2. How Do Economists Measure the Size of an Economy?

When economists study a country's economy, they can look at it from two different perspectives. They can study the economic decision making of individuals, households, and firms—the field known as microeconomics. Or, as you will do in this chapter, they can study the workings of the economy as a whole, the focus of macroeconomics. One of the first questions that scholars in the field of macroeconomics ask is, "How big is the economy?"

Gross Domestic Product: What an Economy Produces

The main measure of the size of a nation's economy is its gross domestic product. GDP is an economic indicator that measures a country's total economic output.In formal terms, **gross domestic product** is the market value of all final goods and services produced within a country during a given period of time. A steadily growing GDP is generally considered a sign of economic health.

The job of measuring U.S. GDP belongs to the Department of Commerce's Bureau of Economic Analysis. We can learn a lot about what is involved in this measurement by looking at the formal definition of gross domestic product phrase by phrase.

The market value . . . Our economy produces a vast variety of goods and services, everything from guitar lessons to computers. How can anyone add them all together to come up with a single measure of an economy's output? The Bureau of Economic Analysis does so by attaching a market value to each product. **Market value** is the price buyers are willing to pay for a good or service in a competitive marketplace.

Of all final goods and services . . . GDP is based on the market price of every "final" good or service that can be legally sold in a country. A **final good** is any new good that is ready for use by a consumer. A box of cereal is a final good, as is a new car. Goods that are used in the production of final goods, such as the grains used to produce cereal or the steel and rubber used to manufacture cars, are known as **intermediate goods**. Their market value is not counted in GDP because it is already included in the market value of the final good.

Produced within a country . . . To be included in GDP, goods and services must be produced within the country's borders. The firms that produce the goods and services do not necessarily have to be American owned. Cars manufactured in the United States by the Japanese automaker Toyota, for example, are included in this country's GDP.

During a given period of time. The Bureau of Economic Analysis calculates GDP every quarter, or three-month period. Economists use the calendar year GDP to compare production from year to year or from country to country. This annual GDP includes all final goods and services produced between January 1 and December 31. Goods do not have to have been sold during that period to be included in GDP. For example, a kayak manufactured in 2009 but sold in 2010 would be included in the 2009 GDP.

How Economists Calculate GDP

Economists typically calculate GDP by measuring expenditures on goods and services produced in a country. They divide the economy into four sectors:households, businesses, government, and foreign trade. Each sector's spending makes up one of the four components of GDP: household consumption (*C*), business investment (*I*), government purchases (*G*), and the net of exports minus imports (*NX*). Economists calculate GDP using this formula:

$C + I + G + NX$ = GDP

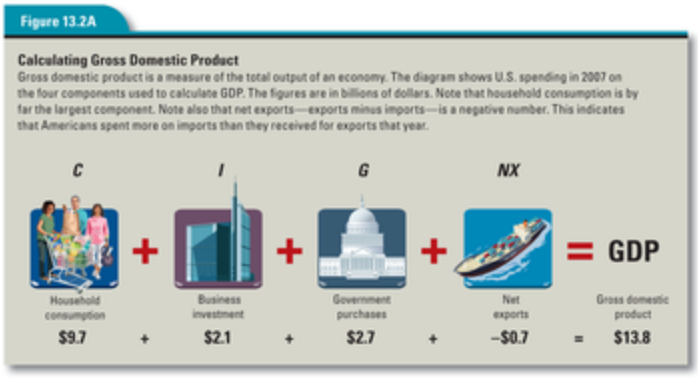


Figure 13.2A shows how this formula was used to calculate this country's GDP for the year 2007.

Household consumption, C. This component of GDP consists of goods and services bought by people in households for personal use. Household consumption ranges from food and fuel to movie tickets and medical care.

Business investment, I. This component consists largely of business investment in capital goods, such as buildings and machinery. It also includes goods produced but not yet sold.

Government purchases, G. Federal, state, and local government purchases of goods and services are also included in GDP. Economists do not count government transfer payments, such as welfare or Social Security benefits, as part of GDP. These payments do not create new production, nor do they involve the purchase of goods or services by the government.

Net exports, NX. In calculating the impact of trade on GDP, economists focus on **net exports**—the value of all exports minus all imports. This makes sense because when a country exports goods and services, those exports bring money back home. The sale of these goods increases the exporting country's GDP. Just the opposite happens, however, when a country imports goods and services. The money used to pay for these imports leaves the economy, thus decreasing the importing country's GDP.

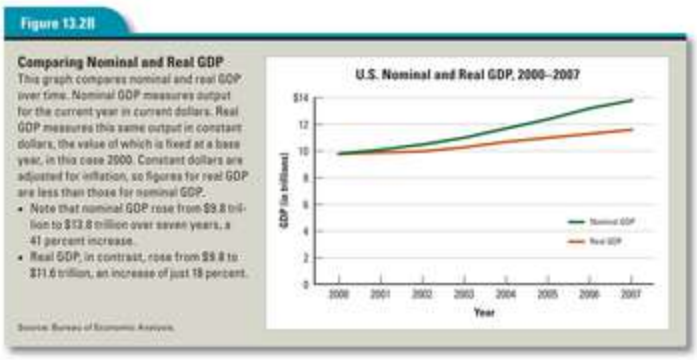
Net exports can be either positive or negative. When exports exceed imports, net exports are positive and increase GDP. When imports exceed exports, net exports are negative and decrease GDP.

Adjusting for Inflation: Nominal vs. Real GDP

Economists use GDP figures to determine not only how big an economy is, but whether it is growing or shrinking and at what rate. For example, the GDP of the United States in 2006 was $13.2 trillion. The GDP in 2007 was $13.8 trillion. The difference between these two figures suggests that the economy grew by some $0.6 trillion, or 4.5 percent, from 2006 to 2007.

But is determining changes in economic output as simple as subtracting an earlier year's GDP from a later year's GDP? The answer is no, and the reason is inflation, which drives up the prices of goods and services over time.

Simply calculating GDP by adding the spending on its four components yields what economists call nominal GDP. **Nominal GDP** measures the output of an economy valued at today's prices, or in current dollars. **Current dollars** reflects the purchasing power of the dollars in the year they are spent. Using current dollars does not take the effect of inflation into account. Inflation can cause prices in current dollars to rise from year to year. And if prices go up, nominal GDP will increase over time, even if the actual output of the economy does not.



To compensate for the effects of inflation, the Commerce Department calculates what is called real GDP. **Real GDP** measures the output of an economy not in current dollars, but in constant dollars.The value of **constant dollars** is fixed at a rate that was current in a specified base year. Because the purchasing power of constant dollars is fixed, real GDP allows us to compare the total output of an economy from year to year as if prices had never changed.

In the example above, real GDP figures show that U.S. economic output grew by only 2.0 percent during 2007, not 4.5 percent as indicated by nominal GDP figures. Figure 13.2B compares nominal and real U.S. GDP over several years.

Adjusting for Population: Per Capita GDP

Economists also use GDP to compare the economies of individual countries. To make accurate comparisons, economists must adjust GDP yet again. This time they do so to take population size into account.

Adjusting for population is accomplished by calculating per capita GDP. *Per capita* means "per person." **Per capita GDP** is a nation's real gross domestic product divided by its population. It is an accepted measure of a society's standard of living.

Consider the United States and Norway, for example. In 2007, the GDP of the United States was about $13.8 trillion. This was more than 55 times the size of Norway's GDP of $0.25 trillion. The difference is not surprising, considering that the U.S. population was more than 300 million and that of Norway just under 5 million. A country with more people generally produces more goods and services, resulting in a higher GDP.

As this example shows, size alone does not provide a complete picture of a country's economy. This is why economists use per capita GDP to compare one nation to another. In 2007, the per capita GDP of the United States was $45,800. The per capita GDP of Norway was $53,000. Despite having a much smaller economy, Norwegians had a higher standard of living than Americans did.

Limitations of GDP as an Indicator of Economic Health

Gross domestic product is a useful tool for measuring economic growth. But as a measure of the overall health of an economy, GDP has several limitations.

GDP leaves out unpaid household and volunteer work. Unpaid activities can have value. A volunteer firefighter, for example, and a parent who stays home to raise children are both doing important work. But because no money is exchanged, such work does not show up in a country's GDP.

GDP ignores informal and illegal exchanges. GDP statistics do not count informal or illegal economic activity as part of a nation's output. An **informal economy** is one that operates without government regulation. Occasional babysitters, for example, are paid for their work. But such transactions are not counted as part of a country's GDP. Barter is another type of informal exchange that is not reflected in GDP.

GDP counts some negatives as positives. A rise in GDP is not always a good sign. For example, after a hurricane, rebuilding can generate economic activity, which in turn can boost GDP. But people are still far worse off than they would have been if disaster had not struck. Over-exploitation of natural resources can also boost GDP. Cutting down a rainforest, for example, will raise GDP in the year of the harvest, but this temporary rise is no guarantee that people will be better off in the future without that resource.

GDP ignores negative externalities. GDP does not reflect the impact of negative externalities such as pollution. A rapidly industrializing country like China, for example, can have a rising GDP even as water and air quality decline. Moreover, GDP turns a negative into a positive when money is spent in response to environmental damage. For example, if a chemical spill from a factory contaminates a drinking well, people's purchases of bottled water are added to GDP.

GDP places no value on leisure time. Citizens of industrialized nations today enjoy more free time than ever before. This leisure time is a major benefit of living in a modern economy. Yet because time is not sold in markets, it is not reflected in GDP.

GDP says nothing about income distribution. A high per capita GDP may suggest that everyone in a society receives a fair share of goods and services. But per capita GDP is an average. It tells us nothing about how income is distributed in a society. Saudi Arabia, for example, has a high per capita GDP but huge income gaps between its richest and poorest citizens.

As this list of limitations suggests, there is much that GDP does not tell us about a society's economic welfare. As Robert Kennedy once observed,

[GDP] is indifferent to the decency of our factories and the safety of our streets alike. It does not include the beauty of our poetry or the strength of our marriages, or the intelligence of our public debate or the integrity of our public officials . . . It measures everything, in short, except that which makes life worthwhile.

—Senator Robert Kennedy, 1968

How GDP Growth Makes People Better Off

For all its limitations, GDP still matters. As a country's per capita GDP increases, so too do other indicators of well-being, such as those listed below.

Literacy and education. Studies show that countries with a high per capita GDP have high levels of education. The **literacy rate**—the percentage of people in these countries who can read and write—is at or near 100 percent. Literacy rates are much lower in countries with low per capita GDP. People with more education generally have better jobs and higher incomes than people with less education.

Health and life expectancy. GDP is related to the health of a population. One measure of health is**life expectancy**—the number of years, on average, that a person is expected to live. People live longer in countries with high per capita GDP than in countries with low per capita GDP. Another measure of health is **infant mortality**—the rate at which babies die during their first year of life.Because people in wealthier countries have better medical care and nutrition, infant mortality rates are lower in countries with high per capita GDPs.

Standard of living. Not surprisingly, people in countries with high per capita GDP tend to be more prosperous than people in low-GDP countries. Their houses are bigger and more comfortable. They have more food and clothing and better

access to services. While such material prosperity is surely no guarantee of individual happiness, overall, people are better off living in a society with a high standard of living.

3. What Does the Unemployment Rate Tell Us About an Economy's Health?

At any one time, millions of Americans may be out of work. For many of them, the experience is devastating. They struggle to pay bills and to put food on the table.In hard economic times, the number of people who are unemployed rises. When business is booming, the number falls.

The job of tracking unemployment belongs to the Bureau of Labor Statistics. The BLS is a government agency that collects and analyzes economic data. This agency determines the **unemployment rate**—the percentage of the labor force that is seeking work. Like the GDP, the unemployment rate is a useful indicator of the health of an economy. In general, a high unemployment rate means the overall health of the economy is poor.

How the Government Measures Unemployment

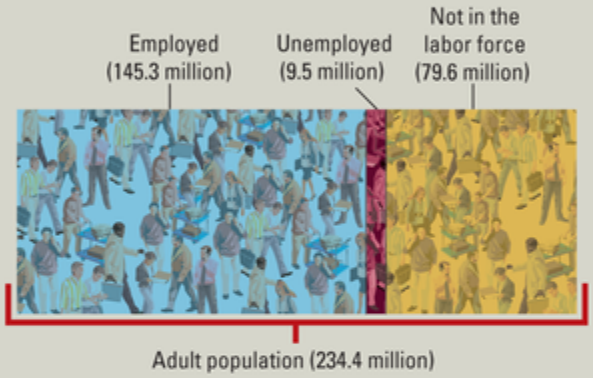
Every month, the BLS reports the total number of people who were unemployed for the previous month. To arrive at this figure, the BLS does not attempt to count every job seeker in the country. Instead, it conducts a sample survey each month. By examining a small but representative sample of the population, the BLS can gauge how many people in the entire population are unemployed.

Figure 13.3A

Calculating the Unemployment Rate

The Bureau of Labor Statistics classifies people who are eligible to participate in the labor force as employed, unemployed, or not in the labor force.

U.S. Unemployment, September 2008



Source: Bureau of Labor Statistics.

It then uses these figures to determine the unemployment rate.

- To calculate the size of the labor force, add the number of employed workers to the number of unemployed workers.
- To calculate the unemployment rate, divide the number of unemployed workers by the number of people in the labor force.

$$\text{unemployment rate} = \frac{9.5 \text{ million}}{154.8 \text{ million}} \times 100 = 6.1\%$$

The BLS surveys about 60,000 households each month. Household members who are eligible to be in the labor force are interviewed about their activities during a specific one-week period. The survey excludes those who are under 16 years of age, on active duty in the military, or in an institution such as a prison or nursing home. Based on the interview data, the BLS classifies those who are eligible as employed, unemployed, or not in the labor force.

Employed. Members of the labor force who have jobs are classified as employed. This category includes people who worked for at least one hour for pay or profit during the survey week. It also includes those who worked 15 hours or more without pay in a family-operated business. And it includes workers who were sick, on vacation, or otherwise excused from their jobs during the survey week.

Unemployed. Members of the labor force who are jobless, but are looking for work, are classified as unemployed. To be counted as unemployed, individuals must have actively looked for work in the four weeks preceding the survey week. They had to have inquired about jobs, sent out resumes, filled out job applications, or otherwise sought work. There is an exception: people who have been laid off and are waiting to be called back to their jobs need not actively seek work to be counted as unemployed.

Not in the labor force. Everyone who is eligible to be in the labor force but is neither working nor looking for work is classified as not in the labor force. This category includes full-time students as well as people who are retired, disabled, or prevented by family responsibilities from taking a paying job.

The BLS adds together the number of employed and unemployed people to determine the size of the labor force. To calculate the unemployment rate, it then divides the number of unemployed people by the number in the labor force. The result is multiplied by 100 to express this ratio as a percent, as shown in the formula below.

unemployment rate = number unemployed/number in labor force x 100

Figure 13.3A shows how this formula applies to a specific example, drawn from the results of one BLS survey conducted in 2008.

Four Types of Unemployment

In its interviews, the BLS gathers detailed information about people who are unemployed. Based on those data and further research, economists identify four types of unemployment: frictional, structural, seasonal, and cyclical.

Frictional unemployment. Have you ever heard someone talk about being "between jobs"? This situation, which exists when a person has left one job and is looking for another, is what economists call **frictional unemployment**. It applies to people who change jobs as well as to people seeking their first jobs. Frictional unemployment is usually short term, lasting only as long as is needed to find the right job.

Consider Devin, who worked for a year in the electronics department of a retail store at the mall.Though he excelled at his job, he was unable to get a promotion. So he quit, confident he would be able to find a better position at a big electronics store.

Frictional unemployment like Devin's can create temporary hardship for the jobless person. It also represents lost production for an employer trying to fill a position.However, a certain amount of frictional unemployment is unavoidable

when people are free to change jobs at will. Changing jobs, as Devin did, is usually good for the economy because it can reallocate labor resources to their best use.

Structural unemployment. People who choose to change jobs are in transition. Their skills are still in demand and the time they spend without a job is usually short.The same cannot be said of those who experience structural unemployment. **Structural unemployment** comes about mainly when advances in technology reduce the demand for certain skills.

Megan, for example, worked as a travel agent for 20 years. People told her where they wanted to go, and she made all the arrangements. She loved her job—until the Internet came along. Online travel services made it easy for people to plan their trips themselves. The demand for Megan's skills dried up. Her job was eliminated, and she became unemployed. What can people like Megan do to become employable again? They might consider returning to school to develop new skills that employers want. Or they might be able to adapt existing skills to qualify for new job opportunities. Even though structural unemployment is hard on those who experience it, the economy as a whole clearly benefits from the technological progress that creates it.

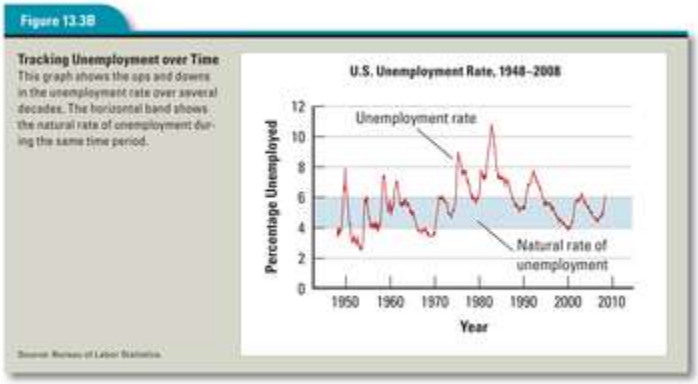
Seasonal unemployment. In some markets, demand for labor depends on the season. For example, Taylor works for a small construction company in Montana.Winters in Montana are so cold that her company almost always closes during January and February. For two months, Taylor experiences seasonal unemployment.**Seasonal unemployment** occurs when businesses shut down or slow down for part of the year, often because of weather. Tourism, construction, and agriculture are among the industries that typically lay people off for part of the year.

Cyclical unemployment. Every economy goes through prosperous times and hard times. Such cycles of growth and decline are the cause of **cyclical unemployment**. This type of unemployment occurs during periods of decline. At such times, economic activity slows, GDP drops, and people lose their jobs.

Consider Kai, who in the late 1990s worked as a Web designer for a start-up company that sold pet supplies over the Internet. Like many other Internet-based start-ups—or dot-coms—the company had no trouble attracting investors who were convinced that doing business over the Internet was the wave of the future. The company's stock soared in value, even though the business itself wasn't making a profit. During this period, the price of dot-com stocks rose to dizzying heights.

Then, in 2000, the dot-com bubble burst. Investors rushed to sell off their dot-com shares, and the value of those stocks dropped dramatically. The company that employed Kai went out of business, leaving him and his co-workers unemployed. People like Kai who experience cyclical unemployment often have trouble finding new jobs that use their skills. Few businesses hire new workers during an economic decline. Moreover, the labor market may be glutted with equally qualified workers who are in the same situation. Many people are forced to take jobs outside their chosen fields or live on unemployment benefits while they wait for the economy to improve.

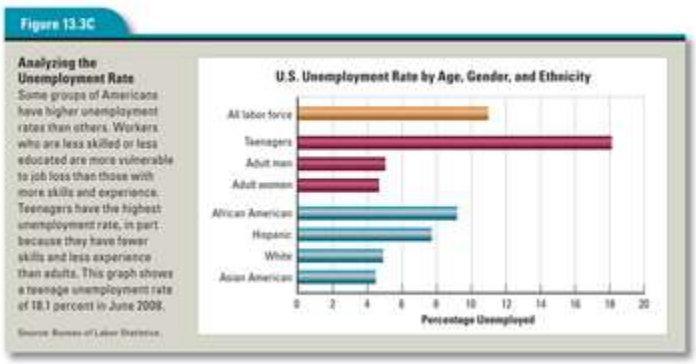
Full Employment and the Natural Rate of Unemployment



When an economy is healthy and growing, it experiences little cyclical unemployment. But there will always be some frictional, seasonal, and structural unemployment. Some people will always be out of work, even in an economy with full employment. At that point, all of the economy's available labor resources are being used efficiently.

When an economy reaches full employment, jobs exist for everyone who wants to work, even though a certain percentage of those jobs and workers will not yet have been matched together. Economists call this percentage the **natural rate of unemployment**. This rate has varied historically, but has generally ranged between 4 and 6 percent. Figure 13.3B shows unemployment rates over time.

Problems with the Unemployment Rate as an Indicator of Economic Health



In determining how many of the country's more than 300 million people are unemployed, the BLS makes every effort to be accurate. Still, critics point to several problems that may make the results less than exact.

The first problem is that at any one time, a number of unemployed people have given up looking for work. Though willing and able to work, they no longer expect to find jobs. These **discouraged workers** do not fit the BLS's definition of unemployed, which counts only those people who are making an effort to find work. Because discouraged workers are left out of BLS calculations, the official unemployment rate, some critics argue, is too low.

The second problem is that the official unemployment rate does not recognize **involuntary part-time workers**. These are people who, unable to find full-time jobs, settle for part-time employment. They work less than 35 hours per week. Others who once worked full time may have had their hours cut back. The BLS counts such part-time workers as employed. However, some economists think these workers should be counted as partially unemployed. For example, someone who works 20 hours a week but wants full-time work might be counted as "half unemployed."

A third problem with the unemployment rate involves people working in informal or underground economies. The **underground economy** is made up of people who earn income from gambling, drug dealing, and other illegal activities. When surveyed by the BLS, they would be unlikely to admit to anything illegal. Instead, their answers would suggest they are unemployed. The same might be true for people in the informal economy who pay no taxes on their earnings. As a result, the actual rate of unemployment might be lower than the official rate indicates.

The Economic Costs of High Unemployment

Despite its flaws, the official unemployment rate serves as a fairly good indicator of conditions in the labor market. And in general, when the rate is high, the overall health of the economy is poor.

The main economic cost of high unemployment is lost potential output. The smaller the number of people who are working, the fewer goods and services the economy can generate. Potential output is lost because labor resources are not being fully utilized. An increasing unemployment rate, then, means a decreasing real GDP.

Unemployed workers also pay a serious economic cost. They and their families lose income and the goods and services that income would have purchased. They may become unable to pay their monthly mortgage, leading to the loss of a home. Unemployment can also mean the loss of medical benefits, which then become an added expense.

High unemployment is also costly for society at large. Unemployed workers no longer contribute income taxes to the government. In fact, many begin taking money from the government in the form of unemployment insurance and other benefits. This may call for shifting money from other programs to pay the additional benefits, or it may mean raising taxes on those workers who remain employed.

4. What Does the Inflation Rate Reveal About an Economy's Health?

A second cup of coffee that costs more than the first. A pile of money that is more valuable as fuel than as currency. These were some of the bizarre realities of hyperinflation in post–World War I Germany.

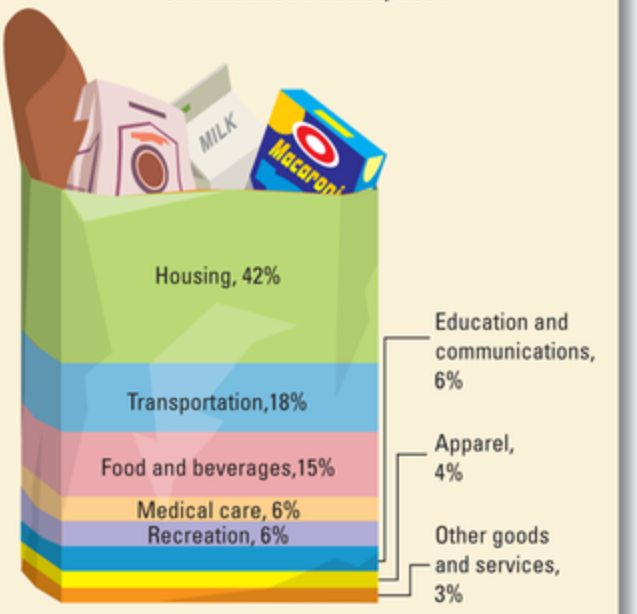
The German experience was proof, if any was needed, that runaway inflation can send an economy into a tailspin. That is why economists keep a close eye on a third economic indicator: the inflation rate. The **inflation rate** is the percentage increase in the average price level of goods and services from one month or year to the next. It is tracked by the same government agency that tracks the unemployment rate, the Bureau of Labor Statistics.

Key Concept

The Consumer Price Index

The consumer price index is an indicator used to track changes in the prices of basic household goods and services. Each group of items in the CPI's market basket is given a "weight," or percentage, that reflects how much consumers spend on it. Average consumers spend the largest part of their income on housing, which includes rent or mortgage payments, property taxes, heat, electricity, and furniture.

CPI Market Basket, 2007



Source: Bureau of Labor Statistics.

Tracking Inflation with the Consumer Price Index

The BLS tracks inflation by gathering information on Americans' cost of living. That is, it studies the cost of buying the goods and services that households like yours purchase every day. As you would expect, the cost of living changes all the time because prices do not stay the same.

Economists at the BLS track changes in the cost of living using what is known as the consumer price index. A **price index** measures the average change in price of a type of good over time. The**consumer price index** (CPI) is a price index for a "market basket" of consumer goods and services.Changes in the average prices of these items approximate the change in the overall cost of living.For that reason, the CPI is sometimes called the **cost-of-living index**. As such, it serves as the primary measure of inflation in the United States.

The CPI market basket is based on surveys of thousands of households about their spending habits.This information is used to develop a detailed list of items to track. Each month, BLS data collectors visit some 25,000 retail stores and record the prices of these items.

The BLS determines the CPI by comparing each month's price information to the prices paid for the same goods and services during a base period. As of 2008, the base period was 1982–1984. The BLS set the cost of goods and services in its market basket during that period at 100.

Using its monthly price data, the BLS can track the change in the CPI between any two periods. For example, the CPI for March 2007 was 205.352. By March 2008, the CPI had increased to 213.528.Based on those numbers, the BLS calculates that the CPI rose 4.0 percent during that 12-month period. In other words, the inflation rate for that one-year period was 4 percent.

Adjusting for Inflation: Nominal vs. Real Cost of Living

You have surely heard older people complaining about how much prices have gone up since they were your age. A pair of shoes that once cost $4, for example, cannot be had for less than $40 today. But do higher prices really mean that things cost more than they used to?

The price a person pays for a pair of shoes or any other product is its nominal cost, or its cost in current dollars. The cost in current dollars of all the basic goods and services that people need is the**nominal cost of living**. Like the nominal GDP, the nominal cost of living is based on current prices.

The **real cost of living** is the nominal cost of basic goods and services, adjusted for inflation.Knowing the rate of inflation —established by the consumer price index—allows economists to calculate the real cost of goods and services in constant dollars. The real cost of living can then be used to compare prices over time.

Figure 13.4A

Comparing Presidential Wages over Time

The first Congress set George Washington's salary as president at $25,000 a year. Two centuries and many pay hikes later, President George W. Bush received $400,000 a year. The difference seems enormous until the effects of inflation are taken into account. When real wages are compared—based on constant 2007 dollars—Washington comes out as the better-paid leader. As a fairly wealthy man, however, Washington declined to accept any salary as president.

Source: Congressional Quarterly and Robert Sahr, Oregon State University.

People who complain about how much prices have risen over the years are probably not thinking about the other side of the coin—wages. Consumers pay nominal costs with **nominal wages**, or wages based on current prices. As prices go up, wages generally go up as well. By using the CPI to adjust for inflation, economists can calculate **real wages** and compare them over time. Figure 13.4A, which tracks presidential salaries since 1789, illustrates the difference between nominal wages and real wages adjusted for inflation.

If wages keep pace with the cost of living, perhaps things do not really cost more than they used to.Thanks to this upward trend, the shoes once purchased for $4 were affordable then and may be just as affordable today at $40. Looking at the cost of living in terms of time, not money, supports this conclusion. As noted in a 1997 Federal Reserve report,
The cost of living is indeed going up—in money terms. What really matters, though, isn't what something costs in money; it's what it costs in time.Making money takes time, so when we shop, we're really spending time. The real cost of living isn't measured in dollars and cents but in the hours and minutes we must work to live.

So how does the cost of a $4 pair of shoes in 1958 compare to the cost of a $40 pair of shoes 50 years later? In 1958, the average wage was around $2 per hour. In 2008, wages averaged around $20 per hour. Which pair cost more in hours worked? The two pairs cost about the same—two hours of time worked.

Creeping Inflation, Hyperinflation, and Deflation

In an ideal world, prices would be stable, neither rising nor falling over time. In our real world, prices are always changing. The result can be creeping inflation, hyperinflation, or deflation.

Creeping inflation. In the United States we have come to expect a certain amount of gradual inflation, or **creeping inflation**, every year. Since 1914, the average annual rate of inflation has been about 3.4 percent. For much of that period, the rate has varied widely. But during your lifetime it has stayed fairly close to that average. For Americans, this is normal inflation—the level we are used to.

Hyperinflation. Occasionally inflation goes into overdrive. The result is hyperinflation. Runaway inflation creates extreme uncertainty in an economy. Nobody can predict how high prices will go, and people lose confidence in their currency as a store of value.

A number of countries have experienced hyperinflation since Germany in the 1920s. The African country of Zimbabwe is one example. Zimbabwe began its plunge into crisis in 2000, when the government seized thousands of white-owned farms. Foreign investors fled. Unemployment shot up. Food shortages became severe.The government responded to the crisis by printing money, adding trillions of Zimbabwean dollars to the money supply each year.

As the Zimbabwean dollar lost value, inflation skyrocketed. Vending machines that took coins quickly became unusable. One soda would have required the deposit of billions of coins. By early 2008, the official annual inflation rate had topped 100,000 percent. With the price of goods doubling every few days, farms and factories shut down and standards of living collapsed.

Deflation. The inflation rate is usually a positive number, meaning that the overall price level is rising. But the inflation rate can be negative, a condition that economists call **deflation**. Deflation occurs when prices go down over time.

Deflation is good news for consumers and savers. The value of every dollar they set aside now to spend later will increase over time as prices fall. Deflation is also good for lenders. The dollars they receive from borrowers tomorrow will be worth more than the dollars they lent them yesterday. This increase in the value of dollars can be painful for borrowers, however.

Deflation may also be bad news for businesses. When prices are dropping, people tend to put off spending, hoping for still lower prices later on. As consumer spending slows, businesses cut wages, lay off workers, and may even go bankrupt. The result can be a deflationary spiral, such as occurred in the early days of the Great Depression. In a **deflationary spiral**, falling prices lead to business slowdowns, which lead to lower wages, which lead to still lower prices, and so on.

Demand-Pull vs. Cost-Push Inflation

You are already familiar with one cause of inflation: an increase in the money supply. A dramatic increase in the amount of money in circulation can cause hyperinflation. But even a more modest increase may trigger inflation if the result is too many dollars chasing too few goods.

A second cause of inflation is an increase in overall demand. The spending that makes up GDP comes from households, businesses, government, and foreign buyers. Sometimes these four sectors together try to purchase more goods and services than the economy can produce. This increase in overall demand results in**demand-pull inflation**. The extra demand by buyers exerts a "pull" on prices, forcing them up.

Inflation can also be caused by increases in the cost of the factors of production. Higher production costs reduce the economy's ability to supply the same output at the same price level. The result is **cost-push inflation**. The rising cost of land, labor, or capital "pushes" the overall price level higher.

Cost-push inflation is often triggered by increases in energy prices. Rising fuel costs affect every link in the supply chain, from farms and factories to the delivery of goods to retail stores. The higher costs of making and moving goods are then passed on to consumers in the form of higher prices.

Whether caused by increased demand or rising costs, inflation can set off a kind of "feedback loop" known as a **wage-price spiral**. This spiral starts when workers demand higher wages in order to keep up with inflation. Employers pay the higher wages but then raise prices still higher to cover their increased production costs. Higher prices for goods and services once again decrease the real income of the workers, prompting them to call for still higher wages. As their demands are met, wages and prices keep climbing in an inflationary spiral.

Limitations of the CPI as a Measure of Inflation

The BLS relies on the consumer price index to estimate the level of inflation in the United States each month. However, critics point to several biases that may distort the CPI, making the reported inflation rate less than accurate.

Substitution bias. Because the CPI measures the price changes of a fixed list of goods, it does not take into account consumers' ability to substitute goods in response to price changes. For example, when the price of beef rises, many people buy chicken instead to save money. Such savings are not reflected in the CPI.

Outlet substitution bias. The CPI is slow to reflect changing trends in shopping patterns. For example, a growing number of households shop at discount stores, buying clubs, and superstores. The money saved by consumers who shop at these low-cost outlets may not be reflected in the CPI.

New product bias. In a market economy, new products are introduced all the time. Because the BLS cannot predict which new products will succeed, the new products are not incorporated into the market basket until they have become commonplace. For example, the mobile phone was introduced in 1983. However, it was not included in the CPI until 1998. By that time, the price of mobile phones had dropped from $3995 to under $200. None of these pre-1998 price drops were reflected in the CPI.

Quality change bias. Over time, technological advances may improve the quality or add to the lifetime of a product. An example is the automobile tire. Tires today generally last longer than they did in the past. As a result, the cost of tires on a per-mile basis has dropped. Because drivers buy tires less often, longer-wearing tires save money. But these savings are not reflected in the CPI.

The BLS has taken steps to reduce such biases through increasingly sophisticated methods of gathering data. Even so, some economists have estimated that, taken together, these biases in the CPI cause the Bureau of Labor Statistics to overstate the annual inflation rate by as much as 1 percent. Thus the economy may actually be healthier—and Americans better off—than the CPI suggests.

The Economic Costs of Inflation

Between 2000 and 2008, the annual rate of inflation in the United States ranged from a low of 1.6 percent to a high of 3.4 percent. Whether inflation at these relatively low levels is "healthy" for the economy is open to debate. However, we do know that inflation of any amount exacts economic costs.

Loss of purchasing power. Inflation erodes purchasing power—the amount of goods and services that can be bought with a given amount of money. As a result, it undermines one of the basic functions of money: its use as a store of value.

Figure 13.4C

Calculating the Effect of Inflation on Purchasing Power

Because of inflation, the dollar you hold today may not have as much purchasing power tomorrow. This "backpack index" shows the effect of 3 percent inflation on the prices of some everyday items over time.

The Backpack Index

Items in Backpack	Today	In 5 Years	In 10 Years
Pens (12 pack)	$1.49	$1.73	$2.00
Highlighters (6 pack)	$2.99	$3.47	$4.02
Notebook	$5.49	$6.36	$7.38
Calculator	$18.96	$21.98	$25.48
Cell phone	$49.99	$57.95	$67.18
Total	$78.94	$91.49	$106.06

For example, suppose you have your eye on an electric guitar that costs $200. You don't have the money to buy it now, so you save up. When you go back to the store, you discover that the guitar now costs $220. It is the same guitar, but inflation has pushed the price up by 10 percent. The purchasing power of your $200 has eroded by 10 percent.

Multiply this single example across an entire economy and you can see how inflation could affect people's standard of living. Retired people living on fixed incomes are the hardest hit by a continual increase in the overall price level. Working people have less to worry about. As long as wages keep pace with inflation, workers will not lose purchasing power.

Higher interest rates. The expectation that inflation will erode future purchasing power drives up interest rates. In inflationary times, lenders pay close attention to the real interest rate on the money they loan. The real interest rate is the nominal interest rate minus the inflation rate. If the nominal interest rate is 10 percent and the inflation rate is 4 percent, then the real interest rate is 6 percent.

Higher real interest rates on bank deposits provide an incentive for people to save more. But higher real rates also slow economic growth by making loans too costly.Lower real interest rates discourage saving. At the same time, they encourage borrowing by allowing borrowers to repay most of their loans in dollars that will be worth less tomorrow than they were today.

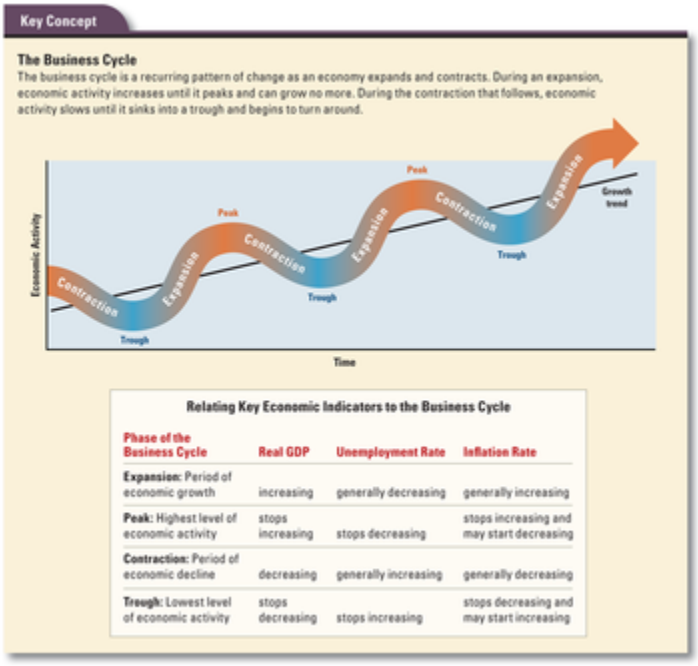
Loss of economic efficiency. Many economists consider uncertainty about prices to be a bigger problem than loss of purchasing power or higher interest rates. When prices fluctuate due to inflation, buyers and sellers cannot rely on an

increase or decrease in prices to give them clear information about market conditions. By making price signals harder to interpret, inflation reduces market efficiency.

5. How Does the Business Cycle Relate to Economic Health?

Economies are always changing. Or, as economics writer Charles Wheelan puts it, they "proceed in fits and starts." Wheelan is referring to the recurring periods of growth and decline in economic activity that all economies experience. Economists call this recurring pattern the **business cycle**.

The Four Phases of the Business Cycle



The business cycle consists of four phases. These phases include a period of growth and a period of decline, as well as the turning points that mark the shift from one period to the next.

A period of economic growth is known as an **expansion**. During this phase of the business cycle, economic activity generally increases from month to month. The longest expansion of the U.S. economy lasted a decade, but expansions typically run out of steam in three to five years.

The point at which an expansion ends marks the **peak** of the business cycle. At that peak, economic activity has reached its highest level. The peak also marks the start of a decline in economic activity. Economists do not know when a peak is occurring until they look back at the economic data. At that time they designate one month as the peak phase.

Following the peak comes the contraction phase of the business cycle. A **contraction** is a period of general economic decline marked by a falling GDP and rising unemployment. One of the longest contractions on record—43 months—occurred at the start of the Great Depression. Since 1945, however, contractions have averaged about 10 months.

The lowest point of a contraction is called the **trough**. Like the peak, the trough marks a turning point. Once the economy hits bottom, a new expansion begins.

Economic Indicators and the Business Cycle

The term *business cycle* implies that expansions and contractions occur at regular, predictable intervals. But in fact, the opposite is true. Business cycles are irregular in both length and severity. This makes peaks and troughs difficult to predict. Nonetheless, economists attempt to do just that, using a variety of economic indicators. The illustration on the opposite page shows how three of these indicators—GDP, inflation rate, and unemployment rate—relate to each phase of the business cycle.

Economists categorize the indicators they use to track the business cycle based on whether they signal a future change, an ongoing change, or a change that has already begun.

Leading indicators. Measures that consistently rise or fall several months before an expansion or a contraction begins are called **leading economic indicators**.They are used to forecast the peak and trough of a business cycle, although not very precisely.

The Census Bureau's monthly estimate of housing starts is one such leading indicator. It shows the number of new home-construction projects started in the previous month. A rise in housing starts signals that there is enough money and confidence in the economy to begin preparing for the next expansion. As the economy improves, there will be plenty of people eager to buy new homes. A decline in housing starts indicates trouble ahead as consumers grow more cautious about buying new homes.

Coincident indicators. Coincident economic indicators are measures that consistently rise or fall along with expansions or contractions. They coincide with the phases of the business cycle. Coincident indicators are most helpful in tracking expansions and contractions as they happen.

One of the most reliable coincident indicators is real GDP. As a rule, if total output is increasing in real terms month after month, an economy is expanding. If total output begins to shrink, the economy is contracting. Because inflation also tends to rise and fall with economic activity, economists use the inflation rate as an important coincident indicator as well.

Lagging indicators. Measures that consistently rise or fall several months after an expansion or a contraction are known as **lagging economic indicators**.Economists use lagging indicators to confirm that one phase of the business cycle has ended and another has begun.

One of the most important lagging indicators is the unemployment rate. The reason is that firms are often reluctant to make decisions to lay off or hire workers until they are sure about the direction of the economy. For example, when an expansion begins, firms may delay hiring new workers until they know that the economy is really growing. As a result, unemployment rates do not drop until weeks or months after an economy hits its low point and begins to recover.

From Boom to Bust to Boom Again

Business cycles are popularly known as periods of boom and bust. A boom is the expansion phase of the cycle. It may also be known as a recovery, upturn, upswing, or period of prosperity. All these terms mean the same thing—the economy is healthy and growing.

One of the key characteristics of a growing economy is an increase in business investment. When firms invest in capital goods, such as factories, machinery, and equipment, their productivity increases. This increased productivity contributes to a rise in real GDP. At the same time, firms hire more people to work in their stores, offices, and factories, thus increasing employment throughout the economy.

Other factors can also contribute to growth. The discovery of new resources, such as by drilling or mining, can boost the quantity of raw materials available for production. Innovations in science or technology can improve efficiency and increase productivity. Such positive "shocks" to the economy can stimulate an expansion.

Consumer confidence is typically high during an expansion. Jobs are plentiful, and both business profits and wages are rising. The future looks bright, leading consumers to borrow and spend money, especially on “big ticket” items such as cars, appliances, and furniture.

An economic expansion can go on for years, leading people to think that it might go on forever. But inevitably, boom turns to bust. The bust, or contract-ion phase of the business cycle, is also called a downturn, a downswing, or a recession. Most economists define a **recession** as a decline in economic activity lasting at least six months. During a recession, real GDP falls, as do real wages, employment, profits, and production.

Why does an expanding economy stop growing and start shrinking? There is no single answer to that question. A number of different obstacles to growth can push an economy into recession. They include:

• a negative shock to the economy, such as rapidly rising oil prices, a terrorist attack, or a stock market crash.

• a rise in interest rates, which makes it harder for consumers and firms to borrow money.

• shortages of raw materials, which can cause price increases.

Consumers typically react to higher prices and higher interest rates by cutting back on spending. As sales slow, businesses begin to see profits fall and inventories rise. **Inventory** is merchandise that companies or stores have on hand. Faced with rising inventory, firms cut back production and lay off workers. If profits continue to fall despite these adjustments, firms must cut back further. In this way, an economy enters a contraction phase.

Some recessions are short and relatively mild in their effects. Others are severe. On rare occasions, a recession will last a long time and cause serious damage to the economy. Economists refer to this kind of severe contraction as a depression. A **depression** is a prolonged economic downturn characterized by a plunging real GDP and extremely high unemployment. Americans have suffered through several depressions, with the Great Depression of the 1930s being the worst.

For many people, a recession is a time of anxiety about the economy and their own financial futures. How do consumers regain confidence? What brings bust back to boom? The answer may depend on the severity of the contraction. It took a war to end the Great Depression. The demand for armaments and other goods to fight World War II spurred production and finally turned the slumping economy around.

Recoveries are usually triggered by a combination of events. As business inventories shrink over time, firms begin to increase production. Hiring begins to pick up.Optimism returns and consumers start spending again. A new expansion begins.

The ups and downs of the business cycle may hold little interest for you at this point in your life. This is likely to change once you enter the job market. Should you start looking for work during an expansion, you may find many employers

eager to hire you. But should you start your job search during a recession, good jobs may be hard to find. The next chapter explores what the government can—and cannot—do to smooth out the bumps in the business cycle.