

Instructor: Pınar Derin Güre
T.A: Pınar Özpala

Discussion Session 3 (Chapter 4 & 5) Solutions

PART A: LONG QUESTIONS

1. Explain why the money demand curve is downward sloping and what factor(s) will cause shifts in the money demand curve.

The money demand curve is downward sloping (with the interest rate on the vertical axis). An increase in the interest rate decreases the demand for money, as people put more of their wealth into bonds.

Money demand depends on the level of transactions and on the interest rate. As the level of transactions increases, individuals will increase money demand. Assuming that nominal income is correlated with nominal transactions, an increase in nominal income will cause an increase in money demand and shifts the curve to the right.

2. The following are the money demand and money supply functions in an economy.

$$M_s = €8,000$$

$$M_d = €40,000 (0.25 - i)$$

- Calculate the equilibrium interest rate.
- Suppose the central bank raises the equilibrium interest rate to 10%, will there be excess money supply or money demand? What monetary policy should be followed to reach the new equilibrium interest rate?

Solution:

a. $8000 = 10,000 - 40,000i$

Therefore, $i = .05$ or 5%

b. $M_s = €8000$

$$M_d = €40,000(0.25 - 0.1) = €6,000$$

$$\text{Excess } M_s = €2,000$$

To decrease money supply by €2,000 and reach the equilibrium interest rate, the central bank should follow a contractive monetary policy.

3. Suppose that the household nominal income in an economy is £5,000 billion and the demand for money is given by

$$M_d = \text{£}Y(0.08 - 0.4i)$$

- a. If the money demand is equal to £100 billion what is the interest rate?
- b. What should the central bank do to interest rates if it wants to increase the money supply to £300 billion?
- c. If the central bank decides to expand the money supply to £300 billion, should it change the interest rate or implement open-market operations?

Solution:

Choosing the quantity of money or choosing the interest rate:

a. $100 = 5000(0.08 - 0.4i)$

$i = 15\%$

b. The central bank should reduce the interest rate to 5%.

c. Lowering interest rates and buying treasuries from the market are both examples of an expansionary monetary policy. While lower interest rates simply increase money supply by £300 billion, open market operations will expand money supply by a multiplied factor.

4. Suppose the goods market is described as follows:

- C_0 is the consumer confidence
- C_1 is the marginal propensity to consume
- Y is the output or income
- I is the investment, which is equal to K_0 when the interest rate $i = 0$ and output $Y = 0$. If i is positive, I decrease by a for each unit increase in i . If Y is positive, I increase by b for each unit increase in output.
- G is government spending, exogenously given at G_0 .
- There is no tax for this economy.
- $\frac{M^s}{P}$ is the real money supply. Assume that $P = 1$, and $M^s = M_0$.
- $\frac{M^d}{P} = gY - hi$.

Assume $c_1 + b < 1$.

- a. Write down the equations for consumption, investment and aggregate demand in the economy.
- b. Derive the equation for the IS curve.
- c. Derive the equation for the LM curve.
- d. Draw IS and LM curves on an $i - Y$ space with correct labels. Also label the intercepts.

- e. Assume that there is a decrease in business confidence in period 1 (K_0 decreases to $K_1 < K_0$). Assume that the government cares only about output, nothing else. If you were an economic advisor to the government, would you suggest the government to revive the economy in period 2 (restore Y_2^* back to Y_0^*) through fiscal expansion (an increase in G), monetary expansion (an increase in money supply) or both? Show your results graphically.

Solution:

a.

$$C = c_0 + c_1 Y$$

$$I = K_0 - ai + bY$$

$$Z = c_0 + c_1 Y + K_0 - ai + bY + G_0$$

b.

$$Y^* = Z = c_0 + (c_1 + b) Y^* + K_0 - ai + G_0$$

$$Y^* = \frac{1}{1 - c_1 - b} (c_0 + K_0 - ai + G_0)$$

Equivalently,

$$IS : i = \frac{1}{a} [(c_1 + b - 1) Y^* + G_0 + c_0 + K_0]$$

c.

$$\frac{M^s}{P} = \frac{M^d}{P}$$

$$M_0 = gY^* - hi$$

$$LM : i = \frac{1}{h} (gY^* - M_0) \quad (2)$$

d.

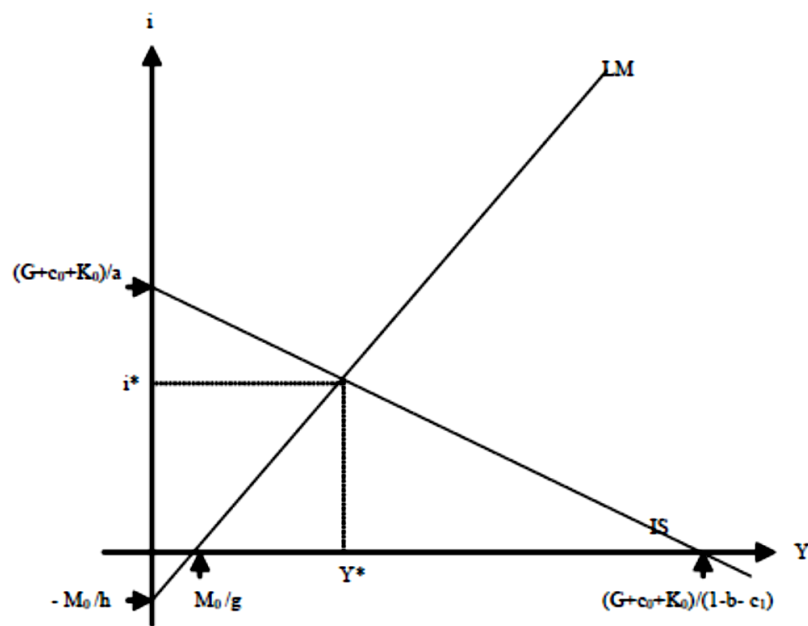


Figure 2: IS-LM for part 4.

Now you have a short – run framework for policy studies.

- e. Assume that there is a decrease in business confidence in period 1 (K_0 decreases to $K_1 < K_0$). Assume that the government cares only about output, nothing else. If you were an economic advisor to the government, would you suggest the government to revive the economy in period 2 (restore Y_2^* back to Y_0^*) through fiscal expansion (an increase in G), monetary expansion (an increase in money supply) or both? Show your results graphically.

See Figures below. If the government cares only about output, either monetary or fiscal expansion (or both) can return the output level back to the original level.

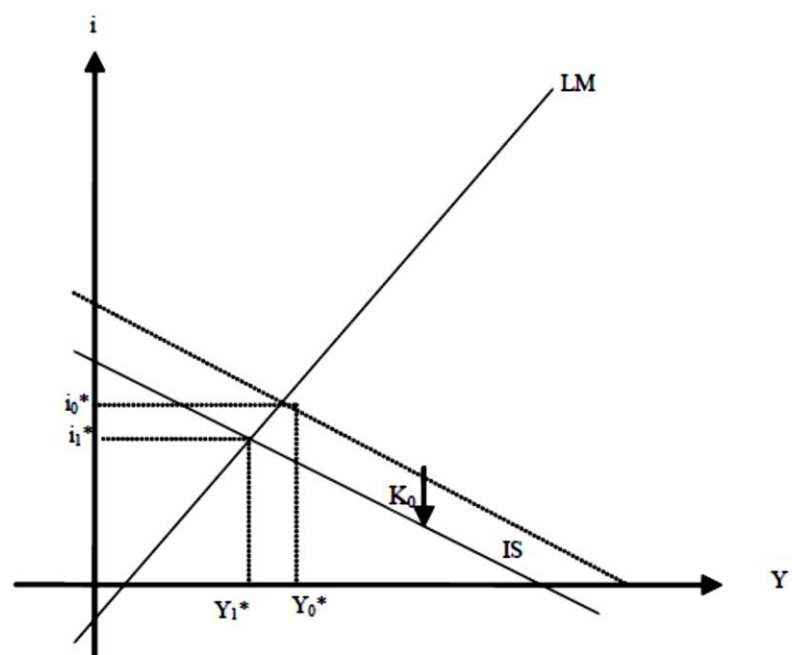


Figure 3: IS curve shifts down due to a decrease in K_0

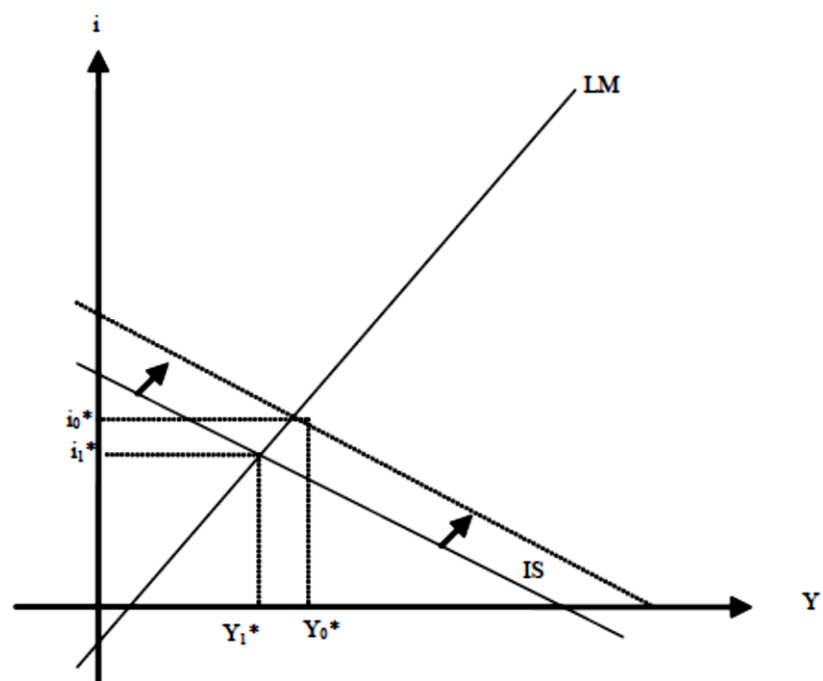


Figure 4: Increase G , IS shifts up

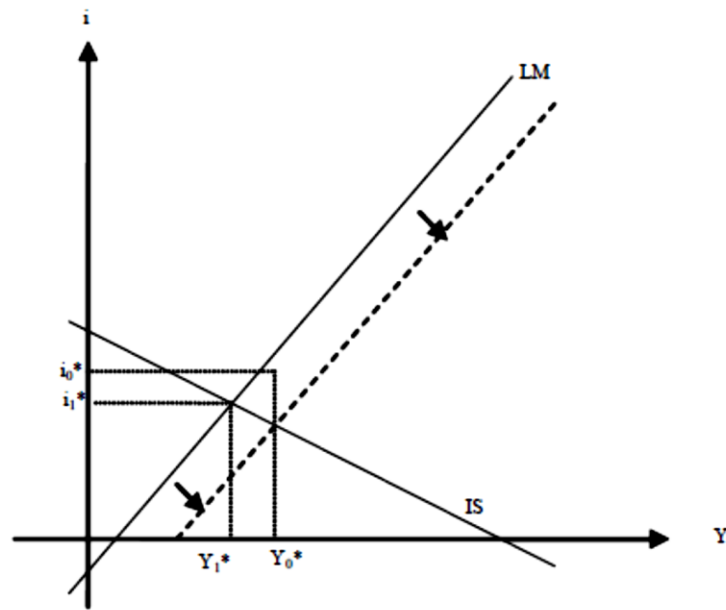


Figure 5: Increase M^s , LM shifts down

PART B: SHORT QUESTIONS

TRUE/FALSE/UNCERTAIN (Explain it.)

1. The central bank can contract money supply by selling Treasury bonds in the market for bonds.

TRUE

2. Monetary policy determines money supply while interest policy determines interest rates.

FALSE

3. The central bank can either increase the money supply or raise interest rates to boost GDP growth in the economy.

FALSE

4. A contractionary monetary policy decreases the money supply and the interest rate, which decreases investment and output.

FALSE

MULTIPLE CHOICE

- 1) The statement, "My iPhone is worth \$900 but I decide not to buy it and put my money under my pillow to spend on something else tomorrow" represents money's function as
 - A) a medium of exchange
 - B) a unit of account.
 - C) **a store of value.**

- D) a standard of deferred payment.
 - E) None of the above
- 2) The interest rate will decrease as a result of which of the following events?
- A) A decrease in the reserve requirement ratio**
 - B) An increase in income
 - C) An open market sale
 - D) All of the above
 - E) None of the above
- 3) Which of the following generally occurs when a central bank pursues contractionary monetary policy?
- A) the central bank purchases bonds and the interest rate increases.
 - B) the central bank sells bonds and the interest rate decreases.
 - C) the central bank purchases bonds and the interest rate decreases.
 - D) the central bank sells bonds and the interest rate increases.**
- 4) The statement, "My iPhone is worth \$300" represents money's function as
- A) a medium of exchange
 - B) a unit of account.**
 - C) a store of value.
 - D) a standard of deferred payment.
 - E) None of the above
- 5) When you stuff dollar bills under your mattress, knowing that they will be there next year to help buy your next major purchase, money is serving which function?
- A) Medium of exchange
 - B) Store of real assets
 - C) Unit of account
 - D) Store of wealth**
- 6) Which of the following will cause a leftward shift in the money demand curve?
- A) an increase in the money supply
 - B) a reduction in the interest rate
 - C) an increase in income
 - D) all of the above
 - E) none of the above**
- 7) Which of the following is not in the assets of a commercial bank?
- A) Loans
 - B) Government Bonds
 - C) Deposits**
 - D) Reserves
 - E) None of the above

- 8) If you expect interest rates to rise, you will want to be holding:
- A) more money because bond prices will likely fall.
 - B) less money because bond prices will likely rise.
 - C) more money because bond prices will likely rise.
 - D) less money because bond prices will likely fall.
- 9) Which of the following is the path through which contractionary monetary policy works?
- A) **Money down implies interest rate up implies investment down implies income down.**
 - B) Money down implies interest rate down implies investment down implies income down.
 - C) Money down implies interest rate up implies investment up implies income down.
 - D) Money down implies interest rate down implies investment up implies income down.

Explanation: Contractionary monetary policy shrinks the money supply, thus increasing interest rates and decreasing investment, leading to a fall in income by a multiple of that amount.

- 10) Open market operations are related to:
- A) actions taken by the CB to close or merge weakened banks.
 - B) changes in the reserve requirement.
 - C) changes in the discount rate.
 - D) **the CB's buying and selling of government securities.**
- 11) When the Fed sells bonds, the money supply:
- A) expands.
 - B) **contracts.**
 - C) sometimes rises and sometimes falls.
 - D) Selling bonds does not affect the money supply.
- 12) If the Fed decreases the reserve requirement, it will likely:
- A) decrease the amount of excess reserves, which will eventually increase the money supply.
 - B) decrease the amount of excess reserves which will eventually decrease the money supply.
 - C) **increase the amount of excess reserves which will eventually increase the money supply.**
 - D) increase the amount of excess reserves which will eventually decrease the money supply.

Explanation: With a lower reserve requirement, banks will have to hold fewer reserves so more loans will be extended, and the money supply will increase.

- 13) A reduction in the federal funds rate could be caused by an:
- A) open market sale of government securities.

- B) increase in the reserve requirement.
- C) increase in the discount rate.
- D) increase in the excess reserves of the banking system.**

Explanation: An increase in the reserves of the banking system increases the availability of credit in the federal funds market and reduces the federal funds rate.

14) When the Fed purchases bonds, the Fed:

- A) reduces the reserves and the federal funds rate increases.
- B) increases the reserves and the federal funds rate decreases.**
- C) reduces the reserves and the federal funds rate decreases.
- D) increases the reserves and the federal funds rate increases.

Explanation: An open market purchase of government securities increases the excess reserves in the banking system, which increases the supply of funds in the federal funds market and decreases the federal funds rate.