Principles of Macroeconomics

Topic 4 Part 1

Government and Fiscal Policy (CH 9)

Effects of G and T on Y*

Example Find the equilibrium output Y*.

C = 300 + 0.75(Yd) I = 50

G = 50 T = 50 X = 50 M = 100 + 0.25Y

We get Y* = 625.

When G = 100, Y* rises to 725.

When T = 100, Y* falls to 550.

Fiscal Policy

- We have studied about how G and T (where T is “NET lump-sum tax”) affect the economy.

- When G increases, AE and Y* increases.
  - Higher G increases demand and output.
- When T increases, AE and Y* decreases.
  - Higher T decreases demand and output.

- These are reflected in the multipliers.

Fiscal Policy

- $\frac{\Delta Y}{\Delta G} = \frac{1}{1-C_1+M_1} > 0$ (C_1 = MPC and M_1 = MPM)
- That is, when G increases by 1 unit, Y will <u>increase</u> by $\frac{1}{1-C_1+M_1}$ units.

- $\frac{\Delta Y}{\Delta T} = \frac{-C_1}{1-C_1+M_1} < 0$ (C_1 = MPC and M_1 = MPM)
- That is, when T increases by 1 unit, Y will <u>decrease</u> by $\frac{C_1}{1-C_1+M_1}$ units.

Discretionary Fiscal Policy

- **The government sets G and T according to economic conditions.** These deliberate changes in G and T are called “discretionary fiscal policy”.

- **discretionary fiscal policy** Changes in taxes or spending as a result of deliberate changes in government policy.

- There is also **“non-discretionary”** fiscal policy. (FOR NEXT TIME)

Discretionary Fiscal Policy

- When the Govt raises G or reduces T, this is called "**expansionary" fiscal policy.**
  - This is to boost the economy, especially when the economy is working BELOW its capacity.

- When the Govt reduces G or raises T, this is called **"contractionary" fiscal policy.**
  - This is to slow down the economy, especially when the economy is working ABOVE its capacity.

Output Gap

- **Y_F (full-employment Y)** denotes the level of output where the economy is at full employment, i.e. unemployment is at its natural rate.

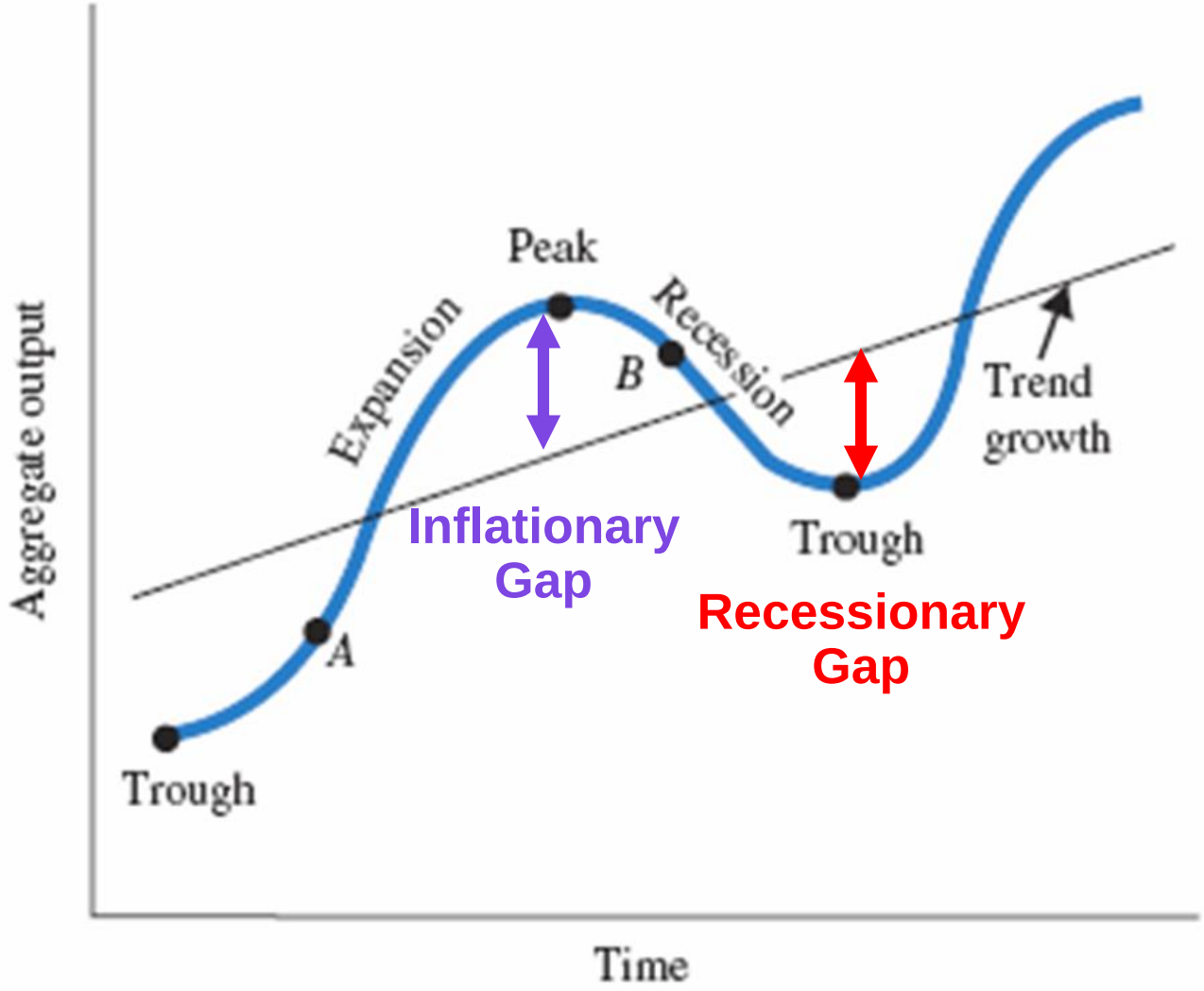
- **When $Y_F > Y^*$, we have recessionary gap.**
- **When $Y_F < Y^*$, we have inflationary gap.**

- **Output gap tells us about what we are producing and what we CAN produce (our capacity).**

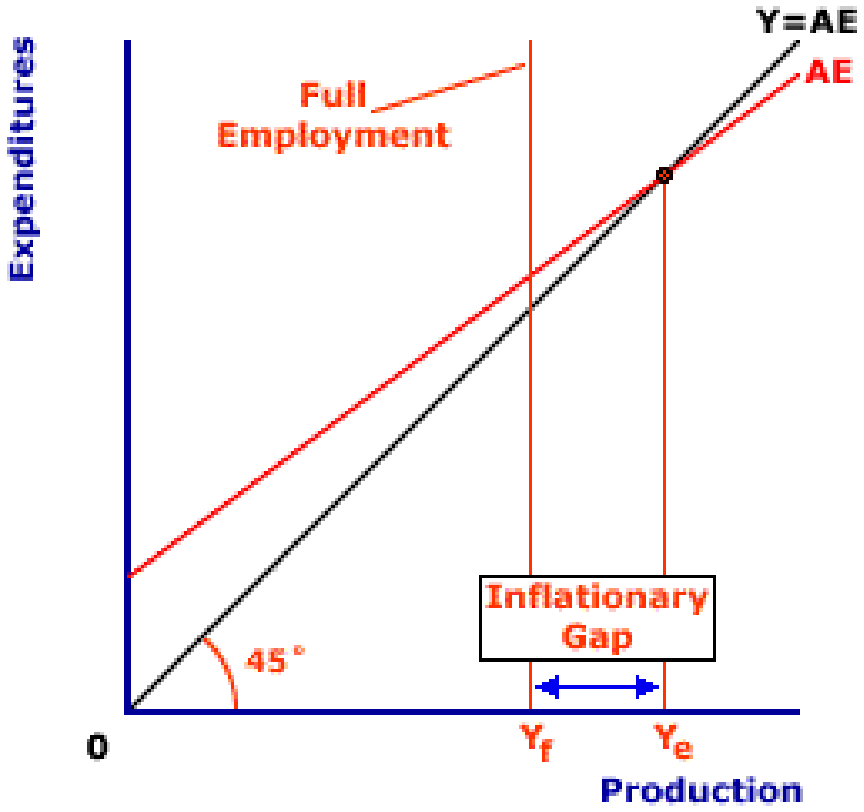
Output Gap

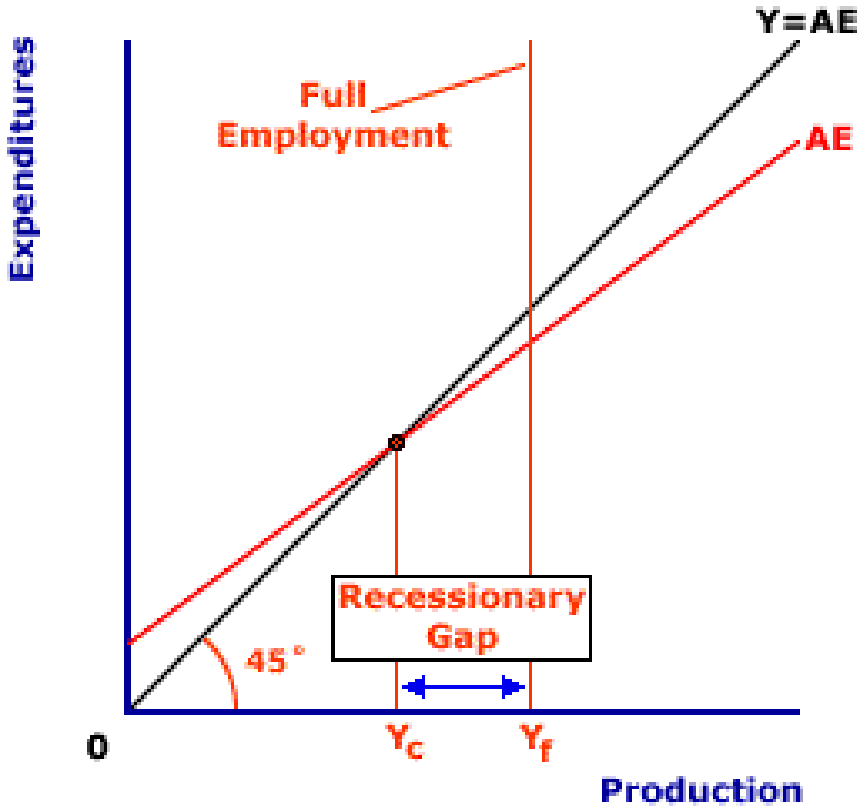
- **When $Y_F > Y^*$, we have recessionary gap.**
  - The unemployment is above the natural rate of unemployment.
  - Some factors of productions are unemployed.
  - This is when the economy is slowing down.
- **When $Y_F < Y^*$, we have inflationary gap.**
  - The unemployment is below the natural rate of unemployment.
  - Some factors of productions are over-employed.
  - This is when the economy is growing too fast.

Output Gap



Output Gap





Fiscal Policy and Output Gap

The policy solution to a recessionary gap **is to shift the AE up**, using policies like tax cuts or government spending increases.

The policy solution to an inflationary gap **is to shift the AE down**, using policies like tax increases or spending cuts.

The Balanced-Budget Policy

- What happens if the government runs a balanced budget?

- Recall that **Balanced Budget implies G = T.**
- For example, if the government wants to increase its spending G by 50, it has to finance this spending with higher tax T of 50.
- **Will the equilibrium output increase or decrease?**
- **We can use the multipliers to answer this question.**

The Balanced-Budget Policy

- What happens if the government runs a balanced budget?
- Govt Multiplier, $\frac{\Delta Y}{\Delta G} = \frac{1}{1-C_1+M_1}$, tells us how Y will change when G changes.
- Tax Multiplier, $\frac{\Delta Y}{\Delta T} = \frac{-C_1}{1-C_1+M_1}$, tell us how Y will change when T changes.

- **The SUM of the two will tell us how Y will change when both G and T change by the same amount.**

The Balanced-Budget Multiplier

$$\frac{\Delta Y}{\Delta G} = \frac{1}{1-C_1+M_1} \qquad \frac{\Delta Y}{\Delta T} = \frac{-C_1}{1-C_1+M_1}$$

- **Balanced-Budget Multiplier (BBM):**

$$\frac{\Delta Y}{\Delta G} + \frac{\Delta Y}{\Delta T} = \frac{1-C_1}{1-C_1+M_1} < 1$$

- **For example, if BBM = 0.5, this means that when the government increases both T and G by 1 unit, the output will increase by 0.5 units.**

The Balanced-Budget Policy

Example Find the equilibrium output Y*.

C = 300 + 0.75(Yd) I = 50

G = 50 T = 50 X = 50 M = 100 + 0.25Y

We get Y* = 625.

When G = 100, Y* = 725. When T = 100, Y* = 550.

What happens if G = T = 100?

Short Summary – 1

- We have two approaches to find the equilibrium in the Keynesian Cross.
  - Y = AE Approach
  - Saving/Investment Approach (FOR NEXT TIME)

- Y = AE is also called “income = expenditure”.
- “Saving/Investment” is also called **“leakage = injection”** approach.

Short Summary – 2

The Equilibrium Condition of the Y = AE:

- Closed Econ w/o Govt: $Y = AE = C + I$
- Closed Econ w/ Govt: $Y = AE = C + I + G$
- Open Econ w/ Govt:

$$Y = AE = C + I + G + (X - M)$$

Y = AE Approach – 1

Example Find the equilibrium output Y*.

C = 300 + 0.75(Yd) I = 50

G = 50 T = 50 X = 50 M = 100 + 0.25Y

Y = AE Approach – 2

We start with the equilibrium condition:

$$Y = AE = C + I + G + (X - M)$$

$$Y = 300 + 0.75(Y - T) + I + G + X - (100 + 0.25Y)$$

$$Y = 300 + 0.75(Y - 50) + 150 - (100 + 0.25Y)$$

$$Y - 0.75Y + 0.25Y = 450 - 0.75(50) - 100$$

$$0.5Y = 350 - 37.5 = 312.5$$

$$Y^* = 625$$

Y = AE Approach – 3

- Drawing the Keynesian Cross

AE = C + I + G + (X – M)

AE = 300 + 0.75(Y – 50) + 150 – (100 + 0.25Y)

AE = 312.5 + 0.5Y

Intercept = 312.5

Slope = 0.5 = MPC – MPM

Finding the Multipliers – 1

$Y = C + I + G + (X - M)$

with $C = C_0 + C_1(Y - T)$ and $M = M_0 + M_1(Y)$

$$Y = C_0 + C_1(Y) - C_1(T) + I + G + X - (M_0 + M_1(Y))$$

$$Y = C_0 + C_1(Y) - C_1(T) + I + G + X - M_0 - M_1(Y))$$

$$Y - C_1(Y) + M_1(Y) = C_0 - C_1(T) + I + G + X - M_0$$

$$(1 - C_1 + M_1)Y = C_0 - C_1(T) + I + G + X - M_0$$

$$Y = \frac{1}{1 - C_1 + M_1}(C_0 - C_1(T) + I + G + X - M_0)$$

Finding the Multipliers – 2

$$Y = \frac{1}{1 - C_1 + M_1}(C_0 - C_1(T) + I + G + X - M_0)$$

- $\frac{\Delta Y}{\Delta I} = \frac{1}{1-C_1+M_1}$
- $\frac{\Delta Y}{\Delta G} = \frac{1}{1-C_1+M_1}$
- $\frac{\Delta Y}{\Delta T} = \frac{-C_1}{1-C_1+M_1}$
- $\frac{\Delta Y}{\Delta T} + \frac{\Delta Y}{\Delta G} = \frac{1-C_1}{1-C_1+M_1}$

C_1 = MPC

M_1 = MPM

$C_1 - M_1$ = slope of AE