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CHAPTER 9

# Business Cycles, Unemployment, and Inflation

## Learning Objectives

- LO9.1 Describe the business cycle and its primary phases.
- LO9.2 Illustrate how unemployment is measured and explain the different types of unemployment.
- LO9.3 Explain how inflation is measured and distinguish between cost-push inflation and demand-pull inflation.
- LO9.4 Relate how unanticipated inflation can redistribute real income.
- LO9.5 Discuss how inflation may affect the economy's level of real output.

As indicated in Chapter 8, the United States has experienced remarkable economic growth over time. But this growth has not been smooth, steady, and predictable from year to year. At various times the United States has experienced recessions, high unemployment rates, or high inflation rates. For example, U.S. unemployment rose by 8 million workers and the unemployment rate increased from 4.7 percent to 10.1 percent during the 2007–2009 recession. Other nations have also suffered high unemployment rates at times. As just one example, Spain's unemployment rate exceeded 26 percent in 2012. Also, inflation has occasionally plagued the United States and other nations. For instance, the U.S. inflation rate in 1980 was 13.5 percent. Zimbabwe's inflation soared to 26,000 percent in 2007!

Our goal in this chapter is to examine the concepts, terminology, and facts relating to macroeconomic instability. Specifically, we want to discuss the business cycle, unemployment, and inflation. The concepts discussed are extremely important for understanding subsequent chapters on economic theory and economic policy.

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## The Business Cycle

LEARNING OBJECTIVE 1 Describe the business cycle and its major phases.



The long-run trend of the U.S. economy is one of economic growth, as stylized by the upsloping line labeled “Growth Trend” in Figure 9.1. But growth has been interrupted by periods of economic instability usually associated with **business cycles**. Business cycles are alternating rises and declines in the level of economic activity, sometimes over several years. Individual cycles (one “up” followed by one “down”) vary substantially in duration and intensity.

### Phases of the Business Cycle

Figure 9.1 shows the four phases of a generalized business cycle:

- At a **peak**, such as the middle peak shown in Figure 9.1, business activity has reached a temporary maximum. Here the economy is near or at full employment and the level of real output is at or very close to the economy's capacity. The price level is likely to rise during this phase.
- A **recession** is a period of decline in total output, income, and employment. This downturn, which lasts 6 months or more, is marked by the widespread contraction of business activity in many sectors of the economy. Along with declines in real GDP, significant increases in unemployment occur. Table 9.1 documents the 10 recessions in the United States since 1950.

**FIGURE 9.1** The business cycle. Economists distinguish four phases of the business cycle; the duration and strength of each phase may vary.

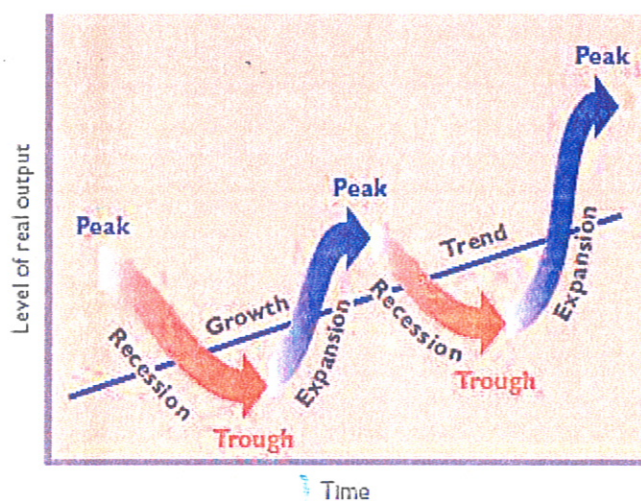


TABLE 9.1 U.S. Recessions since 1950

Period	Duration, Months	Depth (Decline in Real Output)
1953–54	10	–2.6%
1957–58	8	–3.7
1960–61	10	–1.1
1969–70	11	–0.2
1973–75	16	–3.2
1980	6	–2.2
1981–82	16	–2.9
1990–91	8	–1.4
2001	8	–0.4
2007–09	18	–4.3

Source: National Bureau of Economic Research, [www.nber.org](http://www.nber.org), Bureau of Economic Analysis, [www.bea.gov](http://www.bea.gov), and Minneapolis Federal Reserve Bank, "The Recession and Recovery in Perspective," [www.minneapolisfed.gov](http://www.minneapolisfed.gov). Output data are in 2000 dollars.

- In the **trough** of the recession or depression, output and employment “bottom out” at their lowest levels. The trough phase may be either short-lived or quite long.
- A recession is usually followed by a recovery and **expansion**, a period in which real GDP, income, and employment rise. At some point, the economy again approaches full employment. If spending then expands more rapidly than does production capacity, prices of nearly all goods and services will rise. In other words, inflation will occur.

Although business cycles all pass through the same phases, they vary greatly in duration and intensity. Many economists prefer to talk of business “fluctuations” rather than cycles because cycles imply regularity while fluctuations do not. The Great Depression of the 1930s resulted in a 27 percent decline in real GDP over a 3-year period in the United States and seriously impaired business activity for a decade. By comparison, the U.S. recessions detailed in Table 9.1 were less severe in both intensity and duration.

The Business Cycle Dating Committee of the National Bureau of Economic Research (NBER), a nonprofit economic research organization, declares the start and end of recessions in the United States. Citing evidence of declining real output and falling employment, the NBER officially declared that the latest recession began in December 2007. The NBER subsequently declared that the Great

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that its declaration was not a forecast for the future path of the economy.

Recessions, of course, occur in other countries, too. For example, nearly all industrial nations and many developing nations have suffered recessions in the past several years. Page 197

## Causation: A First Glance

The long-run trend of the U.S. economy is expansion and growth. That is why the business cycles in Figure 9.1 are drawn against a trend of economic growth. A key issue in macroeconomics is why the economy sees business cycle fluctuations rather than slow, smooth growth. In terms of Figure 9.1, why does output move up and down rather than just staying on the smooth growth trend line?

Economists have developed several possible explanations. But before turning to them, recall that in Chapter 6 we explained that these theories are founded on the idea that fluctuations are driven by shocks—unexpected events that individuals and firms may have trouble adjusting to. Also recall that short-run price stickiness is widely believed to be a major factor preventing the economy from rapidly adjusting to shocks. With prices sticky in the short run, price changes cannot quickly equalize the quantities demanded of goods and services with their respective quantities supplied after a shock has happened. Instead, the economy is forced to respond to shocks in the short run primarily through changes in output and employment rather than through changes in prices.

Economists cite several possible general sources of shocks that can cause business cycles.

- **Irregular innovation** Significant new products or production methods, such as those associated with the railroad, automobile, computer, and Internet, can rapidly spread through the economy, sparking sizable increases in investment, consumption, output, and employment. After the economy has largely absorbed the new innovation, the economy may for a time slow down or possibly decline. Because such innovations occur irregularly and unexpectedly, they may contribute to the variability of economic activity.
- **Productivity changes** When productivity—output per unit of input—unexpectedly increases, the economy booms; when productivity unexpectedly decreases, the economy recedes. Such changes in productivity can result from unexpected changes in resource availability (of, say, oil or agricultural commodities) or from unexpected changes in the general rate of technological advance.
- **Monetary factors** Some economists see business cycles as purely monetary phenomena. When a nation's central bank shocks the economy by creating more money than people were expecting, an inflationary boom in output occurs. By contrast, printing less money than people were expecting triggers an output decline and, eventually, a price-level fall.
- **Political events** Unexpected political events, such as peace treaties, new wars, or the 9/11 terrorist attacks, can create economic opportunities or strains. In adjusting to these shocks, the economy may experience upswings or downswings.
- **Financial instability** Unexpected financial bubbles (rapid asset price increases) or bursts (abrupt asset price decreases) can spill over to the general economy by expanding or contracting lending, and boosting or eroding the confidence of consumers and businesses. Booms and busts in the rest of the economy may follow.

The severe recession of 2007–2009 was precipitated by a combination of excessive money and a financial frenzy that led to overvalued real estate and unsustainable mortgage debt. Institutions

bundled this debt into new securities (“derivatives”) that were sold to financial investors. Some of the investors, in turn, bought insurance against losses that might arise from the securities. As real estate prices plummeted and mortgage defaults unexpectedly rocketed, the securitization and insurance structure buckled and nearly collapsed. Credit markets froze, pessimism prevailed, and spending by businesses and households declined.

Whatever the source of economic shocks, most economists agree that the *immediate* cause of the large majority of cyclical changes in the levels of real output and employment is unexpected changes in the level of total spending. If total spending unexpectedly sinks and firms cannot lower prices, firms will find themselves selling fewer units of output (since with prices fixed, a decreased amount of spending implies fewer items purchased). Slower sales will cause firms to cut back on production. As they do, GDP will fall. And because fewer workers will be needed to produce less output, employment also will fall. The economy will contract and enter a recession.

By contrast, if the level of spending unexpectedly rises, output, employment, and incomes will rise. This is true because, with prices sticky, the increased spending will mean that consumers will be buying a larger volume

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of goods and services (since, with prices fixed, more spending means more items purchased). Firms will respond by increasing output. This will increase GDP. And because firms will need to hire more workers to produce the larger volume of output, employment also will increase. The economy will boom and enjoy an expansion. Eventually, as time passes and prices become more flexible, prices are also likely to rise as a result of the increased spending.

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## Cyclical Impact: Durables and Nondurables

Although the business cycle is felt everywhere in the economy, it affects different segments in different ways and to different degrees.

Firms and industries producing *capital goods* (for example, housing, commercial buildings, heavy equipment, and farm implements) and *consumer durables* (for example, automobiles, personal computers, and refrigerators) are affected most by the business cycle. Within limits, firms can postpone the purchase of capital goods. For instance, when the economy goes into recession, producers frequently delay the purchase of new equipment and the construction of new plants. The business outlook simply does not warrant increases in the stock of capital goods. In good times, capital goods are usually replaced before they depreciate completely. But when recession strikes, firms patch up their old equipment and make do. As a result, investment in capital goods declines sharply. Firms that have excess plant capacity may not even bother to replace all the capital that is depreciating. For them, net investment may be negative. The pattern is much the same for consumer durables such as automobiles and major appliances. When recession occurs and households must trim their budgets, purchases of these goods are often deferred. Families repair their old cars and appliances rather than buy new ones, and the firms producing these products suffer. (Of course, producers of capital goods and consumer durables also benefit most from expansions.)

In contrast, *service* industries and industries that produce *nondurable consumer goods* are somewhat insulated from the most severe effects of recession. People find it difficult to cut back on needed medical and legal services, for example. And a recession actually helps some service firms, such as pawnbrokers and law firms that specialize in bankruptcies. Nor are the purchases of many nondurable goods such as food and clothing easy to postpone. The quantity and quality of purchases of nondurables will decline, but not so much as will purchases of capital goods and consumer durables.

### QUICK REVIEW 9.1

- The typical business cycle goes through four phases: peak, recession, trough, and expansion.
- Fluctuations in output and employment are caused by economic shocks combining with sticky prices.
- Sources of shocks that cause recessions include irregular innovation, productivity changes, monetary factors, political events, and financial instability.

- During a recession, industries that produce capital goods and consumer durables normally suffer greater output and employment declines than do service and nondurable consumer goods industries.

## Unemployment

LO9.2 Illustrate how unemployment is measured and explain the different types of unemployment.

Two problems that arise over the course of the business cycle are unemployment and inflation. Let's look at unemployment first.

### Measurement of Unemployment

The U.S. Bureau of Labor Statistics (BLS) conducts a nationwide random survey of some 60,000 households each month to determine who is employed and who is not employed. In a series of questions, it asks which members of the household are working, unemployed and looking for work, not looking for work, and so on. From the answers, it determines an unemployment rate for the entire nation.

Figure 9.2 helps explain the mathematics. The BLS divides the total U.S. population into three groups. One group is made up of people under 16 years of age and people who are institutionalized, for example, in mental hospitals or correctional institutions. Such people are not considered potential members of the labor force.

A second group, labeled “Not in labor force,” is composed of adults who are potential workers but are not employed and are not seeking work. For example, they are stay-at-home parents, full-time students, or retirees.

The third group is the **labor force**, which constituted slightly more than 50 percent of the total population in 2009. The labor force consists of people who are able and willing to work. Both those who are employed and those who are unemployed but actively seeking work are counted as being in the labor force. The **unemployment rate** is the percentage of the labor force unemployed:

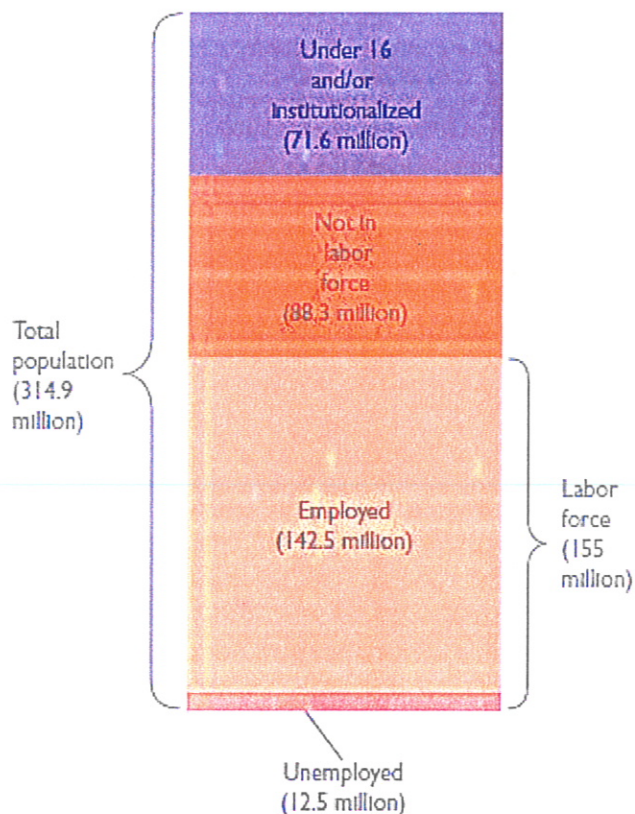
$$\text{Unemployment rate} = \frac{\text{unemployed}}{\text{labor force}} \times 100$$

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**FIGURE 9.2** The U.S. labor force, employment, and unemployment, 2012.\* The labor force consists of persons 16 years of age or older who are not in institutions and who are (1) employed or (2) unemployed but seeking employment.



\*Civilian labor-force data, which excludes military employment.

Source: Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov).

The statistics underlying the rounded numbers in Figure 9.2 show that in 2012 the unemployment rate averaged

$$\frac{12,506,000}{154,975,000} \times 100 = 8.1\%$$

**WORKED PROBLEMS**

**W9.1**  
Unemployment rate

Unemployment rates for selected years appear on the inside covers of this book.

Despite the use of scientific sampling and interviewing techniques, the data collected in this survey are subject to criticism:

- **Part-time employment** The BLS lists all part-time workers as fully employed. In 2012 about 26 million people worked part-time as a result of personal choice. But another 8 million part-time workers either wanted to work full-time and could not find suitable full-time work or worked fewer hours because of a temporary slack in consumer demand. These last two groups were, in effect, partially employed and partially unemployed. By counting them as fully employed, say critics, the official BLS data understate the unemployment rate.
- **Discouraged workers** You must be actively seeking work in order to be counted as unemployed. An unemployed individual who is not actively seeking employment is classified as “not in the labor force.” The problem is that many workers, after unsuccessfully seeking employment for a time, become discouraged and drop out of the labor force. The number of such **discouraged workers** was roughly 909,000 in 2012, up from 396,000 in 2007. By not counting discouraged workers as unemployed, say critics, the official BLS data understate the unemployment problem.

## Types of Unemployment

There are three *types* of unemployment: frictional, structural, and cyclical.

**Frictional Unemployment** At any given time some workers are “between jobs.” Some of them will be moving voluntarily from one job to another. Others will have been fired and will be seeking reemployment. Still others will have been laid off temporarily because of seasonal demand. In addition to those between jobs, many young workers will be searching for their first jobs.

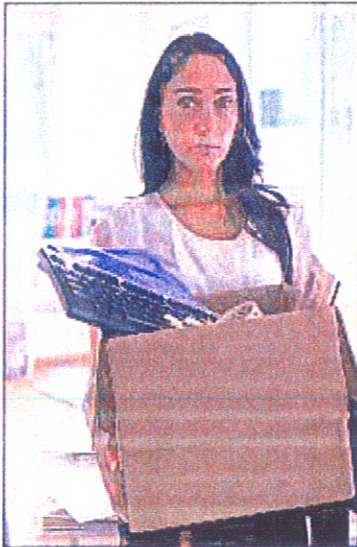
As these unemployed people find jobs or are called back from temporary layoffs, other job seekers and laid-off workers will replace them in the “unemployment pool.” It is important to keep in mind that while the pool itself persists because there are always newly unemployed workers flowing into it, most workers do *not* stay in the unemployment pool for very long. Indeed, when the economy is strong, the majority of unemployed workers find new jobs within a couple of months. One should be careful not to make the mistake of confusing the permanence of the pool itself with the false idea that the pool's membership is permanent, too. On the other hand, there are workers who do remain unemployed and in the pool for very long periods of time—sometimes for many years. As we discuss the different types of unemployment below, notice that certain types tend to be transitory while others are associated with much longer spells of unemployment.

Economists use the term **frictional unemployment**—consisting of *search unemployment* and *wait unemployment*—for workers who are either searching for jobs or waiting to take jobs in the near future. The word “frictional” implies that the labor market does not operate perfectly and instantaneously (without friction) in matching workers and jobs.

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## CONSIDER THIS ...

### Downwardly Sticky Wages and Unemployment



Labor markets have an important quirk that helps to explain why unemployment goes up so much during a recession.

The quirk is that wages are flexible upward but sticky downward.

On the one hand, workers are perfectly happy to accept wage increases. So when the economy is booming and firms start bidding for the limited supply of labor, wages rise—often quite rapidly.

On the other hand, workers deeply resent pay cuts. So if the economy goes into a recession and firms need to reduce labor costs, managers almost never cut wages because doing so would only lead to disgruntled employees, low productivity, and—in extreme cases—workers stealing supplies or actively sabotaging their own firms.

Instead, managers usually opt for layoffs. The workers who are let go obviously don't like being unemployed. But those who remain get to keep their old wages and, consequently, keep on being as productive and cooperative as they were before.

This preference that firms show for layoffs over wage cuts results in downwardly sticky wages and an informal price floor that helps to explain why unemployment goes up so much during a recession. The

problem is that when the demand for labor falls during a recession, the informal price floor prevents wages from falling. As a result, there is no way for falling wages to help entice at least some firms to hire a few more workers. Thus, when a recession hits, employment falls more precipitously than it would if wages were downwardly flexible and falling wages could help to increase hiring.

Frictional unemployment is inevitable and, at least in part, desirable. Many workers who are voluntarily between jobs are moving from low-paying, low-productivity jobs to higher-paying, higher-productivity positions. That means greater income for the workers, a better allocation of labor resources, and a larger real GDP for the economy.

**Structural Unemployment** Frictional unemployment blurs into a category called **structural unemployment**. Here, economists use “structural” in the sense of “compositional.” Changes over time in consumer demand and in technology alter the “structure” of the total demand for labor, both occupationally and geographically.

Occupationally, the demand for certain skills (for example, sewing clothes or working on farms) may decline or even vanish. The demand for other skills (for example, designing software or maintaining computer systems) will intensify. Unemployment results because the composition of the labor force does not respond immediately or completely to the new structure of job opportunities. Workers who find that their skills and experience have become obsolete or unneeded thus find that they have no marketable talents. They are structurally unemployed until they adapt or develop skills that employers want.

Geographically, the demand for labor also changes over time. An example: the migration of industry and thus of employment opportunities from the Snowbelt to the Sunbelt over the past few decades. Another example is the movement of jobs from inner-city factories to suburban industrial parks. And a final example is the so-called *offshoring* of jobs that occurs when the demand for a particular type of labor shifts from domestic firms to foreign firms. As job opportunities shift from one place to another, some workers become structurally unemployed.

The distinction between frictional and structural unemployment is hazy at best. The key difference is that *frictionally* unemployed workers have marketable skills and either live in areas where jobs exist or are able to move to areas where they do. *Structurally* unemployed workers find it hard to obtain new jobs without retraining, gaining additional education, or relocating. Frictional unemployment is short-term; structural unemployment is more likely to be long-term and consequently more serious.

**Cyclical Unemployment** Unemployment that is caused by a decline in total spending is called **cyclical unemployment** and typically begins in the recession phase of the business cycle. As the demand for goods and services decreases, employment falls and unemployment rises. Cyclical unemployment results from insufficient demand for goods and services. The 25 percent unemployment rate in the depth of the Great Depression in 1933 reflected mainly cyclical unemployment, as did significant parts of the 9.7 percent unemployment rate in 1982, the 7.5 percent rate in 1992, the 5.8 percent rate in 2002, and the 9.3 percent rate in 2009.

Cyclical unemployment is a very serious problem when it occurs. We will say more about its high costs later, but first we need to define “full employment.”

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There are also more recent examples: Between June 1986 and March 1991 the cumulative inflation in Nicaragua was 11,895,866,143 percent. From November 1993 to December 1994 the cumulative inflation rate in the Democratic Republic of Congo was 69,502 percent. From February 1993 to January 1994 the cumulative inflation rate in Serbia was 156,312,790 percent.<sup>4</sup>

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Such dramatic hyperinflations are always the consequence of highly imprudent expansions of the money supply by government. The rocketing money supply produces frenzied total spending and severe demand-pull inflation. Zimbabwe's 14.9 billion percent inflation in 2008 is just the latest example.

### QUICK REVIEW 9.5

- Cost-push inflation reduces real output and employment.
- Economists argue about the effects of demand-pull inflation. Some argue that even mild demand-pull inflation (1 to 3 percent) reduces the economy's real output. Other say that mild inflation may be a necessary by-product of the high and growing spending that produces high levels of output, full employment, and economic growth.
- Hyperinflation, caused by highly imprudent expansions of the money supply, may undermine the monetary system and cause severe declines in real output.

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## SUMMARY

### LO9.1 Describe the business cycle and its primary phases.

The United States and other industrial economies have gone through periods of fluctuations in real GDP, employment, and the price level. Although they have certain phases in common—peak, recession, trough, expansion—business cycles vary greatly in duration and intensity.

Although economists explain the business cycle in terms of underlying causal factors such as major innovations, productivity shocks, money creation, and financial crises, they generally agree that changes in the level of total spending are the immediate causes of fluctuating real output and employment.

The business cycle affects all sectors of the economy, though in varying ways and degrees. The cycle has greater effects on output and employment in the capital goods and durable consumer goods industries than in the services and nondurable goods industries.

### LO9.2 Illustrate how unemployment is measured and explain the different types of unemployment.

Economists distinguish between frictional, structural, and cyclical unemployment. The full-employment or natural rate of unemployment, which is made up of frictional and structural unemployment, is currently between 5 and 6 percent. The presence of part-time and discouraged workers makes it difficult to measure unemployment accurately.

The GDP gap, which can be either a positive or a negative value, is found by subtracting potential GDP from actual GDP. The economic cost of unemployment, as measured by the GDP gap, consists of the goods and services forgone by society when its resources are involuntarily idle. Okun's law suggests that every 1-percentage-point increase in unemployment above the natural rate causes an additional 2 percent negative GDP gap.

### LO9.3 Explain how inflation is measured and distinguish between cost-push inflation and demand-pull inflation.

Inflation is a rise in the general price level and is measured in the United States by the Consumer Price Index (CPI). When inflation occurs, each dollar of income will buy fewer goods and services than before. That is, inflation reduces the purchasing power of money. Deflation is a decline in the general price level.

Unemployment rates and inflation rates vary widely globally. Unemployment rates differ because nations have different natural rates of unemployment and often are in different phases of their business cycles. Inflation and unemployment rates in the United States recently have been in the middle to low range compared with rates in other industrial nations.

Economists discern both demand-pull and cost-push (supply-side) inflation. Demand-pull inflation results from an excess of total spending relative to the economy's capacity to produce. The main source of cost-push inflation is abrupt and rapid increases in the prices of key resources. These supply shocks push up per-unit production costs and ultimately raise the prices of consumer goods.

### LO9.4 Relate how unanticipated inflation can redistribute real income.

Unanticipated inflation arbitrarily redistributes real income at the expense of fixed-income receivers, creditors, and savers. If inflation is anticipated, individuals and businesses may be able to take steps to lessen or eliminate adverse redistribution effects.

When inflation is anticipated, lenders add an inflation premium to the interest rate charged on loans. The nominal interest rate thus reflects the real interest rate plus the inflation premium (the expected rate of inflation).

#### **LO9.5 Discuss how inflation may affect the economy's level of real output.**

Cost-push inflation reduces real output and employment. Proponents of zero inflation argue that even mild demand-pull inflation (1 to 3 percent) reduces the economy's real output. Other economists say that mild inflation may be a necessary byproduct of the high and growing spending that produces high levels of output, full employment, and economic growth.

Hyperinflation, caused by highly imprudent expansions of the money supply, may undermine the monetary system and cause severe declines in real output.

## TERMS AND CONCEPTS

business cycles

peak

recession

trough

expansion

labor force

unemployment rate

discouraged workers

frictional unemployment

structural unemployment

cyclical unemployment

full-employment rate of unemployment

natural rate of unemployment (NRU)

potential output

GDP gap

Okun's law

inflation

Consumer Price Index (CPI)

deflation

demand-pull inflation

cost-push inflation

per-unit production costs

core inflation

nominal income

real income