

EC 235

Problem Set 2

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Fall 2023

INSTRUCTIONS:

Take your time and go through each problem.

Recall that group work is *strongly encouraged*.

Problem 1

Assume that an economy's money demand and supply functions are, respectively, given by

$$M^d = PY(l_1 - i)$$

$$M^s = 25$$

Nominal income is currently 100, and $l_1 = 0.28$.

- (a) Calculate the equilibrium interest rate.
- (b) Suppose the central bank wants to double the interest rate from the level just derived. What is the appropriate money supply?
- (c) Suppose the central bank wants to decrease the interest rate by 1 percentage point from the level derived under part (a). What is the new level of the money supply?

Problem 2

Assume an initial equilibrium in the money market. In a $(x,y) = (M, i)$ space, show the following in a graph:

- (a) The initial equilibrium. Label the equilibrium levels of the interest rate and money stock as i^* and M^* , respectively.
- (b) Suppose an expansionary monetary policy adopted by the monetary authority. Sketch this in your graph. What happens to the equilibrium levels of part (a)?
- (c) Complementing your graph from part (b), describe how the adjustment to the new equilibrium level(s) happens, focusing on the bond market.

Problem 3

The following equations describe an IS-LM economy:

$$C = 175 + 0.3(Y - 200)$$

$$I = 120 + 0.3Y - 1,100i$$

$$G = 220$$

$$M/P = 2.35Y - 7,000i$$

- (a) Derive the IS relation to show the level of output as a function of the interest rate.
- (b) Derive the IS relation to show the interest rate as a function of aggregate output.
- (c) Suppose the interest rate is 5%. Calculate the required real money supply.
- (d) Still assuming the interest rate from part (c), calculate (i) aggregate output, (ii) aggregate consumption, (iii) aggregate investment, and (iv) aggregate savings.
- (e) From (d), does aggregate demand equal aggregate supply?

Problem 4

Consider the following macroeconomic relations:

$$C = 125 + 0.75(Y - T)$$

$$I = 200 - 10i$$

$$G = 150$$

$$T = 100$$

$$M^D = 0.8Y - 16i$$

$$M^S = 800$$

- (a) Derive an expression for the IS curve.
- (b) Sketch the IS curve.
- (c) Derive an expression for the LM curve.
- (d) Sketch the LM curve.
- (e) Now suppose Government expenditures are increased to 300 monetary units. Revisit parts (a) and (b) above.

Problem 5

For the following policies, carefully describe its outcomes in the goods and financial markets, as well as the net effect in an IS-LM setting. *Hint:* using graphs will be very helpful.

- (a) The central bank increases its sales of bonds.
- (b) Expansionary fiscal policy with a horizontal LM curve.
- (c) An increase in Government expenditures with an inelastic LM curve.
- (d) The central bank increases its bond purchases from the general public.