SOLUTIONS TO TEXT PROBLEMS:

Quick Quizzes

1. The consumer price index tries to measure the overall cost of the goods and services bought by a typical consumer. It is constructed by surveying consumers to fix a basket of goods and services that the typical consumer buys, finding the prices of the goods and services over time, computing the cost of the basket at different times, and then choosing a base year. To compute the index, we divide the cost of the market basket in the current year by the cost of the market basket in the base year and multiply by 100.

2. Since Henry Ford paid his workers $5 a day in 1914 and the consumer price index was 10 in 1914 and 177 in 2001, then the Ford paycheck was worth $5 $\times$ 177/10 = $88.50 a day in 2001 dollars.

Questions for Review

1. A 10 percent increase in the price of chicken has a greater effect on the consumer price index than a 10 percent increase in the price of caviar because chicken is a bigger part of the average consumer's market basket.

2. The three problems in the consumer price index as a measure of the cost of living are: (1) substitution bias, which arises because people substitute toward goods that have become relatively less expensive; (2) the introduction of new goods, which are not reflected quickly in the CPI; and (3) unmeasured quality change.

3. If the price of a Navy submarine rises, there is no effect on the consumer price index, since Navy submarines are not consumer goods. But the GDP price index is affected, since Navy submarines are included in GDP as a part of government purchases.

4. Since the overall price level doubled, but the price of the candy bar rose sixfold, the real price (the price adjusted for inflation) of the candy bar tripled.

5. The nominal interest rate is the rate of interest paid on a loan in dollar terms. The real interest rate is the rate of interest corrected for inflation. The real interest rate is the nominal interest rate minus the rate of inflation.

Problems and Applications

1. a. The price of tennis balls increases 0 percent; the price of tennis racquets increases 50 percent [=($60-$40)/$40 x 100%]; the price of Gatorade increases 100 percent [= ($2 - $1)/$1 x 100%].

   To find the percentage change in the overall price level, follow these steps:

   1) Determine the fixed basket of goods: 100 balls, 10 racquets, 200 Gatorades

   2) Find the price of each good in each year:

Year	Balls	Racquets	Gatorade

2001	$2	$40	$1
2002	$2	$60	$2

3) Compute the cost of the basket of goods in each year:
2001: (100 x $2) + (10 x $40) + (200 x $1) = $800
2002: (100 x $2) + (10 x $60) + (200 x $2) = $1,200

4) Choose one year as a base year (2001) and compute the CPI in each year:
2001: $800/$800 x 100 = 100
2002: $1,200/$800 x 100 = 150

5) Use the CPI to compute the inflation rate from the previous year:
2002: (150 - 100)/100 x 100% = 50%

b. Tennis racquets are less expensive relative to Gatorade, since their price rose 50 percent while the price of Gatorade rose 100 percent. The well-being of some people changes relative to the well-being of others. Those who purchase a lot of Gatorade become worse off relative to those who purchase a lot of tennis racquets or tennis balls.

2. To find the percentage change in the overall price level, follow these steps:

a. Determine the fixed basket of goods: 100 heads of cauliflower, 50 bunches of broccoli, 500 carrots.

b. Find the price of each good in each year:

Year	Cauliflower	Broccoli	Carrots
2001	$2	$1.50	$0.10
2002	$3	$1.50	$0.20

c. Compute the cost of the basket of goods in each year:
2001: (100 x $2) + (50 x $1.50) + (500 x $.10) = $325
2002: (100 x $3) + (50 x $1.50) + (500 x $.20) = $475

d. Choose one year as a base year (2001) and compute the CPI in each year:
2001: $325/$325 x 100 = 100
2002: $475/$325 x 100 = 146

e. Use the CPI to compute the inflation rate from the previous year:
2002: (146-100)/100 x 100% = 46%

3. Many answers are possible.

4. a. Since the increase in cost was considered a quality improvement, there was no increase registered in the CPI.

b. The argument in favor of this is that consumers are getting a better good than before, so the price increase equals the improvement in quality. The problem is that the increased cost might exceed the value of the improvement in air quality, so consumers are worse off. In this case, it would be better for the CPI to at least partially reflect the higher cost.

5. a. introduction of new goods; b. unmeasured quality change; c. substitution bias; d. unmeasured quality change; e. substitution bias

6. a. ($0.75 - $0.15)/$0.15 x 100% = 400%.

   b. ($14.26 - $3.36)/$3.36 x 100% = 324%.

   c. In 1970: $.15/($3.36/60) = 2.7 minutes. In 2000: $.75/($14.26/60) = 3.2 minutes.

   d. Workers' purchasing power fell in terms of newspapers.

7. a. If the elderly consume the same market basket as other people, Social Security would provide the elderly with an improvement in their standard of living each year because the CPI overstates inflation and Social Security payments are tied to the CPI.

   b. Since the elderly consume more health care than younger people, and since health care costs have risen faster than overall inflation, it is possible that the elderly are worse off. To investigate this, you would need to put together a market basket for the elderly, which would have a higher weight on health care. You would then compare the rise in the cost of the "elderly" basket with that of the general basket for CPI.

8. Many answers are possible. A common answer may be that as students, they spend a greater proportion of their income on tuition and books than the typical household. If the prices of tuition and books have risen faster than average prices, students face a higher inflation rate than the typical household.

9. When bracket creep occurred, inflation increased people's nominal incomes, pushing them into higher tax brackets, so they had to pay a higher proportion of their incomes in taxes, even though they were not getting higher *real* incomes. As a result, real tax revenue rose.

10. In deciding how much income to save for retirement, workers should consider the real interest rate, since they care about their purchasing power in the future, not the number of dollars they will have.

11. a. When inflation is higher than was expected, the real interest rate is lower than expected. For example, suppose the market equilibrium has an expected real interest rate of 3 percent and people expect inflation to be 4 percent, so the nominal interest rate is 7 percent. If inflation turns out to be 5 percent, the real interest rate is 7 percent minus 5 percent equals 2 percent, which is less than the 3 percent that was expected.

    b. Since the real interest rate is lower than was expected, the lender loses and the borrower gains. The borrower is repaying the loan with dollars that are worth less than was expected.

    c. Homeowners in the 1970s who had fixed-rate mortgages from the 1960s benefited from the unexpected inflation, while the banks that made the mortgage loans were harmed.