

# Economic Fluctuations, Unemployment, and Inflation

## CHAPTER FOCUS

- What is a business cycle? How much economic instability has the United States experienced?
- Why do economies experience unemployment? Are some types of unemployment worse than others?
- What do economists mean by full employment? How is full employment related to the natural rate of unemployment?
- How are anticipated and unanticipated inflation different? What are some of the dangers that accompany inflation?

*Prosperity is when the prices of things that you sell are rising; inflation is when the prices of things that you buy are rising. Recession is when other people are unemployed; depression is when you are unemployed.*

—Anonymous



**A**s we have already discussed, macroeconomics is about growth of income and fluctuations in that growth. The primary objectives of macroeconomic policy are to help promote rapid and stable growth, a high level of employment, and stability in the general level of prices. These goals are generally considered desirable. However, there is sometimes controversy about how they can best be achieved. As we proceed, we will analyze both economic growth and stability in detail and consider how both of these objectives can be attained.

The performance of the economy influences our job opportunities, income levels, and quality of life. Thus, key indicators of economic performance, such as growth of real GDP, the rate of unemployment, and the inflation rate, are closely watched by investors, politicians, and the media. This chapter will focus on how several key economic indicators are derived and explain how changes in these measures influence our lives. ■

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## Swings in the Economic Pendulum

During the last hundred years, the annual growth rate of real GDP in the United States has averaged approximately 3 percent. But there have also been considerable fluctuations in year-to-year growth. During the Great Depression of the 1930s, economic growth plunged. Real GDP declined by 7.5 percent or more each year from 1930 to 1932. In 1933, it was almost 30 percent less than it was in 1929. The 1929 level of real GDP was not reached again until 1939. World War II was characterized by a rapid expansion of GDP, which was followed by a decline after the war. Real GDP did not reach its 1944 level again until 1953, although the output of consumer goods did increase significantly in the years immediately following the war.

**EXHIBIT 1** presents the growth rate figures (four-quarter moving average) for real GDP for 1960–2009. Real GDP grew rapidly throughout most of the 1960s; the periods 1972–1973, 1976–1977, and 1983–1988; and most of the 1990s. Since 1960, however, there have also been seven periods (1960, 1970, 1974–1975, 1980, 1982, 1991, 2001 and 2008–2009) of falling real GDP. Although the economic ups and downs have continued, the fluctuations have been less severe in recent decades than during the first fifty years of the twentieth century. Figures on GDP and related data can be obtained from the Bureau of Economic Analysis on the Internet at <http://www.bea.gov/>.

## A Hypothetical Business Cycle

### Business cycle

Fluctuations in the general level of economic activity as measured by variables such as the rate of unemployment and changes in real GDP.

The United States and other industrial economies have been characterized by instability when it comes to the growth of real GDP. Inevitably, real GDP growth has been followed by economic slowdowns. Economists refer to these swings in the rate of output as the **business cycle**. Periods of growth in real output and other aggregate measures of economic activity followed by periods of decline are the characteristics of business cycles.

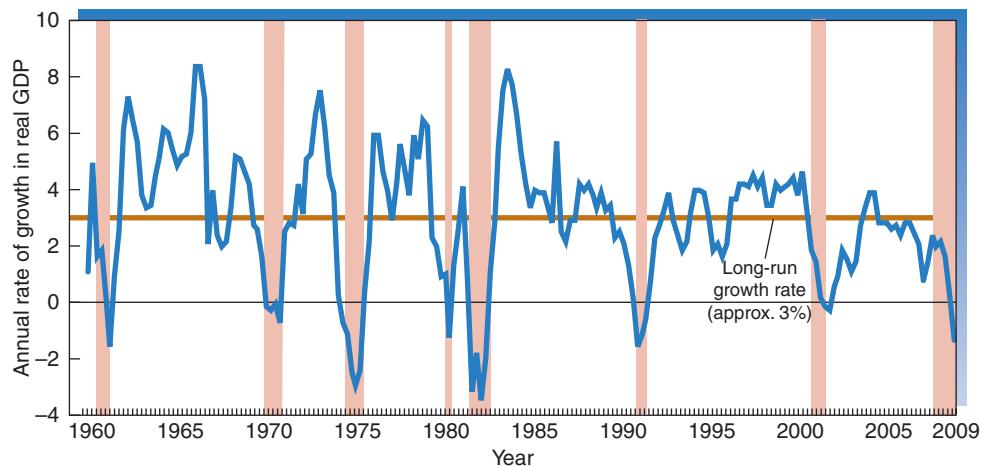
**EXHIBIT 2** shows a hypothetical business cycle. When most businesses are operating at capacity level and real GDP is growing rapidly, a *business peak*, or boom, is present. As business conditions slow, the economy begins the *contraction*, or recessionary, phase of a business cycle. During the contraction, the sales of most businesses decline, real GDP grows at a slower rate or perhaps falls, and unemployment in the labor market increases.

The bottom of the contraction phase is referred to as the *recessionary trough*. After the downturn reaches bottom and economic conditions begin to improve, the economy enters the *expansion* phase of the cycle. Here business sales rise, GDP grows rapidly,

**EXHIBIT 1**

## Instability in the Growth of Real GDP, 1960-2009

Although real GDP in the United States fluctuates substantially, periods of positive growth outweigh the periods of declining real GDP. Since 1960, the U.S. growth rate of real GDP has averaged approximately 3 percent annually. Economists refer to periods of declining real GDP as recessions. The recessionary periods are shaded.



Source: *Economic Report of the President* (Washington, DC: Government Printing Office, various issues).

Jim Stratford/Bloomberg News/Landov



Spencer Platt/Getty Images



*During economic expansions, construction and investment are increasing. In contrast, recessions are characterized by plant closings and high unemployment.*

and the rate of unemployment declines. Eventually, the expansion blossoms into another business peak. The peak, however, inevitably ends and turns into a contraction, beginning the cycle anew.

The term **recession** is widely used to describe conditions during the contraction and recessionary trough phases of the business cycle. This is a period during which real GDP declines. Often, a recession is defined as a decline in real GDP for two or more consecutive quarters.<sup>1</sup> When a recession is prolonged and has a sharp decline in economic activity, it is called a **depression**.

**Recession**

A downturn in economic activity characterized by declining real GDP and rising unemployment. In an effort to be more precise, many economists define a recession as two consecutive quarters in which there is a decline in real GDP.

**Depression**

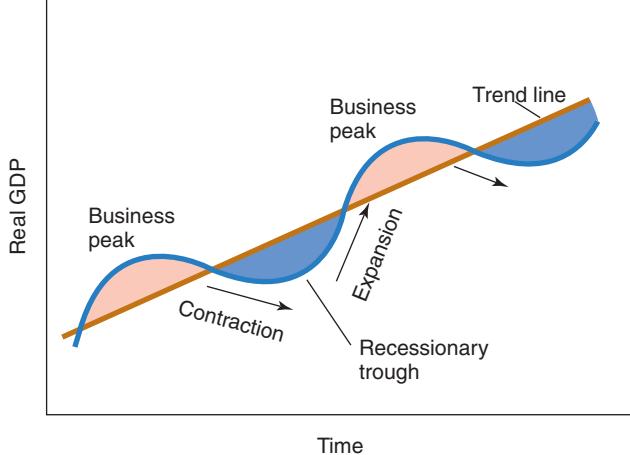
A prolonged and very severe recession.

<sup>1</sup>See Geoffrey H. Moore, "Recessions," in *The Fortune Encyclopedia of Economics*, ed. David R. Henderson (New York: Time Warner, Inc., 1993), for additional information on recessions in the United States. This publication is also available online at <http://www.econlib.org/>.

**EXHIBIT 2**  
**The Business Cycle**

In the past, ups and downs have often characterized aggregate business activity. Despite these fluctuations, there has been an upward trend in real GDP in the United States and other industrial nations.

During economic expansions, construction and investment are increasing. In contrast, recessions are characterized by plant closings and high unemployment.



In one important respect, the term *business cycle* is misleading. The word *cycle* is often used to describe events of similar time length that occur regularly, like the seasons of the year, for example. As Exhibit 1 illustrates, this is not the case with the business cycle. The expansions and contractions last varying lengths of time, and the swings differ in terms of their magnitude. For example, the recessions of 1961, 1982, and 1990 were followed by eight years or more of uninterrupted growth of output. In contrast, the recession of 1980 was followed by an expansion that lasted only twelve months. The expansionary phase following the recessions of 1970 and 1974–1975 fell between these two extremes. Clearly, the duration of real-world expansions and contractions is varied and unpredictable.

How can we know where an economy is in the business cycle? Of course, changes in real GDP will tell us. However, these numbers are available only quarterly, and it usually takes four to six weeks after the quarter is over before reliable figures are released. Various measures that are available monthly or more often can provide clues. For example, auto sales, new housing starts, new factory orders, and even the stock market will generally increase during an expansion and decline when the economy dips into a recession. As a result, these indicators are monitored carefully.

### Civilian labor force

The number of people sixteen years of age and over who are either employed or unemployed. To be classified as unemployed, a person must be looking for a job.

### Unemployed

The term used to describe a person not currently employed who is either (1) actively seeking employment or (2) waiting to begin or return to a job.

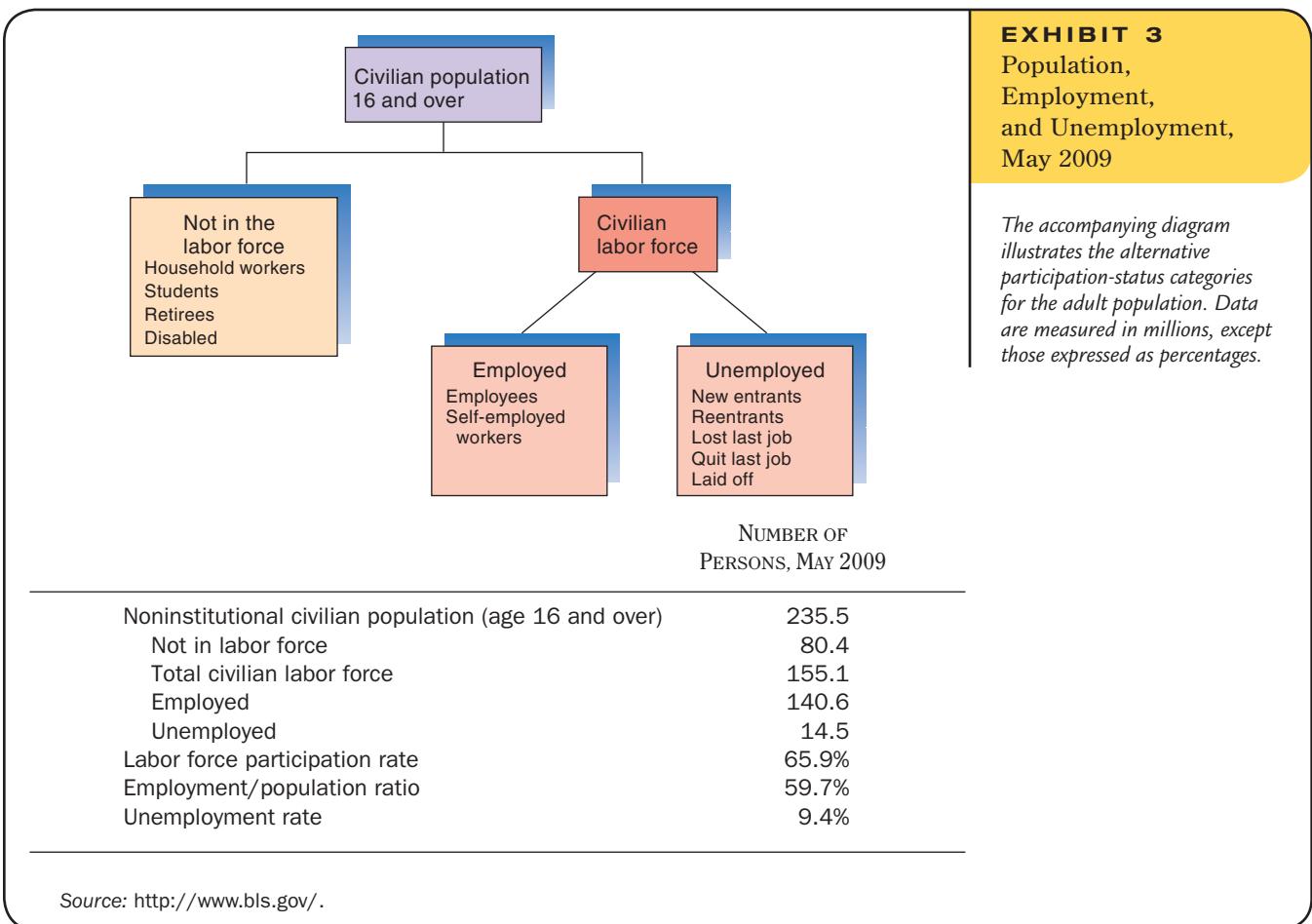
### Labor force participation rate

The number of people in the civilian labor force sixteen years of age or over who are either employed or actively seeking employment as a percentage of the total civilian population sixteen years of age and over.

## Economic Fluctuations and the Labor Market

Fluctuations in real GDP influence the demand for labor and employment. In our modern world, people are busy with jobs, household work, school, and other activities. **EXHIBIT 3** illustrates how economists classify these activities in relation to the **civilian labor force**, defined as the number of people aged sixteen years and over who are either employed or seeking employment. The noninstitutional civilian adult population is divided into two broad categories: (1) people not in the labor force and (2) people in the labor force. There are various reasons why people aren't in the labor force. Some are retired. Others are working in their own households or attending school. Still others are not working because they are ill or disabled. Although many of these people are quite busy, their activities lie outside the market labor force.

As Exhibit 3 shows, **unemployed** workers who are seeking work are included in the labor force along with employed workers. The **labor force participation rate** is the number of people in the civilian labor force (including both those who are employed and those who are unemployed) as a percentage of the civilian population sixteen years of age



and over. In May 2009, the population (sixteen years of age and over) of the United States was 235.5 million, 155.1 million of whom were in the labor force. Thus, the U.S. labor force participation rate was 65.9 percent (155.1 million divided by 235.5 million).

The labor force participation rate varies substantially across countries. For example, in 2008, the labor force participation rate of fifteen- to sixty-four-year-olds was 75.3 percent in the United States, 78.8 percent in Canada, and 80.2 percent in Sweden. In contrast, the labor force participation rate was only 62.2 percent in Mexico and 63.0 percent in Italy. The percentage of married women in the labor force is generally smaller in countries like Italy and Mexico that have low labor force participation rates.

In the United States, one of the most interesting labor force developments in recent decades is the dramatic increase in the labor force participation rate of women. **EXHIBIT 4** illustrates this point. In 2008, 59.5 percent of adult women worked outside the home, up from 32.7 percent in 1948. Married women accounted for most of this increase. More than half of all married women now are in the labor force, compared to only 20 percent immediately following World War II. While the labor force participation of women rose, the rate for men fell. In 2008, the labor force participation rate of men was 73.0 percent, down from 83.3 percent in 1960 and 86.6 percent in 1948. Clearly, the composition of workforce participation within the family has changed substantially during the past six decades.

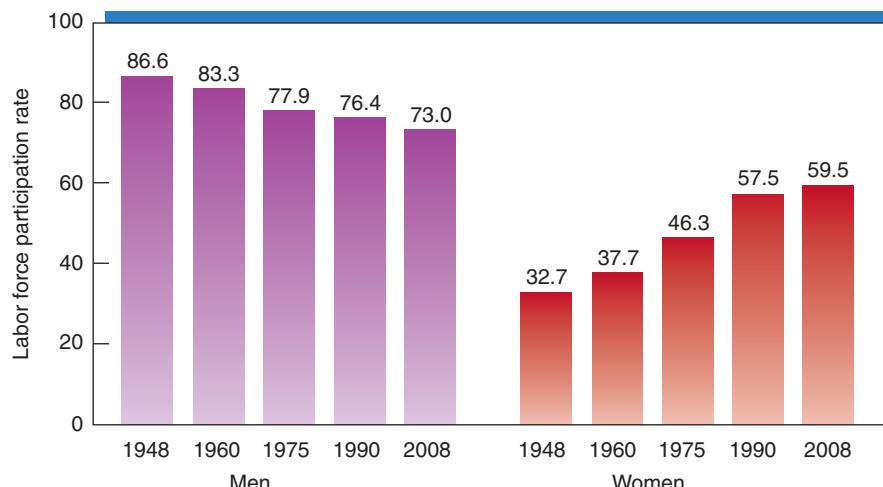
The **unemployment rate** is a key barometer of conditions in the aggregate labor market. This notwithstanding, the term is often misunderstood. It is important to note that unemployment is different from not working. As we previously discussed, there are several reasons—including household work, school attendance, retirement, and illness or disability—why a person may be neither employed nor looking for a job. These people, though not employed, are not counted as unemployed.

### Unemployment rate

The percentage of people in the labor force who are unemployed. Mathematically, it is equal to the number of people unemployed divided by the number of people in the labor force.

**EXHIBIT 4**  
Labor Force Participation Rate of Men and Women, 1948–2008

As the chart illustrates, the labor force participation rate for women has been steadily increasing for several decades, while the rate for men has been declining.



Source: <http://www.bls.gov/>.

Moreover, only people employed or unemployed are counted as part of the labor force. Part-time as well as full-time workers are counted as employed members of the labor force. The rate of unemployment is the number of people unemployed expressed as a percentage of the labor force. In May 2009, the rate of unemployment in the United States was 9.4 percent (14.5 million out of a labor force of 155.1 million). (See the accompanying Measures of Economic Activity feature for information on how the Bureau of Labor Statistics derives the unemployment rate.)

## MEASURES OF ECONOMIC ACTIVITY

### Deriving the Unemployment Rate

Each month, the Bureau of Labor Statistics (BLS) contacts a sample of 50,000 households that reflects the population characteristics of the United States. Specially trained interviewers pose identical questions designed to determine whether each of the approximately 90,000 adults in these households is employed, unemployed, or not in the labor force. People aged sixteen years and over are considered employed if they (1) worked at all (even as little as 1 hour) for pay or profit during the survey week, (2) worked 15 hours or more without pay in a family-operated enterprise during the survey week, or (3) have a job at which they did not work during the survey week because of illness, vacation, industrial disputes, bad weather, time off, or personal reasons. People are considered unemployed if they (1) do not have a job, (2) are available for work, and (3) have actively looked for work during the past four weeks. Looking for work may involve any of the following activities: (1) registering at a public or private employment office, (2) meeting with prospective employers, (3) checking with friends or relatives, (4) placing or answering advertisements, (5) writing letters of application, or (6) being in a union or on a professional register. In addition, those not working



Joel Stettenheim/CORBIS

are classified as unemployed if they are either waiting to start a new job within thirty days or waiting to be recalled from a layoff. The BLS uses its survey data to calculate the unemployment rate and other employment-related statistics each month. States use the BLS survey and employment figures from industries covered by unemployment insurance to construct state and area employment statistics. These labor market figures are published by the U.S. Department of Labor in the *Monthly Labor Review* and on the Internet at <http://www.bls.gov/>.



## THUMBNAIL SKETCH

### Formulas for Key Labor Market Indicators

1. **Labor force** = Employed + Unemployed
2. **Labor force participation rate** = Number in labor force/  
Population (aged 16 and over)

3. **Unemployment rate** = Number unemployed/Number in  
labor force
4. **Employment/population ratio** = Number employed/  
Population (aged 16 and over)

In addition to the rate of unemployment, many economists also use the **employment/population ratio**—the number of people employed expressed as a percentage of the population sixteen years old and over—to monitor labor market conditions. This ratio will tend to rise during an expansion and fall during a recession. Both the number of people employed and the population aged sixteen and over are well defined and readily measurable. Their measurement does not require a subjective judgment as to whether a person is actually “available for work” or “actively seeking employment.” Thus, some believe that the employment/population ratio is a more objective measure of job market conditions than the rate of unemployment. The employment/population ratio was 59.7 percent in May 2009. The accompanying **Thumbnail Sketch** shows the formulas that are used to calculate the major indicators of labor market conditions.

### Employment/population ratio

The number of people sixteen years of age and over employed as civilians divided by the total civilian population sixteen years of age and over. The ratio is expressed as a percentage.

## Dynamic Change and Reasons for Unemployment

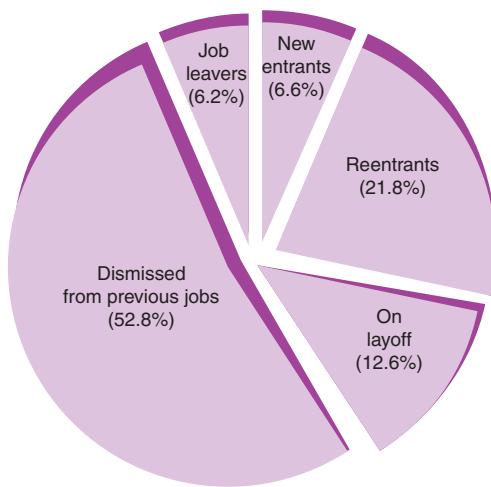
In a dynamic world, where information is scarce and people are free to choose among jobs, some unemployment is inevitable. As new products are introduced and new technologies developed, some firms are expanding while others are contracting. Similarly, some firms will be starting operations, while others will be going out of business. This process results in the creation of new jobs and the disappearance of old ones. At the same time, some potential workers will be switching from school or other nonwork activities to the labor force, while others are retiring or taking a leave from the labor force. Furthermore, workers are mobile. At any point in time, some will voluntarily quit and search for better opportunities. Although some unemployment will always be present, there is a positive side to the unemployment–job search process: it makes it possible for individuals to better match their skills and preferences with the job requirements of employers. Better-matched employees and employers increase both productivity and earnings.

Unemployment may occur for reasons other than the loss of a job, however. For example, people often experience periods of unemployment as they enter and reenter the labor force. The Department of Labor lists five reasons why workers may experience unemployment. **EXHIBIT 5** shows the share of unemployed workers in each of these five categories in May 2009. Interestingly, 6.6 percent of the unemployed workers were first-time entrants into the labor force; 21.8 percent were reentering the labor force after exiting it to obtain additional schooling, do household work, or for other reasons. Therefore, 28.4 percent of the unemployed workers—over one-quarter—were unemployed because they were entering or reentering the labor force. About one out of every sixteen unemployed workers (6.2 percent) quit their job. People laid off and waiting to return to their previous positions contributed 12.6 percent to the total. Workers dismissed from their job accounted for about one-half (52.8 percent) of the total number of unemployed workers.

Young workers often switch jobs and move between schooling and the labor force as they search for a career path that best fits their abilities and preferences. As the result of this job switching, the unemployment rate of younger workers is substantially higher than that of more established workers. As **EXHIBIT 6** shows, the unemployment rate of workers twenty to twenty-four years of age in May 2009 was nearly twice the rate for their counterparts aged twenty-five years and over. Further, the unemployment rate for

**EXHIBIT 5**  
**Composition of the Unemployed by Reason**

This chart indicates the various reasons that people were unemployed in May 2009. About one-half (52.8 percent) of the people unemployed were dismissed from their last job. More than one-quarter (28.4 percent) of the unemployed workers were either new entrants or reentrants into the labor force.



Source: <http://www.bls.gov/>.

**EXHIBIT 6**  
**The Unemployment Rate by Age and Gender, May 2009**

GROUP	CIVILIAN RATE OF UNEMPLOYMENT MAY 2009 (PERCENTAGE)
Total, all workers	9.4
Men, Total	10.5
Ages 16–19	26.7
Ages 20–24	17.5
Ages 25 and over	9.0
Women, Total	8.0
Ages 16–19	18.6
Ages 20–24	12.2
Ages 25 and over	7.0

Source: <http://www.bls.gov/>.

teenagers was approximately three times the rate for those twenty-five years and older. The unemployment rates for men were higher than women for all age groups.

## Three Types of Unemployment

Although some unemployment is consistent with economic efficiency, this is not always the case. Abnormally high rates of unemployment generally reflect weak demand conditions for labor, counterproductive policies, and/or the inability or lack of incentive on the part of potential workers and potential employers to arrive at mutually advantageous agreements. To clarify matters, economists divide unemployment into three categories: frictional, structural, and cyclical. Let us take a closer look at each of these three classifications.

### Frictional Unemployment

Unemployment that is caused by constant changes in the labor market is called **frictional unemployment**. It occurs because (1) employers are not fully aware of all available

### Frictional unemployment

Unemployment due to constant changes in the economy that prevent qualified unemployed workers from being immediately matched up with existing job openings. It results from imperfect information and search activities related to suitably matching employees with employers.

workers and their job qualifications and (2) available workers are not fully aware of the jobs being offered by employers. In other words, the main cause of frictional unemployment is imperfect information.

For example, an employer looking for a new worker seldom hires the first applicant who walks into the employment office. The employer wants to find the “best available” worker to fill the opening. It is costly to hire workers who perform poorly. It is sometimes even costly to terminate their employment. So, employers search—they expend time and resources screening applicants in an effort to find the best-qualified workers who are willing to accept their wage and employment conditions.

Similarly, job seekers search for their best option among the potential alternatives. They make telephone calls, search newspaper ads and Internet sites, submit to job interviews, use employment services, and so on. The pursuit of personal gain—landing jobs that are more attractive than the current options they face—motivates job seekers to engage in job search activities.

However, as a job seeker finds out about more and more potential job opportunities, it becomes less likely that additional searching will uncover a more attractive option. Therefore, the *marginal benefit* derived from a job search declines with the time spent searching for a job because it becomes less likely that it will lead to a better position. The *marginal cost* of a job search rises as a more lengthy search leads to the discovery of more attractive job opportunities.

As the marginal benefit of the job search declines and the marginal costs rise, eventually a rational job seeker will conclude that additional search is no longer worth the cost. He or she will then accept the best alternative available at that point. However, this process will take time, and during this time the job seeker is contributing to the frictional unemployment of the economy.

It is important to note that, even though frictional unemployment is a side effect, the job search process typically leads to improved economic efficiency and a higher real income for employees (see the accompanying Myths of Economics feature).

Changes that affect the costs and benefits of a job search influence the level of unemployment. The Internet has had an interesting effect on the job search process. Increasingly, both employers and employees are using Internet sites as a means of communicating with each other. Employers provide information about job openings in various skill and occupational categories, and employees supply information about their education, skills, and experience. This electronic job search process reduces information costs and makes it possible for both employers and employees to consider quickly a wide range of alternatives. As this method of employment search becomes more widespread, it will tend to shorten the job search process and improve the matches between employers and employees. As a result, frictional unemployment might be lower in the future.

On the other hand, a change that makes it cheaper to reject available opportunities and continue searching for jobs will increase the level of unemployment. For example, an increase in unemployment benefits would make it less costly to continue looking for a preferred job. As a result, job seekers will expand the length of their search time, and the unemployment rate will rise.

## Structural Unemployment

In the case of **structural unemployment**, changes in the basic characteristics of the economy prevent the “matching up” of available jobs with available workers. It is not always easy to distinguish between frictional and structural unemployment. In each case, job openings and potential workers searching for jobs are both present. The crucial difference between the two is that with frictional unemployment, workers possess the necessary skills to fill the job openings; with structural unemployment, they do not. Essentially, the primary skills of a structurally unemployed worker have been rendered obsolete by changing market conditions and technology. Realistically, the structurally unemployed worker faces the prospect of either a career change or prolonged unemployment. For older workers in particular, these are bleak alternatives.

### Structural unemployment

Unemployment due to the structural characteristics of the economy that make it difficult for job seekers to find employment and for employers to hire workers. Although job openings are available, they generally require skills many unemployed workers do not have.

There are many causes of structural unemployment. The introduction of new products and production technologies can substantially alter the relative demand for workers with various skills. Changes of this type can affect the job opportunities of even highly skilled workers, particularly if their skills are not easily transferable to other industries and occupations. The “computer revolution” has dramatically changed the job opportunities of many workers. The alternatives available to workers with the skills required to operate and maintain high-tech equipment have improved substantially, while the prospects of those without such skills have, in some cases, deteriorated drastically.

Shifts in public-sector priorities can also cause structural unemployment. For example, environmental regulations designed to improve air quality led to a reduction in the demand for coal during the 1990s. As a result, many coal miners in West Virginia, Kentucky, and other coal-mining states lost their jobs. Unfortunately, the skills of many of the job losers were ill-suited for employment in expanding industries. Structural unemployment was the result.

Institutional factors can also make it difficult for some workers to find jobs. For example, minimum-wage legislation may push the wages of low-skilled workers above their productivity levels and thereby severely retard the job opportunities available to them. High unemployment benefits reduce the opportunity cost of unemployment and may also lead to higher levels of structural unemployment. See Applications in Economics for a suggested policy alternative that would reduce the adverse unintended consequences of the current unemployment benefit system.

## MYTHS OF ECONOMICS

### **“Unemployment would not exist if the economy were operating efficiently.”**

Nobody likes unemployment. Certainly, an extended period of unemployment can be a very painful experience. Looking for a job, however, performs an important labor market function: It leads to improved matches between workers’ skills and employers’ job requirements.

Job searchers are “shopping”—they are searching for information about the job opportunity that best fits their skills, earning capabilities, and preferences. Similarly, employers shop when they are seeking labor services. They, too, acquire information about available workers that will help them select employees whose skills and preferences match the demands of the job.

This shopping results in some unemployment, but it also provides both employees and employers with information that will help them make better choices. If the resources of an economy are going to be used effectively, the skills of workers must be matched well with the jobs of employers. Waste will result if, for example, a person with high-level computer skills ends up working as a janitor while someone else with minimal computer skills is employed as a computer programmer. Moreover, as workers try to find jobs for which their skills are well suited, they achieve higher wage rates, and the economy is able to generate a larger output.

Perhaps thinking about the housing market will help you better understand why search time can be both beneficial and productive. Like the employment market, the housing market is characterized by imperfect information and dynamic change. New housing structures are built; older structures depreciate and are torn down. Families move from one community to another. In this dynamic world, it makes sense for renters to shop around from time to time to find the housing quality, price, and location that best fit their preferences and budgets. Similarly, landlords search among renters, seeking to rent their accommodations to those who value them most highly. As a result of this shopping, housing vacancies inevitably occur. But does this mean the housing market is inefficient? No. It is the result of imperfect information and the search for a more efficient match on the part of both landlords and renters.

Of course, some types of unemployment, particularly cyclical unemployment, are indicative of inefficiency. However, this is not the case with frictional unemployment. The job searching (as well as the frictional unemployment that accompanies it) helps both job seekers and employers make better choices, and it leads to a more efficient match of applicants with job openings than would otherwise be possible. It is perfectly consistent with economic efficiency.

## APPLICATIONS IN ECONOMICS

### Would Personal Savings Accounts Reduce the Rate of Unemployment?

Under the current unemployment insurance system, workers and their employers are required to pay taxes on wages and salaries, which are used to finance benefits for unemployed workers covered by the program. Typically, the benefits replace about 50 percent of a worker's prior pretax earnings for up to twenty-six weeks. During recent recessions, Congress has extended benefits for an additional thirteen weeks. In Europe, however, unemployment benefits are even higher, and people are permitted to draw the benefits for longer time periods—often two or three years.

Unfortunately, unemployment programs have an unintended secondary effect: They increase the unemployment rate. The benefits make it less costly for an unemployed worker to turn down available jobs and continue searching while receiving the payments. They also reduce the incentive of the unemployed to switch occupations or move to another location in order to find employment. As a result, workers stay unemployed longer and the overall unemployment rate is higher than it would be otherwise. In fact, empirical evidence indicates that there is a spike in the number of unemployed workers obtaining employment just prior to and immediately after their unemployment benefits are exhausted. The persistently higher unemployment rates in Europe (see Exhibit 8), where the benefits are more generous, also indicate that the program pushes the

unemployment rate upward, perhaps by as much as 2 or 3 percentage points.

To deal with this problem, Lawrence Brunner and Stephen Colarelli have proposed that a system of personal savings accounts be substituted for the current system.<sup>1</sup> Instead of paying a payroll tax, employees and their employers would make equivalent payments into an unemployment personal savings account owned by the employee. Workers could then access the funds in their accounts during periods of unemployment. Upon retirement, any funds remaining in the account would be available to the worker, and, in case of death, unused funds would be passed along to the worker's heirs. Because this system would mean that workers would be using their own funds rather than the government's during periods of unemployment, the approach would eliminate the perverse incentive structure caused by the current system.

#### Question for Thought

1. Would the proposed reform increase the incentive to search for and accept employment rather than undergo lengthy periods of unemployment? Why or why not? Can you think of problems this system would create compared with the current system?

<sup>1</sup>Lawrence Brunner and Stephen M. Colarelli, "Individual Unemployment Accounts," *Independent Review* 8 (Spring 2004): 569–85.

## Cyclical Unemployment

When there is a general downturn in business activity, **cyclical unemployment** arises. Because fewer goods are being produced, fewer workers are required to produce them. Employers lay off workers and cut back employment.

An unexpected fall in the general level of demand for goods and services will cause cyclical unemployment to rise. In a world of imperfect information, adjustments to unexpected declines in demand are often painful for people. When the demand for labor declines, workers will at first not know whether they are being laid off because their employer is experiencing lower demand or if the reduction in demand is widespread throughout the economy. Similarly, they will not immediately know whether their poor current employment opportunities are temporary or long-term. If a reduction in demand is limited to only a few employers, the dismissed workers will generally be able to find jobs with other employers in a short period of time. The situation is different, however, when there is a general decline in demand. Many employers will lay off workers and few other employers will be hiring. Under these circumstances, workers' search efforts will be less fruitful, and the duration of their unemployment abnormally long. Unemployment of this type is referred to as cyclical unemployment. As we proceed, we will consider the causes of cyclical unemployment and analyze how it might be reduced.

### Cyclical unemployment

Unemployment due to recessionary business conditions and inadequate labor demand.

## Employment Fluctuations—The Historical Record

Employment and output are closely linked over the business cycle. If we are going to produce more goods and services, we must either increase the number of workers or increase the output per worker. Although productivity, or output per worker, is the primary source of long-term economic growth, it changes slowly from year to year. Consequently, rapid increases in output, such as those that occur during a strong business expansion, generally require an increase in employment. As a result, output and employment tend to be positively related. Conversely, there is an inverse relationship between growth of output and the rate of unemployment.

The empirical evidence is consistent with this view. As **EXHIBIT 7** shows, the unemployment rate generally increases during a recession (indicated by shading), and declines during periods of expansion in output. During the recession of 1960–1961, the rate of unemployment rose to approximately 7 percent. In contrast, it declined throughout the economic boom of the 1960s, only to rise again during the recession of 1970. During the recession of 1974–1975, the unemployment rate jumped to more than 9 percent. Similarly, it soared to nearly 11 percent during the severe recession of 1982 and to over 9 percent during the 2008–2009 recession. Conversely, it declined substantially during the expansions of 1983–1989, 1992–2000, and 2002–2006.

### Full employment

The level of employment that results from the efficient use of the labor force taking into account the normal (natural) rate of unemployment due to information costs, dynamic changes, and the structural conditions of the economy. For the United States, full employment is thought to exist when approximately 95 percent of the labor force is employed.

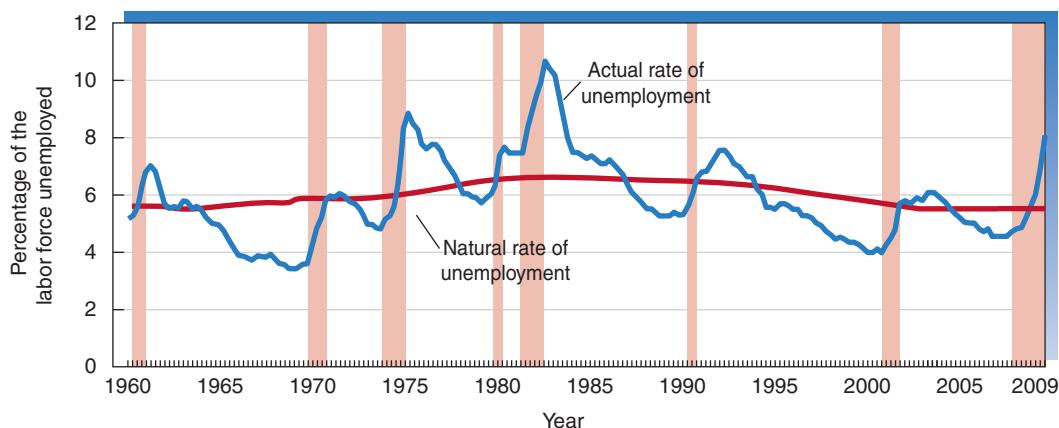
### Full Employment and the Natural Rate of Unemployment

**Full employment**, a term widely used by economists and public officials alike, does not mean zero unemployment. As we have noted, in a world of imperfect information, both employees and employers will “shop” before they agree to accept a job or hire a new

#### EXHIBIT 7

#### The Unemployment Rate, 1960–2009

Here, we illustrate the rate of unemployment during the 1960–2009 period. As expected, the unemployment rate rose rapidly during each of the seven recessions. (The shaded years indicate recessions.) In contrast, soon after each recession ended, the unemployment rate began to decline as the economy moved to an expansionary phase of the business cycle. Also note that the actual rate of unemployment was substantially greater than the natural rate during and immediately following each recession.



Source: <http://www.bls.gov/>; and Robert J. Gordon, *Macroeconomics* (Boston: Addison-Wesley, 2009).

worker. Much of this shopping is efficient, because it leads to better matches between the skills of employees and the skills employers need. Some unemployment is therefore necessary for a dynamic labor market to operate efficiently. **Consequently, economists define full employment as the level of employment that results when the rate of unemployment is “normal,” considering both frictional and structural factors.** In the United States, full employment is currently believed to be approximately 95 percent of the labor force, or perhaps just slightly above this figure.

Closely related to the concept of full employment is the **natural rate of unemployment**, the amount of unemployment reflected by job shopping and imperfect information. **The natural rate of unemployment is not a temporary high or low; it is a rate that is sustainable. Economists sometimes refer to it as the unemployment rate accompanying the economy’s “maximum sustainable” rate of output.** When unemployment is at its natural rate, full employment is present, and the economy is achieving the highest rate of output that it can sustain.

The natural rate of unemployment, however, is not fixed. It is affected by the structure of the labor force and by changes in public policy. Over time, changes in the demographic composition of the labor force will influence the natural rate. The natural rate of unemployment increases when youthful workers expand as a proportion of the workforce. Because youthful workers change jobs and move in and out of the labor force often, they experience high rates of unemployment (see Exhibit 6). Therefore, the overall rate of unemployment is pushed upward as they become a larger share of the labor force. This is what happened during the 1960s and 1970s. In 1960, youthful workers (ages sixteen to twenty-four) constituted only 16 percent of the labor force. But as the postwar baby boom generation entered the labor market, youthful workers as a share of the labor force rose dramatically. By 1980, one out of every four workers was in the youthful-worker grouping. In contrast, prime-age workers (over age twenty-five) declined from 84 percent of the U.S. workforce in 1960 to only 75 percent in 1980. As a result of these demographic changes, studies indicate that the natural rate of unemployment rose from approximately 5 percent in the late 1950s to more than 6 percent in the mid-1980s.

Since the late 1980s, the situation has reversed. The natural rate of unemployment has declined as the baby boomers moved into their prime working years and youthful workers shrank as a share of the labor force. Today, most researchers estimate that the natural rate is once again about 5 percent, or perhaps even a little lower.

Public policy also affects the natural rate of unemployment. When public policy makes it more costly to employ workers and/or less costly for people to remain unemployed, it increases the natural rate of unemployment. The economies of France, Germany, Italy, and Spain illustrate this point. Labor markets in these four countries are characterized by generous unemployment benefits and regulations that both increase the cost of dismissing workers and mandate uniform wages nationwide. Regulations of this type reduce the flexibility of labor markets and make it more costly to hire and employ workers. Persistently high rates of unemployment will result, as can be seen in **EXHIBIT 8**. The unemployment rates of the countries with highly regulated labor markets were substantially higher during the last decade than the comparable figures for the United States, Japan, and the United Kingdom, where labor markets are less regulated. High unemployment rates over lengthy time periods are indicative of structural rather than cyclical factors.

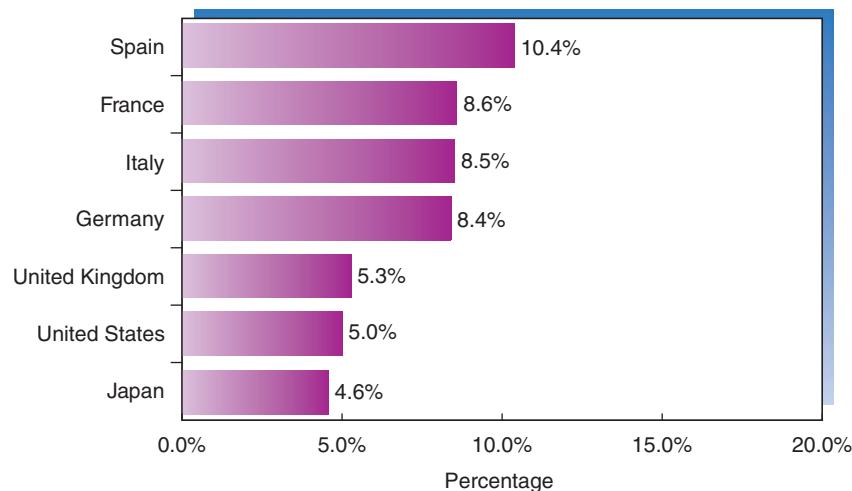
The relationship between the *actual* unemployment rate and the *natural* unemployment rate for the United States over the last four decades can be observed in Exhibit 7. Note that the actual unemployment rate fluctuates around the natural rate in response to cyclical economic conditions. The actual rate generally rises above the natural rate during a recession and falls below the natural rate when the economy is in the midst of an economic boom. For example, the actual rate of unemployment was substantially above the natural rate during the recessions of 1974–1975, 1982, and 2008–2009. The reverse was true during the latter stages of the lengthy expansions of the 1960s, 1980s, 1990s, and 2000s. As we proceed, we will often compare the actual and natural rates of unemployment. In a very real sense, macroeconomics studies why the actual and natural rates differ and attempts to discern the factors that cause the natural rate to change over time.

### Natural rate of unemployment

The “normal” unemployment rate due to frictional and structural conditions in labor markets. It is the unemployment rate that occurs when the economy is operating at a sustainable rate of output. The current natural rate of unemployment in the United States is thought to be approximately 5 percent.

**EXHIBIT 8**

Average Unemployment Rate for Major Economies, 1999–2008



Source: <http://www.oecd.org>.

## Actual and Potential GDP

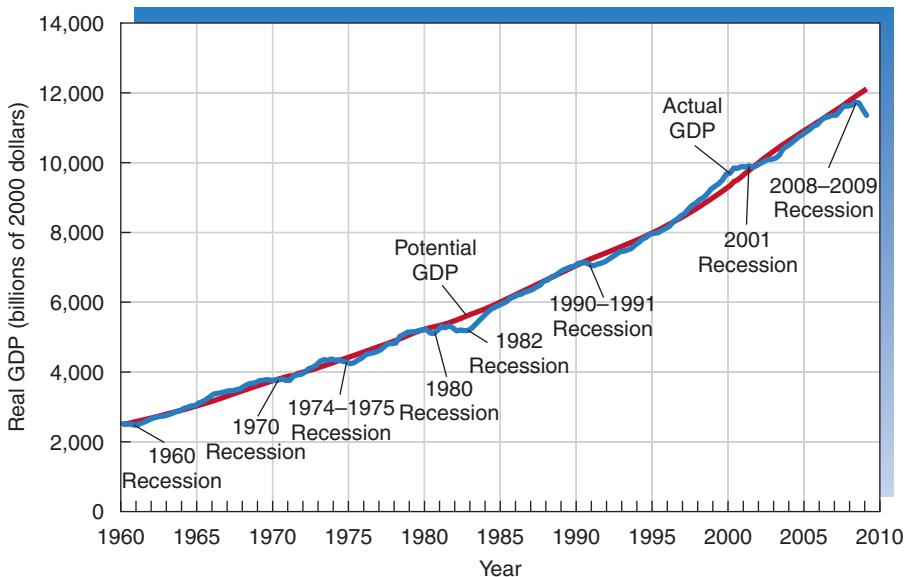
If an economy is going to realize its potential, full employment is essential. When the actual rate of unemployment exceeds the natural rate, the actual output of the economy will fall below its potential. Potential output does not represent the absolute maximum level of production that could, for example, be generated in wartime or other situations during which the level of aggregate demand is abnormally high. Rather, it is the rate that would be expected under more normal circumstances.

**Potential output** can therefore be thought of as the maximum *sustainable* output level consistent with the full employment of resources currently available in the economy. To estimate the economy's potential output level, we need to look at three factors: the size of the labor force, the quality (productivity) of labor, and the natural rate of unemployment. Because these factors cannot be estimated with certainty, some variation exists in the estimated values of the potential rate of output.

**EXHIBIT 9** shows the relationship between the actual and potential output of the United States since 1960. The relationship between actual and potential GDP reflects the business cycle. Note the similarity of the actual real GDP data of Exhibit 9 and the hypothetical data of an idealized business cycle of Exhibit 2. Although the actual data of Exhibit 9 are irregular compared to the hypothetical data, periods of expansion and economic boom followed by contraction and recession are clearly observable. During the boom phase, actual output expands rapidly and may temporarily exceed the economy's long-run potential. In contrast, recessions are characterized by an actual real GDP that is less than its potential. As we proceed, we will focus on how we can achieve maximum potential output while minimizing economic instability.

## The Effects of Inflation

Inflation is a sustained increase in the general level of prices. When inflation is on the rise, it costs more to purchase a typical bundle of goods and services. Of course, even when the general level of prices is stable, some prices will be rising and others will be falling. During a period of inflation, however, the impact of the rising prices will outweigh the impact of falling prices. Because of the higher prices (on average), a dollar will purchase


**EXHIBIT 9**  
**The Actual and Potential GDP**

Here, we illustrate both the actual and potential GDP. Note the gap between the actual and potential GDP during recessions.

less than it did previously. Inflation, therefore, can also be defined as a decline in the value (the purchasing power) of money.

How do we determine whether prices are generally rising or falling? Essentially, we answered that question in the preceding chapter when we indicated how a price index is constructed. When the general level of prices is rising, the price index will also rise. In turn, the annual rate of inflation is merely the year-to-year change in an index of the general level of prices. The consumer price index (CPI) and the GDP deflator are the price indexes most widely used to measure the inflation rate in the United States. As discussed earlier, these two measures of the rate of inflation tend to follow a similar path.

It's important to note that inflation affects the prices of things we sell as well as the prices of goods we buy. Both resource and product prices are influenced by inflation. Before we become too upset about inflation "robbing us of the purchasing power of our paychecks," we need to realize that inflation influences the size of those paychecks. For example, the weekly earnings of employees would not have risen at a sharp annual rate of 7 percent during the 1970s if the rate of inflation hadn't increased rapidly during the period, too. Wages are also a price. Inflation raises both prices and wages.

How rapidly has the general level of prices risen in the United States? Using the annual rate of change in the CPI, **EXHIBIT 10** shows the U.S. inflation rate since the mid-1950s. During the 1950s and into the mid-1960s, the annual inflation rate was generally low. The average inflation rate during the 1956–1965 period, for example, was just 1.6 percent. Beginning in the latter half of the 1960s, however, inflation began to accelerate upward, jumping to 12 percent or more during 1974, 1979, and 1980. During the 1973–1981 period, the inflation rate averaged 9.2 percent. Price increases moderated again in the mid-1980s, and the inflation rate averaged 3.1 percent during the period 1983–2009. Additional details on inflation and related measures can be obtained on the Internet at <http://www.bls.gov/>.

The rate of inflation varies widely among countries. **EXHIBIT 11** provides data on the annual inflation rates during 2002–2008 for Canada, Germany, Singapore, the United Kingdom, and the United States—five countries with low rates of inflation. The annual inflation rates of these countries were generally less than 4 percent during this period;

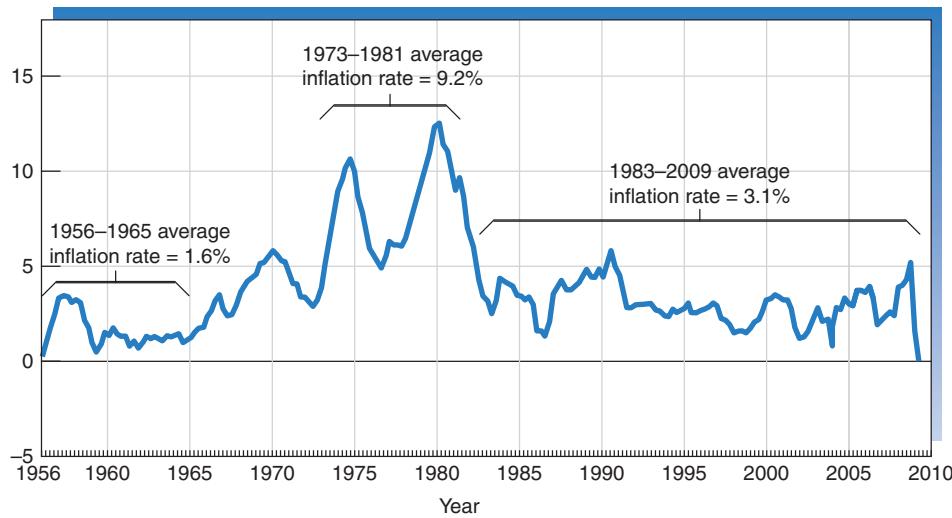
moreover, the year-to-year variations in inflation were relatively small—typically no more than 1 or 2 percent.

Exhibit 11 also presents parallel inflation rate data for five high-inflation countries: Romania, Russia, Turkey, Uruguay, and Venezuela. In contrast with the low-inflation countries, the inflation rate of the high-inflation countries was not only higher but it also varied substantially more from one year to another. For example, consider the data for

#### EXHIBIT 10

##### The Inflation Rate, 1956–2009

*Here, we present the annual rate of inflation since 1956. Between 1956 and 1965, prices increased at an annual rate of only 1.6 percent. In contrast, the inflation rate averaged 9.2 percent during the 1973–1981 era, reaching double-digit rates in several years. Since 1982, the rate of inflation has been lower (the average annual rate was 3.1 percent during the period 1983–2009) and more stable.*



Source: <http://www.bls.gov/>. Also see *Economic Report of the President* (Washington, DC: Government Printing Office, published annually).

#### EXHIBIT 11

##### Variations in the Annual Inflation Rates of Selected Countries, 2002–2008

COUNTRY	2002	2003	2004	2005	2006	2007	2008
<b>LOW INFLATION</b>							
Canada	2.3	2.7	1.8	2.2	2.0	2.1	2.4
Germany	1.4	1.0	1.8	1.9	1.8	2.3	2.8
Singapore	-0.4	0.5	1.7	0.5	1.0	2.1	6.5
United Kingdom	1.3	1.4	1.3	2.0	2.3	2.3	3.6
United States	1.6	2.3	2.7	3.4	3.2	2.9	3.8
<b>HIGH INFLATION</b>							
Romania	22.5	15.3	11.9	9.0	6.6	4.8	7.8
Russia	15.8	13.7	10.9	12.7	9.7	9.0	14.1
Turkey	45.1	25.3	8.6	8.2	9.6	8.8	10.4
Uruguay	14.0	19.4	9.2	4.7	6.4	8.1	7.9
Venezuela	22.4	31.1	21.7	16.0	13.7	18.7	30.4

Source: International Monetary Fund, <http://www.imf.org>.

Venezuela. The inflation rate in Venezuela jumped from 22.4 in 2002 to 31.1 in 2003. It then receded to 13.7 by 2006 and rose again to reach 30.4 in 2008. The other countries in the high-inflation group also experienced wide fluctuations in their annual rates of inflation. The data of Exhibit 11 reflect a general pattern. **High rates of inflation are almost always associated with substantial year-to-year swings in the inflation rate.**

## Unanticipated and Anticipated Inflation

Before we examine the effects of inflation, it is important that we distinguish between unanticipated and anticipated inflation. **Unanticipated inflation** is an increase in the price level that comes as a surprise, at least to most individuals. For example, suppose that, based on the recent past, most people anticipate an inflation rate of 3 percent. If the actual inflation rate turns out to be 10 percent, it will catch people off guard. When the inflation rate is high and variable, it will be virtually impossible for people to anticipate it accurately.

**Anticipated inflation**, on the other hand, is a change in the price level that is widely expected. Decision makers are generally able to anticipate slow, steady rates of inflation—like those in Canada, Germany, Singapore, the United Kingdom, and the United States during the period 2002–2008—with a high degree of accuracy. When the general level of prices is more stable, this will exert a positive impact on real output and the level of prosperity. The experience of the United States illustrates this point. During the 1983–2008 period, U.S. inflation was low and relatively stable. This period was characterized by strong growth and only seventeen months of recession. In contrast, when the inflation rate was high and variable during the 1970s, the United States experienced two recessions (1974–1975 and 1979–1980) and sluggish growth of real GDP.

### Unanticipated inflation

An increase in the general level of prices that was not expected by most decision makers.

### Anticipated inflation

An increase in the general level of prices that was expected by most decision makers.

## Why Does Inflation Adversely Affect the Economy?

People will not be able to predict high and variable rates of inflation. There are three major reasons why such rates will adversely affect GDP and the overall health of the economy.

**1. HIGH AND VARIABLE INFLATION REDUCES INVESTMENT.** Unanticipated inflation alters the outcomes of long-term projects, such as the purchase of a machine or an investment in a business; it will increase the risks and retard the level of such productive activities. For example, when the price level rises 15 percent one year and 40 percent the next year and then increases again by 20 percent the following year, no one knows what to expect. Unanticipated changes of even 5 percent or 10 percent in the rate of inflation can often turn an otherwise profitable project into a personal economic disaster. Given the uncertainty that it creates, many decision makers will simply forgo capital investments and other transactions involving long-term commitments when the rate of inflation is highly variable and therefore unpredictable. As a result, mutually advantageous gains from trade will be lost and the efficiency of markets reduced.

**2. INFLATION DISTORTS THE INFORMATION DELIVERED BY PRICES.** Prices communicate important information concerning the relative scarcity of goods and resources. Some prices can be easily and regularly changed. But this will not be true for others, particularly those set by long-term contracts. For example, time delays will occur before the prices accompanying rental lease agreements, items sold in catalogs, mortgage interest rates, and collective bargaining contracts can be changed. Because some prices will respond quickly to inflation whereas others will change more slowly, an unanticipated change in the rate of inflation will change *relative prices* as well as the *general price level*. The distorted relative prices will be a less reliable indicator of relative scarcity. As a result of these unreliable price signals, producers and resource suppliers will often make choices that they will later regret, and the allocation of resources will be less efficient than it would have been if the general level of prices had been more stable.

**3. HIGH AND VARIABLE INFLATION RESULTS IN LESS PRODUCTIVE USE OF RESOURCES.** Failing to anticipate accurately the inflation rate can have a substantial effect on one's wealth. Because of this, when the inflation rate is high, people will spend more of their time and money trying to predict and cope with the future rate of inflation. These are resources that could have been used to produce goods and services demanded by the marketplace. For example, managers will spend more time coping with frequent price changes and less time improving production methods and products. Speculative market practices will occur as people try to outguess one another about the future direction of prices. As a result, funds will flow into speculative-type investments instead of more productive ones that increase output.

## What Causes Inflation?

We need to acquire some additional tools of analysis before we can answer in detail the question of what causes inflation. However, at this point we can list two particular causes. First, economists emphasize the link between aggregate demand and supply. If aggregate demand rises more rapidly than supply, prices will rise. Second, nearly all economists believe that a rapid expansion in a nation's stock of money causes inflation. The old saying is that prices will rise because "there is too much money chasing too few goods." The hyperinflation experienced by South American countries and, more recently, by Russia and several other countries of the former Soviet Union has mainly been the result of monetary expansion. Once we develop additional knowledge about the operation of our economy, we will consider this issue in more detail.

### Looking ahead

In this chapter, we looked at business cycles and how they affect employment, and how inflation, both anticipated and unanticipated, affects output. In the next chapter, we will begin to develop a macroeconomic model that will help us better understand the factors that influence these indicators of economic performance.



### KEY POINTS

- ▼ During the past century, real GDP in the United States has grown at an average annual rate of approximately 3 percent. Cyclical movements in real GDP have accompanied this growth of output.
- ▼ The four phases of the business cycle are *expansion*, *peak (or boom)*, *contraction*, and *recession*. A recession is defined as two back-to-back quarters of declining real GDP. If a recession is quite severe, it is called a depression.
- ▼ There are three types of unemployment:  
(1) frictional unemployment, (2) structural unemployment, and (3) cyclical unemployment.
- ▼ In a world of imperfect information and dynamic change, some unemployment is inevitable.
- ▼ Full employment is the employment level consistent with the economy's natural rate of unemployment. Both full employment and the natural rate of unemployment are associated with the economy's maximum sustainable rate of output.
- ▼ Potential output is the maximum *sustainable* output level consistent with the economy's resource base and current institutional arrangements.
- ▼ Inflation is an increase in the general level of prices. It is important to distinguish between anticipated