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. Production possibility frontier
2. Factors of production

Many 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 that Smith raises—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. Energy producers like Russia and the Persian Gulf States piled up large surpluses. Then, beginning in 2007, things started to go wrong. A downturn 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. Since that time the world economy has struggled to recover, with some countries more successful than others.

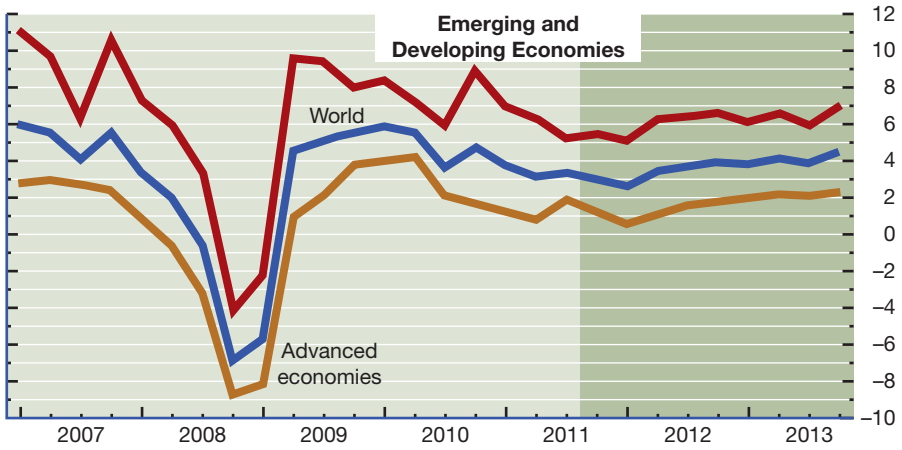
This chapter begins the exploration of macroeconomics by looking both at the broad forces that shape the search for prosperity and stability in the long run, and those that cause short-run cyclical disturbances like the recent global crisis.

17.1 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. On the whole, as Figure 17.1 shows, emerging and developing economies have grown more rapidly in recent years than those that are already developed. Poorer countries—like India, China, and Brazil—have caught up with more developed ones—such as the United States, Japan, and Western Europe. As they have done so, the world distribution of income has become more equal, and hundreds of millions have

escaped from extreme poverty. Not all the news is good, however. Even as global income inequality has fallen, inequality within countries, including the United States and China among others, has become less equal. Also, some countries and even entire regions, like Sub-Saharan Africa, have lagged behind.

FIGURE 17.1 WORLD ECONOMIC GROWTH, ACTUAL AND PROJECTED, 2005–2015



Before, during, and after the recent global economic crisis, emerging and developed economies have grown faster than advanced economies. As a result, the world distribution of income has become more equal. Paradoxically, however, income distribution within many countries, including the United States and China, has at the same time become less equal. Also, some countries, and even whole regions such as Sub-Saharan Africa, have lagged behind.

Source: IMF, World Economic Outlook Database, September 2011

Gross Domestic Product (GDP)
A measure of the value of total output of goods and services produced within a nation's borders

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

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.[1] If GDP is to provide a meaningful measure of growth over time, like other economic quantities it must be expressed in **real** terms; that is, it must be adjusted for the effects of changes in the average price level. For example, during the period of prosperity from the last quarter of 2001 to the last quarter of 2007, U.S. **nominal** GDP (that is, GDP measured according to prices at which goods were actually sold in the given year) grew from $10,373 billion to $14,253 billion, or 37 percent. However, part of the increase in nominal GDP was due to an increase of roughly 20 percent in the average price level during the period. Adjusted for inflation and expressed

in constant dollars, real GDP increased by only 17 percent. The term **real output** is a synonym for real gross domestic product.

Real output

A synonym for real gross domestic product

Sources of Economic Growth

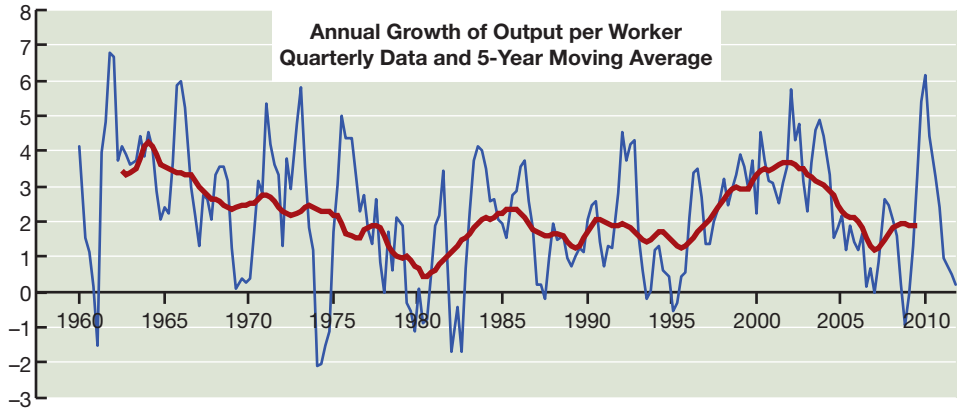
We can divide the sources of economic growth into two main components: the growth of total labor inputs, on the one hand, and the growth of output per unit of labor, or labor productivity, on the other.

The growth of total labor inputs depends on 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. Most of the growth is due to immigration. Population in most other advanced countries is stable or slowly declining. Another possible source of increased labor input is increased labor 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 2000, labor force participation has begun to decrease again although it is still well above the rates of the 1950s and 1960s. Over the past fifty years, the increase in labor force participation and population growth together have more than offset a decrease of about 10 percent in the average number of hours each employed person has worked each year. Taking all these trends together, total hours worked in the U.S. economy have grown moderately.

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

In contrast to the slow changes in hours worked, output per worker (productivity) has experienced considerable volatility over the past fifty years, as shown in Figure 17.2. To show trends more clearly, the chart shows both quarterly rates of productivity growth and averages over a five-year period. The simple average rate of productivity growth over the whole period was 2.2 percent. During the 1970s and early 1980s, productivity growth suffered a prolonged slowdown. Then, from the mid-1990s to mid-2000s, productivity growth grew more strongly again.

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



This chart depicts output per worker in the business sector of the U.S. economy from 1960 to 2008. Quarterly data move irregularly. To show trends more clearly, the chart also includes a five-year moving average of productivity growth.

Data source: Federal Reserve Bank of St. Louis

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

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. Economists use the term **total factor productivity** to refer to any increase in output per worker that they cannot attribute to changes in capital per worker.

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

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.

Capital includes industrial equipment like bulldozers and assembly robots.

The Benefits and Costs of Economic Growth

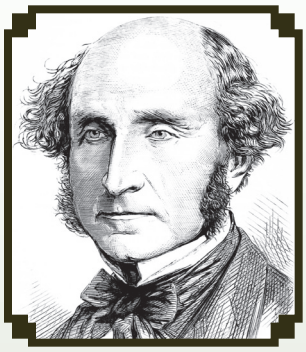
Economic growth has many benefits. First and foremost, it provides consumers with a higher standard of living in the form of more goods and services. Growth also means new opportunities to choose between work and leisure. If more people choose to work, or if people want to work longer hours, growth makes 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 with fewer hours per week and more days off.

Finally, many people see economic growth as a necessary condition for reducing poverty and economic injustice. Growth is not a sufficient condition, as it is not always the case that a rising tide lifts all boats. For example, in the United States, the yachts of the rich have risen significantly more rapidly than the rafts of the poor, at least in recent years. From 1979 to 2007, the share of total income going to the highest-earning 1 percent of U.S. households roughly doubled—from about 9 percent to about 18 percent.[2] Still, there is little dispute that issues of social equality are even harder to resolve in countries where the tide is going out.

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.

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 three, was tutoring the younger members of his family in Latin at age eight, and first read Smith's *Wealth of Nations* at age thirteen. 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:

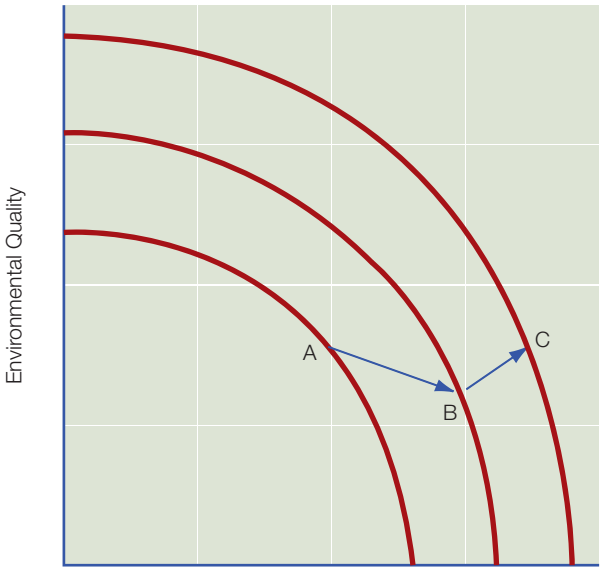
> I cannot … regard the stationary state of capital and wealth with the unaffected aversion so generally manifested towards it by political economists of the old school. I am inclined to believe that it would be, on the whole, a very considerable improvement on our present condition. I confess I am not 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 many writers who are concerned about problems of population, pollution, and resource depletion echo Mill's sentiments.

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 fail to distinguish between two issues: the rate of economic growth and its direction.

Figure 17.3 uses a production possibility frontier to help separate the two issues. The diagram shows an economy that can use resources either for improving environmental quality or for increasing per capita consumption of material goods. For an economy operating efficiently on its production possibility frontier, the only way to improve environmental quality is to divert resources from production of material goods.

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, while investing more to make power plants cleaner means producing less energy. Over time, investment and innovation shift the production possibility frontier outward. Either of two growth paths is possible 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.

Over time, however, investment and innovation shift the production possibility frontier 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 activities such as production of renewable energy and restoration of 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 environmental quality, for example, quality of urban air, improved in recent decades after deteriorating through much of the nineteenth and early twentieth centuries.[3]

17.2 Short-Run Macroeconomics and the Business Cycle

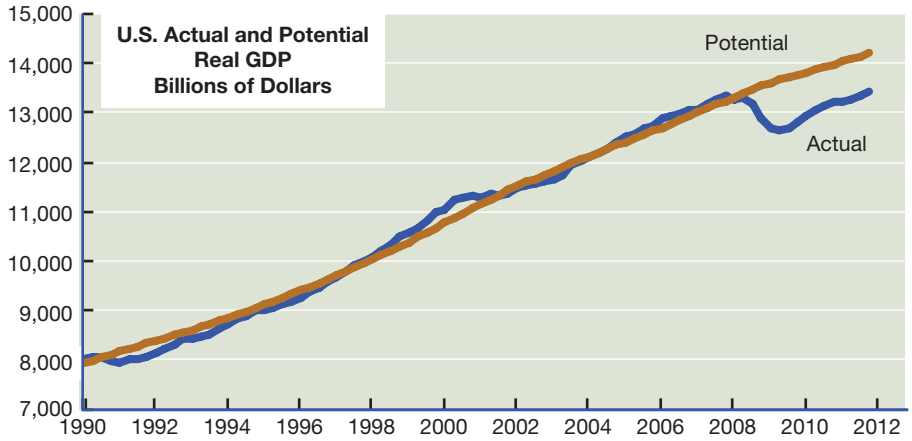
The first section of this chapter focused on prosperity—economic growth and its causes in the long run. In this section, we turn to issues of stability, that is, to short-run variations around the long run trends of real GDP, inflation, and employment.

Natural (potential) level of real output

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

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.

Figure 17.4 Actual and Potential Real Output in the United States 1990–2011



This chart shows U.S. actual and natural, or potential, real GDP. Potential GDP represents the estimated 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 the output gap.

Source: Federal Reserve Bank of St. Louis.

As the chart shows, until the economic crisis that began at the end of 2007, real GDP moved sometimes above and sometimes below the long-term trend line, but never far from it. Economists call the difference between the current level of real output and potential real output the **output gap**. A positive output gap indicates that real output is above its natural level; a negative output that it is below the natural level. After 2008, real GDP dropped much farther below the long-term trend of potential GDP than at any time since the Great Depression of the 1930s. Some economists think that the shock to the economy that occurred during the global economic crisis was so great that it has permanently reduced the country's potential GDP. If so, it will be necessary to make a downward adjustment of the line showing potential real GDP. Doing so would make the output gap appear smaller. As of early 2012, it was too early to know for sure whether such an adjustment would be necessary, or whether, instead, the economy will eventually grow back in line with the potential GDP trend shown in the chart.

Output gap

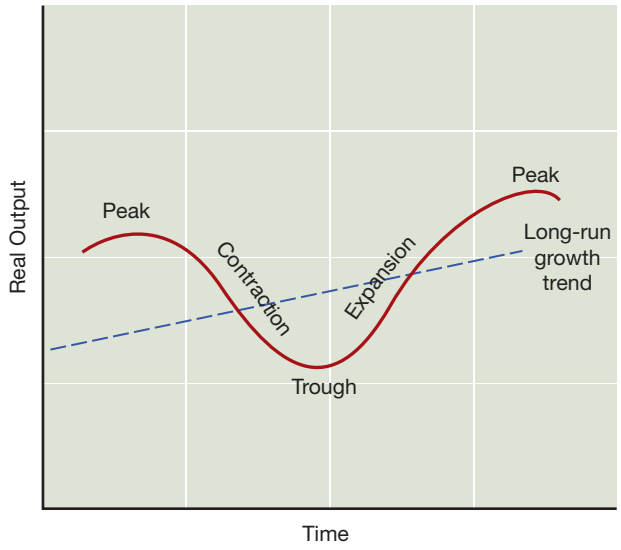
The economy's current level of real output minus its natural level of real output

Phases of the Business Cycle

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

Economists use the term **business cycle** to refer to the alternating periods of growth of GDP above and below its long-term trend. Figure 17.5 shows an idealized business cycle. We can divide the cycle into four, or possibly five, 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. Some economists use the term recovery to refer to the first part of the expansion, before the economy returns to its previous peak of output.

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 its trough. Following the trough, the economy enters an expansion until it reaches a new peak. 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.

Recession
A cyclical economic contraction that lasts six months or more

According to a commonly used (although somewhat simplified) definition, a contraction lasting six months or more is a **recession**. Figure 17.4 clearly shows the most recent recession, which began in late 2007 and lasted until mid-2009.

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. Because no succeeding contraction has come close to it in severity, the term depression has passed out of use in all but historical contexts. Many people have begun to refer to the period of low economic activity that began in 2007 as the "Great Recession." Although that downturn was not as severe as the Great Depression itself, it was been worse than any other cyclical downturn since.

The term "**Great Recession**" should be understood in an informal sense. Technically, the recession that began in December 2007 ended in June 2009, the month that the economy reached the trough of the business cycle. However, in popular discussion, the term applies to a period that extends at least through the recovery phase of the cycle, which lasted until the third quarter of 2011, when the economy finally reached its pre-recession peak of real GDP. Even after that date, many people continued to speak of the Great Recession as something still ongoing. Some are likely to do so as long as a large, negative output gap persists.

Great Recession
An informal term for the period of low economic activity that began in December 2007

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.

Measuring Unemployment Trends The most common 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. It is worth looking closely at some terms and methods that underlie this deceptively simple statistic.

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 fifty thousand 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: 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?

Respondents' answers to these questions determine their employment status. A person is officially **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 officially **unemployed**.

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 1 hour a week for pay or at least 15 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

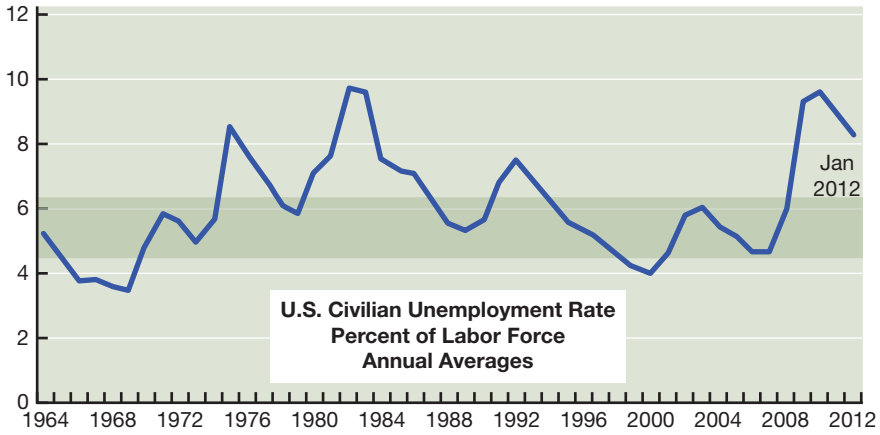
Labor force
The sum of all individuals who are employed and all individuals who are unemployed

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 do not count 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 measure of the labor force, known as the civilian labor force, also excludes members of the armed forces.

Figure 17.6 shows the unemployment rate for the United States since 1960. The shaded band indicates "low to moderate unemployment" reflecting 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, followed by a sharp increase in the aftermath of the global economic crisis.

Figure 17.6 U.S. Civilian Unemployment Rate



There is no one level of unemployment that is 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 percent unemployment that many people consider "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: Economic Report of the President, 2011, Table B-42; 2011–12 data from Bureau of Labor Statistics

Gray Areas in the Measurement of Unemployment There are many gray areas in the measurement of unemployment. People have criticized the official data 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, many people who work are not officially employed. By far the largest such group consists of people who work full time at housekeeping and child care. People in those occupations count as employed if they work for pay, but much of such work is done without pay. Also, children under age sixteen do not count 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 counts as unemployed. In addition to those who are not looking for work, and therefore are not 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 many people who count as employed because they work part-time, but who would prefer full-time work if they could find it.

People who have jobs but are absent from them because of labor disputes are counted as employed.

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 count as unemployed are on layoffs from jobs to which they expect to be recalled or have found jobs that they expect to start within thirty days. Other people who count 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 fit people who have part-time jobs but would take full-time jobs if they could find them.

Discouraged worker

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

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, often called "broad unemployment," includes many discouraged and underemployed workers along with those who are officially unemployed. In May 2007, when the official unemployment rate hit a cyclical low of 4.4 percent, U-6 was 8.2 percent. In October 2009, when the official rate reached its high for the recession of 10.0 percent, U-6 reached 17.4 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**.[4] That 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.

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

The natural rate of unemployment is a theoretical construct that economists cannot observe, but must measure indirectly instead. A recent paper by Murat Tasci and Saeed Zaman of the Federal Reserve Bank of Cleveland looked at various ways of estimating the natural rate.[5] The authors observe that regardless of the method used, the natural rate varies over time. It was low in the 1950s and 1960s, rose during the 1970s and 80s as many new workers entered the labor market, and has fallen since then. Their preferred estimate for the natural rate as of 2010 was 5.6 to 5.7 percent, a bit higher than before the recession. However, other economists put the rate higher, perhaps in the range of 6.3 to 6.5 percent.

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 appear.

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. Government statisticians base the monthly figure for change in payroll jobs on a survey of employers that is entirely separate from the household survey they use to calculate the unemployment rate. The sample size of the employer survey is larger, and some people consider it more reliable. However, it, too, has its problems. It is often subject

to significant revisions. Also, unlike the unemployment rate, it does not include farm workers and the self-employed. 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 responds to 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.[6]

The **employment-population ratio** is subject to long-term demographic changes as well as cyclical influences. As the population ages, a smaller percentage of the whole population is of working age. The combined effects of the business cycle and demographic trends brought the employment-population ratio to an all-time low of 58.2 percent in June 2011. By early 2012, it had risen a little, but it will presumably resume its long downward trend in the future.

Employment-population ratio

The percentage of the noninstitutional adult population that is employed

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 17.7 shows that as of the fourth quarter of 2006, when the job market was strong, 38 percent of unemployed workers were out of a job for five weeks or less. By the second quarter of 2010, the job market had weakened significantly, and just 19 percent of unemployed workers were still out for five weeks or less between jobs.

The term **frictional unemployment** refers 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, 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 job search are often high.

Frictional unemployment

The portion of unemployment that reflects the short periods of unemployment needed for matching jobs with job seekers

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 17.7 shows that as of late 2006, just 16 percent of unemployed workers were out of a job for half a year or more. By mid-2010, that percentage had risen to 45 percent, far higher than at any other time since World War II. 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 without the work experience needed to find steady work. Workers without high-school education are particularly

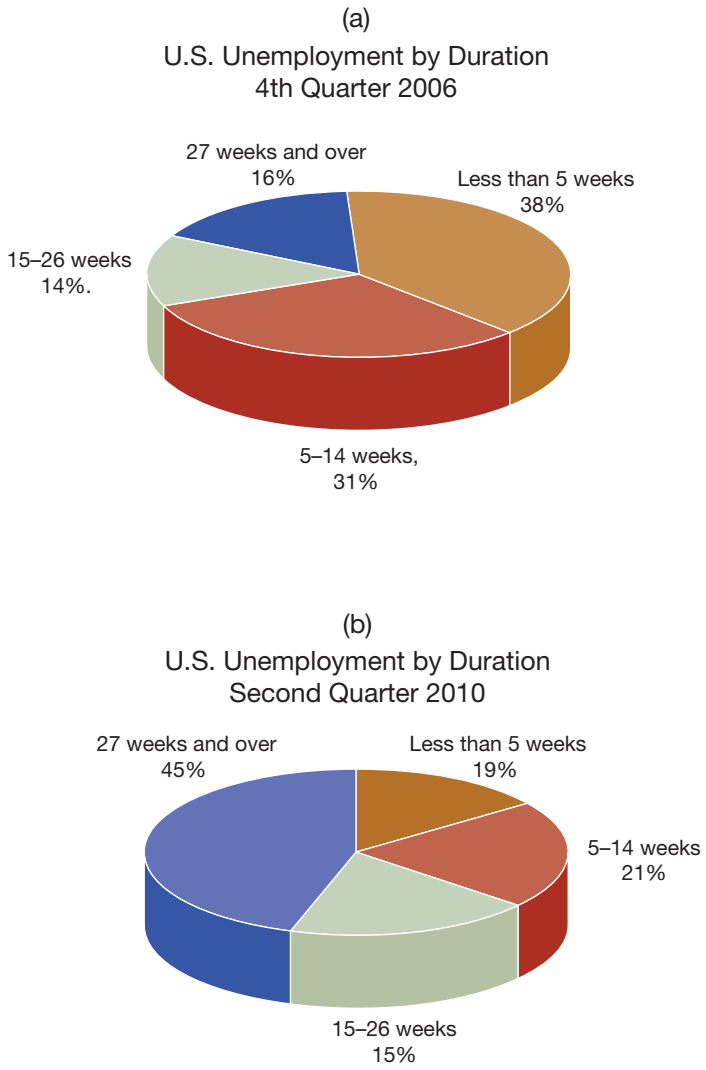
Structural unemployment

The portion of unemployment that reflects long periods out of work by people whose skills do not match those required for available jobs

vulnerable to structural unemployment, and structural unemployment rates are higher for some minorities than for the population as a whole.

As Figure 17.7 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.

Figure 17.7 U.S. Unemployment by Duration



As this chart shows, there is considerable variation in the length of time people are unemployed. In 2006, when the job market was strong, short-term frictional unemployment predominated. When the job market weakens, as in 2010, structural unemployment rises.

Source: Economic Report of the President, 2011, Table B-44.

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 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 out of work. The average duration of unemployment rises above normal frictional plus structural levels. Economists use the term **cyclical unemployment** to mean the difference between the actual unemployment rate in a particular month and the natural rate. When the economy slows down, cyclical unemployment adds to frictional and structural unemployment. At the peak of an expansionary period, cyclical unemployment is negative.

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

17.3 Price Stability

Up to this point, our discussion has focused on real variables—real output and the level of employment. Changes in the prices of goods and services are also important, however. **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—is another of the major goals of macroeconomic policy.

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

Price stability
A rate of inflation that is low enough not to be a significant factor in business and individual decision-making

Figure 17.8 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 again came under control and has remained low since.

Figure 17.8b shows that the decline of inflation since the 1980s was part of a world-wide phenomenon. In the 1980s and 1990s, inflation in emerging and developing economies was much more rapid than in advanced economies. Since that time, inflation has slowed to moderate levels in both groups of countries.

Short-Run Costs of Inflation

Some of the year-to-year variation of inflation in Figure 17.8 is attributable to the business cycle. As the cycle approaches its peak, inflation tends to accelerate. During recessions, inflation slows again. As inflation rises and falls over the business cycle, its costs affect people unevenly.

Transfer payments

Payments to individuals that are not made in return for work they currently perform

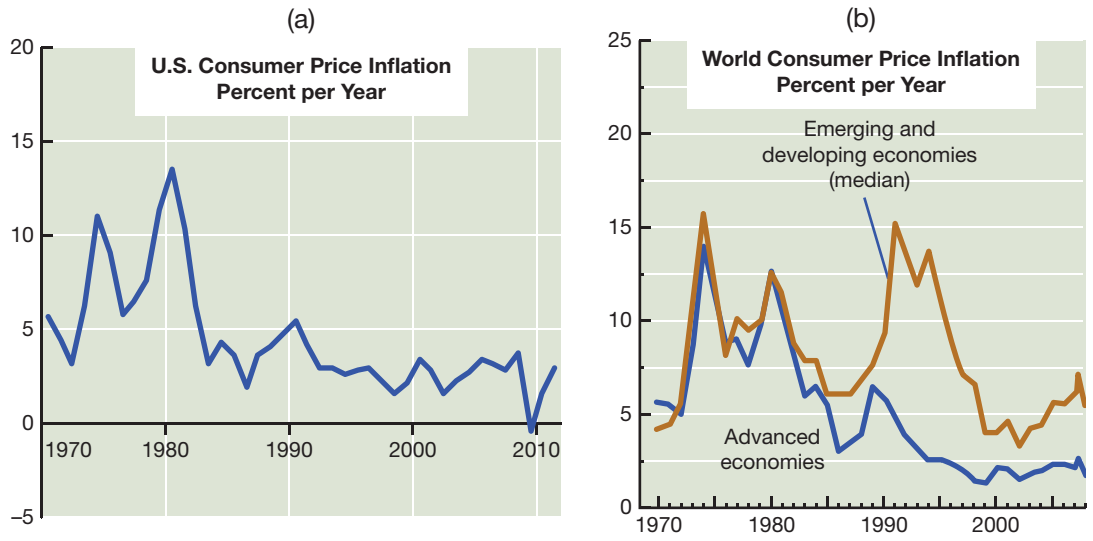
Indexation

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

Most people receive the bulk of their income in the form of wages and salaries. Wage and salary earners often feel that they suffer from 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, receive automatic adjustments that compensate for changes in consumer prices that protect them from inflation. Such automatic adjustments go by the general name of **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

Figure 17.8 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. The 1970s and early 1980s were years of high and variable inflation; but by the late 1980s, inflation came under control and has remained low since. Part b shows that since the 1980s, inflation has slowed, not just in the United States, but around the world, first in advanced economies and later in emerging market and developing economies.

Source: Figure 4.8a, Bureau of Labor Statistics. Figure 4.8b: IMF, World Economic Outlook Database, September 2011

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; you, the creditor, are hurt.

However, the traditional view of the effects of inflation is incomplete because 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 of the loan. Suppose instead that we both had expected a 10 percent increase in the price level over the life of the loan. In that case, you would not have lent 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 I had expected no inflation.

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.

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

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.

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 that is underway. 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 reached a peak of more than 10 percent.

Deflation

Deflation

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

Sometimes a country experiences a period in which the price level falls for a sustained period. The term for such an episode is **deflation**. Superficially, one might think that if inflation is bad, deflation must be good. 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, Japan has experienced deflation on and off since the early 1990s. Although the rate of deflation has usually been about one percent per year or less, it has contributed to a sharp slowdown in Japan's once booming economy. At first, people referred to the period starting in the 1990s as Japan's "lost decade," but now they are beginning to worry that the shift to slow or no growth may last indefinitely.

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?** The most common measure of economic growth is the rate of growth of *Gross Domestic Product (GDP)*, a measure of the value of the economy's total output of goods and services. Economists often express GDP in real terms to avoid distortions caused by inflation. Real gross domestic product in the United States has grown at an average rate of about 2–3 percent since 1950, although that growth has not been steady. Economic growth 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. We need to consider composition of real domestic product, as well as its rate of growth, in order to properly assess environmental damage.

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 we call the *business cycle*. The point at which output reaches a maximum is the peak of the cycle. It is followed by a contraction, a trough, an expansion, and a new peak. A contraction lasting six months or more is 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 counts as *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. We refer to unemployment as frictional, structural, or cyclical, depending on its cause. The natural rate of unemployment is the sum of structural plus frictional unemployment. The employment-population ratio is the percentage of the adult non-institutional population that is employed.

(Continues)

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. The best-known measure of inflation is the rate of change in the *consumer price index*. In measuring economic quantities, we must distinguish 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. Deflation means a sustained period during which the price level falls. Deflation is also harmful to the economy.

Key Terms	Page #
Business cycle	500
Cyclical unemployment	507
Deflation	510
Discouraged worker	503
Employed	501
Employment-population ratio	505
Frictional unemployment	505
Great Recession	501
Gross Domestic Product (GDP)	492
Indexation	508
Inflation	507
Labor force	502
Natural (potential) level of real output	498
Natural rate of unemployment	504
Nominal	492
Nominal interest rate	509
Output gap	499
Price stability	507
Real	492
Real interest rate	509
Real output	493
Recession	500
Structural unemployment	505
Total factor productivity	494
Transfer payments	508
Unemployed	501
Unemployment rate	501

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** Some people have suggested replacing the unemployment rate 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. Do you think the government's broad unemployment measure, U-6, is an adequate expression of unemployment hardship?

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.) 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 the result of economic growth? Can you identify any environmental problems that stem from 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** The government publishes unemployment and inflation data monthly (www.bls.gov), and data on economic growth on a quarterly basis (www.bea.gov). 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 now? Use the data you find to update relevant figures in this chapter.

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 1992, 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 its recovery from a recession although there had not yet been an official announcement of its end. But 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.

What about good news that comes just before the election? History suggests that such news can be too little, too late. Economists who have studied the economics-politics link in detail, like Ray Fair of Yale, 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 just before the 1992 election. Unemployment fell; and 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, it there was an upward revision 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.

At the time of writing, the election campaign of 2012 is just getting underway. At the start of the year, unemployment was high but falling, and growth, although still moderate, was better than in the previous year. Political observers were expecting economic trends to have a strong influence on the election results.

BVT Lab

Visit www.BVTLab.com to explore the student resources available for this chapter.

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 George H. W. Bush. 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 also of many more people as well. Why do you think this is the case?

3. By the time you read this, the 2012 presidential election will be over. Did Barack Obama, the incumbent, achieve re-election, or was there a change of party in the White House? Did the election results confirm the importance of economic data during spring and early summer, as in the election of 1992, or did a different pattern emerge?

Endnotes

1. Chapter 19 will give a more formal definition of GDP and explain the methods used to measure it.
2. For details, see Congressional Budget Office, "Trends in the Distribution of Household Income, 1979–2007," October 2011 (http://www.cbo.gov/publication/42729). Chapter 16 explored 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. We will explore the relationship between inflation and changes in real output and unemployment, in detail, in later chapters.
5. "Unemployment After the Recession: A New Natural Rate?" Federal Reserve Bank of Cleveland, September 8, 2010, http://www.clevelandfed.org/research/commentary/2010/2010-11.cfm.
6. 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.