

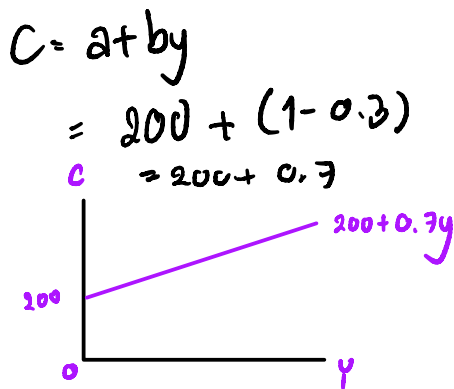
Exercise 3

Keynesian Cross and the Multiplier

1. The Keynesian consumption function assumes that $0 < \text{MPC} < 1$; what is the basis for such assumption?

MPC = Proportion of income that we use to consume
 → As income increases, consumption will also increase but no more than 1
 Consumption function → $C = C_0 + C_1 Y$ ^{MPC}

2. Assume a **CLOSED** economy with **NO** government. Let the autonomous consumption be 200 and MPS be 0.3. Draw and write equations for both saving and consumption functions.



$$S = Y - C$$

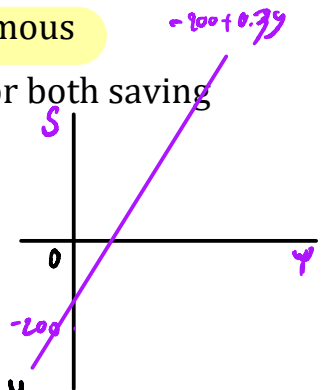
$$= Y - a - by$$

$$S = -a + (1 - b)y$$

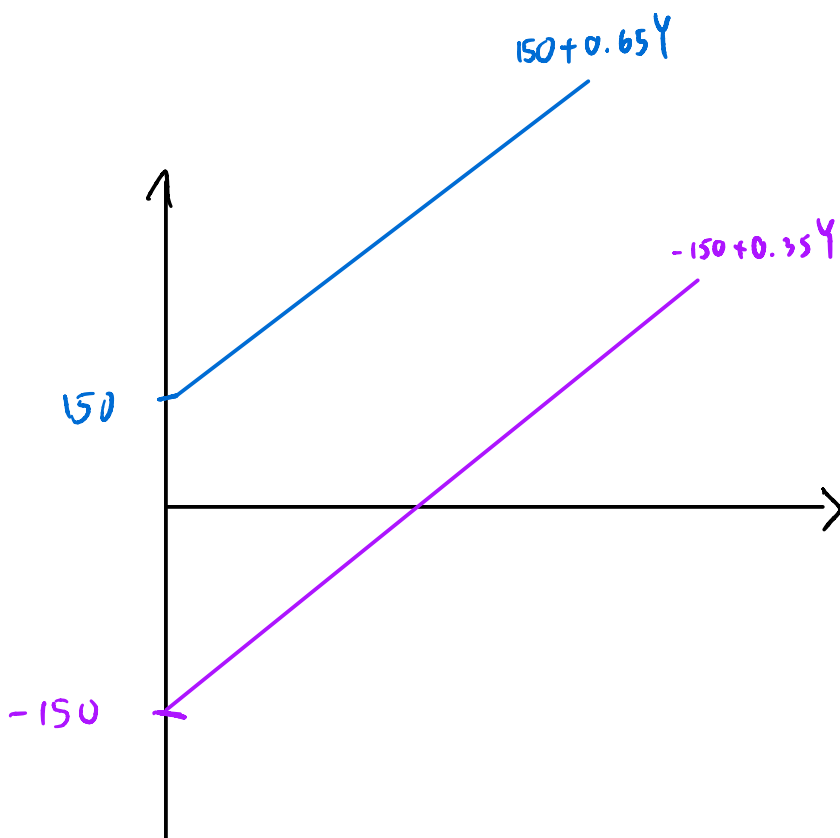
$$= -200 + (1 - 0.3)y$$

$$= -200 + y - 0.7y$$

$$= -200 + 0.3y$$



3. Let the saving function be $S = -150 + 0.35Y$. Find and draw the consumption function.



$$S = -150 + 0.35Y$$

$$S = Y - C$$

$$C = Y - S$$

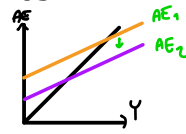
$$C = Y + 150 - 0.35Y$$

$$C = 150 + 0.65Y$$

4. How do the followings affect the AE graph (i.e. explain how the graph changes) and the equilibrium output?

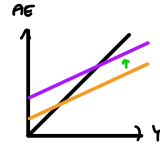
- All firm managers decide to buy fewer machines.

$$\Delta I \downarrow \quad AE \downarrow$$



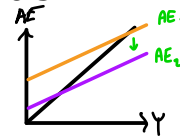
- The government decides to build more roads.

$$\Delta G \uparrow \quad AE \uparrow$$



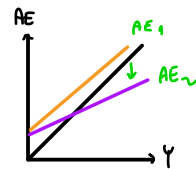
- The citizens decide to save more at all income levels.

$$\Delta MPS \uparrow \quad AE \downarrow$$



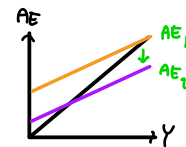
- The citizens decide to save larger proportion of income.

$$\Delta MPS \uparrow \quad AE \downarrow$$

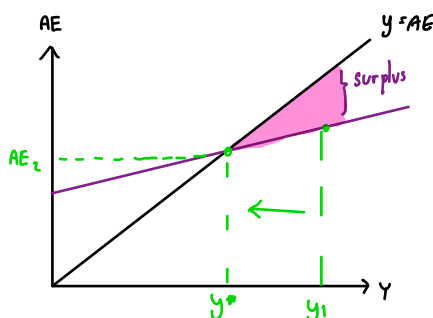


- The government decides to raise tax.

$$\Delta T \uparrow \quad AE \downarrow$$



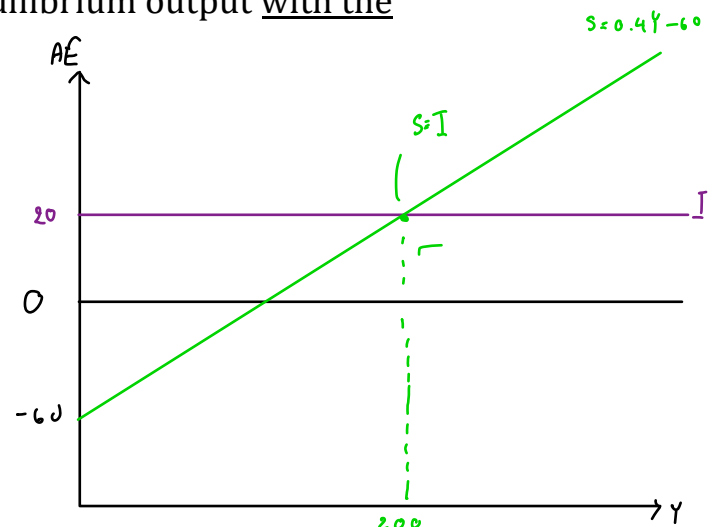
5. In the Keynesian Cross Model, suppose that aggregate output is greater than aggregate expenditure. Explain the adjustment process towards the equilibrium



$y > C + I$
When supply is more than demand,
The business need to cut back
of production to adjust to the
equilibrium.

6. Let $C = 60 + 0.6Y$ and $I = 20$. Find the equilibrium output with the saving/investment approach.

$Y = C + S$	$S = I$
$S = Y - C$	$0.4Y - 60 = 20$
$S = Y - 60 + 0.6Y$	$0.4Y = 80$
$S = 0.4Y - 60$	$Y = 200$

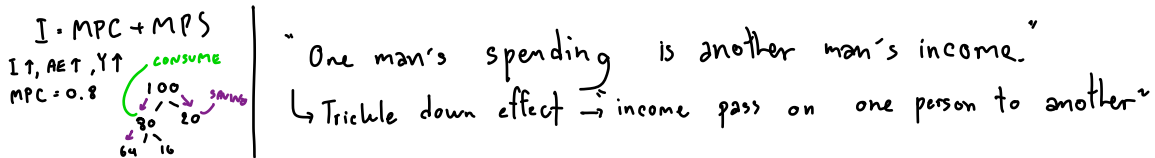


$$MC: 60 + 0.6Y$$

7. Let $S = -60 + 0.4Y$ and $I = 20$. Find the equilibrium output with the standard approach. Now, suppose I increases by 20. Find the new equilibrium and the investment multiplier.

$Y = AE$ $= C + I_0$ $= 60 + 0.6Y + 20$ $= 80 + 0.6Y$ $Y^* = 200$	$\Delta I \uparrow 20$ $Y = AE$ $= C + I_0$ $= 60 + 0.6Y + 40$ $Y^* = 100 + 0.6Y$ $Y^* = 250$	$\frac{\Delta Y^*}{\Delta I} = \frac{250 - 200}{40 - 20} = \frac{50}{20} = 2.5$
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8. With the multiplier effect, an injection of money (for example, investment) can lead to a greater proportional increase in output. Explain how this can happen.



9. How is the investment multiplier related to MPC? Explain the intuition behind such relationship. (Hint: Question 9)

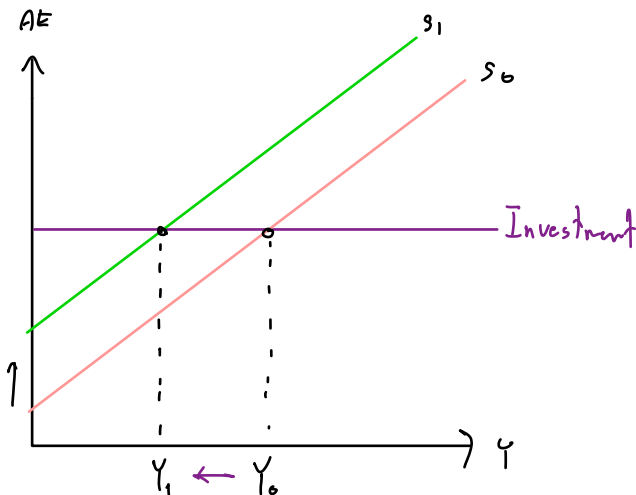
When MPC is increased, the multiplier will be higher too.

\rightarrow Investment multiplier, $\frac{1}{1-MPC}$

if $mpc = 0.5$; $M = \frac{1}{1-0.5} = 2$

if $mpc = 0.8$; $M = \frac{1}{1-0.8} = 5$

10. What is the Paradox of Thrift? Explain it with diagram.



Paradox of Thrift: when you save more, you will consume less, this lead to a decrease in aggregate expenditure and output. So, your income will be lower \rightarrow there is no overall change in saving.