

IS-LM Model

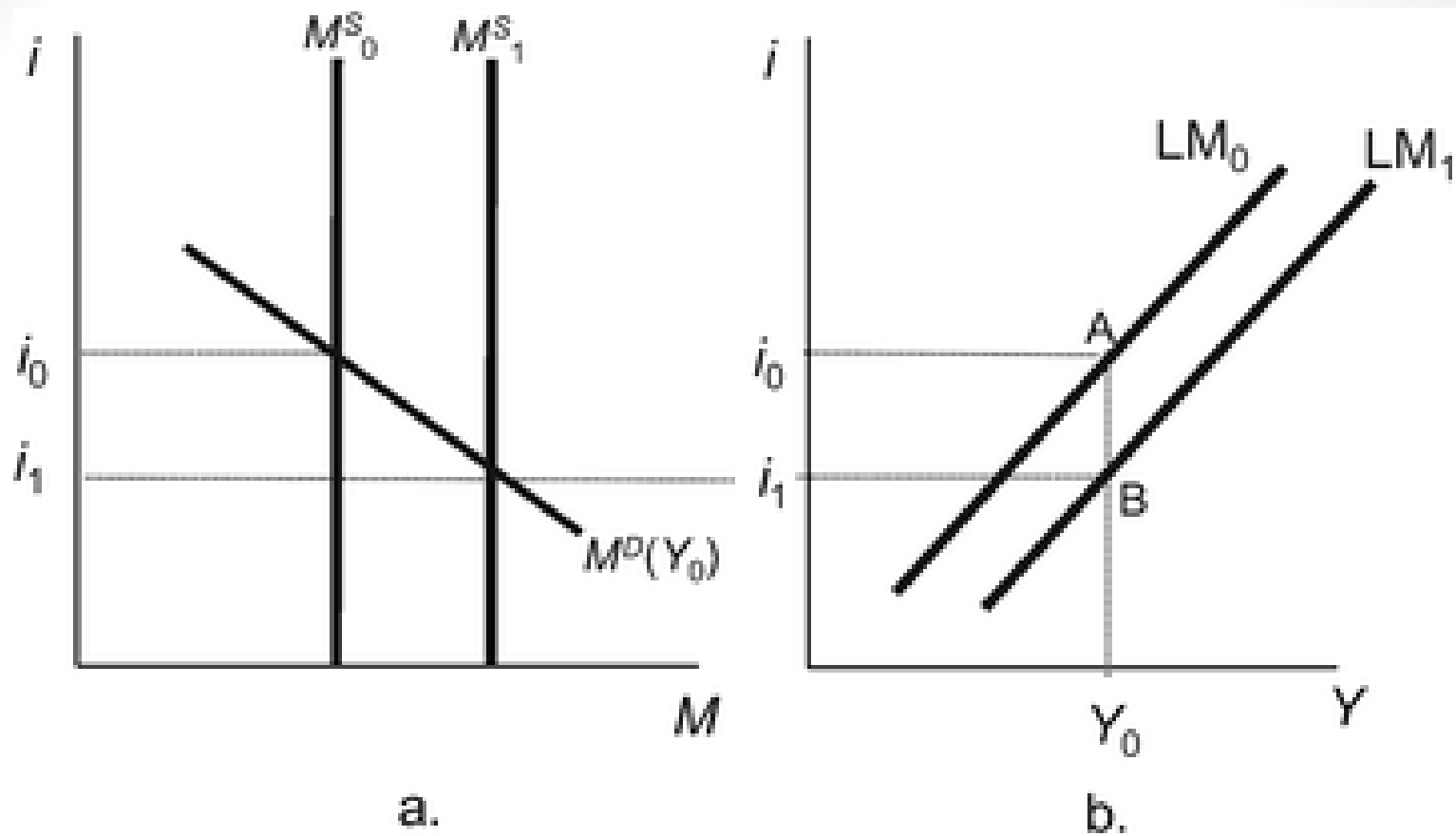
Part 3

Movement along the LM curve

- LM equation: $M/P = L(i, Y)$
- Movement along the curve is due to the change in i , **while keeping M and P constant.**
- Higher interest rate reduces the demand for money. To maintain the demand for money equal to the fixed money supply, the level of income has to rise so that the demand for money will rise too.
- $i \uparrow \gg Md \downarrow \gg Y \uparrow \gg Md \uparrow \gg Md = Ms$
- Hence, we have positive relationship between i and Y .
- However, when M or P changes, we have shift in LM curve.

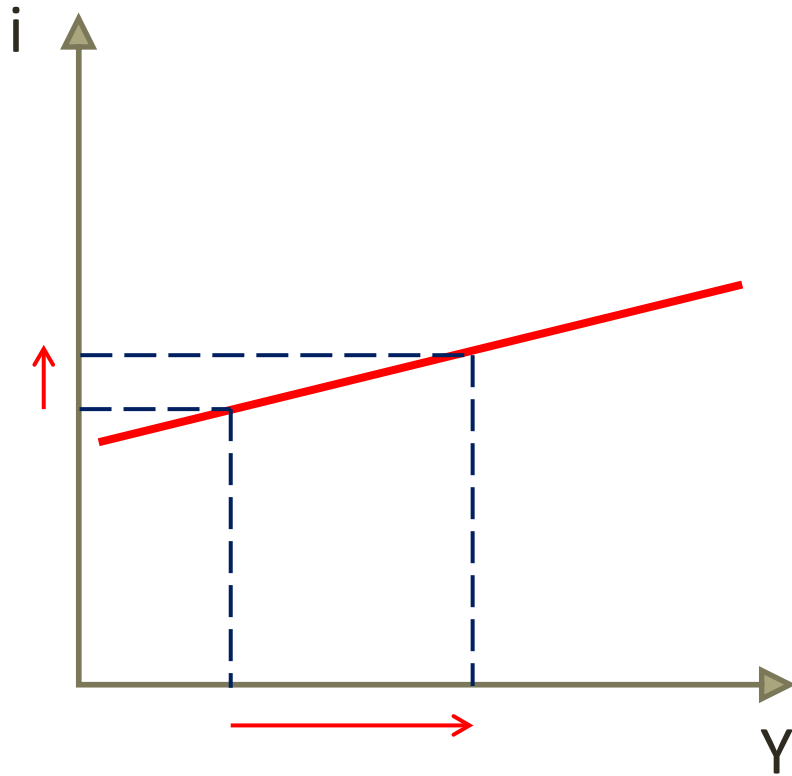
Shift in the LM curve

- **Shift in the money demand curve** causes **movement** along the LM curve.
- **Shift in the money supply curve** causes **shift** in the LM curve.
- **When real money supply increases** (due to $M \uparrow$ OR $P \downarrow$), the interest rate has to fall to match with the higher real money demand. Hence, at a given level of output, the interest rate is now lower.
- That is, **the LM curve shifts down/ to the right.**

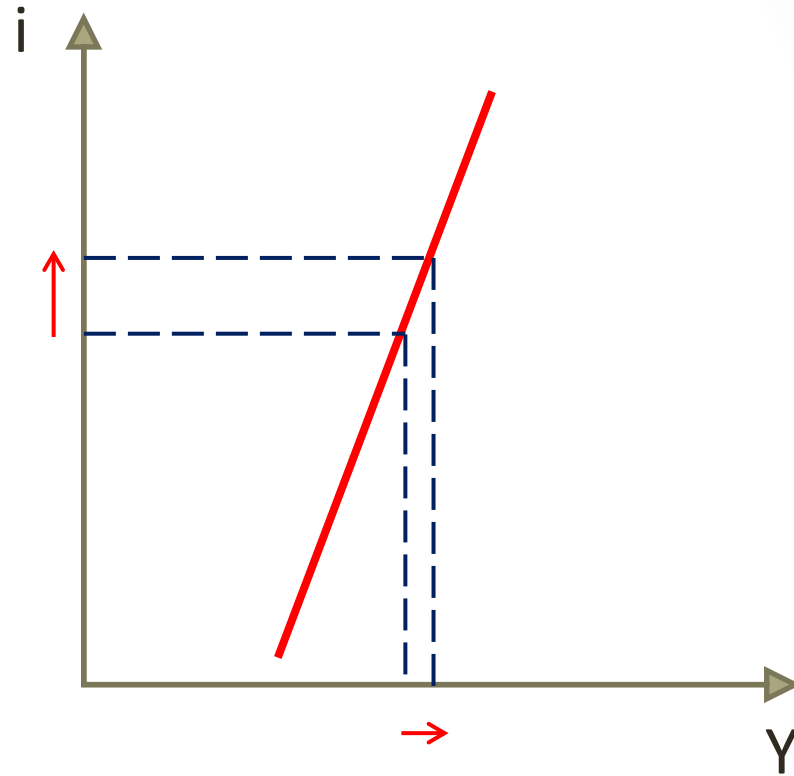


An increase in the money stock shifts the LM curve to the right. At each level of income, the equilibrium interest rate has to be lower to induce people to hold the larger quantity of money.

Slope of the LM curve



An increases in i causes
a large increase in Y
>> FLAT LM curve



An increases in i causes
a small increase in Y
>> STEEP LM curve

Slope of the LM curve

LM Curve: $M/P = L(i, Y)$ with $\frac{dL}{di} < 0$ and $\frac{dL}{dY} > 0$

- We can write $L(i, Y) = n \cdot Y - m \cdot i$ where $m, n > 0$
- m denotes the sensitivity of Md to changes in i
- n denotes the sensitivity of Md to changes in Y .
- The slope of the LM curve thus depends on m and n .

Slope of the LM curve

- LM Curve: $M/P = L(i, Y) = n \cdot Y - m \cdot i$
- Rearrange:
$$M/P = n \cdot Y - m \cdot i$$
$$m \cdot i = n \cdot Y - M/P$$
$$i = (n/m)Y - (1/m)(M/P)$$
- (n/m) = Slope of the LM Curve
- Thus, the LM is steep when n is large or m is small.

Slope of the LM curve

- $i = (n/m)Y - (1/m)(M/P)$
- The LM is steep when n is large or m is small.
- n tells us about how much Md changes when Y changes.
- When n is large,
Y ↑ a little >> Md ↑ **a lot** (Md shifts up by a large distance)
>> i ↑ a lot.
- That is, the LM curve will be STEEP.

Slope of the LM curve

- $i = (n/m)Y - (1/m)(M/P)$
- The LM is steep when n is large or m is small.
- m tells us about how much M_d changes when i changes.
- When m is small,
 $i \uparrow$ a lot $\gg M_d \downarrow$ a little BUT we need $M_d = M_s$
 $Y \uparrow$ a little $\gg M_d \uparrow$ little $\gg M_d$ cancel each other.
- That is, the LM curve will be STEEP.

Quick Summary

IS Curve

- It tells us about how much output we produce.
- Higher i reduces Y (because it discourages investment).
- **It shows all combinations of i and Y such that $Y = AE$.**

LM Curve

- It tells us about the CASH we hold.
- We hold $CASH = M/P = n \cdot Y - m \cdot i$.
- $m \cdot i$ is the amount we hold as BOND.
- Higher i raises Y (so that $M_d = M_s$).
- **It shows all combinations of i and Y such that $M_d = M_s$.**

Equilibrium – IS Curve

- **At points to the right** of the IS curve, there is **excess supply for goods** ($Y > AE$). When $Y > AE$, inventories accumulate. Producers will produce less, and hence Y falls back to the equilibrium.
- **At points to the left** of the IS curve, there is **excess demand for goods** ($Y < AE$). When $Y < AE$, inventories dissipate. Producers will produce more, and hence Y rises back to the equilibrium.

Equilibrium – LM Curve

- At **points to the right** of the LM curve, the **interest rate is below the equilibrium rate** ($i < i^*$). There will be excess money demand. People will sell bond. The demand for bond will be low. Bond issuers will respond by raising the interest rate. The market returns to equilibrium.
- At **points to the left** of the LM curve, the **interest rate is above the equilibrium rate** ($i > i^*$). There will be excess money supply. People will buy bond. The demand for bond will be high. Bond issuers will respond by reducing the interest rate. The market returns to equilibrium.

Equilibrium – IS-LM Model

- Any point that is not on the IS or LM or both curves will adjust until it is on both curves.
- Adjustment will take place in one or both markets.
- The equilibrium is at the intersection between IS and LM.

