

Lesson 5 AD-AS Model

Aggregate demand

What is Aggregate Demand?

Aggregate means “added all together.”

**When we use aggregates
we combine all prices and all quantities.**

Aggregate Demand is all the goods and services (real GDP) that buyers are willing and able to purchase at different price levels.

The Demand for everything by everyone in one country.

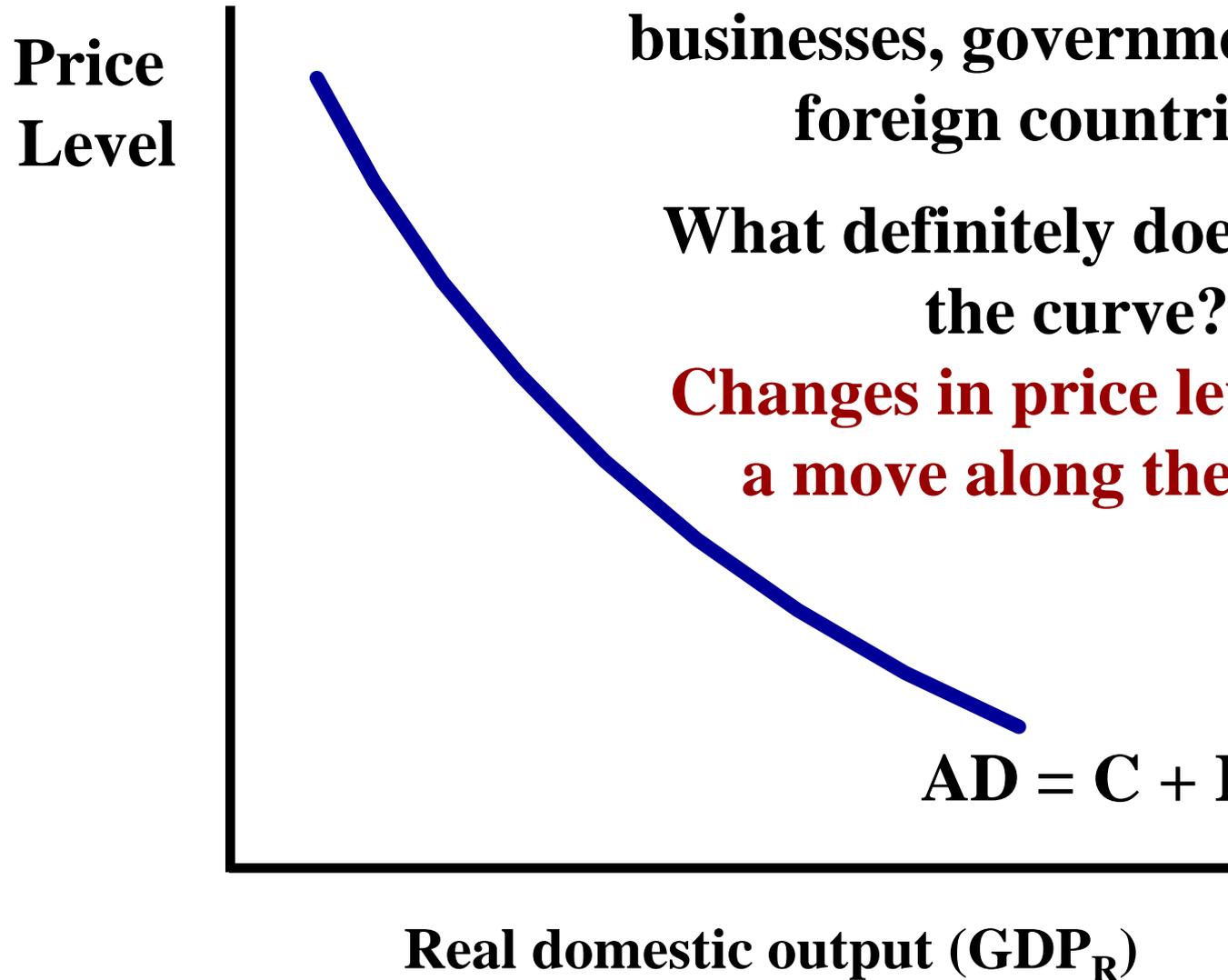
There is an inverse relationship between price level and Real GDP.

If the price level:

- Increases (Inflation), then real GDP demanded falls.**
- Decreases (deflation), the real GDP demanded increases.**

Aggregate Demand Curve

AD is the demand by consumers, businesses, government, and foreign countries



What definitely doesn't shift the curve?

Changes in price level cause a move along the curve

Why is AD downward sloping?

1. Wealth Effect-

- Higher price levels reduce the purchasing power of money
- This decreases the quantity of expenditures
- Lower price levels increase purchasing power and increase expenditures

Example:

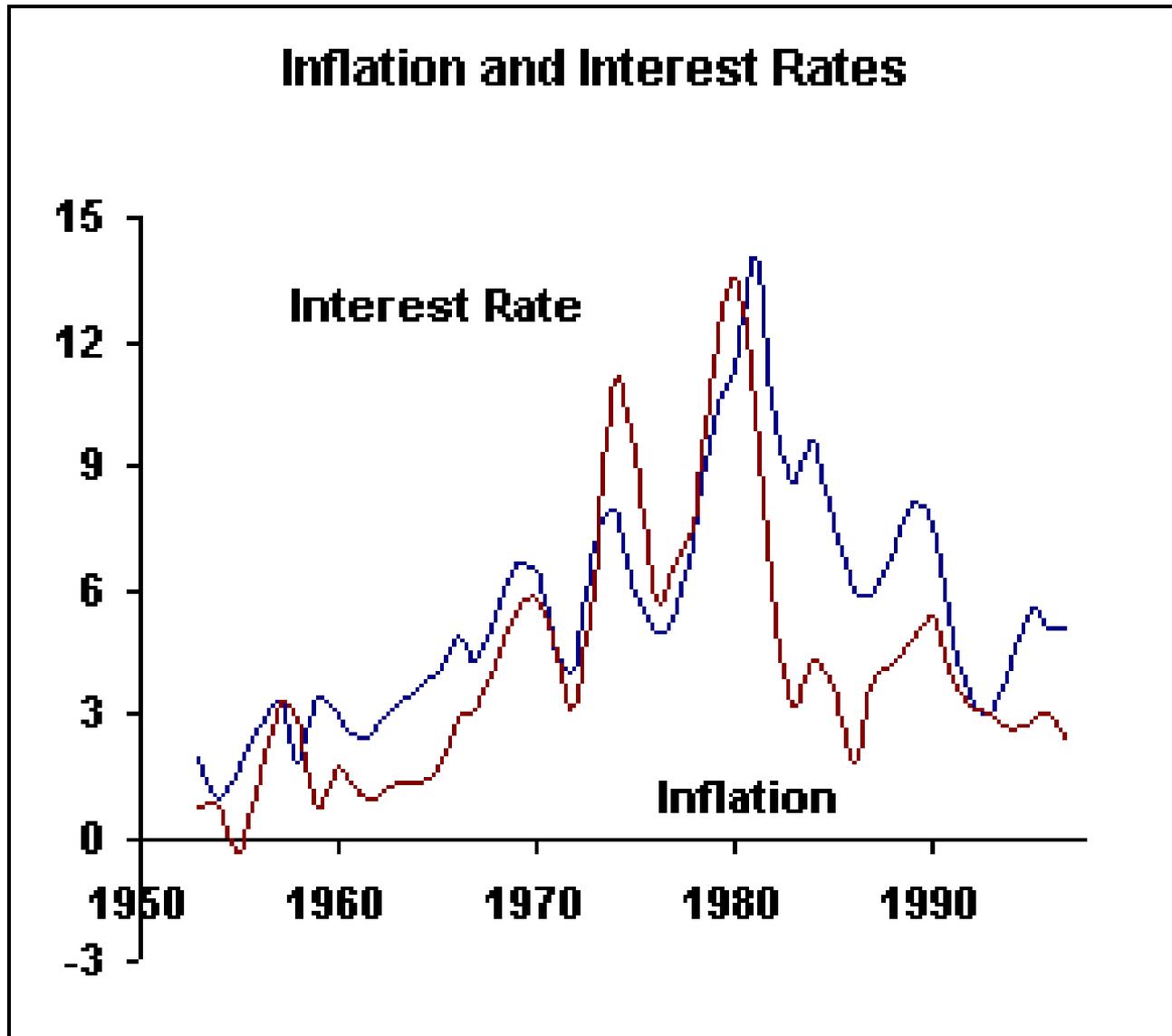
- If the balance in your bank was \$50,000, but inflation erodes your purchasing power, you will likely reduce your spending.
- So...Price Level goes up, GDP demanded goes down.

Why is AD downward sloping?

2. Interest-Rate Effect

- When the price level increases, lenders need to charge higher interest rates to get a **REAL** return on their loans.
- Higher interest rates discourage business investment and consumer spending.
- **Example: An increase in prices leads to an increase in the interest rate from 5% to 25%. You are less likely to take out loans to improve your business.**
- **Result...Price Level goes up, GDP demanded goes down (and Vice Versa).**

Why is AD downward sloping?



Why is AD downward sloping?

3. Foreign Trade Effect



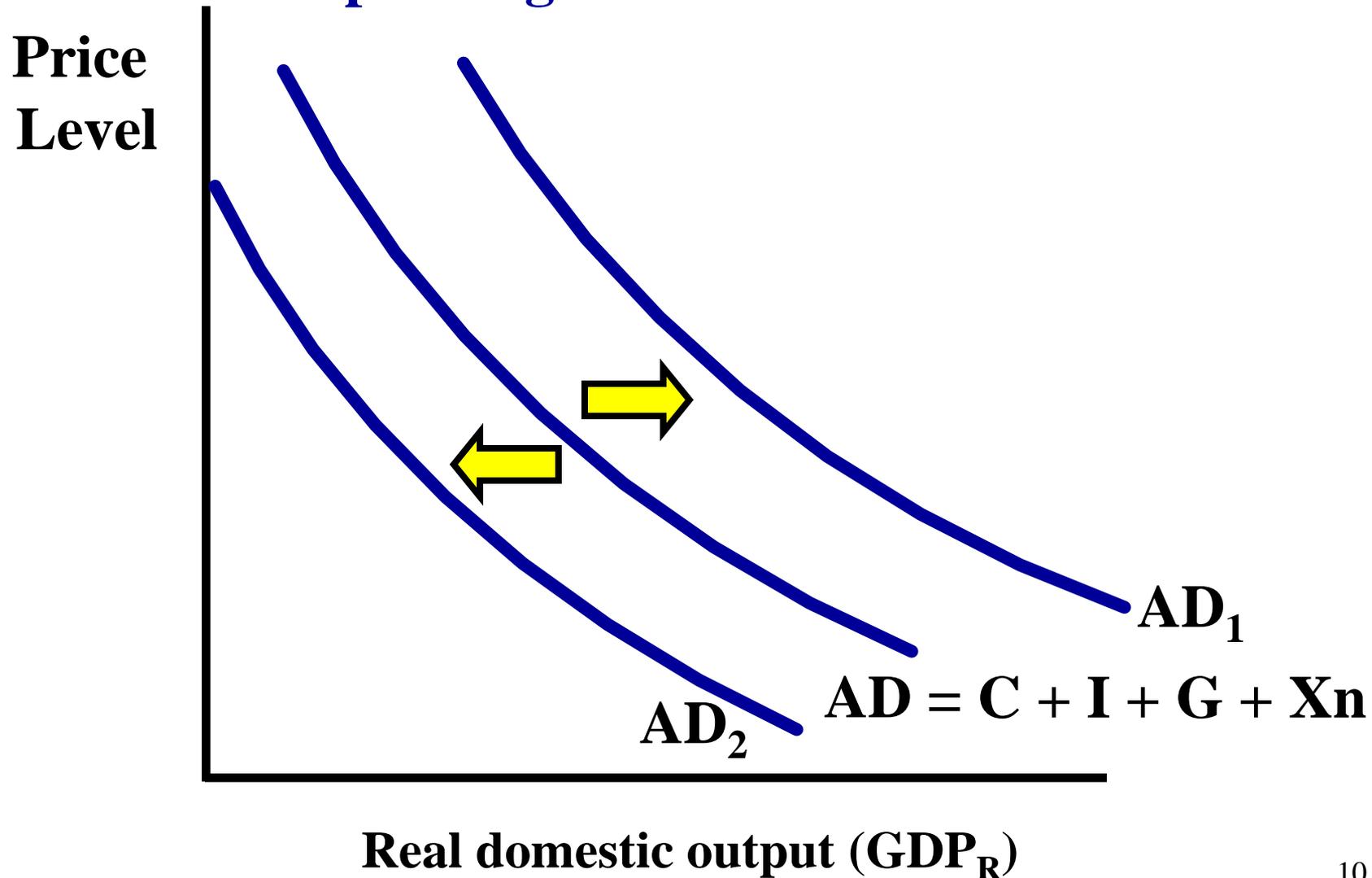
- When U.S. price level rises, foreign buyers purchase fewer U.S. goods and Americans buy more foreign goods
- Exports fall and imports rise causing real GDP demanded to fall. (X_N Decreases)
- Example: If prices triple in the US, Canada will no longer buy US goods causing quantity demanded of US products to fall.
- Again, Price Level goes up, GDP demanded goes down (and Vice Versa).

Shifters of Aggregate Demand

$$\mathbf{GDP = C + I + G + X_n}$$

Shifts in Aggregate Demand

An increase in spending shift AD right, and decrease in spending shifts it left



Shifters of Aggregate Demand

1. Change in Consumer Spending

Consumer Wealth (Boom in the stock market...)

Consumer Expectations (People fear a recession...)

Household Indebtedness (More consumer debt...)

Taxes (Decrease in income taxes...)

2. Change in Investment Spending

Real Interest Rates (Price of borrowing \$)

(If interest rates increase...)

(If interest rates decrease...)

Future Business Expectations (High expectations...)

Productivity and Technology (New robots, buy more)

Business Taxes (Higher corporate taxes means...)

Shifters of Aggregate Demand

3. Change in Government Spending

(War...)

(Decrease in defense spending...)

(Policy...)

4. Change in Net Exports (X-M)

Exchange Rates

(If the us dollar depreciates relative to the euro...)

Consumer tastes

Foreign incomes

(When foreign consumers have more DI, this increases the AD in the U.S.)

$$AD = GDP = C + I + G + X_n$$

Short-run & long-run

Macroeconomic Short Run

In the **macroeconomic short run** period of time, the **prices of goods and services** are **changing** in their respective markets, but **input prices** have **not yet adjusted** to those product market changes.

Macroeconomic Long Run

The macroeconomic long run is long enough for input prices to have fully adjusted to market forces. Now all product and input markets are in equilibrium, and the economy is at full employment.

What is Aggregate Supply?

Aggregate Supply is the amount of goods and services (real GDP) that firms will produce in an economy at different price levels.

The supply for everything by all firms.

Aggregate Supply differentiates between short run and long-run and has two different curves.

Short-run Aggregate Supply

- **Wages and Resource Prices will not increase as price levels increase.**

Long-run Aggregate Supply

- **Wages and Resource Prices will increase as price levels increase.**

Short-run aggregate supply

Short-Run Aggregate Supply

In the Short Run, wages and resource prices will NOT increase as price levels increase.

Example:

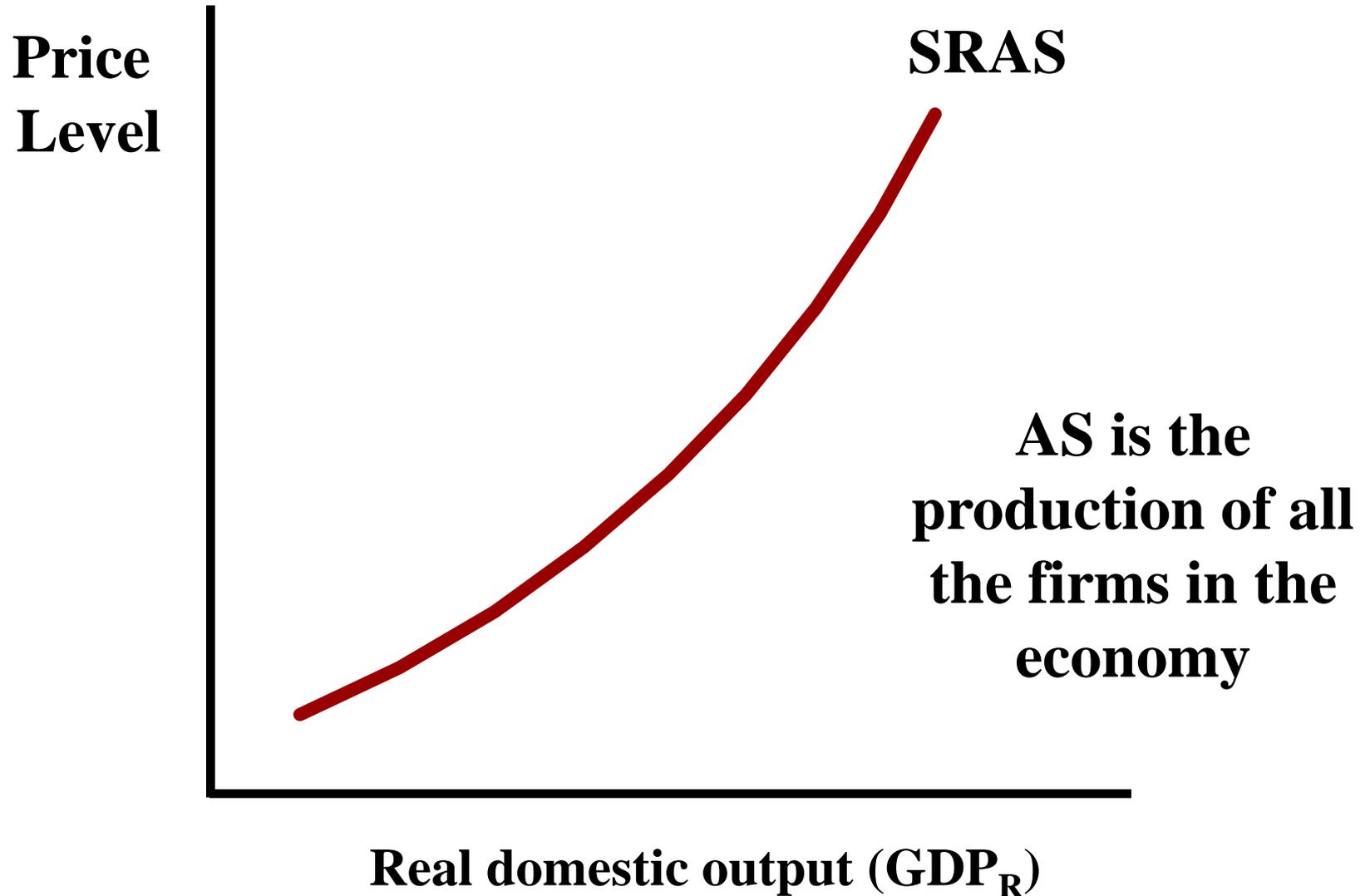
- **If a firm currently makes 100 units that are sold for \$1 each. The only cost is \$80 of labor.
How much is profit?**
- **Profit = \$100 - \$80 = \$20**

What happens in the SHORT-RUN if price level doubles?

- **Now 100 units sell for \$2, TR=\$200.
How much is profit?**
- **Profit = \$120**

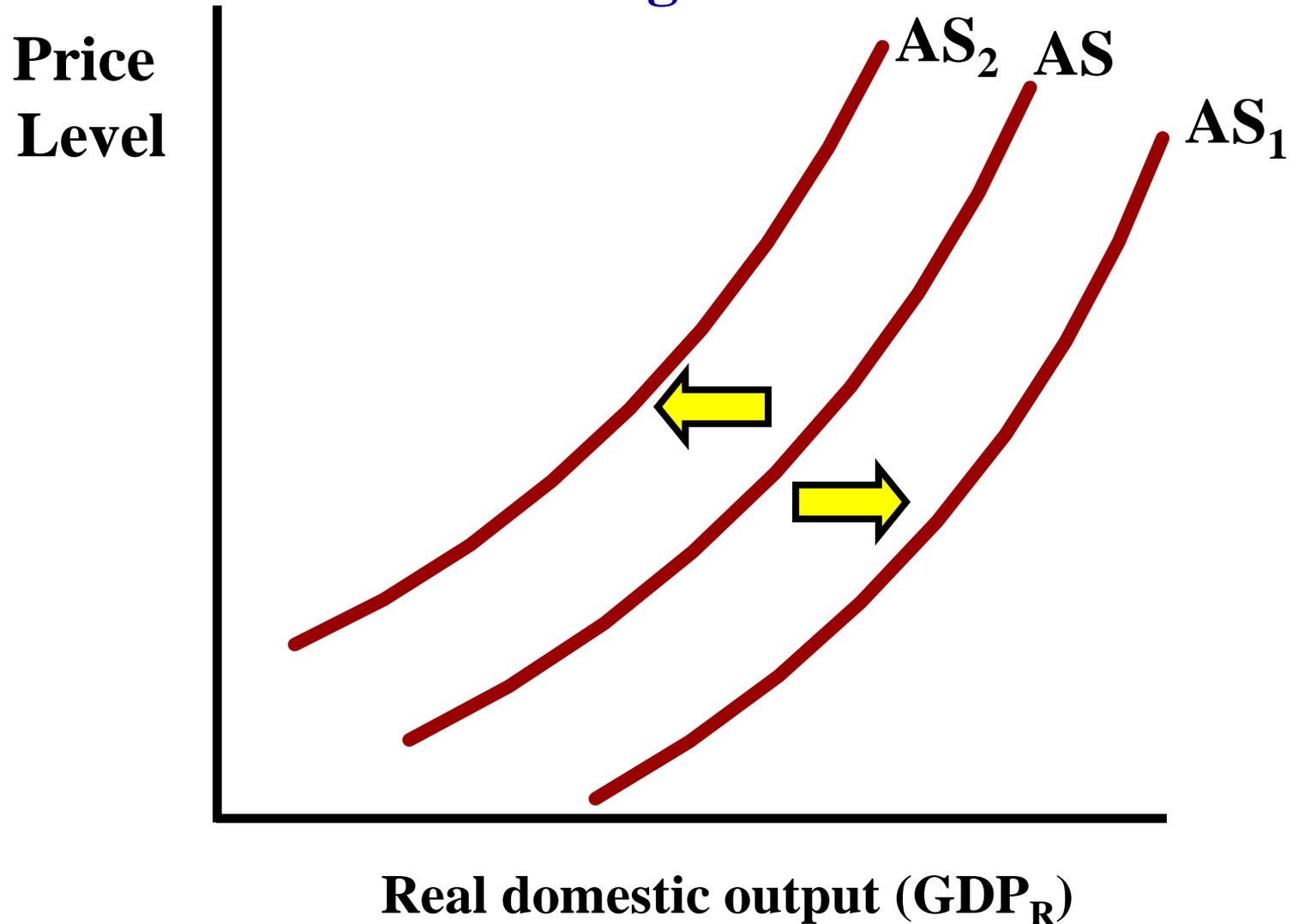
With higher profits, the firm has the incentive to increase production.

Aggregate Supply Curve



Shifts in SRAS

An increase or decrease in national production can shift the curve right or left



Shifters of SRAS

1. Change in Inflationary Expectations

If people expect higher prices in the future. They will demand higher wages. This increases labor and resource costs and decreases AS.

2. Change in Resource Prices

Prices of Domestic and Imported Resources

Supply Shocks(positive, negative)
(Earthquake, tsunami, new oil field)

Shifters of SRAS

3. Change in Government's policy (NOT Government Spending)

Taxes on Producers

Subsides for Domestic Producers

4. Change in Productivity

Technology

Long-run aggregate supply

Long-Run Aggregate Supply

**In the Long Run, wages and resource prices
WILL increase as price levels increase.**

Same Example:

- **The firm has TR of \$100 and uses \$80 of labor.**
- **Profit = \$20.**

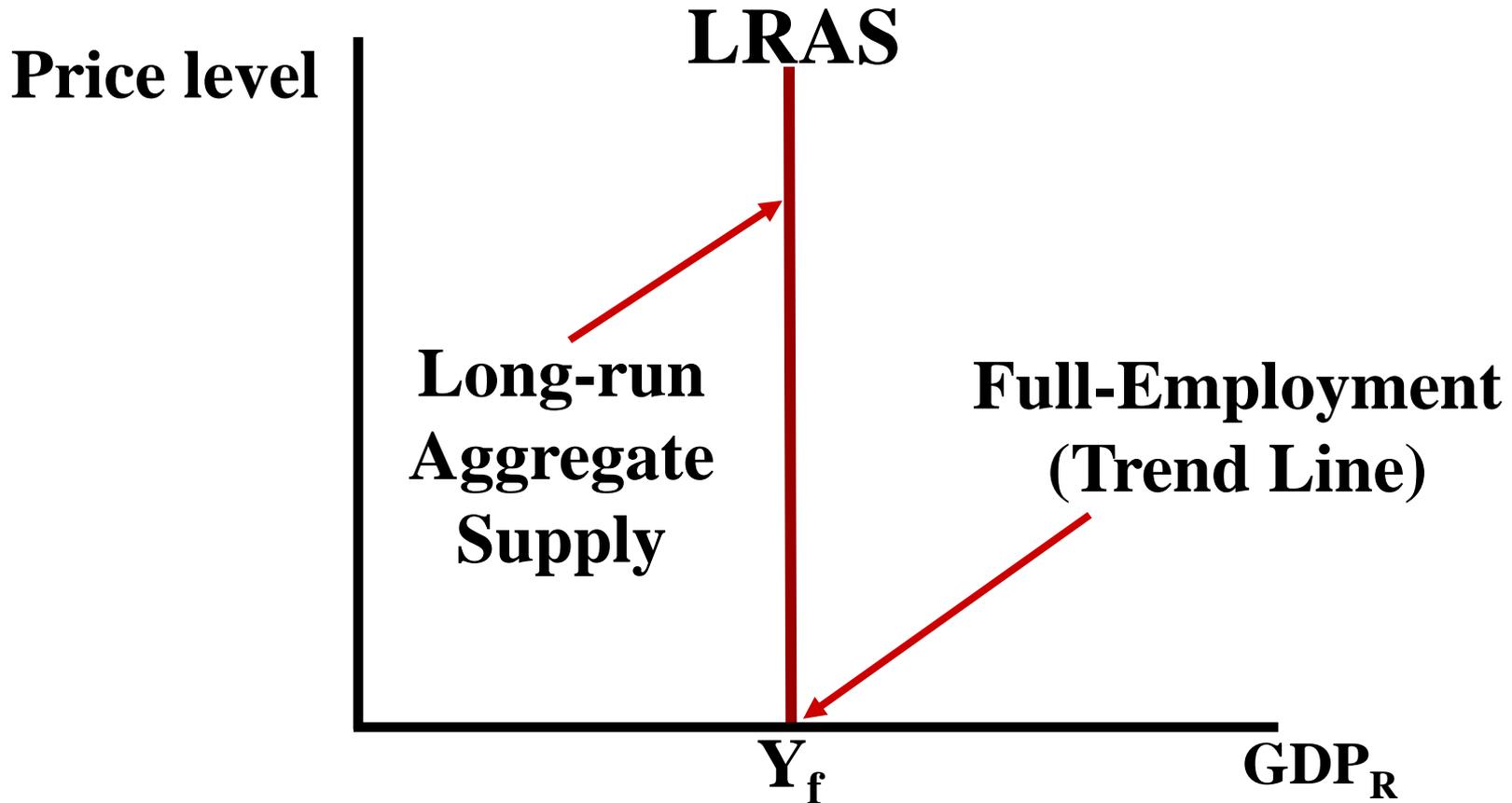
What happens in the LONG-RUN if price level doubles?

- **Now TR=\$200**
- **In the LONG RUN workers demand higher wages to match prices. So labor costs double to \$160**
- **Profit = \$40, but REAL profit is unchanged.**

**If REAL profit doesn't change
the firm has no incentive to increase output.**

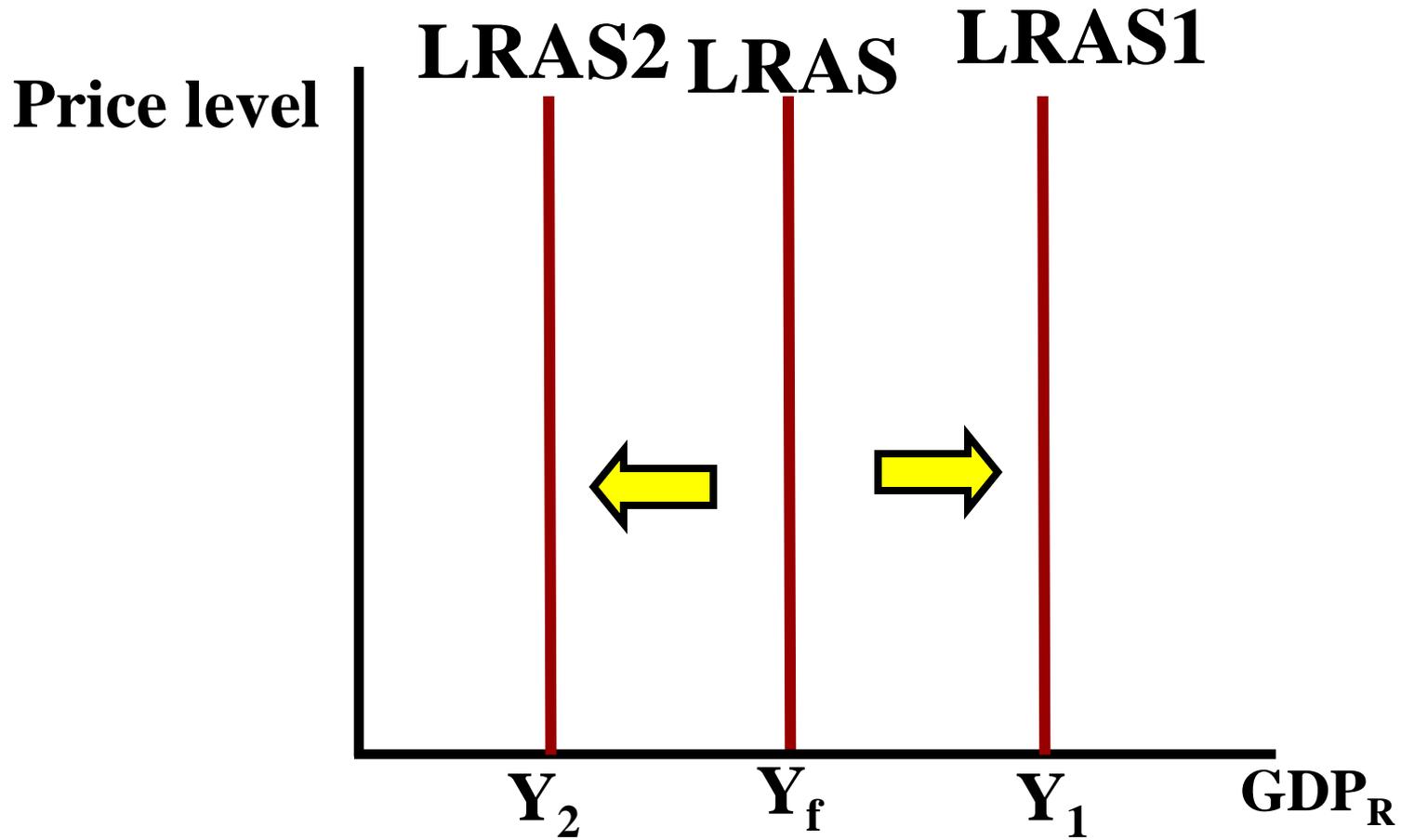
Long run Aggregate Supply

In Long Run, price level increases but GDP doesn't



We also assume that in the long run the economy will be producing at full employment.

Shifts in LRAS



Shifters of LRAS

1. Change in Resource quantity, quality

An increase in labor force population

Higher quality of worker(good education)

2. Change in Productivity

Technology

3. Change in capital accumulation

Human Capital/ knowledge

Physical Capital goods/ capital goods formation

Connection to PPC

Why do some countries have higher GDPs than others?

Productivity (TECHN)

1. Technology

2. Economic System

Example#1: Capitalist countries have historically had more economic growth.

- Capital (like robots) can produce more than people
- Countries with more capital can produce more products than countries without a lot of capital.

3. Capital

Ex: Capital stock is machinery, tools, and man-made resources.

Example#1: India has over a billion people (human resources) but relatively few capital resources and therefore a lower GDP than the U.S.

Example#2: Japan has few natural resources but a high GDP

4. Human Capital (Knowledge)

5. Natural Resources

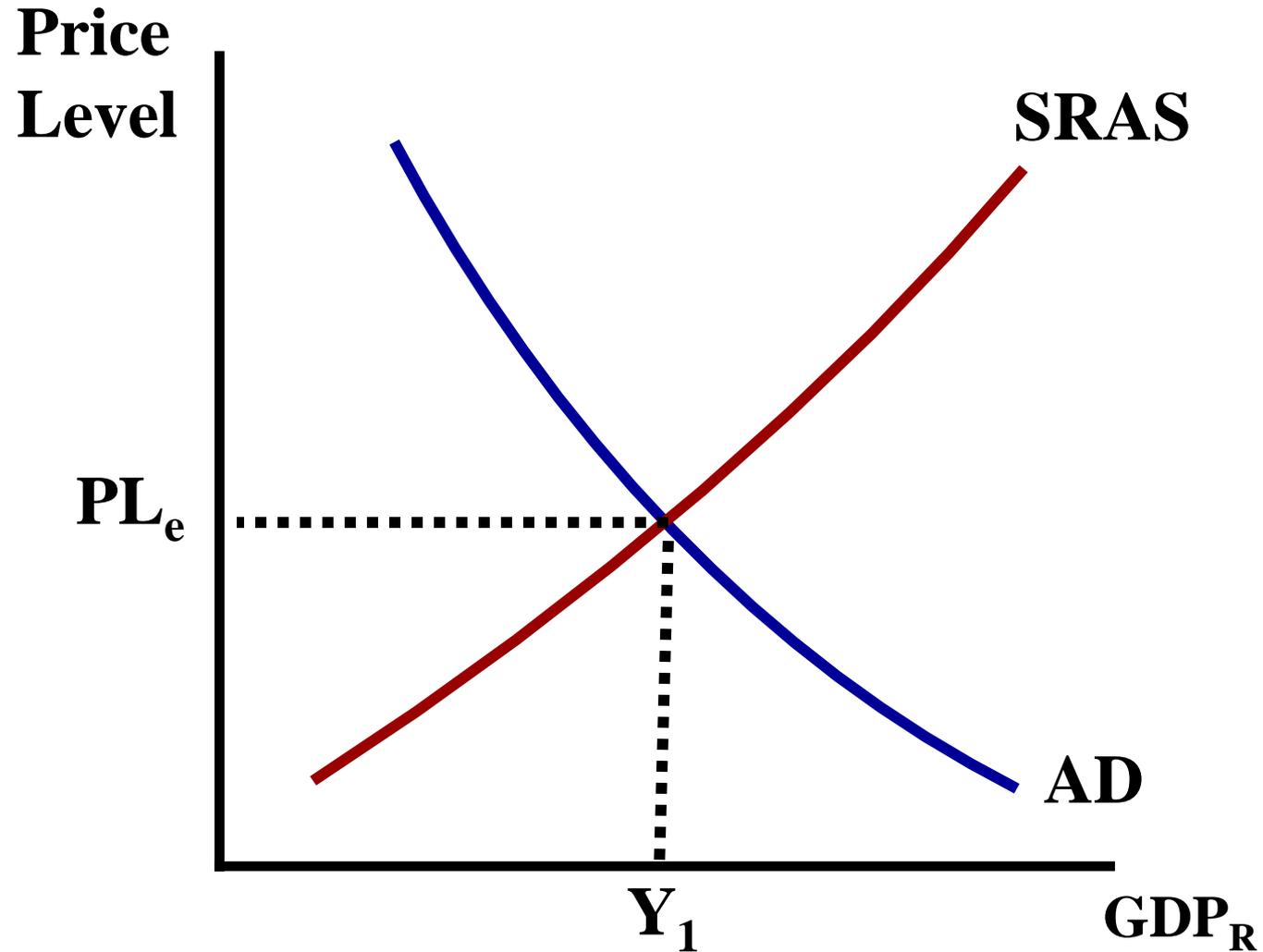
Ex: Syria has a lower GDP because it is mostly desert.

Macroeconomics equilibrium

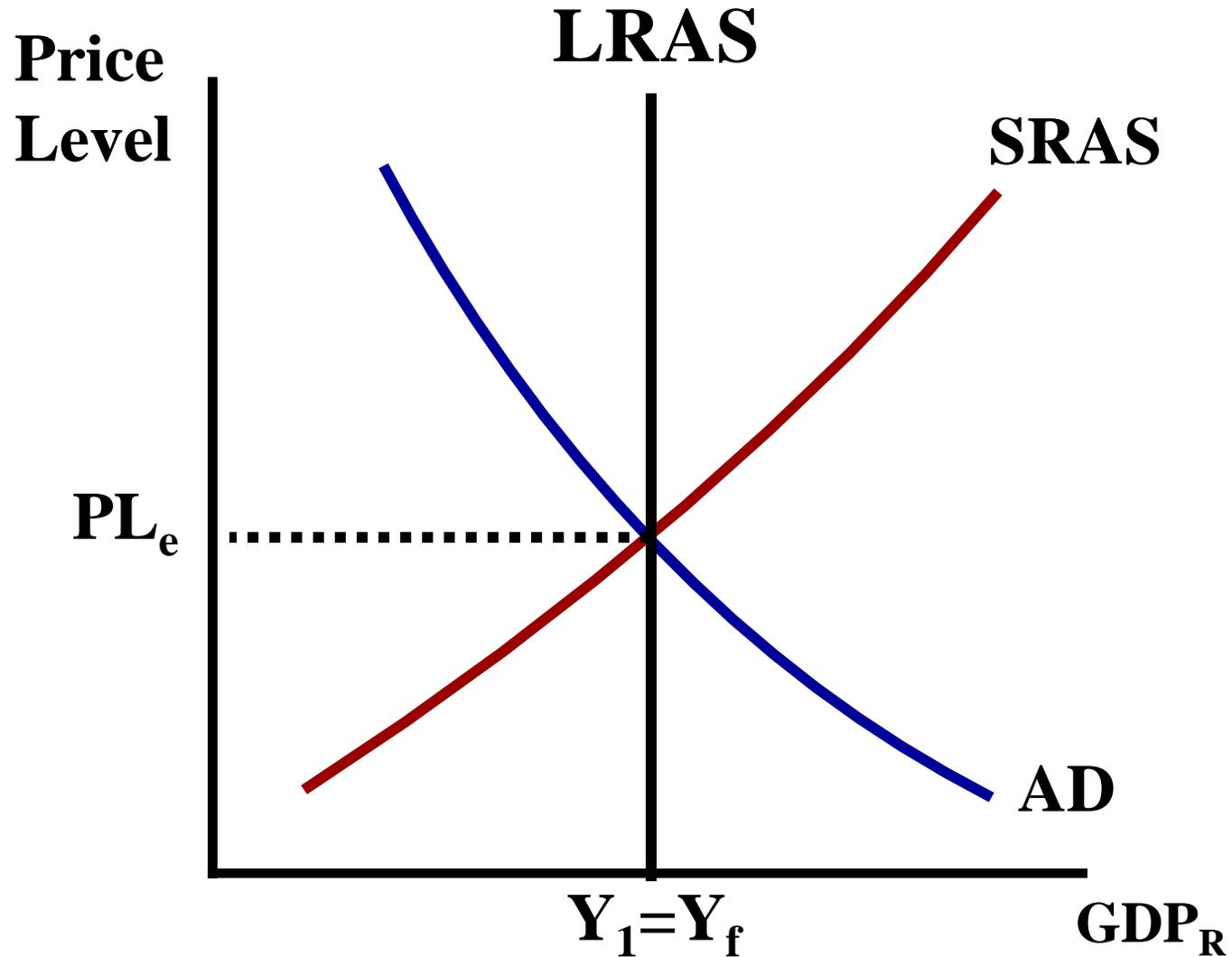
Putting AD and AS together to get Equilibrium Price Level and Output



Perfect Condition

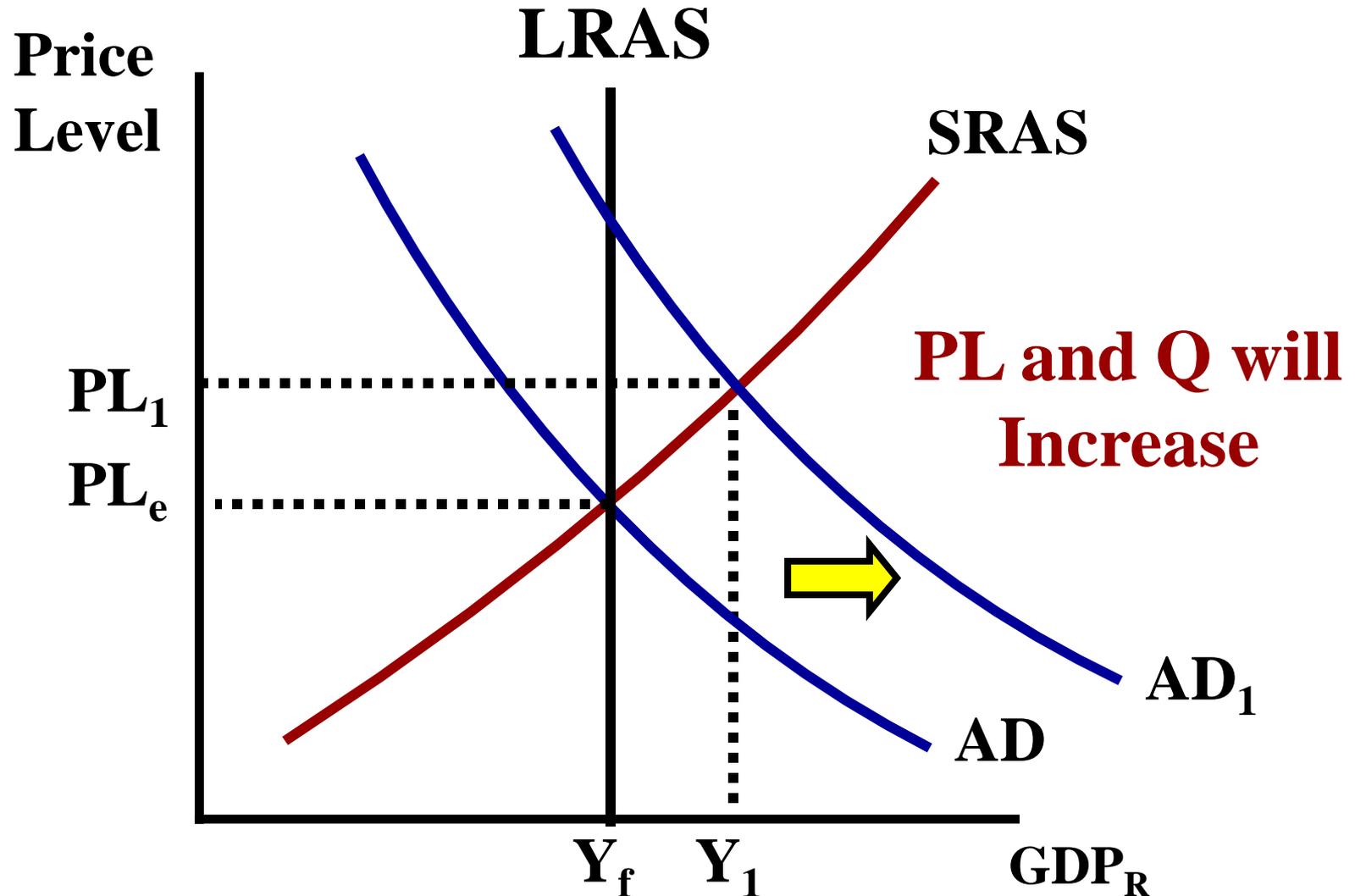


Perfect Condition



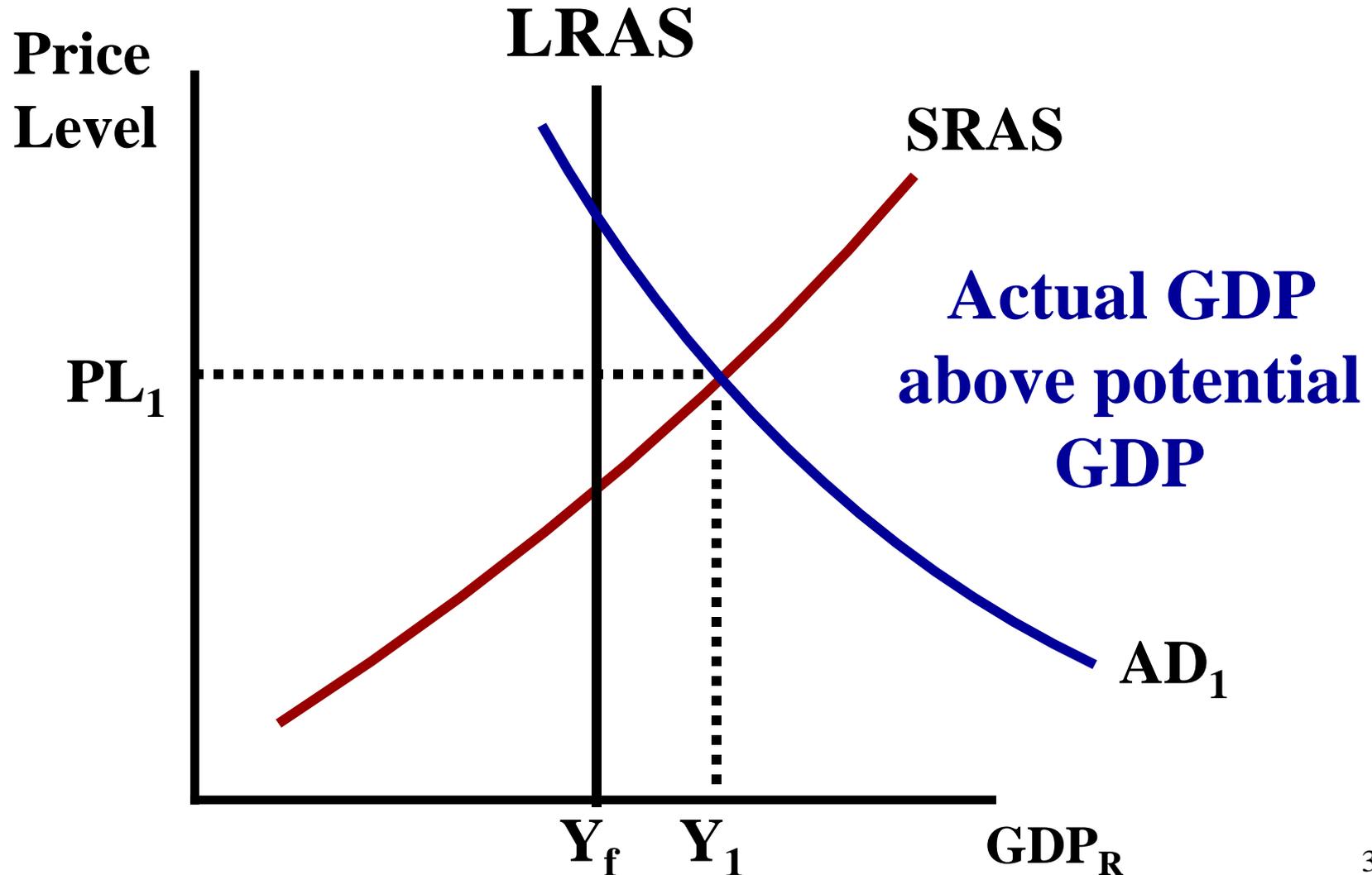
Inflationary and Recessionary Gaps

Example: Assume the government increases spending. What happens to PL and Output?

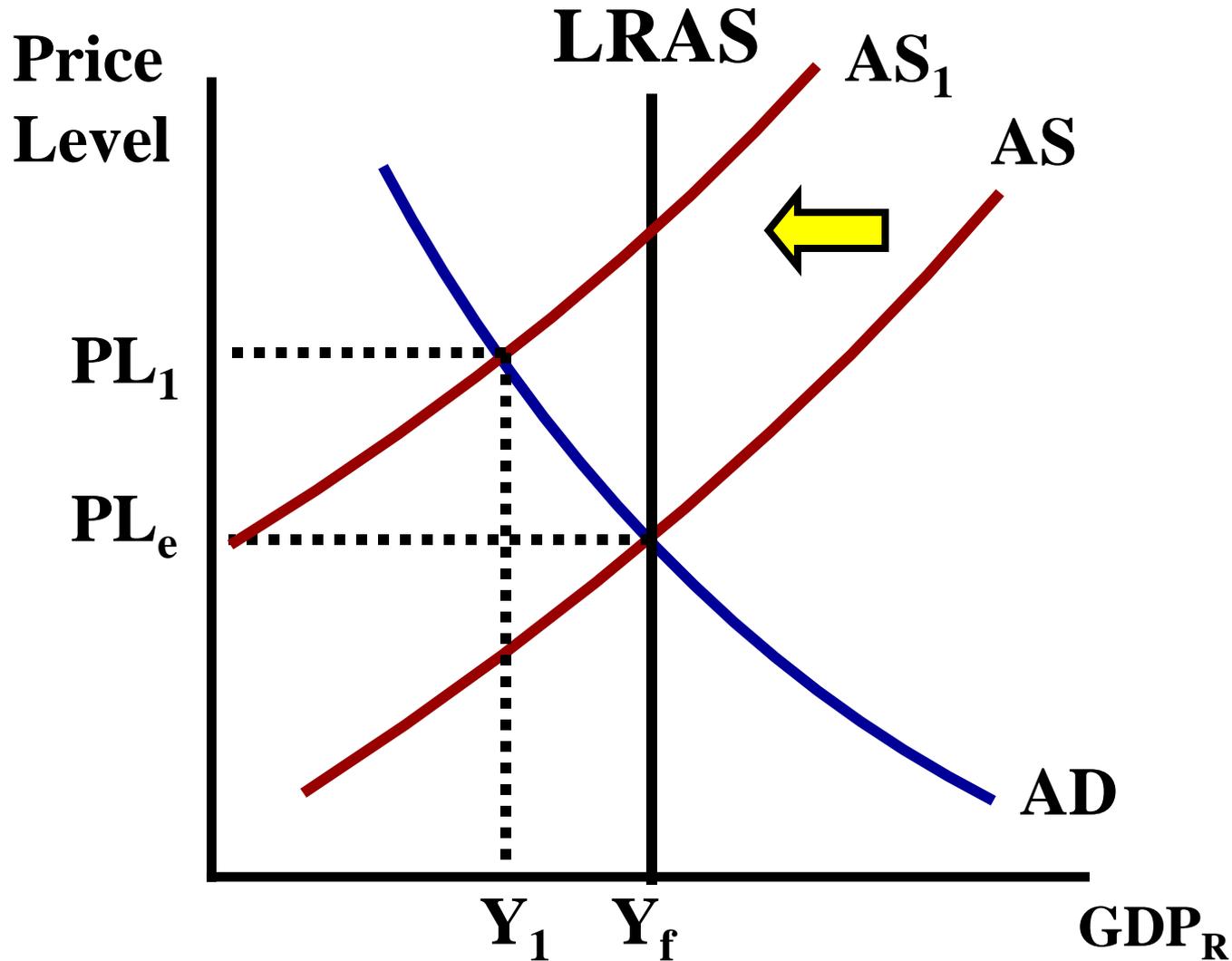


Inflationary Gap

Output is high and unemployment is less than NRU

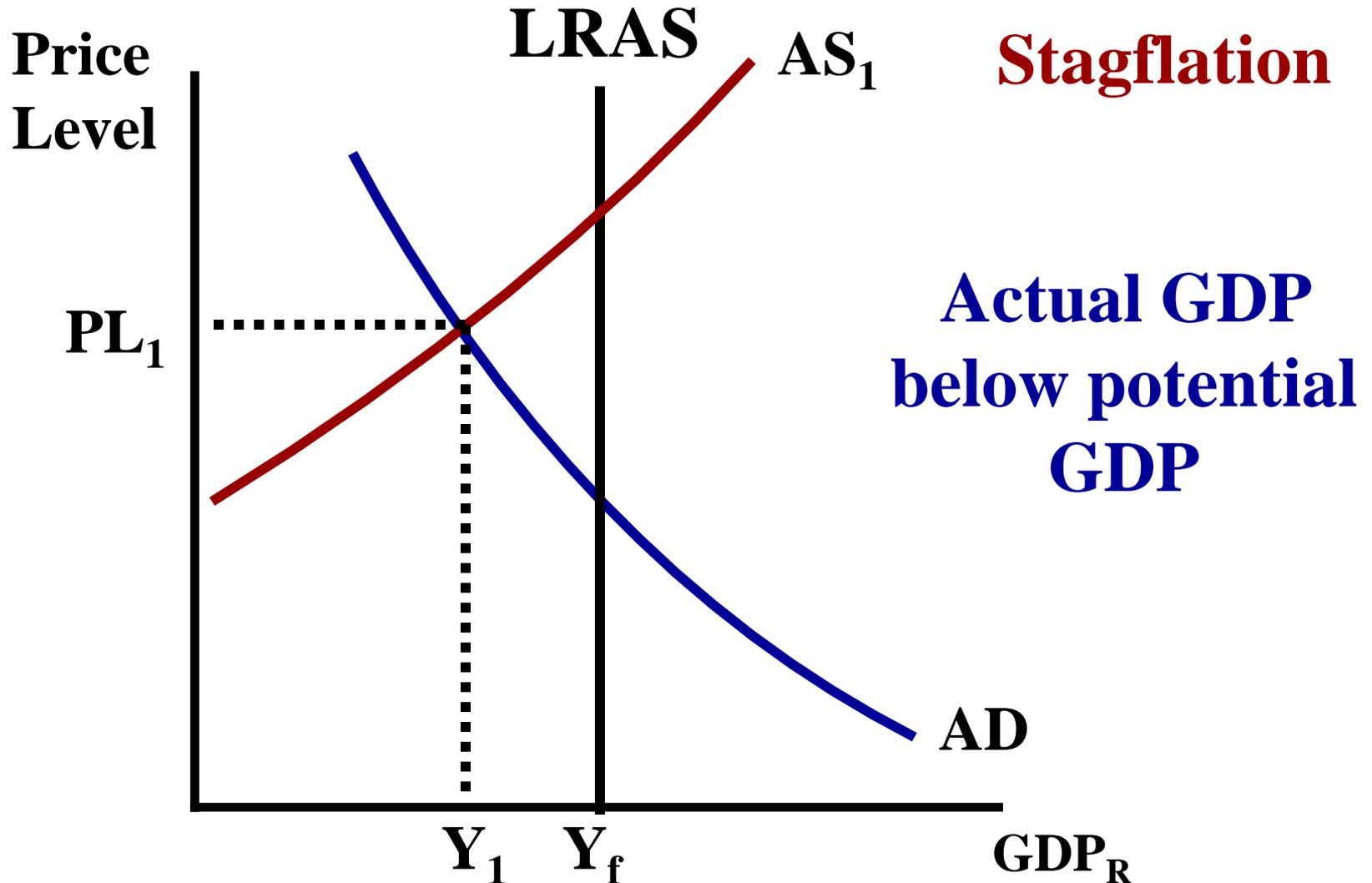


Example: Assume the price of oil increases drastically. What happens to PL and Output?



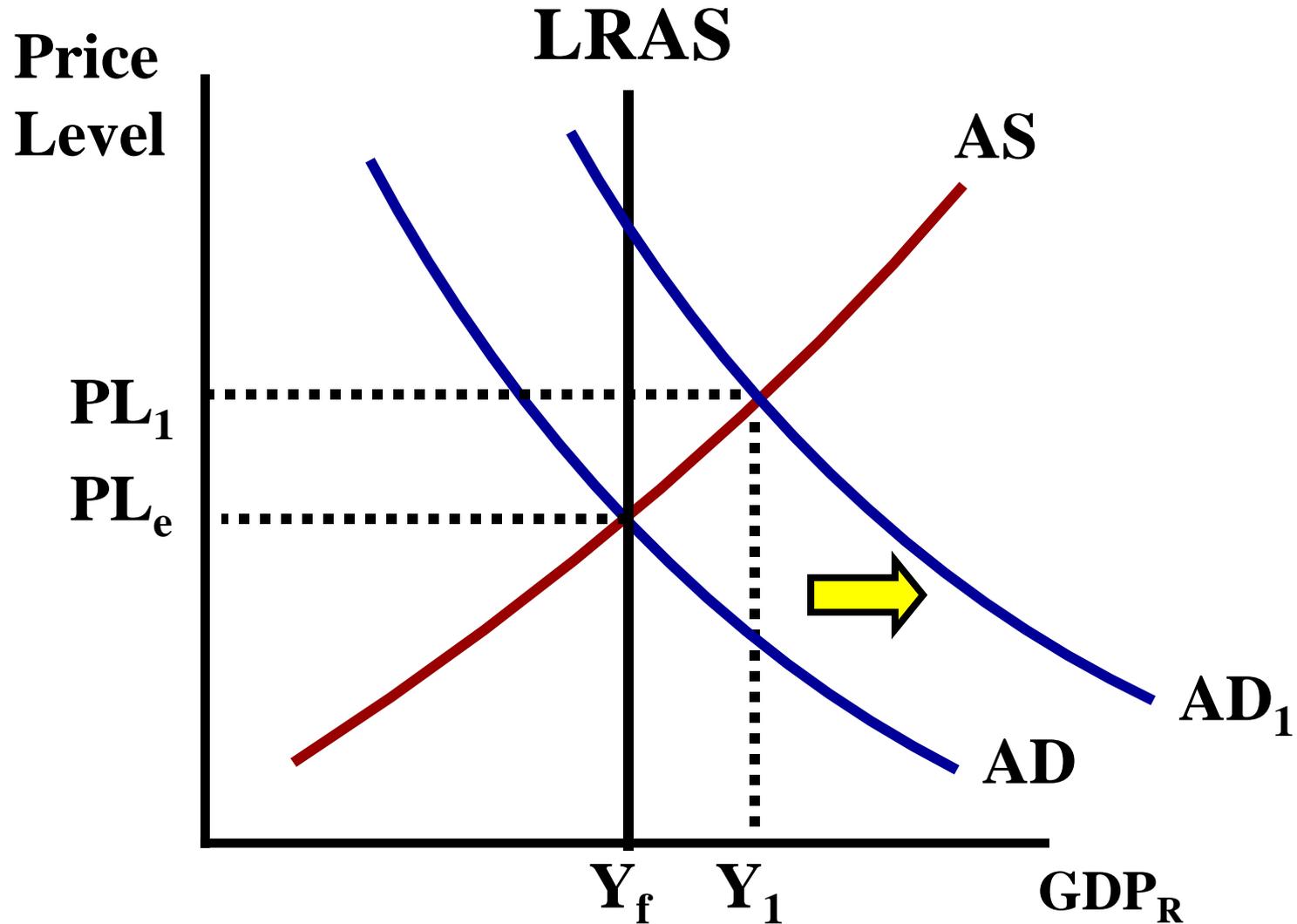
Recessionary Gap

Output low and unemployment is more than NRU



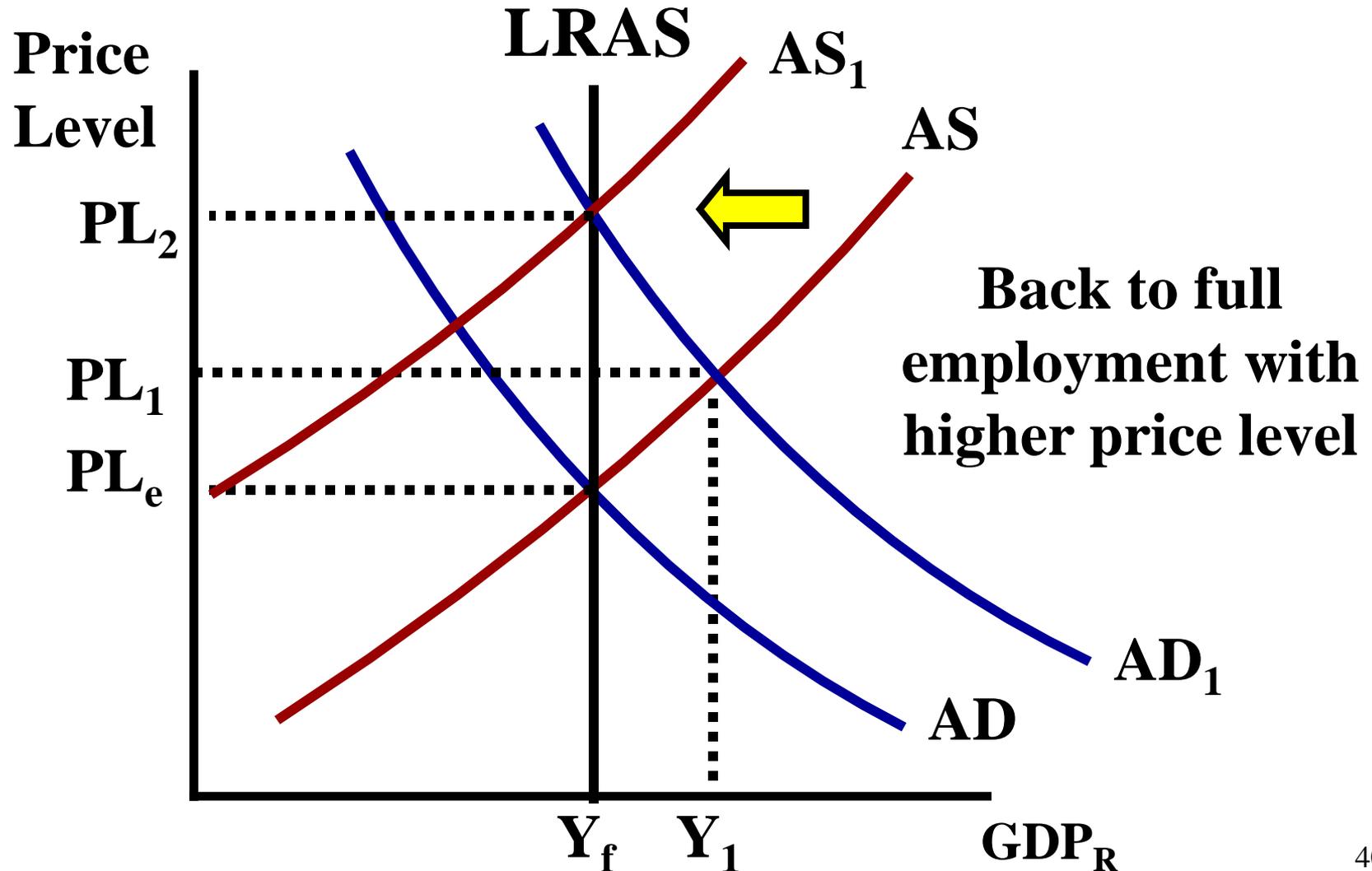
Long Run equilibrium

Example: Assume consumers increase spending. What happens to PL and Output?

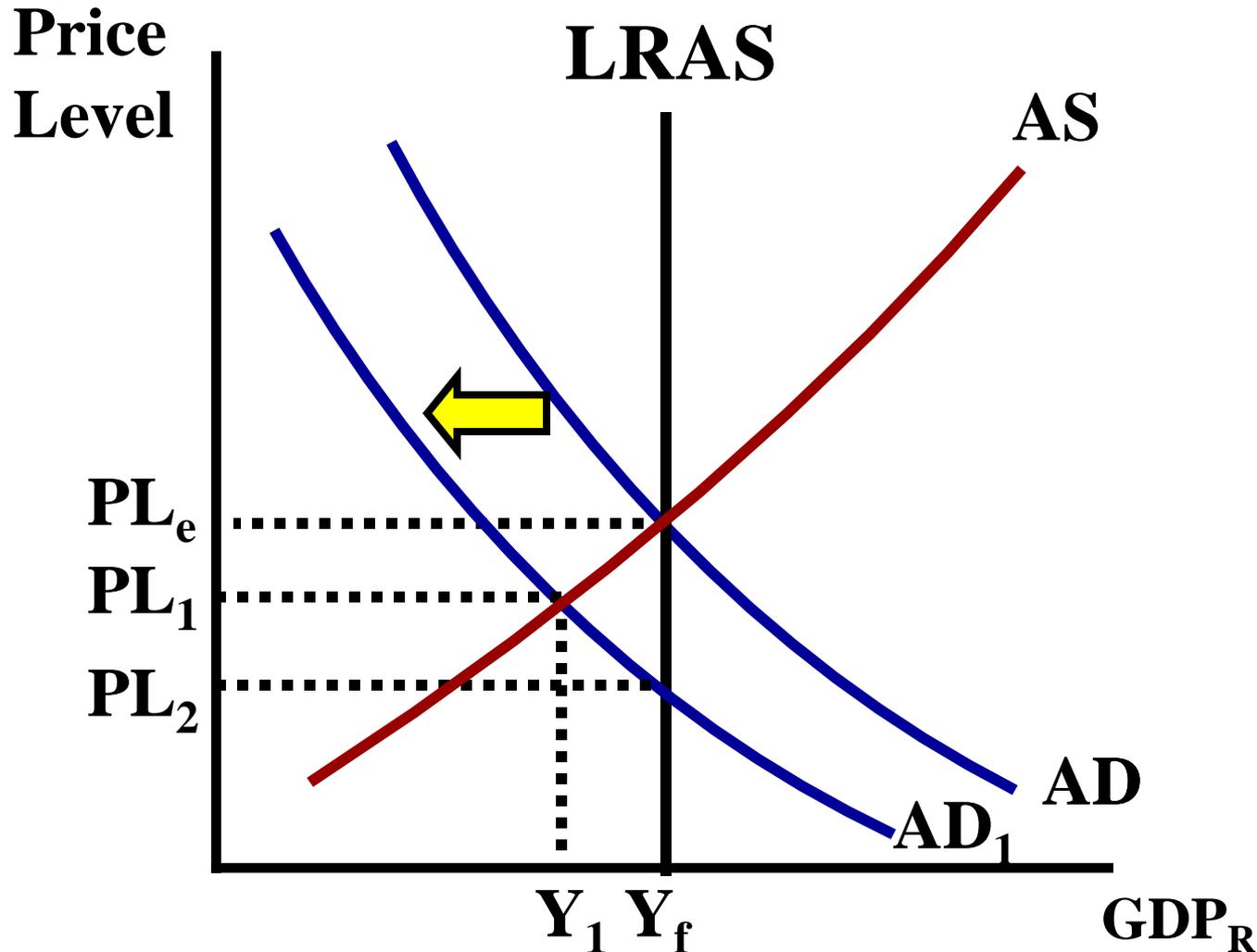


Now, what will happen in the LONG RUN?

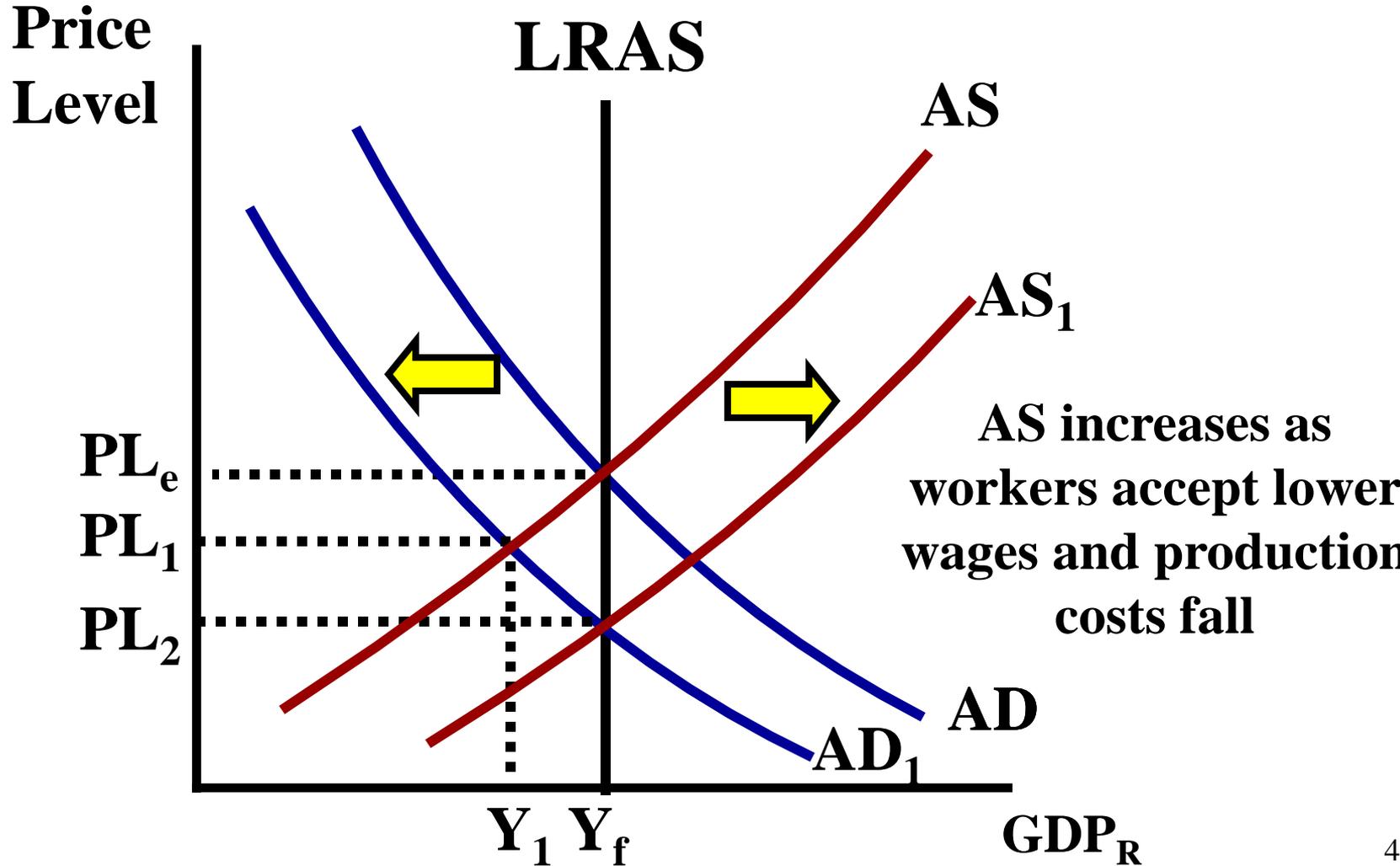
Inflation means workers seek higher wages and production costs increase



Example: Consumer expectations fall and consumer spending plummets. What happens to PL and Output in the Short Run and Long Run?



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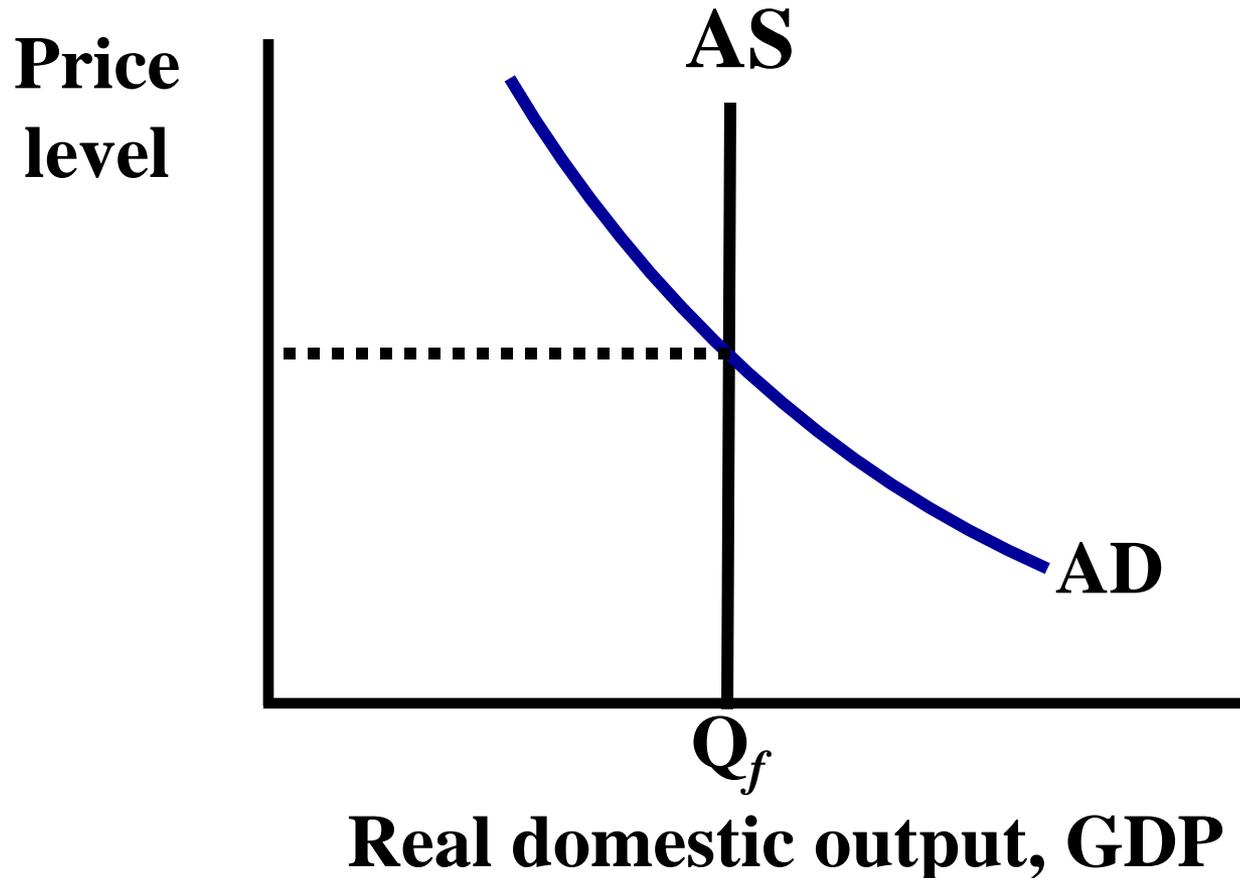


? Debates Over Aggregate Supply?

Debates Over Aggregate Supply

Classical Theory

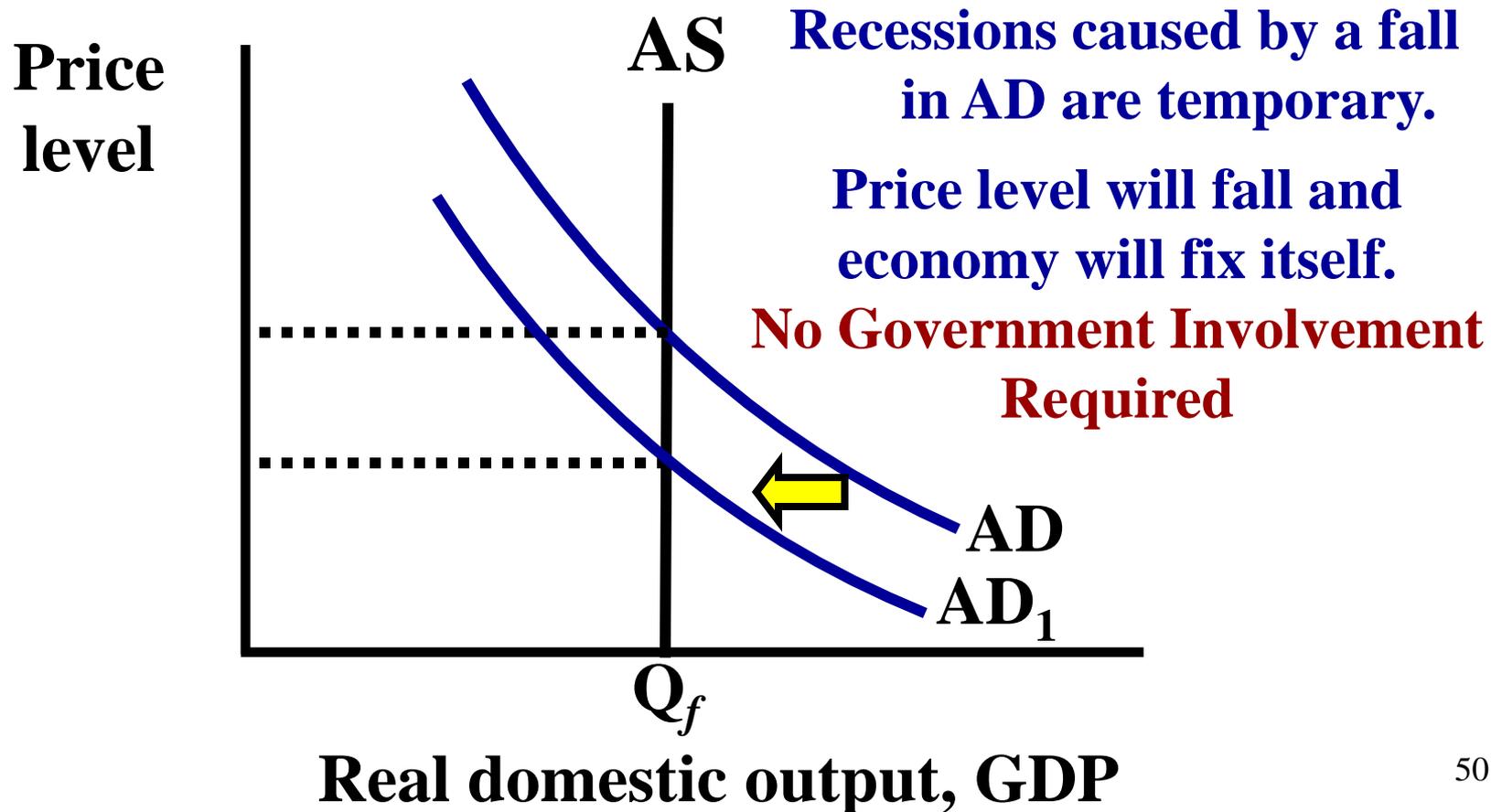
1. A change in AD will not change output even in the short run because prices of resources (wages) are very flexible.
2. AS is vertical so AD can't increase without causing inflation.



Debates Over Aggregate Supply

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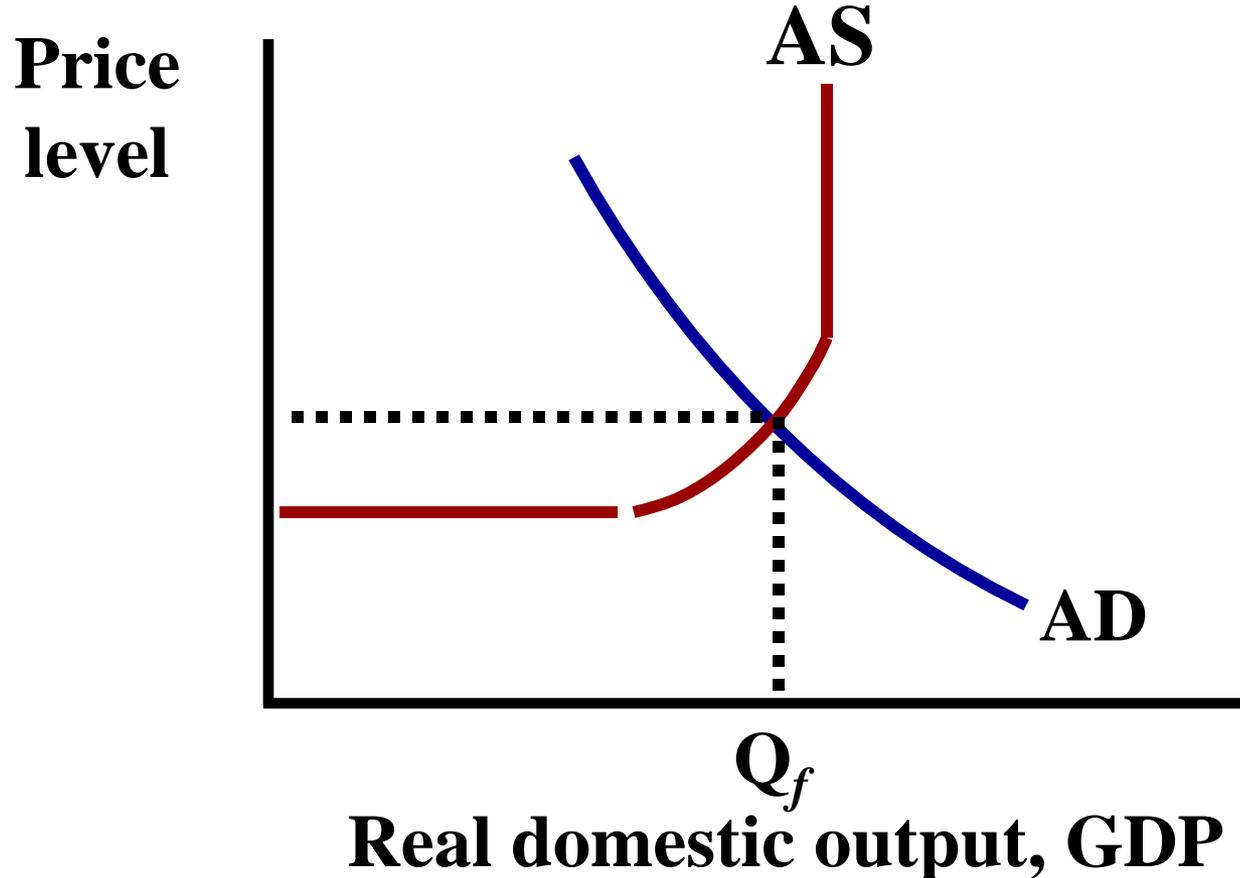
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Debates Over Aggregate Supply

Keynesian Theory

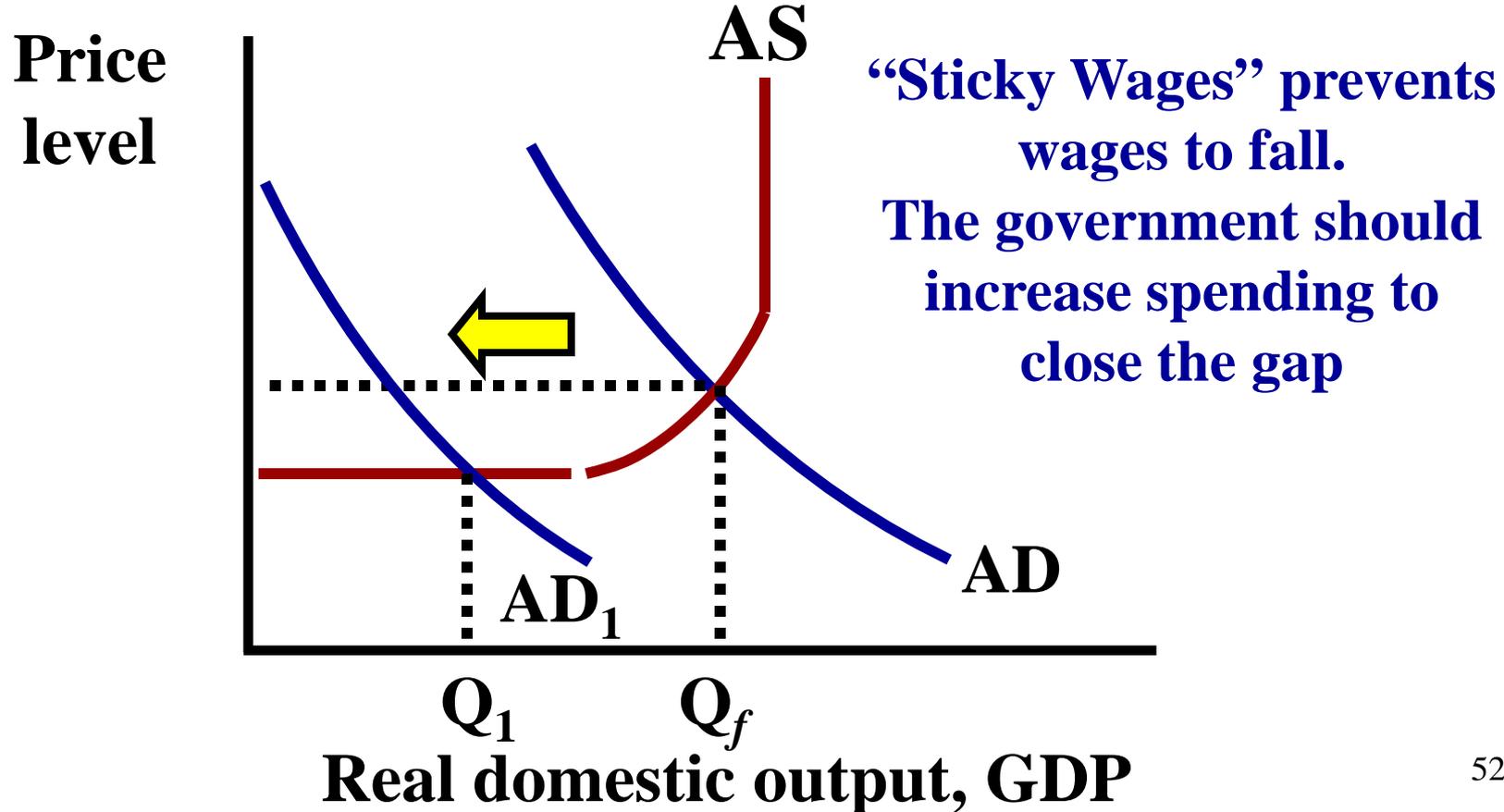
1. A decrease in AD will lead to a persistent recession because prices of resources (wages) are **NOT** flexible.
2. Increase in AD during a recession puts no pressure on prices



Debates Over Aggregate Supply

Keynesian Theory

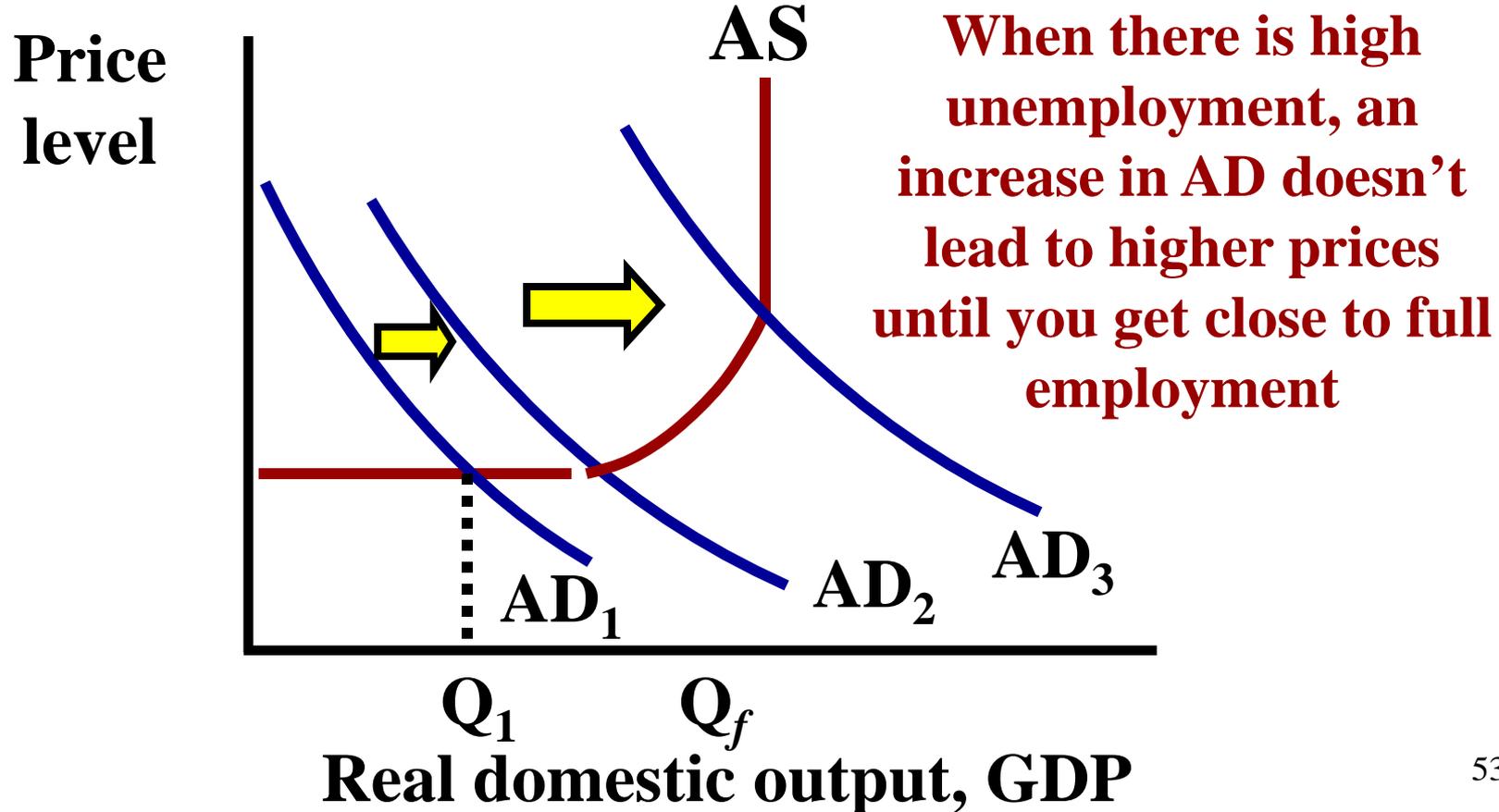
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Keynesian Theory

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Three Ranges of Aggregate Supply

1. **Keynesian Range- Horizontal at low output**
2. **Intermediate Range- Upward sloping**
3. **Classical Range- Vertical at Physical Capacity**

