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## ECO 209Y <br> MACROECONOMIC THEORY

## Problem Set 1-2

1. The following are data for a hypothetical economy in millions of dollars:

| Gross investment | 91,744 |
| :--- | ---: |
| Corporate profits | 46,124 |
| Exports | 137,459 |
| Interest and rents | 39,586 |
| Indirect taxes | 53,825 |
| Income from unincorporated business | 34,560 |
| Investment income received from foreigners | 7,207 |
| Investment income paid to foreigners | 23,761 |
| Imports | 132,879 |
| Depreciation | 59,438 |
| Government expenditure on goods and services | 112,986 |
| Consumption | 273,081 |
| Wages and salaries | 248,858 |

a) Compute GDP using the spending approach.
b) Compute net national product (NNP).
c) Compute net national income (NNI).
d) Compute net domestic income (NDI) two ways.
2. Using the following data for a hypothetical economy, calculate gross domestic product (GDP), net domestic income (NDI), and government budget surplus (BS):
Consumption 600

Government expenditure on goods and services 250
Wages and salaries 450
Net exports 50
Capital consumption allowance (depreciation) 130
Indirect taxes 140
Government transfer payments 100
Corporate and personal income taxes 200
Gross investment 200
3. Assume that GDP is $\$ 120$, personal disposable income is $\$ 100$, and the government budget deficit is $\$ 7$. Consumption is $\$ 85$ and the trade surplus is $\$ 2$.
a) How large is private savings (S)?
b) How large is national saving?
c) What is the size of investment (I)?
d) How large is government spending?
4. Identify which of the following purchases is counted as part of GDP.
a) You purchase a used lawn mower at a garage sale.
b) General Motors of Canada purchases tires from Goodyear of Canada to equip new Chevrolets.
c) General Motors of Canada purchases tires from Goodyear of Canada to replace worn tires on executives' company cars.
d) A neighbour hires you to baby-sit for an evening.
e) You purchase a share of Air Canada.
f) A neighbour breaks your window with a golf ball, and you purchase a new window.
g) You pay your tuition for the semester.
5. This question deals with the price index numbers. Consider a simple economy where only three items are in the CPI: food, housing, and entertainment (fun). Assume that in the base period, say 2000, the household consumed the following quantities at the then prevailing prices:

|  | Quantity | Price per Unit (\$) | Expenditure (\$) |
| :--- | :---: | :---: | :---: |
| Food | 5 | 14 | 70 |
| Housing | 3 | 10 | 30 |
| Fun | 4 | 5 | 20 |
| Total |  |  | 120 |

a) Define the consumer price index.
b) Assume that the basket of goods that defines the CPI is as given in the table. Calculate the CPI for 2009 if the prices prevailing in 2009 were: food, $\$ 30$ per unit; housing, $\$ 20$ per unit; and fun, $\$ 6$ per unit.
c) Using the CPI, what was the rate of inflation between 2000 and 2009?
6. Suppose that an economy produces only apples, bananas, and oranges, and that price (in dollars) and quantity (in pounds) data are given in the table below.

|  | Year 2008 |  | Year 2009 |  |
| :--- | :---: | :---: | :---: | :---: |
| Good | Quantity | Price | Quantity | Price |
| Apples | 3,000 | $\$ 2$ | 4,000 | $\$ 3$ |
| Bananas | 6,000 | $\$ 3$ | 7,000 | $\$ 2$ |
| Oranges | 8,000 | $\$ 4$ | 6,000 | $\$ 5$ |

a) What is the rate of growth of nominal GDP in 2009?
b) Taking 2008 as the base year, what is the rate of growth of real GDP in 2009?
c) Taking 2008 as the base year, what is the value of the GDP deflator in 2009?
d) According to the GDP deflator, what was the rate of inflation in 2009?
e) Using the chain method of estimating real GDP, what is the rate of growth of real GDP in 2009?
7. Answer true or false to the following statement:
a) Using the consumer price index or the GDP-deflator to calculate changes in the average price level should produce identical inflation rates.
b) If nominal GDP in Germany increased by $2.8 \%$ last year, but Canadian GDP increased by $4.2 \%$, we can conclude that the welfare of Canadian citizens increased by more than that of German citizens.
c) A country that spends more than its total national income must have a trade deficit.
d) I bought a new home last year. If I sell it today, I will raise the level of economic activity.

