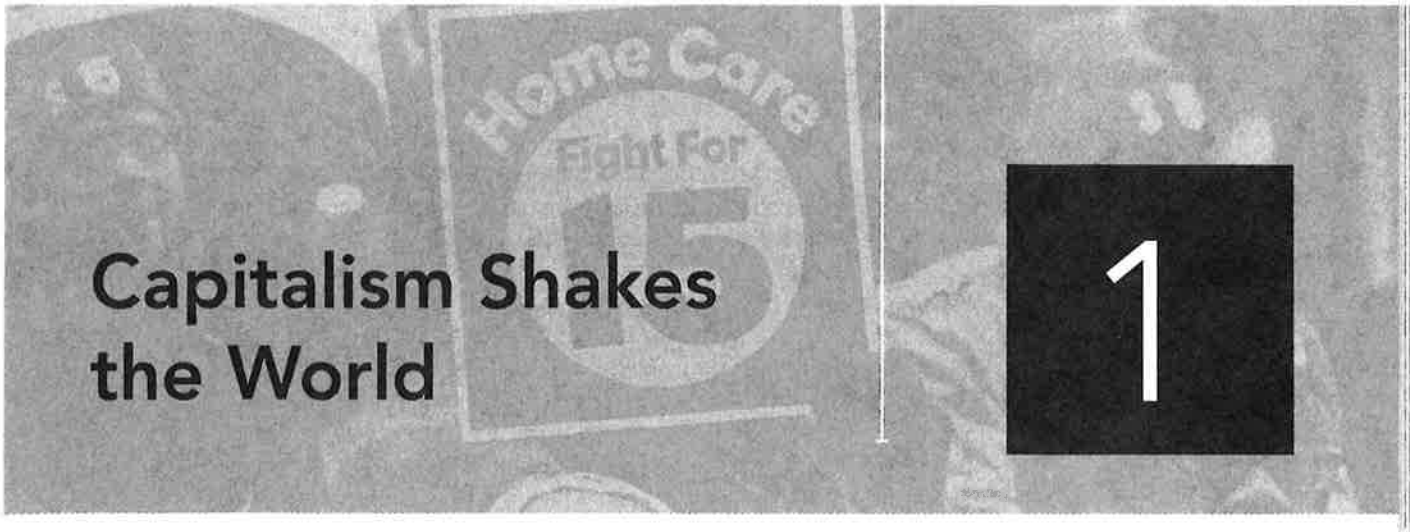

Capitalism Shakes the World

1

For more than four decades following World War II, Germany was divided: East Germany was a dictatorship, while West Germany was a democracy. The economic systems of the two Germanys were as different as their systems of government. In the East, the economy, like just about everything else, was run by the Communist Party. Decisions about who should produce what, how, when, and for whom were made by the government and carried out under orders. Communism was not simply a form of government, it was also an economic system based on centralized direction of economic decisions. By contrast, West Germany had what is termed a capitalist economy. West Germans for the most part made economic decisions independently, guided in most cases by what they needed to do to turn a profit, to get and keep a decent job, or to have a particular kind of lifestyle given their means.

In October 1989 the general secretary of the East German Communist Party, Erich Honecker, grandly celebrated the founding of Communist East Germany forty years earlier. He proclaimed that it had been both a "historical necessity" and a "turning point in the history of the German people." Parades and demonstrations commemorated the anniversary. But twelve days after the celebration, Honecker suddenly stepped down as prodemocracy demonstrations broke out first in the East German city of Leipzig and then spread throughout the country. A million and a half Germans participated in these demonstrations in October, and twice that number attended them in November.

Less than a month after Honecker's resignation, East and West Germans danced together on the Berlin Wall and then dismantled it. Less than a year after the grandiose celebration of its fortieth anniversary, East Germany passed out of existence, its territory joined with that of West Germany, and the combined parts became once again simply Germany. As a result, the citizens of the former Communist nation passed from one economic system to another, from communism to capitalism. At about the same time, prodemocracy demonstrators toppled their Communist rulers in the Soviet Union, Poland, Czechoslovakia, Hungary, and, indeed, in all of the remaining Communist-ruled countries except Cuba, Vietnam,

Laos, North Korea, and China. The demonstrators rejected not only Communist dictatorships but also the centralized organization of their economies. All adopted some form of capitalist economic system.

Like communism, other economic systems had earlier fallen to the capitalist onslaught. An economic system based on slavery in the U.S. South ended with the victory of the Union troops in the Civil War and Lincoln's emancipation of the slaves. As a result the South ceased to be a slave economy and became capitalist. Similarly, the simple economics of hunting and gathering—what most humans did to make a living for most of our time on earth—has been abandoned in most parts of the world, to be replaced by other economic systems, and eventually, in most parts of the world, by capitalism. And the process continues. Capitalism is on a roll and has been since its birth.

Nevertheless, capitalism is new, having been a moving force in world history for only the past five centuries or so—less than 1 percent of the time that humans have inhabited the earth. During this relatively short period, however, the world has changed more quickly, more constantly, and more profoundly than during any earlier period of human history. And now the pace of change appears to be quickening, so even greater transformations will most likely occur in our lifetimes.

In this chapter we look at the evolution of capitalism in some detail. We define **capitalism** as an economic system in which employers hire workers to produce goods and services that will be marketed with the intention of making a profit. The main idea of this chapter is that wherever capitalism has taken root, it has left no aspect of society unchanged. This main idea is expressed in four key points:

Capitalism is an economic system in which employers, using privately owned capital goods, hire wage labor to produce commodities for the purpose of making a profit.

1. Capitalism has brought with it unprecedented advances in scientific and other kinds of knowledge, astonishing developments in technology, previously unimaginable ways of sharing information, and rising standards of consumption, health, and education in most of the world.

2. Capitalism has also led to fundamental realignments of power and redistributions of wealth, the abolition of slavery and other archaic forms of bondage, and radical changes in family life, ideals, and beliefs.

3. Since we have lived with rapid change all of our lives, we tend to think of it as normal, even natural. Yet from a historical perspective, rapid and relentless transformation of the social and physical world is anything but normal. Far from being driven by change, earlier economic systems were bound by inertia. The **capitalist epoch** began in some parts of Europe around AD 1500. The capitalist organization of work—employers hiring people for wages to make a profit—first appeared in parts of England, the Netherlands, Belgium, and Italy. Initially the new way of organizing production affected few people, even in the countries where it first appeared, but as it spread and became stronger, the transformative power of capitalism also grew. It would eventually revolutionize the world.

The **capitalist epoch** began in some parts of Europe around AD 1500, when capitalist organization of labor processes first appeared. It continues to the present in most of the world.

4. Capitalism's development and the social changes accompanying it occurred at different times in different places, and its impact was highly uneven. In some places capitalist development occurred quickly, in other places very slowly, and in some regions of the world, capitalism is only now replacing other economic systems.

Europe at the Dawn of the Second Millennium

A mere handful of folk—unending emptiness stretching so far west, north, and east that it covers everything—fallow land, fens, and wandering rivers, heaths, woods and pastureland, every conceivable type of erstwhile forest leaving behind it brush fires and the woodburners' furtive sowing—clearings here and there, wrested from the forest but still only half-tamed; shallow pitiful furrows that wooden implements drawn by scrawny oxen have scratched in the unyielding soil . . . huts of stone, mud or branches, clustered in hamlets surrounded by thorn hedges and a belt of gardens; sparsely scattered towns, streets in ruins, fortifications haphazardly repaired, stone structures dating back to the Roman Empire that have been turned into churches or strongholds.

Such is the Western world in the year 1000. Compared with Byzantium, compared with Cordoba, it seems rustic, very poor and defenseless. A wild world ringed round by hunger, its meager population is in fact too large. The people struggle almost barehanded, slaves to intractable nature and to a soil that is unproductive because it is poorly worked. No peasant who sows one grain of wheat expects to harvest much more than three—if it is not too bad a year that means bread to eat until Easter time.

Source: From Georges Duby, *The Age of the Cathedrals* (Chicago: University of Chicago Press, 1981), 3.

The Permanent Technological Revolution

To see more clearly the changes that have come with capitalism, consider what life was like in Europe before the dawn of the capitalist age. In the year 1000, people there had short life spans; they had almost no experience with people or places farther away than the nearest town; and they depended on the food and other things they could produce by their own efforts, supplementing their consumption with only a few items available in local markets.

During most of human history, people lived in societies that had not changed much since the time of their parents, grandparents, or earlier ancestors. For generation after generation, sons made their livings in much the same ways as had their fathers before them, and daughters also followed in their mothers' footsteps. Tools and utensils, stories and beliefs were passed on from parents to children, just as they had been a century, or even a millennium, before. Good years and bad alternated with the weather, but continuous, rapid, and systematic change would not become an ordinary fact of life until the emergence of capitalism.

Around the world societies were organized in many different ways, but most people were only dimly aware of this diversity because their horizons did not extend beyond the small communities in which they lived. By the beginning of the fifteenth century, however, Europeans began to explore other continents and "discovered" what they called the "New World." Before long, traders and colonists, often financed by investors seeking fabulous riches, were intruding on indigenous peoples in areas located in what is now Virginia, Peru, Barbados, South Africa, and India. The dynamism unleashed by the advent of capitalism in Europe soon began to impinge on the rest of the world.

It is hard to know which came first, capitalism or the great spurt of technical change that came along with it. Whatever the truth may be, the continuous, rapid, and far-reaching scientific discoveries and technological innovations that are now accepted as a permanent feature of modern life emerged more or less simultaneously with capitalism. And, of course, these discoveries and innovations made possible the remarkable economic advances of the last five centuries.

In 1500 goods were made almost entirely by hand, using simple tools. Power machinery consisted of such devices as the water wheel that turned a miller's grinding stone. People's understanding of the physical world was so rudimentary that births, deaths, and harvests, whether abundant or meager, were frequently interpreted with recourse to magic, superstition, or reference to God's will.

As late as 1800 traditional craft-based techniques, using skills that had been handed down from generation to generation, still prevailed in most production processes. But the new era brought new ideas, new discoveries, new methods, and new machines in every field of endeavor, making old ideas and old tools obsolete. And the new ways were in turn quickly made obsolete by even newer ones. As technical change revolutionized production, it reduced the amount of time required to produce most products.

The most important increases in labor productivity were those that occurred in the agricultural sector. As fewer people were required to produce the same or greater amounts of food, more labor could be devoted to the production of other things, particularly in the manufacturing sector. Thus, increases in agricultural productivity had to be achieved before the Industrial Revolution could take place. To illustrate the rapidity with which farm output has increased during the capitalist era, Figure 1.1 shows the growth of productivity in U.S. agriculture during the past two centuries.

There have also been dramatic improvements in methods of transportation during the past five centuries. In 1500 people either walked or used wagons to get themselves and their possessions or freight from one place to another on land. Wagons were pulled either by people or by animals, and the movement of people or freight overland was arduous, costly, slow, and sometimes dangerous. For all but a very few wealthy people, travel beyond a short distance from home was virtually impossible, and shipping freight was so expensive that it did not pay to send anything but very valuable and lightweight goods such as spices and silks.

Water transport on rivers and along coasts was easier, but ships were small, slow, and unsafe. In 1500 there had been few advances in maritime technology beyond what was available to the Romans 1,000 years earlier. Within a century, however, sea transport was greatly improved. Ships began regularly crossing the Atlantic or rounding the Cape of Good Hope en route to the East Indies. By 1800 clipper ships raced from China to London in eighty days and from New York to San Francisco (around the southern tip of South America) in twenty-two days. At the same time, sailing across the Atlantic became almost routine.

The opening of the Suez Canal by 1870 and the Panama Canal by 1914 greatly shortened world trade routes, while coal- and oil-fueled engines made sailing ships obsolete. Before the end of the twentieth century, oil tankers, each carrying 2,500 times the cargo of Columbus's ships, clogged the shipping arteries of the world and became too large to enter all but the largest and deepest harbors. Until the Concorde was grounded for economic reasons in 2003, those who could pay the $9,000 required for a reservation on this aircraft could travel from London to New York in three hours, moving at twice the speed of sound, overtaking the sun, and arriving "earlier" than when they had left.

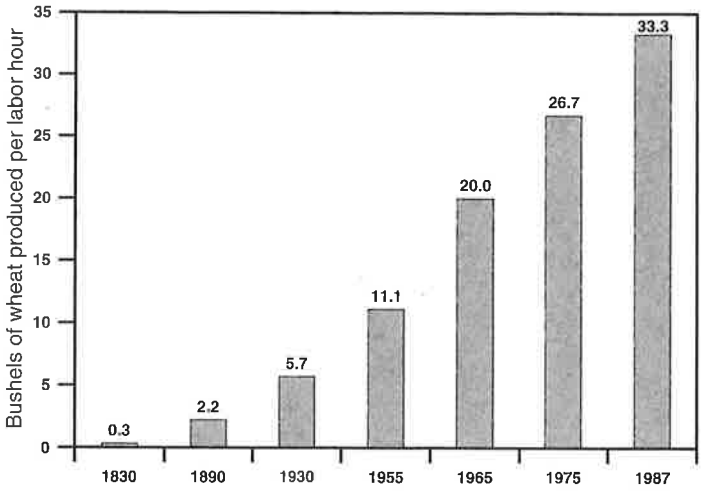

FIGURE 1.1 Productivity increases in U.S. agriculture, 1830–1987.

Focusing specifically on wheat production, this figure shows how labor productivity in U.S. agriculture has risen during the past two centuries. In the eighteenth century American farmers used crude wooden plows, sometimes drawn by horses or oxen. They sowed seeds by hand, cultivated them with hoes, cut the wheat with sickles, and harvested their grain from the wheat using manual threshing devices called flails. Iron plows were introduced early in the nineteenth century, but as late as 1830 it still took about three hundred hours of labor to produce one hundred bushels of wheat on a five-acre farm. In the mid-nineteenth century farmers began to use chemical fertilizers, and soon came to rely more and more on factory-made agricultural tools and later machinery. Over the next century agricultural productivity rose dramatically. By 1987, on a large, highly mechanized American farm, one hundred bushels of wheat could be produced with only three hours of labor on three acres of land, one hundred times more output per hour than could be produced in 1830.

Source: U.S. Department of Agriculture, Economic Research Service, "A History of American Agriculture 1776–1990" (Washington, DC: US Department of Agriculture, Economic Research Service, 1993).

Land transport was revolutionized as well. First, inland canals were dug such as the famous 365-mile Erie Canal in New York State, finished in 1825. Barge traffic through canals greatly reduced the cost of overland haulage. Railroads further increased the speed and cut the cost of moving goods and people. In the United States, the transcontinental railroad was completed in 1867, and by the end of the nineteenth century tracks would crisscross all the world's industrial areas and penetrate the Canadian Rockies, the East African highlands, the Chinese hinterland, the vast Russian steppes, and the plain of northern India as well. Yet all this was but a prelude to the great twentieth-century land transport revolution based on automobiles, trucks, and highways. When air travel and transport, major innovations of the last century, were added to the mix, they partly displaced railroads in global shipping and travel.

The technological advances in transportation were matched by equally significant developments in medicine, agriculture, and communications. Improvements in health care and agricultural productivity made possible the population explosion and urbanization discussed later in this chapter. Moreover, the communications revolution has been central to the process of globalization, also to be discussed later in this chapter.

Less beneficial were certain advances in weaponry and the discovery and production of toxic chemicals and biological agents. Today, chemical, biological, and nuclear weapons, sometimes referred to as weapons of mass destruction, are

powerful enough to destroy the entire population of the world. Whether in production techniques, in transportation, in medicine, in agriculture, in communications, or in nuclear, chemical, and biological warfare, technical change has occurred with a speed and pervasiveness that is unprecedented in human history.

The Enrichment of Material Life

The technological changes of the past five centuries have been accompanied by significant increases in people's consumption standards. Before the capitalist epoch, living conditions improved or deteriorated with changes in the weather, epidemics, and other natural phenomena, because most people made their living by farming, herding, or hunting and gathering. But where capitalism took hold, average living standards began to rise in a sustained way, though with variations over space and time. Figure 1.2 shows the sharp upturn in real wages experienced by one group of workers after capitalism emerged as the dominant economic system in Great Britain in the nineteenth century.

While Britain was the first capitalist country, the new economic system soon spread to other countries, producing comparable increases in average living standards wherever it went. In the United States, for example, as best we can measure, the buying power of the average income in 2002 was thirty-two times what it was in 1789 (the year the U.S. Constitution was adopted). This does not mean, of course, that Americans are now thirty-two times happier than they were in 1789, but it does indicate an unprecedented growth in the availability of material goods. With increasing material abundance, diets became more varied (with meat eaten more frequently) and housing larger and more comfortable (at least warmer in the winter).

Why did the English Economy take off? Competition, Coal, or Colonies?

Over the last five hundred years, small regional disparities in living standards grew into enormous gaps, and a large part of the world fell under the domination of Europeans and of Americans of European descent. Why did industrialization take hold so rapidly in Britain and Europe? Was it coal? Colonization? Economic policies?

At first glance England, and Europe generally, had no special advantages that primed these economies to make the leap. Before the "European miracle" Chinese scientific knowledge surpassed that of Europe in many fields and rivaled it in most. And Europe's scientific advances were in fields with few links to the technologies that propelled the industrial revolution there. Nor were the more advanced economic areas of China, like the Yangtze River delta, poorer than the advanced areas of Britain and Europe.

Some economists say it was British economic institutions that made the difference: that the British government kept its hands off the economy, respecting property rights and refraining from setting prices or wages. But recent historical research shows that individual pursuit of economic gain was probably freer from governmental interference in China's Yangtze River delta in the eighteenth century than in England or Europe. Historian Kenneth Pomeranz concludes that neither scientific advances, nor riches, nor a laissez-faire environment explains why capitalism took root in England rather than flowering elsewhere and propelling some other people to world dominance.

What the Yangtze delta lacked was natural resources. Unlike England, it had no rich coal deposits and little water power, and its hinterland was not prepared to supply sufficient raw materials for an expanding economy.

By contrast, British military prowess, honed in centuries of Continental warfare, gave England cheap access to the raw materials of the New World, especially after France lost the Seven Years War (1756–1763). Sugar from Barbados, Jamaica, and the other British Caribbean colonies provided over 10 percent of the calories consumed by British labor. Slave plantations in British colonies fed raw cotton to the booming textile mills of Manchester. Britain's farmland could not have produced enough sugar for British workers or enough fibers for British cloth production. Without the colonies, economic expansion would have pushed up the prices of cotton, sugar, and other raw materials, driving down profits and prematurely grounding the British takeoff.

Pomeranz uses these arguments to dispute other historians' claim that institutions gave Britain the edge: that strong property rights, effective competition, and limited government drove the Industrial Revolution. Instead, he wrote, England and Europe had institutional advantages that seemed "applicable to very few endeavors in the pre-1800 world besides war, armed long-distance trade and colonization."

Source: Kenneth Pomeranz, *The Great Divergence: China, Europe, and the Making of the Modern World Economy* (Princeton: Princeton University Press, 2000). The quote is from p. 166.

Figure 1.3 shows how the rise of productivity in Europe eventually helped to lift output per person in the world as a whole. The main part of the figure shows that the dramatic increase in output per person, averaged for the world as a whole, did not occur until after 1820, while the smaller (inset) chart shows in detail the relative contributions of different regions to the world's total output during the past five centuries. To simplify this chart, the nations of the world have been divided into three groups. The first group, called "Western world," includes western Europe and the largest nations of the former British empire—the United States, Canada, Australia, and New Zealand—where English-speaking settlers rapidly became a majority of the population. The second group includes all of Asia, including China, India, and Japan. The third group consists of all the nations in Africa, Latin America, and the former Soviet Union countries of eastern Europe, including Russia.

It can be seen that the "Western world" was responsible for most of the growth of world output between 1500 and the early 1900s, its share of world output increasing from less than 20 percent in 1500 to more than 55 percent in 1913 and 1950. But, as the chart shows, its relative share has been falling since 1950.

While the West's share of world output was increasing, that of Asia was declining. This was due in part to the fact that the absolute amount of output being produced in the West was growing much faster than the amounts being produced in other regions, so the *percentage* of world output attributable to the other regions had to be falling. Because Asia produced most of the world's output in 1500, it was the region with the most to lose. Most of the decline in Asia's share was due to the spectacular economic success of Europe and North America. But there were other reasons for the precipitous decline in Asia's share of world output between 1820 and 1950. For one thing, British imperialism had a devastating effect on the productivity of India, a major contributor to Asia's output. Whereas India had had a strong and diversified economy in 1800, by the mid-nineteenth century its British rulers had begun to

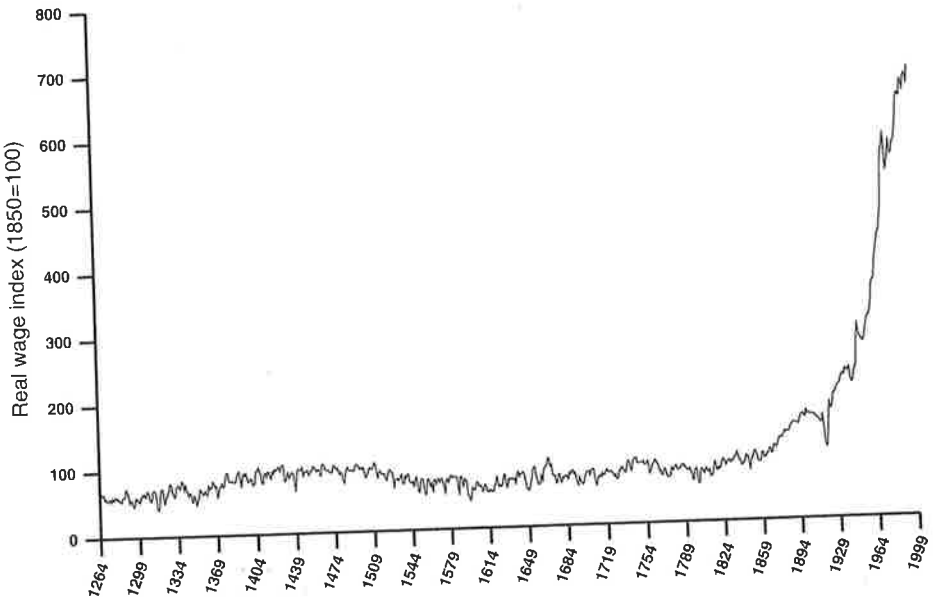

FIGURE 1.2 Real wages in London over seven centuries.

This figure shows the average real daily wage of skilled construction workers in London between 1264 and 1999. The term "real" means that the monetary wage in each year has been corrected for price inflation, so that it measures the buying power of the wage in that year. The data are presented here as an *index*. They show what the average real wage was in each year *relative* to what it was in 1850, the arbitrarily chosen *base year* for which the index is set at 100. For example, if the real wage in the 1930s was twice what it was in 1850, it is shown here as 200; if in the mid-fourteenth century it was half of its 1850 level, it is shown as 50 in that period. While the data are subject to error, they do make clear that real wages did not rise consistently prior to the full development of capitalism. Variations in the real wage before 1800 often resulted from sudden population changes. For example, the Black Death (bubonic plague) killed many in Great Britain and elsewhere in the mid-fourteenth century, creating a labor shortage in Great Britain and driving up wages. Gains made between 1300 and 1500 were eroded after 1500 by rapid price increases caused by the sudden inflow of gold to Europe from the Americas. Inflation often reduces real wages, at least if workers lack organization and bargaining power. But after 1800, and particularly after 1900, increased labor productivity and greater bargaining power of some workers led to dramatic increases in real wages for people like the skilled construction workers represented in this figure.

Source: Robert Allen, "Wages, Prices and Living Standards: The World Historical Perspective," available at https://www.nuffield.ox.ac.uk/People/sites/Allen/SitePages/Biography.

cripple that nation's cotton textile industry in order to gain the entire Indian market for their own cotton textile products. At the same time India was forced to specialize in producing (less valuable) raw cotton for export to English textile factories.

Since 1950, the rising Asian share of world output and the simultaneous decline in the West's share stemmed largely from economic expansion in Japan and China. Measured by total output, the United States has the largest economy in the world, and China (officially the People's Republic of China) is second, with nearly one-fifth of the world's population and with average growth rates of output of 10 percent since 1983. Also important is the contribution of some Asian "tigers"—notably South Korea, Thailand, and Singapore—all of which achieved a 9 percent average growth rate from 1987 through 1996, followed by somewhat slower growth.

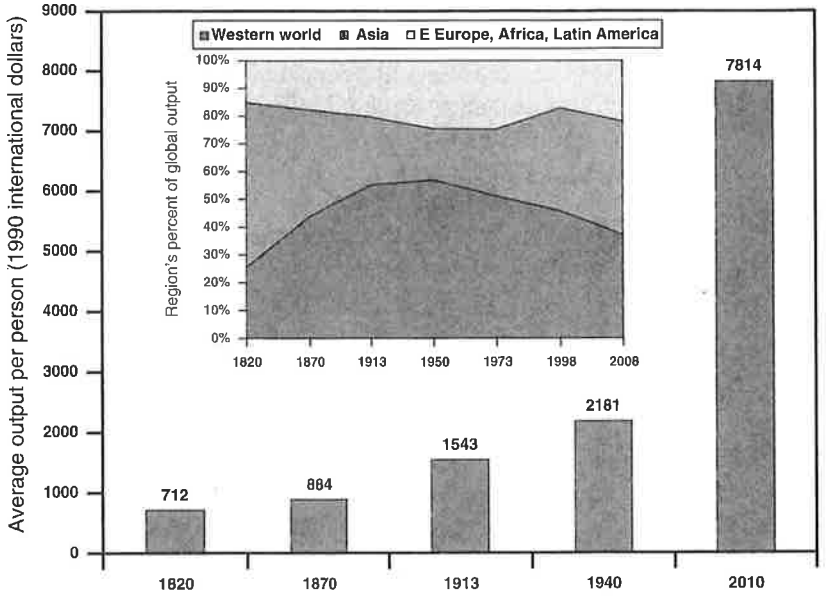

FIGURE 1.3 Two centuries of world GDP per capita.

The larger chart presents inflation-adjusted estimates of output per person (GDP per capita) for the whole world during the last two hundred years. These estimates come from over half a century of research by the late Angus Maddison, an eminent scholar of global population size, technical change, and productivity growth, and his fellow economic historians, who are continuing the project. Maddison estimated that world output per person rose only slightly from the year AD 0 to 1820; his successors agree, estimating it at $600–$700 in AD 0 and $712 in 1820 (in 1990 international G-K dollars). For 1820, among countries for which data exist and have been analyzed, average incomes are estimated from over $300 in Korea to over $2,000 in the UK. For eighteen centuries, global output rose about as fast as global population. But since 1820, technical changes accompanying the rise of capitalism have greatly expanded output per person. The smaller (inset) chart shows how in the past two centuries the share of world output produced by each region has changed. These changes have many causes, including diverse population growth rates, technology, war or peace, and the organization of production and exchange.

Sources: The Maddison-Project, http://www.ggdc.net/maddison/maddison-project/home.htm, 2013 version; Angus Maddison, *Monitoring the World Economy, 1820–1992* (Paris: OECD, 1995), 19, Table 1-1(a); Angus Maddison, *The World Economy: A Millennial Perspective* (Paris: OECD, 2001), 28, Table 1-2, available at http://www.oecd-library.org/development/the-world-economy_9789264104143-en; World Economics: Measuring Global Activity, Maddison Historical GDP Data, Downloadable Data (to 2008); http://www.worldeconomics.com/Data/MadisonHistoricalGDP/Madison%20Historical%20GDP%20Data.efp.

One can also see from the inset chart in Figure 1.3 that the nations of Africa, Latin America, and eastern Europe started out with the smallest share of world output in 1500, and increased their share slightly between 1820 and 1950, but ended up again (in 2010) with the smallest share. The recent decline here is mostly a result of the catastrophic fall in output associated with the difficult transition from central planning to capitalism after the upheavals of 1989 to 1991 in eastern Europe and Russia. It is also partly a result of the very rapid growth in China and other Asian countries, which mean that even the Western world's share of global output shrank.

The data presented in Figures 1.2 and 1.3 showing vast increases in wages and output in much of the world over the past few centuries may actually *understate*

the associated improvements in living standards if the overall *quality* of goods has increased dramatically, an increase that may not be adequately accounted for when we measure prices and output.

Qualitative improvements can be seen most strikingly in the production of light, starting with the campfires of our distant ancestors and then moving on, with the passage of time, to oil lamps, candles, kerosene lamps, and, ultimately, to modern lighting technologies such as filament and fluorescent light bulbs. These changes brought an extraordinary increase in the efficiency of light production. Engineers define lighting efficiency with reference to how much light, measured in units called "lumens," can be produced using a certain amount of energy (measured in watts).

Figure 1.4 charts the advance of lighting technology from 1700 to 1993, showing the lumens per watt of each new lighting source. Not shown in the chart is the fact that the lighting power of a campfire is between .002 and .003 lumens per watt. By 1800 a light source, the tallow candle, had been developed that was more than thirty-two times as efficient as a campfire: it emitted light at nearly .076 lumens per watt. With the coming of electric power in the late nineteenth century, lighting technology began to improve rapidly. By 1900 an advanced carbon filament lamp could light up a room (or a street) at 3.7 lumens per watt. A century later, a 100-watt tungsten

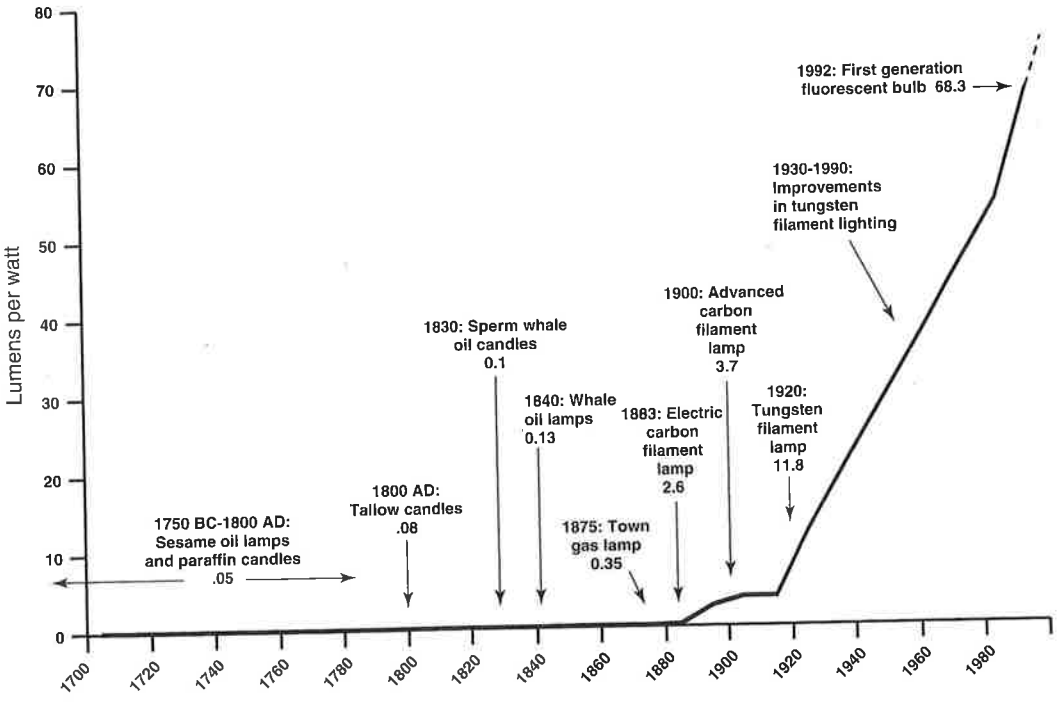

FIGURE 1.4 Improvements in lighting technology, 1700–1992.

This figure shows how the efficiency of lighting technology, measured in lumens per watt on the vertical axis, has increased over the past three centuries. A "lumen" is a unit indicating a certain intensity of light, and a "watt" is a unit measuring the power of a source of energy.

Source: William D. Nordhaus, "Do Real-Output and Real-Wage Measures Capture Reality? The History of Lighting Suggests Not," in Timothy F. Bresnahan and Robert J. Gordon, eds., *The Economics of New Goods*, National Bureau of Economic Research Studies in Income and Wealth, vol. 58 (Chicago: University of Chicago Press, 1996), 29–66.

filament lamp—the standard 100-watt commercial light bulb—could emit light at a rate of more than 14 lumens per watt.

The biggest single advance in lighting technology so far is the "compact" fluorescent light bulb producing 50 to 70 lumens per watt, making it up to 30,000 times as efficient as a campfire. The point is that our typical measures of improvements in standards of living—real wage increases and growth of real gross domestic product (GDP) per capita—do not account for the fact that we often get proportionally more of something, in this case illumination, than increases in our spending on it would indicate. Such measurement issues have grown in importance in the past century and a half as the rate of technical progress—stimulated by capitalism—has accelerated.

Capitalism is not unique in its capacity to promote rapid increases in material well-being. The Soviet Union, with a Communist government and a centrally planned nonmarket economy, achieved very high rates of economic growth between the late 1920s and the mid-1980s. And, as we have just seen, over the past three decades China, also under Communist rule (though with growing market and capitalist institutions), has maintained rates of increase in total output unparalleled by any of the world's capitalist economies, supporting extraordinary improvements in living standards. Indeed, during World War II, when the U.S. economy was in essence centrally planned to ensure that all resources went to supply the war effort, the economy recorded over 15 percent growth in real (inflation-adjusted) output each year during 1941–43, suggesting that under some conditions central planning has the power to foster more rapid expansion in output than does leaving economic growth to market forces alone.

Growing Inequality

The material abundance that has come with capitalism is not evenly distributed. As capitalism has enhanced the generation of wealth in some parts of the world, it has also led to glaring global inequalities. Before the rise of capitalism, most of the world's population lived quite simply, without the material goods that the majority of people in rich countries now take for granted. But as capitalism developed, the gap between rich and poor became a chasm.

One way to measure inequality is by using data on how much wealth people own. A person's *wealth* or *net worth* is defined, at a point in time, as the value of what the person owns (money, house, furniture, vehicles, financial assets, and so on) minus the amount of that person's debt. That is, *wealth* = *assets* – *debts*. The distribution of wealth is typically more unequal than the distribution of *income*; income is defined as the flow of money into a person's possession over a given period of time. Someone who says, "I have $200,000 in assets after subtracting my debts," is stating her *wealth* or *net worth*. But if she says, "I received $4,000 last month from various sources," she is stating her flow of *income* for that month.

Several sets of researchers have tried to measure global wealth inequality, using somewhat different methods and data sets. According to one major study, in 2014 the wealthiest 1 percent of the adults in the world held 48 percent of the world's wealth.[1] The *Global Wealth Databook* published by the bank Credit Suisse estimated that in

[1]James B. Davies, Rodrigo Lluberas, and Anthony F. Shorrocks, "Estimating the Level and Distribution of Global Wealth, 2000–14," United Nations University, World Institute for Development Economics Research (UNU-WIDER) Working Paper 2016/3, February 2016.

2015 the richest sixty-two individual multibillionaires alone owned as much wealth ($1.76 trillion) as the poorest half of the world's population, numbering 3.6 billion people. Research on the United States uses better data, and shows clearly that wealth inequality nationally has been on the rise. Such extreme inequality has unacceptable social consequences. Today many people in the world still do not have clean drinking water, and so their children often die of preventable diseases, while the very wealthy own their own jet planes.

The Population Explosion and the Growth of Cities

Along with capitalism's technical progress and rising standards of living, there has been a global population explosion. As Figure 1.5 shows, the population of the world grew very slowly from 10,000 BC to the 1700s. But since then, as the sharp upturn in the curve indicates, the population growth has increased dramatically.

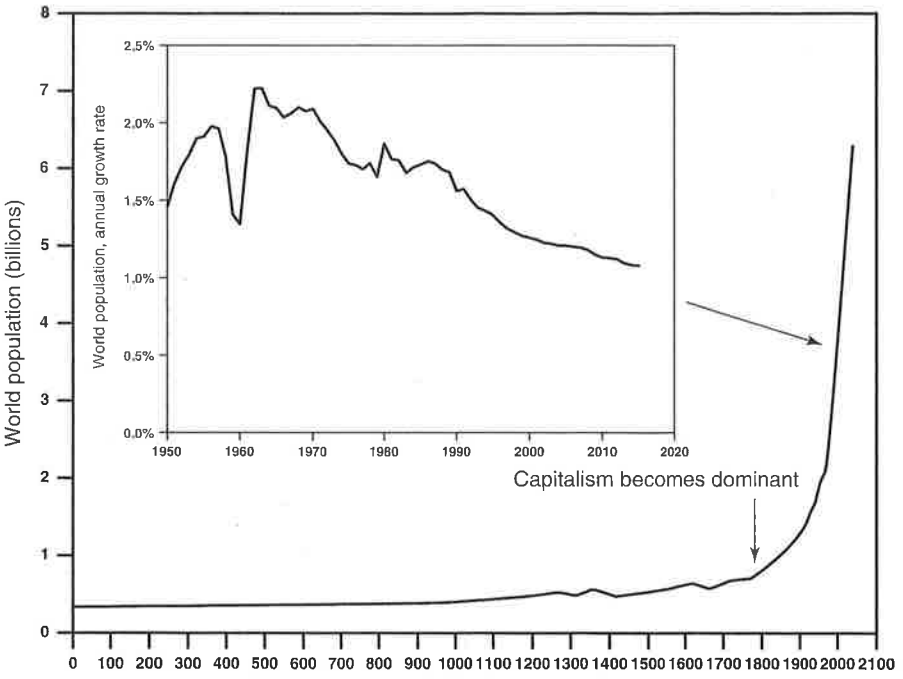

FIGURE 1.5 Capitalism and the population explosion.

This figure charts the population of the world from AD 0 to 2015. For most of the last 12,000 years, including most of the 2,000 years shown in this figure, the total population of the world grew slowly, if at all, with periods of increase in good years followed by intervals of decline in response to bad weather, disease, and other calamities. There are about twenty cities in the world today whose populations exceed the entire population of the world 11,000 years ago (less than 10 million persons), when agriculture began displacing hunting and gathering. Population started growing rapidly in a few countries two centuries ago, but the world's population really exploded in the twentieth century due to the spread of modern medicine, especially public health practices. The world's population is still growing, but at a declining rate (see inset chart).

Sources: U.S. Bureau of the Census, *Historical Estimates of World Population* (updated 2013) available at https://www.census.gov/population/international/data/worldpop/table_history.php; U.S. Bureau of the Census, "Total Midyear Population for the World: 1950–2050" (updated July 9, 2015), available at http://www.census.gov/population/international/data/idb/worldpoptotal.php.

From AD 1 to 1750 the population grew at only 0.56 per thousand annually, so that it took 1,200 years to double in size. Between 1750 and 1950 it grew at a faster rate (about 5.7 per thousand per year), doubling the population every 120 years. In just 38 years from 1950 to 1988, it doubled from 2.4 to 4.8 billion. The population explosion of the past 250 years is a radical departure from the previous trend, a new social phenomenon seen only in the capitalist epoch. However, population growth is slowing. Since 1990, population growth has been less than 0.8 billion per decade, and that number has been drifting downward, so that the next doubling (to 9.6 billion) will likely be completed at the very earliest in 2045 and have taken nearly sixty years.

While world population growth has been dramatic, there have also been important movements of people from one part of the globe to another. In places such as North and South America and Australia, for example, entirely new populations came in, overwhelming and virtually eliminating the indigenous peoples.

Many of the indigenous ("Indian") populations of North and South America were decimated, with their remnants relocated to remote territories. At the same time, millions of Africans—from 10 to 100 million, by various estimates—were forcibly taken from their communities and transported in chains across the Atlantic Ocean to become slaves in the Americas; perhaps as many as half died in the crossing. Numerous Chinese and (Asian) Indians were recruited to work under near-slave conditions and shipped to faraway places—the Chinese to build railroads in North America, the Indians to build them in East and Southern Africa.

Other populations migrated long distances when their traditional livelihoods were destroyed by changes in their homelands. Germans, for example, had to leave their country when they were subjected to political repression. Italians left when declining grain prices made farming no longer a viable way of life. Others emigrated when they found their traditional crafts made obsolete by new capitalist factories. A large number of Irish emigrated in the mid-nineteenth century when the potato crop, their main food source, was wiped out by blight. For similar reasons Poles, Greeks, Jews, Hungarians, and Russians also migrated. Whether pushed by worsening opportunities at home, or pulled by hope for a better life abroad, or both, they experienced fundamental life changes, saw old routines disrupted, and pursued alternative opportunities in new lands.

Along with migration came significant changes in occupations. In 1800 the overwhelming majority of Americans were food producers: independent farmers, food-producing slaves, or fishermen. Today only 2 percent of the U.S. population lives and works on farms, while another 3 percent works in the food processing and food service industries. This 5 percent of the population grows, processes, and serves enough food for the whole country and still produces a surplus that is exported.

As people left farming, another change became apparent, namely, *urbanization* and the growth of cities. Before the emergence of capitalism, most people lived in the countryside, not in urban areas. In the last few centuries, however, people have been drawn, or in some cases pushed, into cities. In 1800 only 6 percent of Americans lived in towns or cities with more than 2,500 people. Today four-fifths of the U.S. population lives in such urban areas.

London's population, only 70,000 in 1500, grew to 600,000 by 1700 and approached three-quarters of a million in 1800, making it then the largest English-speaking city in the world. Today, London has a population of 10 million, the New York metropolitan area 21 million, and Mexico City 20 million. Tokyo, the world's biggest urban area, is home to 38 million people. Seven other urban areas in Asia each have between 20 and 30 million people.

FIGURE 1.6 Cities of the world with more than a million inhabitants in 2014.

Each of the dots in this figure represents a city of more than 1 million people (but not all cities of more than a million people are represented in the figure). Increasing concentration of people in cities—urbanization—has all along been an important consequence of the spread of capitalism. By 1850, three cities had grown to a size of more than 1 million people: London, Paris, and Beijing (the three arrows in this map pinpoint their locations). By 2014, as a result of rapid population growth and the expansion of capitalism throughout the world, there were 498 such cities (only some of which are shown in this figure).

Source: Tertius Chandler, *Four Thousand Years of Urban Growth: An Historical Census* (Lampeter, Wales, UK: St. David's University Press, 1987). Map generated by Deepta Sateesh.

The process of urbanization is not limited to the United States, England, Mexico, or Japan. Urbanization happens wherever industrialization takes place. As the economic historian Eric Hobsbawm argued in *The Age of Capital: 1848–1875*, capitalist economic development propels an exodus from rural areas to cities, pushes people to migrate from one region to another, and drives them to move from one town to another. In 1900, nine of the ten largest cities in the world were in Europe or North America, with Tokyo as the exception. Today, with the global spread of capitalism, nine of the ten largest urban areas are now in Asia or Latin America, with New York as the exception. In 1850 there were only three cities with populations exceeding 1 million people—London, Paris, and Beijing—but as Figure 1.6 shows, by 2017 there were 520 urban areas of this size in all parts of the world.

Urbanization happened without anyone *planning* for it to happen: it occurred because individuals chose, for one reason or another, to leave their homes in the countryside and move to cities. Thus, the urbanization of the past few centuries is a prime example of how free markets can foster fundamental changes in society based on individual decisions.

In the waning years of the twentieth century, Bill Gates, the founder of Microsoft and the richest man in the world (see Chapter 5), embarked on a program of offering free computers to all libraries in poor neighborhoods in the United States, most of which were in rural areas. He imagined—and intended—that his program would halt the process of urbanization, since people in rural areas would now have access through the computers in their local libraries to most of what is available to denizens of urban areas. A story in the *New York Times* reported on this as follows: "Bill Gates predicted in 1995 that the Internet would help rural people stay put, in part because they would have the same advantages as city slickers in the virtual world." Having offered this prophecy in his 1995 book, *The Road Ahead*, Gates later revisited "the land of no stoplights" and had to concede that "the road ahead was full of blind curves." The fact was that the introduction of computers had done nothing to halt, or even to slow down, the exodus of people from rural America. Indeed, many rural Americans used the new computers to help them find jobs in urban areas. Gates concluded: "I thought digital technology would eventually reverse urbanization, and so far that hasn't happened."

The Changing Nature of Work

The way people earn their livelihoods has changed as well. At the dawn of the capitalist era, most families consumed only what they themselves produced or what they could obtain by selling their own products. Except for slaves, most families owned the tools they needed to make a living. With the rise of capitalism, people have become increasingly dependent on employment, that is, on getting a job working for someone else. At the same time, they have become subject to the dangers and hardships of unemployment. When there are not enough jobs to go around, unemployment leaves families and even whole regions destitute and desperate. It becomes a capitalist form of plague, potentially affecting everyone except the independently wealthy and thus threatening almost everyone with insecurity.

Rapid change in the workplace makes even the most skilled workers vulnerable to unemployment as technological change renders their skills obsolete. Before capitalism, the son of a blacksmith could be confident that the skills learned in his father's shop would be a secure source of his livelihood. Under capitalism, a worker may spend arduous years learning specific skills, but new production processes can

make them obsolete almost overnight. Blacksmiths in the nineteenth century, for instance, completed long apprenticeships, learning to work with wrought iron, needing to know exactly how much to heat the iron and how to process it. When steelmaking processes were improved, and steel replaced iron in some uses, blacksmithing began to shrink as an occupation. However, farriers (those who shoe horses) are still needed, and ornamental ironwork—making elegant gates and fences—still supports a few of these skilled workers. Those who mainly produced iron castings, on the other hand, by pouring hot iron into molds, were called foundrymen. But when iron production was partly replaced by steel production, some foundry workers and blacksmiths who were not yet ready to retire had to learn new skills, or else resign themselves to personally pay some of the costs of technological progress.

The changes also transformed working conditions. As time went on workers found employment in huge factories and mills, in circumstances where dangerous machinery, poor lighting, intense heat, long hours, and the pressure to produce quickly combined to make such jobs hazardous and exhausting. In the past century and a half before the passage of protective legislation, the number of people wounded in industrial accidents multiplied like casualties on a battlefield. Even now, occupational safety and health laws have far too few inspectors to enforce them.

Nothing has been left untouched by the expansion of the capitalist economic system. Even people's experience of time itself has changed. Precapitalist lives tended to follow natural time, marked by the passing of the seasons and the movement of the sun and moon across the sky. Individual work tasks were performed irregularly, with periods of high work effort alternating with periods of rest. The work pattern could follow the natural rhythms of the worker, or it might be dictated by the natural rhythms of the weather. But in capitalist employment labor is paid for by the hour, and work tasks are defined with reference to how much time they take to perform. Starting and stopping time, lunch, coffee breaks, and even bathroom breaks are often measured in minutes. Clock time has supplanted natural time. Clocks can now be seen on public buildings, in schoolrooms, at factory gates, on people's wrists, and of course on their cell phones. "Time is money," Benjamin Franklin said more than two hundred years ago, previewing what was to come.

In recent years the trend toward working outside the home has reversed for some, as modern communications technology has made it possible for people who do certain kinds of jobs—mostly well-paid writers, lawyers, professionals in finance, and others working for themselves—to work at home, "meeting" with clients and collaborators and selling their services over the Internet.

The Transformation of the Family

Social and family life has also been transformed in the capitalist era. Although families remain important to our emotional lives and procreation, the household has been entirely reshaped and, as a productive unit, nearly eliminated. Before the advent of capitalism, a family of three generations and several married couples often lived within a stone's-throw of one another or even under the same roof, sharing tasks and meals; in some parts of the world this is still common. By the mid-twentieth century in Western societies, the typical household had been reduced to a nuclear family (a family unit consisting of a mother and father and their children), with grandparents living in a nursing or retirement home and aunts and uncles scattered throughout the country. By the end of the twentieth century, divorce, improved birth control,

abortion, greater longevity, and increasing numbers of couples choosing not to get married had taken us even further from the traditional household. Households in the United States are much smaller now, consisting on average of fewer than three people; by 2013 unmarried couples constituted more than one out of eight of the 60 million U.S. households that were headed by couples.

At the same time, many of the customary functions of the family have been removed from the family's domain. Activities such as making clothes and preparing and preserving food that were once carried on at home are now performed mostly in factories or other market-oriented enterprises. The people engaged in such work outside the home today are often the very women (or their grandchildren) who once worked in their own kitchens or at the home loom. Much of the work of rearing children, providing education and medical care to family members, and accomplishing other tasks in the home has also been entrusted to outside professionals.

Finally, today's family, at least in advanced capitalist countries, finds itself in a greatly changed social network. Once, families tended to live in the same community from generation to generation, with skills and occupations being passed from parents to children and each family having an acknowledged and often hierarchically ordered place in that community. Today, few families remain in one spot from generation to generation. Many have to move in search of work. Indeed, it is common now for families to move several times in one generation, making it difficult to sustain their ties to any particular community. As a result, families cannot rely as much as they used to on a local network for support or assistance. This further contributes to people's use of purchased services and government assistance. In many countries the day care center and the babysitter have largely taken over for the grandmother or the older children or relatives. For many people today the idea of a neighborhood as a community of families lives on only as a source of nostalgia.

Threats to the Ecosystem

Scientists have long warned of the damage that human activities can do to the natural environment. In 1962, marine biologist Rachel Carson described the damage pesticides were doing to the water and soil, and the already visible harm to flora and fauna. And over thirty years ago the first edition of this text cited a 1983 U.S. government warning about growing atmospheric concentrations of pollutants that would have a "greenhouse effect," warming the planet. It described the likely consequences: possible melting of polar ice caps, rising sea levels, and changing climates and rain patterns that might destroy prime food-growing areas.

Today we see all these effects. The evidence of global warming is stark: Since the late 1980s the planet has rapidly grown hotter, as the top panel of Figure 1.7 clearly shows. Although there are fluctuations from year to year, this thirty-year trend in the global average temperature has been relentlessly upward. The year 2016 was the hottest on record since 1880, and 2015 the second hottest. In fact, all ten of the hottest years on record have happened since 1998.

The Effects of Climate Change

As climate scientists predicted long ago, heat is not the only problem. In recent years changes in wind currents and rain patterns have brought more frequent extreme weather events. The year 2013 alone brought drought that killed pasture and

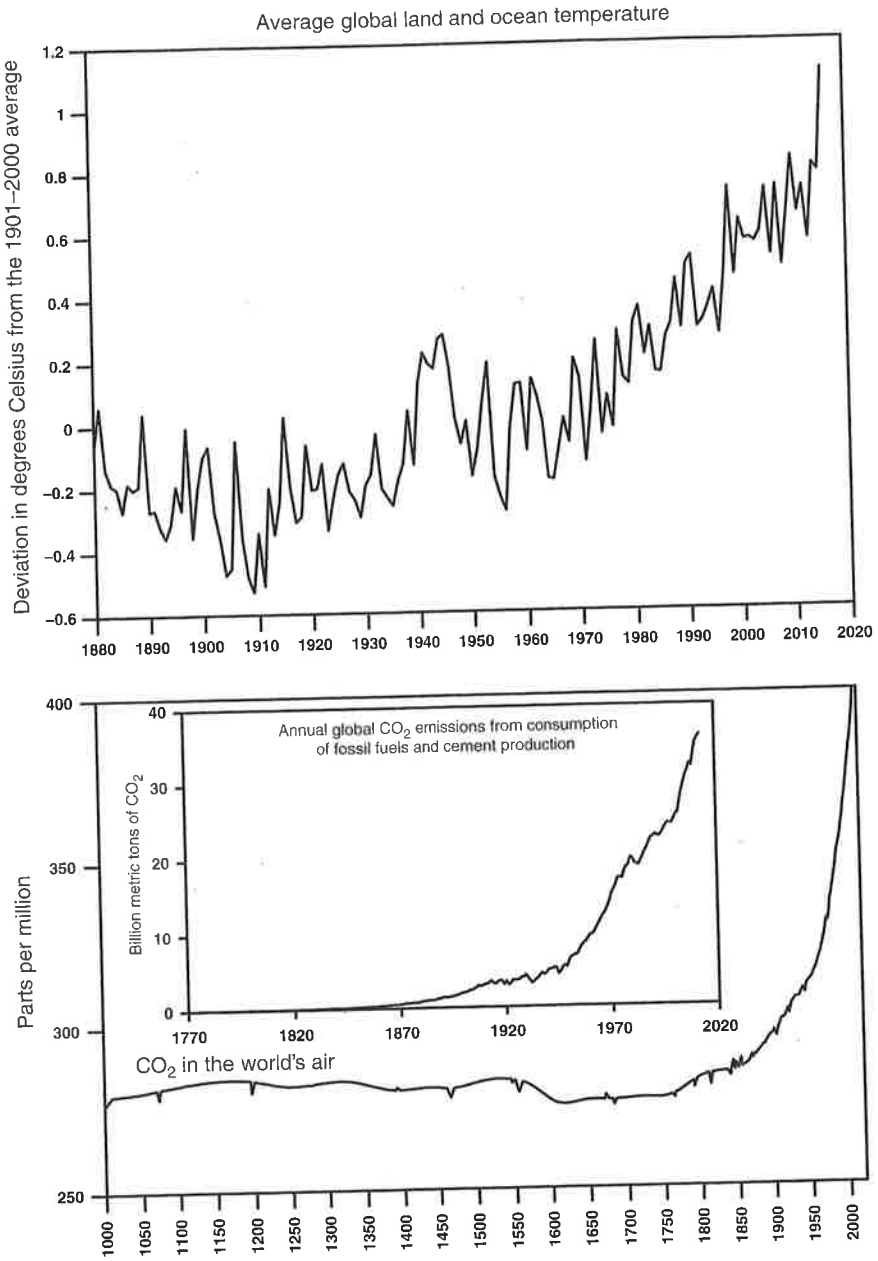

FIGURE 1.7 Global warming, CO_2 emissions, and CO_2 in the air.

For most of the past 1,000 years Northern Hemisphere temperatures and amounts of CO_2 in the world's air remained more or less constant. However, the growing use of fossil fuels such as coal and petroleum products in the twentieth and twenty-first centuries is associated with rising CO_2 emissions and therefore more intense concentrations of CO_2 in the world's air. The smallest (inset) chart shows that CO_2 emissions from fossil fuel consumption and cement production have risen exponentially over at least the last century and a half. Greenhouse gases—gases that trap heat and prevent it from escaping—have also risen, causing global temperatures to rise. The result is global warming. Past temperatures are estimated from studies of tree fossils, centuries-old ice, and other phenomena.

Sources: Top: National Oceanic and Atmospheric Administration (NOAA), National Climate Data Center, Climate at a Glance, Global Land and Ocean Temperature Anomalies, April, Base Period: 1901–2000. Available at http://www.ncdc.noaa.gov/cag/time-series/global/globe/land_ocean/1/4/1880-2016.csv. Bottom, main and inset: T. A. Boden, G. Marland, and R. J. Andres, "Global, Regional, and National Fossil-Fuel CO_2 Emissions." Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, TN, 2016. Available at http://doi.org/10.3334/CDIAC/00001_V2016.

livestock in the African Sahel, causing hunger and famine affecting 23 million people; a vast area of drought-fed wildfires in New South Wales, Australia; the violent super-typhoon Haiyan in the Philippines; and floods covering one-fifth of Pakistan, affecting 20 million. Oxfam International estimated that in the five years between the 2009 and 2014 climate summits, natural disasters caused mainly by climate change cost nearly $500 billion, affected nearly one-tenth of the world's population, and killed 112,000 people.[2]

Why is this happening? After the late nineteenth century rise of refined oil as an energy source, the development of capitalism meant that fossil fuels were put to work powering engines that ran industrial production, public transportation systems, and a growing number of private vehicles. Burning fossil fuels (coal, gasoline, diesel) releases carbon dioxide (CO_2) into the air. The CO_2 and other "greenhouse gases" (GHG) absorb infrared rays from the sun, heating the air but also trapping the heat within the earth's atmosphere. This is called the "greenhouse effect" because it resembles the way the sun's rays enter a glassed-in space and heat the air inside, without allowing the heat any way to escape.

Since GHG persist in the atmosphere for tens to hundreds of years, even cutting back GHG emissions would not immediately solve the problem, though it would help. The consequences are far-reaching: The Arctic ice sheet already is less than half its former size and shrinking fast, and unless temperature increases are soon halted, scientists now estimate that Antarctic ice will likely melt far more rapidly than previously predicted. Rising sea levels already are beginning to encroach on some coastal areas, and many cities and states are completely unprepared. The ocean is also affected as a marine habitat. Part of the carbon dioxide in the air dissolves into its waters, making it currently 30 percent more acidic than three decades earlier. Ocean temperatures are also rising, which like rising acidity is hard on marine life. Coral reefs are being destroyed.

To be sure, not all climate change is caused by greenhouse gases. Average temperatures of the earth fluctuate from decade to decade under the influence of many factors. One is reduced sunlight due to volcanic events such as the massive Tambora eruption in 1815 and the Krakatau explosion in 1883. The Tambora volcano spewed forth so much ash in 1815, blocking the sun's rays, that 1816 became known as the "year without a summer." In that year frost covered the southern United States on the Fourth of July. The 1883 Krakatau eruption produced an ash cloud that circled the world for more than two years, lowering the earth's temperature. In the last century, however, average temperatures have risen due to higher greenhouse gas concentrations, much of which comes from burning fossil fuels. Methane gas produced by livestock, and GHG from cement production, are two of several other significant sources. Cutting down tropical forests worsens the situation because, according to a December 2014 NASA study, they absorb a considerable amount of carbon dioxide.

Is there a point of no return?[3] If so, have we reached it? There are two kinds of lines that scientists say we should not cross. One line is a temperature limit. In 2009, many countries signed the Kyoto Protocol agreeing that the global average

---

[2]"The Summit that Snoozed?" Oxfam Media Briefing, September 19, 1964, available at https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bkm_climate_summit_media_brief_sept19.pdf

[3]The following discussion is based largely on the documentary film *Do the Math: Bill McKibben and the Fight over Climate Change* by Tony Hale, Bill McKibben, Mike McSweeney, Kelly Nyks, and Jared P. Scott (PF Pictures Productions; San Francisco, CA: Kanopy Streaming), available from the Media Education Foundation (Northampton, MA, 2013).

temperature should not be allowed to rise beyond 2° C (3.6° F) above the preindustrial global average temperature. The Paris Agreement of 2015 stated an even lower limit of 1.5° C, but with no real plan to achieve it. By 2016 the earth was already 0.9° C above the preindustrial temperature.

The other upper boundary is the level of atmospheric concentration of CO_2. NASA scientist James Hansen and his research team have estimated that the danger zone is above 350 parts per million (ppm) of CO_2.[4] As the bottom panel of Figure 1.7 shows, the world already exceeded this level in 1987, and by 2014 it even passed the 400 ppm level, continuing to rise at about 2 ppm per year. There is no clear cliff-like drop-off, but it would be wise to take steps to stop and then reverse this growth.

One problem with too much warming is that new processes are triggered that could easily accelerate the warming process. In places like Greenland, the frozen earth called the *permafrost* melts as temperatures rise, releasing at least some of the carbon now locked up in it, either as methane gas or carbon dioxide. Likewise, the drought induced by global warming increases the frequency and size of grass fires and forest fires, events which in turn further increase the CO_2 in the atmosphere.

Is there a technological solution? More technical knowledge may make it easier and cheaper to stop global warming, but the main obstacle to doing so is political. Nations that have emitted little carbon, and so bear little responsibility for causing global warming, want to see the major carbon-emitting regions be the ones to spend most heavily to solve the problem. So who are the biggest emitters?

The column graph in Figure 1.8 shows cumulative carbon dioxide emissions per capita for 1990–2012. The United States, Canada, and Europe have been the highest per capita emitters. Over these twenty-three years the United States and Canada emitted a cumulative total 376.6 metric tons of CO_2 per capita, more than four times the world average of 90.7 metric tons per capita. For Europe that number was 172.8 metric tons, just under twice the world average. The United States, Canada, and Europe together emitted about 41 percent of the cumulative world emissions over the period, though they have only about 14 percent of the world's population.

This was much lower than their share during the previous forty years, 1950–1989, however, when they emitted more than three-fourths of the world total; but this was largely because after 1990 other regions, particularly Asia, rapidly developed, and so increased their annual carbon emissions, as shown in the inset to Figure 1.8. Even so, Asia's population is around 4 billion, or about four times that of the United States, Canada, and Europe combined, so its per capita emissions remain well below the world average. Europe's annual emissions leveled off in the 1980s, while U.S. annual emissions only fell beginning with the 2007–2009 Great Recession. There is still much to be done. Among developed countries, Germany has gained recognition as a leader in shifting from fossil fuels to other forms of energy.

Researchers estimate that burning more than 20 percent of the fossil fuels currently reported in world reserves of private corporations and major state-owned oil reserves would lead to temperature increases beyond the acceptable limits described above. For this reason, environmental action groups ask that 80 percent of these deposits simply be left in the ground. The campaign to persuade universities to divest from fossil fuels hopes to make burning fossil fuels an unprofitable business activity, so that fossil fuel companies will shift to less destructive forms of production.

---

[4]James Hansen et al., "Target Atmospheric CO_2: Where Should Humanity Aim?," *The Open Atmospheric Science Journal* 2 (2008): 217–31.

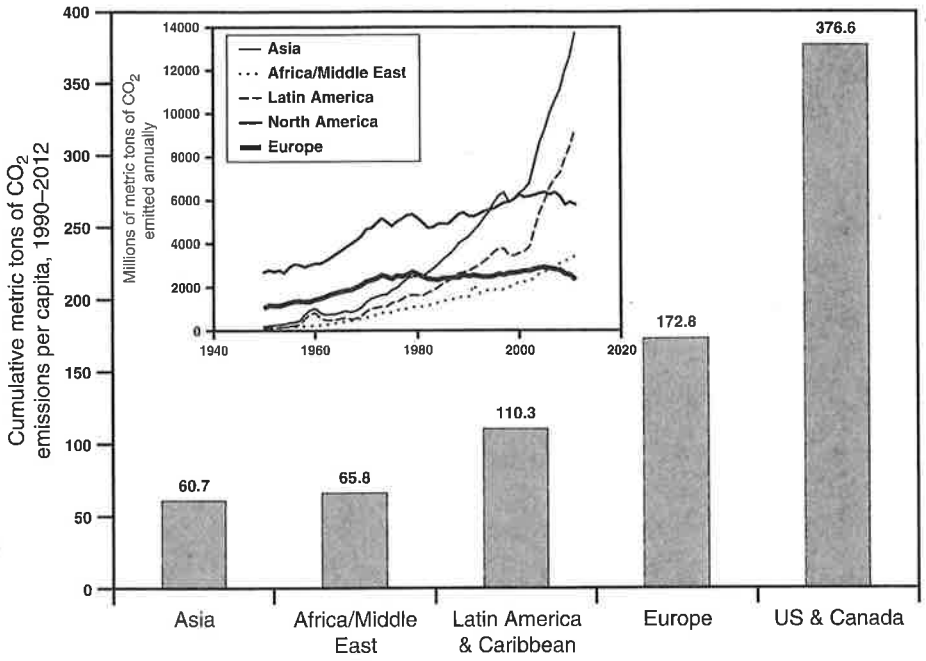

FIGURE 1.8 Cumulative CO_2 emissions per capita, 1990–2012, by region, and trends in total emissions by region, 1950–2012.

Changes in (net) CO_2 emissions result from changes in the amount of fossil fuels burned, but also from changes in cement production, from changes in forests that affect carbon absorption and emission, and other factors.

Sources: CAIT Climate Data Explorer, (Washington, DC: World Resources Institute, 2015), available at http://cait.wri.org and at http://www.wri.org/resources/data-sets/cait-historical-emissions-data-countries-us-states-unfccc. Data incorporate land use and forestry data from FAO 2014, FAOSTAT Emissions Database. Data were calculated and compiled by T. A. Boden, G. Marland, and R. J. Andres, in "Global, Regional, and National Fossil-Fuel CO_2 Emissions," Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, TN, 2016. Available at http://doi.org/10.3334/CDIAC/00001_V2016. Data in metric tons of carbon were converted to metric tons of carbon dioxide by multiplying by 3.667.

Contamination

Global warming is not the only environmental danger. Rachel Carson's acclaimed book *Silent Spring*, published in 1962, warned that we were fouling our nest with pesticides and other toxic chemicals contaminating groundwater, rivers, lakes, oceans, and soil, and so killing off all kinds of creatures—birds, insects, and other—essential to the ecosystem. And in 1984, in the city of Bhopal, India, the discharge of toxic chemicals from a Union Carbide chemical plant there killed at least 3,700 people and permanently damaged the health of many more. Bhopal became known worldwide as a symbol of environmental destruction. In the years since the Bhopal disaster, many more environmental crises have occurred, and people have become increasingly aware of the threats facing the earth's ecosystem. The BP oil spill in 2010 in the Gulf of Mexico caused massive damage to marine life, shrimp farming, and the coastal economy. Such events have raised public awareness about the dangers of environmental destruction.

With oil spills, the dumping of toxic and radioactive chemicals, and routine discharges from tankers and industrial plants, the oceans are being spoiled. The destruction of natural habitats is endangering rising numbers of animal and plant species. As Carson warned, insecticides and herbicides are poisoning prime farming soils. Routine massive use of antibiotics in raising animals for meat, as well as in fish farming, has helped to foster the growth of drug-resistant bacteria ("superbugs"), which soon will be impossible to kill with any known antibiotics. These changes in our physical world, especially when taken all together, threaten destruction on a scale that we cannot now calculate, but must nevertheless do everything possible to prevent. Prevention may well end up being far cheaper, at least from the standpoint of society, than remediation after the damage is done.

The public has increasingly demanded policies to protect and restore the environment. Some of these have been very effective, resulting in cleaner air and water in many parts of the United States and reduced energy use in Europe. The main lesson is that environmental problems often cannot be addressed without cooperation among nations. The successful international effort to reverse the depletion of the ozone layer is an example of the kind of cooperation that is needed. But so far, the United States has been one of the countries least eager to make the changes needed to stop global warming, at least at the national level.

New Roles for Government

Government and people's relations to government have also been altered since the rise of capitalism. In 1500 much of what was to become the capitalist world was ruled by some type of despot, with kings and emperors basing their claims to authority on God's will, hereditary right, or simply brute force. There were few ways in which ordinary people could protect themselves from the arbitrary powers of such rulers. But governments played a minor role in most people's daily lives; tax collection was typically nonexistent or ineffective, while compulsory schooling, permanent police forces, and standing armies did not become common until the nineteenth century.

Hereditary rulers were challenged by the British revolutions of the seventeenth century and by the American and French Revolutions of the eighteenth century. These revolutions established the important principle of governing with the consent of the governed, although only property-owning freeborn (nonslave) males gained the right to vote. But in Europe and the United States these revolutions placed important limitations on absolute rulers, and eventually they were followed by written constitutions, the abolition of slavery, widespread male suffrage, elimination of property qualifications for voting, and the extension of the franchise to women and minorities. In the nineteenth and twentieth centuries, largely as a result of intense and lengthy struggles by workers, antislavery groups, suffragists, and others, all the major capitalist countries participated in the growth of democratic government. As governments became more democratic, they came to play a major role in providing such services as public education for the young and income support and health care for the elderly.

In the late nineteenth century in Europe and later in North America and other parts of the world, governments increasingly also took responsibility for providing assistance to the unemployed and those unable to work. Today, in western Europe and to a lesser degree in the United States, many people expect governments to provide something like a social safety net, especially during periods of economic decline. Moreover, governments have become major employers as well.

But while government in most countries has become more democratically accountable, everywhere it has also become more intrusive. In the past century governments have attained increased powers to invade the privacy and influence the sentiments of the citizenry. Television and other modern communications media give heads of state enormous influence in shaping people's opinions, while modern information technology allows government easy access to our location, private messages, and economic activity.

Globalization

The finale of Warner Brothers' blockbuster Matrix film trilogy, *The Matrix Revolutions*, opened simultaneously on November 5, 2003, on 10,013 screens in more than fifty countries and in forty-three languages. On that day at precisely the same moment—6 a.m. in Los Angeles, 9 a.m. in New York, 5 p.m. in Moscow, 11 p.m. in Tokyo, and so on—moviegoers watched the title shots appear on the screen as this first-ever global debut of a film began.

The president of Warner Brothers Entertainment, Alan Horn, called it "showmanship." "It's theatrical, it's fun, it's exciting," Horn said about the mega-opening. He also explained that by making the film available in theaters around the world he hoped to limit the profits of film pirates, who copy a film and distribute it globally (as they often do if a film opens in one country but cannot be seen in theaters in other countries until much later). Like many others, Horn understood that globalization means that many aspects of our life, from our entertainment to the enforcement of property rights, are no longer local or even national matters; they are global.

Capitalism has accomplished what not even the most powerful rulers in the past were able to do: it has brought the entire world into a single all-encompassing system. Alexander the Great conquered much of the world in the fourth century BC, expanding the reach of Greek civilization as far as India, but he soon retreated, leaving only traces of Greek culture behind. The Roman Empire at its height extended from the British Isles to the Middle East, at most a few thousand miles. In the two centuries following Muhammad's death in AD 632, his influence expanded well beyond Arabia, and Islam became the dominant force in a swath of loosely affiliated states stretching from Spain to what is now Indonesia—a third of the way around the world. But none of these empires touched more than parts of the globe. Only the capitalist economy, with a built-in tendency to expand and with the help of the twentieth-century revolution in communications technology, has reached entirely around the world, obliterating distances, spawning common languages and appetites, and bringing most of the world's peoples into a single interdependent system.

In Bangalore, India, women in a call center respond to customer service inquiries placed via 800 numbers to companies such as General Electric, Dell Computer, America Online, and British Airways. They and others like them are doing back-office work for global corporations that outsource tasks such as customer service to India or other countries where English is spoken and people are willing to work for a fraction of what American workers are paid. To facilitate the growth of call center employment, the Indian government over a decade ago installed reliable high-capacity telephone lines so that a person working in an Indian call center can communicate with customers overseas without sounding any different from a person working in the same country as the corporation being called.

To remove any suspicions that the person responding to a service call from the United States is a foreigner, the young Indian women who answer the phone are trained to sound just like Americans. To practice, they watch old video episodes of shows like *Friends*, and learn that "Bimmer" refers to a BMW. They also take American names like "Naomi Morrison" and "Susan Sanders," according to the *New York Times* story illustrated by the photo of the two women. With accents one might hear at Wrigley Field, the women pretend to be residents of Chicago. Call centers elsewhere in the world similarly train their workers to respond to calls from (and to sound like residents of) some specific U.S. region.

There are now over 60,000 call centers in the United States employing around 5 million people, the majority of them women, most accepting relatively low wages. Call centers outside the United States earn tens of billions of dollars, and for years it appeared that such jobs would continue to go abroad. But for several years, as the wage gap between the United States and the main call-center countries (India and the Philippines) narrowed, these jobs began returning. That trend has slowed down, however, and call centers, or "contact centers" outside are still growing.

One technological change that has smoothed the way to more global trade has been containerized shipping. In any major port, one can see stacks of cargo containers that will be loaded onto container ships, or have just been unloaded. Today, most of non-bulk seaborne shipping is containerized (bulk shipping is of coal, iron ore, petroleum and its products, and the like, and by weight is about five-sixths of all seaborne trade), Containers carried one-sixth of the 10 billion tons of cargo shipped in 2014 by sea, but about half its total value. Container traffic is measured on the basis of "twenty equivalent units," or TEUs, with each 20-foot-long container being counted as one TEU and each 40-foot long container as two TEUs. The average container ship in use by the top twenty operators holds 5,000 to 6,000 TEUs, but new ships being ordered typically will each carry 10,000 to 20,000 TEUs. About 700 million TEUs passed through the world's ports in 2014.[5] Containerization is one technological change that has made world trade cheaper and easier.

The fact that there is now a single world market for goods and services of all kinds means that producers depend on buyers worldwide for their livelihood. When the U.S. economy is booming and American wages are on the rise, automobile workers in South Korea prosper. The globalization of the economy also means that Indian software developers are constantly looking for ways to edge out competitors in Silicon Valley (and vice versa).

Similarly, the clothing worker stitching shirts in the United States (an endangered species, with only about 50-60,000 production workers now engaged in sewing apparel) is looking for ways to stay ahead of the competition in Sri Lanka, where the stitchers are paid less than one-tenth of what a comparable U.S. worker makes. Most large companies now consider the entire world not only as the market for their products but also as offering potential locations for production units. And, as readers of this book may already know, American students seeking admission to colleges or graduate schools now face competition from students from all over the world. The same is true for many jobs in the rapidly expanding information-based sectors of the U.S economy.

---

[5]United Nations Conference on Trade and Development, *Review of Maritime Transport 2015*, New York and Geneva: United Nations.

Trading over long distances has been integral to the functioning of capitalism since its inception. The huge market fairs in Europe from the fifteenth to the seventeenth centuries attracted merchants from hundreds of miles away and even from beyond Europe. They often brought with them lightweight luxuries such as spices and precious metals. However, long-distance trade in other goods was relatively insignificant. As noted earlier, transportation costs for heavier products were very high, and other difficulties blocking the transport of goods over long distances included brigandage, piracy, and the many local transit taxes levied by the rulers of the small kingdoms and principalities that then made up Europe. In the last half-century, however, there has been a dramatic increase in long-distance trade. In 1950 only 8 percent of the world's output was exported to other nations; now the comparable figure is almost 30 percent.

It now makes sense to think, to some extent, of the entire world system of investing, buying, and selling as a single global economy. National boundaries still matter, of course, but less so than in the past: goods, money, and information pass with only minor impediments from country to country. Even movement of people among countries has been somewhat eased with the formation of the European Union and some regional agreements—although for refugees, even transit countries have been quick to put up barriers. The process of globalization has challenged national governments, for it makes them more interdependent. Decisions made by the U.S. government or by the European Central Bank have ripple effects that extend throughout the world. The inability of Mexican or Russian borrowers to service their foreign debt can send shock waves through Wall Street and from there to the U.S. Treasury Department.

Globalization, as we have said, concerns the international movement of money, goods, and even people in search of a better livelihood. But globalization is not simply economic: it concerns languages, political rights and movements, what people value and admire, how people worship, what they eat and dance to, and the arts. The Indian women at the call center in Bangalore are able to imitate Chicago accents and discuss recent Chicago Bulls games because they see the Bulls on TV and hear Chicagoans on the radio.

Globalization, like technical change, is a source of affluence for many, but it can quickly make a once cutting-edge industry or job skill obsolete, causing unemployment and financial hardship for the people involved. The citizens of most democratic nations have pressed their governments for protection against the vagaries of the global marketplace, in some cases seeking to limit the extent of global exchange. In some democracies, especially those in western Europe, governments have implemented extensive unemployment insurance and offered subsidies for retraining and relocation to workers in declining industries. These programs are expensive, of course, and many governments are reluctant to raise the taxes necessary to fund them for fear that higher taxes will induce some businesses to relocate to other (lower-tax) nations, which would only increase economic insecurity. Many fear that globalization increases economic insecurity while at the same time diminishing the power of governments to implement programs that might make people more secure.

Underlying such fears is a simple fact: the economy is now global while government is still local. The global economy is thus interconnected, while the power to coordinate it is dispersed among more than two hundred national governments, a handful of international bodies, and a few thousand large corporations. Power in the

global economy is not distributed among individual citizens and consumers. Rather, it is held by a small number of powerful institutions. For example, the World Trade Organization, which regulates the terms on which nations exchange goods and services, is deliberately structured to limit input from ordinary citizens.

The heads of the world's one thousand largest corporations, producing 80 percent of the globe's industrial output, could all fit into a medium-sized concert hall, for example, Alice Tully Hall at Lincoln Center in New York City. About two thousand corporate leaders, along with some government officials, actually do come together annually at a ski resort in the small town of Davos, Switzerland. Calling themselves the World Economic Forum, this exclusive group has been assembling there for more than forty years. From 2000 to 2015, protesters showed up at Davos to criticize the exclusive meeting, but by 2016 they had decided it was no longer worth it, saying that the Davos Forum was losing credibility.

Some observers have hoped that global leaders such as those who meet in Davos would work together to regulate the world economy in ways that would protect both people and the environment from the social costs generated by multinational capitalist enterprises. However, the fact is that corporations have at least as much interest in competing as in cooperating, while their interest in protecting society and the environment from the consequences of global profit seeking is tempered by their opposition to restrictions on their own profit making. And in the absence of anything resembling a world government, all international cooperation must come about through negotiations among independent governments; but of course any government can refuse to participate in such negotiations.

Conclusion

To lay the foundations for an understanding of capitalism, this chapter has focused on the technological revolution, increasing material well-being, the population explosion, the growth of cities, the transformation of work and family, threats to the ecosystem, new roles for government, and globalization. The list of changes that have come with capitalism could be expanded, but the set of transformations discussed here establishes the basic point of the chapter: capitalism generates perpetual change.

It could be argued that the rise of capitalism was not so much the cause as it was the effect of the changes outlined in this chapter. Might not advances in science and technology have led to the development of capitalism? Or could the population explosion have been the cause and capitalism the consequence?

Science and population growth are undoubtedly important, but before capitalism they did not have cumulative effects. Scientific knowledge and technology were more advanced in the Islamic world and China, for example, than they were in Europe before 1500. But neither Islamic science and mathematics nor the Chinese inventions of gunpowder, magnetic compasses, cast iron, moveable type, canal locks, and machines for keeping time led to sustained technological progress or industrial development. It is also true that periods of rapid population growth have accompanied short periods of economic expansion throughout the 100,000 or so years of human existence, but as Figure 1.5 shows, it was not until the advent of capitalism that rapid population growth became the rule rather than the exception.

In the last five hundred years virtually all traditional patterns of life and livelihood have been disrupted and reconstructed. The world and the world's peoples have been shaken up and remade. In the chapters to follow we discuss the reasons why capitalism is such a powerful source of change and why it affects not only the economy but also politics, beliefs, and many other dimensions of social life.

Suggested Readings

Sven Beckert, *The Empire of Cotton: A Global History* (New York: Vintage, Reprint edition, 2015).

James K. Boyce, *The Political Economy of the Environment* (Cheltenham, UK: Edward Elgar, 2002).

Fernand Braudel, *Capitalism and Material Life 1400–1800* (New York: Harper & Row, 1967).

Ha-Joon Chang, *23 Things They Don't Tell You about Capitalism* (New York: Bloomsbury Press, 2010).

William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill & Wang, 1983).

Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W.W. Norton, 1999).

Maurice Dobb, *Studies in the Development of Capitalism* (New York: International Publishers, 1947).

Bill Gates, *The Road Ahead* (New York: Viking Penguin, 1995), especially Chapter 8, "Friction-Free Capitalism," 157–83.

Eban Goodstein, *Economics and the Environment*, 7th edition (New York: Wiley, 2014).

John Gray, *False Dawn: The Delusions of Global Capitalism* (New York: New Press, 1999).

Eric Hobsbawm, *The Age of Capital: 1848–1875* (New York: Vintage Books, 1996).

Naomi Klein, *This Changes Everything: Capitalism vs. the Climate* (New York: Simon & Schuster, 2014).

David Landes, *The Wealth and Poverty of Nations: Why Some Are So Rich and Some So Poor* (New York: W. W. Norton, 1999).

Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* (New York: Oxford University Press, 1990).

Barrington Moore, *The Social Origins of Dictatorship and Democracy* (Boston: Beacon Press, 1966).

Robert Pollin, *Greening the Global Economy* (Cambridge, MA: Boston Review Books, MIT Press, 2015).

Robert Reich, *Saving Capitalism: For the Many, Not the Few* (New York: Alfred A. Knopf, 2015).

George Soros, *The Crisis of Global Capitalism: Open Society Endangered* (New York: PublicAffairs, 1998), especially Chapter 6, "The Global Capitalist System," 101–34.

Eric Wolf, *Europe and the People Without History* (Berkeley: University of California Press, 1982).