CHAPTER 2

Economic Development: Overview

> By the problem of economic development I mean simply the problem of accounting for the observed pattern, across countries and across time, in levels and rates of growth of per capita income. This may seem too narrow a definition, and perhaps it is, but thinking about income patterns will necessarily involve us in thinking about many other aspects of societies too, so I would suggest that we withhold judgement on the scope of this definition until we have a clearer idea of where it leads us.
>
> —R. E. Lucas [1988]

> [W]e should never lose sight of the ultimate purpose of the exercise, to treat men and women as ends, to improve the human condition, to enlarge people's choices. [A] unity of interests would exist if there were rigid links between economic production (as measured by income per head) and human development (reflected by human indicators such as life expectancy or literacy, or achievements such as self-respect, not easily measured). But these two sets of indicators are not very closely related.
>
> —P. P. Streeten [1994]

2.1 Introduction

Economic development is the primary objective of the majority of the world's nations. This truth is accepted without controversy, or so it would appear in public discourse at least. Raising the well-being and socioeconomic capabilities of peoples everywhere is easily the most crucial

social task facing us today. Every year, aid is disbursed, investments are undertaken, policies are framed, and elaborate plans hatched to achieve this goal, or at least to get closer to it. How do we identify and track the results of these efforts? What criteria do we use to evaluate the extent of "development" a country has undergone or how "developed" or "underdeveloped" a country is at any point in time? How do we measure development?

The issue isn't easy to resolve. We all have intuitive notions of "development." Presumably, when we speak of a developed society, we have in mind a world in which people are well fed and well clothed, have access to a variety of goods and services, possess the luxury of leisure and entertainment, and live in a healthy environment. We think of a society free of violent discrimination, with tolerable levels of equality, where the sick receive proper medical care and people do not have to sleep on the sidewalks. In short, most of us would insist that a *minimal* requirement for a "developed" nation is that its *physical* quality of life be high, uniformly so rather than restricted to an incongruously affluent minority.

Of course, the notion of a good society goes further. We might stress political rights and freedoms, intellectual and cultural development, stability of the family, a low crime rate, social civility and so on. However, a high and widely accessible level of *material* well-being is probably a prerequisite for most other kinds of advancement, quite apart from being a worthy goal in itself.[1] Economists and policy makers therefore do well (and have enough to do!) by concentrating on this aspect alone.

It is, of course, tempting to suggest that the state of material well-being of a nation is captured quite accurately by its per capita gross national income (GNI): the per person value of income earned by the people of a country over a given year. (Or one might invoke its close cousin, gross domestic product, GDP, which restricts itself to domestically produced income, and ignores net income received from other countries, such as dividends, interest or repatriated profits.) Indeed, since economic development at the national level was adopted as a conscious goal,[2] there have been long phases during which development performance was judged exclusively by the yardstick of per capita income growth. In the last few decades, this practice increasingly has come under fire from various quarters. The debate goes on, as the quotations at the beginning of this chapter suggest.

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[1] This is not to suggest at all that it is *sufficient* for every kind of social advancement.

[2] For most poor countries, this starting point was the period immediately following World War II, when many such countries, previously under colonial rule, gained independence and formed national governments.

We must be careful here. No one in their right mind would ever suggest that economic development be identified, in a *definitional* sense, with the level or growth of per capita income. It is perhaps universally accepted that development is not just about income, although income (economic wealth, more generally) has a great deal to do with it. For instance, we noted previously that economic advancement should not be restricted to a small minority. This means, in particular, that development is also the removal of poverty and undernutrition: it is an increase in life expectancy; it is access to sanitation, clean drinking water, and health services; it is the reduction of infant mortality; it is increased access to knowledge and schooling, and literacy in particular.[3] There is an entire multitude of yardsticks. Paul Streeten's thoughts, summarized in the quotation at the beginning of this chapter, capture this "multidimensionality" very well.

Far more intriguing is the sharp focus of Robert Lucas' words (see quotation). At first they appear narrow, perhaps even missing the point, whereas the more holistic scenario sketched in the foregoing paragraphs seems pretty much the way to go. In thinking this we would be wrong. Neither Lucas nor any intelligent person believes that per capita income *is* development. What's hidden in these words is actually an approach, not a definition. It is really a belief about the world, which is that *the universal features of economic development—health, life expectancy, literacy, and so on—follow in some natural way from the growth of per capita income*, perhaps with the passage of time. Implicit here is a belief in the power of aggregate economic forces to positively affect every other socioeconomic outcome that we want to associate with "development." This outlook may be contrasted with the view that a correlation between per capita income and other desired features is not automatic, and that in many cases those connections may not be present at all. According to this view, per capita income fails as an adequate overall measure and must be supplemented by other indicators directly.

The debate implicit in the two quotations is not, therefore, about what development *means*, on which there is possibly widespread agreement. It is really about a view of the world—about the possibility of finding a smaller set of variables that correlates well with the multifaceted process of development. Note well that, in a way, saying too much is saying too

[3]The Millenium Development Goals, set out in United Nations meeting in 2000 describe six targets: (1) eliminate extreme poverty and hunger, (2) universalize primary education, (3) achieve gender equality, (4) reduce infant and child mortality, (5) improve maternal health, (6) combat disease, such as HIV/AIDS and malaria, (7) build a "sustainable" environment, and (8) develop a global partnership for development. There is no reason for you to buy all of these goals; the point is only to illustrate the implicit recognition of "development" as a multifaceted concept.

little. It may be that per capita income does not capture all aspects of development, but a weighty assertion that no small set of variables ever captures the complex nature of the development process and that there are always other considerations is not very helpful. In this sense, the view that economic development is ultimately fueled by per capita income may be taking things too far, but at least it has the virtue of attempting to reduce a larger set of issues to a smaller set, hopefully in a way that is supported by sound reasoning and empirical evidence.

This book implicitly contains a reduction as well, although not all the way to per capita income alone. In part, sheer considerations of space demand such a reduction. Moreover, we have to begin *somewhere*, so we concentrate implicitly on understanding two sets of connections throughout this book. One is how average *levels* of economic attainment influence development. To be sure, this must include an analysis of the forces that, in turn, cause average levels of income and other indicators to grow. The other connection is how the *distribution* of economic attainment, across the citizens of a nation or a region and across the nations of the world, influences development. The task of understanding these two broad interrelationships takes us on a long journey. In some chapters the relationships may be hidden in the details, but they are always there: levels and distribution as twin beacons to guide our inquiry.[4]

This is not to say that the basic features of development will be ignored. Studying them is our primary goal, but our approach to them lies through the two routes described in the previous paragraph.

We begin with a summary of the historical experience of developing countries over the past few decades. We pay attention to per capita income, then to income distribution, as well as other indicators of development. We describe the structural characteristics of developing countries: the occupational distribution of the population, the share of different sectors (such as agriculture and services) in national income, the composition of imports and exports, and so on.

[4]Even the double emphasis on levels and distribution might not be enough. For instance, the *Human Development Report* (United Nations Development Programme [1995]) informs us that "the purpose of development is to enlarge all human choices, not just income. The concept of human development is much broader than the conventional theories of economic development." More specifically, Sen [1983] writes: "Supplementing data on GNP per capita by income distributional information is quite inadequate to meet the challenge of development analysis." There is much truth in these warnings, which are to be put side by side with Streeten and certainly contrasted with Lucas, but I hope to convince you that an understanding of our "narrower" issues will take us quite far.

2.2 Income and growth

2.2.1 Measurement issues. Low per capita incomes are an important feature of economic underdevelopment — perhaps *the* most important feature — and there is little doubt that the distribution of income across the world's nations is extraordinarily skewed. Per capita incomes are, of course, expressed in takas, pesos, escudos, remimbi, and in the many other currencies of the world. To facilitate comparison, each country's income (from all sources, but presumably largely in local currency) is converted into a common currency, typically U.S. dollars, and divided by that country's population to arrive at a measure of per capita income. This conversion scheme is called the *exchange rate method*, because it uses the rates of exchange between the local and the common currencies to express incomes in a common unit.

The *World Development Indicators* (see, e.g., World Bank [2011]) contains such estimates for all countries. Using the yardstick of gross national income, the world produced approximately $59.2 trillion of it in 2009. A bit under $9.3 trillion of this came from all low-income and lower middle-income developing countries[5] Simply put, close to 70% of the world's population have access to under 16% of world income. Norway, with per-capita income close to $85,000 under this system of measurement, would therefore be over 500 times as rich than the Democratic Republic of Congo, and close to 150 times as rich as Bangladesh.

Figure 2.1 contrasts per capita gross national income in different countries with the populations of these countries. The figure speaks for itself.

This book is not written with my heart on my sleeve, but the implied disparities are staggering. No amount of fine-tuning in measurement methods can get rid of the stark inequalities that we live with. Nevertheless, both for a better understanding of the *degree* of international variation that we are talking about and for the sake of more reliable analysis of these figures, it is best to recognize at the outset that these measures provide biased estimates of what is actually out there.

[5]The 2011 World Development Indicators uses 2009 per capita income to define various thresholds. Low income countries are those with per capita income under $995. Many African countries fall under this category, as do countries such as Bangladesh, Haiti, Myanmar and Nepal. Low middle-income countries are those that lie between per capita incomes of $996 and $3945; members of this group include China, India, Nicaragua, Nigeria, and Thailand. Upper middle-income countries include several of the richer Latin American economies, such as Argentina and Brazil, and countries such as Lebanon, South Africa and Turkey; they span the range between $3946 and $12195. The upper-income countries make up the rest.

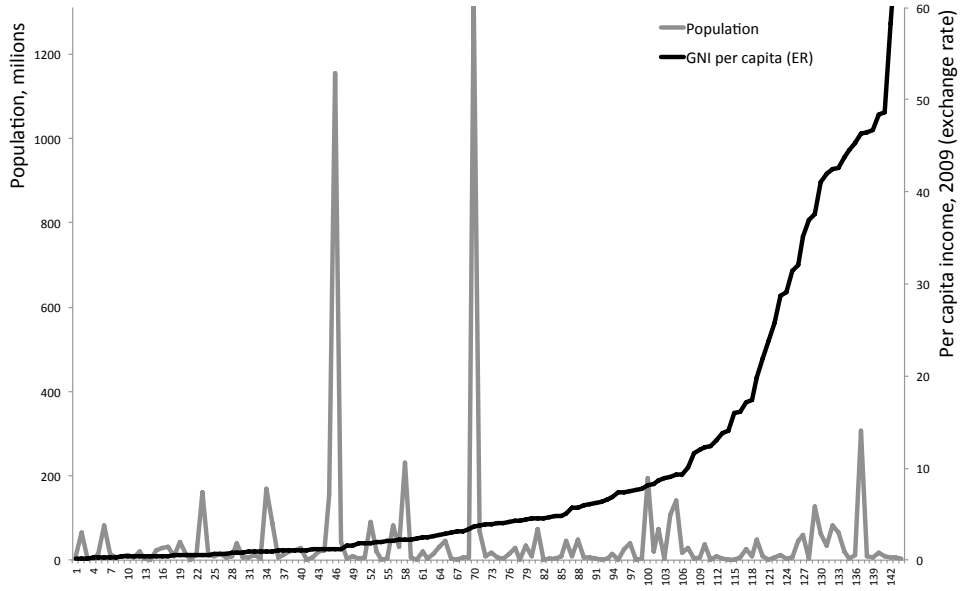


FIGURE 2.1. Population and per capita GDP (exchange rate method), 2009.

(1) For one thing, underreporting of income is not uncommon in developing countries. Because tax collection systems are not as efficient as those prevailing in the industrialized market economies, there is a greater incentive to underreport income or output for tax purposes. The national accounts may not be comprehensive as well.[6]

In addition, the proportion of income that is actually generated for self-consumption is relatively high in developing countries. As we shall soon see, the proportion of the population living in the rural sector in developing countries is large. Many of these individuals are subsistence farmers who grow crops that they themselves consume. Such outputs may not be reported adequately.

Although we can make educated guesses about the degree of underestimation involved, there is possibly very little that we can do about accurately correcting for this problem (though see the discussion in Parente, Rogerson and Wright [2000]).

[6]For instance, in the case of India, Acharya et al. [1985] estimated that 18–21% of total income in 1980–81 went unrecorded in the national accounts. On parallel markets more generally, see, e.g., Roemer and Jones [1991].

(2) A more serious discrepancy arises from the fact that *prices* for many goods in all countries are not appropriately reflected in exchange rates. This is only natural for goods and services that are not internationally traded. Exchange rates are just prices, and the levels of these prices depends *only* on commodities (including capital) that cross international borders. The prices of nontraded goods, such as infrastructure and many services, do not affect exchange rates. What is interesting is that there is a systematic way in which these nontraded prices are related to the level of development. Because poor countries are poor, you would expect them to have relatively low prices for nontraded goods: their lower real incomes do not suffice to pull these prices up to international levels. However, this same logic suggests that a conversion of all incomes to U.S. dollars using exchange rates *underestimates* the real incomes of poorer countries. This can be corrected to some extent, and indeed in some data sets it has been. The most widely used of these is the Heston–Summers data set (see box). Recently, the World Bank started to publish income data in this revised format.

PPP: The International Comparison Program. According to GDP estimates calculated on an exchange-rate basis, Asia's weight in world output fell from 7.9% in 1985 to 7.2% in 1990—and yet Asia was by far the fastest growing region during this period[7]. This same period also witnessed a sharp decline in some Asian countries' exchange rates against the dollar. Now does that tell us something about the shortcomings of GDP exchange-rate estimates?

Actually, the trouble with market exchange rates for income calculations is not so much that they fluctuate, but that they do not fluctuate around the "right" average price, if "right" is to be measured by purchasing power. Even if exchange rates equalize the prices of internationally traded goods over time, substantial differences remain in the prices of nontraded goods and services such as housing and domestic transportation. There is a simple reason for this: because developing countries have relatively low incomes, you would expect non-traded goods to be cheaper. By assigning international prices to a basket of goods and then estimating incomes relative to those prices, we're carrying out a comparison that maintains "purchasing power parity"; hence the term "PPP incomes".

The International Comparisons Program (ICP) began as a research project in 1968. Initially funded by the World Bank and the Ford Foundation,

[7]See *The Economist*, May 15, 1993.

the ICP carried out comparison programs for 1970, 1973 and 1975 before its absorption as a regular component into the United Nations Statistical Division (UNSD). The UNSD coordinated regional comparisons carried out by regional commissions. Research on the conceptual basis of such comparisons was initiated and continued by two economists at the University of Pennsylvania, Alan Heston and Robert Summers, both connected with the ICP since its inception. Their efforts resulted in the Penn World Tables (PWT; also called the Heston–Summers data set). It consists of a set of national accounts for a large set of countries dating from 1950. Entries are denominated in a set of "international" prices in a common currency, which drew on the ICP. Hence, international comparisons of income can be made both between countries and over time.[8]

Likewise, the ICP continues to provide price and expenditure comparison for an ever-expanding set of countries, further rounds of comparisons being completed in 1980, 1985, 1993 and 2005. The latest round (at the time of writing) is 2011, coordinated by the World Bank for 180 countries.

The first step of the ICP is simple: to compare prices for a well-defined commodity in (say) Bangladesh relative to the US. If it costs $2 to buy a kilo of potatoes in the United States but 100 taka in Bangladesh, then the "potato exchange rate" between the taka and the dollar is 50. Indeed, life at the ICP would be blissful if all we consumed were the lowly potato, but of course, there are thousands of items, all with their own prices. Some of these are traded, and the overall exchange rate as we know it comes from these prices. Many items are not traded. The difficulties lie in aggregating from the lowest commodity heading (e.g., potato) all the way back up to overall income.

In particular, the ICP must gather detailed data on prices for thousands of items. These items are then classified numerous expenditure categories (broadly under the consumption, investment and government expenditure headings). By an averaging procedure following a method suggested by statistician R. C. Geary, the average price for each category is obtained relative to the price for that category in the U.S. In this way, numerous relative prices (or "price parities") are made available for each country and each category. Finally, categories must be aggregated up to national income.

[8]The PWT are housed at the Center for International Comparisons at the University of Pennsylvania; see `http://pwt.econ.upenn.edu/`. Apart from income data, the PWT also offers data on selected countries' capital stocks and demographic statistics. In the revised GDP calculations based on PPP, Asia's share in world output in 1990 jumped from 7 to 18%.

The procedure is hard going, and the issues of standardization over countries severe.[9] Moreover, there is the deeper issue of how to weight different items as we aggregate all up to national income. The goods and services consumed in different countries are not all consumed in the same proportion. Their composition will vary depending on economic and social conditions, and any weighting procedure employed in aggregation needs to be sensitive to such compositional variations.

The end result is a PPP exchange rate for national output between two countries. If it is x taka to the dollar, it means that for every dollar spent on GDP in the United States, x taka would need to be spent on the "same goods and services" in Bangladesh. The notion of "sameness" will need to take into account a changing composition, but the idea — at least in theory — is that the two bundles must provide equivalent utility in the two countries.

There is no doubt that the ICP performs an enormously valuable function. At the same time, the maintenance of such a program isn't easy. For instance, it is not clear that the price information — for which one has to reply on many different domestic statistical agencies — is accurate. There are logistical problems in the collection and *coordinated* editing of the data, which requires close interaction between the national statistical offices and the regional offices of the UN. To the extent that PPP estimates may raise income calculations and have a bearing on aid allocations, there might even be strategic reasons for "inaccuracy" (or at least procrastination) in the provision of price data.

And indeed, it hasn't been easy: the ICP has indeed suffered from poor management and insufficient coordination at the different levels. The World Bank, in its role as global coordinator, has taken on several of these issues, by raising funds for the ICP as well as pushing for country-level participation in the Program.

Finally, remember that while the data pioneered by Summers and Heston and the ICP are useful for "real" comparisons, exchange rate-based data are the appropriate ones to use for international financial transactions and capital flows.

Briefly (see box for more details), *international prices* are constructed for an enormous basket of goods and services by averaging the prices (expressed,

[9] See the World Bank's site on the ICP for more detail: `http://siteresources.worldbank.org/ICPEXT/Resources/ICP_2011.html`.

say, in dollars) for each such good and service over all different countries. National income for a country is then estimated by valuing its outputs at *these* international prices. In this way, what is maintained, in some average sense, is *parity* in the *purchasing power* among different countries. Thus we call such estimates PPP estimates, where PPP stands for "purchasing power parity."

PPP estimates of per capita income go some way toward reducing the astonishing disparities in the world distribution of income, but certainly not all the way. For an account of how the PPP estimates alter the distribution of world income, consult Figure **??**, which compares PPP and exchange-rate calculations of per-capita GNI. The setting is just the same as in Figure 2.1, with countries ranked in ascending order of exchange-rate GNI per-capita. The new, darker line shows the PPP computations, which I've normalized for you by setting the world average PPP income (weighted by population) equal to its exchange rate counterpart. As expected, the PPP numbers are relatively higher for poorer countries. The main reason for this is that their nontraded prices are lower, as we've discussed.

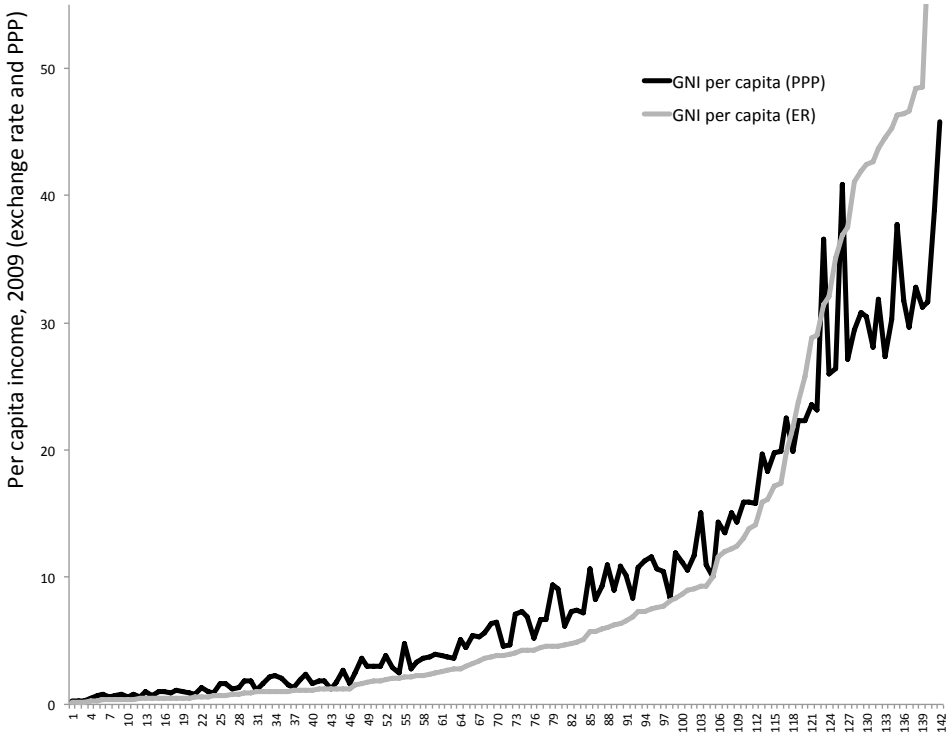


FIGURE 2.2. PPP versus exchange-rate GDP per capita, 2009.

(3) There are other subtle problems of measurement. Income measurement, even when it accounts for the exchange-rate problem, uses market prices to compare apples and oranges; that is, to convert highly disparate goods into a common currency. The theoretical justification for this is that market prices truly reflect preferences as well as relative scarcities. There are several objections to this argument. Not all markets are perfectly competitive; neither are all prices fully flexible. We have monopolies, oligopolistic competition, and public sector companies[10] that sell at dictated prices. There is expenditure by the government on bureaucracy, on the military, or on space research, whose monetary value may not reflect the true value of these services to the citizens. Moreover, conventional measures of GNP ignore costs that arise from externalities — the cost of associated pollution, environmental damage, resource depletion, human suffering due to displacement caused by "development projects" such as dams and railways, and so forth. In all of these cases, the going prices do not capture the true marginal social value or cost of a good or a service.

All these problems can be mended, in principle, and sophisticated measures of national income do so to a large extent. Distortions in prices can be corrected for by imputing and using appropriate "shadow prices" that capture true marginal values and costs. There is a vast literature, both theoretical and empirical, that deals with the concepts and techniques needed to calculate shadow prices for commodities. An estimated "cost of pollution" is often deducted in some of the measures of *net* national income, at least in industrialized economies. Nevertheless, it is important to be aware of these additional problems.

With this said, let us turn to a brief account of recent historical experience.

2.2.2 Historical Experience. Over the period 1980–2010, the richest 10% of the world's nations averaged a per capita income (PPP) that was a bit over 4 times the world average income, while the poorest 10% had about 6–10% of the world average income, this latter ratio showing a small but significant tendency to deteriorate over the 1990s; see Table 1, which shows the same trend for both per-capita GDP and GNI. This broad constancy of extreme inequality among the very richest and poorest countries has been maintained since 1960, with some deterioration at the close of the 20th century. As Parente and Prescott (2000) quite correctly observe, interstate disparities *within* the United States do not even come close to these international figures. In 2010, the richest state in the United States

[10]In many countries all over the Third World, sectors that are important or require bulk investment, such as iron and steel, cement, railways, and petroleum, are often in the hands of public sector enterprises.

	1982	1988	1994	2000	2006	2009
pc GNI top 10%/World average	4.05	3.99	4.06	4.20	4.15	3.96
pc GNI bottom 10%/World average	0.10	0.09	0.07	0.06	0.06	0.06
pc GDP top 10%/World average	4.12	3.95	4.04	4.11	4.05	3.84
pc GDP bottom 10%/World average	0.10	0.09	0.07	0.07	0.07	0.07

Source: The World Bank, `http://data.worldbank.org/`.

TABLE 1. Richest and Poorest 10% Relative to World Average

(not counting DC) was Alaska and the poorest was Mississippi, and the ratio of per capita incomes worked out to slightly over 2!

Of course, the fact that the richest and poorest 10% of countries bear approximately the same ratio of incomes (relative to the world mean and each other) does not suggest that the *entire* world distribution of incomes has remained stationary. To get some idea of this, note first that world GDP per capita grew at an average annual rate of about 1.5% per year over 1970–2010.[11] But East Asia danced to a tune all its own. Japan was initially the most visible, averaging 5.3% in per-capita GDP growth over 1960–1990, but similar or even higher growth rates over the same period were also characteristic of other East Asian economies: Korea (6.1%), Hong Kong (6.6%), Indonesia (3.8%), Malaysia (4.2%), Singapore (6.4%), or Thailand (5.1%). Despite the East Asian financial crisis in the late 1990s, these countries continued their economic advance into the 21st century, growing at annualized rates well in excess of 3% over 1990–2010, while Japan slowed to under the world average.[12]

Impressive as these rates are, they are dwarfed by China's phenomenal performance. Between 1980 and 1990, China's per capita income grew at an annual rate of 7.6%. The corresponding figure for 1990–2010 is even higher: around 9.5%.

Other large economies in Asia have begun to move. India motored along at a relatively sedate rate of 2.6% per year over 1960–1990, which picked up to 3.6% over the 1990s, and then to a remarkable 6.2% over 2000–2010.

In contrast, much of Latin America and the Caribbean languished during the 1980s. After a relatively high rate of economic expansion in the two preceding decades — at around 2.9% annually — growth slowed to a crawl,

[11] All growth numbers are taken from `databank.worldbank.org` unless otherwise indicated.

[12] Japan grew by less than 1% per year over this period, while the numbers remained high for Korea (4.4%), Hong Kong (2.9%), Indonesia (3.3%), Malaysia (3.6%), Singapore (4.0%) and Thailand (3.4%).

and in many cases there was no growth at all. Over 1980–1990, during the so called "lost decade" for Latin America, per-capita income for the region *declined* by an average of over 0.7% year over year, leading to an overall decline of around 10%.[13] Down went Argentina (-2.9% *annualized* over 1980–1990), Brazil (-0.5%), Mexico (-0.3%), Peru (-3.0%), Uruguay (-0.7%) and their neighbors. Only Chile (2.1%) and Colombia (1.4%) had a significantly higher per capita income in 1990 than they did in 1980. It is certainly true that such figures should be treated cautiously, given the extreme problems of accurate GNP measurement in high-inflation countries, but they illustrate the situation well enough. With some notable exceptions (such as Chile, 4.7%, and Argentina, 3.6%), growth in incomes continued to be slow in the 1990s; around the world average at a bit less than 1.6%. We see a broader recovery over 2000–2010, with average growth rates well in excess of 2% annually; take note of Argentina (3.3%), Brazil (2.4%), Chile (2.6%), Peru (4.3%) and Uruguay (3.0%), though one of Latin America's largest economies, Mexico, has not fared quite so well (0.8%).

Similarly, much of Africa stagnated or declined over the 1980s. Sub-Saharan Africa as a whole declined at an annual per-capita rate of over 1%, and things were not any better in the 1990s (-0.4%), though the first decade of this century has seen a relative improvement (2.2%). Countries such as Nigeria (-1.6%) and Tanzania (-2.0%[14]) experienced substantial declines of per capita income through the 1980s, and essentially stagnated through the 1990s, before pulling back to a more robust recovery over 2000–2010 (3.9% annual for Nigeria, 4.0% for Tanzania). Kenya barely grew in per capita terms in the 1980s, and continued to decline in the 1990s before recovering to some extent in 2000–2010; overall conditions (0.2%) over this *thirty-year* period are near-stagnant. Uganda stagnated over the 1980s (-0.1%) before picking up pace and making substantial progress over 1990–2010, growing at over 3.5% annually. Another notable turnaround is Rwanda, crippled by negative growth in the 1980s (-1.2%) and 1990s (-0.7%) before a remarkable recovery over 2000–2010 (4.8%). Yet Burundi's negative growth rate of 3.2% in the 1990s is barely compensated for by its near-stagnation over 2000–2010 (0.4%). One of the largest countries in Africa, the Democratic Republic of the Congo, went into veritable freefall over the 1980s (-2.2%) and the 1990s (-8.5% *annually*) before its less surreal advance of around 1.8% annually over 2000–2010. And what of Zimbabwe, a country that stagnated in the 1980s (0.7%) and 1990s (-0.3%) before entering a freefall of its own (-4.8%) over 2000–2010?

[13] See Morley (1995) on the fortunes of Latin America over this period.
[14] See Maliyamkono and Bagachwa (1990).

We began this account with the world rate of growth (roughly 1.5% annual over 1970–2010), and we end with another benchmark — the growth experience of country-members of the Organization for Economic Cooperation and Development (OECD). The twenty original members and the fourteen additions since contain all the developed countries, though a few middle-income countries are also members. Over 1970–1990, OECD growth was a bit over 2.4% annual, before falling to a more sedate 1.8% over the 1990s (but still a bit more than the world average over this period) and then under the world average at 0.8% during 2000–2010, the slowdown essentially an outcome of the "great recession" of 2009. Finally, the United States mirrors the OECD reasonably well, growing at over 2.2% over 1970–1990, falling slightly to a bit under 2.2% in 1990–2000, before slowing to 0.7% in 2000–2010. Its overall growth over 1970–2010 is uncannily close to the world average; see below.

This discussion isn't a comprehensive accounting of growth, but you can see that there's been a lot of churning in the international distribution of incomes. Such diversity demands explanation, but this demand is ambitious. No single story can account for the variety of historical experience. We know that in Latin America, the sovereign debt crisis triggered enormous economic hardship in the 1980s. In sub-Saharan Africa, low or negative growth is due in large measure to unstable government, civil strife and consequent infrastructural breakdown, as well as to high rates of population increase. The heady successes of East Asia are not fully understood, but a conjunction of farsighted government intervention, a relatively equal domestic income distribution and a vigorous entry into international markets played an important role. We will take up these topics, and many others, in the chapters to come.

Growth experiences such as these can change the face of the world in a couple of decades. One easy way to see this is to look at the "doubling time" implicit in a given rate of growth; that is, the number of years it takes for income to double if it is growing at some given rate. The calculation in the footnote[15] reveals that a good approximation to the doubling time is seventy divided by the annual rate of growth expressed in percentage terms. Thus an East Asian country growing at 5% per year will *double* its per capita income every fourteen years! In contrast, a country growing at 1% per year will require seventy years. Percentage growth figures look like small numbers, but over time, they add up very fast indeed.

[15] A dollar invested at r% per year will grow to two dollars in T years, where T solves the equation $[1 + (r/100)]^T = 2$. This means that $T \ln_e[1 + (r/100)] = \ln_e 2$. However, $\ln_e 2$ is approximately 0.7, whereas for small values of x, $\ln_e(1 + x)$ is approximately x. Using this in the equation gets you the result.

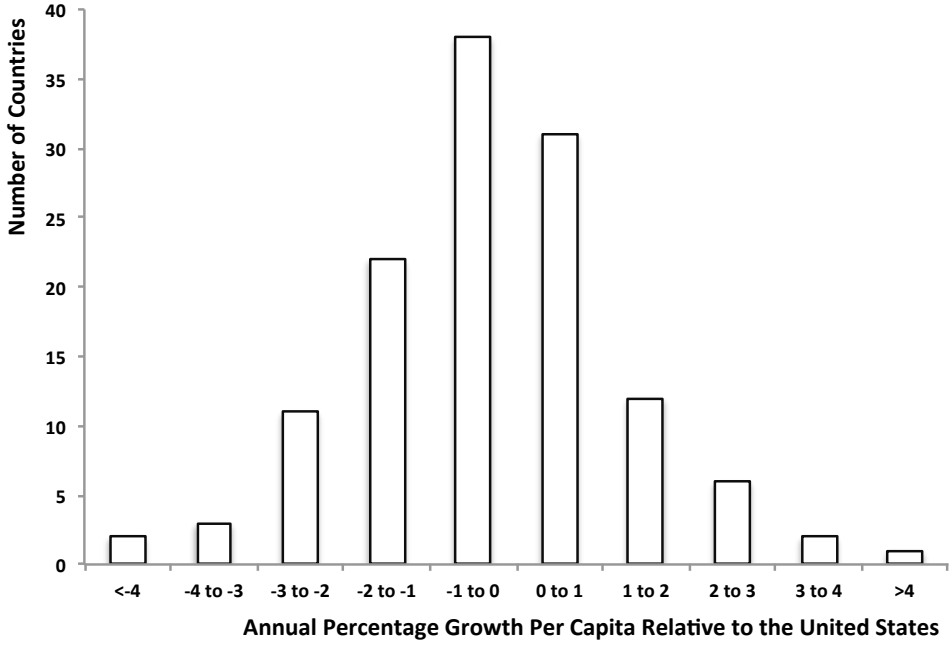


FIGURE 2.3. Annual percentage change in PPP income of different countries relative to U.S. levels, 1982–2009. Source: The World Bank; `http://databank.worldbank.org`.

Thus it is quite possible for the world distribution of income to stay fairly constant in *relative* terms (and even at the extremes), while at the same time there is plenty of action *within* that distribution as countries climb and descend the ladder of relative economic achievement. Indeed, the several countries that we have cited as examples are no exceptions to the general picture of movement. To see this, we follow the convention of using the United States as a benchmark. As averages go (but only as averages go), it isn't a bad benchmark. World average income was a bit under a quarter of US per-capita income in 1982; that ratio hasn't budged at all. We express each country's per capita GDP (PPP) relative to that of the United States, and look at how this ratio changes over time. Figure 2.3 shows the number of countries that experienced changes in income (relative to that of the United States) of different magnitudes over the years 1982–2009.[16]

Figure 2.3 indicates two things. First, over 60 countries — close to half — changed their position relative to the United States by an average of *one percentage point or more per year*, over the period 1982–2009. Second, there is a

[16]See Chart 10 in Parente and Prescott (1993) for an earlier version.

Obs	Cat	①	②	③	④	⑤
32	①	**84**	**13**	**3**	**0**	**0**
21	②	**43**	**43**	**14**	**0**	**0**
26	③	**0**	**27**	**50**	**23**	**0**
20	④	**0**	**0**	**20**	**70**	**10**
29	⑤	**0**	**0**	**0**	**3**	**97**

FIGURE 2.4. The Income Mobility of 128 Countries, 1982–2009.

rough symmetry between changes upward and changes downward, which partly accounts for the fact that you don't see much movement in the world distribution taken as a whole. (As the previous edition of my book shows, the same remarks are also true of 1960–1985.) This observation is cause for much hope and some trepidation: the former, because it tells us that there are probably no traps to ultimate economic success, and the latter, because it seems all too easy to slip and fall in the process. Economic development is probably more like a treacherous road, than a divided highway where only the privileged minority is destined to ever drive the fast lane.

This last statement must be taken with some caution. Although there appears to be no evidence that very poor countries are doomed to eternal poverty, there is some indication that low incomes are very sticky. Even though we will have more to say about the hypothesis of ultimate convergence of all countries to a common standard of living (see Chapters 3–5), an illustration may be useful at this stage. Following Quah (1993), we can use per capita income data to construct "mobility matrices" for countries. First convert all per capita incomes to fractions of the *world*'s per capita income. Thus, if a country has per capita income of $1,000 and the world average is $3,000, assign the number 1/3. Now create categories that we will put each country into. Quah used the following categories (you can certainly construct others if you like): income less than a quarter of the world average (1), income between a quarter and half the world average (2), income between half the world average and the world average (3), income between the world average and twice the world average (4), and income exceeding twice the world average (5).

Now imagine doing this exercise for two points in time, with a view to finding out if a country transited from one category to another during this period. You will generate what we might call a *mobility matrix*. Figure **??** illustrates such a matrix for the period 1982–2009, using per-capita GDP data (a very similar observation holds for GNI). The numbered rows house countries in the corresponding categories in 1982; the italicized numbers

tell you how many in each; e.g., in 1982, 32 countries in the 128-country set had per-capita GDP less than a quarter of the world average. The columns house the corresponding categories in 2009. Thus a cell of this matrix defines a pair of categories. Each entry in the cell records the percentage of countries that made the transition from the row category (1982) to the column category (2009). For instance, 13% of the countries in category 1 made it to category 2 over the twenty-seven year period. A matrix constructed in this way gives you a fairly good sense of how much mobility there is across nations. A matrix with very high numbers on the main diagonal, consisting of those special cells with the same row and column categories, indicates low mobility. According to such a matrix, countries that start off in a particular category have a high probability of staying right there. Conversely, a matrix that has the same numbers in *every* entry (which must be 20 in our 5×5 case, given that the numbers must sum to 100 along each row) shows an extraordinarily high rate of mobility. Regardless of the starting point in 1982, such a matrix will give you equal odds of being in any of the categories in 2009.

With these observations in mind, continue to stare at Figure **??**. Notice that middle-income countries have far greater mobility than either the poorest or the richest countries. For instance, only half of all the countries in category 3 (between half the world average and the world average) remained where they were in 1962. In stark contrast to this, fully 84% of the poorest countries (category 1) remained where they were in 1962, and none of them made it over the world average by 2009. Likewise, 97% of the richest countries in 1982 stayed right where they were in 2009.[17] This is interesting because it suggests that although everything is possible (in principle), a history of underdevelopment or extreme poverty puts countries at a tremendous disadvantage.

This finding may seem trite. Poverty should feed on itself and so should wealth, but on reflection you will see that this is really not so. There are certainly many reasons to think that historically low levels of income may be *advantageous* to rapid growth. New technologies are available from the more developed countries. The capital stock is low relative to labor in poor countries, so the marginal product of capital could well be high. One has, to some extent, the benefit of hindsight: it is possible to study the success stories and avoid policies that led to failures in the past. This account is not meant to suggest that the preceding empirical finding is inexplicable: it's

[17] Of course, our categories are quite coarse and this is not meant to suggest that there were no relative changes at all among these countries. The immobility being described is of a very broad kind, to be sure.

just to say that an a priori guess does not yield straightforward answers. We will have much more to say on this topic throughout the book.

There is actually a bit more to Figure **??** than lack of mobility at the extremes. Look at the next-to-poorest category (those with incomes between one-quarter and one-half of the world average in 1982). Note that 14% of these countries went up by one category, but over 40% of them *dropped* to the lowest category. It is not only the lowest-income countries that might be caught in a very difficult situation. In general, at low levels of income, the overall tendency seems to be movement in the downward direction. That suggests the existence of a disturbing low-income trap, one that might require herculean effort to break free of.

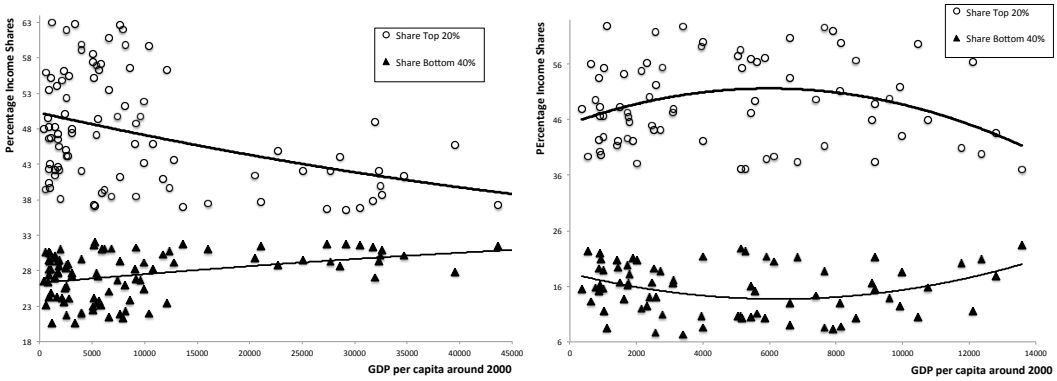
To summarize, then:

(1) Over the period 1980–2010, the *relative* distribution of world income appears to have been quite stable. The richest 10% of nations averaged a per capita income around 4 times the world average; the poorest 10% had 6–10% of the same average. By any standards, this disparity is staggering, and especially so when we remember that we are talking about incomes that have been corrected for purchasing power parity.

(2) The fact that the overall distribution has remained reasonably stationary does *not* mean that there has been little movement of countries within the world distribution. Of particular interest is the rise of the East Asian economies and the languishing of other economies, particularly those of sub-Saharan Africa and several countries in Latin America. Diverse growth experiences such as these can change the economic composition of the world in the space of a few decades. Nonetheless, a single explanation for this diversity remains elusive.

(3) The observation that several countries have changed relative positions suggests that there are no ultimate traps to development. At the same time, a history of wealth or poverty does seem to partly foretell future developments. The mobility of countries appears to be highest somewhere in the middle of the wealth distribution, whereas a history of underdevelopment or extreme poverty appears to put countries at a disadvantage.

(4) That history matters in this way is an observation that requires a careful explanation. Poor countries do seem to have some advantages. They can use, relatively free of charge, technologies that are developed by their richer counterparts. Scarce capital in these countries should display a higher rate of profit, because of the law of diminishing returns. They can learn from mistakes that their predecessors have made. In this way differences across countries should iron themselves out over the longer run. Thus the



(A) The full range of per-capita GDP (B) Per-capita GDP below $15,000

FIGURE 2.5. Income shares of poorest 40% and richest 20% in various countries. Source: The World Bank; `http://databank.worldbank.org`.

observation that history matters in maintaining persistent differences needs more of a justification than might be obvious at first glance.

2.3 Income distribution in developing countries

The international disparity of national income is only one indication that something is fundamentally askew with global development. Add to this the astonishing inequalities observable *within* each of the vast majority of developing countries. It is commonplace to see enormous wealth coexisting with great poverty, and nowhere is this more evident than on the streets of Bombay, Rio de Janeiro, Manila, Mexico City, and the other great urban conglomerates of the developing world. It isn't that such inequalities do not exist in the developed world—they certainly do—but coupled with the low average income of developing countries, these disparities result in an outcome of visible poverty and destitution.

We will have much more to say on the topic of income distribution later in this book. As an overview, however, it is useful to get a feel for the magnitude of the problem by looking at some data.[18] Figure 2.6 summarizes recent information on inequality for over 90 countries, arranged in order

[18]One can imagine that the statistical problems here are even more severe than those involved in measuring per capita income. The goal is to measure the incomes earned *by different groups* in the same country and compare them, so all the measurement difficulties are compounded (except for the problem of international price comparability), because no

of increasing per-capita GDP. The bulk of the data comes from 2000, but in the interests of coverage I have added several more observations from 1998–2002. The figure records the income share of the poorest 40% of the population as well as the income share of the richest 20% of the population.

Look first at Panel A of Figure 2.6. Observe that both the share of the poorest 40% and the richest 20% exhibit a distinct transition around the $15,000 mark. Before this threshold, the poorest 40% of the population earn, on average, around 15%—perhaps less—of overall income, whereas the richest 20% earn well over half of total income. Then (for the richer countries) the former share rises to around 20%, while the latter falls to about 40%. These — especially the shares below the $15,000 threshold — are sizable inequalities. When compounded with the inter-country differences that we've already discussed, it is no surprise that the poor in the developing world are twice cursed.

One would be tempted to conclude from Panel A that inequality unambiguously falls in the course of development. But such a conclusion would be premature for several reasons. To begin with (as you will be warned over and over again), variation in some variable *across* countries is not necessarily to be equated with a change in that variable as a *particular* country develops over time. In addition, there are arguments that suggest more complex variations in inequality over the course of development, including the famous "inverted-U hypothesis" of Simon Kuznets: inequality first rises and then falls over the course of development.

Here is a quick summary of the Kuznets argument. At very low average levels of living, it is difficult to squeeze the income share of the poorest 40% below a certain minimum. For such countries the income share of the rich, although high, is not close to the extraordinarily high ratios observed in middle-income countries. Flipping this argument around, it is possible that as economic growth occurs, it initially benefits the richest groups in society more than proportionately. This situation is reflected in a rise in the income share of the upper segments of the population. The share of the poorest groups tends to fall at the same time, although this does not necessarily mean that their income goes down in *absolute* terms. At higher levels of per capita income, economic gains tend to be distributed more equally—the poorest groups now catch up in income share. The overall picture follows, then, an "inverted U".

As both Table 2 and Panel B of Figure 2.6 appear to suggest, there is some truth to the story. In Panel B, we've truncated the data of Panel A at

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system of overall, national accounts can be used to estimate the incomes of any one *subgroup* of the population.

$15,000, allowing us to look more closely at the countries in this range. There is some evidence that over the poorest range, inequality is indeed rising with per-capita GDP. As already noted, nothing is really being said

Country	GDP pc (c. 2000)	Share bot. 40%	Share top 20%
0–4000 PPP			
Malawi	546	13	56
Uganda	765	16	50
Tanzania	866	19	42
Bangladesh	893	22	40
Senegal	1,492	17	48
Pakistan	1,898	21	42
Nicaragua	2157	12	55
Sri Lanka	3,106	17	48
Guatemala	3,350	11	59
4,000–13,000 PPP			
El Salvador	5,183	10	55
Peru	5,444	11	57
Costa Rica	5,520	13	50
Thailand	5,568	11	59
Panama	5,840	8	60
Colombia	6,617	9	61
Brazil	7,911	7	65
Costa Rica	8,113	13	51
Venezuela	9,924	12	52
Mexico	12,095	12	56
13,000+ PPP			
Korea	16.015	21	37
Spain	25,129	19	42
UK	28,575	18	44
Sweden	29,126	23	37
Switzerland	34,713	20	41
USA	39,578	16	46
Norway	43,642	24	37

Source: The World Bank; `http://databank.worldbank.org`.

TABLE 2. Shares of poorest 40% and richest 20% for selected countries, circa 2000.

about how inequality in a *single* country changes over time: what we have here is a snapshot — suggestive, but a snapshot nevertheless — running over different countries arrayed in terms of their per-capita incomes. We will return to this issue in Chapter 7.

Indeed there can be no inevitability about any supposed correlation between inequality and development. Countries that pursue policies of broad-based access to infrastructure and resources, such as health services and education, will in all likelihood find that economic growth is distributed relatively equally among the various groups in society. Countries that neglect these features will show a greater tendency toward inequality. The only possibility that we plant here is that economic development is an uneven process: some sector takes off initially, thus enriching its inhabitants, only to find later that everyone else slowly catches up. That might generate an inverted-U in inequality, not just once (as in the the agriculture-industry transition that interested Kuznets), but several times in history.

2.4 The Many Faces of Underdevelopment

The highly unequal distribution of incomes — and its variation across countries — suggests that excessive reliance on income per capita as a reliable indicator of overall development might be dangerous. A relatively prosperous country may fare poorly on some of the commonsense indicators of "human development", such as literacy, access to drinking water, low rates of infant mortality and life expectancy. And we need to entertain the additional possibility that factors beyond just per capita income or its distribution may be at work. The social and economic empowerment of women may serve to significantly reduce infant mortality and (more generally) raise the health and nutritional status of children, yet neither income nor its equal distribution across households fully guarantees the

Sri Lanka (17, 48)	1990	2000	2007
Per capita GNI (PPP)	1450	2670	4210
Under-5 Mortality	29	21	21
Adult Literacy %	87	91	91
Life Expectancy (yrs)	69	71	74

TABLE 3. Some development indicators for Sri Lanka.

Source: The World Bank, `http://databank.worldbank.org`, and `UNDP`, *Human Development Report*.

empowerment of women. Likewise, a country that promotes popular science and health education programs might be a welcome outlier in the health category, even though income may be low or poorly distributed. Later in this section, we will emphasize the *overall* correlation of human development with per capita income, but it is always worthwhile to be sensitive to the outliers, because they tell their own story.

Guatemala (11, 59)	1990	2000	2007
Per capita GNI (PPP)	2360	3470	4490
Under-5 Mortality	77	47	39
Adult Literacy %	46	69	73
Life Expectancy (yrs)	62	70	70

TABLE 4. Some development indicators for Guatemala.

Source: The World Bank, `http://databank.worldbank.org`, and `UNDP`, *Human Development Report*.

Consider Tables 3–5. Each refers to a different country, and beside the country name I have recorded the share of the poorest 40% and the richest 20%, taken off Table 2. First compare Table 3, for Sri Lanka, with Table 4, for Guatemala. Notice that Sri Lanka is *substantially* poorer in per capita terms than Guatemala. Yet Sri Lanka has a relatively equal income distribution; the share of the poorest two quintiles is around 60% higher than it is in Guatemala.

Now look at some of the "human development" indicators for these two countries, compiled in the two tables. The indicators are very different indeed. Life expectancy was a good seven years higher in Sri Lanka in 1990. The difference has narrowed by 2007, but it's still there. Much of this difference came from the huge difference in child mortality rates, defined as the number of children (per thousand live births) who die before the age of 5. In Sri Lanka this figure was 29 per thousand in 1990; in Guatemala it was more than two and a half times higher. Even in 2007 it is close to twice as high. Finally, Sri Lanka had an adult literacy rate of 87% in 1990, climbing to over 90% by 2007. In Guatemala, that number was 46% in 1990 and 73% in 2007. Looking at these two tables, it is hard to escape the conclusion that the highly unequal distribution of income in Guatemala is responsible, at least in part, for these differences in some natural yardsticks of development.

However, that isn't the whole story. Look at Table 5, which does the same exercise for Pakistan. The same indicators are nothing short of dreadful (though there are countries that do worse), and they are certainly

significantly worse than their counterparts for Guatemala. Of course, one reason is that per capita income (PPP) in Pakistan is relatively low. But the numbers are not entirely incomparable to those of Sri Lanka: certainly, 2007 Pakistan is in line with 2000 Sri Lanka from a narrow income perspective. The income distribution in Pakistan is also comparable to that in Sri Lanka; indeed, the numbers favor Pakistan to a significant degree. Yet in 2007, Pakistan has human development indicators which are orders of magnitude worse than those for Sri Lanka in 2000. Clearly, government policies or cultural attitudes, such as those concerning education, health or the treatment of women play significant roles.

Pakistan (21, 42)	1990	2000	2007
Per capita GNI (PPP)	1260	1690	2540
Under-5 Mortality	130	108	90
Adult Literacy %	26	43	54
Life Expectancy (yrs)	61	64	66

TABLE 5. Some development indicators for Pakistan.

Source: The World Bank, `http://databank.worldbank.org`, and `UNDP`, *Human Development Report*.

The Human Development Index Many of the *direct* physical symptoms of underdevelopment are easily observable and independently measurable. Undernutrition, disease, illiteracy — these are among the stark and fundamental ills that a nation would like to remove through its development efforts. For quite some time now, international agencies (like the World Bank and the United Nations) and national statistical surveys have been collecting data on the incidence of malnutrition, life expectancy at birth, infant mortality rates, literacy rates among men and women, and various other direct indicators of the health, educational, and nutritional status of different populations.

As we've seen, a country's performance in terms of income per capita might be significantly different from the story told by these basic indicators. Some countries, comfortably placed in the "middle-income" bracket, nevertheless display literacy rates that barely exceed 50%, infant mortality rates close to or exceeding one hundred deaths per thousand, and undernourishment among a significant proportion of the population. On the other hand, there are instances of countries with low and modestly growing incomes, that have shown dramatic improvements in these basic indicators. In some

categories, levels comparable to those in the industrialized nations have been reached.

The United Nations Development Programme (UNDP) has published the *Human Development Report* since 1990. One objective of this *Report* is to coalesce some of the indicators that we have been discussing into a single index, which is known as the *human development index* (HDI). This is not the first index that has tried to put various socioeconomic indicators together. A forerunner is Morris' "physical quality of life index" (Morris [1979]), which created a composite index from three indicators of development: infant mortality, literacy, and life expectancy conditional on reaching the age of 1.

The HDI, as revised in 2010, begins with three components or dimensions. A "dimension index" is constructed for each component, and these are subsequently aggregated. The first component is life expectancy at birth (this will indirectly reflect infant and child mortality). The second component is a measures of educational attainment. This measure is itself a composite: it combines two subindices, one tracking mean years of schooling, the other expected years of schooling viewed from the current year onwards. The last component is per capita income: the logarithm of this income is chosen, presumably on the grounds that there is diminishing marginal utility to higher incomes. In each case, a dimension index is composed by setting maxima and minima to the dimensions, and then tracking "achievement" by the ratio of the path already traversed along that dimension to the entire length of the path.[19] The HDI is obtained by taking a symmetric geometric mean of the three dimension indices.

The creation of composites from such fundamentally different indicators as life expectancy and literacy is a bit like adding apples and oranges. It is arguable that rather than create composites, the reader should view the different indicators and then judge the overall situation for herself. The advantage of a composite index is its visual simplicity and, of course, its political power: in this era of sound bites, it is far easier and appears to be more "scientific" to say that country X has an "index" of 0.8 out of 1, rather than laboriously to detail that country's achievements (or lack of them) in five different spheres of development. The HDI might *look* scientific and the formulae used to create the final average might *look* intricate, but that is no reason to accept the implicit weighting scheme that it uses, because as it stands it is just as ad hoc as any other. Nevertheless, the HDI is one way

[19]For instance, the maximum is 83.2 years, presumably as of 2010, while the minimum is set to 20, so that a country with a life expectancy of x enjoys the dimension index $(x - 20)/(83.2 - 20)$.

to combine important development indicators, and for this reason it merits our attention.

The HDI creates, for each country, a final number that takes a value somewhere between 0 and 1. The number is to be (tentatively) interpreted as the "fraction of ultimate development" that has been achieved by the country in question. Because these notions of "ultimate bliss" are embodied in the HDI, and especially because the logarithmic transform of income is chosen, it is not at all surprising that the indicator is relatively varied among the poorer countries, but then flattens out sharply as we move into richer countries. This creates an artificial tendency for such an indicator of "human development" to more easily converge across countries than incomes would (low-indicator countries experience higher growth in their indicators). [20]

At the same time, the *rankings* generated by the HDI are of some interest because they illustrate how it is possible for a relatively high-income country to fare so badly in meeting basic socioeconomic goals that its HDI index falls behind that of a relatively poor country. One way to show how this happens is to present the HDI ranking for different countries as well as the rankings induced by per capita GDP. It is then possible to study the difference in the two rankings induced by these two measures. A positive difference means that the country has done better in "human development" relative to its position in the GDP rankings; a negative ranking means the opposite. What about the examples of our previous section: Sri Lanka, Guatemala, and Pakistan? The ranking approach justifies what we already saw on the basis of specific indicators. Sri Lanka has a positive rank differential of +10. Guatemala and Pakistan have negative rank differentials of -13 and -4, respectively.

There are all sorts of variations on the HDI. For instance, one can adjust each of the components for within-country inequalities. Or one might specialize the indicator (or more accurately, use the same aggregation approach) to other outcomes of interest, such as gender or poverty. UNDP's website at `http://hdr.undp.org/en/` contains descriptions of these different variations, as well as a comprehensive and easy-to-use database. The subpage `http://hdr.undp.org/en/data/explorer/` is particularly recommended.

[20] In particular, be careful of statements such as those made in early versions of the *Human Development Report*:"the HDI of industrial countries (0.916) is *only* 1.6 times higher than that of developing countries (0.570), even though their real GDP per capita (PPP$) is 6 times higher". They have little meaning as the logarithmic use of income as well as the notion of bliss points in the other dimensions essentially forces such convergence.

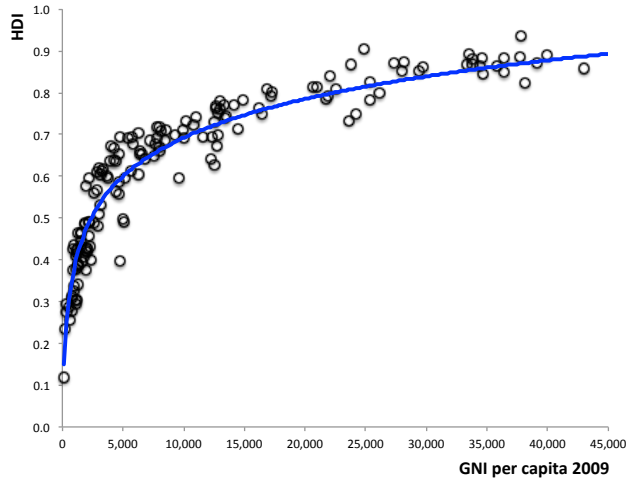

FIGURE 2.6. HDI versus GNI per capita across various countries. Source: UNDP, *Human Development Report*.

There is little doubt, then, that per capita income, or even the equality of its distribution, does not serve as a unilateral guarantee of success in "human development." This sentiment is captured very well in one of the views of development with which we started this chapter.

At the same time, the apparently narrow perspective of mainstream economists, with its hard-nosed focus on per capita income as a summary statistic of development, may not be too out of line. It is arguable that although taking a wider and multidimensional view of development is *conceptually* correct, per capita GDP still acts as a fairly good *proxy* for most aspects of development.[21] For instance, it can be argued that rising income levels generally translate into better health, nutritional, and educational standards in a population. Paying due attention to the exceptions does not mean that the general rule should be ignored.

Figure **??** illustrates the argument for the case of the Human Development Index (see box). Recall that the HDI combines different measures of development into a single index, and that country rankings according to HDI do not necessarily correspond to rankings according to income per capita. At the same time, the correlation between per capita income

[21]For additional information on this debate and related matters, see the contributions of Anand and Harris [1994], Aturupane, Glewwe and Isenman [1994], Desai [1991], Naqvi [1995], Srinivasan [1994], and Streeten [1994].

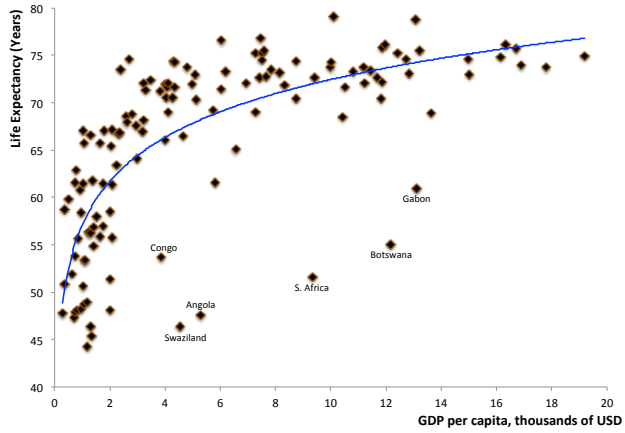

FIGURE 2.7. Life expectancy (years) and GDP per capita, 2009. Source: The World Bank, `http://databank.worldbank.org`

and HDI is very strong. Figure **??** plots per capita income (PPP GNI) for 168 countries against the HDI of those countries in 2009. To be sure, the resulting plot *is* a scatter, but it closely hugs a logarithmic line of fit. Of course, log income is one of the components of the HDI, but the whole point of the *Human Development Report* has to been to argue that HDI goes well beyond per capita income.

To be sure, there is no need to restrict ourselves to HDI. We could choose any indicator that interests us, and examine its correlation with per-capita income (or indeed, with any other variable we like). In this section, we chose three indicators of development: life expectancy at birth, the infant mortality rate, and the adult literacy rate. To be sure, these indicators are not entirely independent of each other. For instance, life expectancy *includes* the possibility of dying before the age of 1, which is infant mortality. Nevertheless, these are common indicators that enter into indexes of development, such as the HDI or the physical quality of life index.

Figures 2.7–2.9 plots the relationship between these variables and GDP per capita, by looking at a cross section of countries in 2009. It is only to be expected that as we move into the range of countries with *very* high per capita income, these indicators will be at high levels as well, and they are. So as not to dwarf the entire exercise by these extremes, we leave out all countries with GDP per capita exceeding $20,000 PPP in 2009. In principle, this makes the case *against* per capita income stronger. Variation

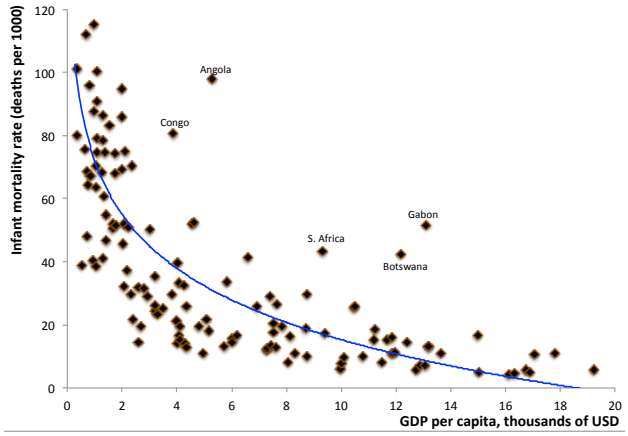

FIGURE 2.8. Infant Mortality (per thousand) and GDP per capita, 2009. Source: The World Bank, `http://databank.worldbank.org`

in income here is somewhat smaller, and there is therefore much room for other policies or characteristics to affect the outcome.

By and large, the relationship between per capita income *alone* and each of these variables is strikingly strong.[22] The figures speak for themselves to express the idea that per capita income is a powerful correlate of development, no matter how broadly we conceive of it.[23]

In short, we *must* begin, and we do so, with a study of how per capita incomes evolve in countries. This is the subject of the theory of economic growth—a topic that we take up in detail in the chapters to come.

[22]There are several authors who have argued that higher per-capita income is correlated with indicators of the quality of life; see, for example, Mauro [1993], Pritchett and Summers [1995], Boone [1996] and Barro [1996].

[23]Indeed, by looking at the actual *levels* of achievement in each of these indicators, rather than just the ranking across countries that they induce, I have actually made life more difficult for the argument in favor of per capita income. In an influential book, Dasgupta (1993) showed that per capita income is correlated even more highly with other indicators of development if we consider *ranks* rather than *cardinal measures*. In other words, if we rank countries according to their per capita GDP levels and then compute similar ranks based on some other index (such as adult literacy, child mortality, etc.), then we find a high degree of statistical correspondence between the two sets of ranks if the set of countries is sufficiently large and wide ranging. Because I have already carried out cardinal comparisons, I will skip a detailed discussion of these matters and simply refer you to Dasgupta's study for a more thorough reading.

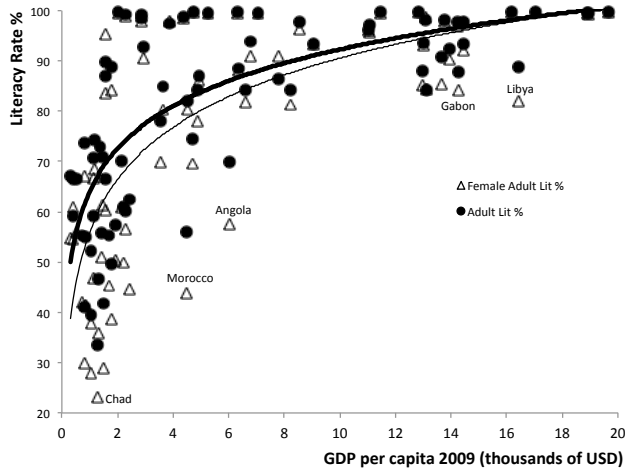

FIGURE 2.9. Adult and Female Adult Literacy (%), and GDP per capita, 2009. Source: The World Bank, `http://databank.worldbank.org`

I must end this section with an important qualification. The scatter diagrams we've looked at are not meant to convey causality: in our case, the impression that per capita income directly *causes* some other feature of development to change. We're looking at correlations, and in a pretty loose way at that. We will return to this issue of causality at several points in the book.[24] But the qualification needs to be strengthened further. Quite apart from grand questions of causality, we haven't even established that *within a country*, per capita income is correlated with social outcomes, whether in a causal way or not. With country fixed effects properly accounted for in panel data, the evidence is somewhat mixed: see Easterly (1997). To summarize, we do not claim that simple cross-country studies can settle the issue conclusively, and we certainly do not propose that income is a complete determinant for all other facets of development.

To continue this delicate balancing act of interpretation, note moreover that even the correlation between per capita income and other indicators is strong but far from perfect (otherwise the data would all lie on some smooth curve linking the two sets of variables). The imperfect nature of the relationship is just a macro-reflection of what we saw earlier with countries such as Sri Lanka, Pakistan, and Guatemala. Inclusion of the *distribution* of per capita income would add to this fit, but even then matters would

[24]You can also study Appendix A, which serves as an introduction to basic statistical and econometric methods.

remain undecided: social and cultural attitudes, government policy, and the public demands for such policies, all would continue to play their role in shaping the complex shell of economic development. (I have marked some other outliers on each of the diagrams.) Thus it is only natural that we concentrate on economic growth and then move on to other pressing matters, such as the study of income distribution and the operation of various markets and institutions.

In conclusion, the point of this section is not to discredit human development, but only to show that we must not necessarily swing our opinions to the other extreme and disregard per capita income altogether. Our caution and caveats aside, we must take per capita income very seriously, and it is in this spirit that we can appreciate the seemingly narrow quotation from Robert Lucas at the beginning of this chapter.

2.5 Some Structural Features

Our final objective in this chapter is to provide a quick idea of the structural characteristics of developing countries. We will examine these characteristics in detail later in the book.

2.5.1 Demographic characteristics. Very poor countries are characterized by both high birth rates and high death rates. As development proceeds, death rates plummet downward. Often, birth rates remain high, before they finally follow the death rates on their downward course. In the process, a gap opens up (albeit temporarily) between the birth and death rates. This leads to high population growth in developing countries. Chapter 9 discusses these issues in detail.

High population growth has two effects. It means that overall income must grow faster to keep per capita growth at reasonable levels. To be sure, the fact that population is growing helps income to grow, because there is a greater supply of productive labor. However, it is not clear who wins this seesaw contest: the larger amount of production or the larger population that makes it necessary to divide that production among more people. The negative population effect may well end up dominant, especially if the economy in question is not endowed with large quantities of capital (physical or human).

A second effect of high population growth (or high birth rates, to be precise) is that the overall population is quite young. It is easy to get an intuition for this: high birth rates mean that a proportionately larger number of children are always entering the population at any given point of time.

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FIGURE 2.10. Population growth rates and per capita income. Source: *World Development Report* (World Bank [1995, 1996]).

This means that the population is heavily weighted in favor of children. This may be quite delightful, as any of us who has grown up with several brothers, sisters, and cousins knows, but it does not change the grim reality of utter economic dependence, especially for those in poverty. There are many untoward consequences of an abnormally young population, and these include poverty, child labor, and low education.

Figure 2.10 shows us how population growth rates vary with per capita income. The thin line plots annual growth rates of population for 1970–80; the thick line does the same for 1980–93. In both cases the horizontal axis records 1993 percapita income (PPP). The variation is substantial (remember: per capita income isn't everything!), but there is a clear downward trend in the growth rate, both with per capita income and over time (for the same country).

2.5.2 Occupational and production structure. Agriculture accounts for a significant fraction of production in developing countries. Indeed, given that substantial agricultural output is produced for self-consumption and so may not be picked up in the data, the proportion is probably higher than that revealed by the published numbers. For the poorest forty-five countries for which the World Bank publishes data, called the *low-income countries*, the average proportion of output from agriculture is close to 30%. Remember that the poorest forty-five countries include India and China and therefore a large fraction of the world's population. Data for the so-called middle-income countries, which are the next poorest sixty-three countries and include most Latin American economies, is somewhat sketchier, but the percentage probably averages around 20%. This stands in sharp contrast to the corresponding income shares accruing to agriculture in the economically developed countries: around 1–7%.

Even more striking are the shares of the labor force living in rural sectors. For the aforementioned low-income category, the share averaged 72% in 1993 and was as high as 60% for many middle-income countries. The contrast with developed countries is again apparent, where close to 80% of the labor force is urbanized. Even then, a large fraction of this nonurban

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FIGURE 2.11. Fractions of the labor force in agriculture. Source: *World Development Report* (World Bank [1996]).

population is so classified because of the "commuter effect": they are really engaged in nonagricultural activity although they live in areas classified as rural. Although a similar effect is not absent for developing countries, the percentage is probably significantly lower.

Figure 2.11 displays the share of the labor force in agriculture as we move over different countries indexed by per capita income. The downward trend is unmistakable, but so are the huge shares in agriculture for both low- and middle-income countries.

Clearly, agricultural activity forms a significant part of the lives of people living in developing countries. We therefore devote a good part of this book to agricultural arrangements: the hiring of labor, the leasing of land, and the operation of credit markets. The overall numbers for production and occupational structure suggest that agriculture often has lower productivity than other economic activities. This is not surprising. In many developing countries, capital intensity in agriculture is at a bare minimum, and there is often intense pressure on the land. Add to this the fact that agriculture, especially when not protected by assured irrigation and ready availability of fertilizer and pesticides, can be a singularly risky venture. Many farmers bear enormous risks. These risks may not look very high if you count them in U.S. dollars, but they often make the difference between bare-bones subsistence (or worse) and some modicum of comfort.

2.5.3 Rapid rural–urban migration. With the above-mentioned features, it is hardly surprising that an enormous amount of labor moves from rural to urban areas. Such enormous migrations deserve careful study. They are an outcome of both the "push" from agriculture, because of extreme poverty and growing landlessness, and the perceived "pull" of the urban sector. The pulls are reinforced by a variety of factors, ranging from the comparatively high wages and worker protections offered in the organized urban sectors to the effect of the media in promoting the urban lifestyle as a desirable end in itself. The media is often misleading and so are the benefits of the organized sector, which are often accessible only to a lucky minority of workers.

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FIGURE 2.12. Nonagricultural labor in services. Source: *World Development Report* (World Bank [1996]).

Consider the rates of growth of the urban sector in developing countries. For the forty-five low-income countries covered by the World Bank, the average rate of urban population growth over the period 1980–93 was 3.9% per year. Compare this with an average rate of population growth of 2% per year for the same countries over the same period of time. Urban growth was simply double that of overall population growth for these countries. Imagine, then, the pressure on the cities of these countries. For the sixty-three countries classified as middle-income by the Bank, the urban growth rate was 2.8% per annum over the period 1980–93, to be compared with a population growth rate of 1.7% per year. Once again, we see evidence of a pressure on the urban sector that is just not captured by the overall population growth figures. On the other hand, the high-income developed countries exhibit near balance: urban populations grew at 0.8% per year, while overall population grew at 0.6% per year.

This is not to say that such migrations are somehow undesirable. Indeed, how did developed countries get to the point that they are now at? The fact of the matter, however, is that all these processes are *accelerated* in modern-day developing countries, and the speed-up imposes enormous strains.

One piece of evidence that reveals these strains is the fact that an unusually large fraction of the population in developing countries is classified as being in the tertiary or "services" sector. Before we take a look at the data, it is useful to conceptualize matters a bit. Think of what we consume as our income increases. Our first needs are for food and clothing. As we have more income to spare we switch to industrial products: radio, television, bicycles, automobiles, and the like. At a still higher level of income we begin to register a high demand for services: banking, tourism, restaurants, and travel. It is not surprising, then, that the developed countries allocate a large fraction of their nonagricultural labor force to the services sector. Countries such as Australia, the United States, the United Kingdom, Norway, and Sweden have about 70% of the total labor force in the services sector; the corresponding figures for some other developed countries such as Japan are somewhat lower. That isn't odd at all. What *is* odd is that many developing countries exhibit large fractions of the labor force in "services" as well!

Country	*Per capita income (1994 PPP)*	*Nonagr. labor force in services*
Tanzania	620	69
Nigeria	1,190	88
India	1,280	61
Senegal	1,580	65
Honduras	1,940	67
Ghana	2,050	68
Philippines	2,740	72
Indonesia	3,600	69
Egypt, Arab Republic	3,720	63
Ecuador	4,190	72
Botswana	5,210	63
Brazil	5,400	70
Venezuela	7,770	69
Spain	13,740	63
United Kingdom	16,150	70
Canada	19,960	74
Japan	21,140	63
United States	25880	71

Source: *World Development Report* (World Bank [1996]).

TABLE 6. Percentage of the non-agricultural labor force in services for selected countries.

Figure 2.12 illustrates the general point and Table 6 provides data for particular countries. Expressed as a fraction of the nonagricultural labor force, the proportion in the services sector is not at all different from what we see in developed countries. At the same time, the proportion of people in agriculture *does* vary a great deal, as we have already seen. What we are seeing, then, for developing countries, is a *classification* of a large part of the labor force into "services" simply because such services are waiting positions or fallback options for laborers lacking an industrial job. That is, the enormous services sector in developing countries is symptomatic of the development of the unorganized or *informal* sector, on which we will have more to say in Chapter 10. This sector is the home of last resort—the shelter for the millions of migrants who have made their way to the cities from the rural sector. People who shine shoes, petty retailers, and middlemen: they all get lumped under the broad rubric of services because there is no other appropriate category. It is fitting that the World Bank Tables refer to this sector as "Services, etc." The large size of this sector in developing

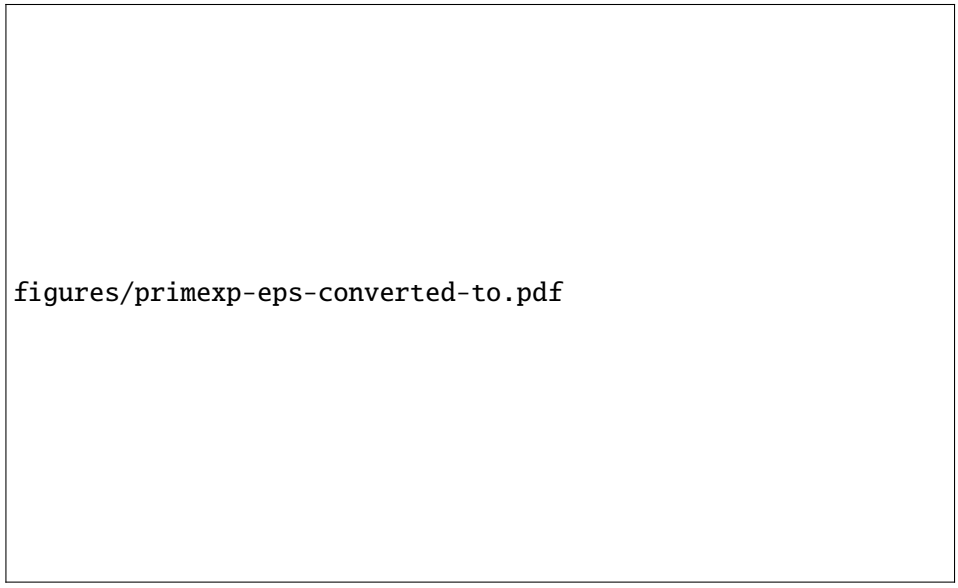

FIGURE 2.13. Share of primary exports in total exports. Source: *World Development Report* (World Bank [1995]).

countries is, in the main, a reflection of the inability of industry in these countries to keep up with the extraordinary pace of rural–urban migration.

2.5.4 International trade. By and large, all countries, rich and poor, are significantly involved in international trade. A quick plot of the ratio of exports and imports to GNP against per capita income, does not reveal a significant trend. There are large countries, such as India, the United States, and Mexico for which these ratios are not very high—perhaps around 10% on average. Then again, there are countries such as Singapore and Hong Kong for which these ratios attain astronomical heights—well over 100%. The modal ratios of exports and imports to GNP are probably around 20%. Trade is an important component of the world economy.

The differences between developing and developed countries are more pronounced when we look at the *composition* of trade. Developing countries are often exporters of primary products. Raw materials, cash crops, and sometimes food are major export items. Textiles and light manufactured items also figure on the list. In contrast, the bulk of exports from developed countries is in the category of manufactured goods, ranging from capital goods to consumer durables. Of course, there are many exceptions to these broad generalizations, but the overall picture is broadly accurate, as Figure 2.13 shows. This figure plots the share of exports that comprise

primary products against per capita income. We have followed the now-familar method of using cross-bars at the mean levels of per capita income and primary share (unweighted by population) to eyeball the degree of correlation. It is clear that, on the whole, developing countries do rely on primary product exports, whereas the opposite is true for the developed countries.

Notice that there are some developing countries that have a low ratio of primary exports. Countries such as China, India, the Philippines, and Sri Lanka are among them. These countries and many of their compatriots are attempting to diversify their exports away from primary products, for reasons that we indicate subsequently and discuss at greater length later in the book. At the same time, there are developed countries that export primaries to a great degree. Australia, New Zealand, and Norway are among them.

The traditional explanation for the structure of international trade comes from the theory of *comparative advantage*, which states that countries specialize in the export of commodities in which they have a relative cost advantage in production. These cost advantages might stem from differences in technology, domestic consumption profiles, or the endowment of inputs that are particularly conducive to the production of certain commodities. We review this theory in Chapter 16. Because developing countries have a relative abundance of labor and a relative abundance of unskilled labor within the labor category, the theory indeed predicts that such countries will export commodities that intensively use unskilled labor in production. To a large extent, we can understand the aforementioned trade patterns using this theory.

At the same time, the emphasis on primary exports may be detrimental to the development of these countries for a variety of reasons. It appears that primary products are particularly subject to large fluctuations in world prices, and this creates instability in export earnings. Over the longer run, as primary products become less important in the consumption basket of people the world over, a declining price trend might be evident for such products as well.

The definite existence of such a trend is open to debate. At the same time, we can see some broad indication of it by studying how the *terms of trade* for different countries have changed over recent decades. The terms of trade for a country represent a measure of the ratio of the price of its exports to that of its imports. Thus an increase in the terms of trade augers well for the trading prospects of that country, whereas a decline suggests the opposite. Figure 2.14 plots changes in the terms of trade over the period 1980–93

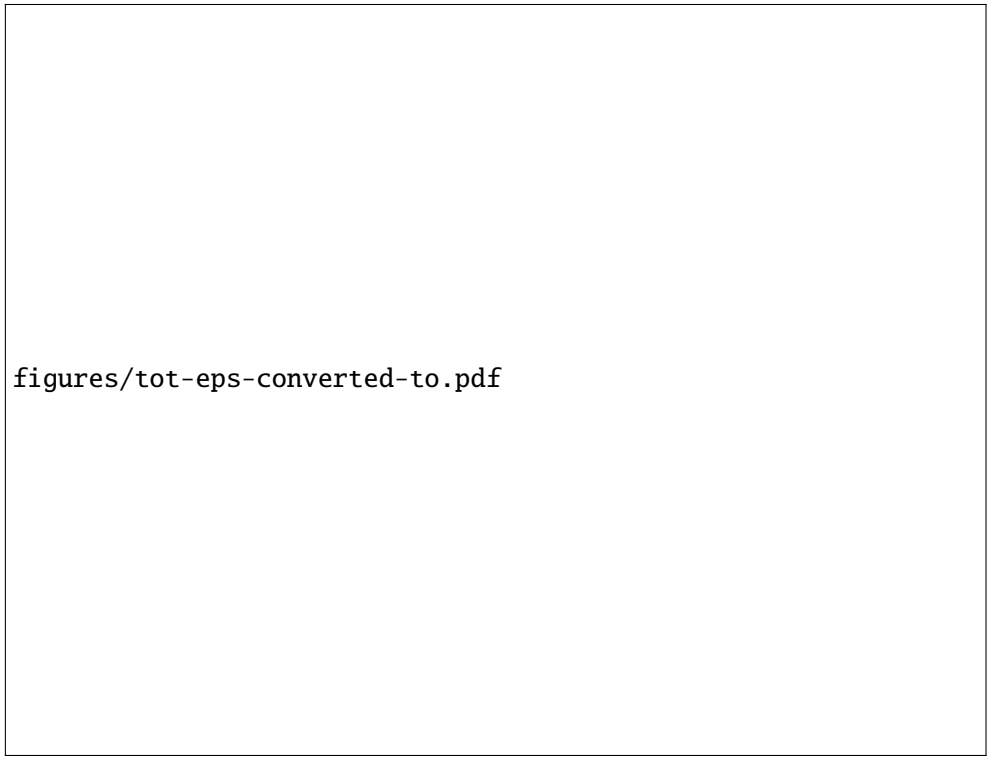

FIGURE 2.14. Changes in the terms of trade, 1980–93. Source: *World Development Report* (World Bank [1995]).

against per capita income. There is some indication that the relationship is positive, which suggests that poor countries are more likely than richer ones to face a decline in their terms of trade. Primary exports may underlie such a phenomenon.

In general, then, activities that have comparative advantage today might not be well suited for export earnings tomorrow. The adjustment to a different mix of exports then becomes a major concern. Finally, technology often is assimilated through the act of production. If production and exports are largely limited to primary products , the flow of technology to developing countries may be affected. We discuss these issues in Chapter 17.

The *import* mix of developing countries is more similar to that of developed countries. Exporters of primary products often need to import primary products as well: thus India might be a major importer of oil and Mexico a major importer of cereals. Primary exports for each country are often

FIGURE 2.15. Share of primary imports in total imports. Source: *World Development Report* (World Bank [1995]).

concentrated in a handful of products, and there is no contradiction in the fact that primaries are both exported and imported. A similar argument establishes that although developed countries might export manufactured items, there is always a need for other manufactures that are in relatively short supply. Trade patterns in this aggregated form are therefore quite similar over countries, as Figure 2.15 reveals.

We summarize: developing countries are likely to have a high ratio of primary goods in their total exports, but as far as imports are concerned, there is significantly less variation.

2.6 Summary

We began with a discussion of what the term *economic development* might mean. It is a multifaceted concept, embodying not just income and its growth, but also achievements on other fronts: reductions in infant mortality, higher life expectancy, advances in literacy rates, widespread access to medical and health services, and so on. Per capita income is sometimes used as an (incomplete) indicator for overall economic development, but should not be identified conceptually with development in the broader sense.

We turned next to per capita income data for countries. Using exchange rates to convert local currencies into dollars, we obtained per capita income evaluated according to the *exchange rate method*. The disparities across countries is enormous. Some of this disparity is due to underreporting of income, but a far more serious problem arises from the fact that price levels are systematically different across countries: dollar prices for nontraded goods and services tend to be lower in developing countries. The *purchasing power parity method* attempts to correct for this by constructing international prices that are used to estimate national incomes. Cross-country disparities in per capita income are then smaller, but still large: the richest 5% of the world's nations averaged a per capita income that was about twenty-nine times the corresponding figure for the poorest 5%, over the period 1960–85.

There have been substantial changes in incomes for many countries. The meteoric rise of East Asia is a case to be noted. This case is contrasted with the fact that much of Latin America and sub-Saharan Africa languished during the 1980s. Thus, although the world distribution of income remained fairly unchanged in relative terms, there was plenty of movement within that distribution. However, there is evidence that a history of underdevelopment or extreme poverty feeds on itself. Using *mobility matrices*, we noted that middle-income countries have significantly higher mobility than either the poorest or the richest countries.

Next, we studied income distribution *within* countries. By and large, income is more unequally distributed in developing countries than in their developed counterparts, which suggests that the poor in developing countries are twice hit: once at the level of distribution across countries and then at the level of distribution within countries. Income distribution is particularly bad for middle-income countries, and most of this extreme inequality appears to be located in Latin America.

With income and income distribution out of the way, we then returned to the broader notion of development. The *Human Development Index* is

the name given to a set of indicators developed by the United Nations Development Programme. It combines three indicators—life expectancy at birth, educational attainment, and per capita income—with weights to arrive at a combined index. We noted that just because an overall index is provided does not mean it should be necessarily taken seriously: the weights are, of course, quite arbitrary. Nevertheless, the overall idea of human development is a laudable attempt to conceptually go beyond per capita income as an operational measure of development.

Nevertheless, per capita income isn't a bad predictor of human development. We showed that the correlations between per capita income and other variables that describe "human development" are high, even if attention is restricted only to the subsample of developing countries.

Finally, we described some structural characteristics of developing countries. We looked at *demographic characteristics* and showed that there is a general tendency for population growth rates to decline with increased per capita income. We discussed very briefly some of the effects of population growth on per capita income. We then studied *occupational and production structure*: agricultural activity accounts for a significant fraction of occupations in developing countries. At the same time, the rates of *rural–urban migration* are very high indeed. In part, this is reflected in the observation that a large fraction of the nonrural labor force is engaged in a nebulous activity called "services." This category includes all sorts of informal activities with low setup costs, and in developing countries is a good indicator of urban overcrowding. At the end, we discussed *patterns of international trade*. Developing countries are largely exporters of *primary products*, although this pattern shows change for middle-income countries. Primary product exports can be explained using the theory of *comparative advantage*, although we note that primary product exports have intrinsic problems, such as a strong tendency for their international prices to fluctuate, which creates instability in export revenues. The import mix of developing countries is, however, more similar to that of developed countries.

Exercises

(1) Per capita income is a measure of purchasing power. People who live and work in developing countries often find that their incomes are meager when buying an international airline ticket, making an international phone call, sending an airmail letter to a friend who lives abroad, buying a book published by an international publisher, or importing consumer goods. They don't feel that poor when they buy vegetables at the local store, get

a haircut, travel domestically by train, bus, or even by taxi, or buy a local textbook. Use these intuitive comments to understand what a traded good is and what a nontraded good is. Note that a potentially tradable good may become effectively nontraded because of import or export restrictions. Why are nontraded goods generally cheaper in poor countries? In addition, if they are cheaper, would their incomes look better (relative to the United States, say) when measured by the exchange-rate method or by the PPP method?

(2) McDonald's operates in various countries. It has been found that the relative price of a Big Mac is a better guide to the overall cost of living than estimates using the exchange rate. Why do you think this might be the case?

(3) Why do you think that European or Japanese television transmits at resolutions that are superior to those in the United States? After looking into this question, formulate a hypothesis that suggests why countries that have poor infrastructure might be more likely to leapfrog over countries with better infrastructure insofar as the installation of new infrastructure is concerned. Use telephone networks as an example.

(4) Make sure you understand the power of exponential growth (and of rapid exponential inflation) by doing the following exercises:

(a) How quickly will a country growing at 10% a year double its income? Quadruple its income? What about a country growing at 5% per year?

(b) Suppose a country's per capita income is currently growing at 5% per year. Then it shaves an additional percentage point off its population growth rate for the next twenty years, but overall income continues to grow at the same rate. How much richer would the country be at the end of twenty years (per capita)?

(c) Suppose that Brazil experiences inflation at 30% per month. How much is this per year? Do your calculations first without compounding (the answer then is obviously 360%). Now do it properly by compounding the inflation rate.

(5) Construct an imaginary mobility matrix from a sample of countries that shows *no* mobility at all. What would it look like? What would a mobility matrix with "perfect mobility" look like? What would a mobility matrix look like if poor countries grow, on average, faster than rich countries?

(6) Use Table 2 to construct what is known as a *Kuznets ratio* (named after the economist and historian Simon Kuznets): the ratio of incomes earned

by the richest 20% of the population to the those earned by the poorest 40% of the population. If incomes were distributed almost equally, what value would you expect this ratio to assume? What values do you see? In the sample represented by Table 2, do you see a trend as we move from poor to rich countries?

(7) Think of various indicators of development that you would like to see in your concept of "economic development." Think about why per capita income, as measured, may or may not be a good proxy for these indicators. Find a copy of the *Human Development Report* and look at it to see how different indicators are combined to get the HDI. Do you think that the method of combination is reasonable? Can you suggest a better combination? What do you think of the idea of presenting data on each of the indicators *separately*, instead of combining them? Think of the advantages and disadvantages of such an approach.

(8) A cogent example in which per capita magnitudes may be misleading if we do not have a good idea of distribution comes from the study of modern famine. Why do famines simply not make sense if we look at them from the viewpoint of worldwide per capita availability of food grain? Do they make better sense if we look at just food-grain availability per capita *in that country*? After mulling this over for a while, read the insightful book by Sen [1981].

(9) (a) Why do you think population growth rates fall with development? If people consume more goods, in general, as they get richer and children are just another consumption good (a source of pleasure to their parents), then why don't people in richer countries "consume" more children?

(b) Why are countries with higher population growth rates likely to have a greater *proportion* of individuals below the age of 15?

(c) Are poorer countries more likely to be rural or is it that rural countries are more likely to be poor? Which way does the causality run, or does it run both ways?

(d) Why do you think the international price of sugar might fluctuate more than, say, that of automobiles?