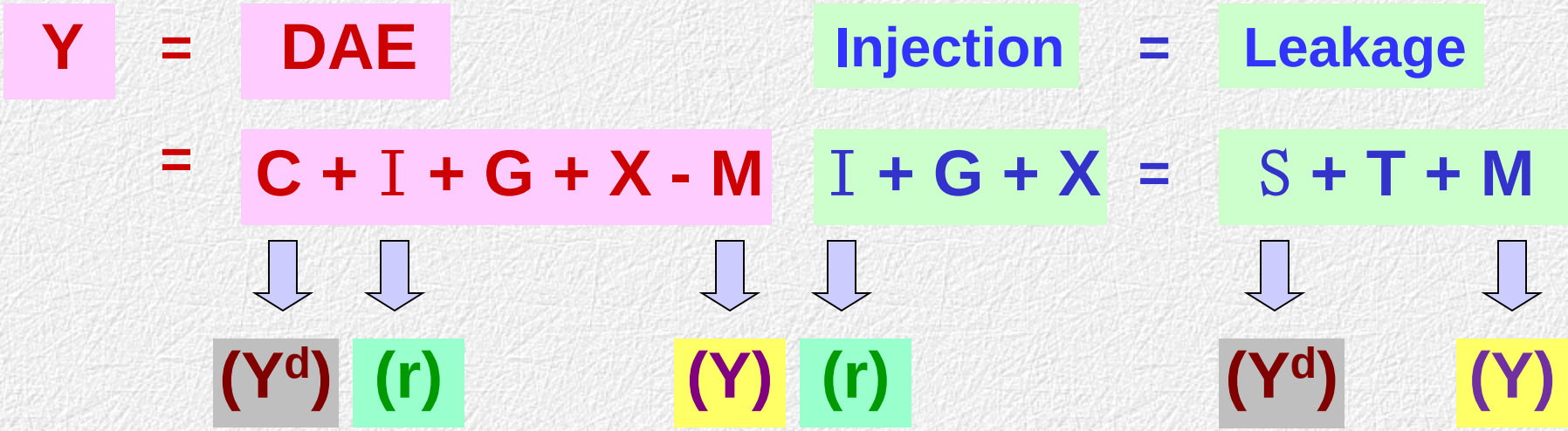
8

The AD – AS Model and Inflation

Aggregate Demand

- **Aggregate Demand**: The total demand for goods and services in the economy.
- Aggregate Demand: shows the relationship between demand for gross output **(Y)** at every price level **(P)**
- Gross output **(Y)** is the equilibrium output of the economy (It is the equilibrium in both good market and money market)

Equilibrium in good market



In good markets we talk about real variable, such as real national income or real gross output

Therefore, changes in price does not affect equilibrium in good market directly.

Equilibrium in money market

$$M^s = M^d$$

$$\frac{฿M^s}{P} = L(Y, r)$$

$\frac{฿M^s}{P}$ = **Real Money Supply**

L (Y, r) = **Real Money Demand**

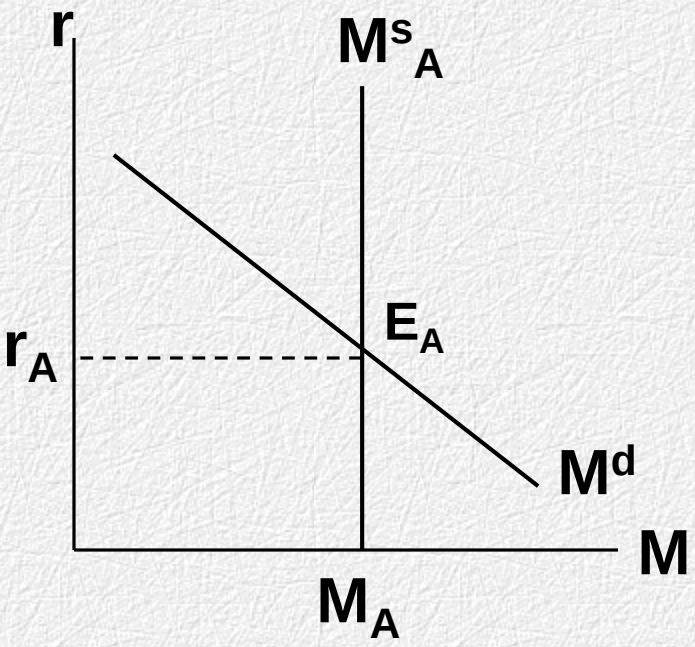
The analysis in previous chapters we assume that price (P) is constant

$\therefore$ ฿M^s and M^s are positively related.

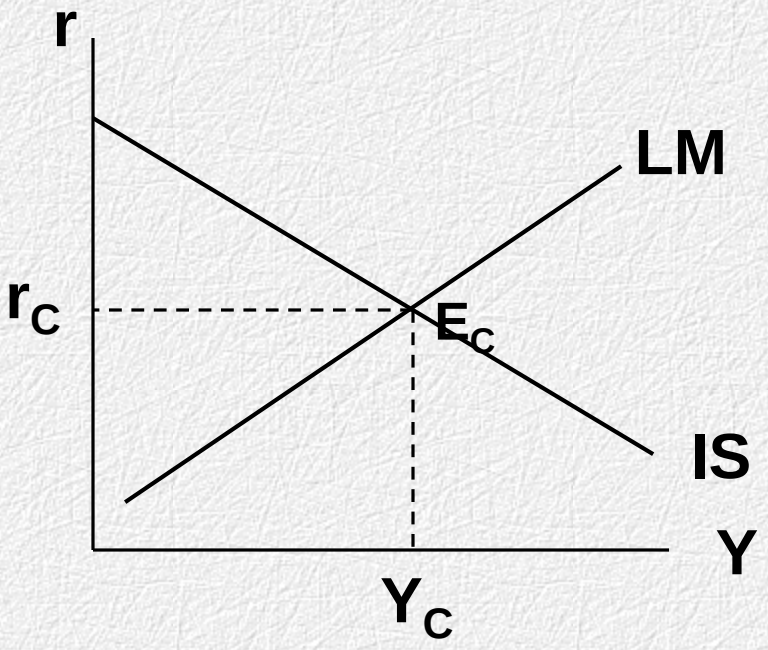
In this chapter, we assume that P can change.

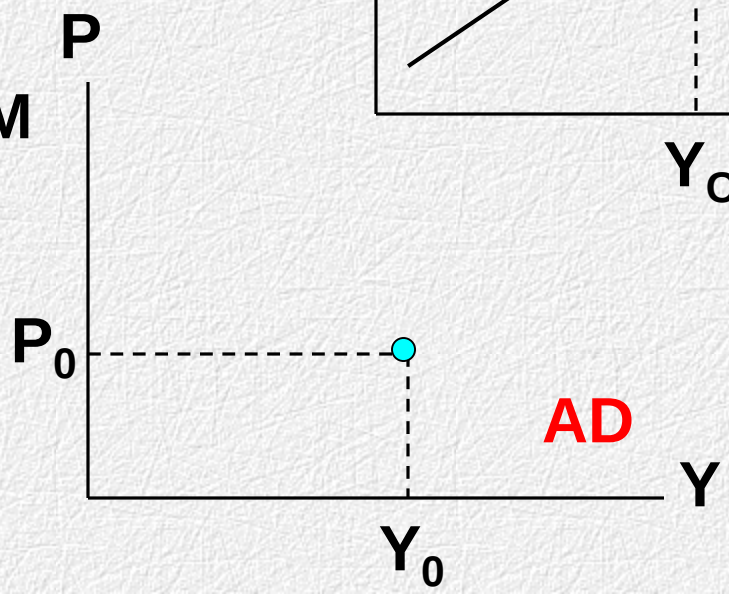
8.1.1 The derivation of AD from IS-LM model

Money market



IS-LM Model





AD

8.1.1 The derivation of AD from IS-LM model

M^s shifts from M^s_A to M^s_B

from LM to LM'

P ↑ ⇨ $\left[\frac{\text{฿}M}{P}\right]$ ↓ ⇨ r ↑ ⇨ LM shifts left ⇨ Y ↓

$r_A r_B$

$Y_C Y_D$

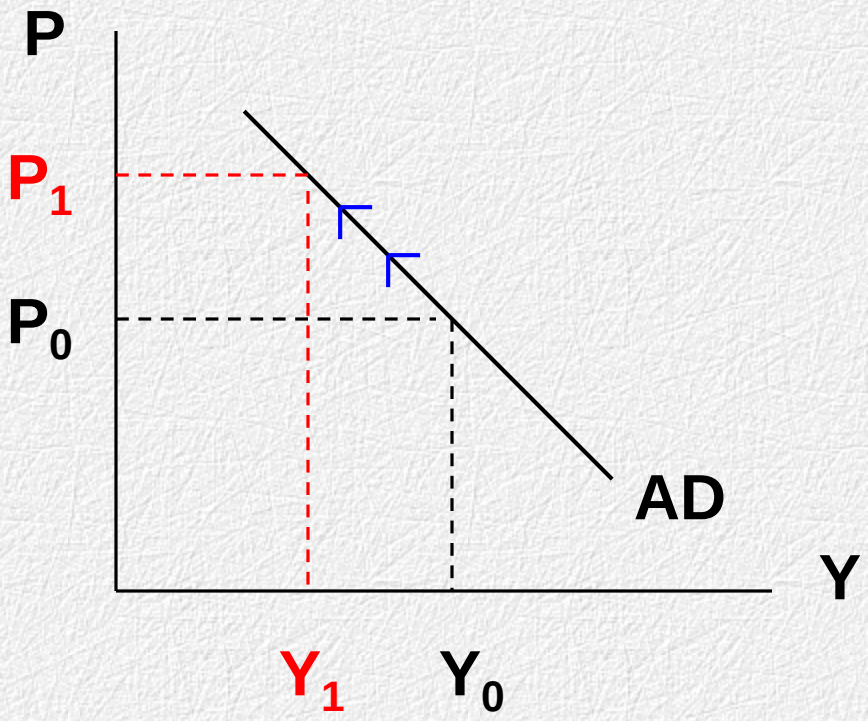
Money market

IS-LM model

Therefore, when P ↑ ⇨ Y ↓

8.1.2 move along AD curve

- **P△ ⟶ Y△ (move along)**



8.1.3 Shift of AD curve

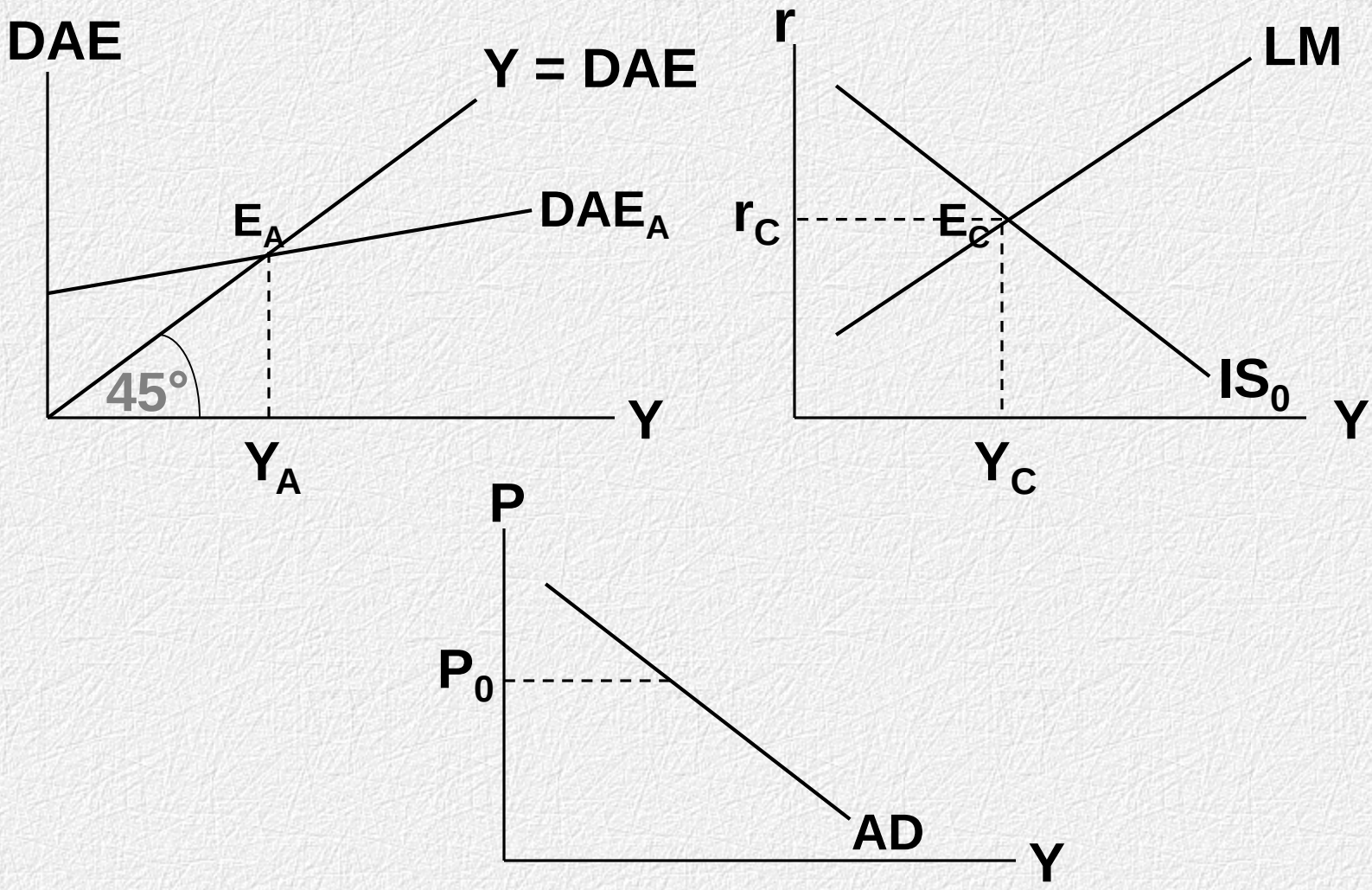
Any factor rather than **P** affecting IS or LM Δ ⇒ **Y** Δ **AD shift**

Any factor rather than **P** affecting IS or LM Δ ⇒ **Y** ↑ **AD shifts to the right**

Any factor rather than **P** affecting IS or LM Δ ⇒ **Y** ↓ **AD shifts to the left**

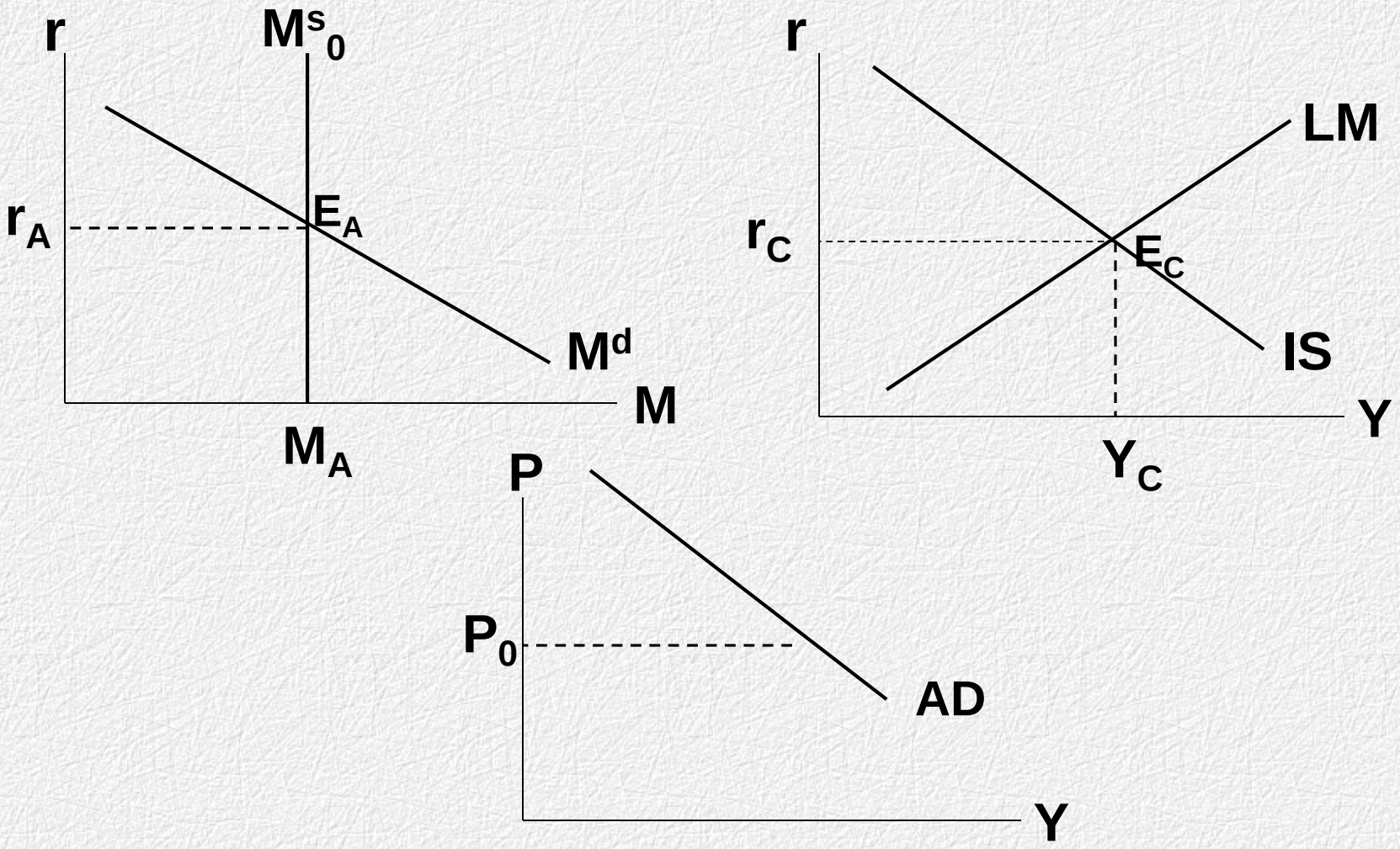
8.1.3 Shift of AD curve

EX. Foreigners tend to buy more Thai commodities



8.1.3 Shift of AD curve

EX. Central bank increases bank rate



8.2 Aggregate Supply (AS)

Aggregate Supply: shows the relationship between supply of gross output **(Y)** at every price level **(P)**

8.2.1 Short Run AS → SRAS)

Assumption : In short run, economy is not at full employment level (use all factors of production)

: ∴ In short run, prices of factors of production do not change much.

Suppose producers need to use more factors of production, such as labor, but some people are still unemployed.

∴ Labor cannot request for higher wage that much because some people are still unemployed, so employers can employ other people

∴ **wage** may _____

8.2.1 Short Run AS → SRAS)

In short run

: When P↑↑↑ → $\frac{W}{P}$ ↑↑↑ → Demand for factors of production

↓

Use of factors of production

↓

Production of G&S

↓

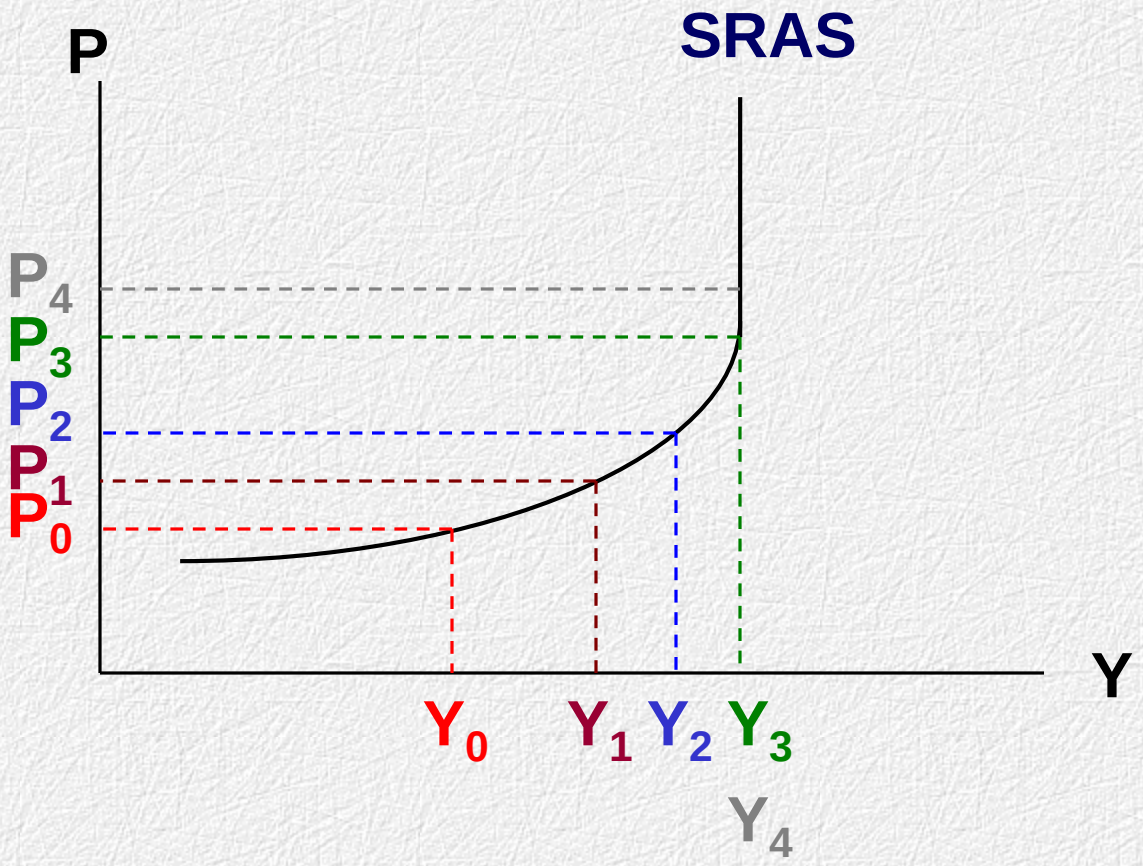
Gross output (Y)

P↑ →

Slope of SRAS is

Mixed school SRAS, and its' increasing slope

Note : **SRAS**



8.2.2 Long Run AS, LRAS)

Assumption : In long run, economy is at full employment level.

: ∴ In long run, prices of factors of production can change a lot

Suppose producers need more factors of production, such as labor, but all labor are already employed.

∴ Labor can request for higher wage (D. for labor > S. of labor)

∴ **Wage may** change a lot

8.2.2 Long Run AS, LRAS

In long run

: When P↑↑↑ → $\frac{W}{P}$ ↑↑↑ not Δ → D. For factors of production does not Δ

Real wage

↓

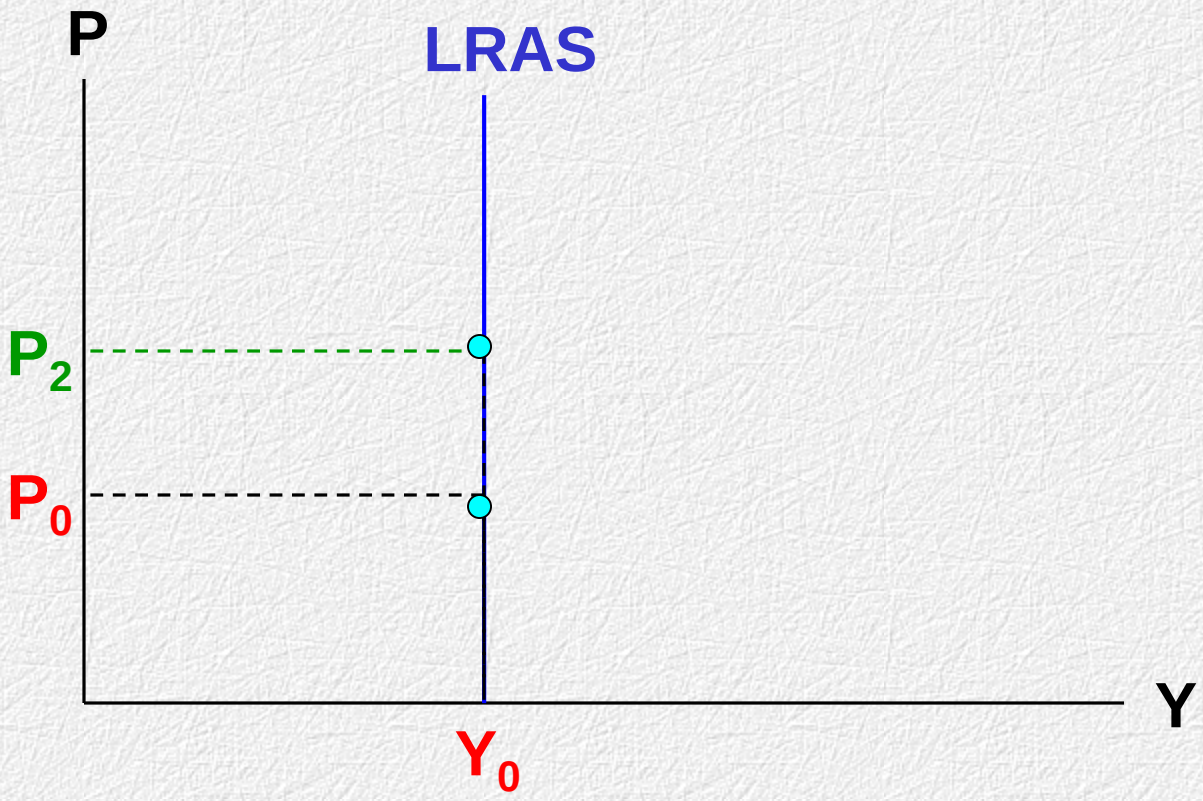
Use of factors of production does not change

↓

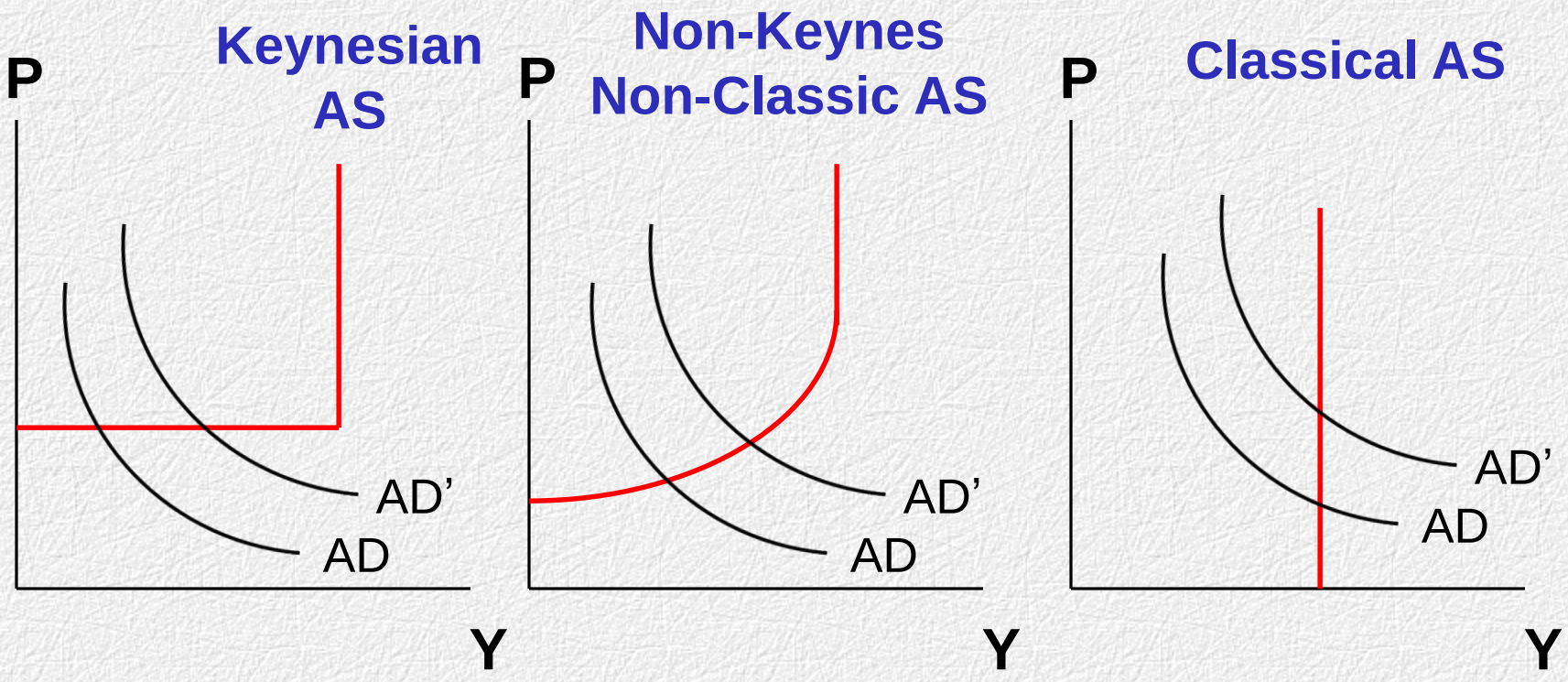
Produce the same amount of G&S

← Gross output does not Δ **(Y does not Δ)**

Long Run AS, LRAS



Combine Short Run and Long Run Aggregate Supply



Note: LRAS sometimes known as Classical AS

8.2.3 Move Along and Shift Of AS

LRAS = F (technology, natural resources, labor, capital, etc.)

SRAS = F (technology, natural resources, labor, capital, **price, cost shock**, etc)

move along AS: PΔ $\longrightarrow$ YΔ

SRAS: P$\uparrow$ $\longrightarrow$ Y $\uparrow$

LRAS: P$\uparrow$ $\longrightarrow$ Y does not change

Shift of AS curve

Any factor rather than **P** affecting **AS** → **Y**Δ **AS shift**

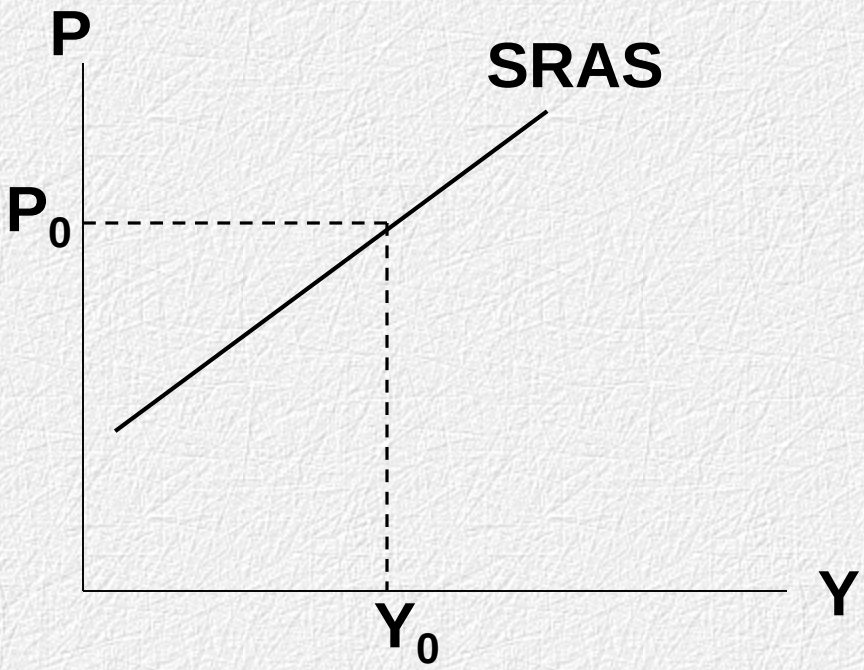
Any factor rather than **P** affecting **AS** → **Y** ↑ **AS shifts to the right**

Any factor rather than **P** affecting **AS** → **Y** ↓ **AS shifts to the left**

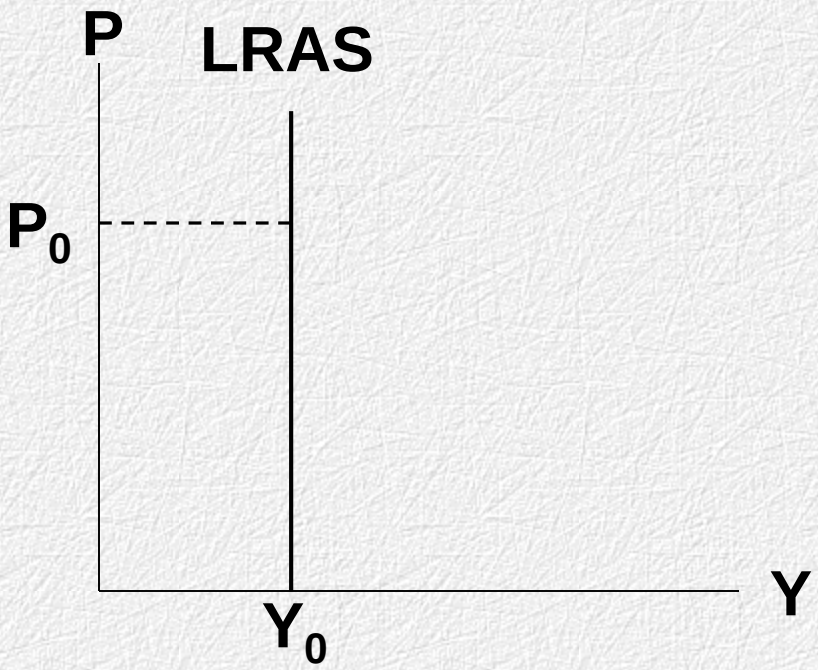
8.2.3 Move Along and Shift of AS curve

Shift of AS

Example 1 : Improving technology



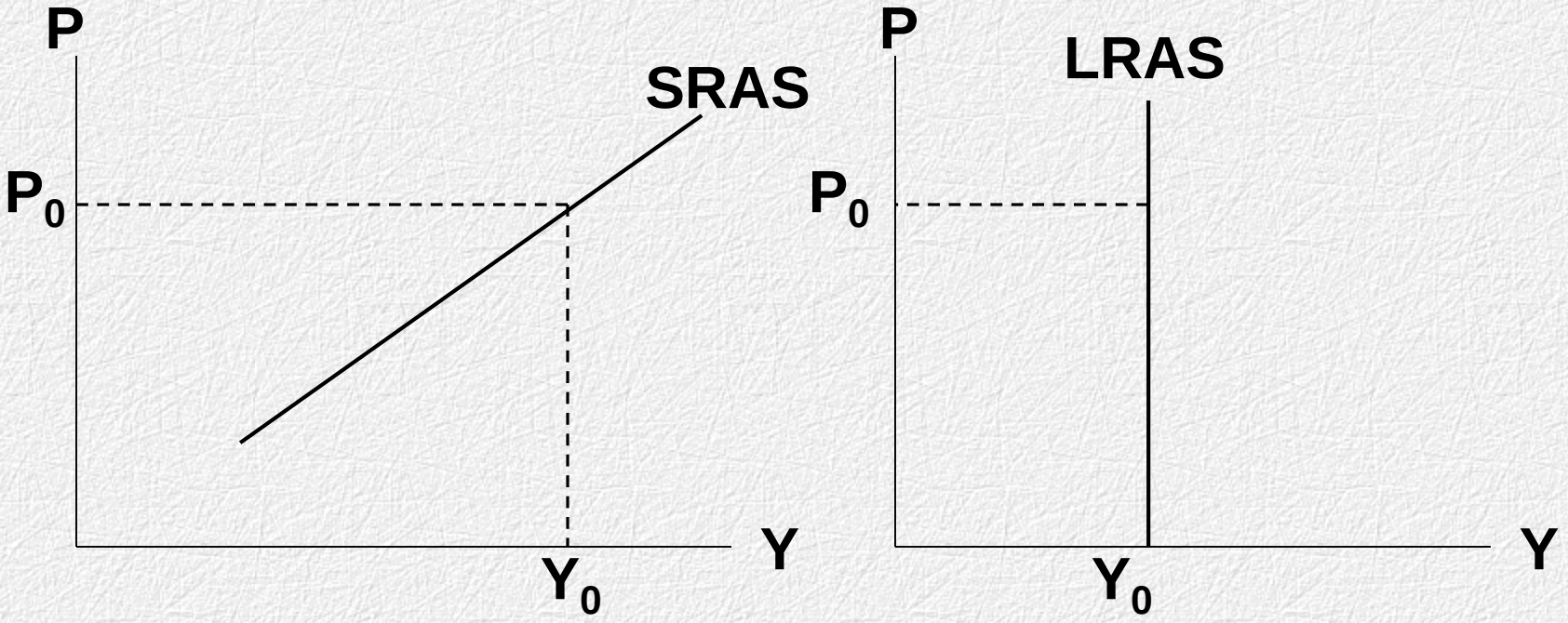
Short-run



Long-run

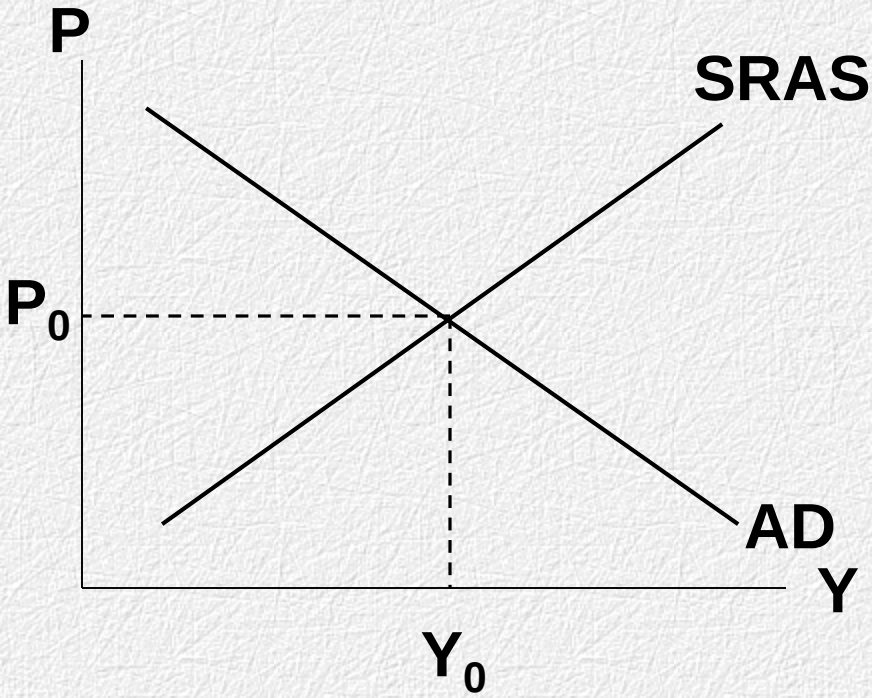
Shift of AS curve

Example 2: Some kind of raw material shortage (temporary)

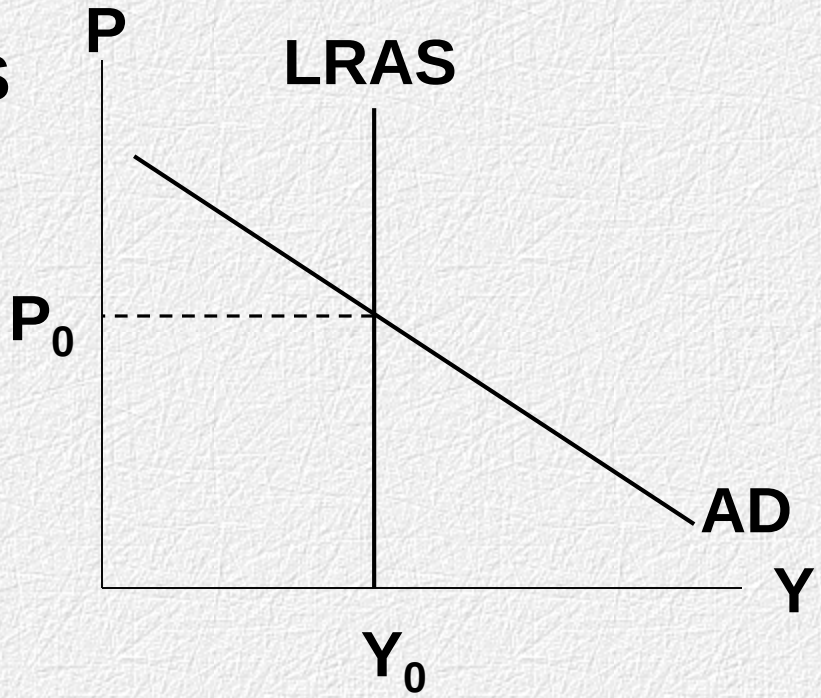


8.3 Equilibrium and changes in equilibrium

8.3.1 Equilibrium



Short-run equilibrium

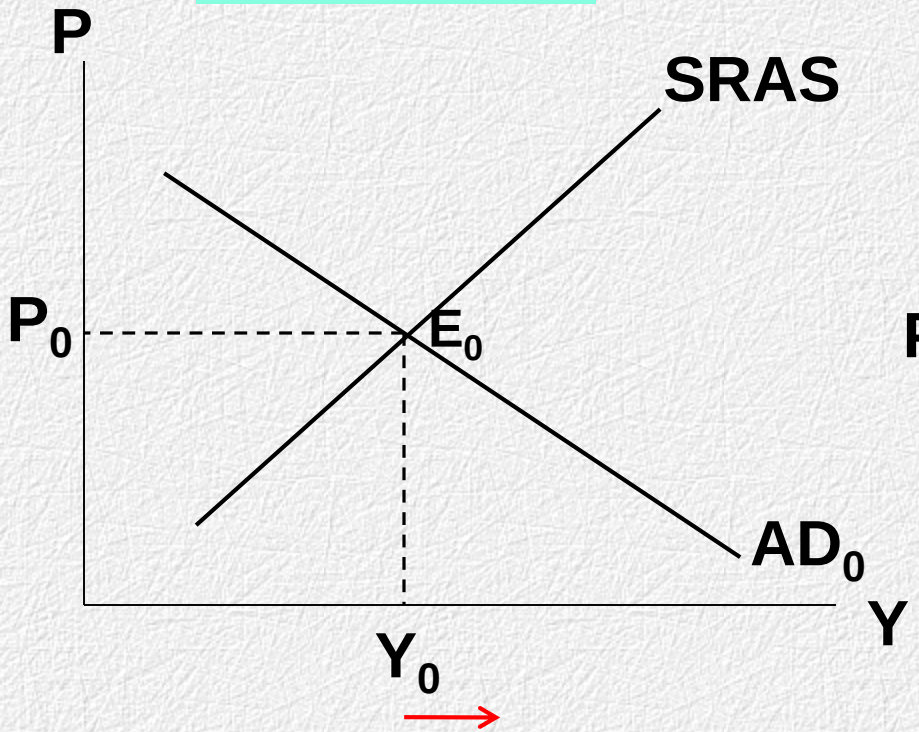


Long-run equilibrium

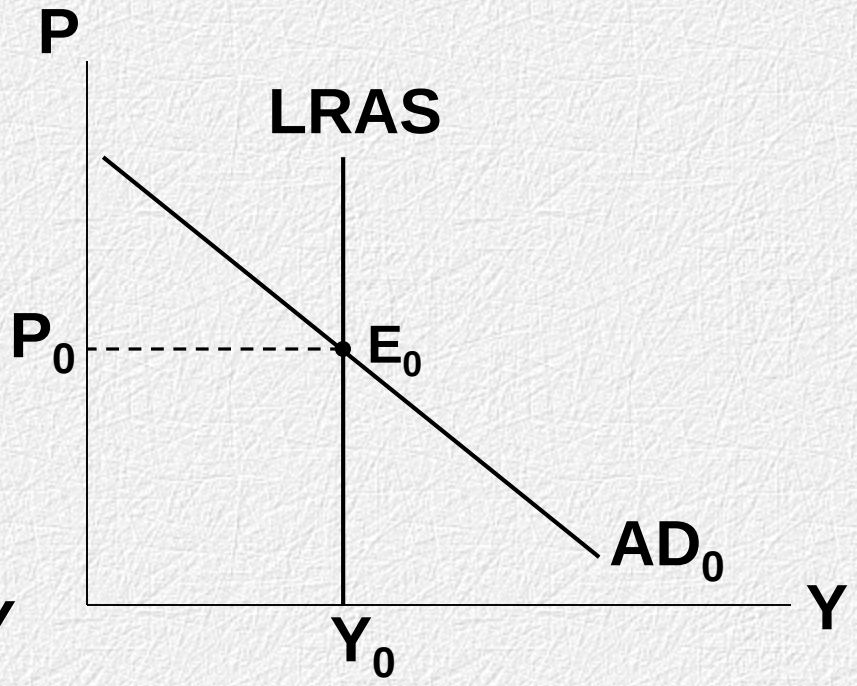
8.3.2 Changes in equilibrium

Case 1 **(AD Shift): for example, consumer credit ↑**

Short -run



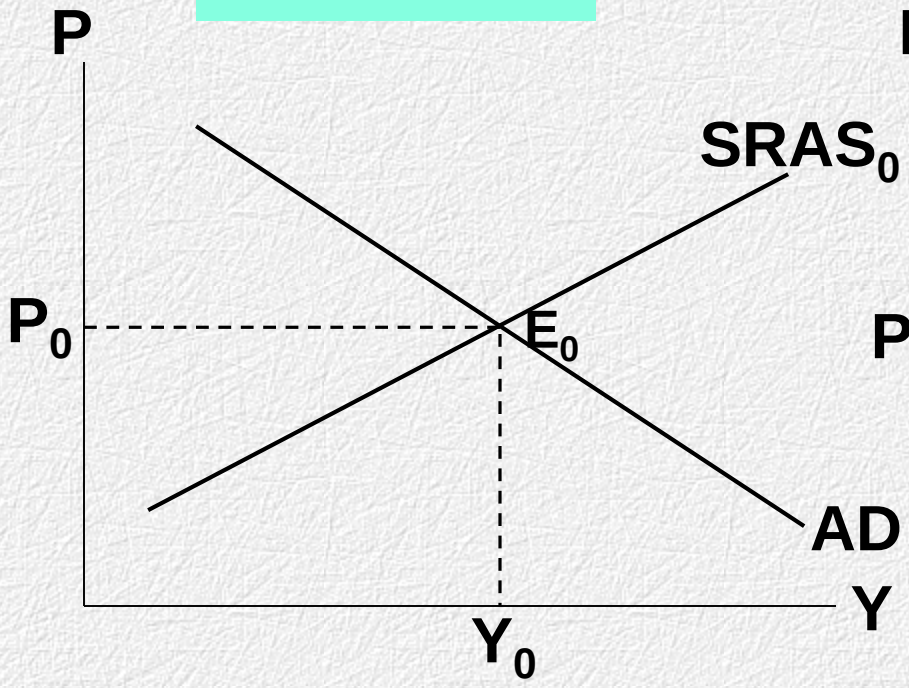
Long-run



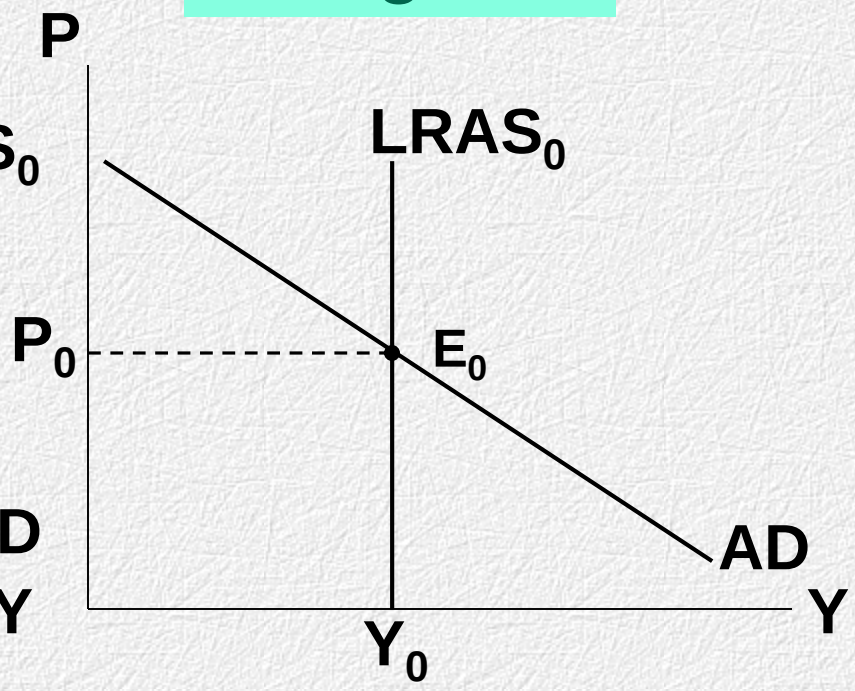
8.3.2 Changes in equilibrium

Case 2 (AS Shift): for example, epidemic occurs in the country

Short-run



Long-run



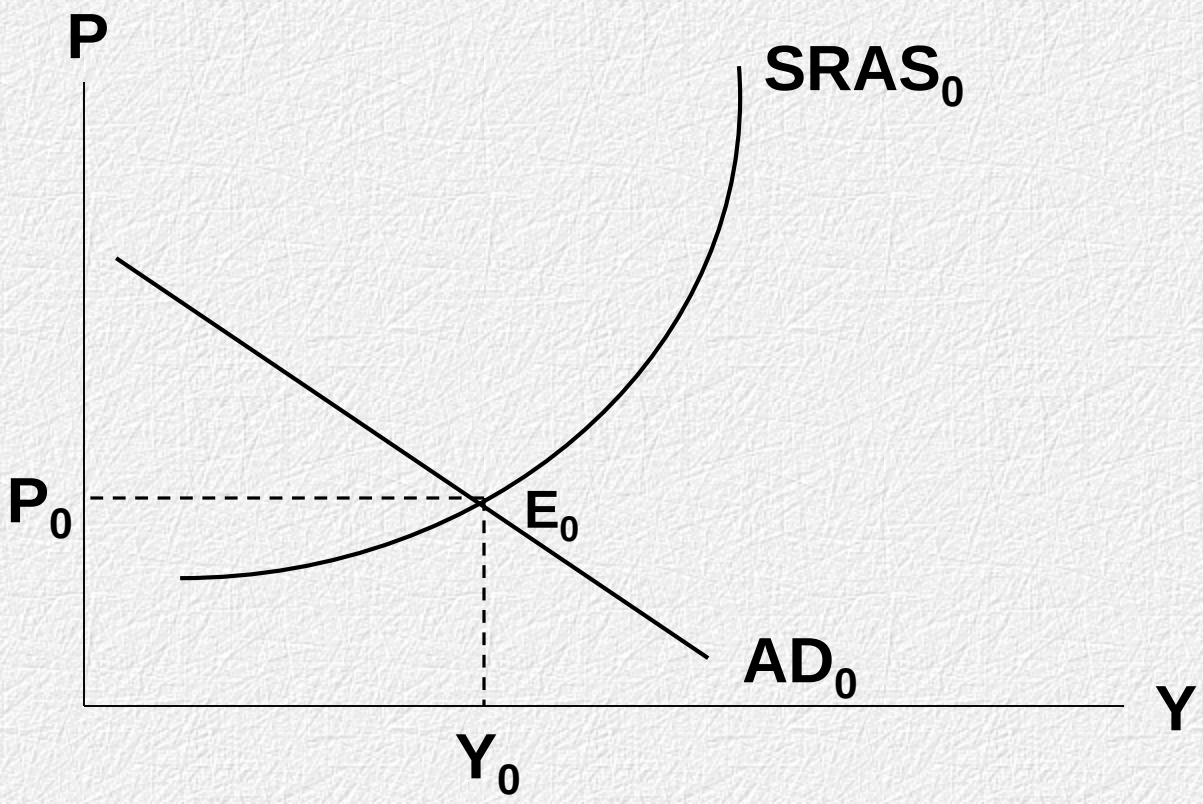
Situation where P↑, Y↓

P↑ → Inflation

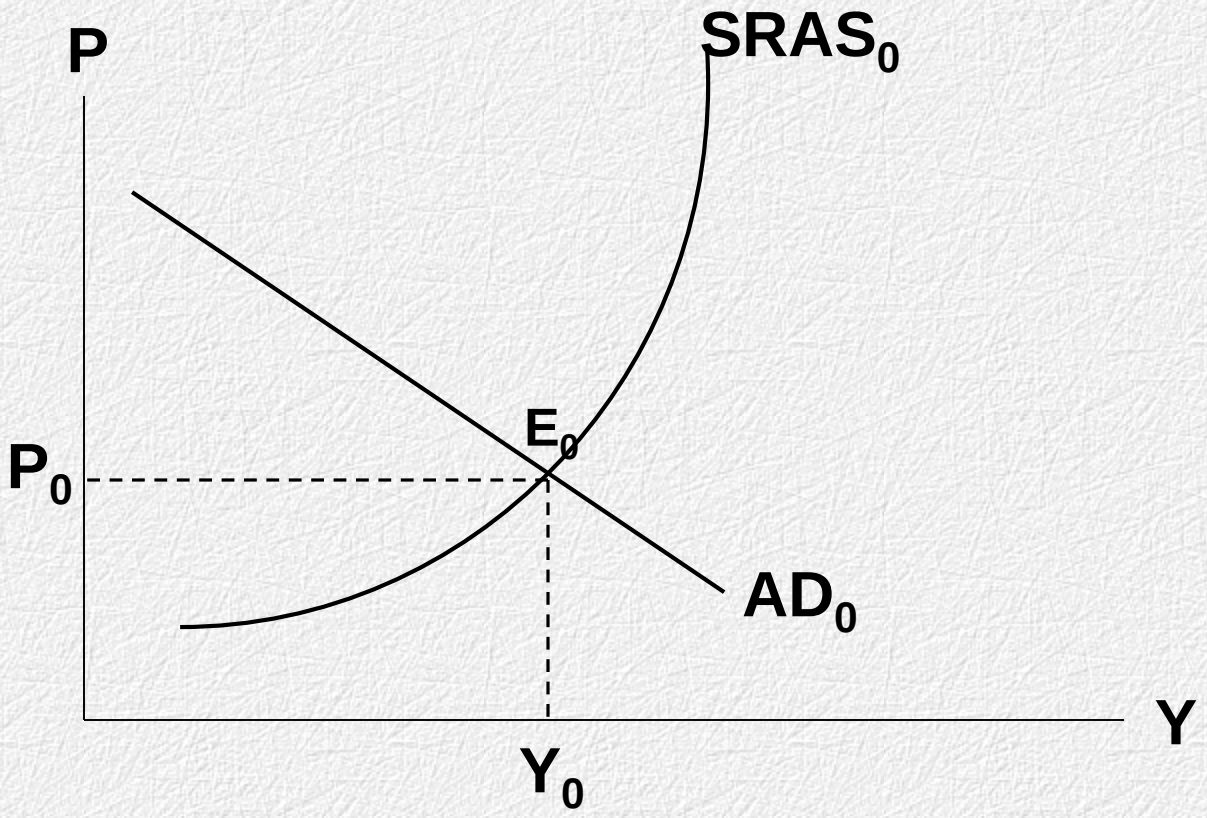
Y↓ → Stagnation

P↑, Y↓ →

Results of Solving problem of gross output (Y) The case when AS shift



Results of Solving problem of overall price (P) The case when AS shift

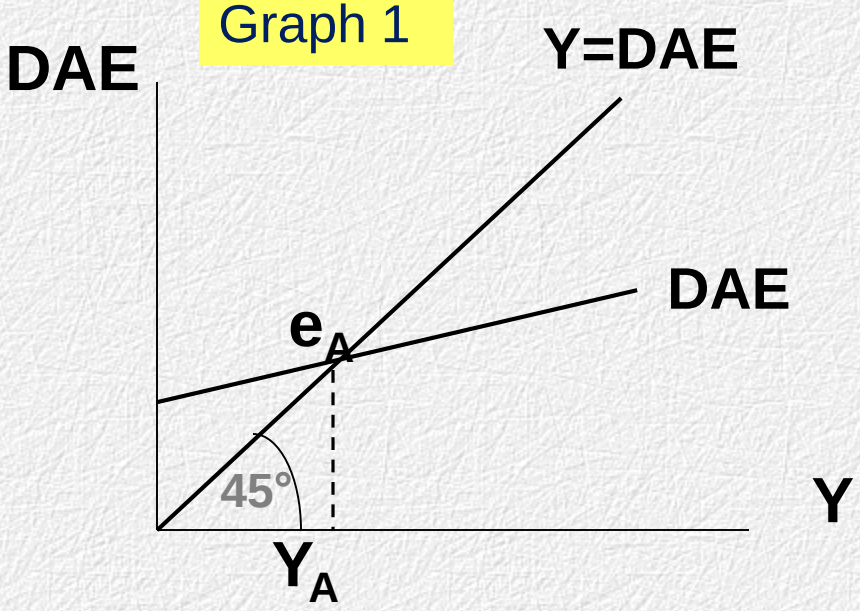


8.4 The analysis of fiscal policy and monetary policy using AD-AS model

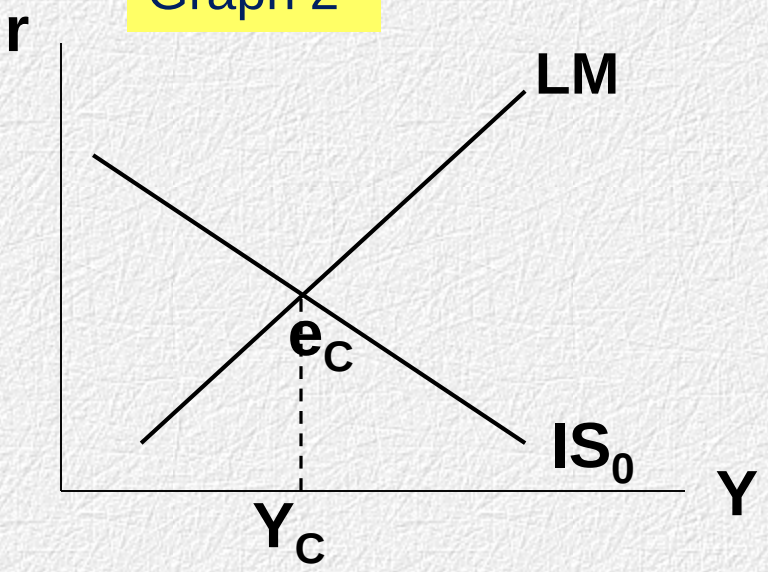
Expansionary fiscal policy

G↑, T↓

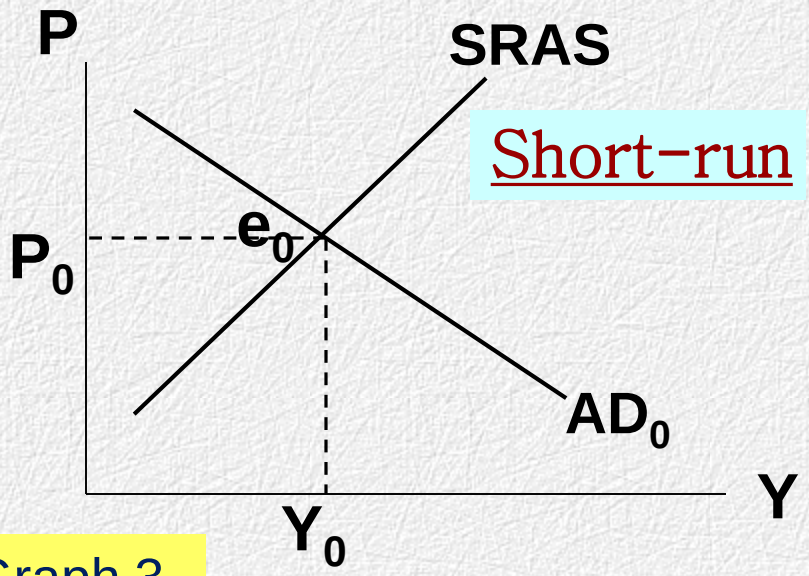
Graph 1



Graph 2

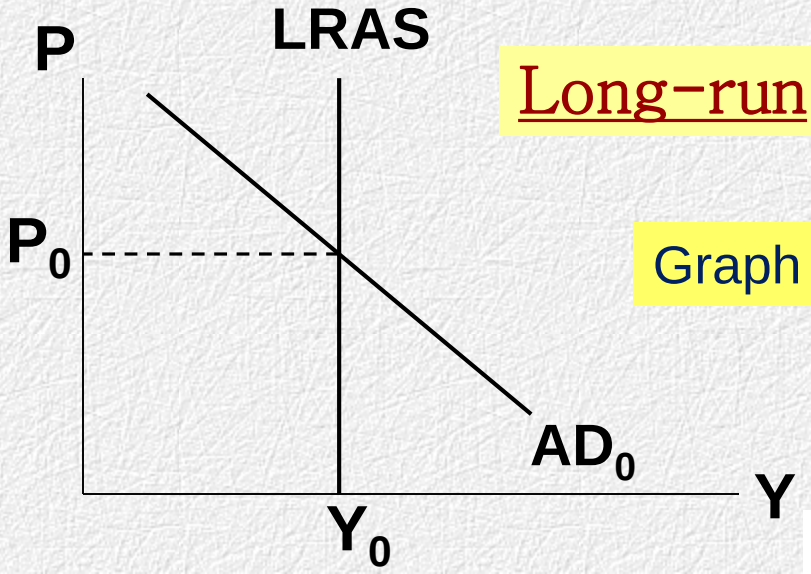


Short-run



Graph 3

Long-run



Graph 4

Expansionary fiscal policy

Graph 1 (product market)

G ↑ ⇨ DAE ↑

DAE shifts to the left from DAE to DAE'

⇨ **Y ↑ = $Y_A Y_B$**

Graph 2 (IS-LM model)

When Y ↑ from Graph 1

IS shifts to the right from IS_0 to IS_1 (level of shift = **$Y_A Y_B$**)

⇨ **Y ↑ = $Y_C Y_D$**

Graph 3 and 4 (AD-AS model)

When Y ↑ from Graph 2

AD shifts to the right from AD_0 to AD_1

⇨ In short run (Graph 3) **P ↑** **Y ↑**

⇨ In long run (Graph 4) **P ↑** **Y does not change**

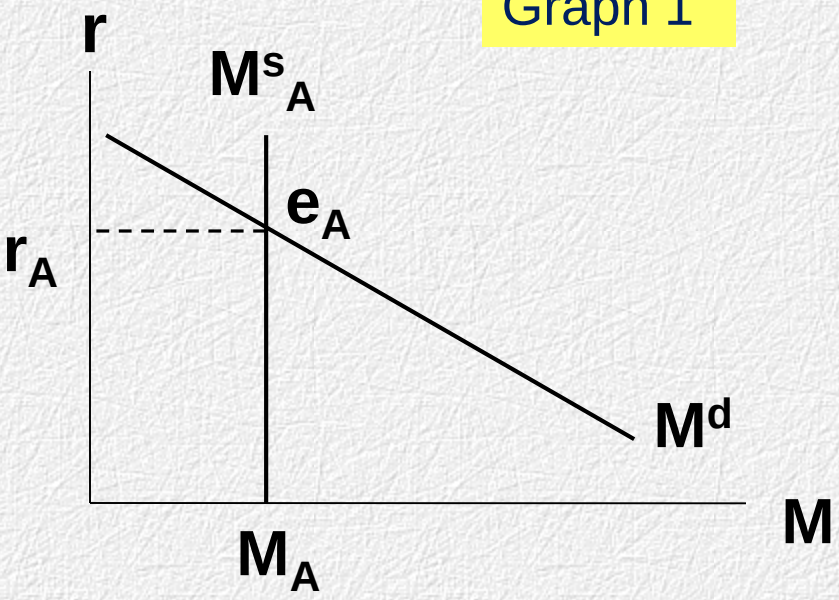
Expansionary fiscal policy

Explanation of adjustment in the short run

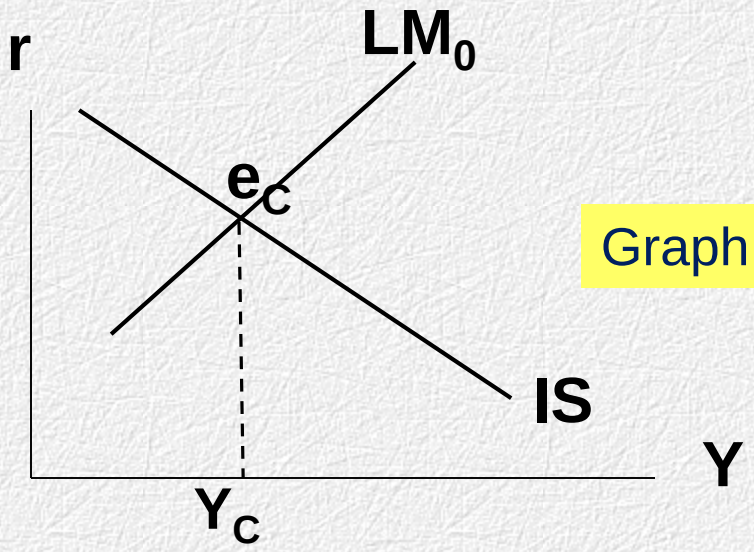
- **When G ↑** — AD shifts to the right (level of shift = $Y_C Y_D$) — At each level of price Y ↑ = $Y_C Y_D$
- At old level of price P_0 — **AD > AS** — **Excess D. for output** ⇨ **P ↑ from P_0 to P_1**
- In IS-LM model — **When P ↑** ⇨ $\left[\frac{฿M}{P}\right]$ ↓ ⇨ **r ↑** ⇨ **LM shifts left from LM to LM'** ⇨ **Y ↓ a bit**
- In AD-AS model — **When AD shifts right** ⇨ **Net change in P is P ↑ from P_0 to P_1**
  ⇨ **Net change in Y is Y ↑ from Y_0 to Y_1**

Expansionary monetary policy

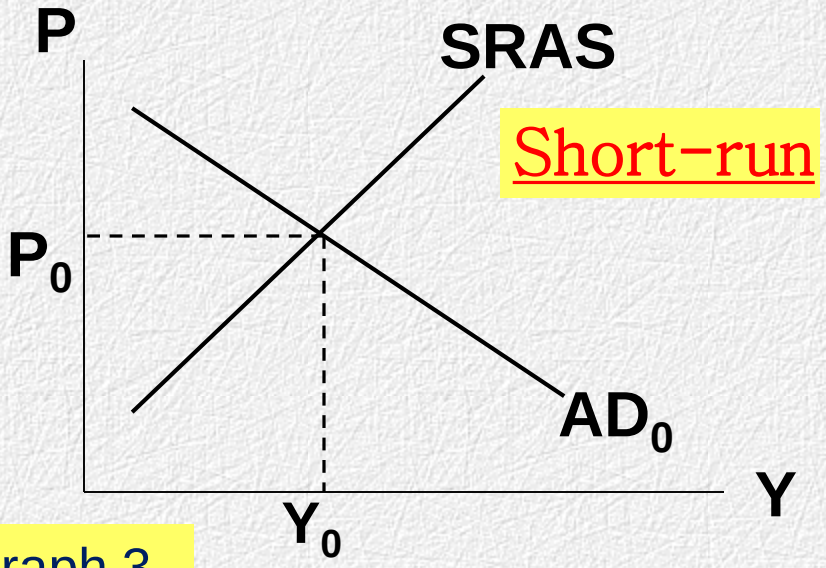
Graph 1



Central bank buys back government bond

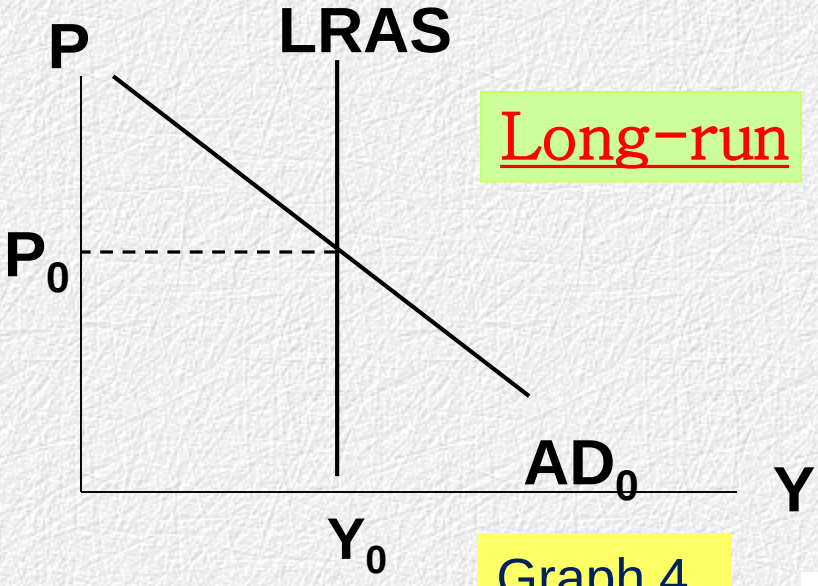


Graph 2



Short-run

Graph 3



Long-run

Graph 4

Expansionary monetary policy

Graph 1 (money market)

M^s ↑ ⇨ M^s shifts to the right ⇨ r ↓ = $r_A r_B$

Graph 2 (IS-LM model)

When r ↓ from Graph 1

LM shifts to the right from LM_0 to LM_1 (level of shift = $r_A r_B$)

⇨ **Y ↑ = $Y_C Y_D$**

Graph 3 and 4 (AD-AS model)

When Y ↑ from Graph 2

AD shifts to the right from AD_0 to AD_1

⇨ In short run (Graph 3) **P ↑** **Y ↑**

⇨ In long run (Graph 4) **P ↑** **Y does not change**

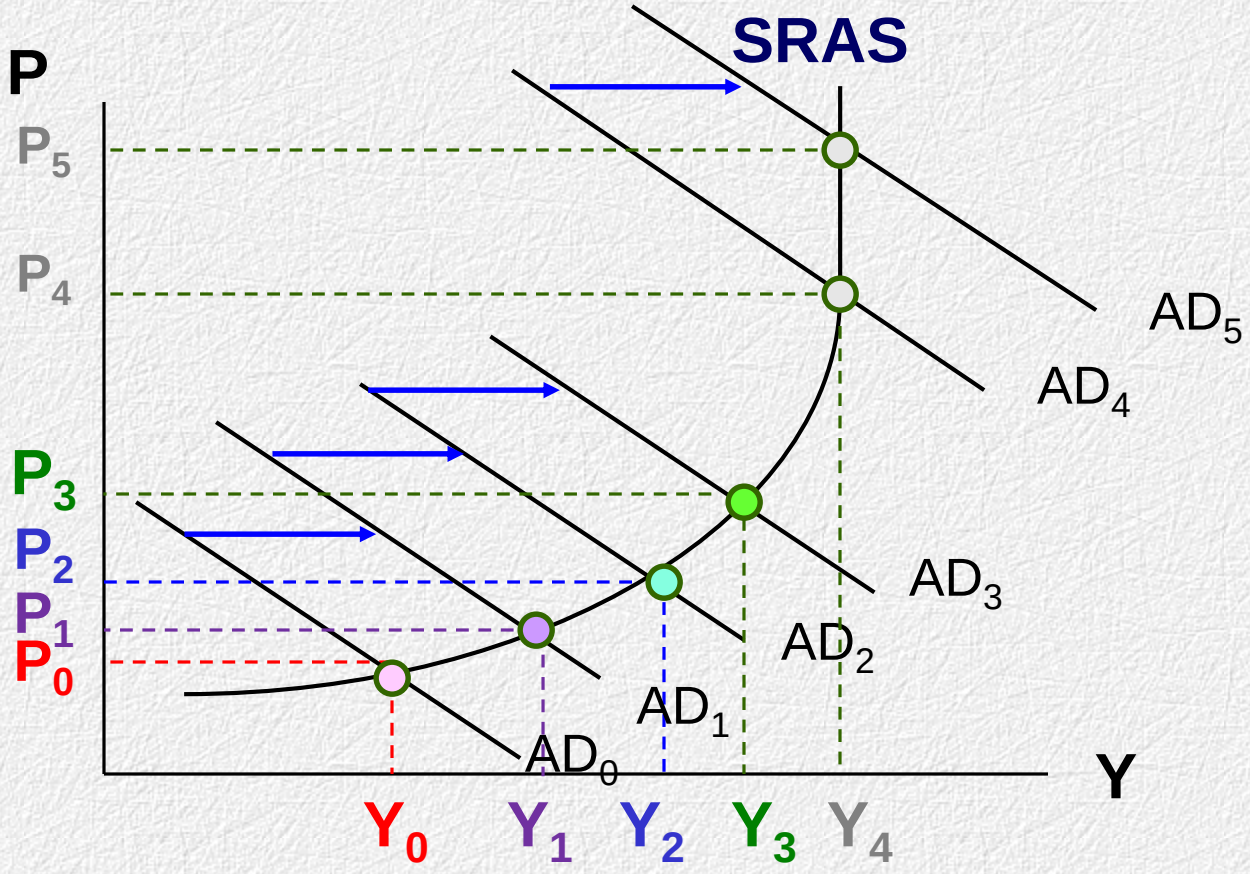
Expansionary monetary policy

Explanation of adjustment in the short run

- **When M^s ↑** — AD shifts to the right (level of shift = $Y_C Y_D$) — At each level of price Y ↑ = $Y_C Y_D$
- At old level of price P_0 — **AD > AS** — **Excess D. for output** ⇨ **P ↑ from P_0 to P_1**
- In IS-LM model — **When P ↑** ⇨ $\left[\frac{฿M}{P}\right]$ ↓ ⇨ **r ↑** ⇨ **LM shifts left from LM_1 to LM_2** ⇨ **Y ↓ a bit**
- In AD-AS model — **When AD shifts right** ⇨ **Net change in P is P ↑ from P_0 to P_1**
  ⇨ **Net change in Y is Y ↑ from Y_0 to Y_1**

Slope of SRAS and effects from AD shocks

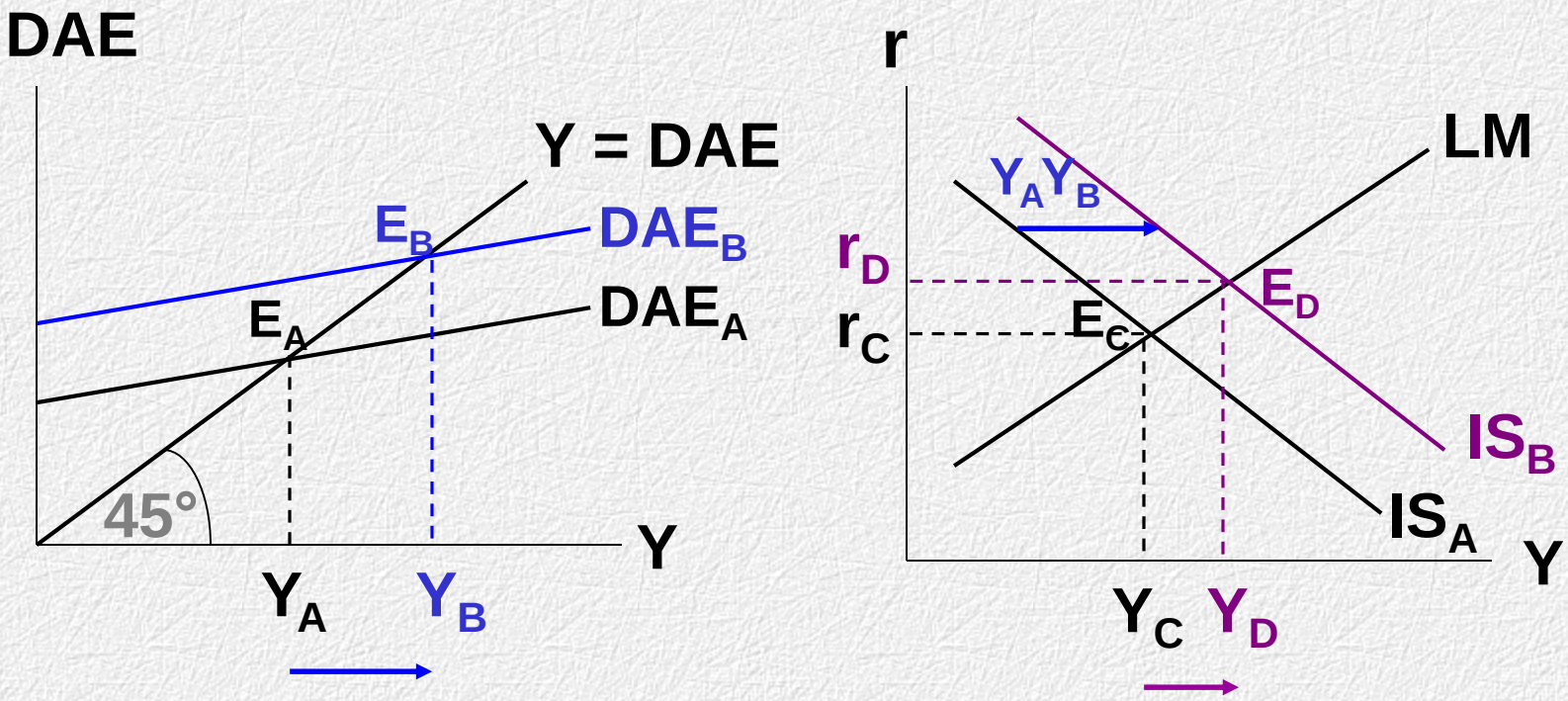
At small slope SRAS	When AD ↑	⇒	Y ↑ a lot	P ↑ a little
At steep slope SRAS	When AD ↑	⇒	Y ↑ a little	P ↑ a lot



At vertical SRAS	When AD ↑	⇒	Y does not change	P ↑ the most

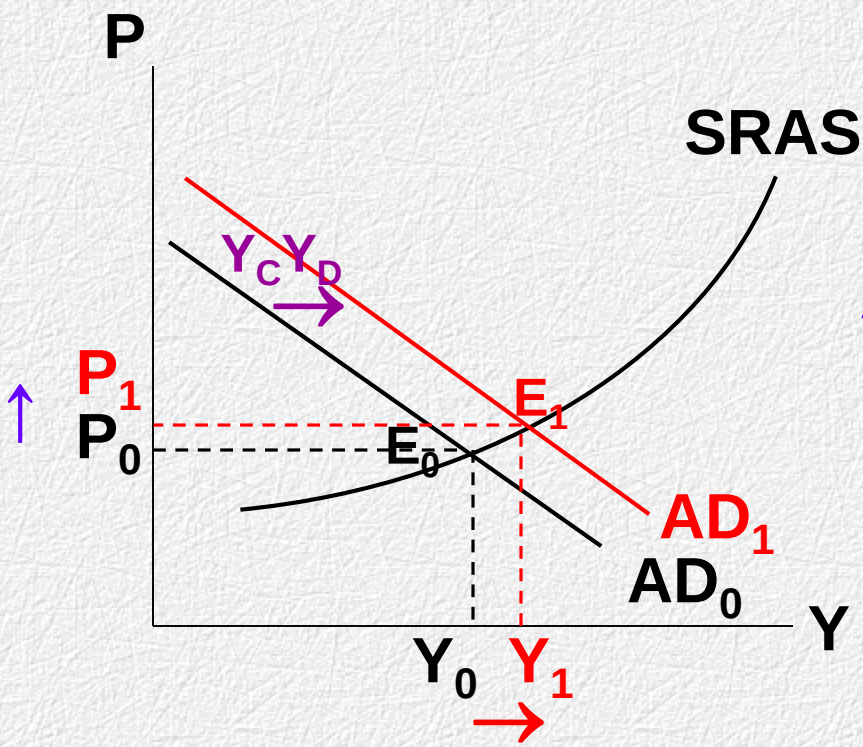
The analysis of fiscal policy

Expansionary fiscal policy $G\uparrow, T\downarrow$



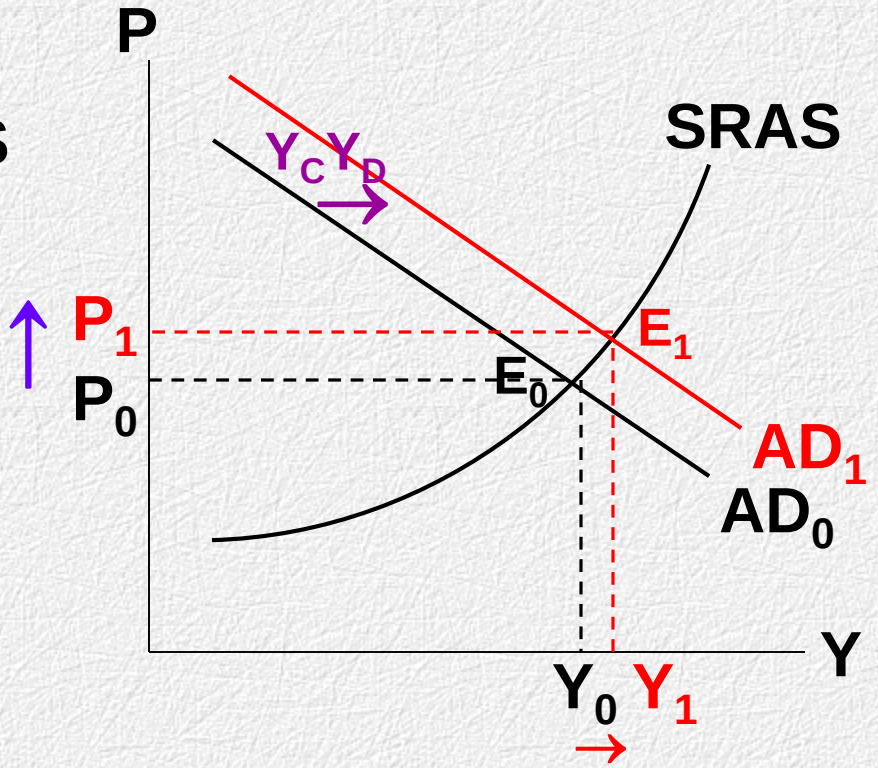
Expansionary fiscal policy: G↑, T↓

Short-run



P↑ a little, Y↑ a lot

(Start from small Y)

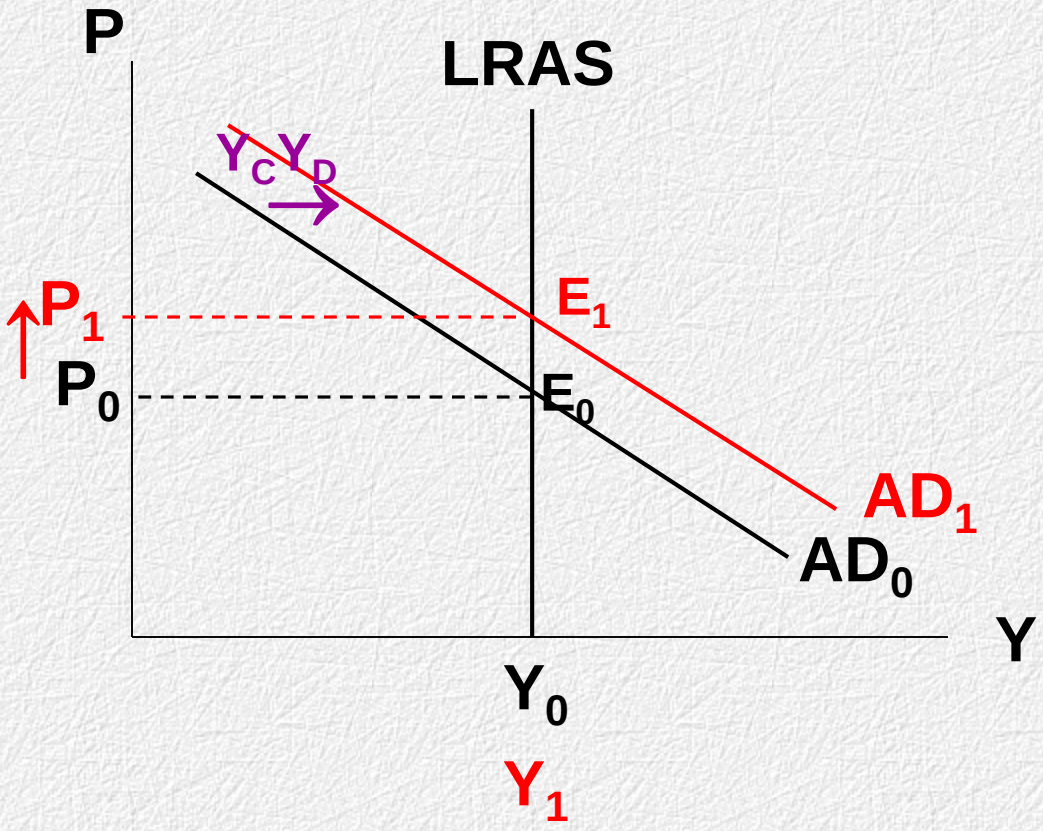


P↑ quite a lot, Y↑ a little

(Start from large Y)

Expansionary fiscal policy: G↑, T↓

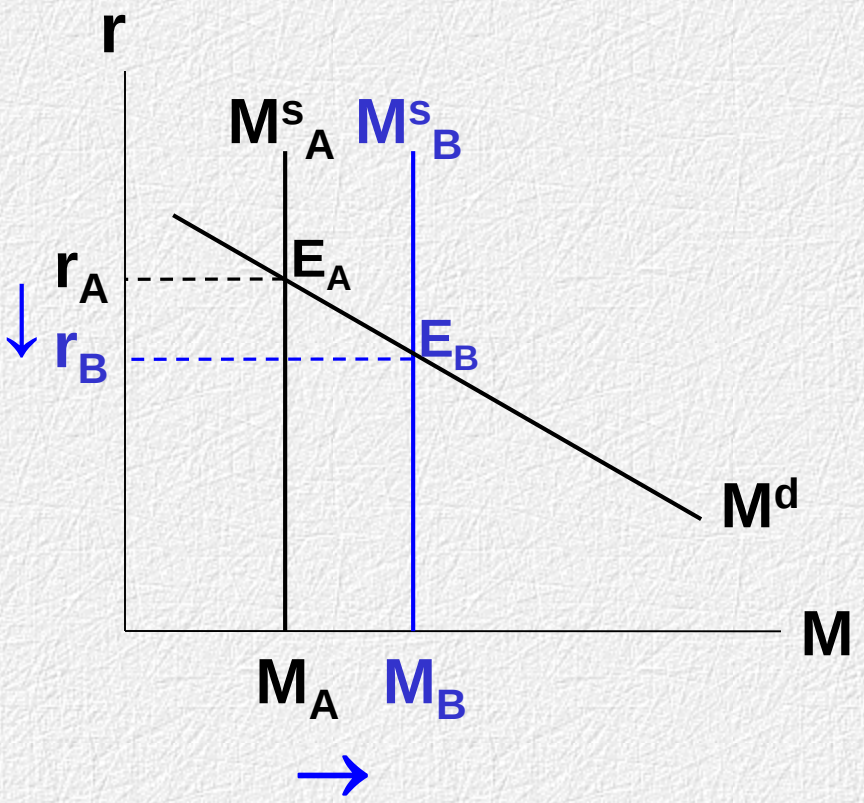
Long-run

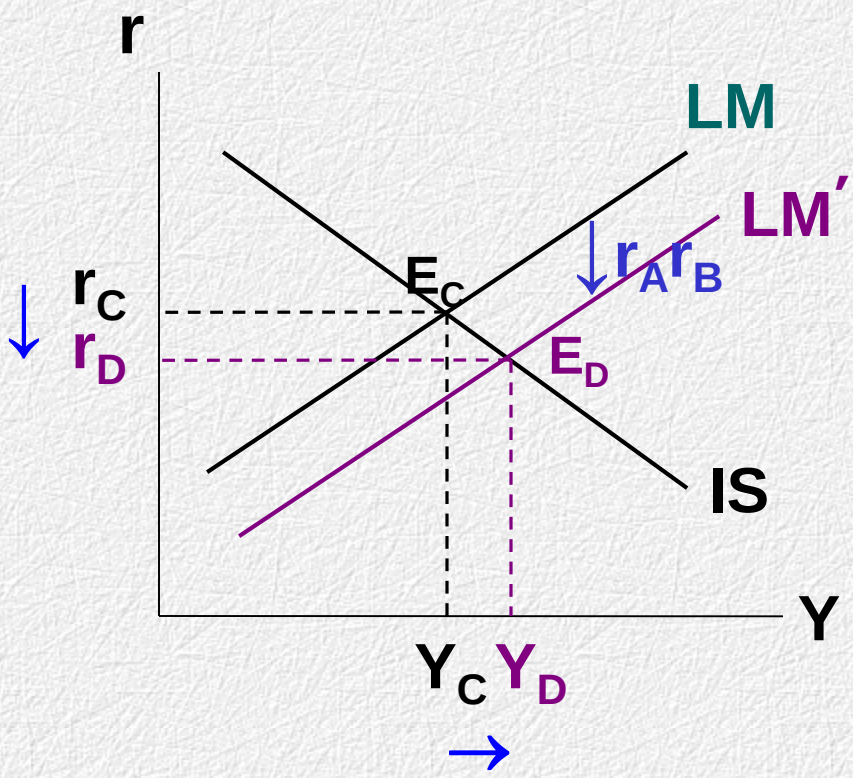


P↑, Y stay the same

The analysis of monetary policy

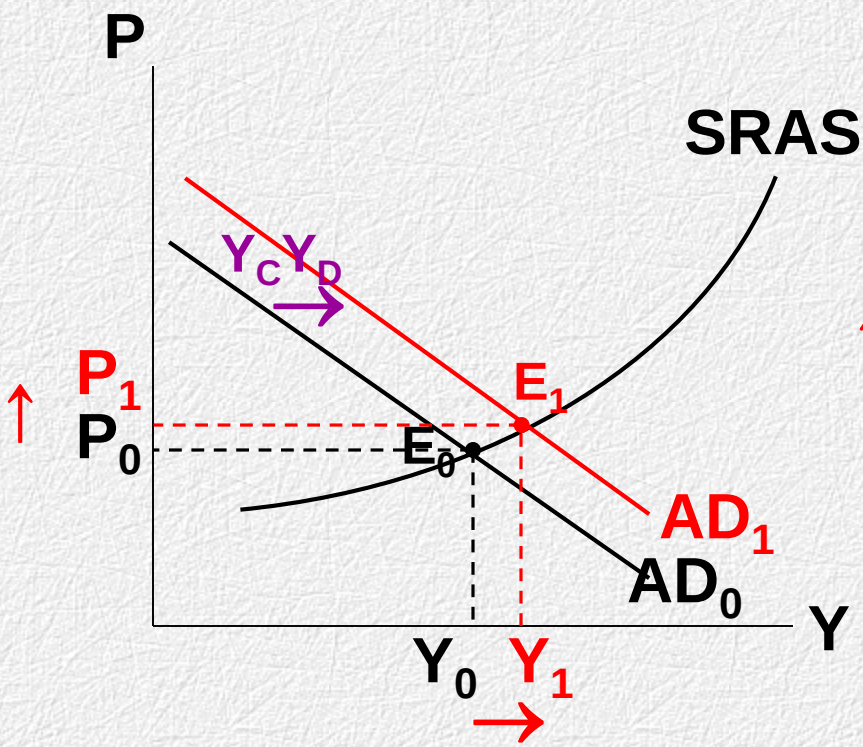
Expansionary monetary policy





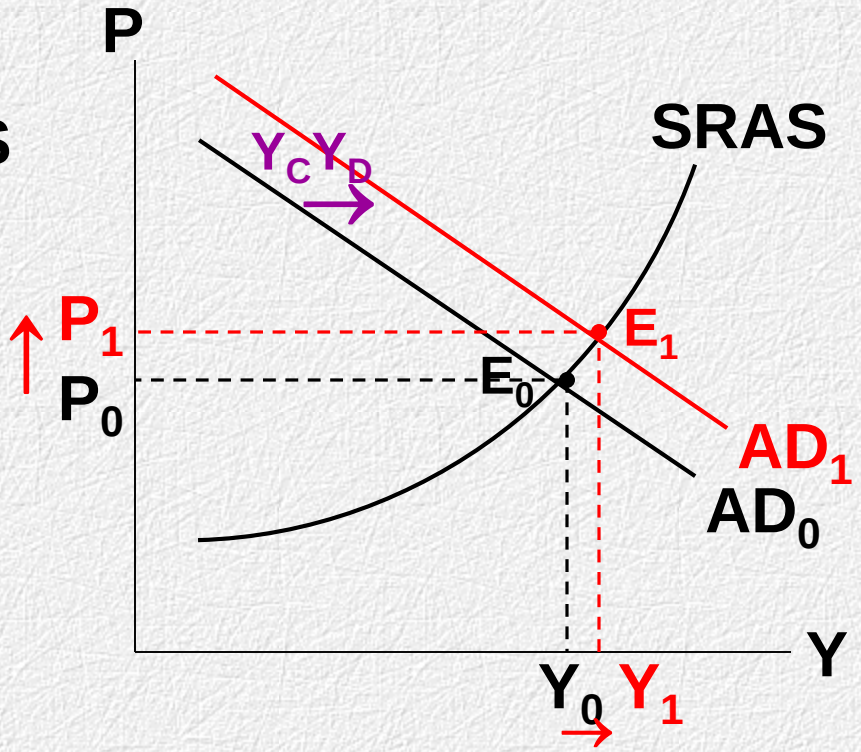
Expansionary monetary policy

Short-run



P↑ a little, Y↑ a lot

(Start from small Y)

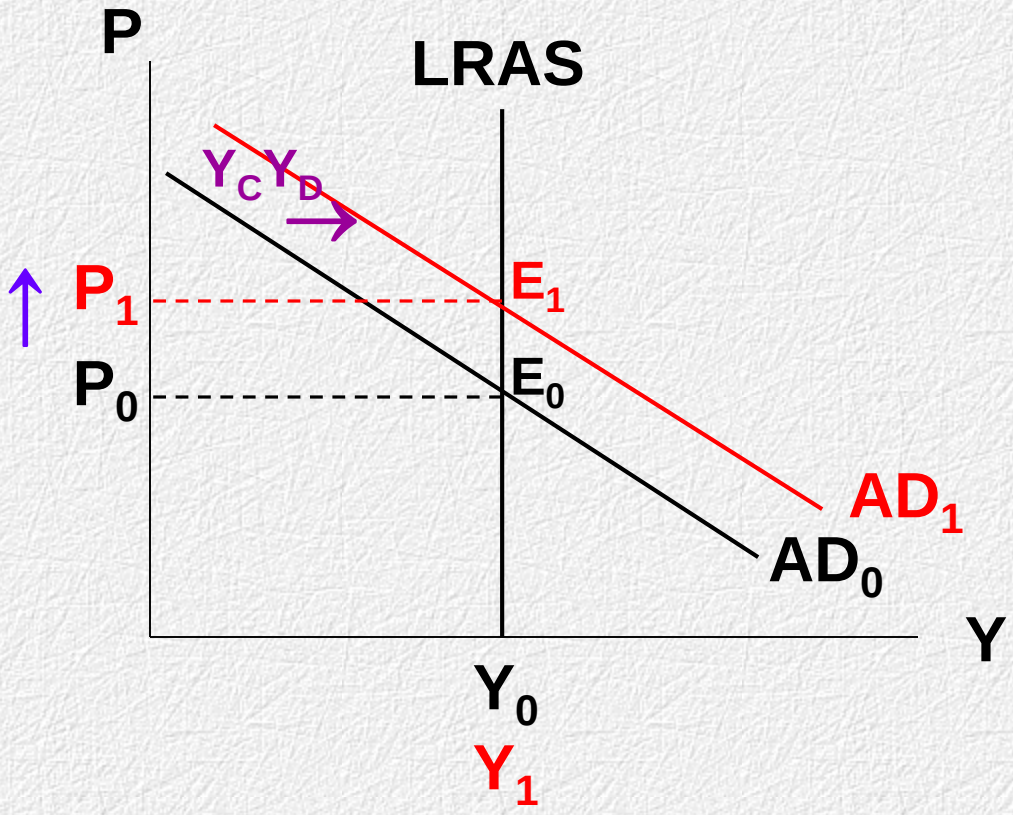


P↑ quite a lot, Y↑ a little

(Start from large Y)

Expansionary monetary policy

Long-run



P↑ a lot, Y stay the same

8.5 Inflation

8.5.1 Definition

- **Inflation:** An increase in the overall price level.

- **Sustained inflation** Occurs when the overall price level continues to rise over some fairly long period of time.

- **Hyperinflation** A period of very rapid increases in the price level.

8.5 Inflation

8.5.2 Causes of inflation

(1) Demand-pull Inflation: Inflation that is initiated by an increase in aggregate demand.

(2) Cost-push inflation: Inflation caused by an increase in costs.

(1) Demand-pull inflation

Inflation that is initiated by an increase in aggregate demand (AD shifts to the right)

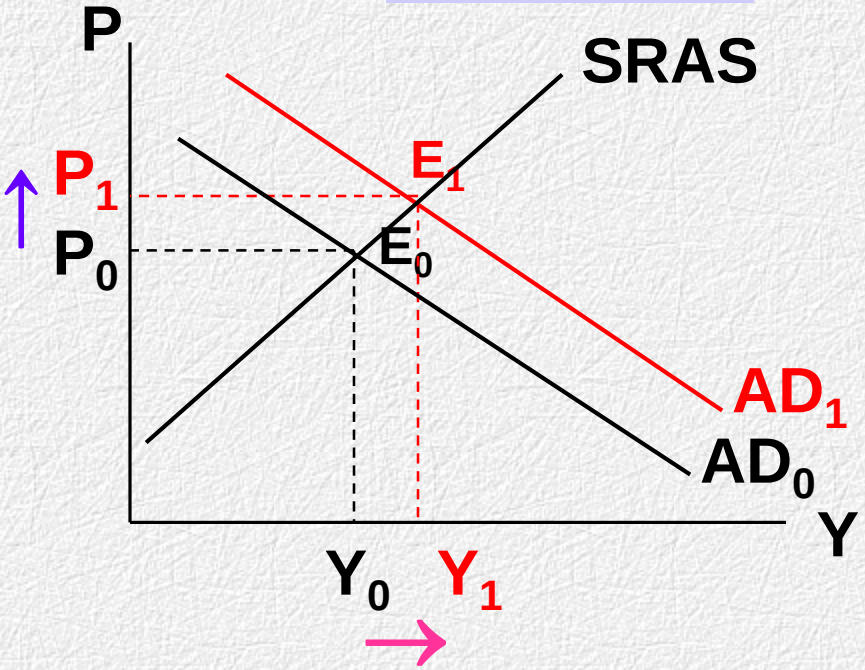
AD↑ (AD shifts to the right) → **P↑** inflation

(1) Demand-pull inflation

- Ex: C, I, G or (X − M)↑ ➡ DAE↑ ➡ Y↑

  ➡ IS shifts to the right ➡ Y↑ ➡ AD shifts to the right

- Ex: M^s↑ ➡ LM shifts to the right ➡ Y↑ ➡ AD shifts to the right



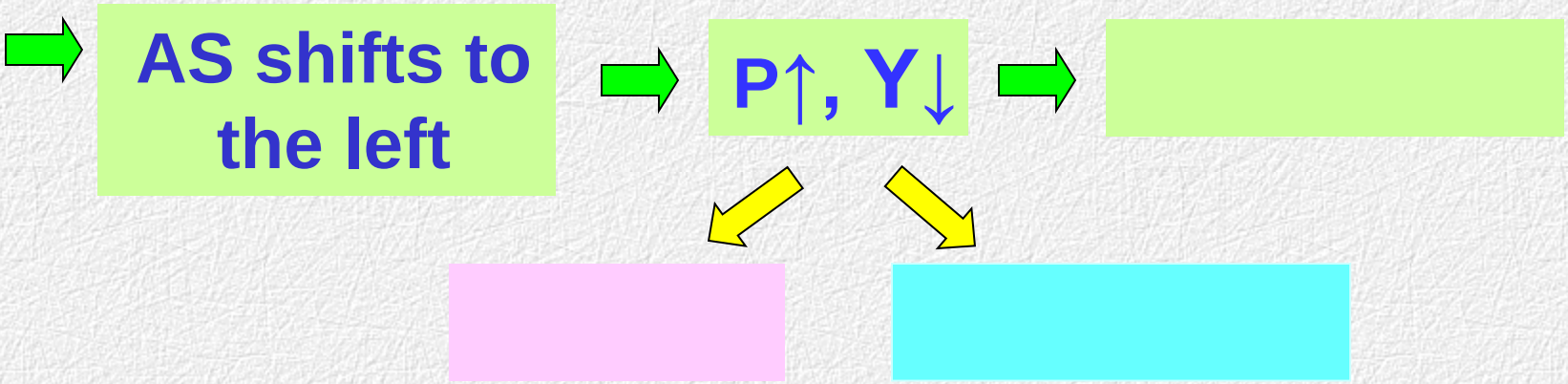
M^s↑ ➡ r↓ ➡ I↑ ➡ Y↑

➡ AD shifts to the right

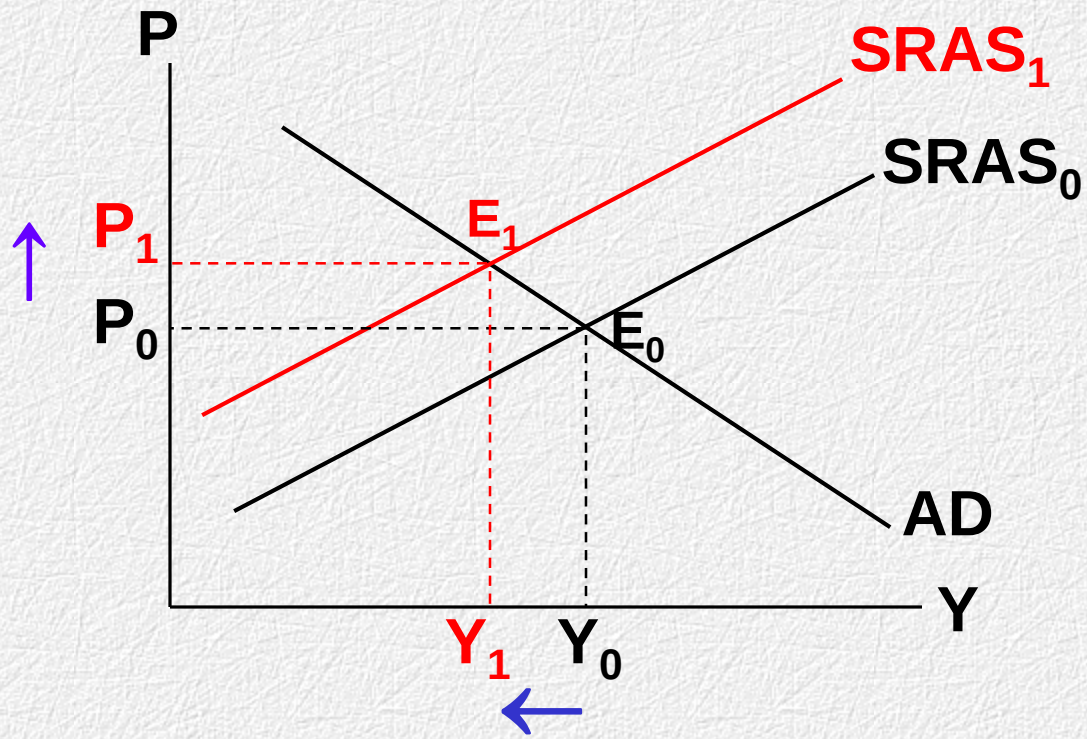
P↑, Y↑

(2) Cost-push inflation

Inflation caused by an increase in costs (AS shifts to the left)



(2) Cost-push inflation



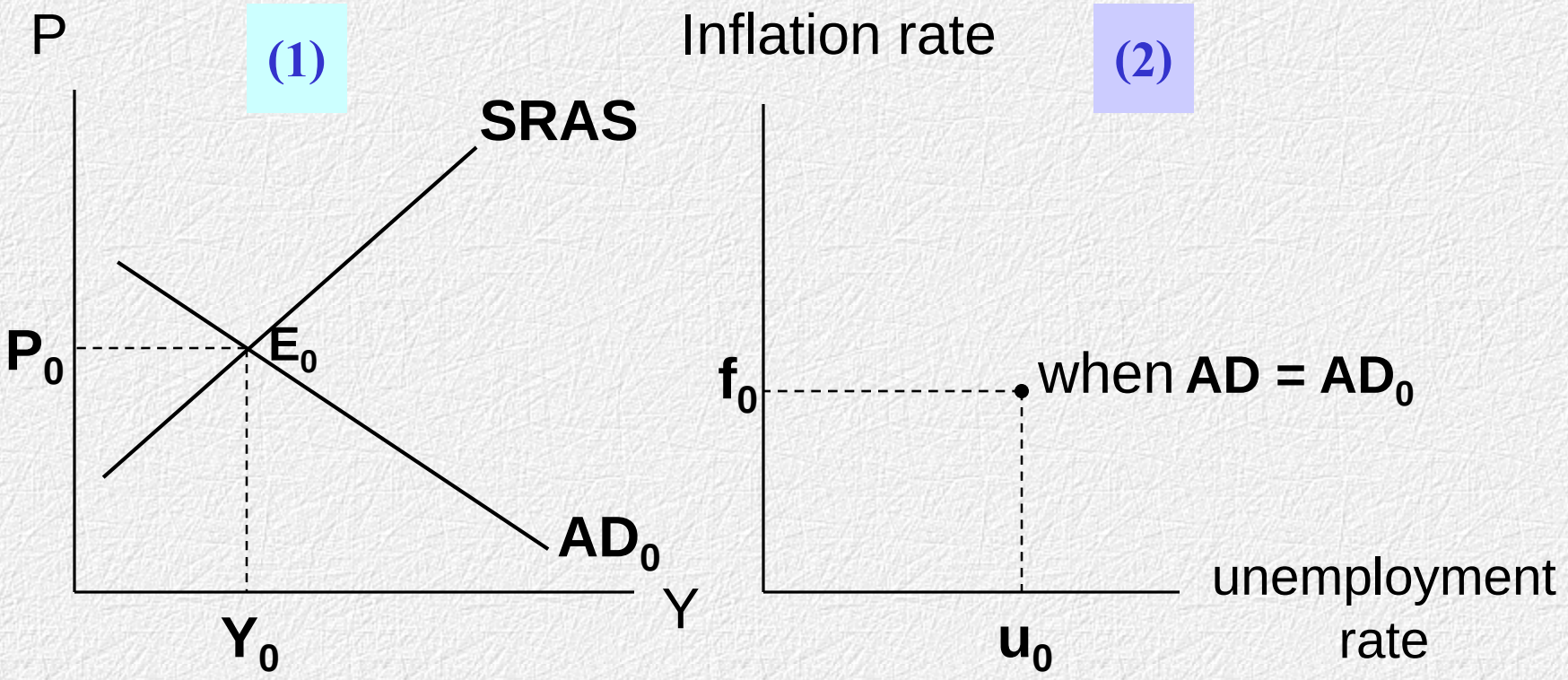
P↑, Y↓

7.6 Phillips Curve (PC)

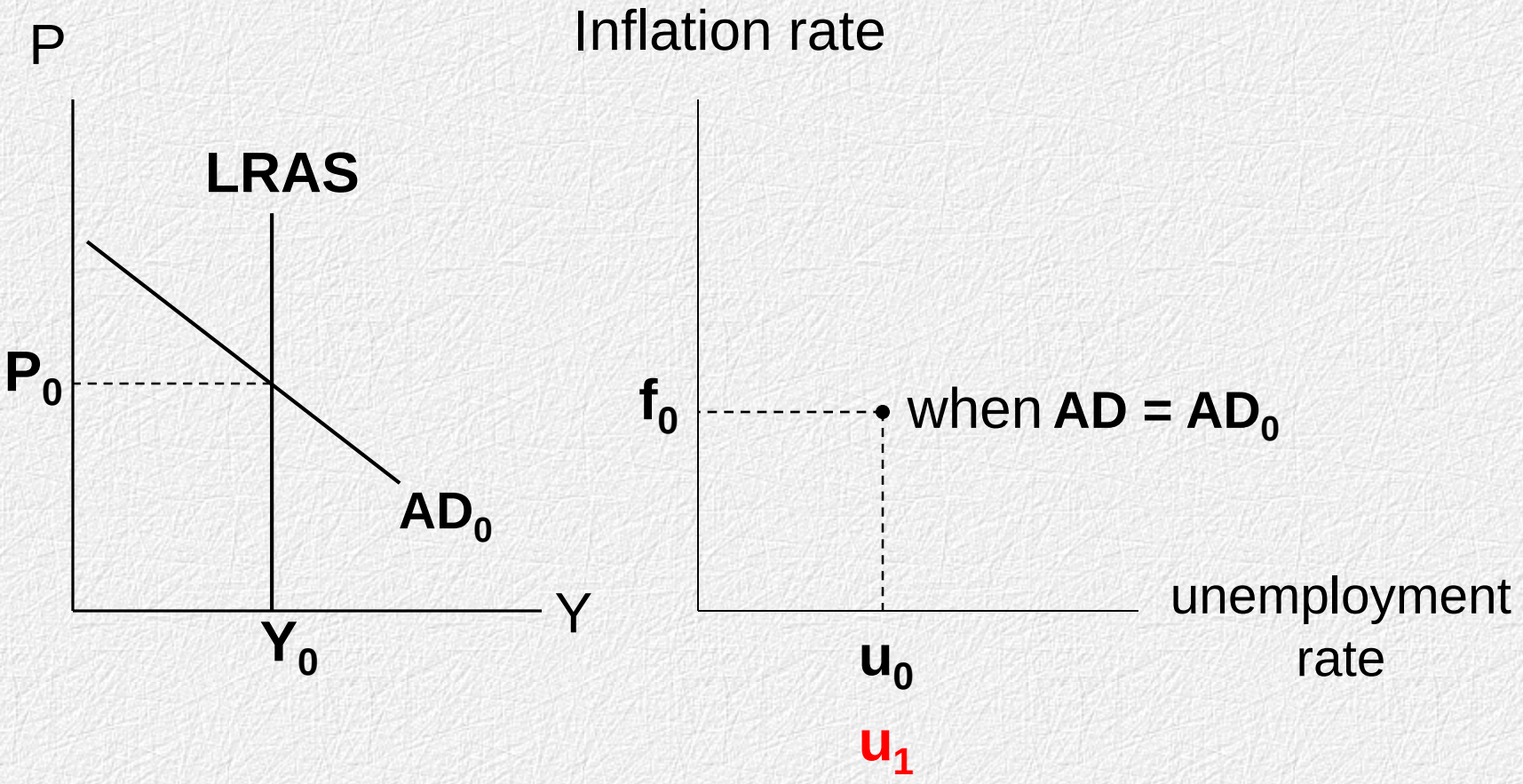
- **Phillips Curve (PC):** the curve that shows relationship between **inflation rate** and **unemployment rate**

- **Short run Phillips Curve (SURC) VS. Long run Phillips Curve (LRPC)**

Short-run Phillips Curve (SRPC)



Long-run Phillips Curve (LRPC)



Transition from short run to long run