

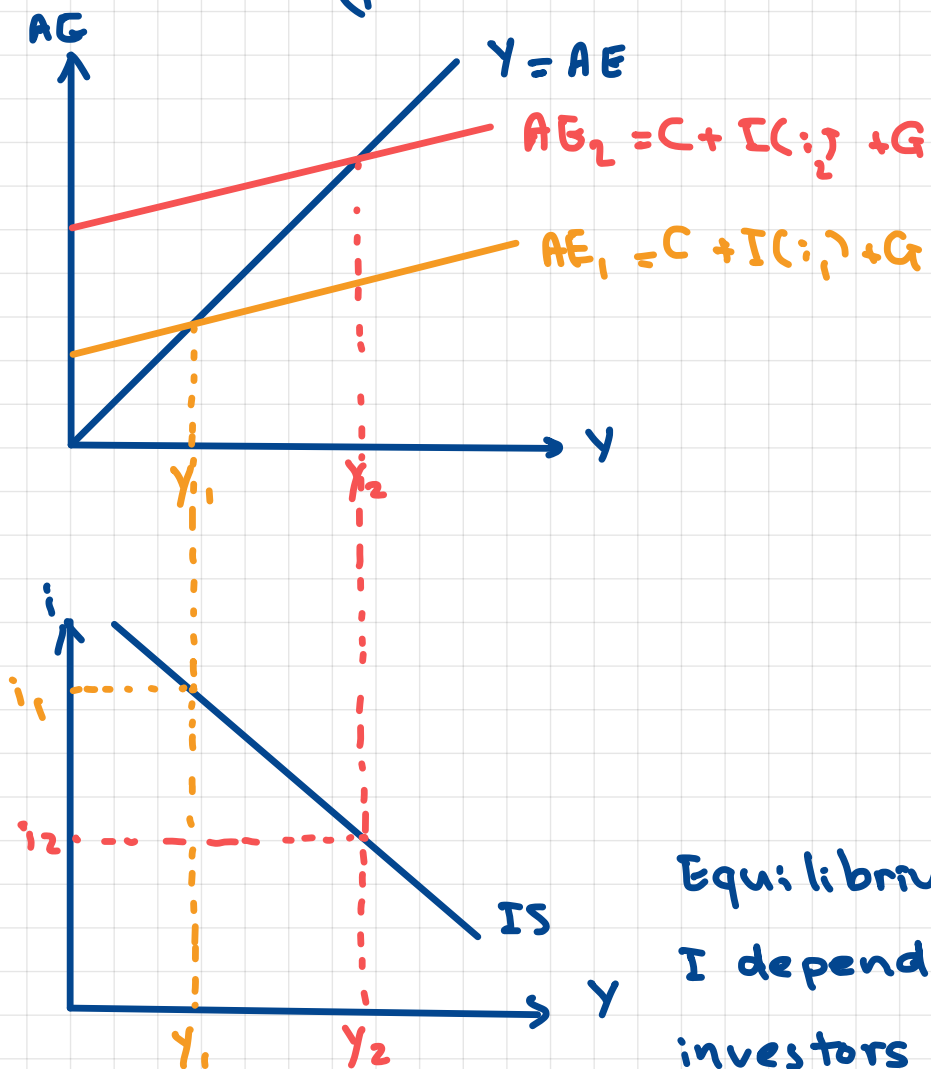
Sournarabady San Exercise 6

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1. The IS-LM Model is a general equilibrium model, which means that.....there is a common price that clears two or more markets....
 There are....2....markets, which are goods and service market, and money market
 The price that clears these markets is.....the interest rate.....
 The IS curve represents a...negative...relationship between interest rate and...output...This is because...when interest rate is high...it discourages investment leading to lower output and vice versa....
 The LM curve represents a...positive...relationship between interest rate and...output.....This is because when people have more income,...they will demand more liquidity and vice versa.....
 Each point on the IS curve is an equilibrium in the.....commodity market.
 Therefore, we have the equilibrium condition: $Y = AE$ or $Y = C(Y-T) + I(i) + G$
 Each point on the LM curve is an equilibrium in the...money...market.
 Therefore, we have the equilibrium condition: $M_d = M_s$
2. Ceteris Paribus (other things equal), how will each variable affect each curve – shift (to which direction?) or movement?

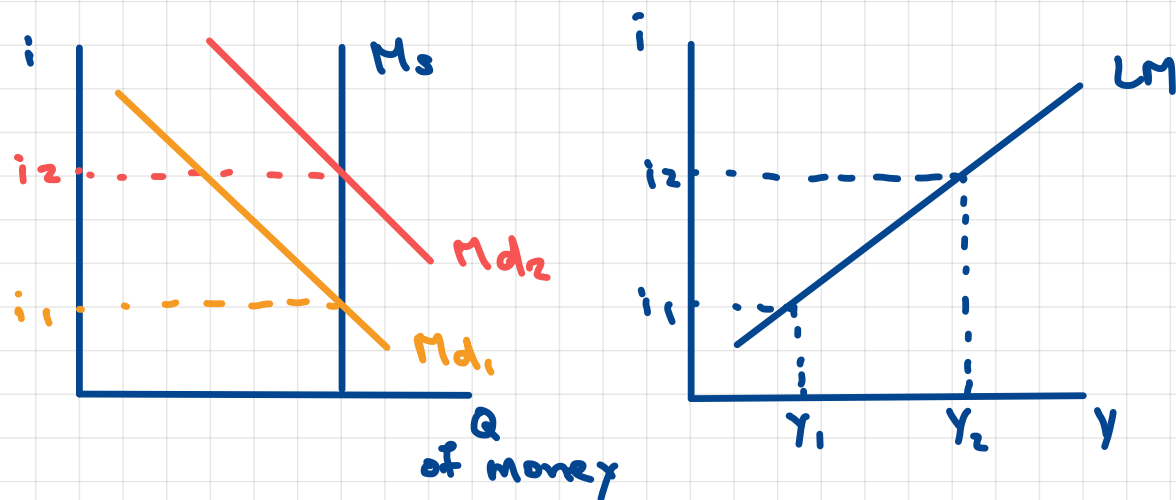
Variable	IS Curve	LM Curve
$i \uparrow$	<u>movement</u>	<u>movement</u>
$G \downarrow$	<u>shift +</u>	<u>movement</u>
$T \downarrow$	<u>shift +</u>	<u>movement</u>
$G \& T \uparrow$ equally	<u>shift +</u>	<u>movement</u>
$M \downarrow$	<u>shift +</u>	<u>shift</u>
$P \downarrow$	<u>shift +</u>	<u>shift</u>

③ + Deriving IS curve from Keynesian Cross



Equilibrium condition : $Y = AE$
 I depends on i , as i increases, investors will invest less due to higher cost of borrowing leading to lower Y and vice versa. This illustrates the negative relationship between i and Y (IS).

4 Deriving LM from money market



Equilibrium condition: $M_s = M_d$

When Y ($Y_1 \rightarrow Y_2$), money demand also increases ($M_{d1} \rightarrow M_{d2}$). If interest rate stays at i_1 , there will be shortage as investors sell bonds / share for money. This leads to bond issuers increasing interest rate to attract investors ($i_1 \rightarrow i_2$). Thus, illustrating the positive relationship between income and interest rate.

④. 4.1. I_i is the endogenous variable of I that depends on i . I_i is also I 's slope.

L_Y is M_d 's sensitivity to change in output (Y)

L_i is M_d 's sensitivity to change in interest rate (i)

4.2 I_i and L_i have negative sign because i has negative relationships with I and Y .

4.3. Derive IS equation that shows how i and Y are related

$$Y = AE \Rightarrow Y = C_0 + C_1(Y - T) + I_0 - I_1 i + G_0$$

$$I_1 i = C_0 + C_1(Y - T) + I_0 + G_0 - Y$$

$$i = \frac{C_0 + C_1(Y - T) + I_0 + G_0 - Y}{I_1}$$

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

4.4. slope of IS curve: $\frac{C_1 - 1}{I_1}$

4.5. Derive LM equation that shows how i and Y are related

$$M_s = M_d \Rightarrow \frac{M}{P} = L(Y, i)$$

$$\frac{M_0}{P_0} = L_Y Y - L_i i$$

$$L_i i = L_Y Y - \frac{M_0}{P_0}$$

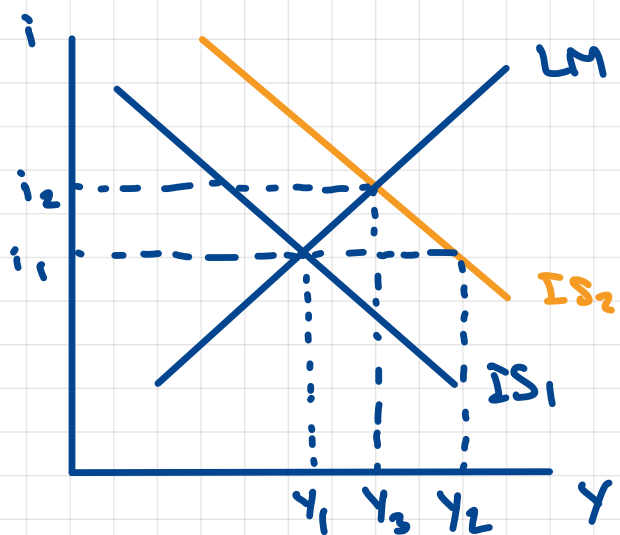
$$i = \frac{L_Y}{L_i} Y - \frac{1}{L_i} \frac{M_0}{P_0}$$

4.6. slope of LM curve: $\frac{L_Y}{L_i}$

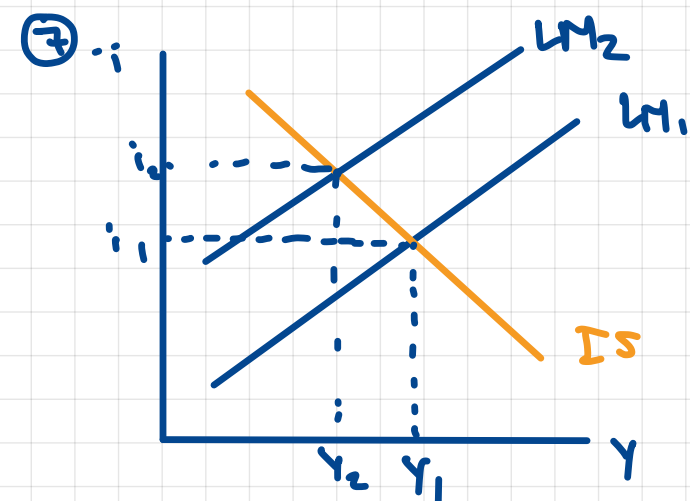
⑤. + Slope of L_s depends on C_1 and I_1 . When C_1 increases, AE and Y also increase. For I_1 that depends on i , when i increases, it discourages investment, lowering AE and Y .

+ Slope of LM depends on L_Y and L_i . L_Y increases, Y also increases. Increase in i leads to decrease in $L_i \rightarrow$ increased Y .

⑥. Crowding-out effect is the reduction of private spending caused by increase in government spending. More government spending leads to increase in money demand that raises interest rate, thus discouraging investors.



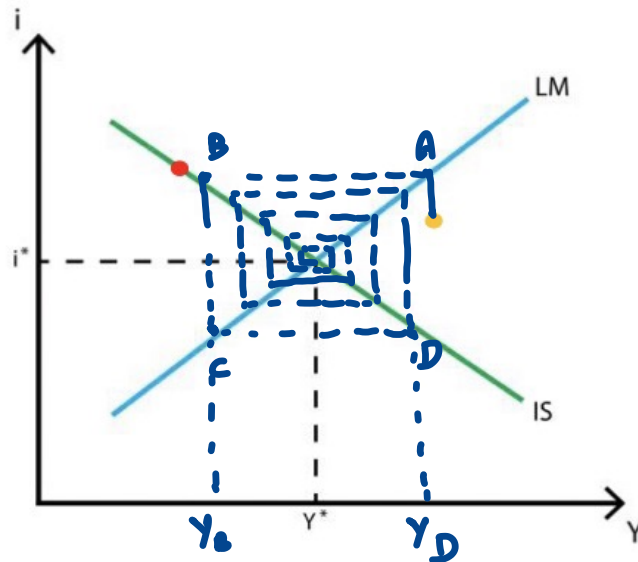
An increase in G makes IS_1 shift up to IS_2 , creating Y_2 . However, this signals more demand of money leading to increase of i_1 to i_2 . LM and IS_2 meet at point of equilibrium i_2, Y_3 .



Contractionary policy will lead to a decrease in M_s which will lead to a higher i (i_2). Higher i makes lower output Y . As illustrated in the diagram LM_1 shifts upward to LM_2

making a new equilibrium at i_2, Y_2 .

8.



8.1. At red point, goods and service market is at equilibrium, while money market is not.

8.2. At orange point, both markets are not in equilibrium. In money market, i is low leading to an adjustment for higher i (at A). However, i_A is too high and discourages people from investing, thus lowering output to Y_0 .

At B, given Y_0 , i is too high $\rightarrow$ surplus of money, thus i adjusts to C.

At C, i is low, encouraging investment leading to high Y (Y_D).

This series of adjustments repeat until it reaches equilibrium of i^* ; Y^* .

9. 9.1. When consumers have high MPC, monetary policy should be used because IS is pretty leveled. Thus, influencing LM can more easily direct the economy

9.2. When investment is not sensitive to i , it means money supply from investments are reliable. Thus, influencing IS through fiscal policy is better.

9.3. When money demand is sensitive to interest rate, IS is steeper. Thus, fiscal policy should be used.

9.4. When money demand is sensitive to change in Y , LM is steeper. Thus, monetary policy should be used.

10. 10.1. Derive IS equation

$$Y = AE = C + I + G$$

$$Y = 100 + 0.5(Y - 40) + 80 - 100i + 40$$

$$= 100 + 0.5Y - 20 + 80 - 100i + 40$$

$$100i = 100 - 0.5Y + 100$$

$$= 200 - 0.5Y$$

$$i = 2 - 0.005Y$$

10.2. Derive LM equation

$$M_d = M_s$$

$$200i = -200 + 0.5Y$$

$$L(Y, i) = \frac{M}{P}$$

$$i = -1 + 0.0025Y$$

$$0.5Y - 200i = 200$$

10.3 . Find point of equilibrium

$$IS : i = 2 - 0.005Y$$

$$LM : i = -1 + 0.0025Y$$

$$\Rightarrow 2 - 0.005Y = -1 + 0.0025Y$$

$$-0.0075Y = -3$$

$$Y^* = \frac{-3}{-0.0075} = 400$$

$$i^* = 2 - 0.005(400) = 0$$