

## Chapter 24

1. The following table shows the prices and the quantities consumed in the country known as the University States. Suppose the base year is 2009. This is the year the typical consumption basket was determined so the quantities consumed during 2009 are the only quantities needed to calculate the CPI in every year.

Year	Price of Books	Quantity of Books	Price of Pencils	Quantity of Pencils	Price of Pens	Quantity of Pens
2009	€50	10	€1	100	€5	100
2010	€50	12	€1	200	€10	50
2011	€60	12	€1.50	250	€20	20

- a. What is the value of the CPI in 2009?

Answer:

$$(\text{€}1100/\text{€}1100) \times 100 = 100$$

- b. What is the value of the CPI in 2010?

Answer:

$$(\text{€}1600/\text{€}1100) \times 100 = 145.5$$

- c. What is the value of the CPI in 2011?

Answer:

$$(\text{€}2750/\text{€}1100) \times 100 = 250$$

- d. What is the inflation rate in 2010?

Answer:

$$[(145.5 - 100)/100] \times 100 = 45.5 \text{ percent}$$

- e. What is the inflation rate in 2011?

Answer:

$$[(250 - 145.5)/145.5] \times 100 = 71.8 \text{ percent}$$

- f. What type of bias do you observe in the CPI and corresponding inflation rates you generated above? Explain.

Answer:

Substitution bias, because as the price of pens increased, the quantity consumed declined significantly.

*Economics, 2<sup>nd</sup> edition*

N. Gregory Mankiw and Mark P. Taylor

ISBN 978-1-84480-870-0 © 2011 Cengage Learning EMEA

- g. If you had a clause in your wage contract that increased your wage by the rate of inflation as measured by the CPI calculated above, would your standard of living increase, decrease, or stay the same over the years 2009–2011? Why?

Answer:

Increase, because the CPI overstates the increase in the cost of living (assuming that your expenditure reflects the typical consumption basket in each year).

- h. Again, suppose you had a clause in your wage contract that increased your wage by the rate of inflation as measured by the CPI calculated above. If you personally only consume pens (no paper or pencils), would your standard of living increase, decrease, or stay the same over the years 2009–2011? Why?

Answer:

Decrease, because the price of pens has increased a greater percentage than the CPI.

2. Suppose that you lend your flatmate €100 for one year at 9 per cent nominal interest.

- a. How many euro of interest will your flatmate pay you at the end of the year?

Answer: €9

- b. Suppose at the time you both agreed to the terms of the loan, you both expected the inflation rate to be 5 per cent during the year of the loan. What do you both expect the real interest rate to be on the loan?

Answer:

9 per cent – 5 per cent = 4 per cent

- c. Suppose at the end of the year, you are surprised to discover that the actual inflation rate over the year was 8 per cent. What was the actual real interest rate generated by this loan?

Answer:

9 per cent – 8 per cent = 1 per cent

- d. In the case described above, actual inflation turned out to be higher than expected. Which of the two of you had the unexpected gain or loss? Your flatmate (the borrower), or you (the lender)? Why?

Answer:

Your flatmate (the borrower) gained; you lost because the borrower repaid the loan with euro of surprisingly little value.

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- e. What would the real interest rate on the loan have been if the actual inflation rate had turned out to be 11 per cent?

Answer:

9 per cent – 11 per cent = –2 per cent

- f. Explain what it means to have a negative real interest rate.

Answer:

It means that a lender typically has to pay the borrower to encourage them to take out a loan; it actually costs a lender to make a loan rather than gaining any return.