

## ECON3123 Problem Set 2 (Due on Oct 5, 2025)

Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

1. The (less paradoxical) paradox of saving

Problem 3 in PS1 considers the effect of a drop in consumer confidence on private saving and investment, when investment depended on output but not on the interest rate. Here, we consider the same experiment in the context of the *IS-LM* framework, in which investment depends on the interest rate and output but the central bank moves interest rates to keep output constant.

- a. Suppose households attempt to save more, so that consumer confidence falls. In an *IS-LM* diagram where the central bank moves interest rates to keep output constant, show the effect of the fall in consumer confidence on the equilibrium in the economy.

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- b. How will the fall in consumer confidence affect consumption, investment, and private saving? Will the attempt to save more necessarily lead to more saving? Will this attempt necessarily lead to less saving?

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2. The response of the economy to fiscal policy
- a. Use an *IS-LM* diagram, show the effects on output of a decrease in government spending. Can you tell what happens to investment? Why?

*Now consider the following IS-LM model:*

$$C = c_0 + c_1 (Y - T)$$

$$I = b_0 + b_1 Y - b_2 i$$

$$Z = C + I + G$$

$$i = \bar{i}$$

- b. Solve for equilibrium output when the interest rate is  $\bar{i}$ . Assume  $c_1 + b_1 < 1$ .

- c. Solve for equilibrium level of investment.

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d. Let's go behind the scene in the money market. Use the equilibrium in the money market  $M/P = d_1Y - d_2i$  to solve for the equilibrium level of the real money supply when  $i = \bar{i}$ . How does the real money supply vary with government spending?

3. Determine the yield to maturity of each of the following bonds:

a. A discount bond with a face value of \$1,000, a maturity of three years, and a price of \$ 800.

b. A discount bond with a face value of \$1,000, a maturity of four years, and a price of \$ 800.

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- c. A discount bond with a face value of \$1,000, a maturity of four years, and a price of \$ 850.

### 4. Price and the Risk Premium

Suppose a share is expected to pay a dividend of \$1000 next year, and the real value of dividend payments is expected to increase by 3% per year forever.

- a. What is the current price of the stock if the real interest rate is expected to remain constant at 5%? at 8%?

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Now suppose that people require a risk premium to hold stocks.

- b. Redo the calculation in part (a) if the required risk premium is 8%.
- c. Redo the calculation in part (a) if the required risk premium is 4%.
- d. What do you expect would happen to stock prices if the risk premium decreased unexpectedly? Explain in words.

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The next question helps you practice data analysis. Please answer them in separated sheets and submit them together with this problem set.

### 5. The Clinton-Greenspan policy mix

As described in Chapter 5, during the Clinton administration the policy mix changed toward more contractionary fiscal policy and more expansionary monetary policy. This question explores the implications of this change in the policy mix, both in theory and fact.

- e. What must the Federal Reserve do to ensure that if  $G$  falls and  $T$  rises so that combination of policies has no effect on output. Show the effects of these policies in an IS-LM diagram. What happens to the interest rate? What happens to investment?
- f. Go to the Web site of the Economic Report of the President for 2012 (<https://www.govinfo.gov/app/details/ERP-2012/context>) Look at *Table B-79 in the statistical appendix. What happened to federal receipts (tax revenues), federal outlays, and the budget deficit as a percentage of GDP over the period 1992 to 2000?* (Note that federal outlays include transfer payments, which would be excluded from the variable  $G$ , as we define it in our IS-LM model. Ignore the difference.)
- g. Can you find out the changes of Target Federal Funds Rate between 1992 and 2000? When did monetary policy become more expansionary?
- h. Go to Table B-2 of the Economic Report of the President and collect data on real GDP and real gross domestic investment for the period 1992 to 2000. Calculate investment as a percentage of GDP for each year. What happened to investment over the period?
- i. Finally, go to Table B-31 and retrieve data on real GDP per capita (in chained 2005 dollars) for the period. Calculate the growth rate for each year. What was the average annual growth rate over the period 1992 to 2000?