

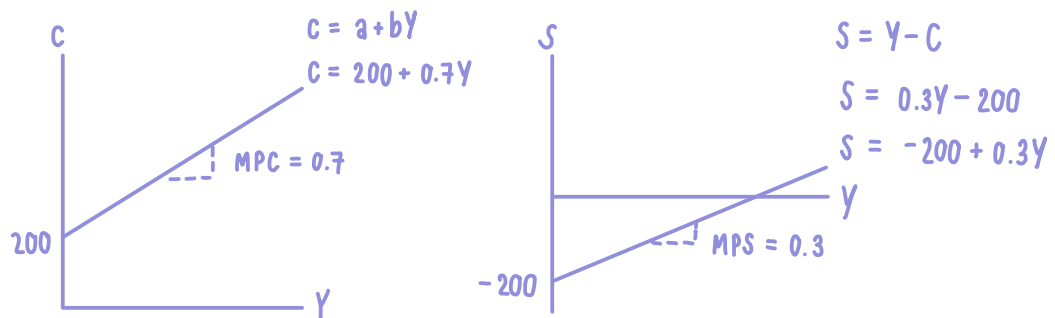
Exercise 3

Keynesian Cross and the Multiplier

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

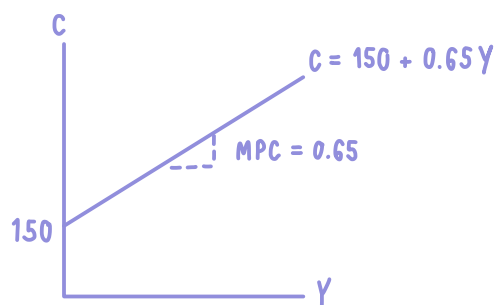
Real consumption is a function of real income, and as income rises, consumption will also rise but not necessarily at the same rate

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. $\hookrightarrow MPC + MPS \equiv 1 \rightarrow MPC = 0.7$



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

$$\hookrightarrow C = 150 + 0.65Y$$



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.

Investment decrease → AE graph shift down → equilibrium output decrease

- The government decides to build more roads.

Government spending increase → AE graph shift up → equilibrium output increase

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

Autonomous saving increase → AE graph shift down → equilibrium output decrease

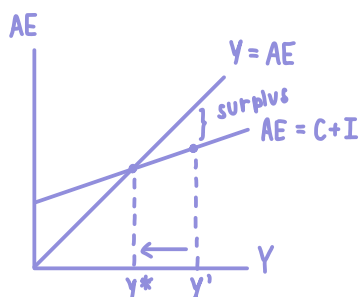
- The citizens decide to save larger proportion of income.

MPS increase → AE graph shift down → equilibrium output decrease

- The government decides to raise tax.

Tax increase → AE graph shift down → equilibrium output decrease

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



$$Y > C + I$$

There is a surplus.

Business will cut back on production, moving the economy towards equilibrium

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

saving/investment approach.

$$S = Y - C$$

$$S = -60 + 0.4Y$$

$$\downarrow S = I$$

$$20 = -60 + 0.4Y$$

$$\frac{80}{0.4} = Y \quad Y = 200 \#$$

$$C = 60 + 0.6Y$$

7. Let $S = -60 + 0.4Y$ and $I_0 = 20$. Find the equilibrium output with the standard approach. Now, suppose I_1 increases by 20. Find the new equilibrium and the investment multiplier.

| | | |
|--|---|---|
| $Y = AE = C + I_0$ $Y = 60 + 0.6Y + 20$ $0.4Y = 80$ $Y = 200 \#$ | $Y = AE = C + I_1$ $Y = 60 + 0.6Y + 40$ $0.4Y = 100$ $Y = 250 \#$ | <p>investment multiplier</p> $\frac{\Delta Y}{\Delta I} = \frac{250 - 200}{40 - 20} = \frac{50}{20} = 2.5 \#$ |
|--|---|---|

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.

Because one man's spending is another man's income.

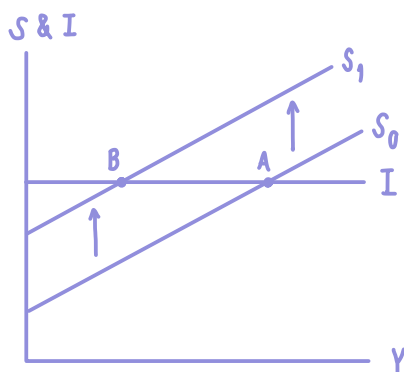
9. How is the investment multiplier related to MPC? Explain the intuition behind such relationship. (Hint: Question 9)

$$\text{Investment multiplier} = \frac{1}{1 - \text{MPC}} \rightarrow \text{when MPC is large, the multiplier is large}$$

When people spend a lot of money (high MPC), others will receive a lot of money as their incomes. They will spend a lot, and many will receive a lot too. Economy will grow.

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

Increase in saving cause equilibrium output to decrease, and decreased consumption leads to a reduction of income. Then the saving become smaller.



increase in saving
from S_0 to S_1
cause equilibrium
output decrease
from A to B