

Exercise 3

Keynesian Cross and the Multiplier

1. The Keynesian consumption function assumes that $0 < MPC < 1$; what is the basis for such assumption?
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.
3. Let the saving function be $S = -150 + 0.35Y$. Find and draw the consumption function.
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. $AE \downarrow$ spending \downarrow
 - The government decides to build more roads. $AE \uparrow$ spending \uparrow
 - The citizens decide to save more at all income levels. $AE \downarrow$ } ?
 - The citizens decide to save larger proportion of income. }
 - The government decides to raise tax. $AE \downarrow$ $Y \downarrow$
5. In the Keynesian Cross Model, suppose that aggregate output is greater than aggregate expenditure. Explain the adjustment process towards the equilibrium.
6. Let $C = 60 + 0.6Y$ and $I = 20$. Find the equilibrium output with the saving/investment approach.
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.
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)
10. What is the Paradox of Thrift? Explain it with diagram.

1. To increase consumption as their incomes increase, but not by as much as the increase in their income.

=> when income \uparrow 1 units, consumption $\uparrow < 1$ unit.

=> amount of consumption that depends on income

$$MPC = \frac{\Delta C}{\Delta y}$$

2. $c = a + bY$ $a = 200$, $MPS = 0.3$ \rightarrow $MPC = 0.7$ bc. $MPC + MPS = 1$

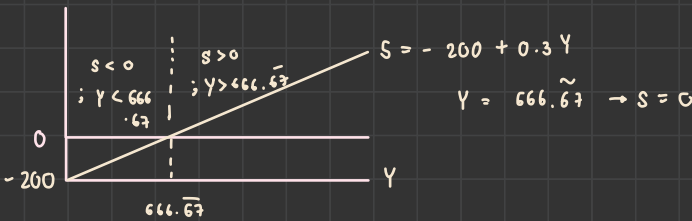
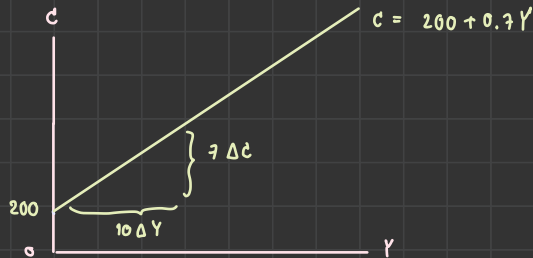
$$s = Y - c$$

$$c = 200 + 0.7Y$$

$$s = Y - a - bY$$

$$= -a + (1 - b)Y$$

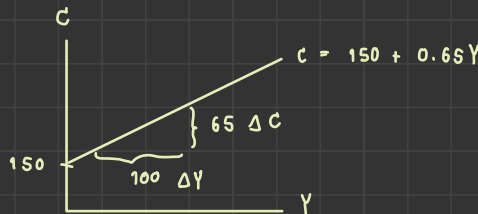
$$= -200 + 0.3Y$$



3. $s = -150 + 0.35Y$ \rightarrow $MPS = 1 - MPC$, autonomous consumption = 150

$$MPC = 0.65$$

$$\therefore c = 150 + 0.65Y$$



4. - if there is a fewer machines \rightarrow product $\downarrow \rightarrow$ consumption \downarrow
 $=$ spending $\downarrow \rightarrow$ AE $\downarrow \rightarrow$ $Y^* \downarrow$
- if gov. build more roads \rightarrow gov. spending $\uparrow \rightarrow$ AE $\uparrow \rightarrow$ $Y^* \downarrow$
 - if pp. save money \rightarrow consumption $\downarrow \rightarrow$ AE $\downarrow \rightarrow$ $Y^* \downarrow$
 - if pp. save more money \rightarrow consumption $\downarrow \rightarrow$ AE $\downarrow \rightarrow$ $Y^* \downarrow$
 - if gov. raise more tax \rightarrow pp will save money \rightarrow C $\downarrow \rightarrow$ AE $\downarrow \rightarrow$ $Y^* \downarrow$

5. In the Keynesian cross Model, if $Y > AE$, it means that we have a surplus. It means that what firms produced $<$ demands. Inventories will increase. So, It is a sign to decrease production rate. Then, production adjust to the equilibrium.

6. Let $c = 60 + 0.6Y$, $I = 20$

- $S = I$
- $c = a + bY$
- $s = -a + (1-b)Y$
 $= -60 + (1-0.6)Y$

$$S = -60 + 0.4Y$$

$$20 = -60 + 0.4Y$$

$$80 = 0.4Y$$

$$Y = 200$$

7. $S = -60 + 0.4Y$, $I = 20 \rightarrow I \uparrow 25$

1.) find $Y_1^* = AE = c + I$

$$c = 60 + 0.6Y, I = 20$$

$$Y = 60 + 0.6Y + 20$$

$$Y = 80 + 0.6Y$$

$$0.4Y = 80$$

$$Y_1^* = 200$$

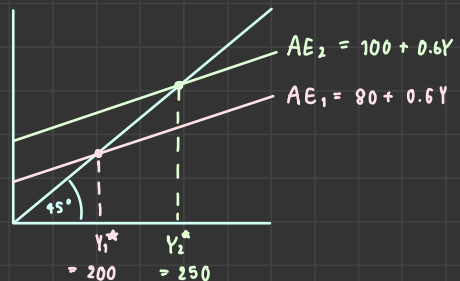
2.) find new Eqbm when $\Delta I = 20$

$$Y = 60 + 0.6Y + 40$$

$$Y - 0.6Y = 100$$

$$0.4Y = 100$$

$$Y_2^* = 250$$



8. if some one invest on something, it will generate flows of income. For example, company A invest on photograph shop, photograph shop will save and spend on something such as noodle. Then, the noodle shop will also save and spend on something too. So, all of this will occur according to multiplier effect.
9. When pp. spend a lot of money (high MPC), others will receive a lot of money as their income, and they will spend a lot too. Then, the economy grow a lot. MPC is used to calculate the investment multiplier. (High MPC $\rightarrow Y^* \uparrow$ a lot)
For example, $\frac{\Delta Y^*}{\Delta I} = 5$, this means that we have to find the value of equilibrium output by $Y^* = AG = a + bY$. So, "b" - MPC. By consider the $\frac{\Delta Y^*}{\Delta I} = 5$, it means that when $\Delta I = 1$ unit, $\Delta Y^* = 5$ units.
10. Paradox of thrift occurs when pp. save more money, the equilibrium output will decrease. For example, $S_0 = -100 + 0.2Y$, $S_1 = -50 + 0.2Y$, $I = 25$

planned of saving, Investment

