Exercise 3
Keynesian Cross
and the Multiplier

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

$C = C_0 + c_1 y$

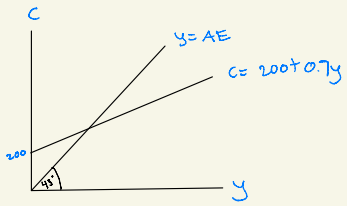
$C_1 = MPC$

- This means when income increases by 1 unit, consumption will increase by less than 1 unit. For example, if you have 100 baht, you wont consume all of them. consumption will not increase as much as income increases.

MPC = proportion of income that we use to consume or amount of consumption depend on income.

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.

Consumption $\rightarrow C = a + by \rightarrow C = 200 + 0.7y$

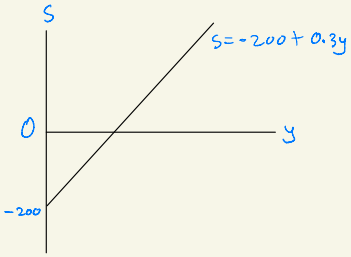


MPS = 0.3 (saving)

MPC = 0.7 (consumption)

MPS + MPC = 1

Saving $\rightarrow S = -a + (1-b)y \rightarrow S = -200 + 0.3y$



or

$S = y - C$

$S = y - (200 + 0.7y)$

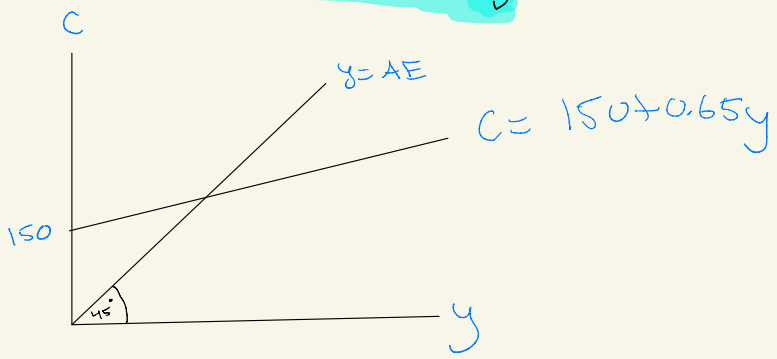
$S = -200 + 0.3y$ #

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

MPC + MPS = 1 → MPC = 1 − MPS

C (Consumption), S (Saving)

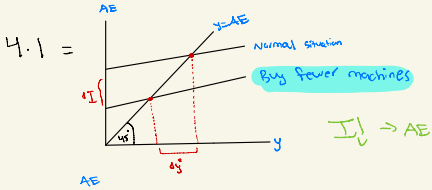
Consumption → C = 150 + 0.65y



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

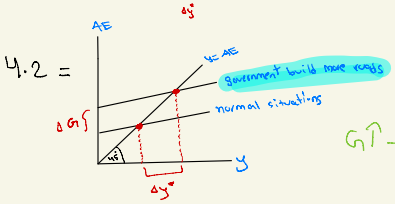
- All firm managers decide to buy fewer machines.
- The government decides to build more roads.
- The citizens decide to save more at all income levels.
- The citizens decide to save larger proportion of income.
- The government decides to raise tax.

4.1 =



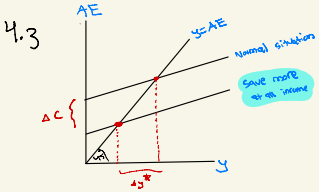
I↓ → AE↓ → y*↓

4.2 =



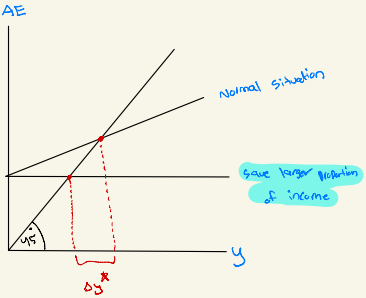
G↑ → AE↑ → y*↑

4.3



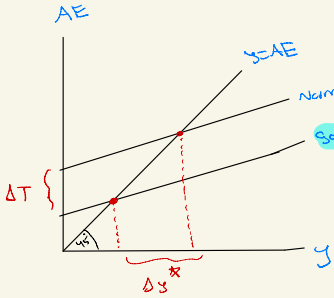
S↑ → AE↓ → y*↓

4.4



MPS↑ → MPC↓ → AE↓ → y*↓

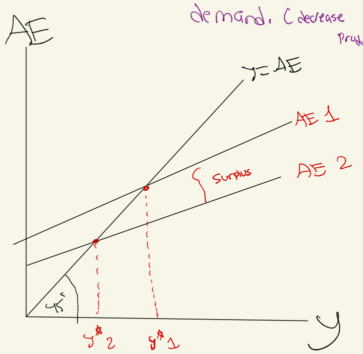
4.5



T↑ → AE↓ → y*↓

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

☆ Supply more than demand. (decrease production)



Aggregate expenditure = **demand**

Aggregate output = **supply**

$Y > AE$

what you produced (income)

what do you plan to spend (รายจ่าย)

If current output exceeds the equilibrium, **inventories (unsold output) accumulate**, encouraging business to cut back on production, moving the economy towards equilibrium.

(surplus) → ผลิตมากไป

But if $Y < AE$ → I ↑

(shortage) → ผลิตเพิ่ม

If level of production is below the equilibrium, then **inventories decline**, encouraging an increase in production and move towards equilibrium.

unsold output (I) [illegible] → demand > supply.

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

① $AE = C + I$

$AE = 80 + 0.6y$

② $y = 80 + 0.6y$

③ $y^* = 200$ #

$S = I$

$y = C + S$

$S = y - C$

$S = y - 60 + 0.6y$

$S = 0.4y - 60$

$S = I$

$0.4y - 60 = 20$

$0.4y = 80$

$y^* = 200$ #

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.

$S = I$

$S = -60 + 0.4y \quad I = 20$

$-60 + 0.4y = 20$

$y^* = 200$

I increases by 20 so I is 40

$40 = -60 + 0.4y$

$y^* = 250$

multiplier

$$\frac{\Delta y^*}{\Delta I} = \frac{250 - 200}{40 - 20} = \frac{50}{20} = 2.5 \; \#$$

∴ when I increases by 1 unit, output will increase by 2.5 units.

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.

$$\frac{\Delta y^*}{\Delta I} = \frac{\Delta y^*}{1 - mpc}$$

Leakage ⇝ ส่วนที่ทำให้ y ลดลง (ออก) : Leakage = S (ออม)

Injection ⇝ ทำให้ y เพิ่มขึ้น (เข้า) Injection = I (ลงทุน)

☆ One man spendings is another mans income. ☆

mpc is large, the multiplier is large. The multiplier is large this means when investment increase, the output will increase alot.

when money injected, firm have more money to operate their business. This means firm can buy more machine, hire more labor. Therefore, there are more money in flow of income, labor have more income, and output increase.

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

$$\frac{\Delta y^*}{\Delta I} = \frac{\Delta y^*}{1 - MPC}$$

→ investment multiplier related to MPC.

The intution behind this relationship is that

1. when people spend alot of money (high MPC), others will recieve a lot of money as their incomes.
2. They will spend alot too, and many will recieve alot too
3. The economy will grow alot.

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

Key idea:

Paradox

Suppose people save more
→ there will be leakage
→ people will spend less
→ less ggs produced in economy
→ income in the economy fall
→ you can save less.

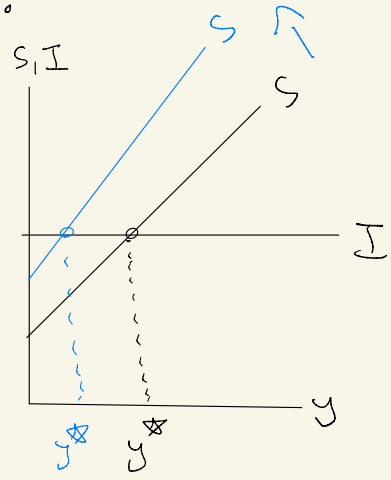
∴ income in autonomous saving leading to decreasing in aggregate expenditure, and thus a decrease in aggregate output.

So when people have less income, their savings will become smaller.

Diagram:

People intend to save money, it reduce income of economic, therefore people can save less.

So even if you save alot you wont be richer.



→ output decrease