

## ACTIVITY 17.1

### How Much Did Things Cost in the “Good Old Days”?

Have you ever heard your parents or grandparents say, “Back in my day, a loaf of bread only cost a nickel and a gallon of gas only cost a quarter”? How can it be that things were so much cheaper back then? Where they really cheaper? You will try to answer this question by comparing modern prices to historical prices and calculating the percent increase in prices. To do so, you will examine prices of two goods: movie tickets and a McDonald’s Big Mac®.

#### Calculating Percent Change in Price

Percent change in price is calculated by dividing the amount of change in price by the original price and multiplying the result by 100. If the price has increased, percent change will be positive, and if the price has decreased, the percent change will be negative. The formula for calculating percent change in price:

$$\frac{\text{New price} - \text{Old price}}{\text{Old price}} \times 100 \quad \text{OR} \quad \frac{\text{Price (Year 2)} - \text{Price (Year 1)}}{\text{Price (Year 1)}} \times 100$$

**Table 17.1-A: Historic Prices**

Goods	Price in 1967 (nominal price)	Price in 2012 (nominal price)	Percent Change in Price	1967 Price in 2012 Dollars (real price)
Movie ticket	\$1.22	\$7.92		
McDonald’s Big Mac®	\$0.45	\$4.33		

Complete the last column of Table 17.1-A by using the CPI Calculator at <http://www.minneapolisfed.org/index.cfm>. Enter the 1967 price, select 2012, and then “calculate.” This price approximates the purchasing power of the 1967 dollar in today’s prices—the goods and services that could be purchased for the same amount of money in 2012.

1. Which item had the largest percent increase in price?

## ACTIVITY 17.1 (Continued)

2. What does a 500 percent increase in price from 1967 to 2012 mean?
  
  
  
  
  
  
3. Prices seem so low in 1967. Were people much better off then? What else would you need to know to draw a conclusion?

**Table 17.1-B: Changes in Overall Price Level**

Goods	Nominal Price (1967)	CPI (1967)	Nominal Price (2012)	CPI (2012)	Converting Grandpa's Prices: 1967 Price × (2012 CPI/1967 CPI)
Movie ticket	\$1.22		\$7.92		
McDonald's Big Mac®	\$0.45		\$4.33		

4. Go to the Minneapolis FED website: [http://www.minneapolisfed.org/community\\_education/teacher/calc/hist1913.cfm](http://www.minneapolisfed.org/community_education/teacher/calc/hist1913.cfm). Find the 1967 CPI and the 2012 CPI. Enter these in Table 17.2-B.

5. How many times higher is the CPI in 2012 than the CPI in 1967? \_\_\_\_\_  
What does  $2012 \text{ CPI}/1967 \text{ CPI}$  equal? \_\_\_\_\_
  6. Use these CPI figures to convert the 1967 nominal prices of movie tickets and Big Macs® into the real prices expressed in terms of 2012 prices.
  7. Now that you have converted the 1967 nominal prices into 2012 prices, you can compare prices in your grandfather's day to the prices you pay today. What conclusions can you draw about movie ticket prices over the past 35 years?
  8. What conclusions can you draw about Big Mac® prices over the past 35 years?

## ACTIVITY 17.2

### The Consumer Price Index (CPI)

#### What Is the CPI?

The Bureau of Labor Statistics (BLS) collects data on prices across the United States and uses the data to compile the Consumer Price Index (CPI). The CPI is an index that is used to measure the average changes in prices paid by consumers in urban markets for a “market basket” of commonly purchased goods and services. The CPI compares the combined price of the goods and services in the market basket from one month to the next. The BLS collects information about prices of goods and service in eight major categories,\* which follow, with examples of goods and services in each:

- FOOD AND BEVERAGES (breakfast cereal, milk, coffee, chicken, wine, full service meals, snacks)
- HOUSING (rent of primary residence, owners’ equivalent rent, fuel oil, bedroom furniture)
- APPAREL (men’s shirts and sweaters, women’s dresses, jewelry)
- TRANSPORTATION (new vehicles, airline fares, gasoline, motor vehicle insurance)
- MEDICAL CARE (prescription drugs and medical supplies, physicians’ services, eyeglasses and eye care, hospital services)
- RECREATION (televisions, toys, pets and pet products, sports equipment, admissions)
- EDUCATION AND COMMUNICATION (college tuition, postage, telephone services, computer software and accessories)
- OTHER GOODS AND SERVICES (tobacco and smoking products, haircuts and other personal services, funeral expenses)

\*Information from Bureau of Labor Statistics, <http://stats.bls.gov/cpi/cpifaq.htm>

## ACTIVITY 17.2 (Continued)

### Working with the CPI

The CPI is an index, a mathematical tool that substitutes an index level for the overall price of the market basket. All indices use a base year for easy reference (set to an index level of 100), and the CPI uses the years 1982–84 as its reference base. This means that the average price of all of the goods and services in the market basket for the years 1982, 1983, and 1984 was set equal to 100. The BLS uses this base level to calculate changes in prices of the market basket. An index of 105 for 1985, for example, means there was a five percent increase in the price of the market basket since 1982–84. Changes in the index can be expressed as percent changes, either monthly or annually, called the **inflation rate**. The inflation rate is simply the percent change in the CPI over the reference period. Here is the formula for calculating the inflation rate (Note: Year 1 is the earliest year; for the inflation rate from 1988 to 1990, 1988 is Year 1):

$$\frac{\text{CPI (Year 2)} - \text{CPI (Year 1)}}{\text{CPI (Year 1)}} \times 100$$

### Calculating the Inflation Rate

Using the simple percent change formula above and the annual CPIs in Table 17.2-B, it becomes possible to calculate the inflation rate between any two years. For example, the inflation rate from 1990 to 1991 was 4.2 percent:

$$\begin{aligned} \frac{\text{CPI (1991)} - \text{CPI (1990)}}{\text{CPI (1990)}} \times 100 &= \frac{(136.2 - 130.7)}{130.7} \times 100 \\ &= 5.5/130.7 \times 100 = 0.420 \times 100 = 4.2\% \end{aligned}$$

Use the annual CPI data in Table 17.2-B to complete the inflation rate calculations for each year in Table 17.2-A.

## ACTIVITY 17.2 (Continued)

**Table 17.2-A: Calculating Inflation Rates**

	CPI (Year 1)	CPI (Year 2)	Calculations	Inflation Rate from Preceding Year
1995				
2005				
2012				

1. If you earned \$10 an hour in 1994, how much would you have to earn in 1995 for your wage to have the same purchasing power?
2. If you saved \$100 in 2004, how much interest would you have to earn in order for the savings to have the same purchasing power in 2005?

**ACTIVITY 17.2 (Continued)****Table 17.2-B: Annual Average CPI (1982–1984 to 2012)**

<b>Year</b>	<b>Annual Average</b>
1982–1984	100.0*
1985	107.6
1986	109.6
1987	113.6
1988	118.3
1989	124.0
1990	130.7
1991	136.2
1992	140.3
1993	144.5
1994	148.2
1995	152.4
1996	156.9
1997	160.5
1998	163.0
1999	166.6
2000	172.2
2001	177.1
2002	179.9
2003	184.0
2004	188.9
2005	195.3
2006	201.6
2007	207.3
2008	215.3
2009	214.5
2010	218.1
2011	224.9
2012	229.6
2013*	233.5

\*Average CPI for 1982, 1983, and 1984; base level = 100.

## ACTIVITY 17.3

### Unanticipated Inflation: Winners and Losers

Recall the definition of inflation: a long-term rise in the average prices for all goods and services. When inflation is anticipated, consumers and producers can plan for its effects, and the impact can be relatively minimal. When inflation is not anticipated but occurs, it can create both “winners” and “losers”—those who are hurt by unanticipated inflation and those who gain from it.

An unanticipated increase in the rate of inflation hurts many Americans financially. This is mostly due to two related factors. First, an increase in the inflation rate means consumers’ purchasing power decreases—it takes more dollars to buy the same goods and services. Second, without an offsetting increase in wages, most consumers are worse off—they experience a lower standard of living.

Economically minded people try to protect their purchasing power. Lenders want to get enough interest on loans they make to increase their purchasing power when the loans are repaid. Savers want to get enough interest on savings to increase the purchasing power of their savings. Workers want raises large enough to increase the purchasing power of their wages.

Unanticipated inflation has different impacts:

#### Lenders

Goal: Loan funds at a rate of interest that is higher than inflation. If the interest rate charged is higher than the actual inflation rate, the purchasing power of the money repaid to the lender increases. If not, the purchasing power of the money repaid to the lender decreases.

#### Borrowers

Goal: Borrow funds at the lowest-possible interest rate. If the actual inflation rate is higher than the interest rate on the loan, the purchasing power of the borrowed funds the borrower pays back decreases, and borrowers may find it easier to repay their loans (particularly if their wages have increased with inflation).

#### Savers

Goal: Save funds at a rate of interest that is higher than inflation. If the interest rate earned is higher than the actual inflation rate, the purchasing power of the savings increases. If not, the purchasing power of the savings decreases.

## ACTIVITY 17.3 (Continued)

### Workers

Goal: Earn wages that increase at a rate that is higher than the inflation rate. If wages increase faster than the actual rate of inflation, the purchasing power of the wages increases. If not, the purchasing power of the wages decreases.

Your group will be given 10 strips of paper, each with a brief description of a fictional person or organization. On January 1, 2013, all of these economic actors anticipated inflation would be 2 percent for 2013—but in 2013, the inflation was actually 10 percent.

### Unanticipated Inflation: Winners and Losers

In your group, use your knowledge of the definition of inflation, real prices, and purchasing power to place each slip in the appropriate column: Winner or Loser. If you think that the person or organization described was made worse off over the year by the unanticipated inflation, place your slip in the Loser block; if you believe the person or organization described was made better off in these six months, place the slip in the Winner block. (Note: There are six losers and two winners.) Situation: On January 1, 2013, all of these economic actors anticipated inflation would be two percent for 2013—but in 2013, the inflation was actually 10 percent.

## ACTIVITY 17.3 (Continued)

### Losers


### Winners


## ACTIVITY 17.3 (Continued)

### Suggested Answers

#### Losers

1. Hourly-wage worker agrees on January 1, 2013, to a three-year union contract at a local factory. A fixed cost-of-living adjustment (COLA) of 2.5 percent per year is built into the contract.

*Wage increase is less than inflation, so purchasing power of wages decreases.*

3. Working mother of two children who purchased a six-month certificate of deposit (CD) on January 1, 2013, paying 3 percent annually.

*Interest rate is less than inflation rates, so purchasing power of savings decreases.*

4. Retiree living on Social Security benefits. No cost-of-living adjustment (COLA) is scheduled until December 31, 2013.

*COLA comes at the end of the year. During the year, purchasing power decreased.*

5. Large local bank that holds many fixed-rate 30-year home mortgage loans at an interest rate of 5 percent.

*Interest rate based on expected inflation. Payments will be worth less due to decrease in purchasing power.*

7. Teenager whose college fund is in a savings account with an interest rate of 2 percent.

*Interest rate is less than inflation rates, so purchasing power of savings decreases.*

## ACTIVITY 17.3 (Continued)

8. John, who loaned \$1,000 to his friend Julie. Julie pays John back \$1,050 after one year, as they agreed.

*Julie pays John back \$1,050 after one year, as they agreed, but the pay-back has less purchasing power for John due to inflation. Since inflation turned out to be 10 percent, John would have needed Julie to pay him back \$1,100 to have the same purchasing power as when he made the loan.*

### Winners

2. Homeowner with a 30-year fixed-rate (5 percent) mortgage.

*Because the fixed rate is lower than the rate of inflation, the money the homeowner repays has much less purchasing power. When inflation was expected to be 2 percent, the bank expected the 5 percent interest rate would mean the homeowner would be paying back enough money so that the bank would be compensated for inflation (2 percent) plus an extra 3 percent as the reward for the bank for loaning the money. When inflation was 10 percent, this resulted in the bank losing purchasing power since the 5 percent interest rate does not compensate for the 10 percent inflation rate.*

6. Small business that signed a three-year fixed-rate lease on office space.

*Although the nominal price remains the same for three years, because the inflation rate has eroded purchasing power, the “real” rent payment has less purchasing power than the landlord anticipated. The small-business owner benefits.*

## ACTIVITY 17.4

### Winner and Loser Scenarios

1. Hourly-wage worker agrees on January 1, 2013, to a three-year union contract at a local factory. A fixed cost-of-living adjustment (COLA) of 2.5 percent per year is built into the contract.
2. Homeowner with a 30-year fixed-rate (5 percent) mortgage.
3. Working mother of two children who purchased a six-month certificate of deposit (CD) on January 1, 2013, paying 3 percent annually.
4. Retiree living on Social Security benefits. No cost-of-living adjustment (COLA) is scheduled until December 31, 2013.
5. Large local bank that holds many fixed-rate 30-year home mortgages at an interest rate of 5 percent.
6. Small business that signed a three-year fixed-rate lease on office space.
7. Teenager whose college fund is in a savings account with an interest rate of 2 percent.
8. John, who loaned \$1,000 to his friend Julie. Julie pays John back \$1,050 after one year, as they agreed.