Exercise 6

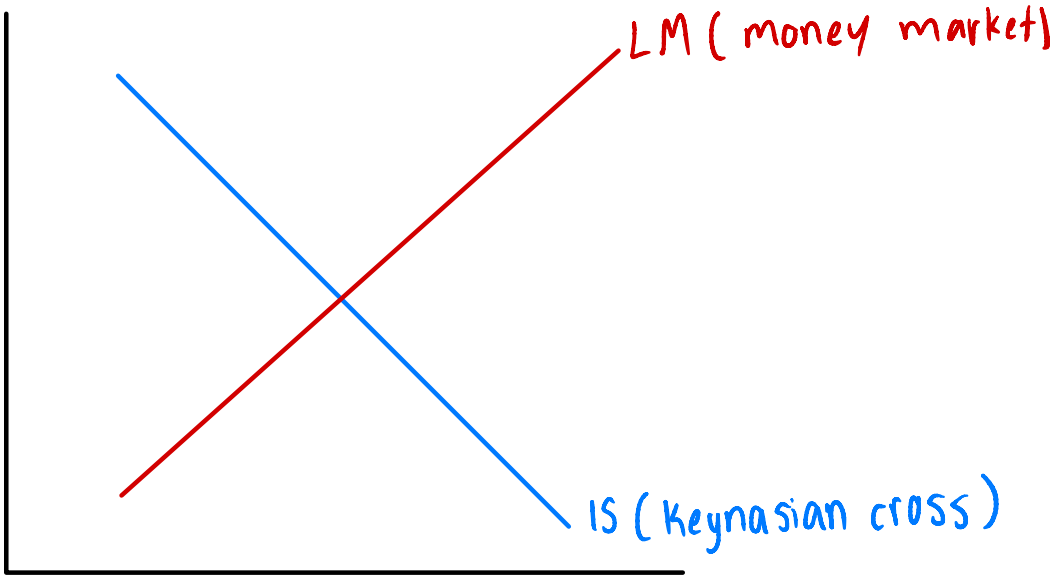
IS-LM Model

1. The IS-LM Model is a general equilibrium model, which means that there have the price that clear each market
   There are 2 markets, which are Good & Services Market and Money Market
   The price that clears these markets is interest rate
   The IS curve represents a negative relationship between i and Y. This is because higher interest rate = decrease in investment because there are more cost of borrowing
   The LM curve represents a positive relationship between i and Y. This is because high Y (income) = higher demand drives up interest rate
   Each point on the IS curve is an equilibrium in the G&S market.
   Therefore, we have the equilibrium condition: C+I+G
   Each point on the LM curve is an equilibrium in the money market.
   Therefore, we have the equilibrium condition: $L_Y \cdot Y - L_i \cdot i$

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↑ = I↓ | i↑ → Y↑	shift left	shift right
G↓ → AE↓	shift left	movement left
T↓ → AE↑	shift right	movement right
G&T↑ equally → AE↑	shift right	movement right
M↓	movement left	shift left
P↓	movement right	shift right

3. <u>Explain, together with diagrams,</u> how we can derive the IS curve from Keynesian Cross, and how we can derive the LM curve from the money market.



IS

$Y = C + I + G$ Keynasian cross

Is I not fixed (I depends on i)

$Y = C + I(i) + G$

LM

$M_d = M_s$ money market

$\frac{M}{P} = L_y \cdot Y - L_i \cdot i$

$\frac{M}{P} = L(y - i)$

4. Assume a closed economy with the government. The economy has the following parameters:

$C = C_0 + C_1(Y - T)$ $I = I_0 - I_1 \cdot i$ $G = G_0$ $T = T_0$

$L(i, Y) = L_Y \cdot Y - L_i \cdot i$ $M = M_0$ $P = P_0$

Answer the following questions.

4.1 What are I_1, L_Y, and L_i?

4.2 Why are I_1 and L_i negative?

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

(Hint: Start with the equilibrium condition Y = AE. Then, substitute relevant variables into the expression. Lastly, rearrange i to the LHS and everything else on the RHS.)

4.4 Find the slope of the IS curve.

(Hint: The coefficient before Y is the slope of IS.)

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

(Hint: Start with the equilibrium condition Md = Ms. Then, substitute relevant variables into the expression. Lastly, rearrange i to the LHS and everything else on the RHS.)

4.6 Find the slope of the LM curve.

(Hint: The coefficient before Y is the slope of LM.)

4.1 I_1 = Sensitivity of investment to Δ in i
L_Y = Sensitivity of money demand to Δ in y
L_i = Sensitivity of money demand to Δ in i

4.2 because it is a change in interest rate and interest rate effect the out put

4.3 $Y = AE$

$Y = C + I + G$

$Y = C_0 + C_1[Y - (T_0)] + I_0 - I_1 \cdot i + G_0$

$I_1 \cdot i = CO + C_1(Y - T_0) + I_0 + G_0$

$i = \frac{CO + C_1(Y - T_0) + I_0 + G_0}{I_1}$

4.4 $= -I_1$

4.5 $Md = Ms$

$\frac{M}{P} = L_Y \cdot Y - L_i \cdot i$

$L_i i = L_Y \cdot Y - \frac{M}{P}$

$i = \frac{L_Y \cdot Y - M/P}{L_i}$

4.6 L_i

5. From Question 4.4, we can see that the slope of IS curve depends on two factors. Explain how each of these factors affects the slope of the IS curve. We also can see that the slope of LM curve depends on two factors. Explain how each of these factors affects the slope of the LM curve.

① the sensitivity of investment to Δ in i

this means

↓ interest rate = ↑↑↑ Investment

this will make IS flat

not sensitivity of investment to Δ in i

↓ interest rate = ↑ Investment

this will make IS steep

② the multiplier

large multiplier

↑ Investment = ↑↑↑ Y

this will make IS flat

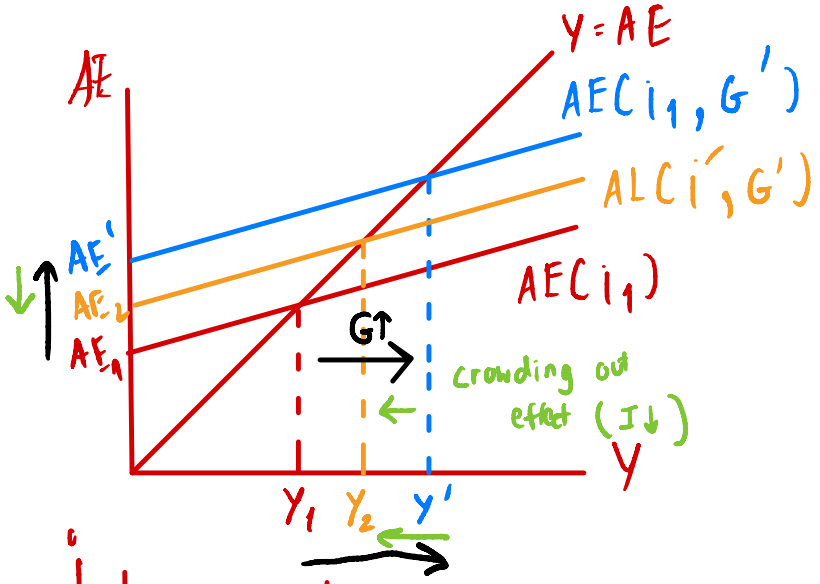
small multiplier

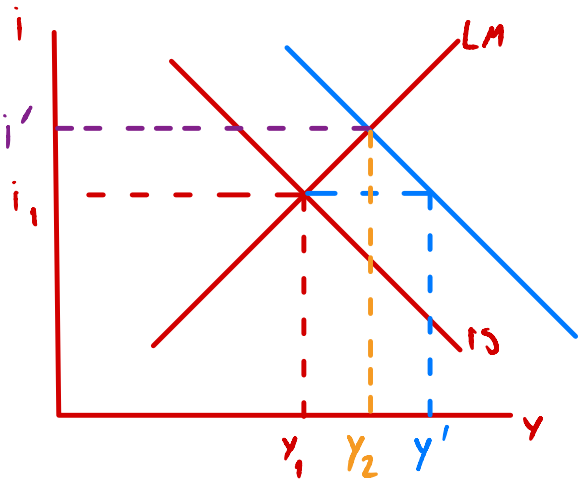
↑ Investment = ↑ Y

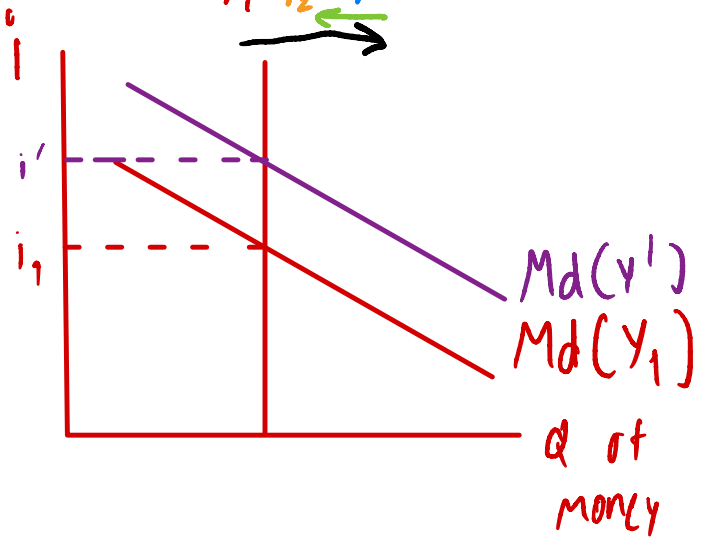
this will make IS steep

6. What is the Crowding-Out Effect?
   Suppose that the government increases its spending, i.e. expansionary fiscal policy. Use the IS-LM diagram to explain how the economy moves to the new general equilibrium and the crowding-out effect.

Expansion fisical policy = G↑ or T↓







GM : G↑ → AE↑ → Y↑

MM : Y↑ → Md↑ → i'↑

GM : i↑ → I↓

→ AE↓ → Y↓

At first the government increase the G it makes the AE and Y increase Then Y increase the Money demand and interest rates increase. After the i increase the I decrease. Then I decrease equal AE and y decrease to conclude G↑ = i↑ = I↓

public sector spending (G) reduce the private setor investment due to the raise on interest rate