

University of Saskatchewan
Economics 214.3
Professor Echevarria
Homework 1

TABLE 1

Wages paid to labour	800
Consumer expenditure	650
Taxes paid by households	200
Total profits made by firms	160
(Gross) Investment	250
Proprietors' income	140
Taxes paid by firms	50
Government expenditures on goods and services	200
Depreciation	50

1. Use Table 1 to calculate:
 - (a) GDP at market prices (use the expenditure approach)
 - (b) GDP at factor cost (use the income approach)
 - (c) Indirect taxes less subsidies (explain)
 - (d) Saving
 - (e) Public saving
 - (f) (Net) Domestic Income (at factor cost)
 - (g) (Personal) Disposable Income
 - (h) Private saving

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 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?
 - (b) What is the labour force participation rate?
 - (c) What is the official unemployment rate?

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

	2000	2000	2001	2001
	Q	P	Q	P
Cars	100	2,000	120	3,000
Haircuts	400	10	600	5
Oranges	1,000	1	1,000	1

- (a) What is the nominal GDP in 2000 and 2001?
- (b) Using 2000 as the base year, what is the real GDP in 2000 and 2001?
- (c) What is the growth rate of the real GDP over this period?
- (d) What is the GDP deflator in 2000 and 2001?
- (e) What is the inflation rate over this period?

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Assignment 2

1. Problem 7 in the problem set
2. (This is problem 7 in chapter 3) The government raises taxes by \$100 billion,. if the marginal propensity to consume is 0.6, what happens to the following? Do they rise or fall? by what amounts?
 - (a) Public saving.
 - (b) Private saving.
 - (c) National saving.
 - (d) Investment.
3. (This is problem 9 in chapter 3) Consider an economy described by the following equations:

$$Y = C + I + G$$

$$Y = 5,000$$

$$G = 1,000$$

$$T = 1,000$$

$$C = 250 + 0.75(Y - T)$$

$$I = 1,000 - 50r$$

- (a) In this economy, compute private saving, public saving and national saving.
- (b) Find the equilibrium interest rate (measured in percentage points).
- (c) Now suppose that G rises to 1, 250. Compute private saving, public saving and national saving.
- (d) Find the new equilibrium interest rate.

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Homework 3

1. **The money multiplier.** In the same way that we did in class for $M1$, derive a multiplier for $M2$. Call this multiplier $mm2$. The definition of $M2$ is $M2 = D + C + T$ where C denotes currency in circulation, D demand deposits, and T saving and time deposits. Assume again that T (saving and time deposits) moves proportionally with D (demand deposits), so the ratio $T/D = t$ is treated as constant.
2. **The money multiplier** (figures are approximations). The reserve requirement on demand deposits is 0%. Banks hold 0.2% of demand deposits as excess reserves. The public holds 8 cents in currency and 81 cents in time deposits for every dollar it holds on demand deposits. Canada's monetary base equals \$42 billion. Calculate $M1$ and $M2$. If the Bank of Canada wants $M2$ to increase in \$40 billion, how much should it increase the monetary base?
3. **Bonds and interest rate.** A bond promises to pay \$100 in one year.
 - (a) What is the interest rate on the bond if its price today is \$75? \$85? \$95?
 - (b) What is the relation between the price of the bond and the interest rate?
 - (c) If the interest rate is 8%, what is the price of the bond today?

4. **Financial markets equilibrium.** Suppose that the money demand M^d is given by

$$M^d = PY \cdot (0.25 - i)$$

where PY denotes nominal income and i denotes nominal interest rate. Also, suppose that $PY = \$100$ and the supply of money is \$20. Assume equilibrium in financial markets.

- (a) What is the nominal interest rate?
- (b) If the Bank of Canada wants to increase i to be 15%, at what level should it set the supply of money?

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Homework 4

1. Suppose that the interest parity condition holds and the expected (nominal) exchange rate between the French franc and the Canadian dollar in one year is 0.2 (20 cents per franc). Determine the current (nominal) exchange rate for the following pairs of annual interest rates:

- (a) France, 7%; Canada, 5%.
- (b) France, 7%; Canada, 7%
- (c) France, 7%; Canada, 9%.

Draw a conclusion from your answers.

2. Assume the following:

- The only goods in the world are Canadian wheat and French wine; and
- In Canada, the price of a bushel of wheat is \$5.

Determine the real exchange rate between Canada and France when:

- (a) A French franc is worth \$0.20 and the price of a bottle of wine is 25 francs.
- (b) A French franc is worth \$0.20 and the price of a bottle of wine is 30 francs.
- (c) A French franc is worth \$0.25 and the price of a bottle of wine is 25 francs.

Draw conclusions from your answers.

3. (This is problem 1 in chapter 5) Use the model of a small open economy to predict what would happen to the trade balance, the real exchange rate and the nominal exchange rate in response to each of the following events.

- (a) A fall in consumer confidence about the future induces consumers to spend less and save more.
- (b) The introduction of a stylish line of Volkswagens makes some consumers prefer foreign cars over domestic cars.
- (c) The introduction of automatic teller machines reduces the demand for money

4. (This is problem 2 in chapter 5) Consider an economy described by the following equations:

$$Y = C + I + G + NX$$

$$Y = 5,000$$

$$G = 1,000$$

$$T = 1,000$$

$$C = 250 + 0.75(Y - T)$$

$$I = 1,000 - 50r$$

$$NX = 500 - 500\varepsilon$$

$$r = r^* = 5$$

- (a) In this economy, solve for national saving, investment, the trade balance, and the equilibrium real exchange rate.
- (b) Now suppose that G rises to 1,250. Find the new equilibrium real exchange rate. Solve for national saving, investment, the trade balance, and the equilibrium real exchange rate. Explain what you find.
- (c) Now suppose that the world interest rate rises from 5 to 10 percent. (G is again 1,000). Solve for national saving, investment, the trade balance, and the equilibrium real exchange rate. Explain what you find.
5. (This is problem 10 in chapter 5) "Travelling in Mexico is much cheaper now than it was ten years ago" says a friend. "Ten years ago a dollar bought 10 pesos; this year a dollar buys 15 pesos."
- Is your friend right or wrong? Given that total inflation over this period was about 25 percent in Canada and 100 percent in Mexico, has it become more or less expensive to travel to Mexico? Write your answer using a concrete example—such as a Canadian hotdog versus a Mexican taco—that will convince your friend.

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Homework 5

1. An economy described by the Solow growth model has the following production function:

$$y = \sqrt{k}.$$

- (a) Solve for the steady-state value of y as a function of s , n , and δ .
 - (b) A developed country has a saving rate of 28 percent and a population growth rate of 1 percent per year. A less-developed country has a saving rate of 10 percent and a population growth rate of 4 percent per year. In both countries $\delta = 0.04$. Find the steady-state value of y for each country.
 - (c) What policies might the less-developed country pursue to raise its level of income?
2. In the United States, the capital share of GDP is about 30 percent; the average growth in output is about 3 percent per year; the depreciation rate is about 4 percent per year; and the capital-output ratio is about 2.5. Suppose that the production function is Cobb-Douglas so that the capital share in output is constant, and that the United States has been in a steady state.
- (a) What must the saving rate be in the initial steady state?
 - (b) What is the marginal product of capital in the initial steady state?
 - (c) Suppose that public policy raises the saving rate so that the economy reaches the Golden Rule level of capital. What will the marginal product of capital be at the Golden Rule steady state? Compare the marginal product of capital at the Golden Rule steady state to the marginal product in the initial steady state. Explain.
 - (d) What will the capital-output ratio be at the Golden Rule Steady state?
 - (e) What must the saving rate be to reach the Golden Rule steady state?