

10.8 Calculating unemployment, inflation, and real GDP

1. Assume that in Country X, the typical consumer buys 48 pizzas, 120 litres of milk and attends 18 professional basketball games. The following table shows the prices for these products in 2015 and 2016

Good	2015 price (per unit in \$)	2016 price (per unit in \$)
Pizza	12.50	12.90
Milk	1.15	1.25
Basketball tickets	45	46
Total cost of the typical basket	1548.00	1597.2

- a. Calculate the cost of this basket in 2015 and 2016. Enter your answers in the table above.

$$2015: (12.5 \times 48) + (1.15 \times 120) + (45 \times 18) = 1548.00$$

$$2016: (12.90 \times 48) + (1.25 \times 120) + (46 \times 18) = 1597.20$$

- b. Using your results from part (a), calculate a consumer price index with 2015 as the base year.

$$(1597.2/1548) \times 100 = 1.0318 \times 100 = 103.18$$

- c. Calculate the rate of inflation in Country X in 2016

$$(103.18 - 100) / 100 = 0.0318 \times 100 = 3.18\%$$

OR

$$(1597.2 - 1548) / 1548 = 0.0318 \times 100 = 3.18\%$$

2. The following table show data for Country Y (all figures in billions of dollars)

Year	2013	2014	2015	2016
Nominal GDP	20.7	21.9	22.6	22.3
GDP deflator	100	102.3	107.6	103.7

Real GDP	20.7	21.41	21	21.5
-----------------	------	-------	----	------

- a. Calculate Country Y's real GDP for 2014 and 2015 expressed in 2013 prices. Enter your answers in the table.

$$2014: (21.9/102.3)*100 = \$21.41 \text{ billion}$$

$$2015: (22.6/107.6)*100 = \$21 \text{ billion}$$

- b. State the reason why a country's real GDP may be *greater than* its nominal GDP.

If prices have fallen since the base year then GDP will actually be *inflated* rather than *deflated* by the "GDP deflator price index". While nominal GDP will look like it is lower than the base year, since the price of everything is lower actual output will have grown.

- c. Calculate the rate of economic growth for Country Y in 2013-2014, 2014-2015 and 2015-2016.

$$2013-2014: (21.41-20.7)/20.7 = 0.0343*100 = 3.43\%$$

$$2014-2015: (21-21.41)/21.41 = -0.019*100 = -1.91\%$$

$$2015-2016: (21.5-21)/21 = 0.0238*100 = 2.38\%$$

- d. Using your answer to part c), identify the year Country Y was in recession.

Country Y was in a recession in 2015, as real output fell by 1.91% from the previous year.

3. Country Y's statistical agency has also collected the following data.

	2016
Population	5,394,735
Number of employed	2,803,600
Working age population	3,895,538
Number of unemployed	456,400

- a. Calculate the unemployment rate for Country Y in 2016

$$456,500/(2803,600+456,500) = 0.14*100 = 14\%$$

b. Outline one difficulty in measuring unemployment.

Answers could include:

- The existence of underemployment (people working in jobs for which they are overqualified or people working part time who would prefer to work full time).
- The existence of hidden unemployment (for instance in the informal sector)
- Discouraged workers (when people leave the labor force after giving up on job search, the unemployment rate falls)

c. Outline one reason that the number of unemployed may decrease while the number of employed does NOT increase.

Discouraged workers who leave the labor force are no longer considered unemployed but have not gotten jobs. The unemployment rate falls on paper but the economy is no better off.