1. Consider the following two good economy. The two goods are food and electronics. P and Q indicate the prices and quantities of each good in years 2013-2016.

Year	P Food	Q Food	P Electronics	Q Electronics
2013	$635	56	$1,300	9
2014	$640	58	$1,302	10
2015	$610	60	$1,316	11
2016	$617	62	$1,349	15

Using 2013 as the base year, compute

(a) Nominal GDP for 2014

(b) Real GDP for 2015

(c) The real GDP growth rate from 2015 to 2016

Answers:

$$\text{NGDP14} = 640 \times 58 + 1,302 \times 10 = 50,140$$

$$\text{RGDP15} = 635 \times 60 + 1,300 \times 11 = 52,400$$

$$\text{Deflator16} = \frac{\text{NGDP16}}{\text{RGDP16}} \times 100$$

$$\text{NGDP16} = 617 \times 62 + 1,349 \times 15 = 58,489$$

$$\text{RGDP16} = 635 \times 62 + 1,300 \times 15 = 58,870$$

$$\text{Deflator16} = \frac{\text{NGDP16}}{\text{RGDP16}} \times 100 = \frac{58,489}{58,870} \times 100 = 99.353$$

$$\text{Growth Rate RGDP 16} = \frac{\text{RGDP16} - \text{RGDP15}}{\text{RGDP15}} \times 100 = \frac{58,870 - 52,400}{52,400} \times 100 = 12.347\%$$

2. In the year 2000, 100 cars are purchased at a price of $50,000 each. That same year, 500,000 loaves of bread are purchased at a price of $10 each. In the year 2010, 120 cars are purchased at a price of $60,000 each. That same year, 400,000 loaves of bread are purchased at a price of $20 each.

    (a) Using 2000 as the base year, compute the GDP deflator for both years.

    (b) Using the 2000 quantities as the fixed basket amounts, compute the CPI for both years.

    (c) What is the inflation rate between 2000 and 2010 using the deflator?

    (d) What is the inflation rate between 2000 and 2010 using the CPI?

Answers:

The deflator will be 100 in the base year. In 2010,

$$\text{Deflator 2010} = \frac{120 \times 60,000 + 400,000 \times 20}{120 \times 50,000 + 400,000 \times 10} \times 100 = 152$$

For cost of the 'basket' in the base year use the 2000 quantities and prices to get 10,000,000. The CPI measure is the basket cost in the current year over the basket cost in the base year times 100. In the base year it will be 100. In 2010,

$$\text{CPI 2010} = \frac{100 \times 60,000 + 500,000 \times 20}{100 \times 50,000 + 500,000 \times 10} \times 100 = 160$$

Using the deflator,
$$\text{Inflation Rate} = \frac{152 - 100}{100} = .52$$

Using the CPI,
$$\text{Inflation Rate} = \frac{160 - 100}{100} = .6$$

3. Consider the following numbers:

Category	Number of People
Have a job	A
No job, but looking for one	B
No job, not looking for one	C

If those numbers include everyone in the adult civilian noninstitutionalized population, then

(a) How many people are employed (E)?

(b) How many people are unemployed (U)?

(c) How many people are in the labor force (LF)?

(d) How many people are not in the labor force (NILF)?

(e) What is the labor force participation rate (LFPR)?

(f) What is the unemployment rate (UR)?

(g) What is the employment to population ratio (EPR)?

Answers:

Employed = A
Unemployed = B
Labor Force = A + B
Not in Labor Force = C
Labor Force Participation Rate = (A + B)/(A + B + C)
Unemployment Rate = B / (A + B)
Employment to Population Ratio = A / (A + B + C)