

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.

**START HERE** →

### 13.4 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.

#### 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.

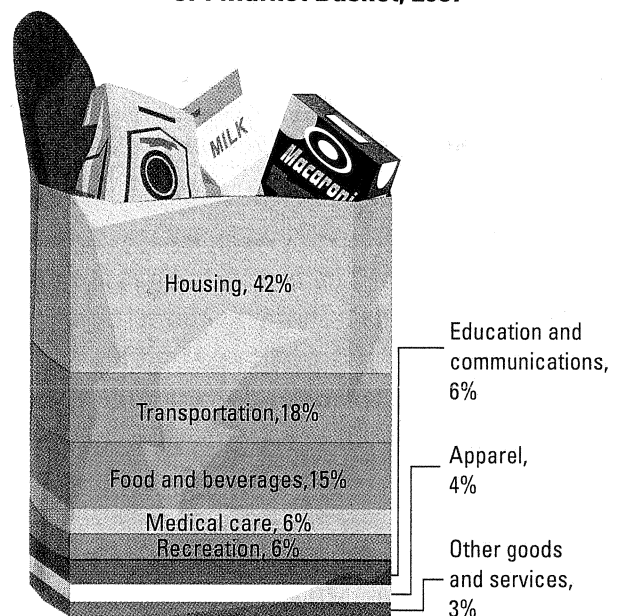
Using its monthly price data, the BLS can track the change in the CPI between any two periods. For example, the CPI for March 2007 was 205.352. By March 2008, the CPI had increased to 213.528. Based on those numbers, the BLS calculates that the CPI rose 4.0 percent during that 12-month period. In other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

#### 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.

## 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.

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,

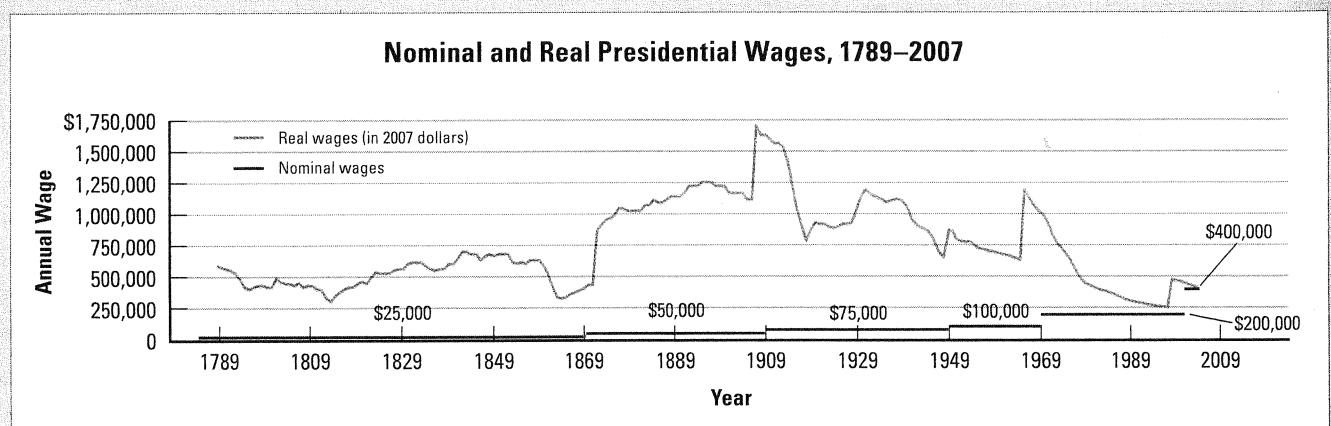
*The cost of living is indeed going up—in money terms. What really matters, though, isn't what something costs in money; it's what it costs in time. Making money takes time, so when we shop, we're really spending time. The real cost of living isn't measured in dollars and cents but in the hours and minutes 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.

**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.



Hyperinflation pushed the economy of Zimbabwe to the point of collapse. In this supermarket in the city of Bulawayo in 2008, shelves stand empty. Fuel prices are so high that goods cannot make it to market.

### **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.

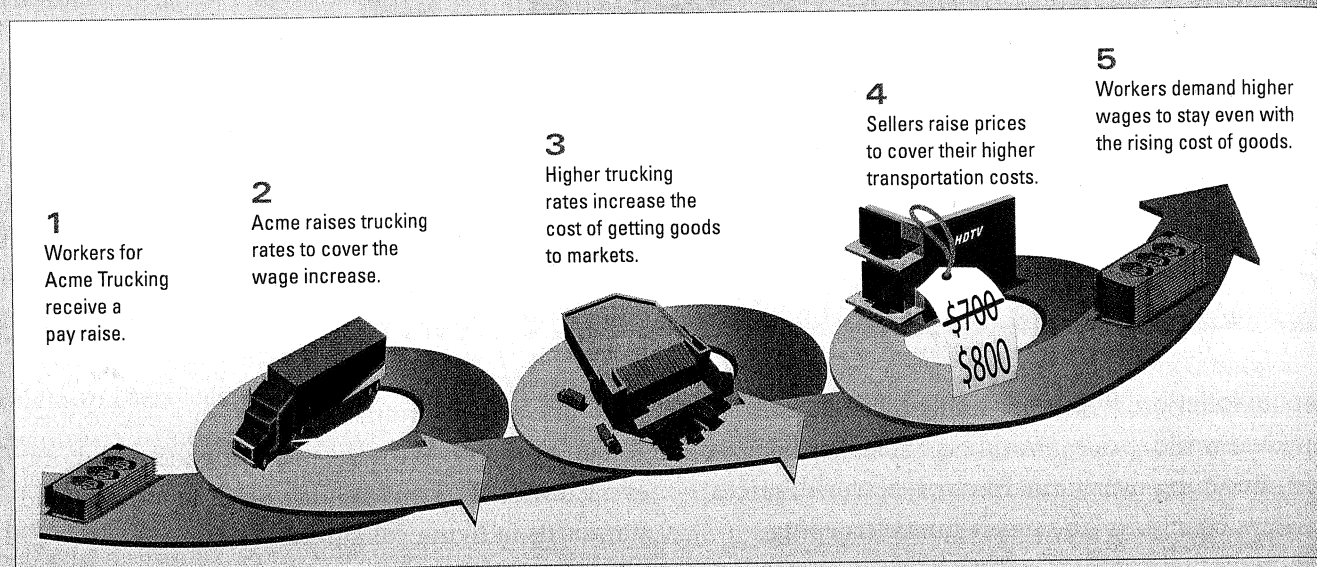
### **Demand-Pull vs. Cost-Push Inflation**

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

**Figure 13.4B**

### Analyzing the Wage-Price Spiral

A wage-price spiral is a vicious cycle in which rising prices drive up wages and then rising wages drive up prices. The result is an inflationary spiral that can be hard to break.



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.

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.

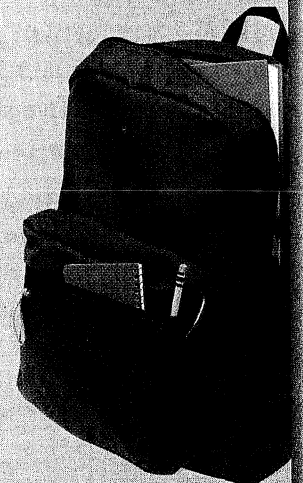
Higher real interest rates on bank deposits

**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
<b>Total</b>	<b>\$78.94</b>	<b>\$91.49</b>	<b>\$106.06</b>



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.

↑  
STOP HERE.

### ■ 13.5 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.