

**University of Saskatchewan**  
**Economics 214.3**  
**Professor Echevarria**  
**Homework 1**

1. Use Table 1 to calculate:

(a) GDP at market prices (use the expenditure approach)

$$Y = C + I + G = 650 + 200 + 250 = 1,100$$

(b) GDP at factor cost (use the income approach)

$$Y = W + profits = 800 + 160 + 140 = 1,100$$

Profits includes both (incorporated) firms' profits and proprietors' income (profits of non-incorporated firms, such as farms).

(c) Indirect taxes less subsidies (explain)

Since the difference between GDP at market prices and GDP at factor cost equals indirect taxes, and both measures are equal, the (net) indirect taxes must be zero.

$$\begin{aligned}GDP_{MP} &= GDP_{FC} + IT \text{ (indirect taxes)} \\IT &= GDP_{MP} - GDP_{FC} = 1,100 - 1,100 = 0\end{aligned}$$

(d) Saving

National saving equals gross investment:

$$S = I = 250$$

(e) Public saving

Public saving equal Gov. revenues (taxes) minus Gov. expenditure:

$$T - G = 200 + 50 - 200 = 50$$

Taxes include all taxes.

(f) (Net) Domestic Income (at factor cost)

Net domestic income equals gross domestic income (product) minus depreciation:

$$NDI_{FC} = GDP_{FC} - depreciation = 1,100 - 50 = 1,050$$

(g) (Personal) Disposable Income

Personal disposable income equals income minus (all) direct taxes:

$$1,050 - 200 - 50 = 800$$

(h) Private saving

Private saving equals disposable income minus consumption:

$$800 - 650 = 150.$$

These private saving plus the public saving should be equal to national saving:

$$150 + 50 = 200.$$

The reason why the national saving, calculated in this way, does not equal the answer in part **d**) is because this is net saving (we have subtracted the depreciation) while the answer to part **d** is gross saving: it includes depreciation, equal to 50.

2. Suppose that in a given month in Canada, there are 18 million people of working age. Of these, only 14 million have jobs. Of the remainder, 2 million are looking for work, 1.5 million have given up looking for work, and 0.5 million do not want to work.

(a) What is the labour force?

The labour force equals the employed plus the unemployed:

$$LF = E + U = 14 + 2 = 16m.$$

The workers who have given up looking for work are called “discouraged workers” and do not classify as unemployed.

(b) What is the labour force participation rate?

The LFPR is the ratio of the labour force to the population of working age:

$$LFPR = \frac{16}{18} = 88.9\%$$

(c) What is the official unemployment rate?

The (official) unemployment rate is the ratio of the officially unemployed to the labour force:

$$UR = \frac{2}{16} = 12.5\%.$$

3. An economy produces three goods: cars, haircuts, and oranges. Production units and prices per unit for years 2000 and 2001 are as follows:

(a) What is the nominal GDP in 2000 and 2001?

$$\begin{aligned} GDP_{00} &= \sum_i P_{00} \cdot Q_{00} = 100 \times 2000 + 400 \times 10 + 1000 = 205,000 \\ GDP_{01} &= \sum_i P_{01} \cdot Q_{01} = 120 \times 3000 + 600 \times 5 + 1000 = 364,000 \end{aligned}$$

- (b) Using 2000 as the base year, what is the real GDP in 2000 and 2001?

The real and nominal GDP in 2000 are the same since this is the base year. The real GDP in 2001 equals the 2001 production valued at 2000 prices:

$$\text{real } GDP_{01} = \sum_i P_{00} \cdot Q_{01} = 120 \times 2000 + 600 \times 10 + 1000 = 247,000$$

- (c) What is the growth rate of the real GDP over this period?

$$\frac{\Delta GDP}{GDP} = \frac{247,000 - 205,000}{205,000} = 20.5\%$$

- (d) What is the GDP deflator in 2000 and 2001?

The GDP deflator is the ratio of the nominal to the real GDP. Calling  $P$  this price index

$$P = \frac{364,000}{247,000} = 147.4\%$$

In the base year the price index is always 100 since nominal and real figures are the same.

- (e) What is the inflation rate over this period?

Since we do not have the CPI, we need to use the GDP deflator to calculate the inflation rate. Calling  $\pi$  the inflation rate,

$$\pi = \frac{\Delta P}{P} = \frac{147.4 - 100}{100} = 47.4\%$$