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?

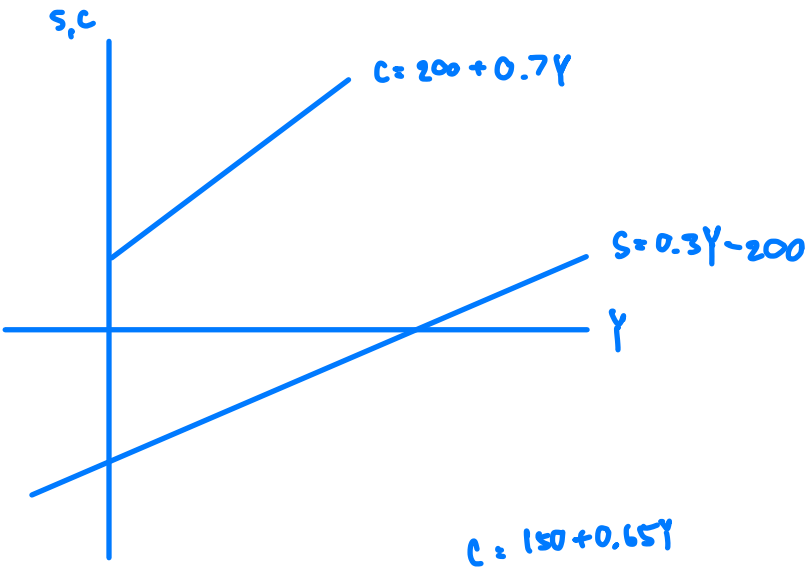
- All firm managers decide to buy fewer machines. I↓
- The government decides to build more roads. G↑
- The citizens decide to save more at all income levels. S↑ (S↑)
- The citizens decide to save larger proportion of income. MPS↑ MPC↓ → AE↓
- The government decides to raise tax. T↑

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. $\frac{1}{1-b}$ ↑ AE
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 Income that is consumed or spent ↑ output ↑

$0 < MPC < 1$ because people save part of their income

2



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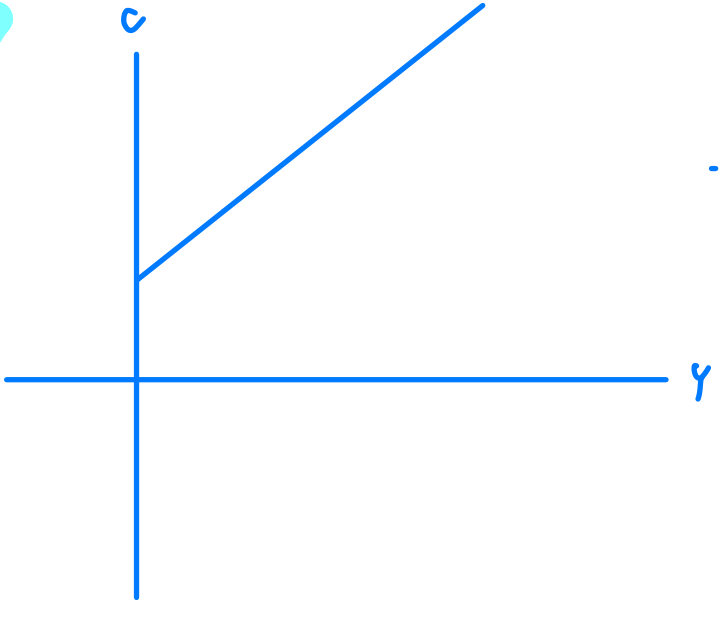
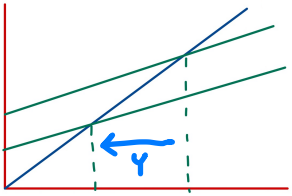


$S = Y - C$

$-150 + 0.35Y = Y - C$

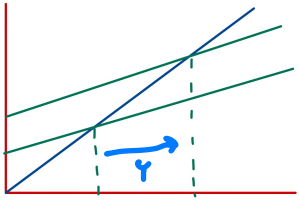
$C = 150 + 0.65Y$

4.1



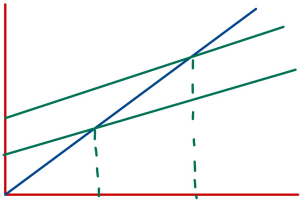
I↓ Y↓

4.2



I↑ Y↑

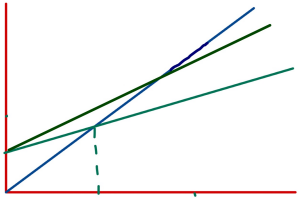
4.3



saving ↑

autonomous saving ↑

4.4



$Y = 200 + 0.8Y$

$Y = 200 + 0.6Y$

4.5 $T\uparrow\ C\downarrow \rightarrow AE\downarrow\ Y^d\downarrow$

5

$Y > AE$ → surplus → inventory accumulate → reduce production

6 $C = 60 + 0.6Y \quad I = 20$

$Y = C + I$

$Y = 0.6Y + 60 + 20$

$0.4Y = 80$

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

7 $S = -60 + 0.4Y \quad I = 20$

$S = Y - C$

$-60 + 0.4Y = Y - C$

$C = 60 + 0.6Y$

$Y = C + I$

$Y = 60 + 0.6Y + 20$

$0.4Y = 80$

$Y = 200$

$\therefore I = 40$

$Y = C + I$

$Y = 60 + 0.6Y + 40$

$0.4Y = 100$

$Y = 250$

$\text{multiplier} = \frac{1}{1 - mpc} = \frac{1}{1 - 0.6} = 2.5$

8) injection multiplier depend on Δy^* and ΔAE

I↑ AE↑

9) $\Delta AE = -(MPC \times \Delta T)$

$$\frac{\Delta y^*}{-MPC\,\Delta T} = \frac{1}{1 - \text{slope of AE}}$$

$$\therefore \frac{\Delta y^*}{\Delta T} = -\frac{MPC}{1 - \text{slope of AE}}$$

10) suppose people save more

↓

there will be leakages

↓

people will spend less

↓

less G&S produced in economy

↓

incomes in the economy fall

↓

you can save less

paradox