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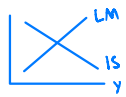
Exercise 6 –

1. The IS-LM Model is a general equilibrium model, which means that 2+ markets are in equilibrium at the same time with common price.
There are 2 markets, which are good & service and money markets.
The price that clears these markets is interest rate (i).
The IS curve represents a negative relationship between i and real Y. This is because when i increases, it discourages investment, so both AE and output Y decrease.
The LM curve represents a positive relationship between i and real Y. This is because when income Y increases, money demand increases so i is reduced to lower Md $\Rightarrow$ Ms = Md
Each point on the IS curve is an equilibrium in the G&S market.
Therefore, we have the equilibrium condition: Y = AE = C+I+G
Each point on the LM curve is an equilibrium in the money market.
Therefore, we have the equilibrium condition: Ms = Md
$\frac{M}{P} = L(Y,i)$

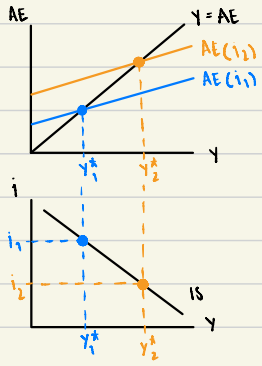


2. Cetaris Paribus (other things equal), how will each variable affect each curve – shift (to which direction?) or movement?

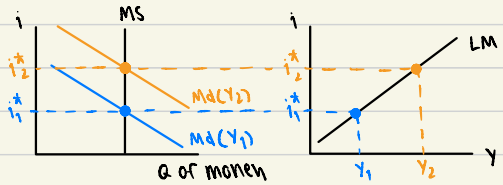
Variable	IS Curve	LM Curve
i↑	movement up	movement up
G↓	shifts to the left	-
T↓	shifts to the right	-
G&T↑ equally (BBM)	shifts to the right	-
M↓	-	shifts to the left
P↓	-	shifts to the right

$MS = \frac{M}{P}$

3. derive IS:



derive LM:



4. 1) I_1 = sensitivity of investment to changes in interest rate, i

L_Y = sensitivity of money demand to changes in income, Y

L_i = sensitivity of money demand to changes in interest rate, i

2) interest rate has negative relationships with money demand and investment

3) $Y = AE = C_0 + C_1(Y - T_0) + I_0 - I_1 i + G_0$

$I_1 i = C_0 + C_1 Y - C_1 T_0 + I_0 + G_0 - Y$

$i = \left(\frac{1}{I_1}\right) C_0 + I_0 + G_0 - C_1 T_0 + \left(\frac{C_1 - 1}{I_1}\right) Y$

4) slope of IS = $-\frac{1 - C_1}{I_1}$

5) $MS = Md \iff \frac{M_0}{P_0} = L_Y Y - L_i i \iff i = \left(\frac{L_Y}{L_i}\right) Y - \left(\frac{1}{L_i}\right) \frac{M_0}{P_0}$

6) slope of LM = $\frac{L_Y}{L_i}$

5. IS slope depends on I_1 and investment multiplier $\left(\frac{1}{1 - C_1}\right)$:

- large I_1 ⇒ change in i leads to large change in I, AE & Y
- large investment multiplier ⇒ change in i & I lead to large change in Y

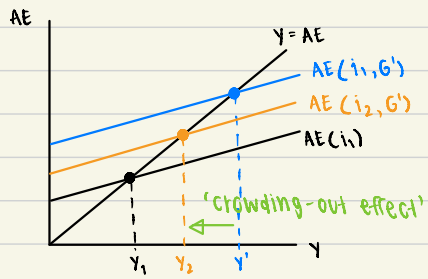
} flat IS curve

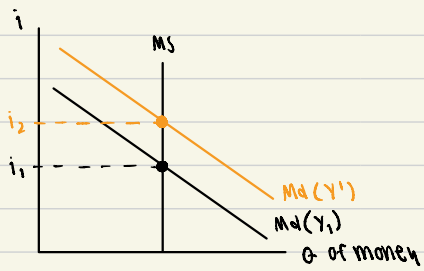
LM slope depends on L_Y and L_i:

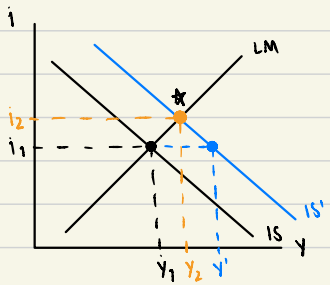
- large L_Y ⇒ change in income Y leads to large change in Md & i (i: to reach equilibrium)
- small L_i ⇒ change in i leads to small change in Md & Y (Y: to reach Md = MS)

} steep LM curve

6. crowding-out effect: when private investment & Y fall when government spending increases due to higher interest rate

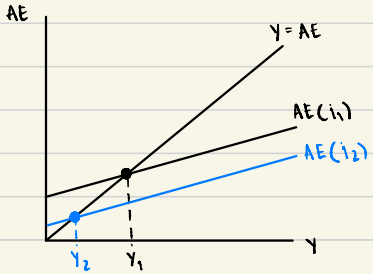


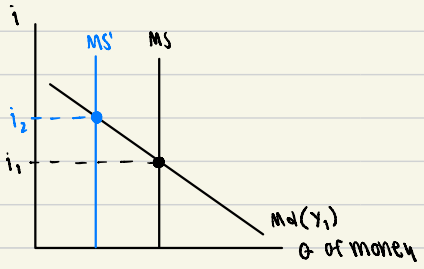


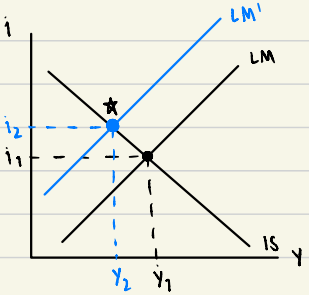


expansionary fiscal policy:

1. GM: G↑, AE↑, Y↑
2. MM: Y↑, Md↑, i↑ so Md↓ and remain equilibrium
3. GM: i↑, G↓, AE↓, Y↓ - crowding-out effect

7. 

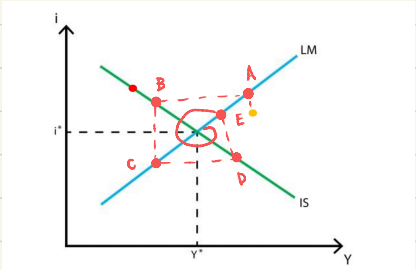




contractionary monetary policy:

1. MM: MS↓, i↑
2. GM: i↑, I↓, AE↓, Y↓

8. 1) good & service market in equilibrium, money market is not



2) 1. MM : MS↑, i↑ to pt. A

2. GM : i↑, I↓, AE↓, Y↓ A to B

3. MM : Y↓, Md↓, i↓ B to C

4. GM : i↓, I↑, AE↑, Y↑ C to D

5. MM : Y↑, Md↑, i↑ D to E

continue until it reaches (Y^*, i^*), follow the phase diagram!

9. 1) high MPC = high investment multiplier = flat IS curve ⇒ monetary

2) small I_i = steep IS curve ⇒ fiscal

3) large L_i = flat LM curve ⇒ fiscal

4) large L_Y = steep LM curve ⇒ monetary

10. 1) $Y = AE = 100 + 0.5(Y - 40) + 80 - 100i + 40 = 200 + 0.5Y - 100i$

$i = 2 - 0.005Y$

2) $MS = Md \iff \frac{400}{2} = 0.5Y - 200i \iff i = 0.0025Y - 1$

3) $IS = LM \iff 2 - 0.005Y = 0.0025Y - 1$

$Y^* = \frac{3}{0.0075} = 400$ $\quad i^* = 2 - 0.005(400) = 0.1$