



SOUTHERN  
OCEAN

## PART 5

# *An Overview of Macroeconomics*





# CHAPTER 17

## In Search of Prosperity and Stability



**After reading this chapter, you will understand the following:**

1. The meaning and origins of economic growth
2. The nature of the business cycle
3. The meaning of unemployment and its importance for economic policy
4. The meaning of inflation and its impact on the economy

**Before reading this chapter, make sure you know the meaning of the concepts:**

1. Positive and normative economics
2. Production possibility frontier

**M**ANY ECONOMISTS DATE the beginning of their discipline from the publication, in 1776, of Adam Smith's book *The Wealth of Nations*. (See *Who Said It? Who Did It?* 1.2). The question raised by Smith's book—why some nations prosper while others lag behind—remains a central focus of macroeconomic policy. In the early 2000s, prosperity was widespread. A booming financial sector powered growth and job creation in the United States, China's export-led economy grew by more than 10 percent per year, and energy-producers like Russia and the Persian Gulf States piled up large surpluses. Even in those years, some nations fell behind, especially where conflict and corruption undermined the economy. Then, beginning in 2007, things started to go wrong. A recession that began in the financial and construction sectors of the U.S. economy spread rapidly through much of the world. As the economies of the leading industrialized countries slowed down, demand for Chinese manufactured goods and Middle-Eastern oil collapsed. As output fell, unemployment rose; and gloom replaced the recent global euphoria.

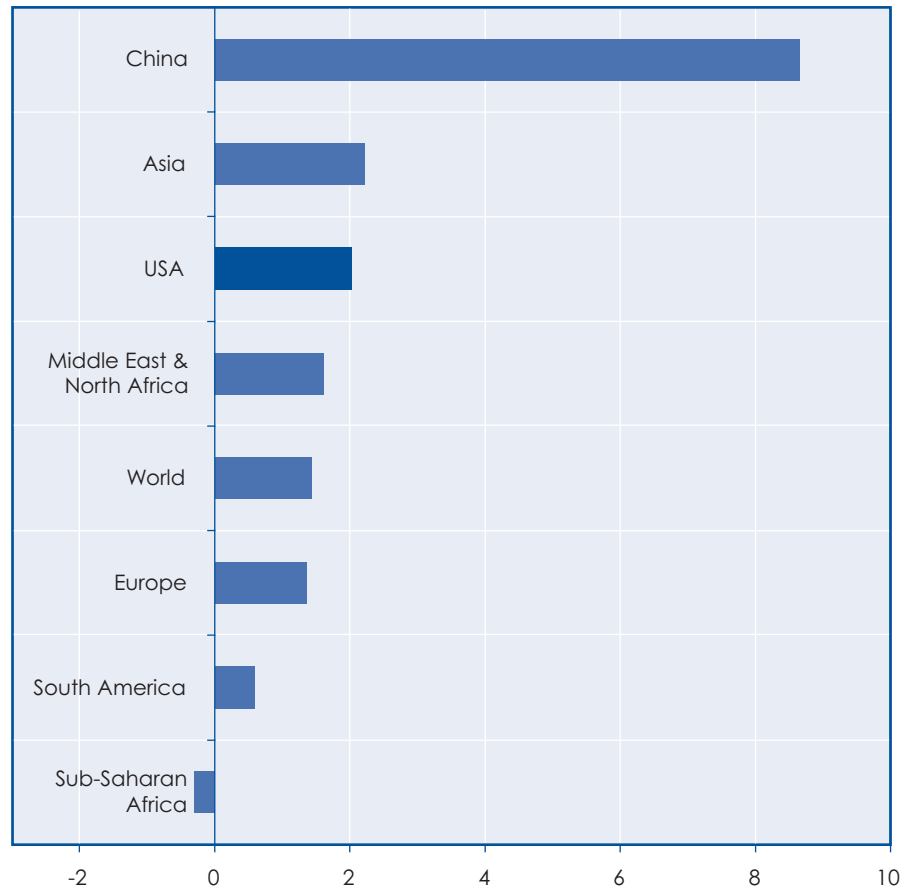
This chapter begins the exploration of macroeconomics by looking both at the broad forces that shape the search for prosperity and stability in the long run and those that cause short-run cyclical disturbances like the recent global crisis.

## Macroeconomics in the Long Run: Economic Growth

No country becomes wealthy overnight. Nations that are prosperous have become so as the result of steady growth over periods of decades and even centuries. Countries that are poor rarely become so because of sudden catastrophe, but rather, due to long periods of gradual decline or slow growth that lags behind the leaders.

Figure 17.1 shows how widely growth rates have differed among major areas of the world. During the quarter century up to 2006, standards of living in much of Asia rose rapidly. At the same time, average incomes in many countries of Sub-Saharan Africa actually decreased. Economic growth theory seeks to explain the reasons for these differences in growth over time and among countries.

**FIGURE 17.1** MEAN ANNUAL GROWTH RATES OF REAL GDP 1981–2006



In the quarter century from 1981 to 2006, growth rates of real GDP varied widely. The United States grew somewhat faster than the world average and many formerly impoverished countries of Asia made rapid gains, but Sub-Saharan Africa became poorer.

SOURCE: World Resources Institute [www.earthtrends.wri.org](http://www.earthtrends.wri.org)

## Measuring Economic Growth

Economic growth is most often expressed in terms of *Gross Domestic Product* (GDP), a measure of the value of total output of goods and services produced within a nation's borders during a period of time.<sup>1</sup> If GDP is to provide a meaningful measure of growth over time, it, like other economic quantities, must be expressed in **real** terms; that is, it must be adjusted for the effects of changes in the average price level. For example, from 1995 to 2005 U.S. **nominal** GDP (that is, GDP measured according to prices at which goods were actually sold in the given year) grew from \$7.298 trillion to \$12.191 trillion, or 68 percent. However, part of the increase in nominal GDP can be attributed to a 20 percent rise in the average price level during the period. Adjusted for inflation and expressed in constant 1995 dollars, real GDP increased over the decade by only about 40 percent. The term **real output** is frequently used as a synonym for real gross domestic product.

### Real

In economics, a term that refers to data that have been adjusted for the effects of inflation

### Nominal

In economics, a term that refers to data that have not been adjusted for the effects of inflation

### Real output

A synonym for real gross domestic product

## Sources of Economic Growth

The sources of economic growth can be divided into two main components: the growth of total labor inputs, on the one hand, and the growth of output per unit of labor, or labor productivity, on the other.

The growth of total labor inputs tends to be determined by social and demographic factors that differ from one country to another, but that do not change rapidly within any one country. One source of growth of labor inputs is population growth. Population in the United States is now growing at about 1 percent per year or less, largely thanks to immigration. Population in most other advanced countries is stable or slowly declining. Another possible source of increased labor input is increased labor



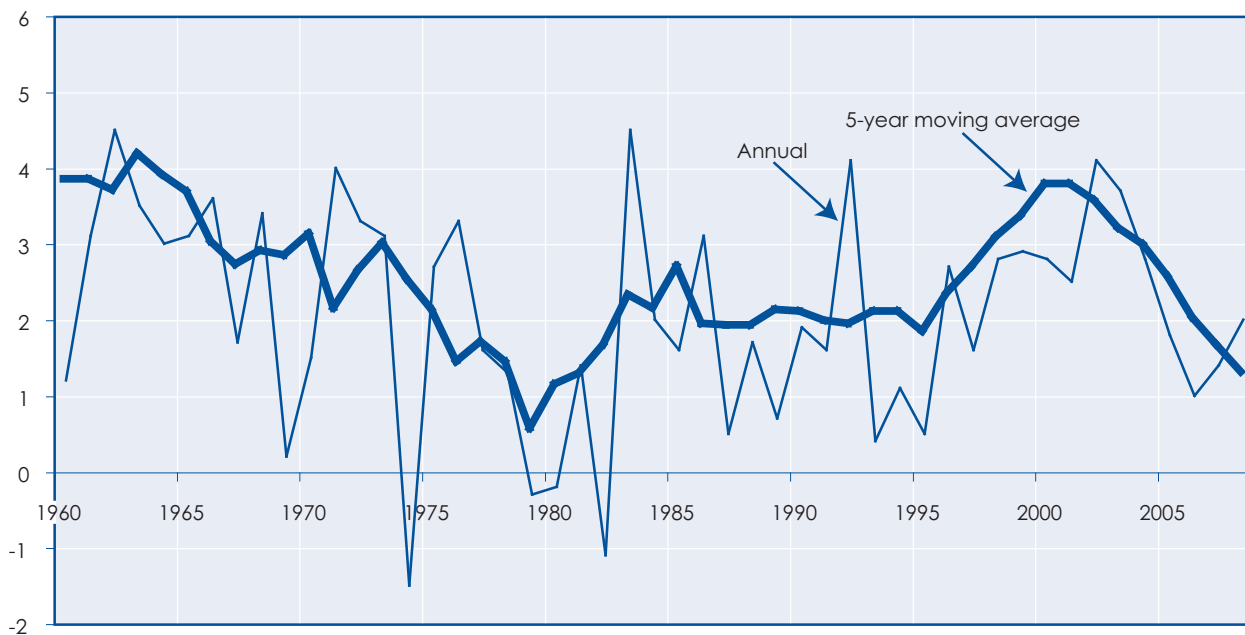
Largely due to immigration, the population in the United States is growing about 1 percent a year.

force participation. In the United States, for example, from 1960 to 1989, labor force participation by women increased from 37 percent to 57 percent, more than offsetting a small decline in labor force participation among men. Since 1990, labor force participation trends of various groups have roughly balanced out so that the total rate has not changed much. Over the same period, both population growth and increased labor force participation have been offset, in part, by a decrease in average weekly hours worked from about 39 in 1960 to about 34 today. Taking all these trends together, total hours worked in the U.S. economy have grown moderately.

In contrast to the relatively steady growth of hours worked, productivity in the United States has increased erratically over the past fifty years, as shown in Figure 17.2. From the end of World War II up to the early 1970s, productivity grew at an average rate of about 2.8 percent per year. Then, from the mid-1970s to the early 1990s, productivity suffered a puzzling slowdown, falling to less than half its previous rate. In the 1990s, productivity growth recovered. From 1996 to 2004, U.S. productivity grew at its fastest rate for any comparable period since World War II.

Since hours worked per capita tend to decrease as countries get richer, productivity growth holds the key to prosperity in the long run. What determines whether productivity grows rapidly or slowly?

**FIGURE 17.2 U.S. ANNUAL PRODUCTIVITY GROWTH, NON-FARM BUSINESS SECTOR**



This chart shows the rate of increase of productivity in the non-farm business sector of the U.S. economy, measured as the annual increase in output per worker from 1960 to 2008. Productivity growth is highly variable from year to year. To make trends stand out more clearly, a 5-year moving average is plotted along with the annual data.

DATA SOURCE: President's Council of Economic Advisors, Economic Report of the President, 2009, Table B-50.

## Total factor productivity

A measurement of improvements in technology and organization that allow increases in the output produced by given quantities of labor and capital

Increases in capital per worker are one important source of productivity growth. Capital includes industrial equipment like bulldozers and assembly robots, capital used in service jobs like hospital equipment and office information systems, and infrastructure capital like roads and communications systems. Any increase in output per worker not due to measured changes in capital per worker is attributed to **total factor productivity**.

Sources of growth in total factor productivity include technological innovation, better organization of production, better education of the labor force (sometimes called “human capital”), and improvements in political institutions that reduce corruption and conflict. All of these play a role in year-to-year and longer-term variations in productivity growth. *Applying Economic Ideas 17.1* illustrates



### Applying Economic Ideas 17.1

## THE U.S. PRODUCTIVITY SLOWDOWN OF THE 1970s AND 1980s

The productivity slowdown of the 1970s and 1980s was a source of great concern for observers of the U.S. economy. Productivity growth had been the driver of steadily rising living standards in the period after World War II. Suddenly, the productivity machine seemed to grind to a halt. Why did it happen? Did it signal a permanent change in the economy, or was it merely a pause? Here are some of the factors that are among those most often cited as contributing to the productivity slowdown:

- Changes in the labor force** Many analyses of the productivity slowdown pointed to the entry of millions of women and young people into the labor force during the 1970s. These new workers were, on the whole, capable and motivated; but they tended to have less experience than those who already held jobs. At the same time, by their sheer number they pulled down the ratio of capital to labor. By the 1990s, these demographic changes had worked their way through, allowing historic productivity trends to resume.
- Supply shocks** Some economists believe that the shock of sharply higher oil prices in the 1970s contributed to the productivity slowdown by rendering

much of the economy’s capital stock obsolete. Many inefficient older trucks, planes, furnaces, generators, and so on had to be retired or placed on standby because high oil prices made them too costly to operate. The effect was almost the same as if the equipment had been destroyed by fire or flood. Moreover, it is argued, the oil price shocks made it necessary to re-channel much investment into finding ways to get by with less oil—either through the design of more energy-efficient equipment or through the production of substitute energy

sources—rather than into other productivity-enhancing areas of research. By the end of the 1980s, the effects of these supply shocks had run their course, leaving a leaner, more efficient capital stock as a basis for further growth.

- Research and technology** During the 1970s, research and development spending fell from a high of

3 percent of GDP to a low of 2.2 percent in 1977. Some economists saw the R&D slowdown as a major culprit in the stagnation of productivity. In the 1980s and even more in the 1990s, these trends were reversed and replaced by a technology boom, as businesses made huge investments in computers and



In the 1970s, an oil price shock, combined with price controls, led to long gas lines.

*continues*

communications technology. At first the impact of these on economy-wide productivity was disappointing, but after a period of learning and organizational change the new technologies began to pay off in a big way. Some economists see the spurt of productivity in the early 2000s as a delayed result of technology investments of the preceding decade.

- **Inflation** Inflation is an enemy of economic growth. The productivity slowdown of the 1970s occurred at the same time as a speedup of inflation. Inflation disrupted business planning and labor-management relations, and distorted the impact of taxes on business and investment income. This not only reduced total investment but also tended to channel investment toward uses that did little to enhance productivity, such as housing and tax shelters, and away from more productive projects. In the 1990s inflation returned to a more moderate range. Many economists think it is not coincidental that the moderation of inflation coincided with the revival of productivity growth.
- **Measurement problems** One reason productivity trends are hard to explain is that productivity is hard to

measure accurately. Productivity is especially difficult to measure in sectors where the quality of goods changes rapidly. It makes much more sense to measure the number of tons of coal produced per worker in U.S. mines than to measure the number of computer chips produced per worker hour. If workers produce the same number of chips as the year before but the chips have double the computing power, has productivity doubled? Official data are believed to understate such quality changes. Also, productivity is notoriously difficult to measure in the service sector, which makes up an increasing part of the economy over time.

The productivity boom of the 1990s, which continued into the early 2000s, caused some economists to hope that a new era of technology-driven growth had arrived. The recession that began in late 2007 sent productivity growth lower again, but productivity normally falls during a recession. Employers, who try when possible to retain their best workers during a slump, tend to reduce output by more than their workforce. It will be several years before it will be possible to see whether the end of the recession brings a renewal of productivity growth, or whether the productivity boom around the turn of the century was a one-time event.

some of the determinants of changes in productivity growth with the case of the U.S. productivity slowdown of the 1970s and 1980s.

### *The Benefits and Costs of Economic Growth*

Economic growth has many benefits. First and foremost, growth provides consumers with a higher standard of living in the form of more goods and services. Growth also provides people with greater opportunities to choose between work and leisure. If more people choose to work, as has recently been the case in the United States, economic growth makes possible the capital investment needed to create jobs for them. Over a longer span of U.S. history, however, people have opted for more leisure. As the economy grew during the nineteenth and early twentieth centuries, it was possible to shorten the average workweek at the same time that material living standards were rising. Finally, many people see economic growth as a necessary condition for reducing poverty and economic injustice. Whether a rising tide lifts all boats more or less automatically, as some people would have it, or whether, at least in some periods, the rich benefit more from growth than the poor remains a source of controversy. However, there is little dispute that issues of social equality are even harder to resolve in countries where the tide is going out.<sup>2</sup>

Despite its obvious benefits, economic growth has had its critics. More than a century ago the English economist John Stuart Mill worried that growth might

cause the loss of “a great portion of the earth’s pleasantries” (see *Who Said It? Who Did It?* 17.1). This sentiment is shared in our own time by environmentalists, who worry that growth is accompanied by increased pollution, destruction of wilderness areas, and the possibility of a global climate disaster.

Criticisms of economic growth have their merits. We have only to look around us to see that the economic growth we have experienced has brought costs as well as benefits. However, some of the critics can be faulted for failing to distinguish between two issues: the *rate* of economic growth and its *direction*.

In Figure 17.3, a production possibility frontier is used to help separate the two issues. The diagram shows an economy in which resources can be devoted either to improving environmental quality or increasing per capita consumption of material goods. For an economy operating efficiently on its production possibility frontier, environmental quality can be improved only by diverting resources away from production of material goods, while producing more goods will harm the environment. Over-time, however, investment and innovation shift the production possibility frontier



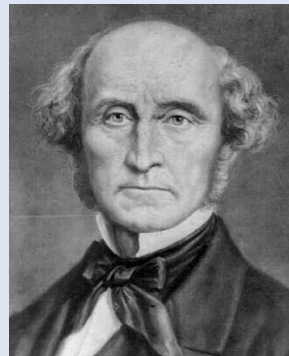
## Who Said It? Who Did It? 17.1

### JOHN STUART MILL ON THE STATIONARY STATE

Economic growth was a major concern of the classical economists of the nineteenth century. Then, as now, most of the leading economists were inclined to view economic growth as a good thing. However, some of them feared that the pressure of growing populations on limited natural resources would sooner or later bring economic growth to a halt. Economists portrayed the “stationary state” toward which society was moving as one of poverty and overpopulation, causing one critic to dub economics the “dismal science.”

John Stuart Mill thought otherwise. Mill was one of the most remarkable figures of the nineteenth century. Eldest son of the prominent economist James Mill, John Stuart Mill began studying Greek at age 3, was tutoring the younger members of his family in Latin at age 8, and first read Smith’s *Wealth of Nations* at age 13. His *Principles of Political Economy*, published in 1848, was the standard text on the subject until Alfred Marshall transformed “political economy” into “economics” at the end of the century.

Mill agreed with earlier classical economists that the economy would sooner or later reach a stationary state, but he did not view the prospect as entirely gloomy:



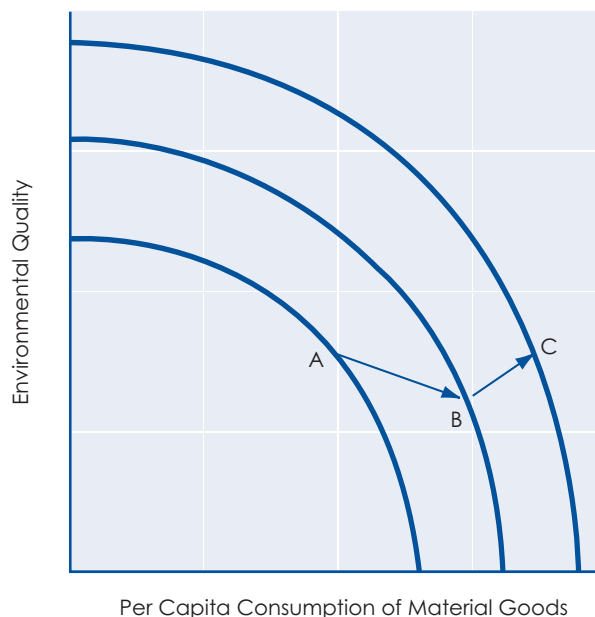
John Stuart Mill

*I cannot ... regard the stationary state of capital and wealth with the unaffected aversion so generally manifested towards it by political economists of the old school. I am inclined to believe that it would be, on the whole, a very considerable improvement on our present condition. I confess I am not charmed with the ideal of life held out by those who think that the normal state of human beings is that of struggling to get on; that the trampling, crushing, elbowing, and treading on each other's heels, which form the existing type of social life, are the most desirable lot of human kind, or anything but the disagreeable symptoms of one of the phases of our industrial progress ...*

*If the earth must lose that great portion of its pleasantries which it owes to things that the unlimited increase of wealth and population would extricate from it, for the mere purpose of enabling it to support a larger, but not a better or happier population, I sincerely hope, for the sake of posterity, that they will be content to be stationary long before necessity compels them to.*

Today Mill’s sentiments are echoed by writers who are concerned about problems of population, pollution, and resource depletion.

FIGURE 17.3 ENVIRONMENTAL QUALITY AND ECONOMIC GROWTH



This figure shows a production possibility frontier for consumption of material goods, on the one hand, and environmental quality, on the other. At any given time there is a trade-off. For example, more power plants of an unchanged kind mean dirtier air; investing more to make power plants cleaner means that less total energy will be produced. Over time, investment and innovation shift the production possibility frontier outward. A choice can be made between two growth paths as the frontier expands. The path from A to B shows an increase in the output of goods and a decrease in environmental quality. Along the path from B to C, investment in cleaner production technologies allow environmental quality to improve while material output also increases.

outward. If, as it does so, the economy follows a growth path like that from point A to point B, people will complain that growth has led to a deterioration of environmental quality. It is not really growth itself that is to blame, however. Instead, the problem lies in the *direction* of growth. Further expansion of the production possibility frontier could make possible growth along a path from point B to point C. That growth path would be possible if more effort and expense were devoted to production of renewable energy and restoring wildlife habitats. Comparing the arrow from A to B with that from B to C, we see that growth can bring both more material output and improved environmental quality *if people choose to go that way*. As is often the case, our problems turn out to arise not from inescapable economic laws but from the choices we make.

Of these two possibilities, in which direction is the world actually headed? Many economists believe that the early stages of economic development move a country in a direction like that from A to B, and later development moves it from B to C. Among other evidence, they point to the fact that standard measures show better air and water quality in the wealthiest countries like the United States and Sweden than in middle-income countries like Mexico or China. Within the United States itself, some measurements of envi-

ronmental quality, for example, quality of urban air, improved in recent decades after deteriorating through much of the nineteenth and early twentieth centuries.<sup>3</sup>

## Short-Run Macroeconomics and the Business Cycle

The first section of this chapter focused on prosperity—economic growth and its causes in the long run. In this section we turn to issues of stability, that is, to short-run variations around the long run trends of real GDP, inflation, and employment.

Figure 17.4 shows growth of the U.S. economy since 1991. Because of increasing labor inputs, capital accumulation, and technological and organizational improvements, the economy's production capacity, known as its **natural** or **potential level of real output** (natural or potential real GDP) has risen steadily.

As the chart shows, real GDP has moved sometimes above and sometimes below the long-term trend line. At any point in time, the difference between the current level of real output and natural real output is known as the **output gap**. The output gap is stated as a percentage of natural real output. A positive output gap indicates that real output is above its natural level; a negative output gap indicates that it is below the natural level. In some years real GDP has not just grown more slowly than the trend but has actually

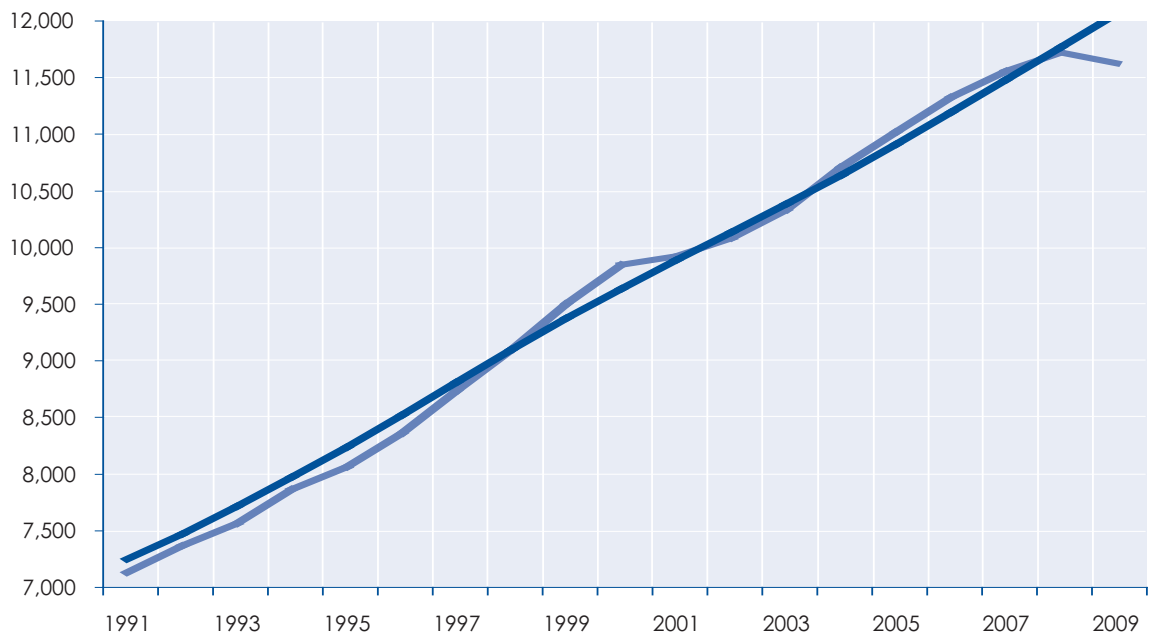
### Natural level of real output

The trend of real GDP growth over time, also known as potential real output

### Output gap

The economy's current level of real output minus its natural level of real output

**FIGURE 17.4** ACTUAL AND NATURAL REAL OUTPUT IN THE UNITED STATES 1991–2009



This chart shows figures for U.S. actual and natural real GDP. Natural real GDP (also known as potential real GDP) represents the long-term trend of growth for the economy. In any given year, actual real GDP may fall below or rise above the trend. The difference between actual and natural real GDP in any year is known as the output gap.

SOURCES: Author's calculations based on data from Federal Reserve Bank of St. Louis and OECD Economic Outlook.

## Business cycle

A pattern of irregular but repeated expansion and contraction of aggregate economic activity

## Recession

A cyclical economic contraction that lasts six months or more

fallen. This pattern of irregular but repeated expansion and contraction of overall economic activity about its natural level is known as the **business cycle**.

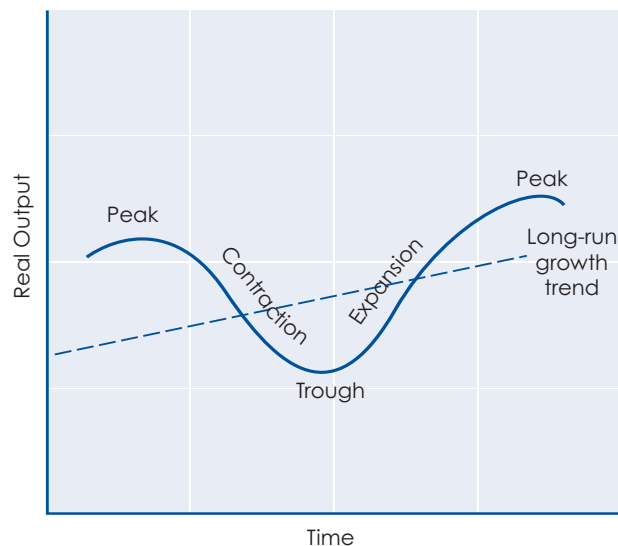
## Phases of the Business Cycle

An idealized business cycle is shown in Figure 17.5. The cycle can be divided into four phases. The peak of the cycle is the point at which real output reaches a maximum. At that point there is a positive output gap. The period during which real output falls is known as the *contraction* phase. At the end of the contraction, real output reaches a minimum known as the *trough* of the cycle. At that point there is a negative output gap. After the trough, real output begins to grow again and the economy enters an *expansion* that lasts until a new peak is reached.

According to a commonly used (although somewhat simplified) definition, a contraction lasting six months or more is a **recession**. The most recent recession, which began in late 2007, can be seen clearly in Figure 17.4.

The nineteenth and early twentieth centuries saw a number of cyclical contractions that were much more severe than any since World War II. These were called *depressions*. The most spectacular of these was the Great Depression of the 1930s, which actually consisted of two contractionary periods separated by an incomplete recovery. During this episode, real output fell by one-third, the price level fell by one-quarter, and the unemployment rate climbed to 24 percent of the labor force.

FIGURE 17.5 AN IDEALIZED BUSINESS CYCLE



This figure shows an idealized business cycle. The cycle begins from a peak and then enters a contraction. A contraction lasting six months or more is called a recession. The low point of the cycle is known as its trough. Following the trough, the economy enters an expansion until a new peak is reached. Because real GDP varies about an upward trend, each cyclical peak tends to carry the economy to a higher level of real GDP than the previous one.

Because no succeeding contraction has come close to it in severity, the term *depression* has passed out of use in all but historical contexts.

## Employment and the Business Cycle

As real output rises and falls over the business cycle, employment also varies. Changes in employment tend to get even more public attention than changes in output. After all, real GDP is a very abstract concept, whereas the security of one's job, and the jobs of relatives and friends, has a far bigger personal impact than a percentage-point wiggle one way or the other in real output.

### Unemployment rate

The percentage of the labor force that is unemployed

### Employed

A term used to refer to a person who is working at least one hour a week for pay or at least fifteen hours per week as an unpaid worker in a family business

### Unemployed

A term used to refer to a person who is not employed but is actively looking for work

### Labor force

The sum of all individuals who are employed and all individuals who are unemployed

**MEASURING UNEMPLOYMENT TRENDS** The most widely used measure of the national employment situation is the **unemployment rate**, which is the percentage of the labor force that is unemployed at a given time. Understanding this deceptively simple statistic requires some definitions of related terms and a discussion of measurement technique.

The U.S. Bureau of Labor Statistics, in conjunction with the Bureau of the Census, obtains the data used in calculating unemployment from a monthly sample of about 50,000 randomly selected households. Field agents go to those households and ask a series of questions about the job status of each member of the household. The questions include such things as: Did anyone work last week? Did anyone look for work? How long has the person been looking for work? How did the person go about looking?

On the basis of their answers to these questions, people are counted as employed or unemployed. A person is considered to be **employed** if he or she works at least one hour per week for pay or at least fifteen hours per week as an unpaid worker in a family business. A person who is not currently employed but is actively looking for work is said to be **unemployed**. The employed plus the unemployed—that is, those who are either working or looking for work—constitute the **labor force**.

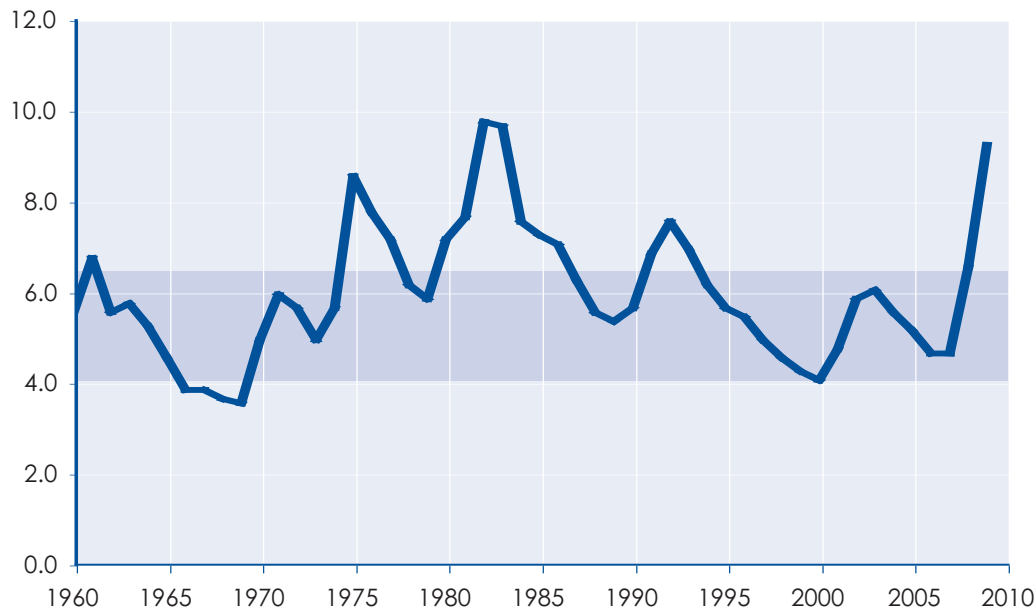
If people are neither employed nor actively looking for work, they are not counted as members of the labor force. People out of the labor force include many people who could work but choose not to for one reason or another. For example, they may be full-time students or retired.

The most commonly reported data for the labor force (the *civilian labor force*) and employment also exclude members of the armed forces.

Figure 17.6 presents unemployment data for the United States since 1960. The shaded band, labeled “low to moderate unemployment,”



The unemployment rate is the most widely used measure of the national employment situation.

**FIGURE 17.6 U.S. CIVILIAN UNEMPLOYMENT RATE (PERCENT OF LABOR FORCE)**

There is no one level of unemployment that is universally accepted as best for the economy. Some unemployment is always present as people change jobs or they enter the labor force in a normally functioning economy. This figure highlights a range of 4 to 6.5 percent unemployment that can be considered “low to moderate.” Until 1975, unemployment stayed within that range, for the most part. The mid-1970s and early 1980s saw much higher rates. During the 1990s and early 2000s, unemployment returned to the low-to-moderate range, but it rose sharply again during the recession that began in late 2007.

SOURCE: Table B-43 ERP 05 Civilian unemployment rate. Economic Report of the President, 2009, Table B-42

reflects a range of views about reasonable economic performance. During the 1950s and 1960s, unemployment stayed within this range most of the time. In the 1970s and early 1980s, the unemployment rate took a turn for the worse. It jumped to 8.3 percent in 1975 and fell into the moderate range in only two of the next twelve years. The period from the early 1990s to the mid-2000s marked another extended period of low to moderate unemployment.

**GRAY AREAS IN THE MEASUREMENT OF UNEMPLOYMENT** There are many gray areas in the measurement of unemployment. The official unemployment rate can be criticized for both understating and overstating the “true” number of unemployed adults. One way to understand these gray areas better is to compare the official definition of unemployment with two common-sense definitions, namely, “not working” and “can’t find a job.”

The official definitions of employment and unemployment differ greatly from the simple definitions of “working” and “not working.” On the one hand, there are many people who work but are not officially employed. By far the largest such group consists of people who work full time at housekeeping and childcare. These occupations are

counted as employment if they are performed for pay, but much of such work is done without pay. Also, children under sixteen are not counted either as employed or as part of the labor force, even if they work for pay.

On the other hand, not everyone who does not work is counted as unemployed. In addition to those who are not looking for work and, therefore, are not counted in the labor force, people who have jobs but are absent from them because of illness, bad weather, or labor disputes are nonetheless counted as employed. Finally, there are those who work part time and are counted as employed but are actively seeking full-time employment and people who have full-time jobs that do not make full use of their skills and education. People in both of these situations are sometimes referred to as *underemployed*.

The second common-sense definition of unemployment, “can’t find a job,” also only loosely fits the official definition. In some ways, the official definition overstates the number of people who cannot find jobs. Some people who are counted as unemployed are on layoffs from jobs to which they expect to be recalled or have found jobs that they expect to start within 30 days. Other people who are counted as unemployed could easily find a job of some kind but prefer to take their time and find just the kind of job they want. (People who are not the sole income earners in their households, for example, may be in a position to look longer and be more selective than people in households with no other income.) Finally, there is some doubt as to whether the description “can’t find a job” fits people who could have stayed on at their last job but quit to look for a better one.

In other ways, however, the official definition of unemployment understates the number of people who cannot find jobs. For example, it does not include **discouraged workers**—people who are not looking for work because they believe no suitable jobs are available. The Bureau of Labor Statistics officially counts as a discouraged worker anyone who has looked for work within the last six months but is no longer actively looking. The description “can’t find a job” could also be applied to the underemployed—those who have part-time jobs but would take full-time jobs if they could find them.

Because the unemployment rate is an imperfect measure of the state of the labor market, the U.S. Bureau of Labor Statistics publishes several alternative measures of labor underutilization. For example, a measure known as “U-6” includes many discouraged and underemployed workers along with those who are officially unemployed. In December 2008, when the official unemployment rate was 7.2 percent, the U-6 index stood at 13.5 percent.

**THE NATURAL RATE OF UNEMPLOYMENT** Figure 17.6 emphasized short-term swings in the unemployment rate associated with the business cycle. For a longer-term perspective, it is useful to look at trends in what economists call the **natural rate of unemployment**.<sup>4</sup> This is the rate of unemployment that prevails when real GDP is at its natural level. Another way to express it is to say that unemployment is at its natural rate when there is a zero output gap.

Figure 17.7 shows the trend of the natural rate of unemployment in the United States with comparison to that in major economies of the European Union. As the figure shows, the natural rate of unemployment has fallen gradually in the United

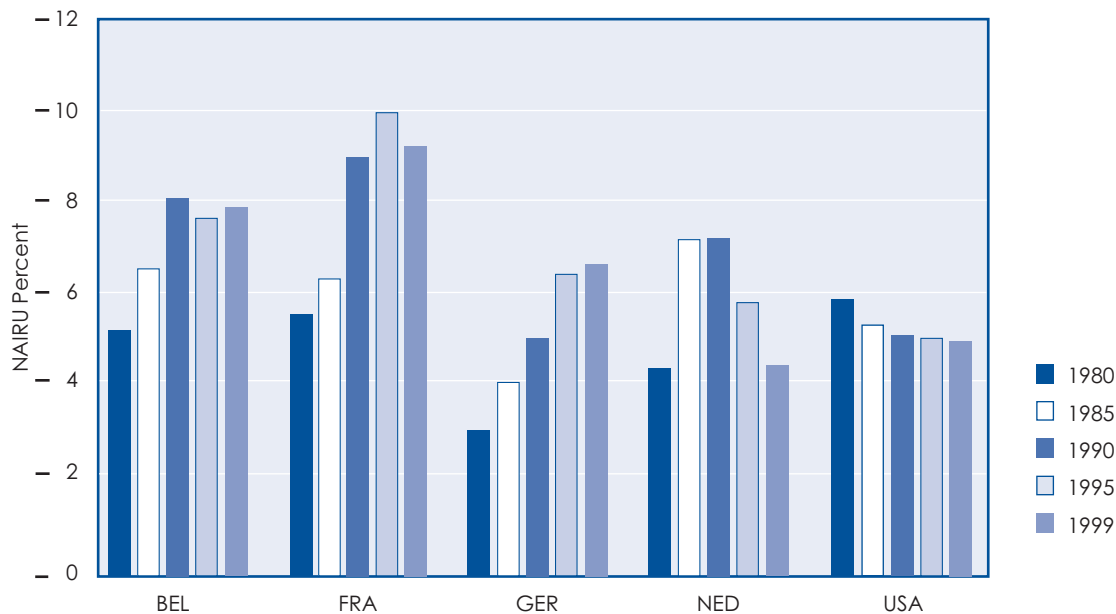
### Discouraged worker

A person who would work if a suitable job were available but has given up looking for such a job

### Natural rate of unemployment

The rate of unemployment that prevails when real output is at its natural level

FIGURE 17.7 NATURAL RATE OF UNEMPLOYMENT TRENDS IN THE UNITED STATES AND EUROPE



This figure shows trends in the natural rate of unemployment for the United States and several European economies. While the natural rate of unemployment has fallen gradually in the United States since 1980, it has risen in France and Germany, Europe's largest economies. Unemployment rates, which were once much lower in France and Germany than in the United States, are now higher.

SOURCE: Achim Kemmerling et al., *Regional Input: Labor Markets*, Eurozoneplus Working Paper 6a, Jean Monnet Center of Excellence, Freie Universität Berlin, Sept. 2002, Chart 1

States since the 1980s. It is now lower than that in the largest European economies. Similar data for the United Kingdom and Ireland, where labor markets are structurally more similar to that of the United States than to those of Continental Europe, would show generally lower natural and actual unemployment rates than those of the two largest Continental European economies, France or Germany.

This divergence of unemployment trends within the EU has been a significant source of controversy. Some economists argue that the trends show a clear superiority of the so-called "Anglo-American" model of flexible labor markets with relatively few restrictions on hiring and firing workers and with a relatively modest social safety net for the unemployed. By comparison, according to these thinkers, the "Franco-German" model is fundamentally flawed. Although it intends to protect jobs by making layoffs difficult and making life easy for the unemployed, it has the unintended effect of providing too few incentives for employers to hire and workers to seek jobs. In reply, thinkers aligned with Europe's tradition of social democracy see the Anglo-American model as harsh and uncaring. Many social democratic thinkers in France and Germany believe their labor markets can be reformed without sacrificing their countries' traditional emphasis on generous social protection of workers.

**OTHER MEASURES OF UNEMPLOYMENT** The unemployment rate is not the only measure of the state of the labor market. Quite aside from the problems of definition just discussed, the unemployment rate may give a misleading picture of what is happening in the labor market because it is sensitive both to changes in its numerator (the number of unemployed) and its denominator (the size of the labor force). During the early stages of recovery from a recession, the labor force often grows at the same time that the number of employed people grows, and the unemployment rate remains unchanged or even increases. This happens because news of possible new jobs draws discouraged workers back into the labor force, but the new workers do not immediately find work. Once a recovery is underway, the size of the labor force stabilizes and the unemployment rate may fall even though just a few new jobs are created.

Because month-to-month changes in the unemployment rate do not give a complete picture, news reports of short-term labor market developments often focus on the number of new payroll jobs created in a given month. The monthly figure for change in payroll jobs is based on a survey of employers that is entirely separate from the household survey used to calculate the unemployment rate. The sample size of the employer survey is larger, and some people consider it more reliable at times when unemployment data and payroll jobs data point in opposite directions. For example, in November 2006, the Bureau of Labor Statistics reported that the number of new jobs created was a larger-than-expected 132,000 but, at the same time, that the unemployment rate rose from 4.4 to 4.5 percent. The reason unemployment rose was that thousands of people streamed into the labor market to find temporary jobs for the holiday season, raising the denominator of the unemployment ratio at the same time the 132,000 new jobs increased the numerator.

Another job statistic that helps complete the picture of the labor market is the **employment-population ratio**. This ratio is the percentage of the noninstitutional adult population that is employed. The denominator of the employment-population ratio, which is governed by such demographic factors as birthrates and death rates, changes slowly and predictably. Hence, this ratio is less likely than the unemployment rate to stand still, while the economy moves ahead, or to give other misleading signals. In particular, during the early stages of an economic recovery when firms first start hiring new workers, the employment-population ratio will rise even though the unemployment rate may temporarily not change because of the return of discouraged workers to the labor force.<sup>5</sup>

**FRictionAL, STRUCTURAL, AND CYCLICAL UNEMPLOYMENT** One final way to look at the state of the labor market is to ask how long people remain unemployed. During times of prosperity, many of the unemployed are out of work only briefly. For example, Figure 17.8 shows that as of the fourth quarter of 2006, when the job market was at its strongest, 38 percent of unemployed workers were out of a job for five weeks or less. By the first quarter of 2009, the job market had weakened significantly, but more than 30 percent of unemployed workers were still out for five weeks or less between jobs.

The term **frictional unemployment** is used to refer to short-term, largely voluntary unemployment spells needed to match jobs and workers. It represents people who quit old jobs to look for new ones, people who take a week or so to move or go on vacation before starting a newly found job, and people who enter occupations,

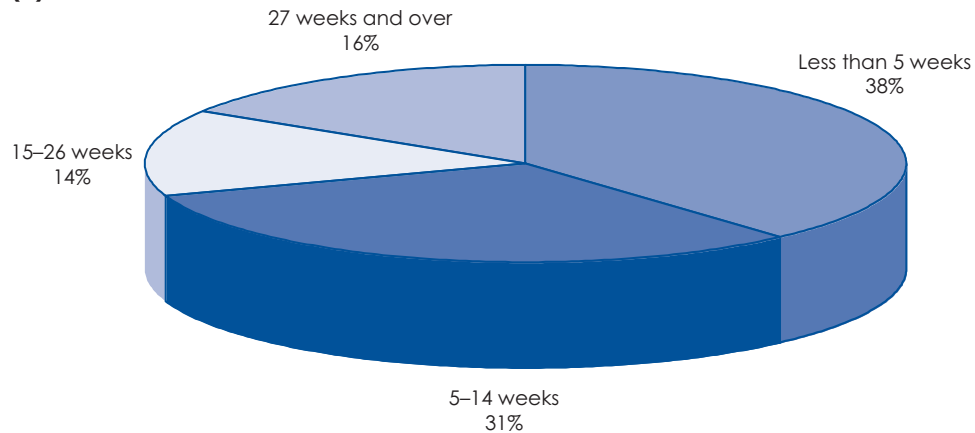
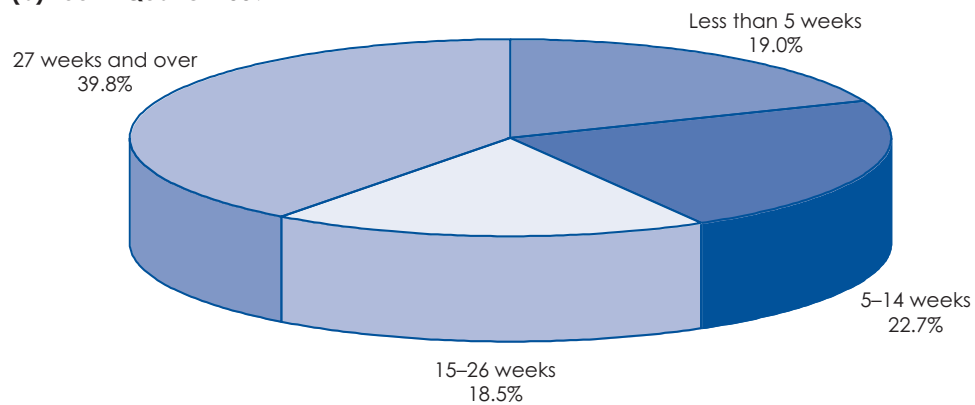
### **Employment-population ratio**

The percentage of the noninstitutional adult population that is employed

### **Frictional unemployment**

The portion of unemployment that is accounted for by the short periods of unemployment needed for matching jobs with job seekers

FIGURE 17.8 U.S. UNEMPLOYMENT BY DURATION

**(a) Fourth Quarter 2006****(b) Fourth Quarter 2009**

As this chart shows, there is considerable variation in the length of time people are unemployed. When the job market is strong, as it was in 2006, frictional unemployment predominates. When the job market weakens, structural unemployment rises; but many people are still out of work for relatively short spells.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics

### Structural unemployment

The portion of unemployment that is accounted for by people who are out of work for long periods because their skills do not match those required for available jobs

such as construction work, in which temporary layoffs are frequent but year-round earnings are good. Economists view a certain level of frictional unemployment as necessary in a labor market in which information is incomplete and the costs of a job search are often high.

In contrast to frictional unemployment, the term **structural unemployment** is applied to people who spend long periods out of work, often with little prospect of finding adequate jobs. Figure 17.8 shows that as of late 2006, just 16 percent of unem-

ployed workers were out of a job for half a year or more. By 2009, the percentage of structurally unemployed had risen as the economy fell into recession. Some workers who experience prolonged joblessness once held good jobs but lost them because the shifting structure of the economy has made their skills obsolete. This category of workers also includes people with few skills and work experience needed to find steady work. Workers without high-school education are particularly vulnerable to structural unemployment, and structural unemployment rates are higher for some minorities than for the population as a whole.

As Figure 17.8 shows, both frictional and structural unemployment are present in good years as well as bad ones. Frictional plus structural unemployment constitute the natural rate of unemployment, but unemployment is not always at its natural level. In some years, a vigorous economic expansion makes jobs so easy to find that the duration of unemployment falls below normal, reducing the number of unemployed below the number normally unemployed for frictional and structural reasons. Even many of the hard-core, structurally unemployed find jobs. In other years, business contractions cause unemployment to rise above its natural rate. At such times even workers who have worked a long time for their present employer and who have excellent skills may find themselves temporarily laid off. The average duration of unemployment rises above normal frictional plus structural levels. The difference between the actual unemployment rate in a particular month and the natural rate is known as **cyclical unemployment**. When the economy slows down, cyclical unemployment is added to frictional and structural unemployment. At the peak of an expansionary period, cyclical unemployment is negative.

### **Cyclical unemployment**

The difference between the observed rate of unemployment at a given point in the business cycle and the natural rate of unemployment

### **Inflation**

A sustained increase in the average level of prices of all goods and services

### **Price stability**

A situation in which the rate of inflation is low enough so that it is not a significant factor in business and individual decision making

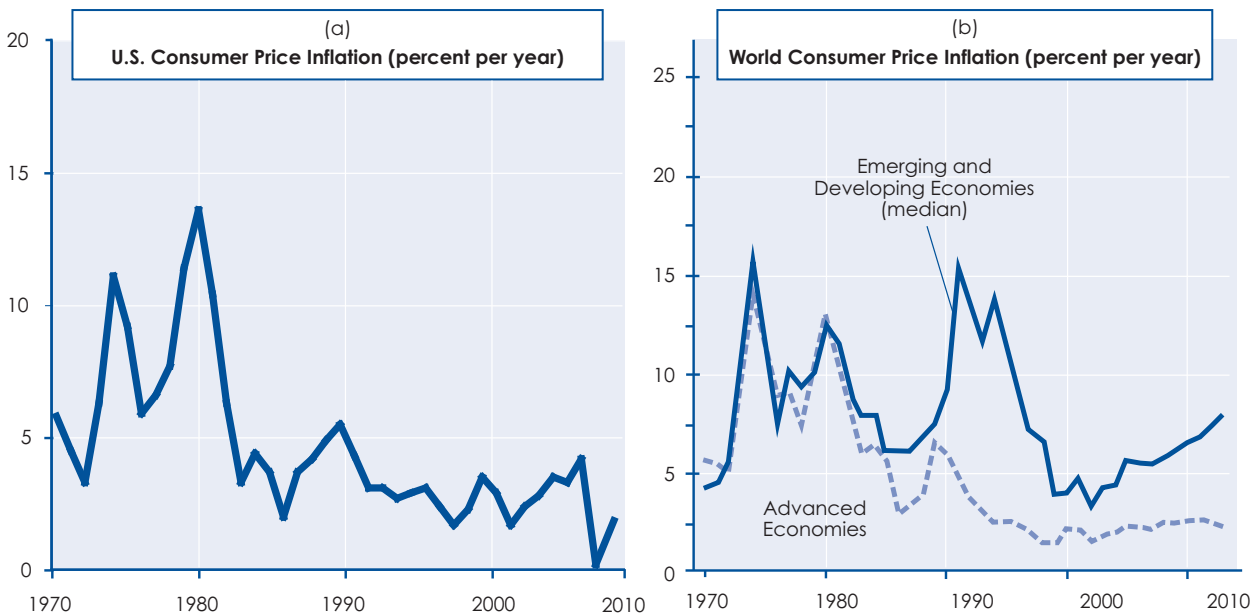
## **Price Stability**

Up to this point, our discussion has focused on real variables—real output and the level of employment. However, changes in the prices at which goods and services are sold are also important. **Inflation**, which means a sustained increase in the average level of prices of all goods and services, is a potential disruptive force in the economic life of nations and individuals. **Price stability**—a situation in which the rate of inflation is low enough so that it is not a significant factor in business and individual decision making—can be considered another of the major goals of macroeconomic policy.

Figure 17.9 shows inflation trends in the U.S. economy and around the world. Before the 1970s, U.S. inflation was low. In fact, for the entire century from the Civil War to the mid-1960s, the U.S. peacetime inflation rate averaged only about 2 percent per year. Beginning in the 1970s, however, inflation rose and became highly variable. The struggle against inflation was a dominant theme in economic policy from the mid-1970s through the 1980s. By the late 1980s, inflation was again brought under control and has remained low since.

Figure 17.9b shows that the rise of inflation in the 1970s and its decline since the 1990s was part of a world-wide phenomenon. It also shows that the U.S. inflation experience was moderate by comparison with the average for other countries. There was a brief spike in inflation throughout the world in early 2008 as a result of a surge in global food and energy prices, but inflation fell quickly again in the second half of the year as the world economy began to slow.

FIGURE 17.9 INFLATION IN THE UNITED STATES AND AROUND THE WORLD



Part a of this figure shows the trend of inflation in the United States since 1970, as measured by the annual percentage change in the Consumer Price Index. The 1970s and early 1980s were years of high and variable inflation; but by the late 1980s, inflation was brought under control. By late 2008, inflation had vanished, and many economists saw a possibility of deflation. Part b shows that what the U.S. experienced was shared by both developing and advanced economies around the world. An upturn in world inflation in the mid-2000s, fueled by higher energy and commodity prices, was reversed by the spreading global financial crisis.

SOURCE: Figure 4.9a, Economic Report of the President Table B-64. Figure 4.9b: IMF, World Economic Outlook October 2008, Fig 1.1.

## Transfer payments

Payments by government to individuals not made in return for services currently performed, for example, unemployment compensation and pensions

## Indexation

A policy of automatically adjusting a value or payment in proportion to changes in the average price level

## Short-Run Costs of Inflation

As can be seen in Figure 17.9, the rate of inflation varies over the business cycle. As the cycle approaches its peak, inflation accelerates. During recessions, inflation shows again. As inflation rises and falls over the business cycle, its costs are distributed unevenly across the population.

Most people receive the bulk of their income in the form of wages and salaries. Wage and salary earners often feel that they are badly hurt by inflation. They compare what their paychecks can buy each month at ever-higher prices with what they would be able to buy with the same paychecks if prices remained stable. However, measured over a period of several years, nominal wages and salaries tend to adjust to inflation. Real wage and salary earnings in the United States rose during the inflationary 1970s and 1980s and also during the low-inflation 1960s and 1990s. People who receive income in the form of social security, other government **transfer payments**, and some private pensions are protected from inflation by automatic adjustments that compensate for changes in consumer prices. The automatic adjustment for inflation of wages, benefits, or other payments is called **indexation**.

Inflation also affects the income of creditors, who receive interest from mortgage loans, corporate bonds, and the like, and that of debtors, who pay interest. The traditional view is that inflation injures creditors and aids debtors. Suppose, for example, that I borrow \$100 from you today, promising to repay the \$100 of principal plus \$5 interest, or \$105 in all, at the end of a year. If there is no inflation during the year, I get the use of the funds for the year; and you get \$5 of real income in the form of the interest on the loan. Suppose, however, that during the year the price level goes up by 10 percent. In that case, I get the use of the funds for the year, and what is more, I pay you back in depreciated dollars. The \$105 I give you at the end of the year will buy only about as much then as \$95 will buy today. Your real income is negative because the real value of \$105 a year from now is less than the real value today of the \$100 that I borrow. I, the debtor, benefit from inflation; and you, the creditor, are hurt.

However, this view of the effects of inflation is incomplete in that it does not distinguish between *unexpected* and *expected* inflation. The example just given implicitly assumes that neither you nor I (the lender and borrower, respectively) expected any inflation at the time the loan was made. Suppose instead that we both had expected a 10 percent increase in the price level between the time the loan was made and the time it was repaid. In that case, you would not have loaned me the \$100 in return for a promise to repay just \$105 at the end of the year. Instead, you would have insisted on a repayment of \$115—the \$100 principal, plus \$10 to compensate you for the decline in purchasing power of the principal plus \$5 of real interest income. I, in turn, would have agreed to those terms, knowing that the \$115 payment under conditions of 10 percent inflation would be no more burdensome than the \$105 payment I would have agreed to if no inflation had been expected.

This example shows that we need to distinguish between two interest concepts: the **nominal interest rate**, which is the interest rate expressed in the ordinary way, in current dollars, and the **real interest rate**, which is the nominal rate minus the rate of inflation. In the example, a 15 percent nominal interest rate, given a 10 percent rate of inflation, corresponds to a 5 percent real interest rate.

The distinction between nominal and real interest rates helps us to understand the impact of expected and unexpected inflation on debtors and creditors. Expected inflation, it turns out, is neutral between debtors and creditors because the parties will adjust the nominal interest rate to take the expected inflation into account. If they would agree to a 5 percent nominal interest rate given no expected inflation, they would agree to a 15 percent nominal rate given 10 percent expected inflation, a 20 percent nominal rate given 15 percent expected inflation, and so on. All of these adjusted rates correspond to a 5 percent real rate. Unexpected inflation is not neutral, however. Unexpected inflation harms creditors and benefits debtors. If you lend me \$100 at a 5 percent nominal rate of interest, and the price level unexpectedly rises by 10 percent over the year before I repay the loan, the real rate of interest that you receive is minus 5 percent.

### Nominal interest rate

The interest rate expressed in the usual way: in terms of current dollars without adjustment for inflation

### Real interest rate

The nominal interest rate minus the rate of inflation

## Long-Run Costs of Inflation

In the short run, unexpected inflation helps some people while it hurts others. In the long run, however, inflation, whether expected or unexpected, has other costs that harm the economy as a whole without producing offsetting benefits.

One problem arises from the way inflation upsets economic calculations. When the rate of inflation is high and variable, as it was in the United States in the 1970s and early 1980s, business planning becomes difficult. The outcomes of investment projects that require firms to incur costs now in the hope of making profits later come to depend less on manufacturing and marketing skills than on the ups and downs of wages, interest rates, and the prices of key raw materials. As the investment environment becomes riskier, firms may avoid projects with long-term payoffs and gamble instead on strategies that promise short-term financial gains. Similarly, households, facing more uncertainty about future price trends, may reduce their long-term saving in favor of increased current consumption. These effects are hard to measure, but many economists think that they are substantial.

Other costs arise from the effort to rid the economy of inflation once it has become established. The experiences of many countries suggest that bringing inflation under control has a cost in terms of higher unemployment and lower real output. For example, the slowdown in inflation in the United States in the early 1980s coincided with back-to-back recessions during which the unemployment rate that reached a peak of more than 10 percent, the worst in half a century.

International comparisons, which include countries that have experienced much more rapid inflation than the United States, show the negative effects of inflation even more clearly. Figure 17.10 shows data on the relationship between growth and inflation from a sample of 103 countries over a 30-year period. There is a clear tendency for inflation to undermine economic growth. Countries that experienced inflation of more than 100 percent per year (that is, a doubling or more of the price level each year) on average experienced decreases in real GDP.

## Deflation

Sometimes a country experiences a period in which the price level falls for a sustained period. Such an episode is known as **deflation**. Superficially, one might think that if inflation is bad, deflation must be good; but that turns out not to be the case. Deflation can be as harmful to the economy, or even more so, than inflation. For example, from 1929 to 1933, at the beginning of the Great Depression, the price level in the United States fell by more than 25 percent. Real output fell by a third during this period, and the unemployment rate rose to a record high of 25 percent. More recently, from 1998 to 2005, Japan experienced more gradual deflation of about 1 percent per year. Even

### Deflation

An episode during which the price level falls for a sustained period

**FIGURE 17.10 INFLATION GDP GROWTH, 103-COUNTRY AVERAGE**

On average, inflation higher than a very moderate rate is harmful to economic growth. This chart, based on a sample of 103 countries over a period of thirty years, shows a clear inverse relationship between growth and inflation. Countries with inflation over 100 percent per year tend to have negative economic growth.

SOURCE: Based on data from Atish Gosh and Steven Phillips, *Inflation, Disinflation, and Growth*, IMF Working Paper 98/68, May 1998

this relatively gentle deflation led to stagnation of real output and rising unemployment, an episode that became known as Japan’s “lost decade.”

Because both inflation, if rapid, and deflation, even if moderate, are harmful to the economy, policy makers in most countries aim for a low, but positive, inflation rate. When we speak of price stability as a goal of macroeconomic policy, then, we do not mean a measured rate of inflation of zero. Instead, policy makers in most countries aim to hold the rate of inflation at a rate of something like 2 percent on average over a time horizon of a few years. In later chapters we will look in detail at strategies for steering the economy between the dangers of excessive inflation and deflation.



## Summary

- 1. What trend has economic growth followed in the United States?** Economic growth is most commonly expressed in terms of the rate of growth of *Gross Domestic Product (GDP)*, a measure of the value of the economy's total output of goods and services during a given period of time. To avoid distortions caused by inflation, gross domestic product is expressed in real terms. Real gross domestic product has grown at an average rate of about 2–3 percent since 1950, although that growth has not been steady. Economic growth is widely seen as beneficial, in that it makes possible higher living standards, jobs for those who want them, and more leisure for those who want it. Some people criticize growth as damaging to the environment. In evaluating such damage, the composition of real domestic product as it grows must be considered as well as its rate of growth.
- 2. What is the business cycle?** Over time, the economy undergoes a pattern of irregular but repeated expansion and contraction of aggregate economic activity that is known as the *business cycle*. The point at which output reaches a maximum is known as the peak of the cycle. A contraction, a trough, an expansion, and a new peak follow this. A contraction lasting six months or more is known as a recession. Over the course of the business cycle, the economy sometimes rises above its *natural level of real output*, resulting in a positive *output gap*, and sometimes falls below the natural level, resulting in a negative output gap.
- 3. What is unemployment and why is it important for economic policy?** A person who works at least one hour a week for pay or fifteen hours per week as an unpaid worker in a family business is considered to be *employed*. A person who is not currently employed but is actively looking for work is *unemployed*. The *unemployment rate* is the percentage of the *labor force* that is not employed. Unemployment may be classified as

*frictional*, *structural*, or *cyclical*, depending on its cause. Structural plus frictional unemployment is known as the *natural rate of unemployment*. The *employment–population ratio* is the percentage of the adult non-institutional population that is employed.

- 4. What is inflation and what impact does it have on the economy?** *Inflation* is a sustained increase in the average level of prices of all goods and services. *Price stability* is a situation in which the rate of inflation is low enough so that it is not a significant factor in business and individual decision making. Inflation is frequently measured in terms of the rate of change in the *consumer price index*. In measuring economic quantities, a distinction must be made between *real* values, or values adjusted for inflation, and *nominal* values, or values expressed in the ordinary way, in current dollars. Applying these concepts to interest rates, we can say that the *real interest rate* is equal to the *nominal interest rate* minus the rate of inflation. Inflation disrupts the economy in two ways. First, it harms or benefits individuals according to their source of income. Second, it disrupts economic calculation, thereby discouraging saving and investment. In addition, the effort to stop inflation once it has begun often entails substantial costs. Sustained periods during which the price level falls are known as deflation. Deflation is also harmful to the economy.

## Key Terms

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## Problems and Topics for Discussion

- 1. Your personal labor force status** What is your current labor force status? Are you a member of the labor force? Are you employed? Unemployed? Explain the basis for your answers. When was the last time your labor force status changed? Do you expect it to change soon? Give details.
- 2. Employment hardship** It has been suggested that the unemployment rate should be replaced with an "employment hardship index" that tries to measure the percentage of people who suffer hardship because of their labor force status. What kinds of people who are not now counted as unemployed might fit into this category? What kinds of people who are now counted as unemployed would not suffer hardship? Discuss.
- 3. Real and nominal interest rates** Check with your local bank to find out what interest rates currently apply to (a) one-year savings certificates and (b) three-year automobile loans. Compare these nominal interest rates with the current rate of inflation as measured by the most recently announced rate of change in the consumer price

index. (You can get this statistic from the Web site of the Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov).) If the current rate of inflation were to continue unchanged, what real rate of interest would you earn on the saving certificate? What real rate of interest would you pay on the loan?

- 4. Economic growth and the environment** The pace of economic growth varies from one area of the United States to another. Some regions are growing rapidly with people moving in, much new construction, rising incomes, and so on. Other areas are stagnant or declining with little new construction and people moving away. Which type of area do you live in? Can you identify any environmental problems in your area that seem to be caused by economic growth? Can you identify any environmental problems that seem to be caused by economic decline? What policies could you suggest that would permit growth in your area to take place with less environmental disruption?
- 5. The current state of the business cycle** Unemployment and inflation data are announced monthly, and data on economic growth is announced on a quarterly basis. Watch your local newspaper, *The Wall Street Journal*, or business magazines such as *Business Week* for discussions of the most recent data. What changes have there been? What is happening to the employment rate? Are the employment and unemployment rates moving in the same direction or in opposite directions? What is the current rate of inflation? Is it increasing, decreasing, or staying the same? Judging from available data, in which phase of the business cycle does the economy appear to be at the moment?

## Case for Discussion

### *Unemployment and Politics*

What did the elections of Presidents Truman, Johnson, Nixon, and Clinton have in common? Those of

Presidents Kennedy, Reagan, and Obama? The answer, for the first four, is that they all held the presidency for their parties in election years when the unemployment rate was falling. The other three achieved a change of party in years when the unemployment rate was stagnant or rising.

The election of 1982, in which incumbent President George H. W. Bush faced challenger Bill Clinton, provides a particularly interesting example. In the spring of that year, the economy was just beginning recovery from a recession although its end had not yet been officially announced. Although the economy was growing, it was doing so at a rate of only about 2 percent per year. That was well below the average rate of growth of 4.6 percent per year for the six post–World War II elections in which the incumbent party retained power. In June, employers slashed 117,000 jobs from their payrolls, and the unemployment rate hit an eight-year high. The jobs data made every news broadcast, and the news was bad.

Moreover, although the first President Bush could hope for good news between early summer and election time, history suggests that such news would be too little, too late. Economists like Ray Fair of Yale, who have studied the economics-politics link in detail, say that last-minute improvements are not enough. The economy's performance during the spring and summer is more important in an election year.

As it turns out, the economic numbers did improve later in the year. Unemployment fell again. An early estimate of the rate of economic growth in the third quarter, announced just before the election, turned out to be 2.7 percent, higher than forecasters had anticipated. Three weeks after the election, this was revised upward to 3.9 percent; but the third-quarter improvement was indeed too little, too late. Challenger Clinton sailed through the election by a wide margin. What is more, by the time of the next presidential election in 1996, the economy was moving strongly forward again. Thanks in part to the favorable economic climate, Clinton was re-elected for a second term.

## QUESTIONS

1. If the economy was growing at a rate of 2 percent or better in mid-1992, how is it possible that the unemployment rate was rising?
2. The unemployment rate rose by only 2.7 percentage points from its low of 5.1 percent in March 1989, to its peak in June 1992. A loss of 2.7 percent of voters would not have been nearly enough to defeat the incumbent president. However, his actual vote total fell far more than that. This implies that a rise in unemployment affects the voting behavior not just of those who are actually unemployed, but of many more people as well. Why do you think this is the case?
3. Use your Internet research talents to compare the role of employment as an issue in the 1992 presidential election with that in the 2008 election. What were the beginning and end dates of the recessions that preceded those elections? Based on past experience, how much longer would the “Bush boom” have had to continue to give the Republicans a good chance of holding the White House in 2008?

## End Notes

1. Chapter 19 will give a formal definition of GDP and explain the methods used to measure it.
2. Chapter 16 explores the issues of poverty and equality in the United States and around the world in detail.
3. For a thorough discussion of these issues, see Susmita Dasgupta et al., “Confronting the Environmental Kuznets Curve,” *Journal of Economic Literature*, Vol. 16 No. 1 (Winter 2002), pp. 147–168.
4. The natural rate of unemployment tends to be associated with periods during which the rate of inflation is neither accelerating nor decelerating. For that reason, another name for it is the *non-accelerating-inflation rate of unemployment*, or NAIRU. The relationship between inflation and changes in real output and unemployment will be explored in detail in later chapters.

5. All three measures of the U.S. labor market situation can be obtained from the Employment Situation Summary released monthly by the Bureau of Labor Statistics, available on line at [www.bls.gov](http://www.bls.gov).

