From Economic Development, 9th Ed.
Michael Todaro & Stephen C. Smith
Pearson, Addison Wesley

Common Characteristics of Developing Nations

The foregoing discussion should have demonstrated why it is sometimes risky to generalize too much about such a diverse set of nations as those in Africa, Asia, and Latin America. Nevertheless, common economic features of developing countries permit us to view them in a broadly similar framework. We will attempt to identify these similarities and provide illustrative data to demonstrate their importance. For convenience, we can classify these common characteristics into six broad categories:

1. Low levels of living, characterized by low incomes, inequality, poor health, and inadequate education

2. Low levels of productivity
3. High rates of population growth and dependency burdens
4. Substantial dependence on agricultural production and primary-product exports
5. Prevalence of imperfect markets and limited information
6. Dominance, dependence, and vulnerability in international relations

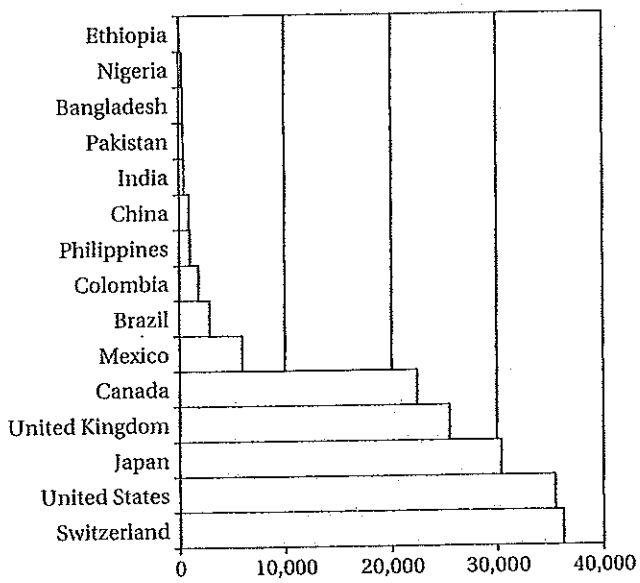
Low Levels of Living

In developing nations, general **levels of living** tend to be very low for the vast majority of people. This is true not only in relation to their counterparts in rich nations but often also in relation to small elite groups within their own societies. These low levels of living are manifested quantitatively and qualitatively in the form of low incomes (poverty), inadequate housing, poor health, limited education, high infant mortality, low life and work expectancies, and in many cases a general sense of malaise and hopelessness. Let us look at some recent statistics comparing certain aspects of life in the underdeveloped countries and in the more economically advanced nations. Although these statistics are national aggregates, often incorporate substantial errors of measurement, and in some cases are not strictly comparable due to exchange-rate variations, they do provide at least a summary indication of relative levels of living in different nations.

Per Capita National Income The **gross national income (GNI)** per capita, the most commonly used measure of the overall level of economic activity, is often used as a summary index of the relative economic well-being of people in different nations. It is calculated as the total domestic and foreign value added claimed by a country's residents without making deductions for depreciation of the domestic capital stock. The **gross domestic product (GDP)** measures the total value for final use of output produced by an economy, by both residents and nonresidents. Thus GNI comprises GDP plus the difference between the income residents receive from abroad for factor services (labor and capital) less payments made to nonresidents who contribute to the domestic economy. Where there is a large nonresident population playing a major role in the domestic economy (such as foreign corporations), these differences can be significant (see Chapter 12). In 2002, the total national income of all the nations of the world was valued at more than U.S. $32 trillion, of which almost $26 trillion originated in the economically developed regions and less than $7 trillion was generated in the less developed nations. When one takes account of the distribution of world population, this means that over 80% of the world's income is produced in the economically developed regions by 15% of the world's people. Thus the remaining 85% of the world's population is living on only one-fifth of total world income. The collective per capita incomes of the low- and middle-income countries average less than one-twentieth the per capita incomes of rich nations.

As an illustration of the per capita income gap between rich and poor nations, look at Figure 2.2. Notice that in 2002, the country with the highest per capita income, Switzerland, had 362 times the per capita income of one of the world's

FIGURE 2.1 Per Capita Gross National Income in Selected Countries, 2002 (in U.S. $ at official exchange rates)



Source: World Bank, *World Development Indicators, 2004* (Washington, D.C.: World Bank, 2004), tab. 1.1. Copyright © 2004 by the World Bank. Reprinted with the permission of the World Bank via the Copyright Clearance Center.

poorest countries, Ethiopia, and 77 times that of one of the world's largest nations, India.

Per capita GNI comparisons between developed and less developed countries like those shown in Figure 2.2 are, however, exaggerated by the use of official foreign-exchange rates to convert the LDC national currency figures into U.S. dollars. This conversion does not measure the relative domestic purchasing power of different currencies. In an attempt to rectify this problem, researchers have tried to compare relative GNIs and GDPs by using **purchasing power parity (PPP)** instead of exchange rates as conversion factors. PPP is calculated using a common set of international prices for all goods and services produced, valuing goods in all countries at U.S. prices. In a simple version, purchasing power parity is defined as the number of units of a foreign country's currency required to purchase the identical quantity of goods and services in the local (LDC) market as $1 would buy in the United States. Generally, prices of nontraded services are much lower in developing countries because wages are so much lower. Clearly, if LDC domestic prices are lower, PPP measures of GNI per capita will be higher than estimates using foreign-exchange rates as the conversion factor. For example, China's 1997 GNI per capita was only 2.7% of that of the United States using the exchange-rate conversion but rises to 12.5% when estimated by the PPP method of conversion. Income gaps between rich and poor nations thus tend to be less when PPP is used.

TABLE 2.4 A Comparison of Per Capita GNI in Selected Developing Countries, plus the United Kingdom and United States, Using Official Exchange-Rate and Purchasing Power Parity Conversions, 2002

Country	GNI Per Capita (U.S. $)	
	Exchange Rate	Purchasing Power Parity
Argentina	4,220	10,190
Bangladesh	380	1,770
Brazil	2,830	7,450
Burundi	100	630
Cameroon	550	1,910
Chile	4,250	9,420
China	960	4,520
Costa Rica	4,070	8,560
Ghana	270	2,080
Guatemala	1,760	4,030
India	470	2,650
Indonesia	710	3,070
Kenya	360	1,010
Malawi	160	570
Malaysia	3,540	8,500
Mexico	5,920	8,800
Nicaragua	710	2,350
Sierra Leone	140	500
South Korea	9,930	16,960
Sri Lanka	850	3,510
Thailand	2,000	6,890
Uganda	240	1,360
United Kingdom	25,510	26,580
United States	35,400	36,110
Venezuela	4,080	5,220
Zambia	340	800

Source: World Bank, *World Development Indicators, 2004* (Washington, D.C.: World Bank, 2004) tab. 1.1. Copyright © 2004 by the World Bank. Reprinted with the permission of the World Bank via the Copyright Clearance Center.

Table 2.4 provides a comparison of exchange-rate and PPP GNI per capita for various developing countries. Measured in PPP dollars, the gap between the United States and Burundi would be 57 to 1 instead of the 354 to 1 gap using official foreign-exchange rates.[8]

Relative Growth Rates of National and Per Capita Income In addition to having much lower levels of per capita income, many developing countries and regions have experienced slower GNI growth than the developed nations and others have grown much more quickly. In the case of both per capita output and population growth, all contemporary developed countries have experienced large multiples of their previous historical rates during the epoch of modern economic growth, roughly from around 1770 to the present. For the now industrialized countries, annual growth rates over this period averaged almost 2% for per capita output and 1% for population, or 3% for total output (real GNI). These rates imply a doubling time of roughly 35 years for per capita output, 70 years for population, and 23 years for real GNI. These doubling times are calculated in a straightforward manner.[9]

TABLE 2.5 Growth Rates of Real Gross National Income Per Capita: Percentage Average Annual Growth, 1980–1990 and 1990–2000

Country	1980–1990	1990–2000
Africa		
Kenya	0.3	−0.3
Nigeria	−3.0	−0.4
Tanzania	−0.7	0.3
Uganda	0.8	4.1
Congo, Dem. Rep.	1.5	−8.3
Asia		
Bangladesh	1.0	3.2
India	3.2	4.2
Indonesia	4.1	2.5
Philippines	−1.5	1.0
South Korea	8.9	4.7
Sri Lanka	2.4	4.0
Latin America		
Brazil	0.6	1.5
Colombia	1.1	1.1
Guatemala	−2.1	1.5
Mexico	−0.9	1.5
Peru	−2.0	3.0
Venezuela	−2.0	−0.5

Sources: World Bank, *World Bank Atlas, 1991* (Washington, D.C.: World Bank, 1991), pp 6–9; World Bank, *World Bank Atlas, 1996* (Washington, D.C.: World Bank, 1996), pp. 18–19; World Bank, *World Development Report, 2002* (New York: Oxford University Press, 2002), pp. 234–237.

Table 2.5 provides figures on recent growth rates of real GNI per capita for some representative countries. For many of them, the 1980s was a lost decade for development. In fact, during the 1980s and early 1990s, the **income gap** between rich and poor nations widened at the fastest pace in more than three decades. The impact of this widening gap is striking. If, for example, we look at the income levels of the richest 20% of the world's population in comparison with the poorest 20%, we find that whereas in 1960 the income ratio was 30 to 1, by 2000 the rich were receiving over 70 times the income of the poor. The richest 1% of people in the world receive as much income as the bottom 57%; this means that less than 50 million people receive as much income as 2.7 billion do.[10]

Table 2.5 provides data on comparative trends in the growth of real GNI per capita between 1980 and 1990 and 1990 and 2000 for a group of developing countries. Table 2.6 gives the details of the ever-growing income disparity between the richest and poorest 20% of the world's population.

Distribution of National Income The enormous gap in per capita incomes between rich and poor nations is not the only manifestation of the widening economic disparity between the world's rich and poor. To appreciate the breadth and depth of poverty in developing countries, it is also necessary to look at the gap between rich and poor *within* individual LDCs. We discuss the question of income distribution and equity more fully in Chapter 5, but a few remarks at this point seem appropriate.

TABLE 2-6 Global Income Disparity between the Richest and Poorest 20% of the World's Population, 1960–2000

Year	Ratio of Income Shares Richest to Poorest
1960	30 to 1
1970	32 to 1
1980	45 to 1
1991	61 to 1
2000	70 to 1

Sources: United Nations Development Program, *Human Development Report, 1992, 1994, 2001* (New York: Oxford University Press, 1992, 1994, 2001). Reprinted with permission.

First, all nations of the world show some degree of **income inequality.** There are large disparities between the income of the rich and of the poor in both developed and underdeveloped countries. Nevertheless, the gap between rich and poor is generally greater in less developed nations than in developed nations. For example, if we compare the share of national income that accrues to the poorest 40% of a country's population with that of the richest 20% as an arbitrary measure of the degree of inequality, we discover that countries like Brazil, Ecuador, Colombia, Nicaragua, Jamaica, Mexico, Venezuela, Kenya, Sierra Leone, South Africa, and Guatemala have substantial income inequality; others like India, Tanzania, Chile, Malaysia, China, Costa Rica, and Libya have moderate inequality; and others like Taiwan, Slovakia, Hungary, Indonesia, Canada, Japan, Sweden, and South Korea have relatively lesser inequalities in overall income distribution. Moreover, there is no obvious relationship or correlation between levels of per capita income and degree of income inequality. Nicaragua, with a similar low per capita income as India, has a much wider income disparity between the top 20% and bottom 40% of the population. Similarly, Kuwait, with almost the same high per capita income as Portugal, has a much lower percentage of its income distributed to the bottom 40% of its population. This phenomenon underlines the important point that economic development cannot be measured solely in terms of the level and growth of overall income or income per capita; one must also look at how that income is distributed among the population—at who benefits from development and why.

Extent of Poverty The magnitude and extent of poverty in any country depend on two factors: the average level of national income and the degree of inequality in its distribution. Clearly, for any given level of national per capita income, the more unequal the distribution, the greater the incidence of poverty. Similarly, for any given distribution, the lower the average income level, the greater the incidence of poverty. But how is one to measure poverty in any meaningful quantitative sense?

Development economists use the concept of **absolute poverty** to represent a specific minimum level of income needed to satisfy the basic physical needs of food, clothing, and shelter in order to ensure continued survival. A problem, however, arises when one recognizes that these minimum subsistence levels will vary from country to country and region to region, reflecting different physiological as well as social and economic requirements. Economists have therefore tended to make conservative estimates of world poverty in order to avoid unsubstantiated

exaggerations of the problem. One common methodology has been to establish an **international poverty line** at, say, a constant U.S. $370 (based, e.g., on the value of the 1993 dollar) and then attempt to estimate the **purchasing power equivalent** of that sum of money in terms of a developing country's own currency.

Table 2.7 shows trends in the extent of absolute poverty in the developing world at selected intervals between 1987 and 1998, based on survey data. In Table 2.7, the poverty line is referred to as $1 per day, but in 1993 purchasing power parity dollars, the actual poverty line is drawn at $1.08. This is extreme poverty by any standard, and looking at the table, we see that a staggering 1.2 billion people still live below this daily income level. Table 2.7 also indicates that the estimated number of absolutely poor people remained little changed (and in fact increased somewhat) over the 11-year period of study. However, the conclusion that no progress had been made during this period would be misleading, because population growth was also substantial. In fact, the proportion of the population in developing countries that live in absolute poverty declined significantly, from 28.3% in 1987 to an estimated 24% in 1998. Note also that regional performance varied widely. While the percentage of the population in absolute poverty plummeted in East Asia, from 26.5% to 15.3%, the share was virtually unchanged in sub-Saharan Africa, the region with the fastest population growth. In practice, this meant that the number of poor people increased in sub-Saharan Africa from 217 million to 290 million. In Eastern Europe and Central Asia, the number in poverty increased from just 1.1 million to some 24 million persons, the result of the catastrophic drop in economic activity in the "transition" countries. As a result, the regional distribution of the poor is shifting from East Asia and South Asia to the "transition" countries, and sub-Saharan Africa. By 1998, the latter two regions accounted for more than two-thirds of all the poor people in the world. In sum, developing countries vary significantly in the amount of absolute poverty they face and in the extent of their progress, or lack of progress, in reducing poverty. (We cover problems of absolute poverty and policies to address it in detail in Chapter 5).

Health In addition to struggling on low income, many people in developing nations fight a constant battle against malnutrition, disease, and ill health. Although there have been significant improvements since the 1960s, in the least developed countries of the world, life expectancy in 2002 still averaged only 50 years, compared to 64 years among all developing countries and 78 years in developed nations. **Infant mortality rates** (the number of children who die before their first birthday out of every 1,000 live births) average about 96 in the least developed countries, compared with approximately 64 in other less developed countries and 8 in developed countries. The rates for some specific countries are shown in Figure 2.3.

In the 1990s and early 2000s, the situation continued to deteriorate in sub-Saharan Africa, with deep declines in food consumption and widespread famine. In both Asia and Africa, over 60% of the population barely met minimum caloric requirements necessary to maintain adequate health. Moreover, it has been estimated that this caloric deficit amounted to less than 2% of the world cereal production. This contradicts the widely held view that malnutrition is the inevitable result of an imbalance between world population and world food supplies. The

TABLE 2.7 Income Poverty by Region, Selected Years, 1987–1998

Region	Population Covered by at Least One Survey (%)	People Living on Less than $1 a Day (millions)				
		1987	1990	1993	1996	1998
East Asia and Pacific	90.8	417.5	452.4	431.9	265.1	278.3
Excluding China	71.1	114.1	92.0	83.5	55.1	65.1
Europe and Central Asia	81.7	1.1	7.1	18.3	23.8	24.0
Latin America and the Caribbean	88.0	63.7	73.8	70.8	76.0	78.2
Middle East and North Africa	52.5	9.3	5.7	5.0	5.0	5.5
South Asia	97.9	474.4	495.1	505.1	531.7	522.0
Sub-Saharan Africa	72.9	217.2	242.3	273.3	289.0	290.9
Total	88.1	1,183.2	1,276.4	1,304.3	1,190.6	1,198.9
Excluding China	84.2	879.8	915.9	955.9	980.5	985.7

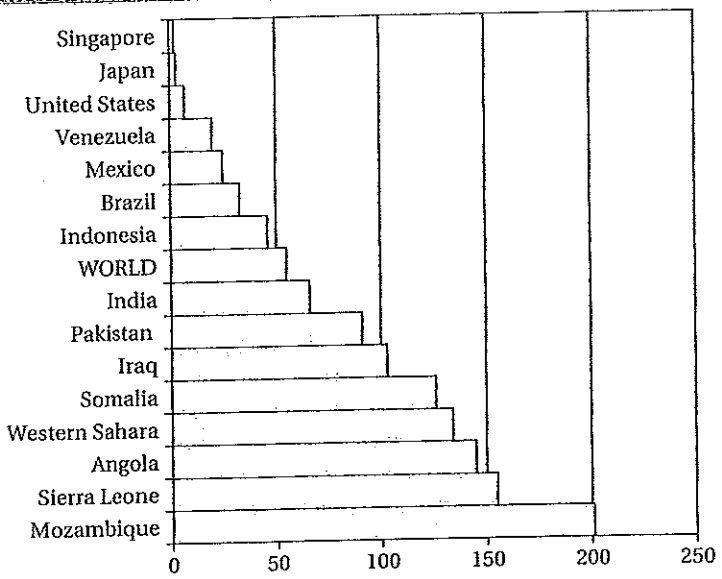
Region	Share of Population Living on Less than $1 a Day (%)				
	1987	1990	1993	1996	1998
East Asia and Pacific	26.6	27.6	25.2	14.9	15.3
Excluding China	23.9	18.5	15.9	10.0	11.3
Europe and Central Asia	0.2	1.6	4.0	5.1	5.1
Latin America and the Caribbean	15.3	16.8	15.3	15.6	15.6
Middle East and North Africa	4.3	2.4	1.9	1.8	1.9
South Asia	44.9	44.0	42.4	42.3	40.0
Sub-Saharan Africa	46.6	47.7	49.7	48.5	46.3
Total	28.3	29.0	28.1	24.5	24.0
Excluding China	28.5	28.1	27.7	27.0	26.2

Source: World Bank *World Development Report 2000/2001, Attacking Poverty* (New York: Oxford University Press, 2000), tab. 1.1. Reprinted with permission.

Note: The poverty line is $1.08 a day at 1993 PPP. Poverty estimates are based on income or consumption data from the countries in each region for which at least one survey was available during 1985–1998. Where survey years do not coincide with the years in the table, the estimates were adjusted using the closest available survey and applying the consumption growth rate from national accounts. Using the assumption that the sample of countries covered by surveys is representative of the region as a whole, the number of poor people was then estimated by region. This assumption is obviously less robust in the regions with the lowest survey coverage.

more likely explanation can be found in the enormous developing imbalance in world income distribution. Thus **malnutrition** and poor health in the developing world are perhaps even more a matter of poverty than of food production, even though the two factors are indirectly interrelated. Table 2.8 provides estimates of the extent of human deprivation in terms of some key health and education indicators. We see, for example, that 766 million people in poor countries are without access to health services, almost 1 billion do not have access to safe drinking water, 2.4 billion live without sanitation facilities, and 158 million children under age 5 (those who managed to live that long) are malnourished. Another often-used measure of child malnutrition is the percentage of children who are underweight. In the early 1990s, statistics revealed that 67% of the children in Bangladesh were underweight, 63% in India, 43% in South Africa, 42% in Vietnam, 38% in Ethiopia, and 36% in Ghana and Nigeria.[11]

FIGURE 2.5 Under-5 Mortality Rates in Selected Countries, 2002 (per 1,000 live births)



Source: Data from *World Population Datasheet, 2003*, Population Reference Bureau, http://www.prb.org.

The importance of access to clean drinking water, which is one of the most important measures of sanitation, cannot be overemphasized. Waterborne diseases such as typhoid fever, cholera, and a wide array of serious or fatal diarrheal illnesses are responsible for more than 35% of the deaths of young children in Africa, Asia, and Latin America. Most of these diseases and resulting deaths would be quickly eliminated with safe water supplies. To make matters worse, medical care is an extremely scarce social service in many parts of the developing world. In 1995, the number of doctors per 100,000 people averaged only 4.4 in the least developed countries, compared with 217 in the developed countries. The ratio of

TABLE 2.8 Human Health and Education Deprivation in the Developing World

Nature of Health Deprivation	Number of People Deprived
Lack of access to health services	766 million (1995)
Lack of access to safe water	968 million (1998)
Lack of access to sanitation	2.4 billion (1998)
Children dying before age 5 from preventable causes	11 million (1998)
Underweight children under age 5	163 million (1998)
People living with HIV/AIDS	34 million (2000)
Illiterate adults	854 million (2000)
Children not in school	325 million (2000)

Source: United Nations Development Program, *Human Development Report, 2001* (New York: Oxford University Press, 2001), p. 9. Reprinted with permission.

hospital beds to population is similarly divergent between these two sets of nations. Moreover, when one realizes that most of the medical facilities in developing nations are concentrated in urban areas where only 25% of the population resides, the woefully inadequate provision of health care to the masses of poor people becomes strikingly clear. For example, in India, 80% of the doctors practice in urban areas where only 20% of the population resides. In Bolivia, only one-third of the population lives in cities, but 90% of the health facilities are found there. In Kenya, the population-to-physician ratio is 672 to 1 for the capital city of Nairobi and 20,000 to 1 in the rural countryside where 87% of the Kenyan population lives. In terms of health expenditures, more than 75% of LDC government outlays are devoted to urban hospitals that provide expensive, Western-style curative care to a minority of the population. Reducing this amount to 50% and using the difference to train 1 million health workers could, according to a United Nations Children's Fund (UNICEF) study, provide much-needed health services to the poorest billion people in the developing world.[12]

Finally, no discussion of health problems would be complete without mentioning the terrible human toll that AIDS is inflicting on millions of people in developing countries. By the end of 2003, over 20 million people worldwide had died of AIDS and more than 38 million others had contracted the human immunodeficiency virus (HIV) that causes it; 90% of all these people live in LDCs.[13] Women constitute almost half of the infected, and over 2 million children are estimated to have the disease. At the end of 2004, the greatest number of HIV-positive people, 25 million, were in sub-Saharan Africa; 8 million were in Asia and 2 million in Latin America and the Carribean. After tuberculosis, AIDS is now the leading infectious cause of death among adult men and women. We will discuss this critical health issue in detail in Chapter 8.

Education As a final illustration of the very low levels of living that are pervasive in developing nations, consider educational opportunities. The attempt to provide primary school educational opportunities has probably been the most significant of all LDC development efforts. In most countries, education takes the largest share of the government budget. Yet in spite of some impressive quantitative advances in school enrollments, literacy levels remain strikingly low compared with the developed nations. For example, among the least developed countries, literacy rates average only 45% of the population. Currently, it is estimated that 325 million children have dropped out of primary and secondary school, and of the estimated 854 million illiterate adults, well over 60% are women.[14] The education of children who do attend school regularly is often irrelevant to the development needs of the nation in which they live. We examine the role of education in detail in Chapter 8.

Summarizing our discussion so far, we can list the following common characteristics of the low living levels of developing countries:

1. Low relative levels and, in many countries, slow growth rates of national income
2. Low levels and, in many countries, stagnating rates of real income per capita growth

3. Highly skewed patterns of income distribution, with the top 20% of the population receiving 5 to 10 times as much income as the bottom 40%
4. Consequently, great masses of developing country populations suffering from absolute poverty, with up to 1.3 billion people living on subsistence incomes of less than $370 per year at purchasing power parity
5. Large segments of the populations suffering from ill health, malnutrition, and debilitating diseases, with infant mortality rates running as high as 10 times or more those in developed nations
6. In education, low levels of literacy, significant school dropout rates, and inadequate and often irrelevant educational curricula and facilities

Most important is the interaction of all six characteristics, which tends to reinforce and perpetuate the pervasive problems of "poverty, ignorance, and disease" that restrict the lives of so many people in the developing world.

A Holistic Measure of Living Levels: The Human Development Index

The most ambitious attempt to analyze the comparative status of socioeconomic development such as we have just reviewed in both developing and developed nations systematically and comprehensively has been undertaken by the United Nations Development Program (UNDP) in its annual series of *Human Development Reports*. The centerpiece of these reports, which were initiated in 1990, is the construction and refinement of the **Human Development Index (HDI)**. The HDI attempts to rank all countries on a scale of 0 (lowest human development) to 1 (highest human development) based on three goals or end products of development: *longevity* as measured by life expectancy at birth, *knowledge* as measured by a weighted average of adult literacy (two-thirds) and mean years of schooling (one-third), and *standard of living* as measured by real per capita income adjusted for the differing purchasing power parity of each country's currency to reflect cost of living and for the assumption of diminishing marginal utility of income. Using these three measures of development and applying a formula to data for 177 countries, the HDI ranks all countries into three groups: low human development (0.0 to 0.499), medium human development (0.50 to 0.799), and high human development (0.80 to 1.0).

Calculation of the HDI has undergone a number of changes since its inception. Perhaps most important, the index has been simplified so that today the HDI is calculated in a relatively straightforward manner. In particular, in the past a relatively complicated formula was used to convert PPP income into "adjusted" income (meaning income adjusted for diminishing marginal utility). Today, we find adjusted income by simply taking the natural log of current income. Then, to find the income index, subtract the natural log of 100 from the natural log of current income, because it is believed that the lowest that per capita income could possibly have been over the past generation in any country is $100 PPP. The difference gives the amount by which the country has exceeded this "lower goalpost." To put this achievement in perspective, consider it in relation to the maximum that a country could reasonably aspire to over the coming generation. The UNDP takes

this at $40,000 PPP. So we then divide by the difference between the log of $40,000 and the log of $100 to find the country's relative income achievement. This gives each country an index number that ranges between 0 and 1. For example, for the case of Armenia, whose 1999 PPP income per capita was $2,215, the income index is calculated as follows:

$$\text{Income index} = \frac{[\log(2{,}215) - \log(100)]}{[\log(40{,}000) - \log(100)]} = 0.517 \tag{2.1}$$

With a value of the income index about midway through the maximum and minimum points (0.517 is close to 0.5), for the case of Armenia, it is easy to see the effect of diminishing marginal utility at work. An income of $2,215, which is less than 6% of the maximum goalpost of $40,000, is already enough to reach more than halfway to the maximum value that the index can take. Note that one (small) country, Luxembourg, has already exceeded the $40,000 PPP income target; for this case, the UNDP assigns Luxembourg the maximum value of $40,000 PPP income, and so the country gets the maximum income index of 1.[15]

To find the life expectancy (health proxy) index, the UNDP starts with a country's current life expectancy at birth and subtracts 25 years. The latter is the lower goalpost, the lowest that life expectancy could have been in any country over the last generation. Then the UNDP divides the result by 85 years minus 25 years, or 60 years, which represents the range of life expectancies expected over the previous and next generations. That is, it is anticipated that 85 years is a maximum reasonable life expectancy for a country to try to achieve over the coming generation. For example, for the case of Armenia, whose population life expectancy in 1999 was 72.7 years, the life expectancy index is calculated as follows:

$$\text{Life expectancy index} = \frac{(72.7 - 25)}{(85 - 25)} = 0.795 \tag{2.2}$$

Notice that no diminishing marginal utility of years of life are assumed; the same holds for the education index. The education index is made up of two parts, with two-thirds weight on literacy and one-third weight on school enrollment. Because gross school enrollments can exceed 100% (because of older students going back to school), this index is also capped at 100%. For the case of Armenia, adult literacy is estimated at 98.3%, so

$$\text{Adult literacy index} = \frac{(98.3 - 0)}{(100 - 0)} = 0.983 \tag{2.3}$$

For the gross enrollment index, Armenia estimates that 79.9% of its primary, secondary, and tertiary age population are enrolled in school, so the country receives the following value:

$$\text{Gross enrollment index} = \frac{(79.9 - 0)}{(100 - 0)} = 0.799 \tag{2.4}$$

Then, to get the overall education index, the adult literacy index is multiplied by two-thirds and the gross enrollment index is multiplied by one-third. This choice reflects the view that literacy is the fundamental characteristic of an educated person. In the case of Armenia, this gives us

$$\text{Education index} = \frac{2}{3}(\text{adult literacy index}) + \frac{1}{3}(\text{gross enrollment index})$$
$$= \frac{2}{3}(0.983) + \frac{1}{3}(0.799) = 0.922 \quad (2.5)$$

In the final index, each of the three components receives equal, or one-third, weight. Thus

$$\text{HDI} = \frac{1}{3}(\text{income index}) + \frac{1}{3}(\text{life expectancy index}) + \frac{1}{3}(\text{education index}) \quad (2.6)$$

For the case of Armenia,

$$\text{HDI} = \frac{1}{3}(0.517) + \frac{1}{3}(0.795) + \frac{1}{3}(0.922) = 0.745 \quad (2.7)$$

One major advantage of the HDI is that it does reveal that a country can do much better than might be expected at a low level of income and that substantial income gains can still accomplish relatively little in human development.

Further, the HDI points up clearly that disparities in income are greater than disparities in other indicators of development, at least health and education measures. Moreover, the HDI reminds us that by *development,* we clearly mean broad human development, not just higher income. Many countries, such as some of the higher-income oil producers, have been said to have experienced "growth without development." Health and education are not just inputs into a production function (as in their role as components of human capital) but are fundamental development goals in their own right (see Chapter 8). We cannot easily argue that a nation of high-income individuals who are not well educated and suffer from significant health problems that lead to their living much shorter lives than others around the globe has achieved a higher level of development than a low-income country with high life expectancy and literacy. A better indicator of development disparities and rankings might be found by including health and education variables in a weighted welfare measure rather than by simply looking at income levels, and the HDI offers one very useful way to get at this.

There are other criticisms and possible drawbacks of the HDI. One is that gross enrollment in many cases overstates the amount of schooling, because in many countries a student who begins primary school is counted as enrolled without considering whether the student drops out at some stage. Equal (one-third) weight is given to each of the three components, which clearly has some value judgment behind it, but it is difficult to determine what this is. Note that because the variables are measured in very different types of units, it is difficult even to say precisely what equal weights mean. Finally, there is no attention to the role of quality. For example, there is a big difference between an extra year of life as a healthy, well-functioning individual and an extra year with a sharply limited range of capabilities (such as being confined to bed). Moreover, the quality of schooling counts, not just the number of years of enrollment. Finally, it should be noted that while one could imagine better proxies for health and education, measures for these variables were chosen partly on the criterion that sufficient data must be available to include as many countries as possible.

TABLE 2.9 Human Development Index for Twenty-Two Selected Countries, 2002

Country	Relative Ranking (lowest to highest)	Human Development Index (HDI)	Real 2002 GDP Per Capital (PPP$)	GDP Rank minus HDI Rank[a]
Low human development				
Sierra Leone	177	0.273	520	−1
Ethiopia	170	0.359	780	−1
Angola	166	0.381	2,130	−38
Malawi	165	0.388	580	+9
Tanzania	162	0.407	580	+12
Guinea	160	0.425	2,100	−30
Medium human development				
Bangladesh	138	0.509	1,700	+1
India	127	0.595	2,670	−10
South Africa	119	0.666	10,070	−66
Nicaragua	118	0.667	2,470	+1
China	94	0.745	4,580	+5
Turkey	88	0.751	6,390	−12
Peru	85	0.752	5,010	+7
Thailand	76	0.768	7,010	−9
Oman	74	0.770	13,340	−32
Malaysia	59	0.793	9,120	−2
High human development				
Costa Rica	45	0.834	8,840	+14
Kuwait	44	0.838	16,240	−6
United Kingdom	12	0.936	26,150	+8
United States	8	0.939	35,750	−4
Canada	4	0.943	29,480	+5
Norway	1	0.956	36,600	+1

Source: United Nations Development Program, *Human Development Report, 2004* (New York: Oxford University Press, 2004), annex tab. 1. Reprinted with permission.

[a]A positive figure indicates that the HDI rank is better than the real GDP per capita (PPP$) rank; a negative indicates the opposite.

Table 2.9 shows the 2002 Human Development Index for a sample of 22 developed and developing nations ranked from low to high human development (column 3) along with their respective real GDP per capita (column 4) and a measure of the differential between the GDP per capita rank and the HDI rank (column 5). A positive number shows by how much a country's relative ranking rises when HDI is used instead of GDP per capita, and a negative number shows the opposite. Clearly, this is one of the critical issues for the HDI. If country rankings did not vary much when the HDI is used instead of GDP per capita, the latter would (as some economists claim) serve as a reliable proxy for socioeconomic development, and there would be no need to worry about such things as health and education indicators.

We see from Table 2.9 that the country with the lowest HDI (0.273) in 2002 was Sierra Leone, and the one with the highest (0.956) was Norway. What is more interesting for our purposes is that even though countries with high HDIs tend to have higher per capita incomes, within and across the three subgroups we find some

TABLE 2.10 Human Development Index: Variations for Similar Incomes, 2002

Country	GDP Per Capita (U.S. $ PPP)	HDI	HDI Rank	Life Expectancy (years)	Adult Literacy (%)
GDP per capita around PPP $1,000					
Tajikistan	980	0.671	116	68.6	99.5
Kenya	1,020	0.488	148	45.2	84.3
Central African Republic	1,170	0.361	169	39.8	48.6
Burkina Faso	1,100	0.302	175	45.8	12.8
GDP per capita around PPP $2,000					
Vietnam	2,300	0.691	112	69.0	90.3
Pakistan	1,940	0.497	142	60.8	41.5
Guinea	2,100	0.425	160	48.9	41.0
Angola	2,130	0.381	166	40.1	42.0
GDP per capita around PPP $3,500					
Jamaica	3,980	0.764	79	75.6	87.6
Sri Lanka	3,570	0.740	96	72.5	92.1
Indonesia	3,230	0.692	111	66.6	87.9
Morocco	3,810	0.620	125	68.5	50.7

Source: United Nations Development Program, *Human Development Report, 2002* (New York: Oxford University Press, 2002, 139–142. Reprinted with permission.

countries whose HDI is considerably higher than others even though the latter have substantially higher per capita incomes. Thus, for example, we see that Tanzania's HDI is 50% higher than that of Sierra Leone even though Sierra Leone's real GDP per capita is roughly the same as Tanzania's. Similarly, Malawi's HDI is very close to Angola's even though the latter's per capita GDP is nearly four times the former's. In the medium HDI group, China's per capita GDP is less than half of South Africa's even though its HDI is nearly a fifth higher. Thailand versus Oman and Costa Rica versus Kuwait also pose interesting contrasts.

To emphasize the point that countries at similar levels of GDP per capita can have significantly different human development indicators, depending on how that income is used, let us look briefly at Table 2.10. We see, for example, that Vietnam and Guinea have about the same income level, but Vietnam's HDI is 163% higher than Guinea's. Similar results are shown for Sri Lanka and Morocco, and for Kenya and the Central African Republic.

One of the major innovations of the HDI over the past few years has occurred through the disaggregation of a country's overall HDI into separate components to distinguish between men and women, different social classes reflecting skewed income distributions, and different regions and ethnic groups. The results show, not surprisingly, that men generally fare better than women for almost every socioeconomic indicator. For example, in the 43 countries for which gender-based income data were available in a recent year, women's income averaged less than 40% of men's in 14 countries (mostly developing countries, although the figure was 35% in Japan and 33% in Ireland) and above 60% in only 11, all of which were developed nations like Sweden and Norway.

When the aggregate HDI for various countries was adjusted for income distribution, the relative rankings of many developing nations also changed significantly.[16] For example, Brazil and Botswana have highly unequal distributions so that their rankings slip by seven and eight places, respectively, while China and Sri Lanka see their HDI rankings rise by a similar factor due to their more egalitarian distributions. When HDIs were then adjusted for race, region, and ethnicity, we find, for example, that even though South Africa's overall HDI was 0.666 (medium), the HDI for whites was 0.876 (high), while for blacks it was 0.462 (low); even though Brazil's HDI was 0.775, its wealthy southern regions (Rio de Janeiro and São Paulo) had an HDI of 0.838, while its poor northeast regions had an HDI of 0.549; and even though Nigeria had an HDI of 0.466, its richest state, Bendel, had an HDI of 0.666, while the poorest, Borno, had a value of only 0.156 (lower than any country).

The United Nations Human Development Index has thus made a major contribution to improving our understanding of what constitutes development, which countries are succeeding (as reflected by rises in their HDI over time), and how different groups and regions within countries are faring. By combining social and economic data, the HDI allows nations to take a broader measure of their development performance, both relatively and absolutely, and thus to focus their economic and social policies more directly on areas in need of improvement.

Although there are somewhat valid criticisms, the fact remains that the HDI, when used in conjunction with traditional economic measures of development, greatly increases our understanding of which countries are experiencing development and which are not. More important, by examining each of the three major components of the HDI-adjusted real per capita income, life expectancy, and literacy and schooling measures and by disaggregating a country's overall HDI to reflect income distribution, gender, regional, and ethnic differentials, we are now able to identify not only whether a country is developing but also whether various significant groups within that country are participating in that development.