Unit 3:
Aggregate Demand and Supply and Fiscal Policy

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 the US.

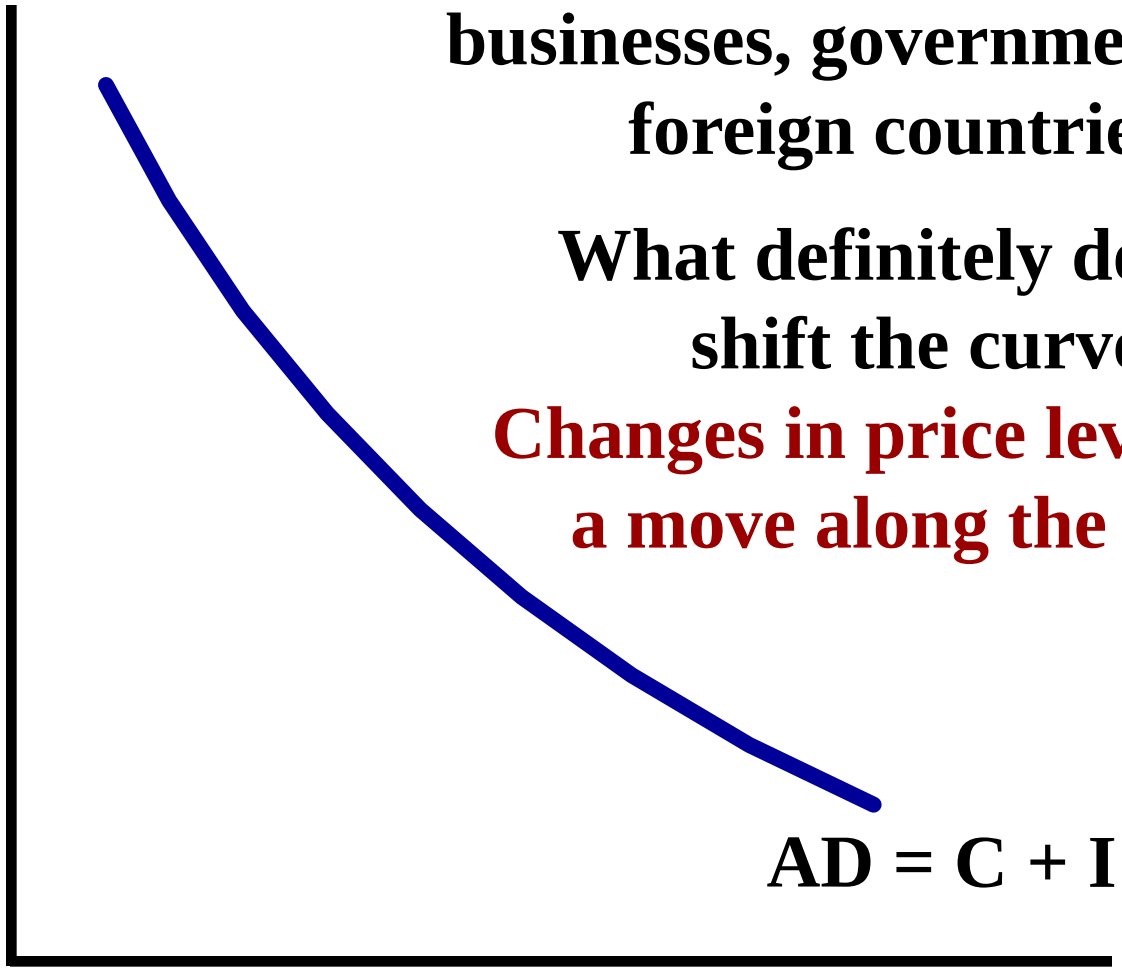
There is an inverse relationship between price level and Real GDP.

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

AD = C + I + G + Xn

Why is AD downward sloping?

1. Real-Balance 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:

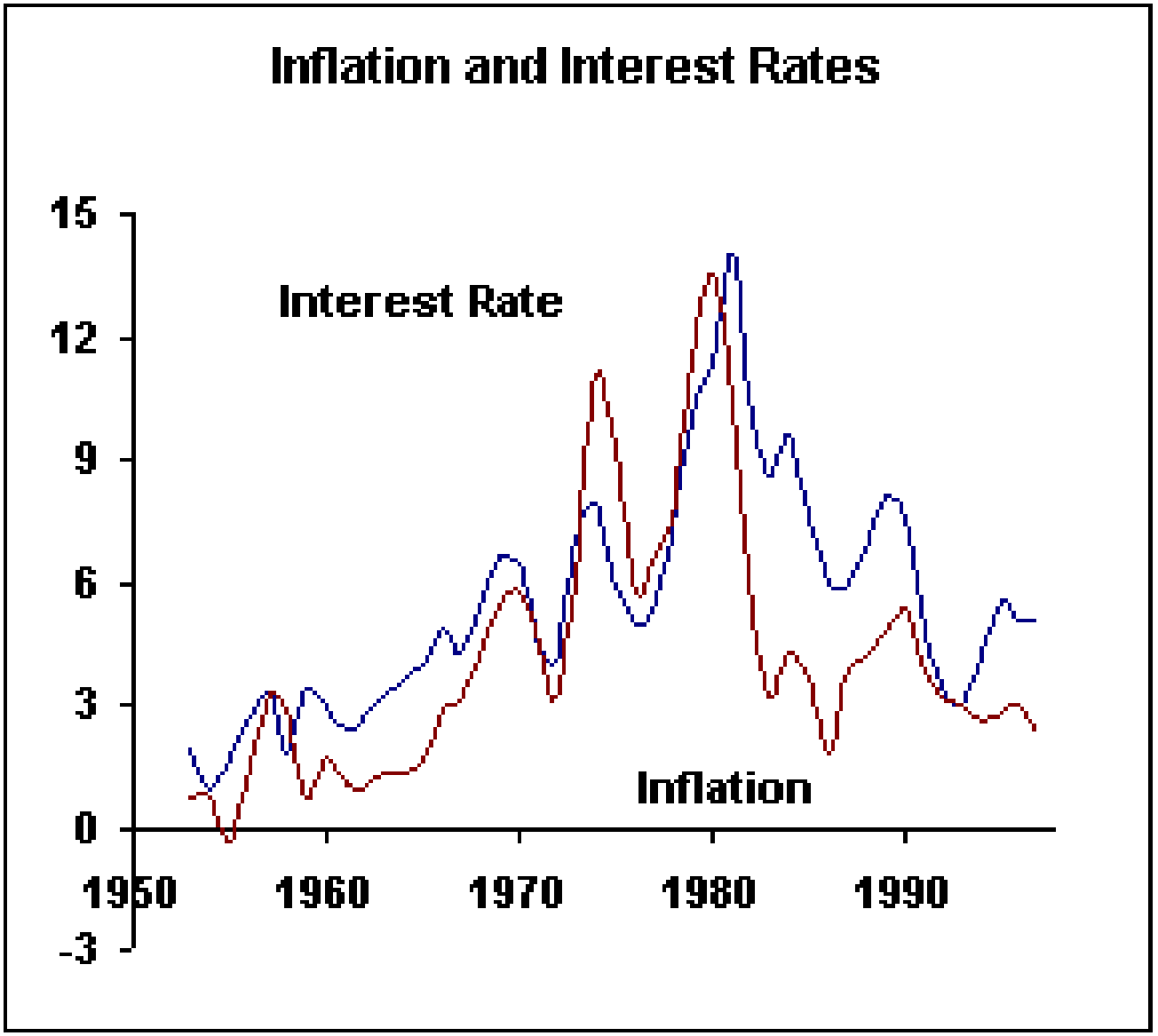
- **If the balance in your bank was $50,000, but inflation erodes your purchasing power, you will likely reduce your spending.**
- **So…Price Level goes up, GDP demanded goes down.**

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 consumer spending and business investment. WHY?**
- **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

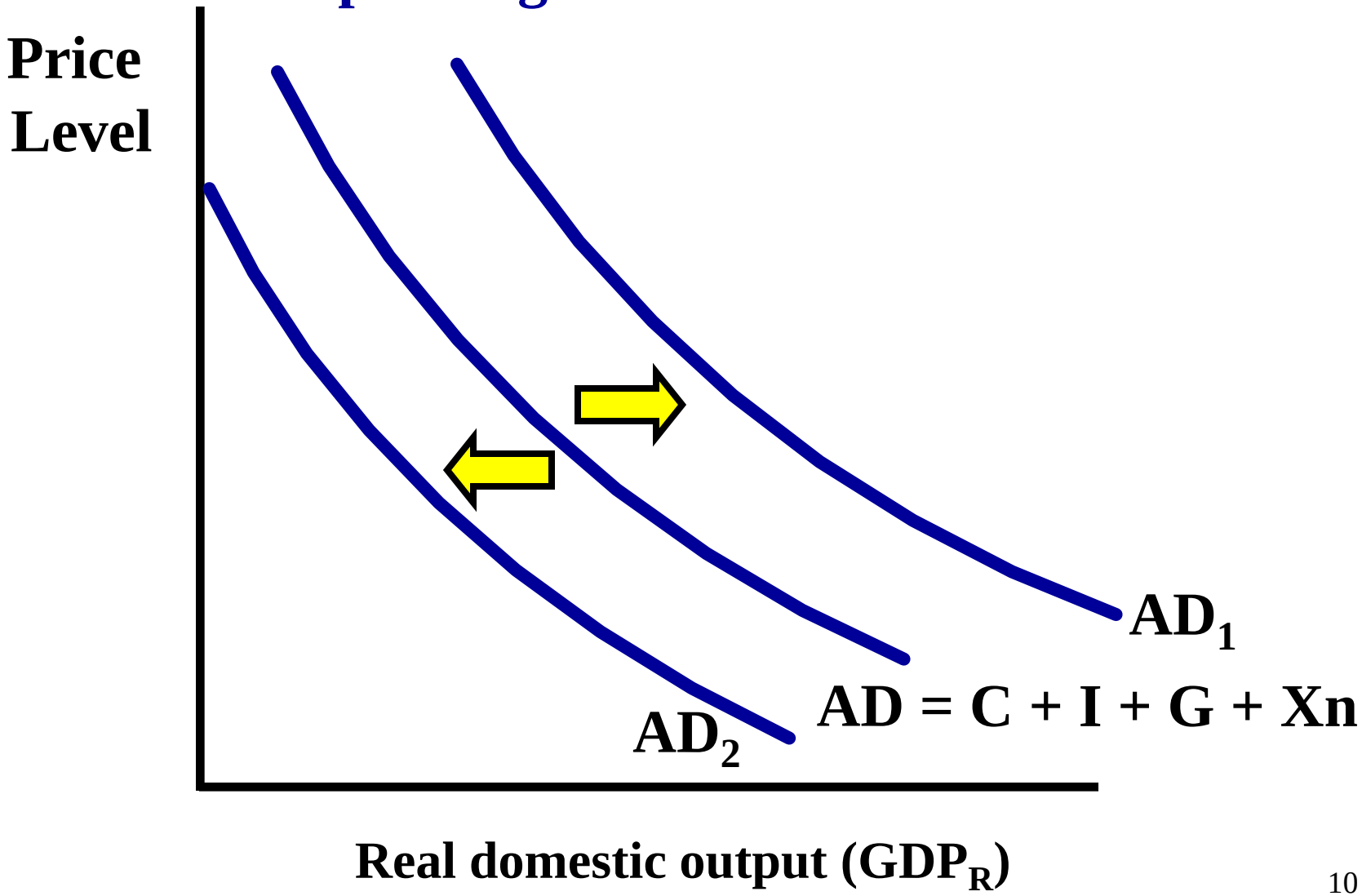
- When U.S. price level rises, foreign buyers purchase fewer U.S. goods and Americans buy more foreign goods
- Exports fall and imports rise causing real GDP demanded to fall. (X_N Decreases)
- Example: If prices triple in the US, Canada will no longer buy US goods causing quantity demanded of US products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

Shifters of Aggregate Demand

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

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…)

Business Taxes (Higher corporate taxes means…)

Shifters of Aggregate Demand

3. Change in Government Spending

(War…)

(Nationalized Heath Care…)

(Decrease in defense spending…)

4. Change in Net Exports (X-M)

Exchange Rates

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

National Income Compared to Abroad

(If a major importer has a recession…)

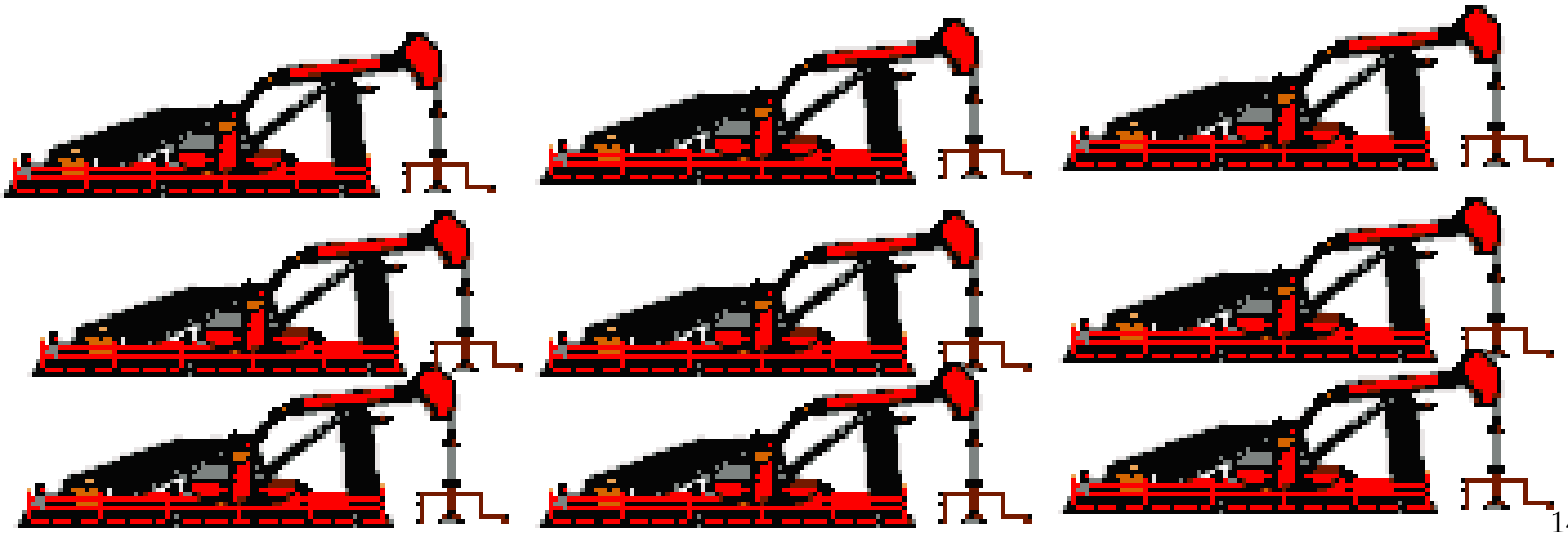
(If the US has a recession…)

"If the US get a cold, Canada gets Pneumonia"

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

Unit 3:
Aggregate Demand and Supply and Fiscal Policy

Aggregate Supply



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

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

Example:

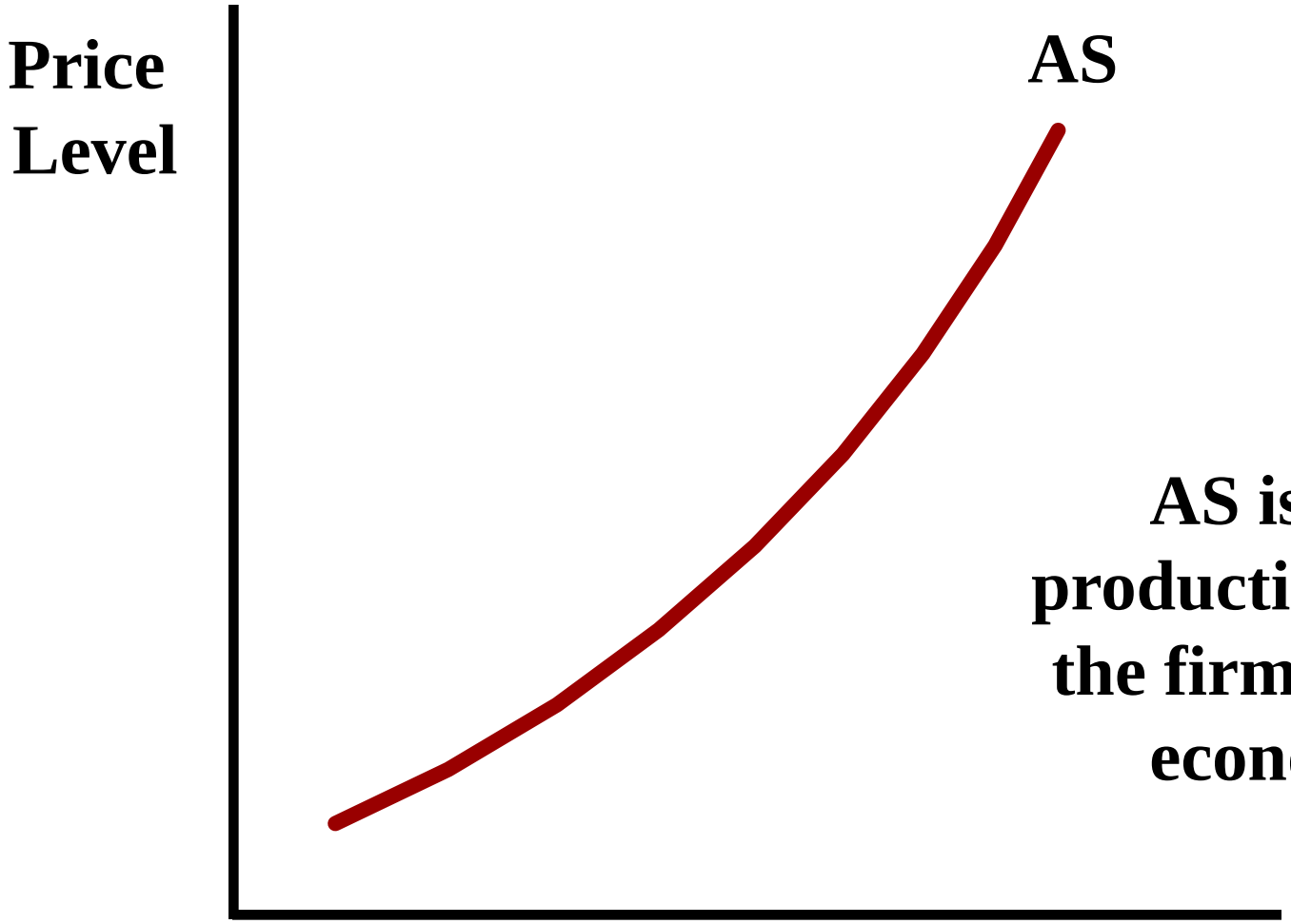
- **If a firm currently makes 100 units that are sold for $1 each. The only cost is $80 of labor.**
  How much is profit?
- **Profit = $100 - $80 = $20**

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



AS is the production of all the firms in the economy

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 an uses $80 of labor.**
- **Profit = $20.**

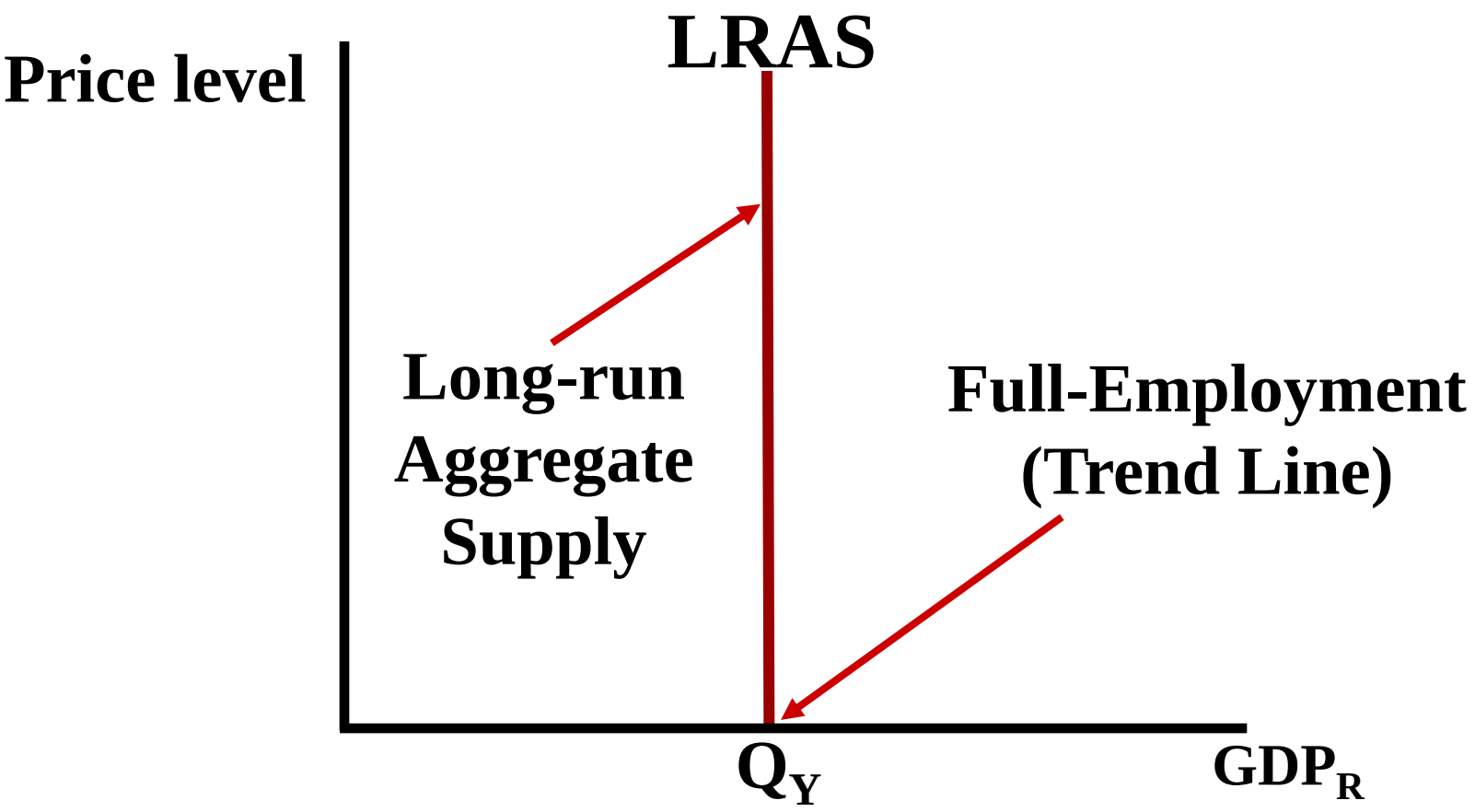
What happens in the LONG-RUN if price level doubles?

- **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



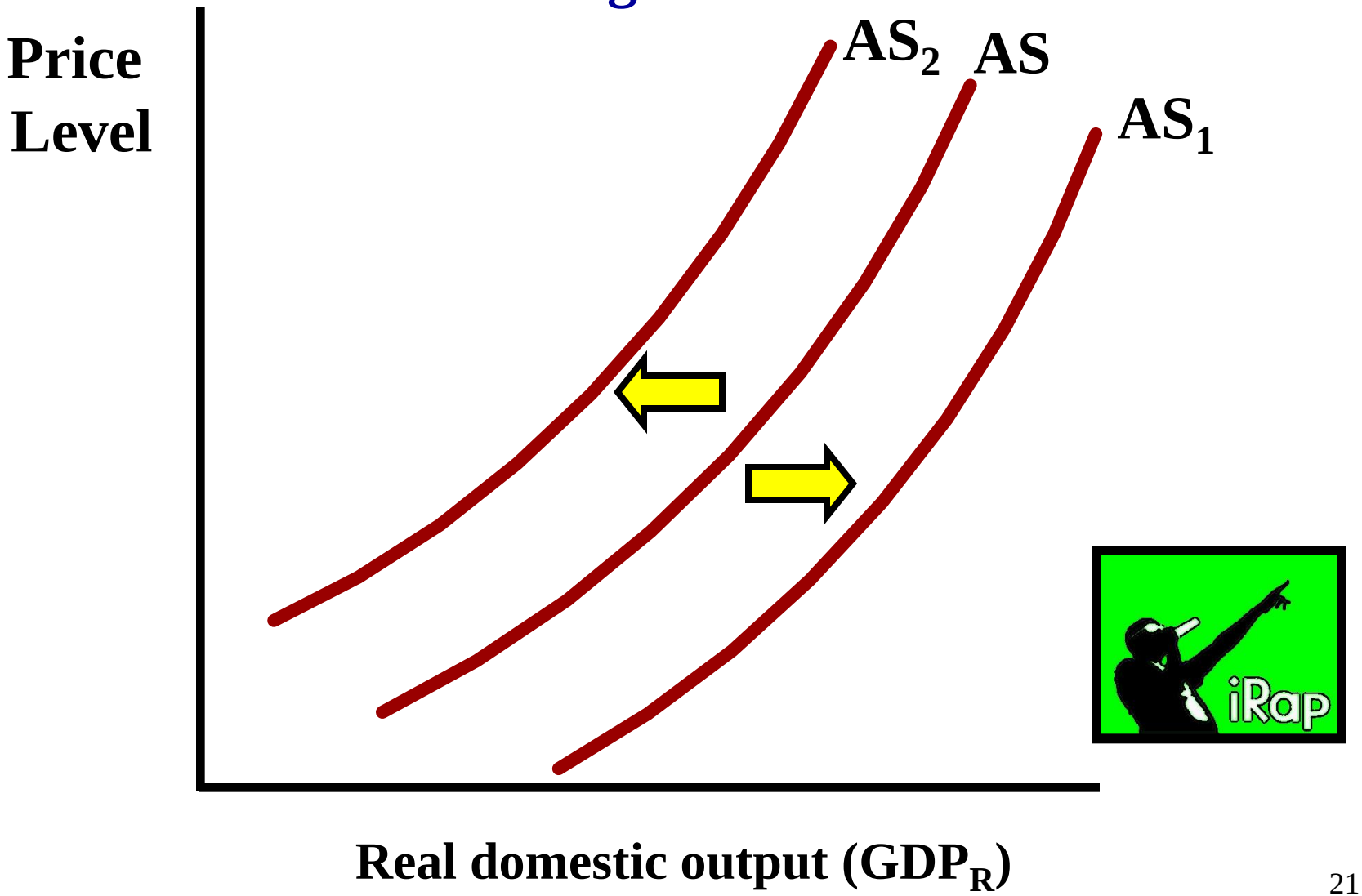
We also assume that in the long run the economy will be producing at full employment.

Shifters Aggregate Supply

I. R. A. P.

Shifts in Aggregate Supply

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



Shifters of Aggregate Supply

1. Change in Inflationary Expectations

If an increase in AD leads people to expect higher prices in the future. This increases labor and resource costs and decreases AS.

(If people expect lower prices…)

2. Change in Resource Prices

Prices of Domestic and Imported Resources

(Increase in price of Canadian lumber…)

(Decrease in price of Chinese steel…)

Supply Shocks

(Negative Supply shock…)

(Positive Supply shock…)

Shifters of Aggregate Supply

3. Change in Actions of the Government

(NOT Government Spending)

Taxes on Producers

(Lower corporate taxes…)

Subsides for Domestic Producers

(Lower subsidies for domestic farmers…)

Government Regulations

(EPA inspections required to operate a farm…)

4. Change in Productivity

Technology

(Computer virus that destroy half the computers…)

(The advent of a teleportation machine…)

Practice

Answer and identify shifter: C.I.G.X or R.A.P

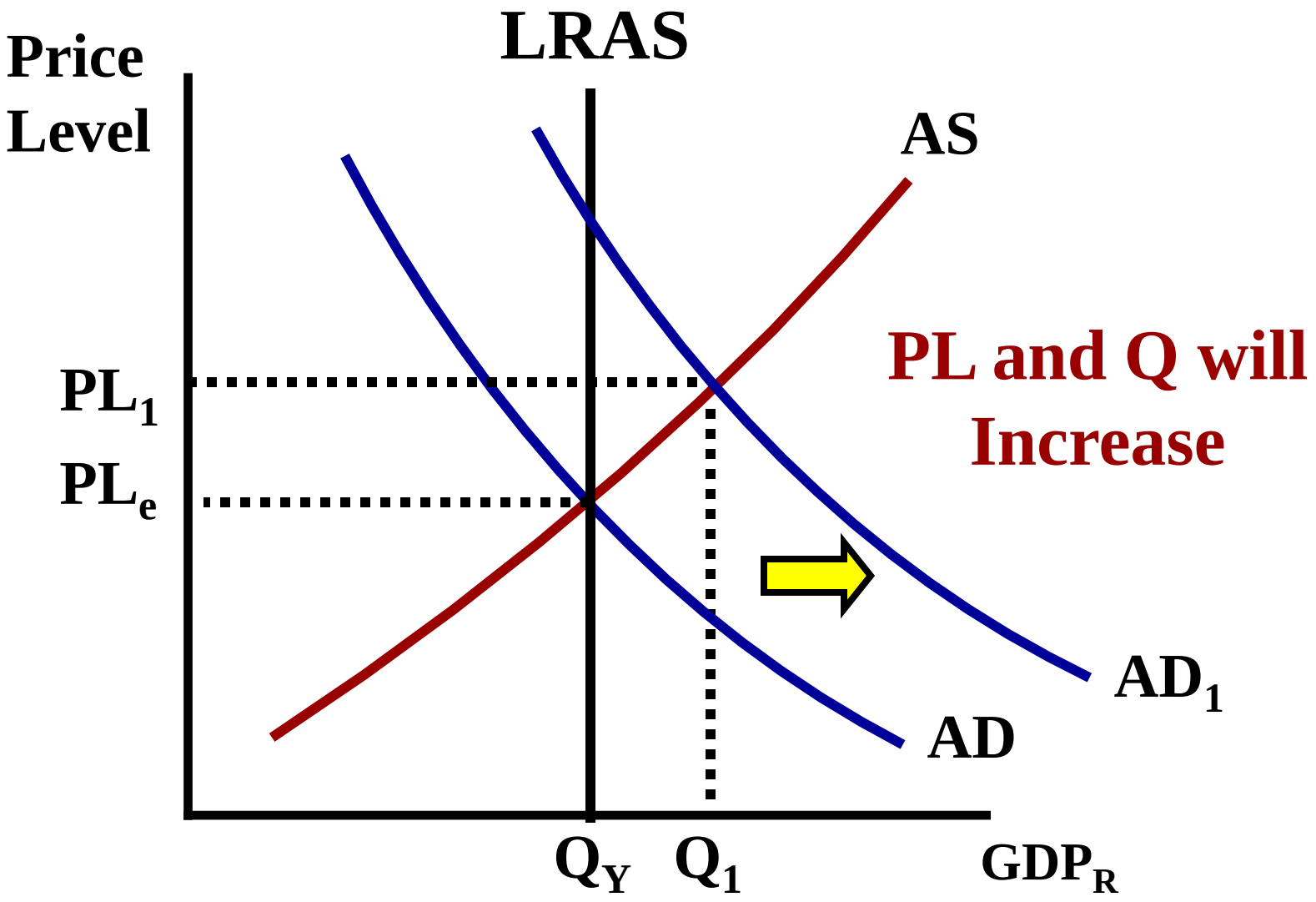
A. Incr in AD B. Decr in AD C. Incr in AS D. Decr in AS

B 1. A **decrease in consumer spending?**
A 2. The impact on net exports caused by **increases in the national incomes of our major trading partners?**
D 3. A **large increase in the price of imported oil** which impact the resource cost of businesses?
A 4. A **large increase in government** spending on our highway system?
D 5. A **substantial increase in wages** that businesses pay their workers?
B 6. The effect on investment if there are **negative business profit expectations?** ["We are heading into a recession."]
A 7. A **decrease in interest rates even though there is no change in price level?**
A 8. The **government picking up the tuition tab for all of the nation's private school students who have made a "90" or above in high school economics?**
C 9. A **major increase in productivity.**
A 10. The effects of **a 25% stock market increase over a two month period?**

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

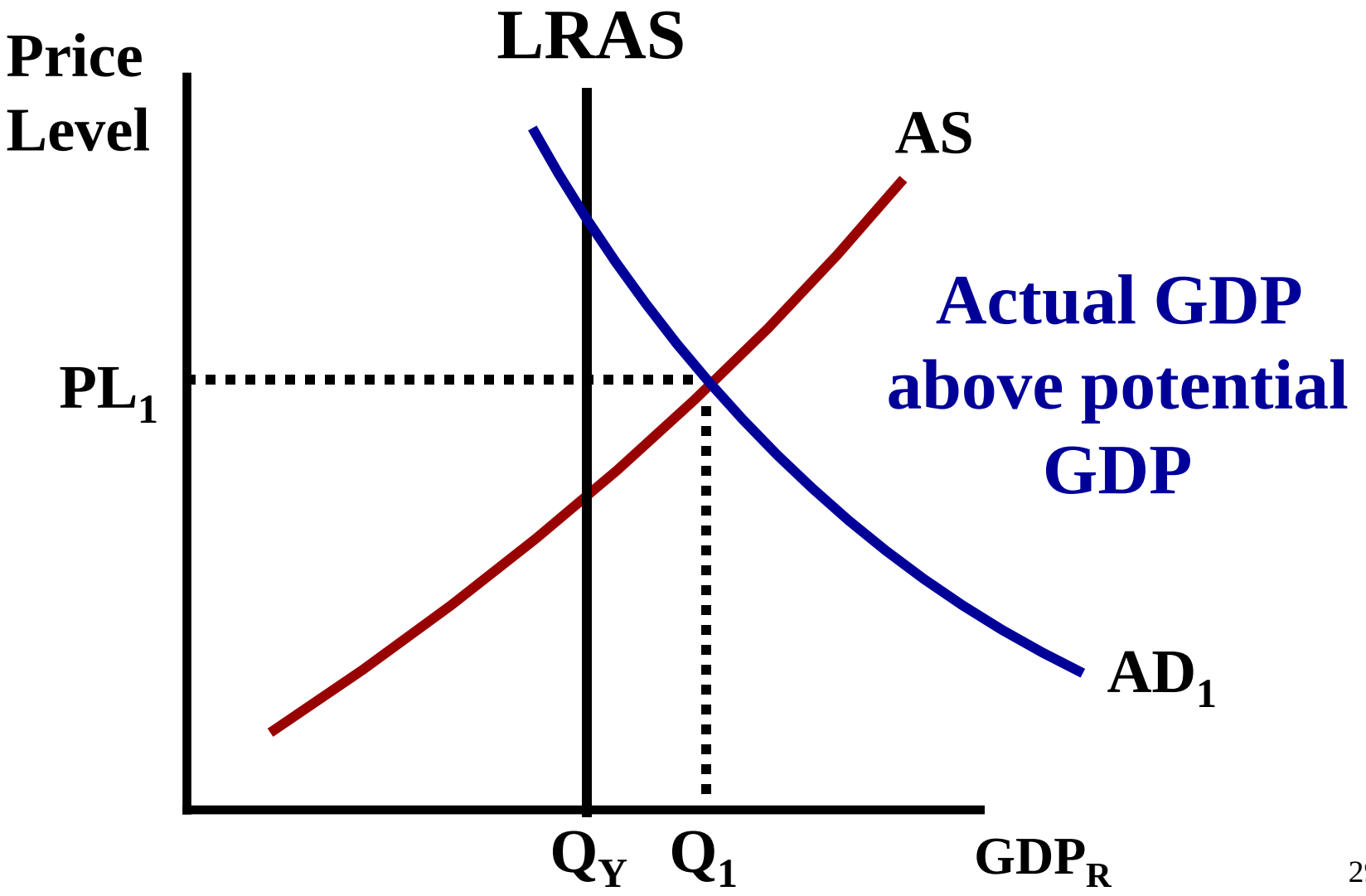
Inflationary and Recessionary Gaps

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

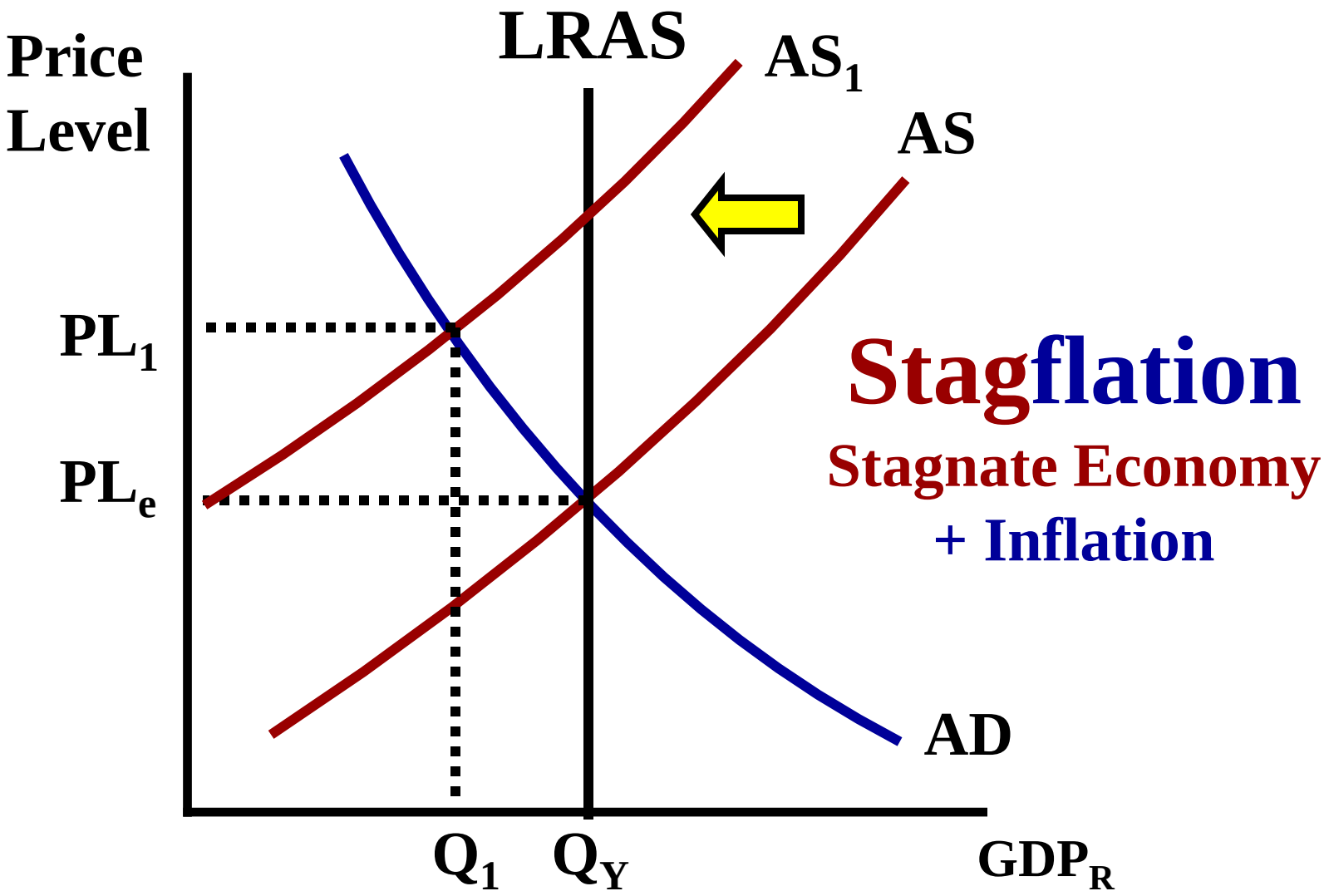


Inflationary Gap

Output is high and unemployment is less than NRU

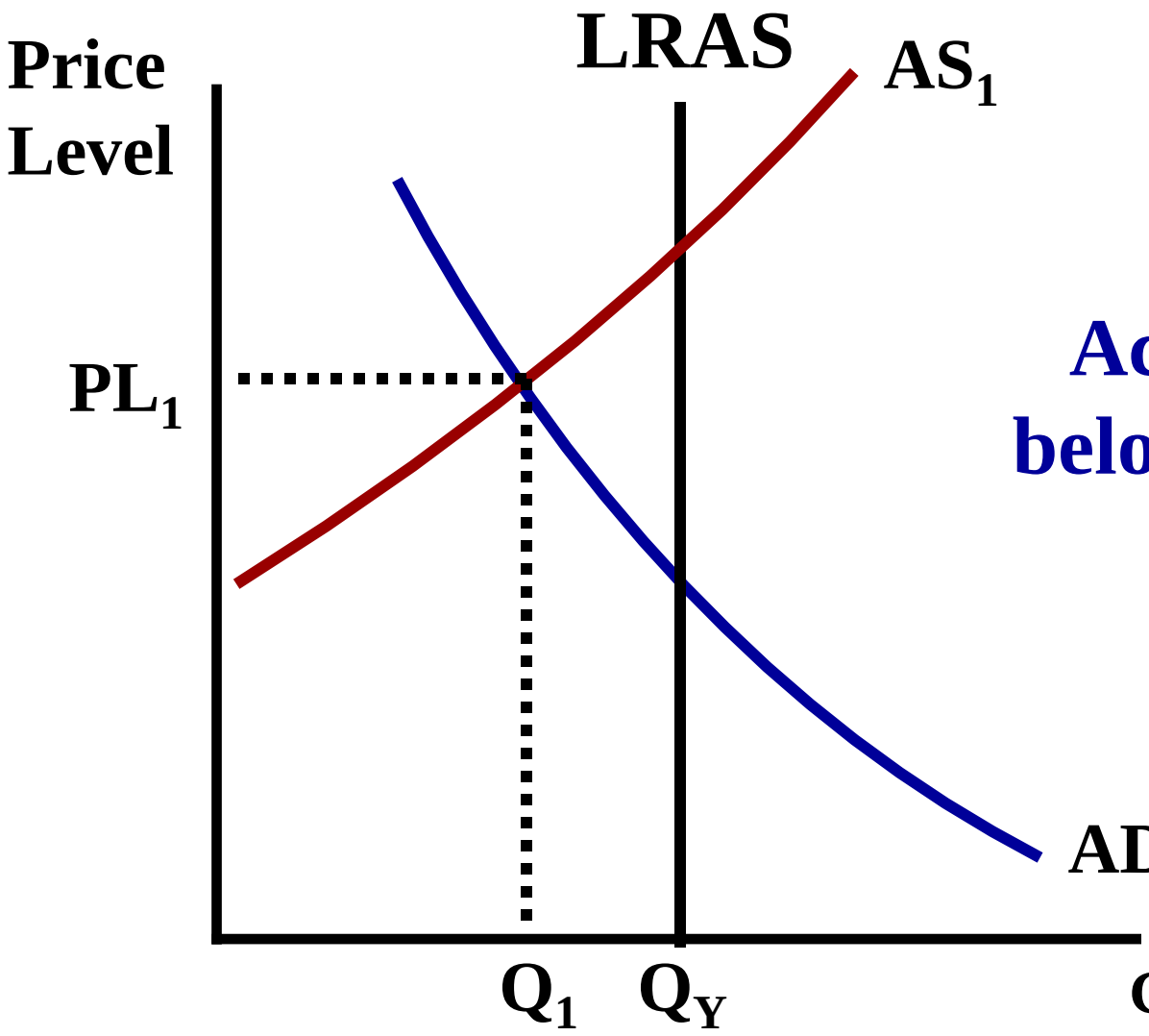


Example: Assume the price of oil increases drastically. What happens to PL and Output?



Recessionary Gap

Output low and unemployment is more than NRU



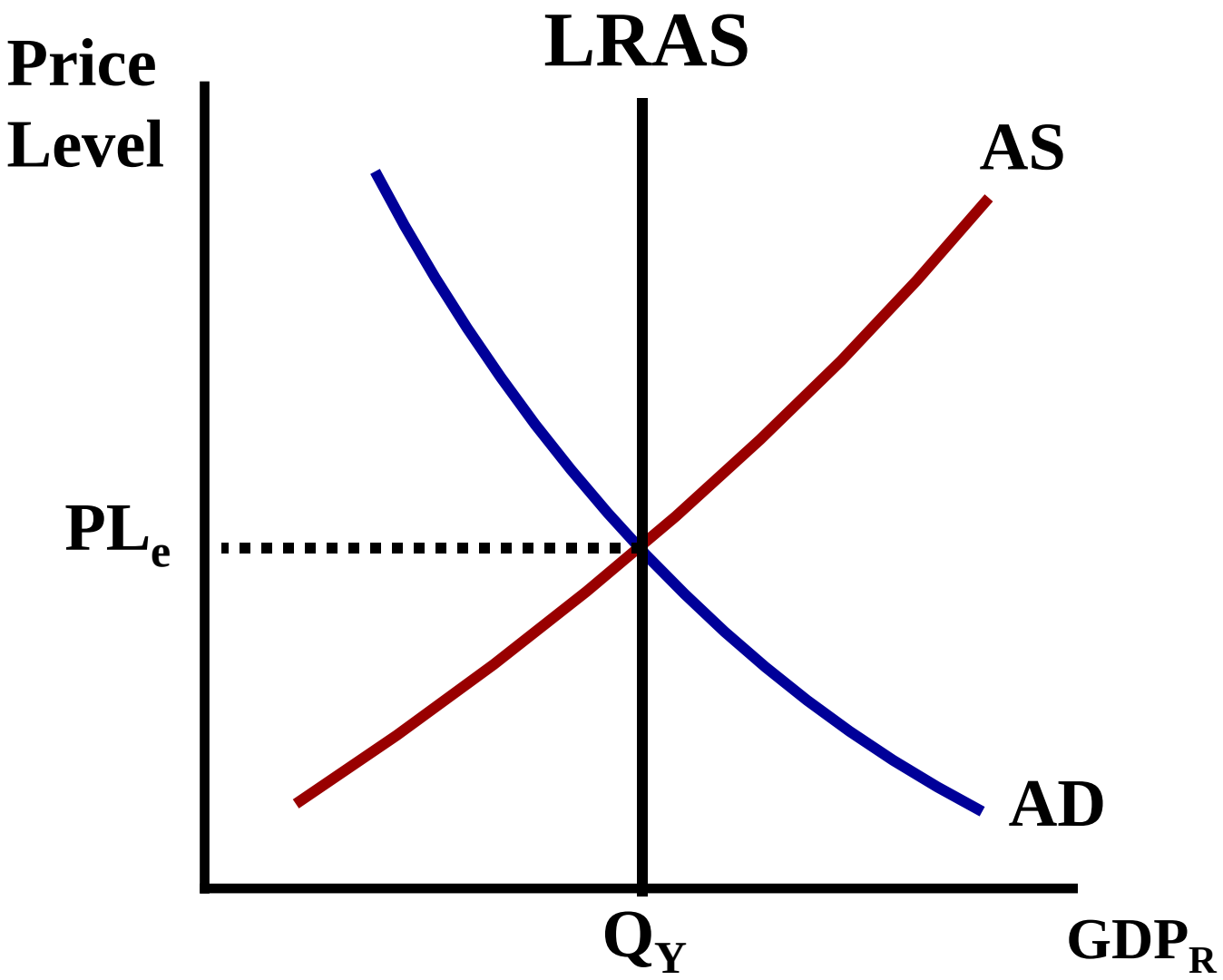
Actual GDP below potential GDP

AD and AS Practice Worksheet

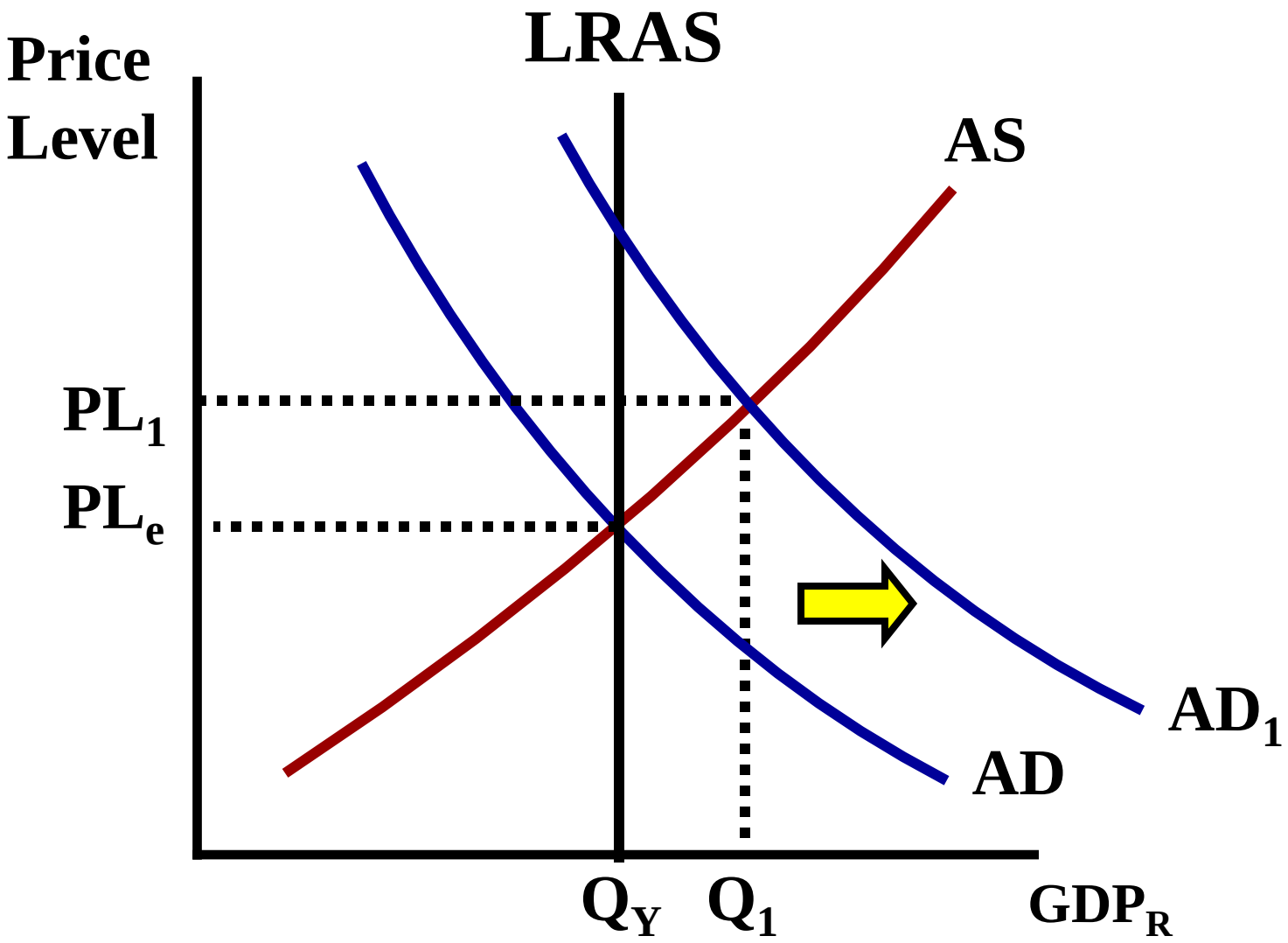
How does this cartoon relate to Aggregate Demand?

Short Run and Long Run

Shifts in AD or AS change the price level and output in the short run

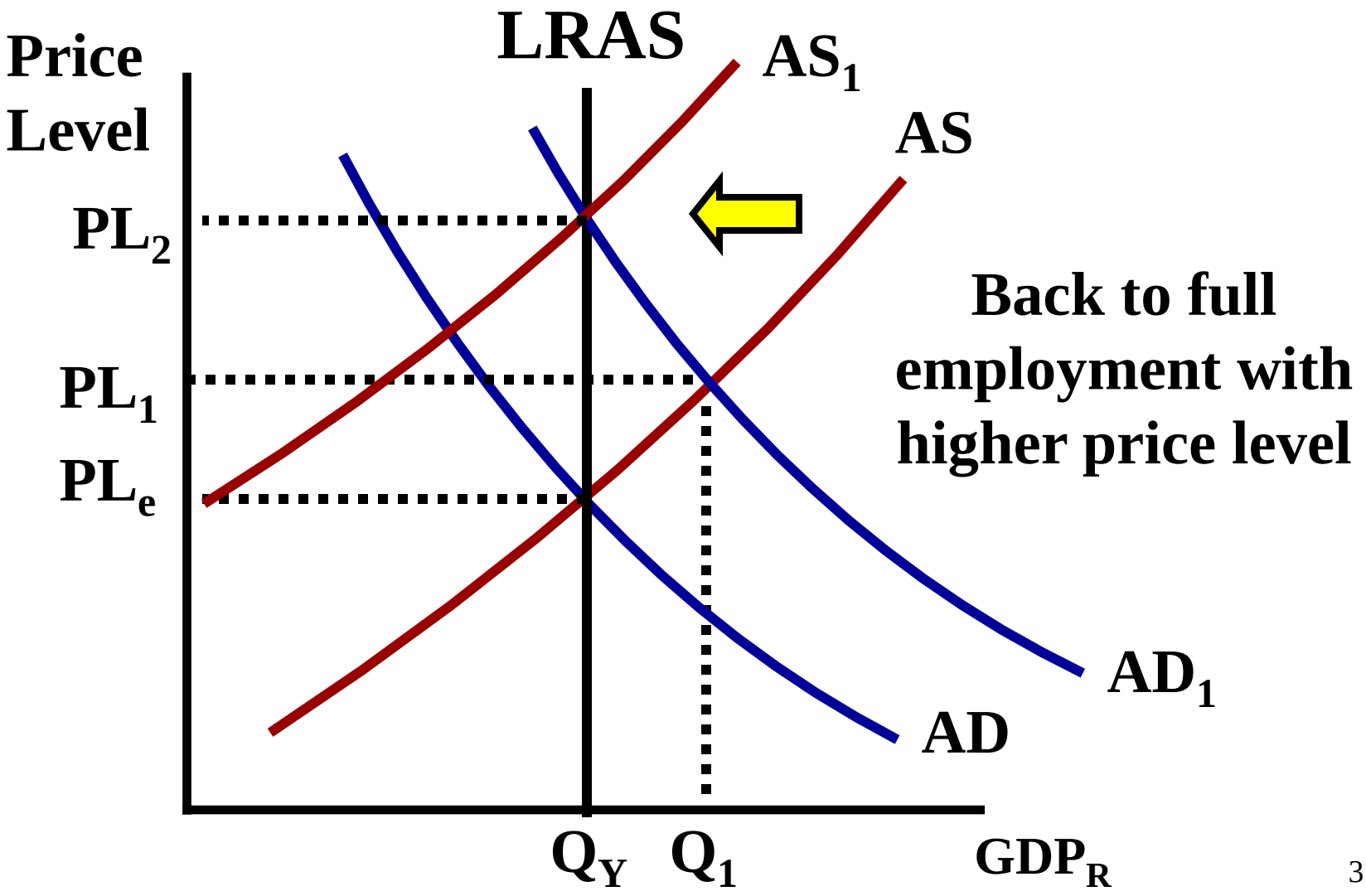


Example: Assume consumers increase spending. What happens to PL and Output?

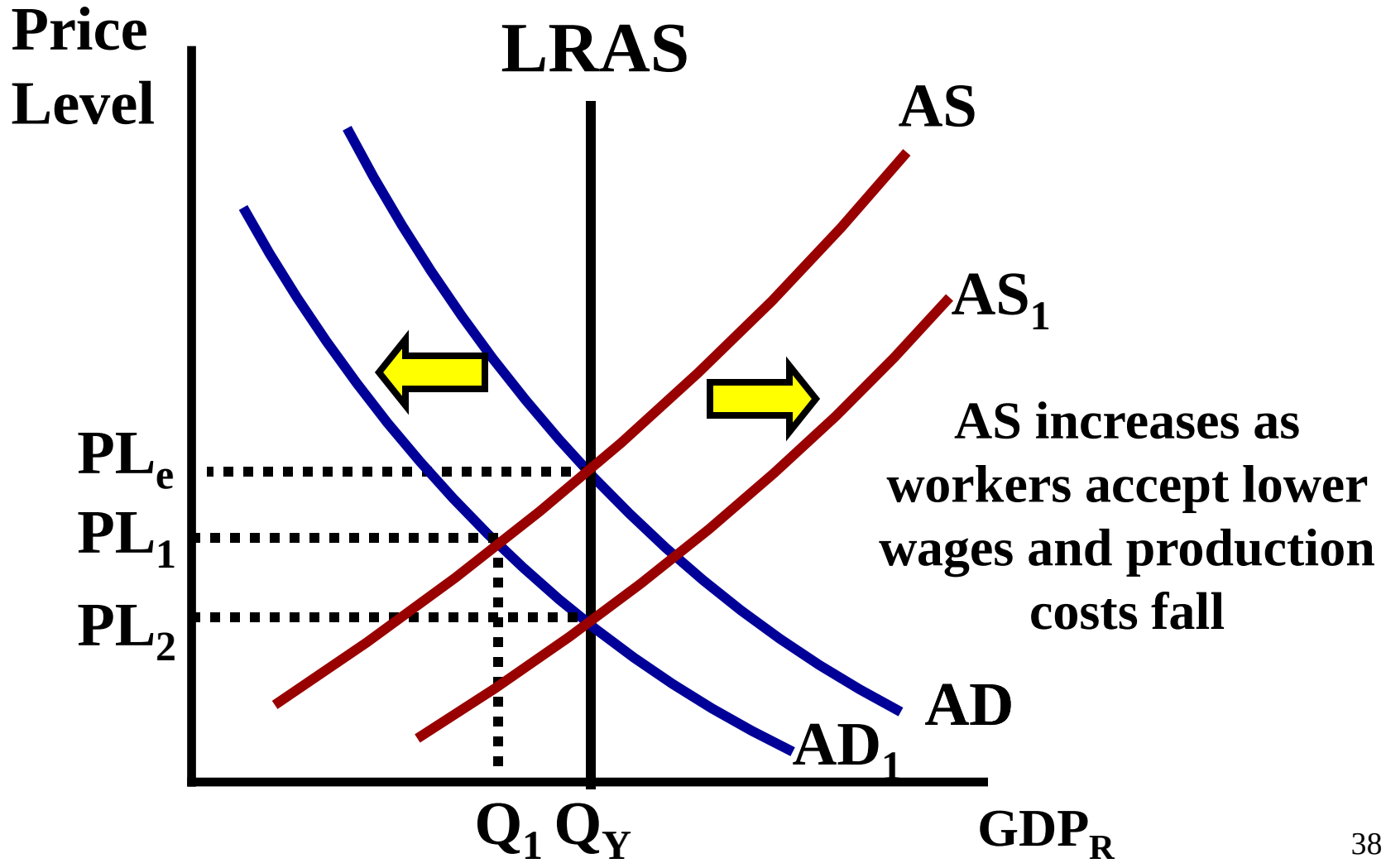


Now, what will happen in the LONG RUN?

Inflation means workers seek higher wages and production costs increase



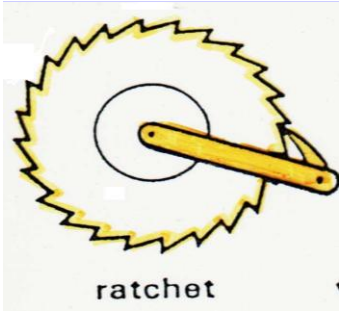
Example: Consumer expectations fall and consumer spending plummets. What happens to PL and Output in the Short Run and Long Run?



Does deflation (falling prices) often occur? Not as often as inflation. Why?

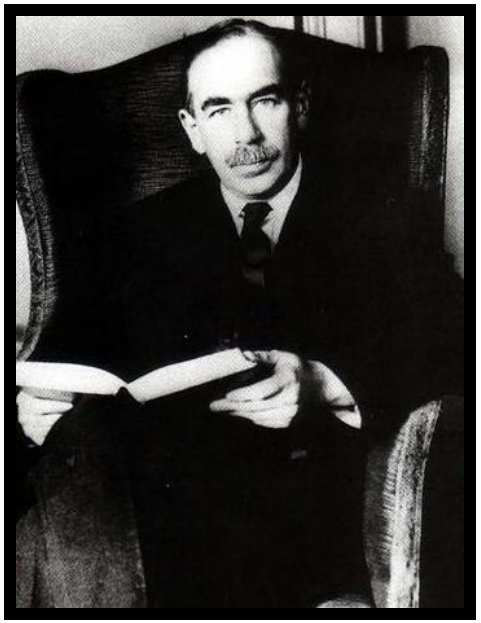
- **If prices were to fall, the cost of resources must fall or firms would go out of business.**
- **The cost of resources (especially labor) rarely fall because:**
  - **Labor Contracts (Unions)**
  - **Wage decrease results in poor worker morale.**
  - **Firms must pay to change prices (ex: re-pricing items in inventory, advertising new prices to consumers, etc.)**

Like a ratchet, prices can easily move up but not down!



Adam Smith
1723-1790

Classical vs. Keynesian

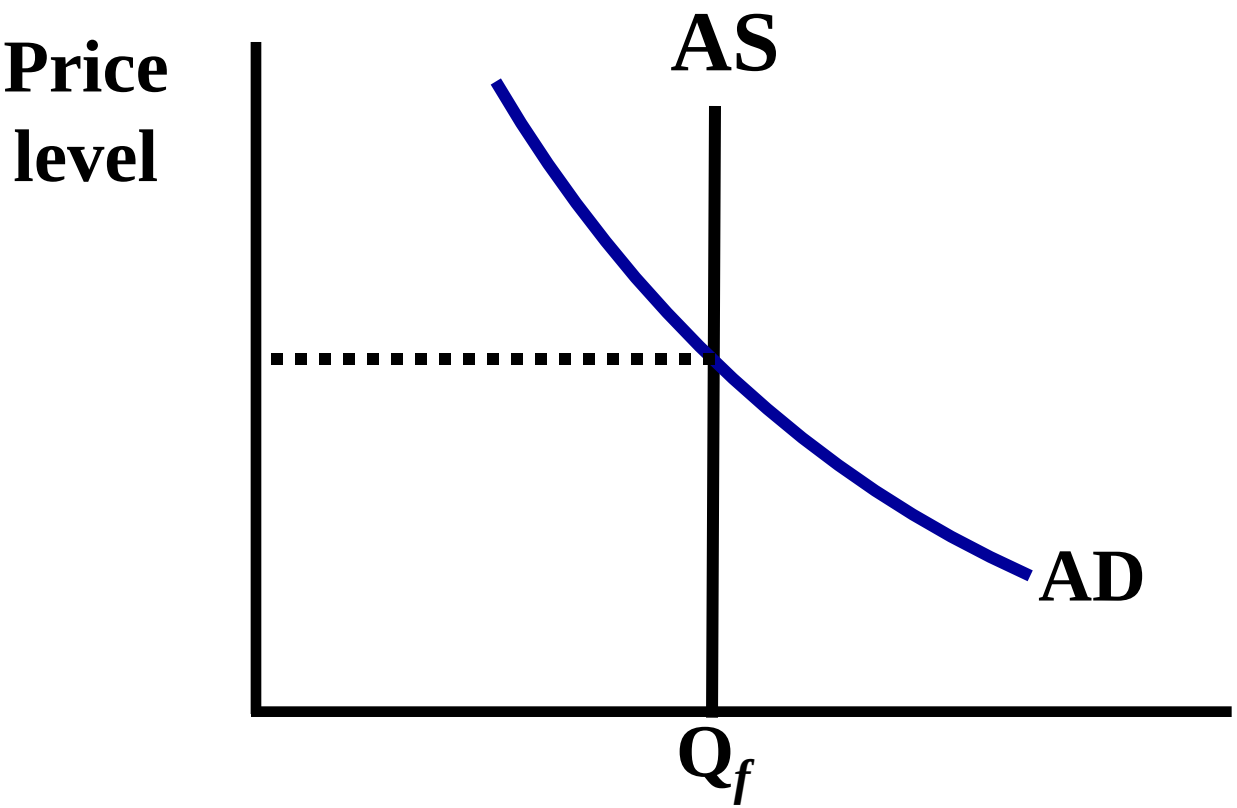


John Maynard Keynes
1883-1946

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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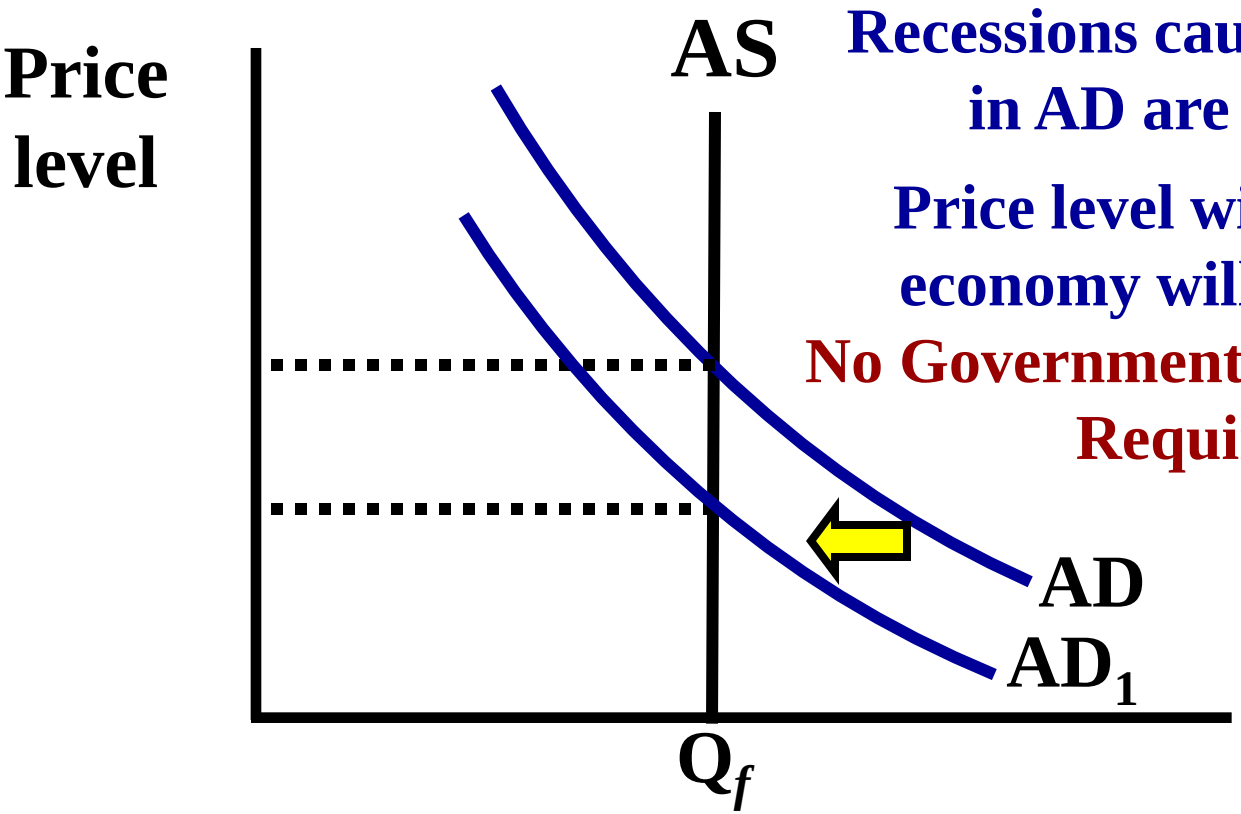


Recessions caused by a fall in AD are temporary.

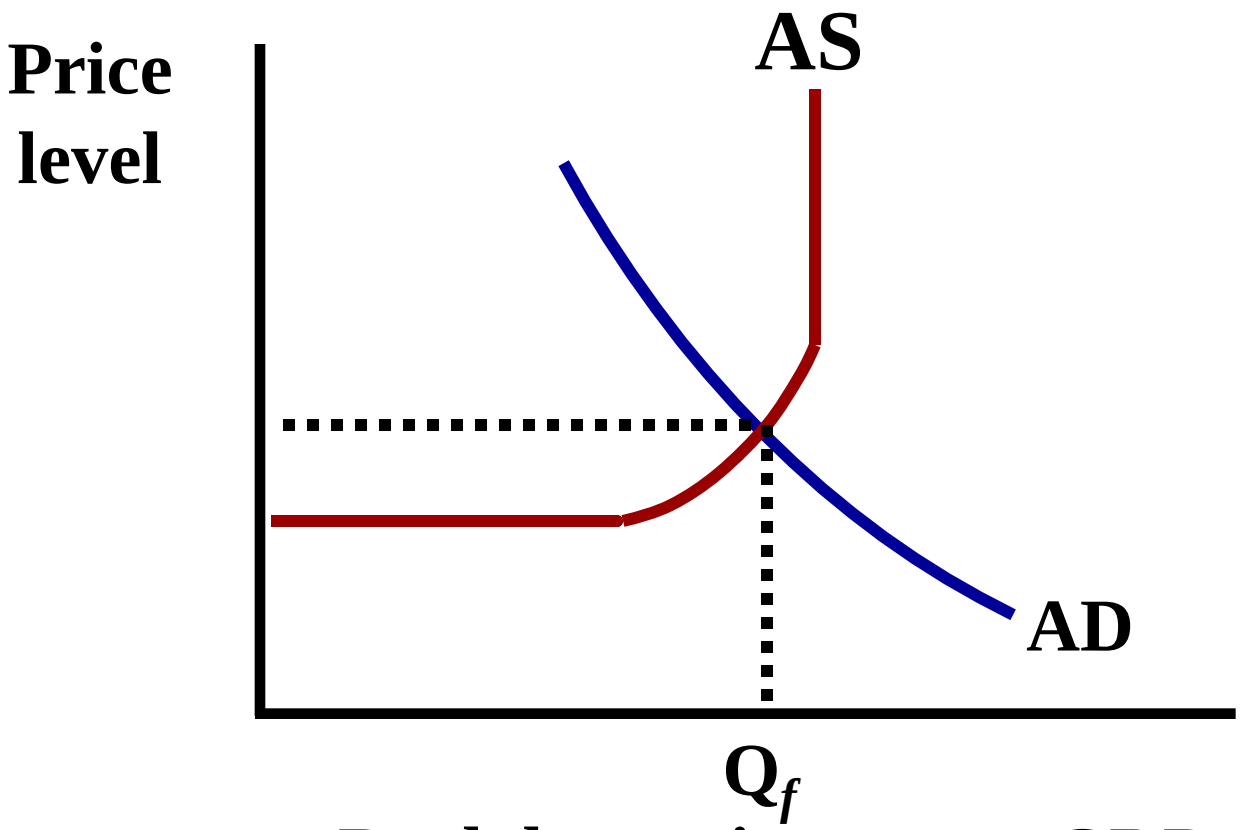
Price level will fall and economy will fix itself.

No Government Involvement Required

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

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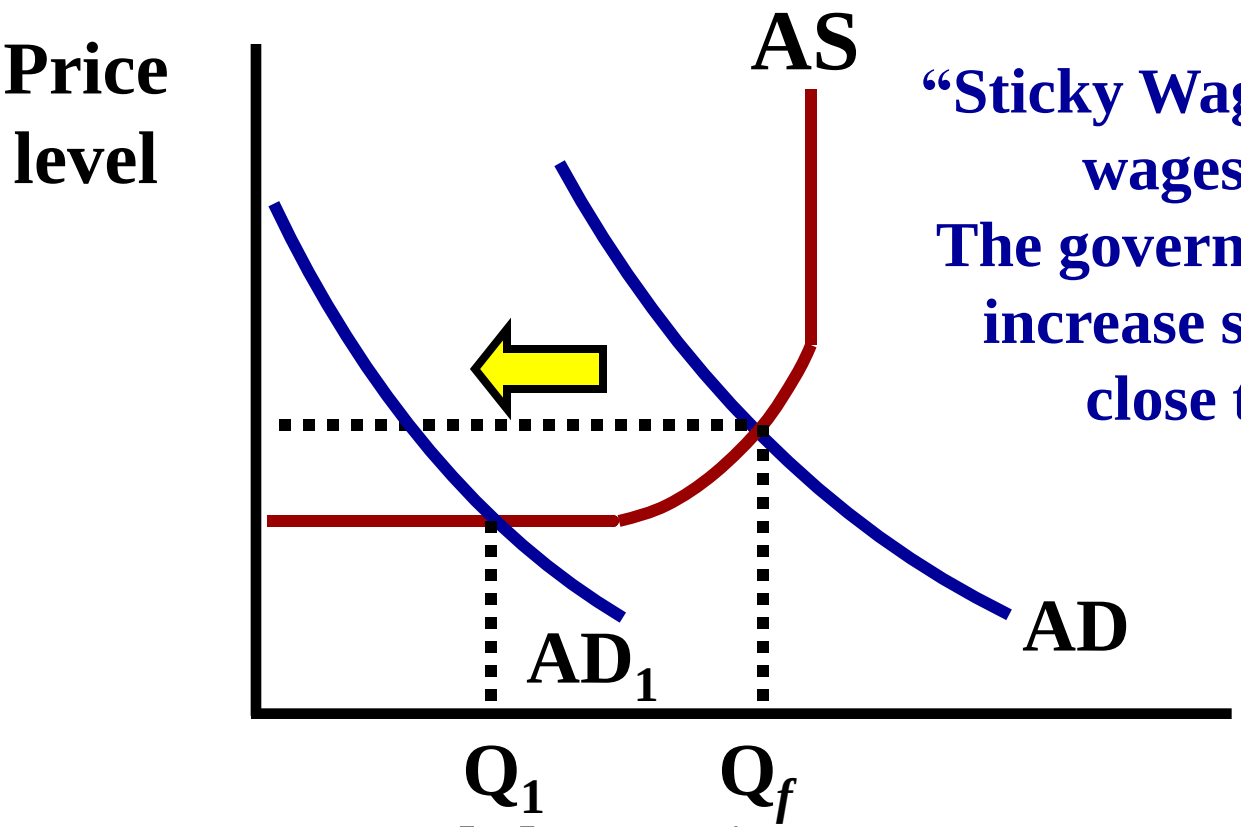

"Sticky Wages" prevents wages to fall.
The government should increase spending to close the gap

Debates Over Aggregate Supply

Keynesian Theory

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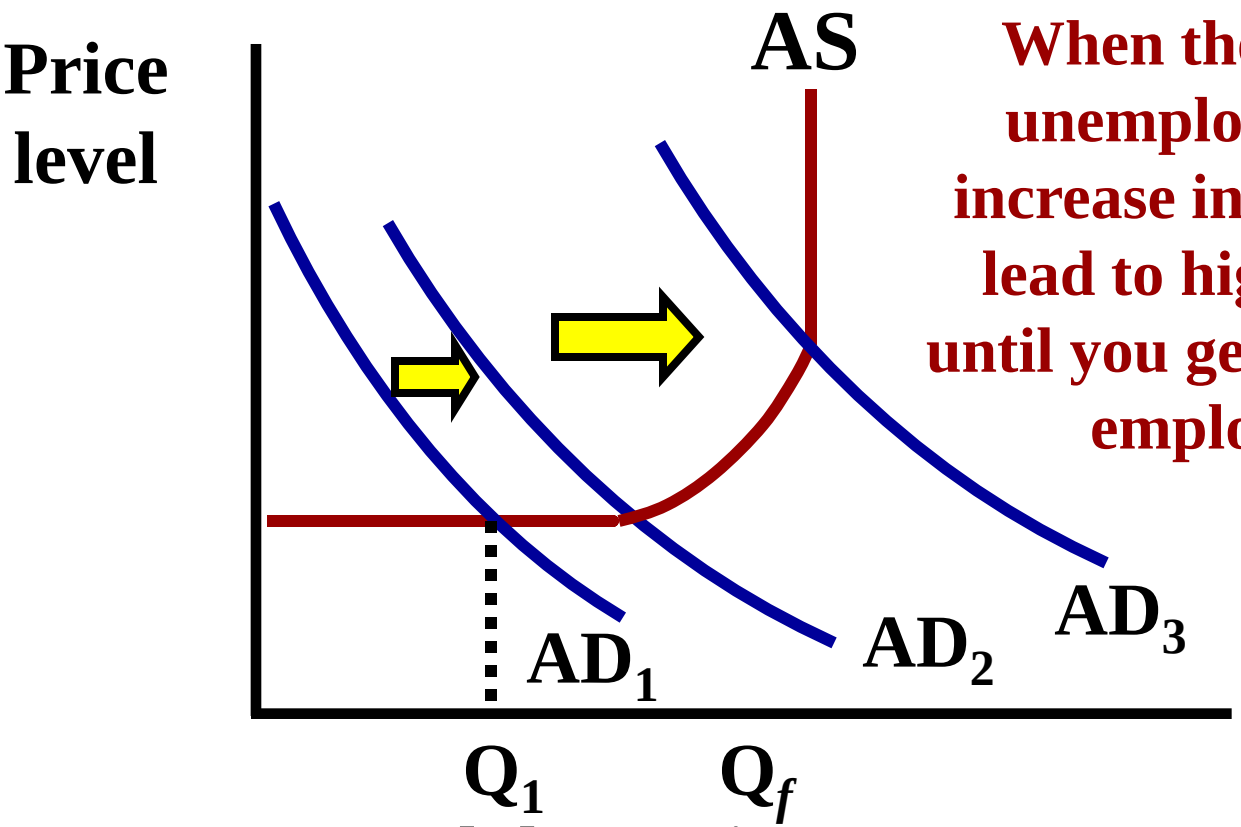
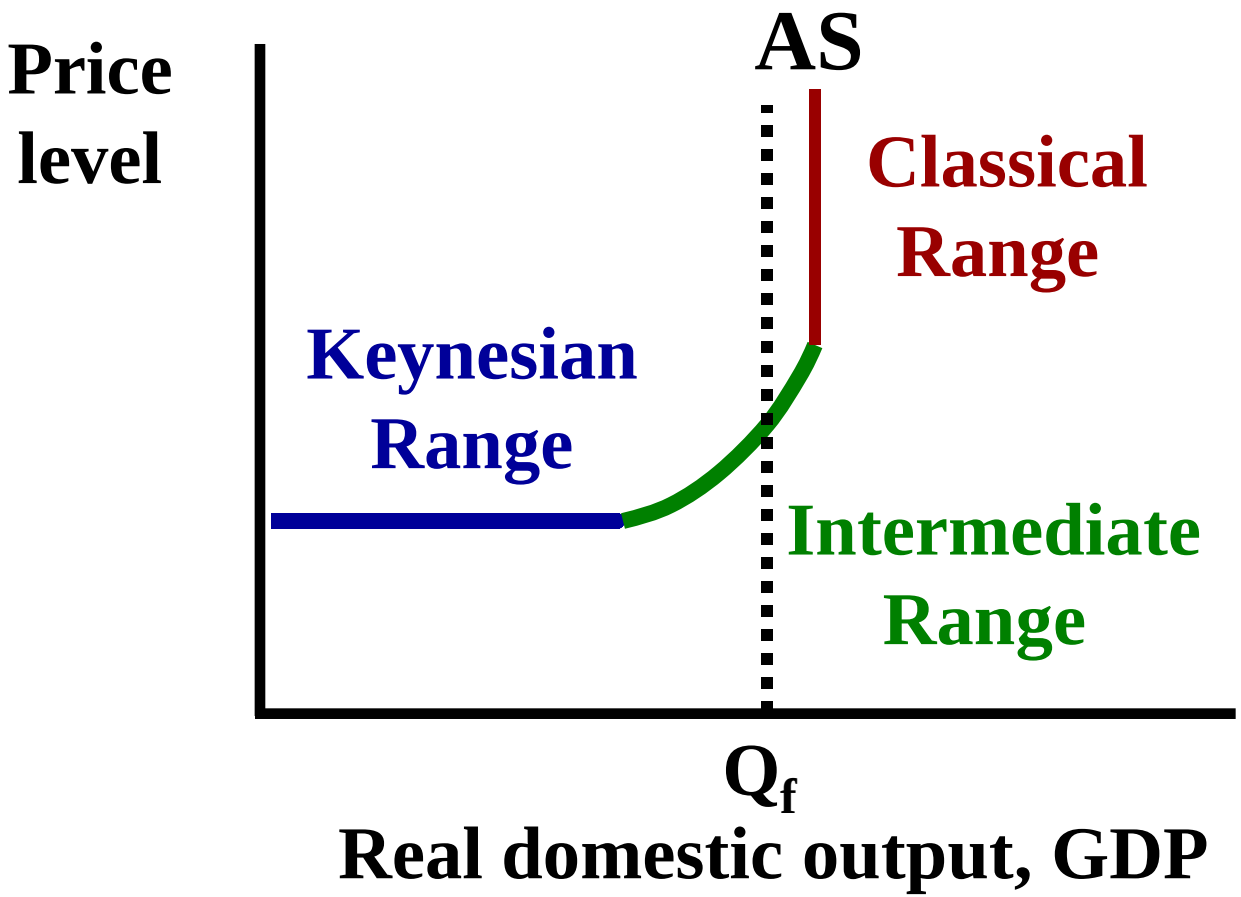


When there is high unemployment, an increase in AD doesn't lead to higher prices until you get close to full employment

Three Ranges of Aggregate Supply

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

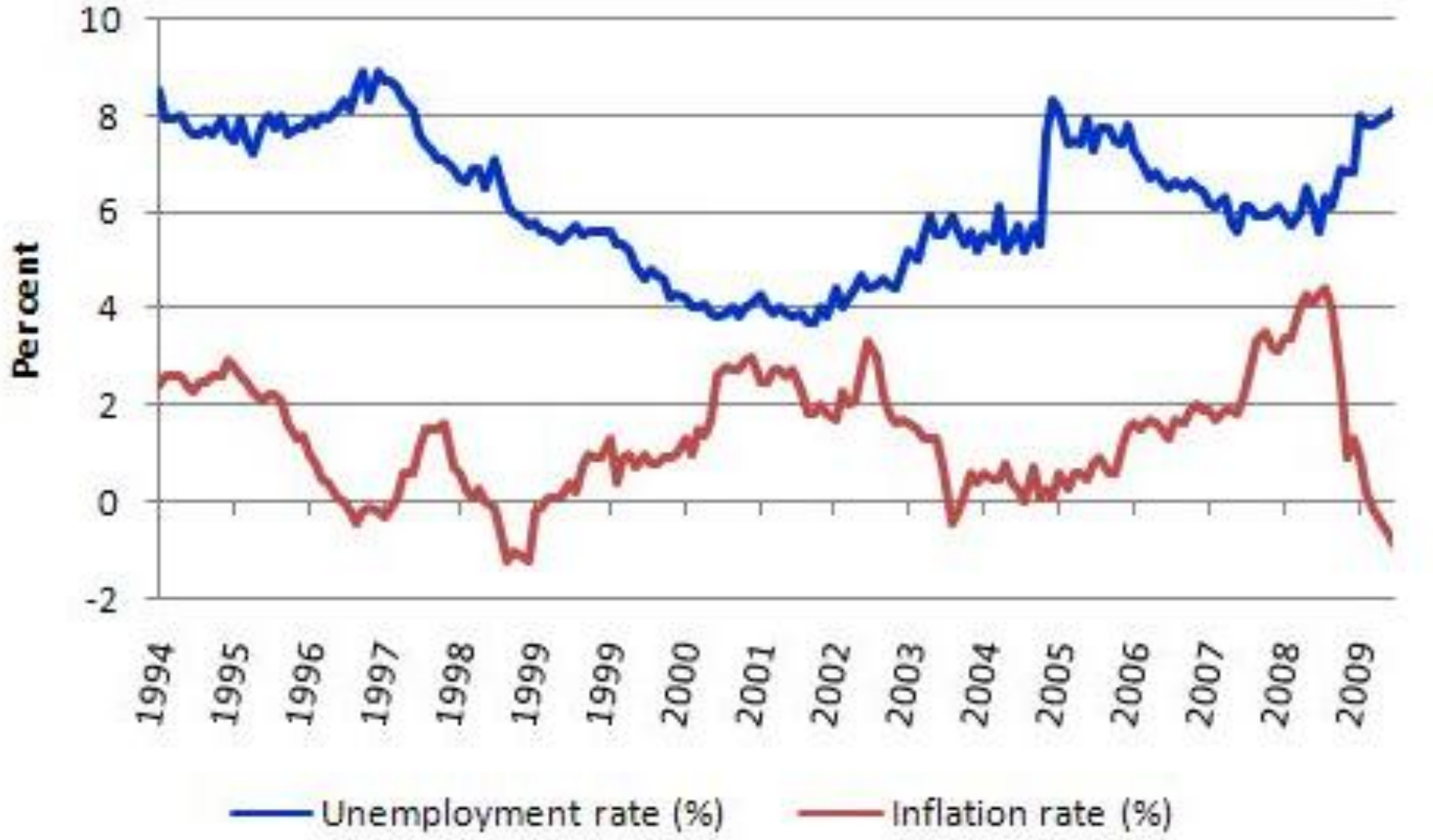


The Phillips Curve

Shows tradeoff between inflation and unemployment.

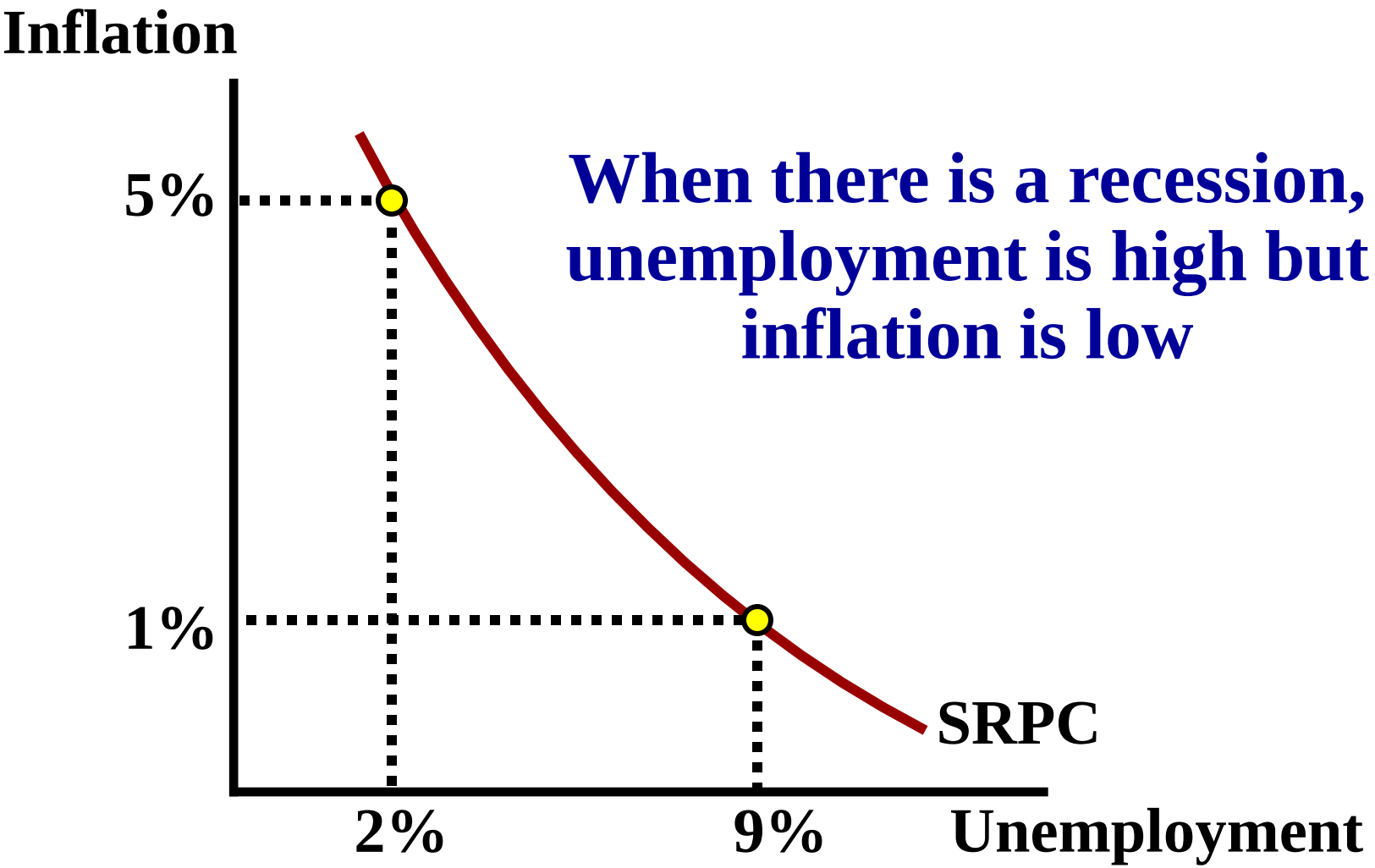
What happens to inflation and unemployment when AD increase?

In general, there is an inverse relationship between unemployment and inflation



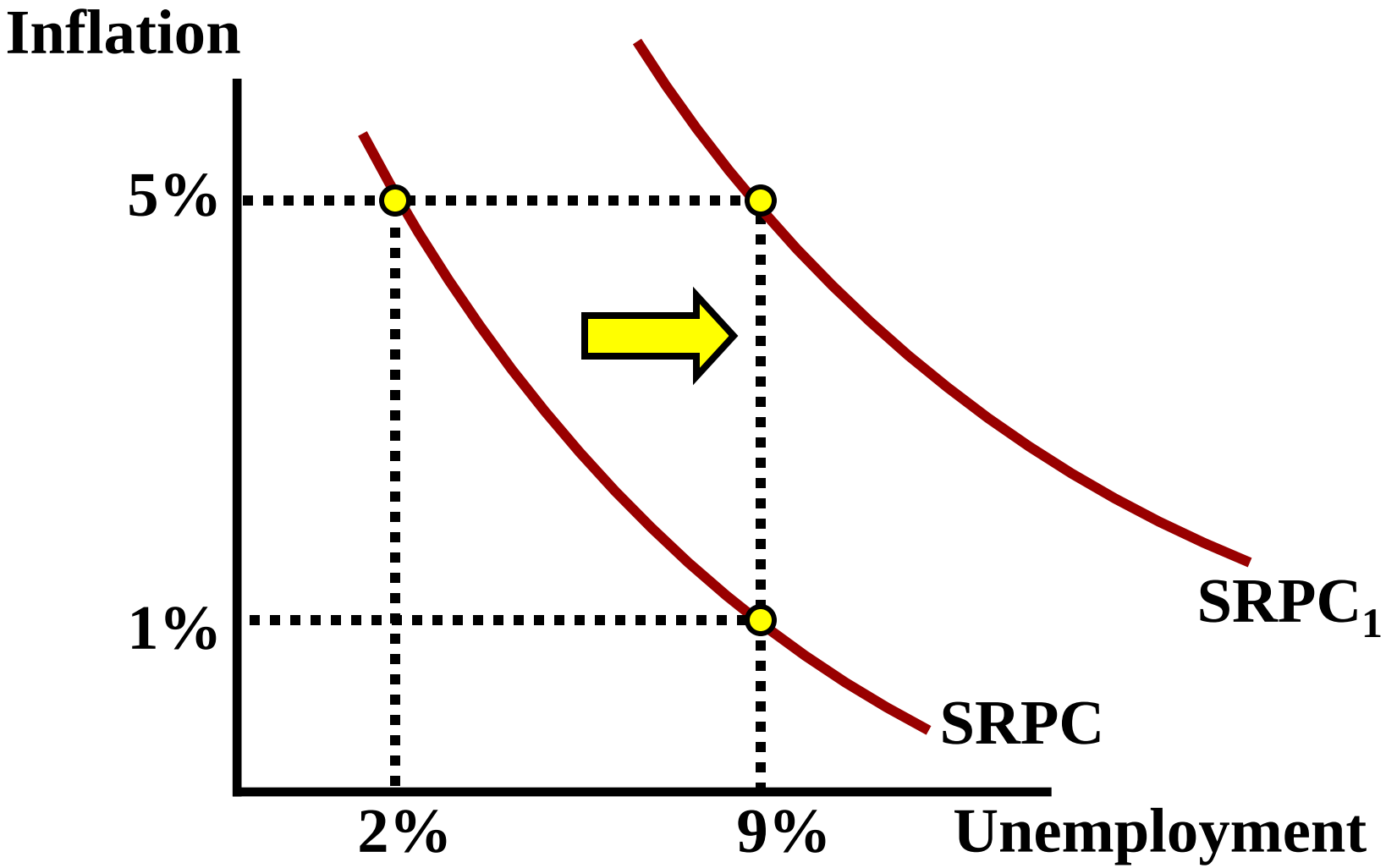
Short Run Phillips Curve

When the economy is overheating, there is low unemployment but high inflation



Short Run Phillips Curve

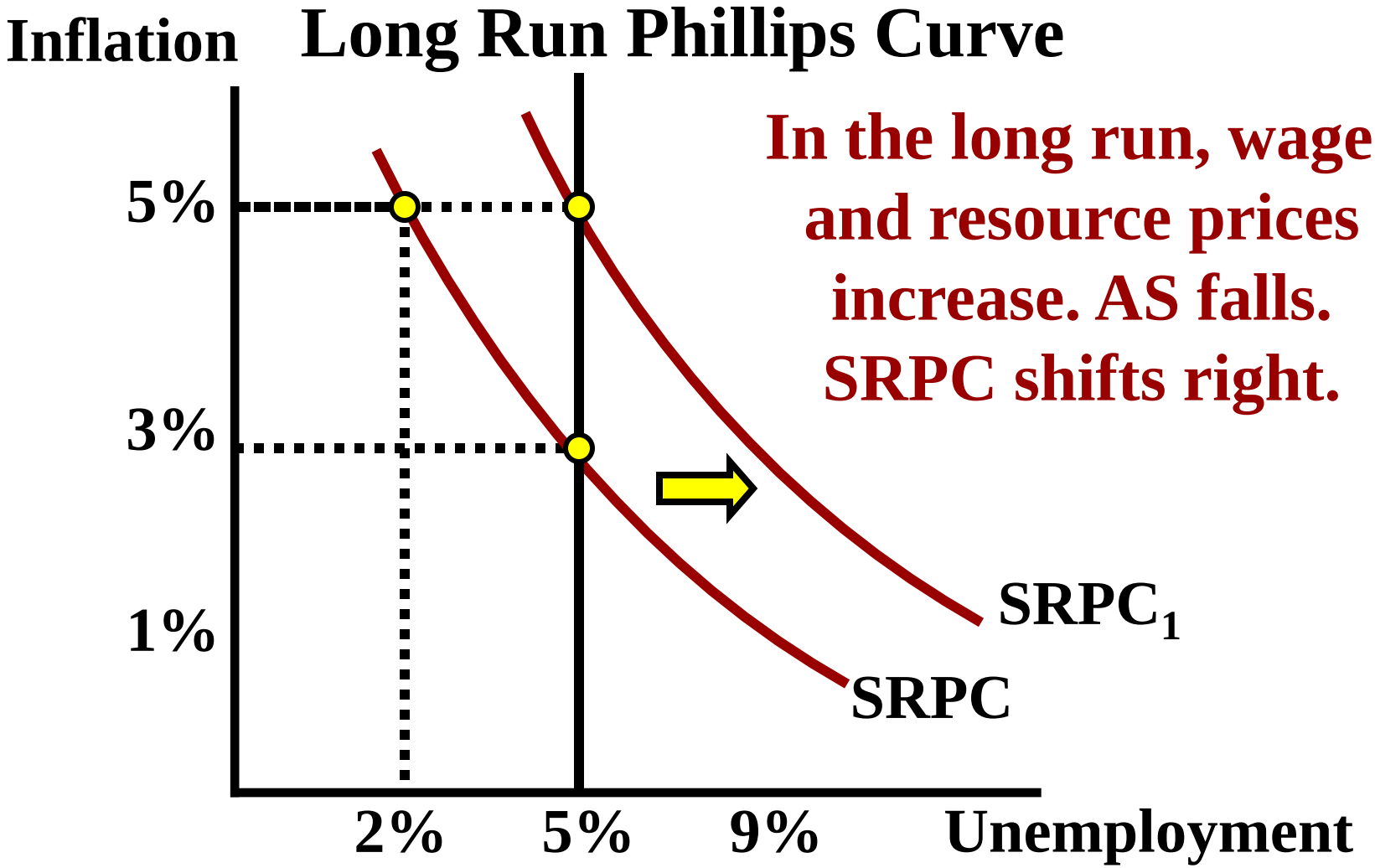
What happens when AS falls causing stagflation?
Increase in unemployment and inflation



Short Run vs. Long Run

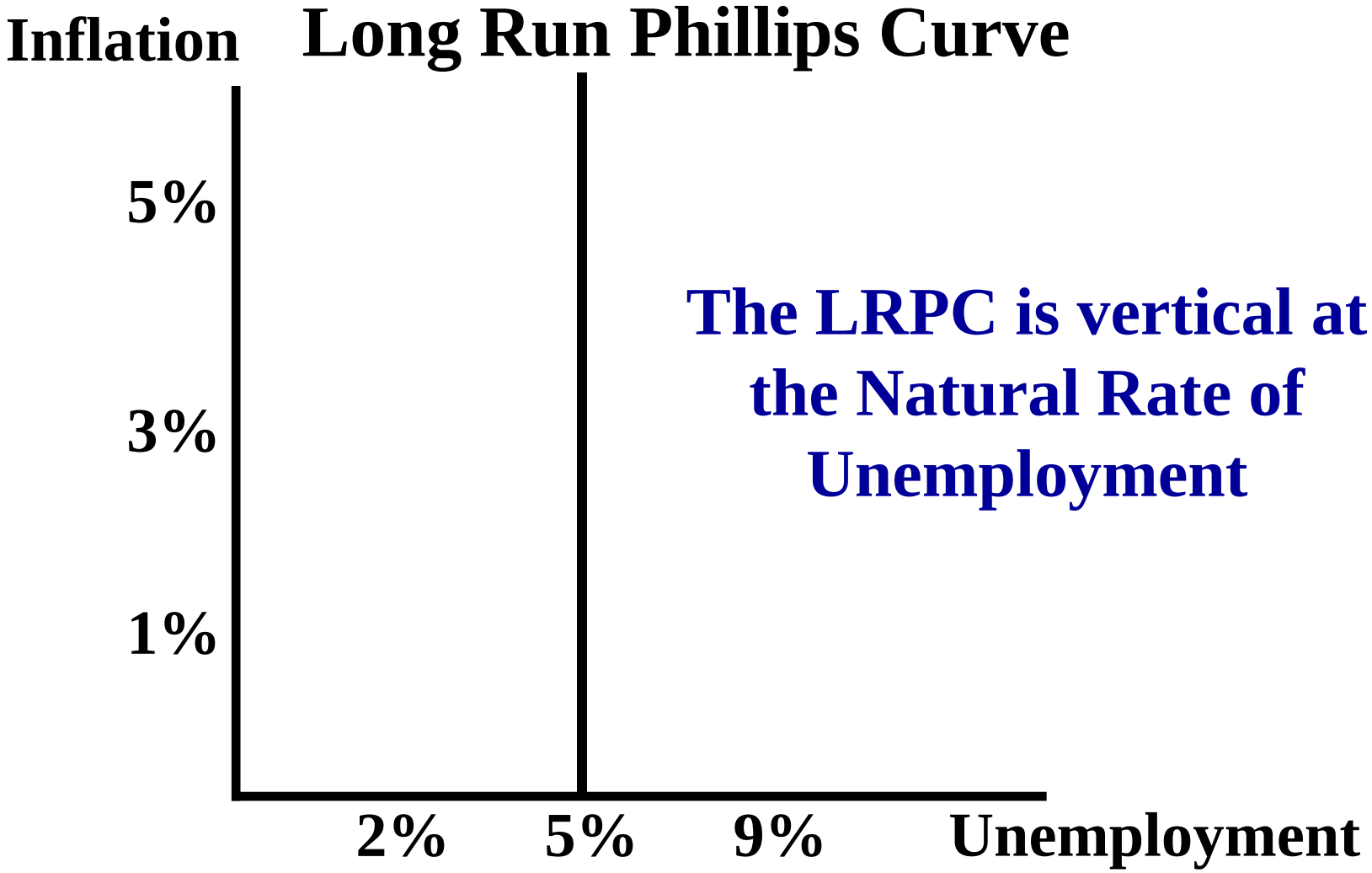
What happens when AD increases?

What happens in the long run?



Short Run vs. Long Run

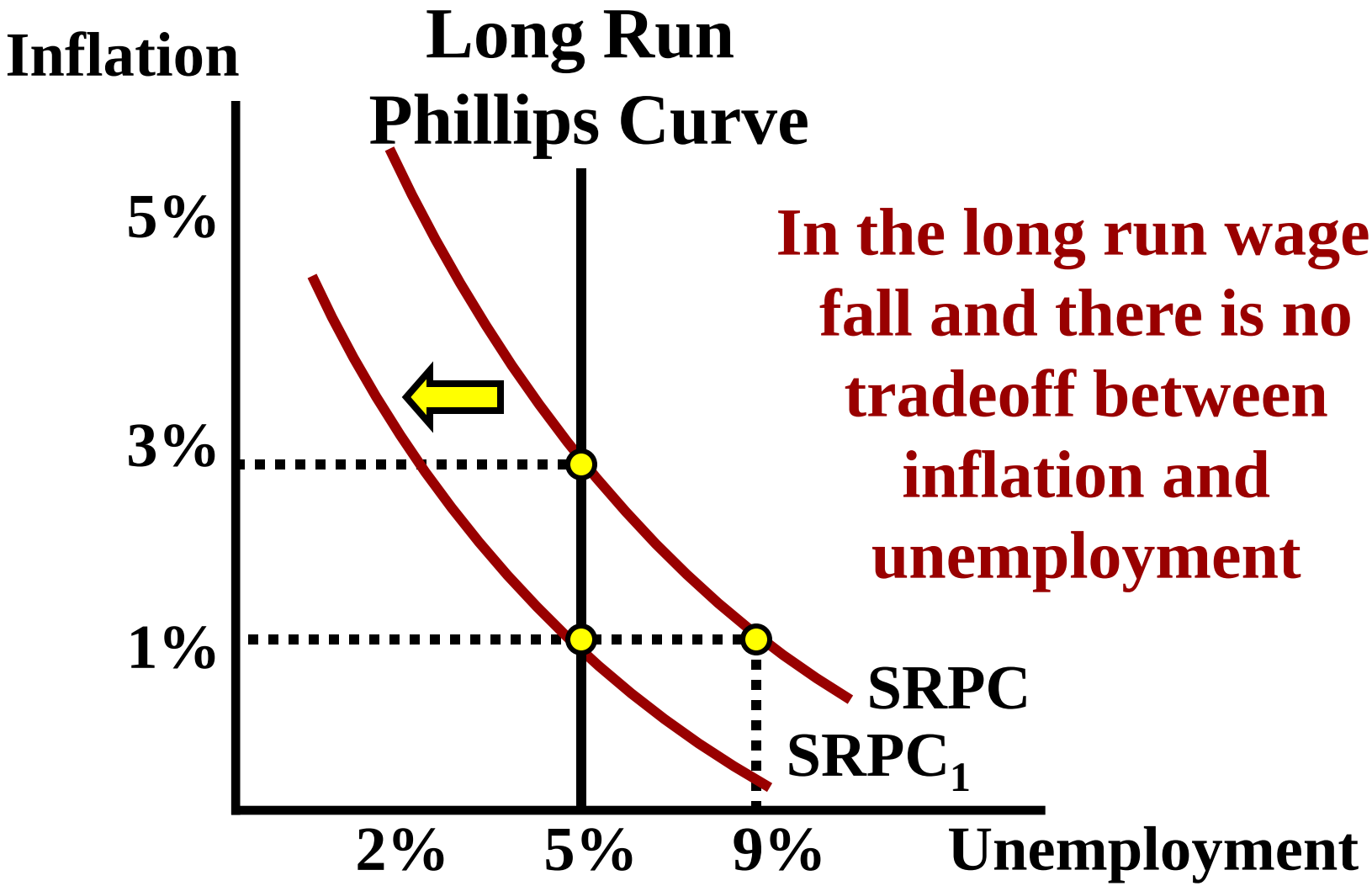
In the long run there is no tradeoff between inflation and unemployment



Short Run vs. Long Run

What happens when AD falls?

What happens in the long run?

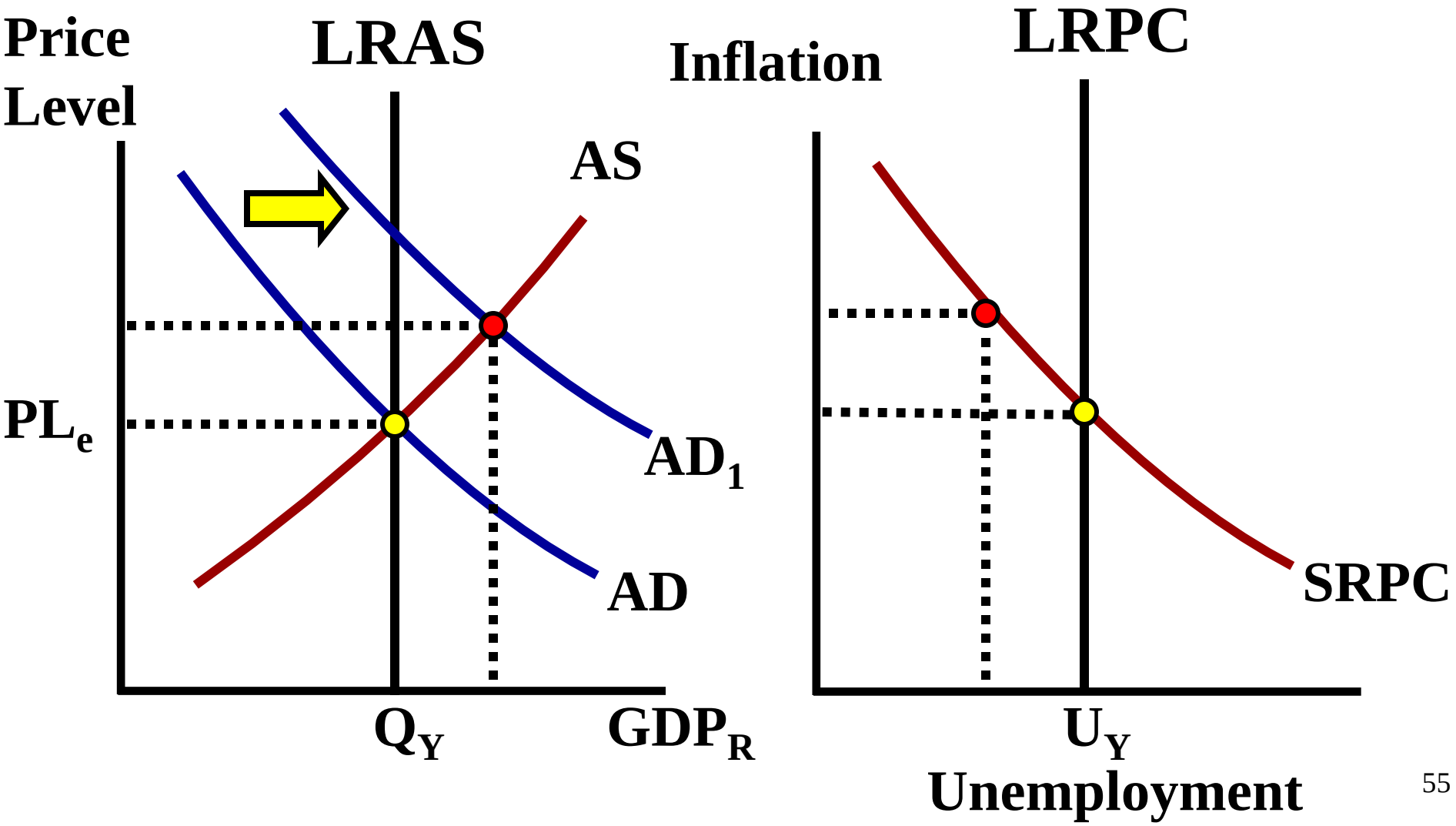


In the long run wages fall and there is no tradeoff between inflation and unemployment

AD/AS and the Phillips Curve

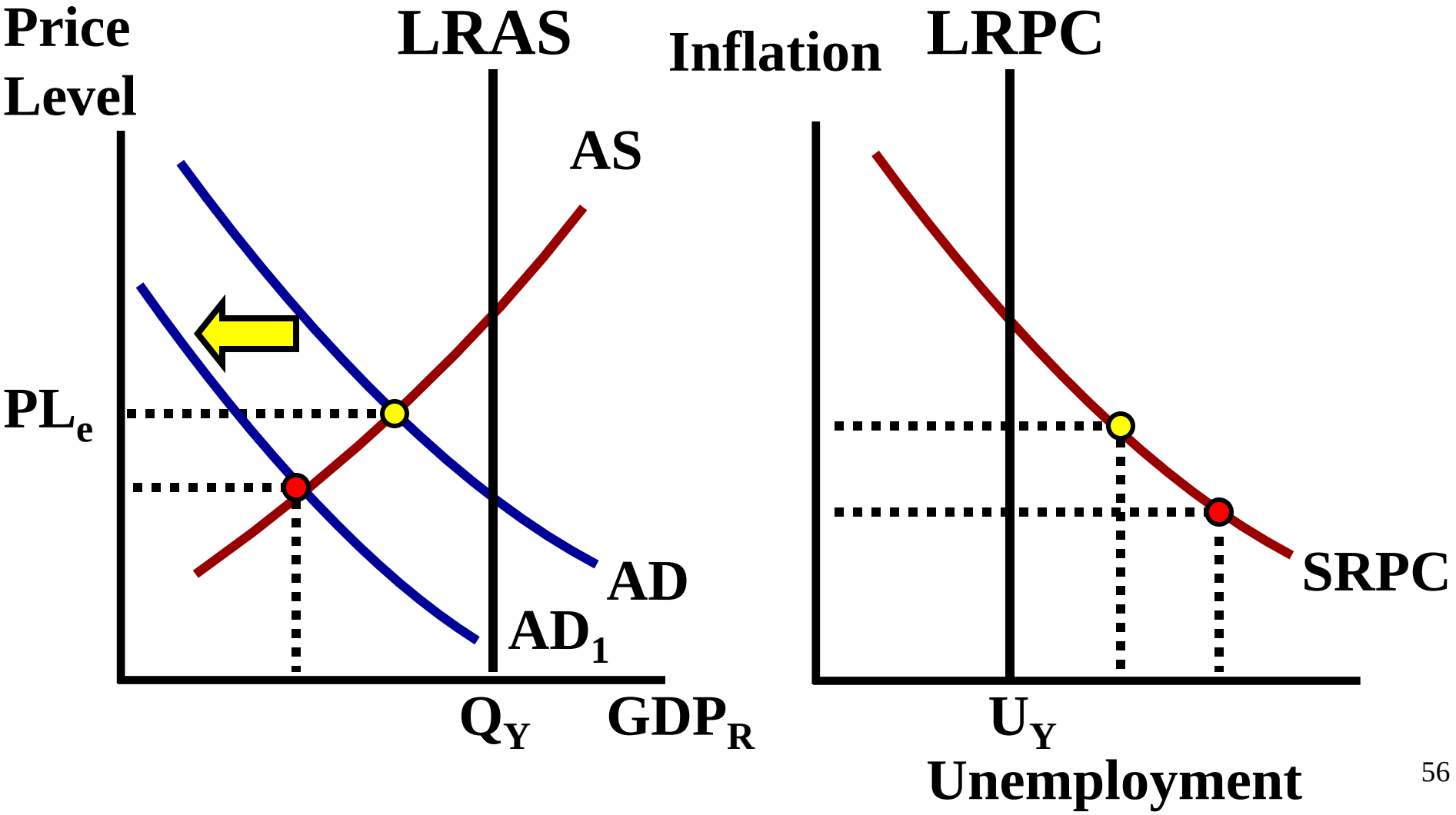
AD/AS and the Phillips Curve

Show what happens on both graphs if AD increases



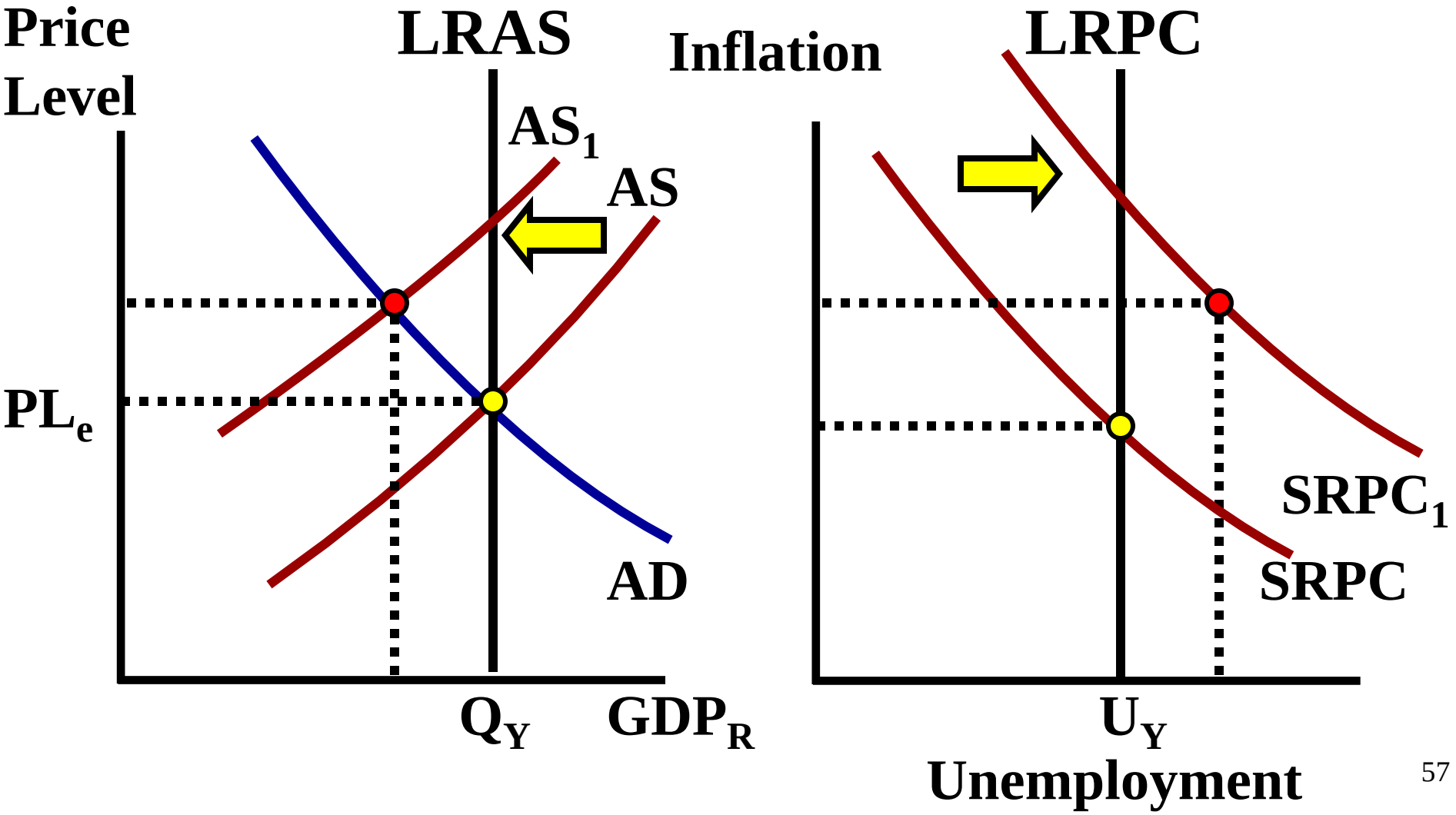
AD/AS and the Phillips Curve

Correctly draw the LRPC and SRPC with the recessionary gap. What happens when AD falls?



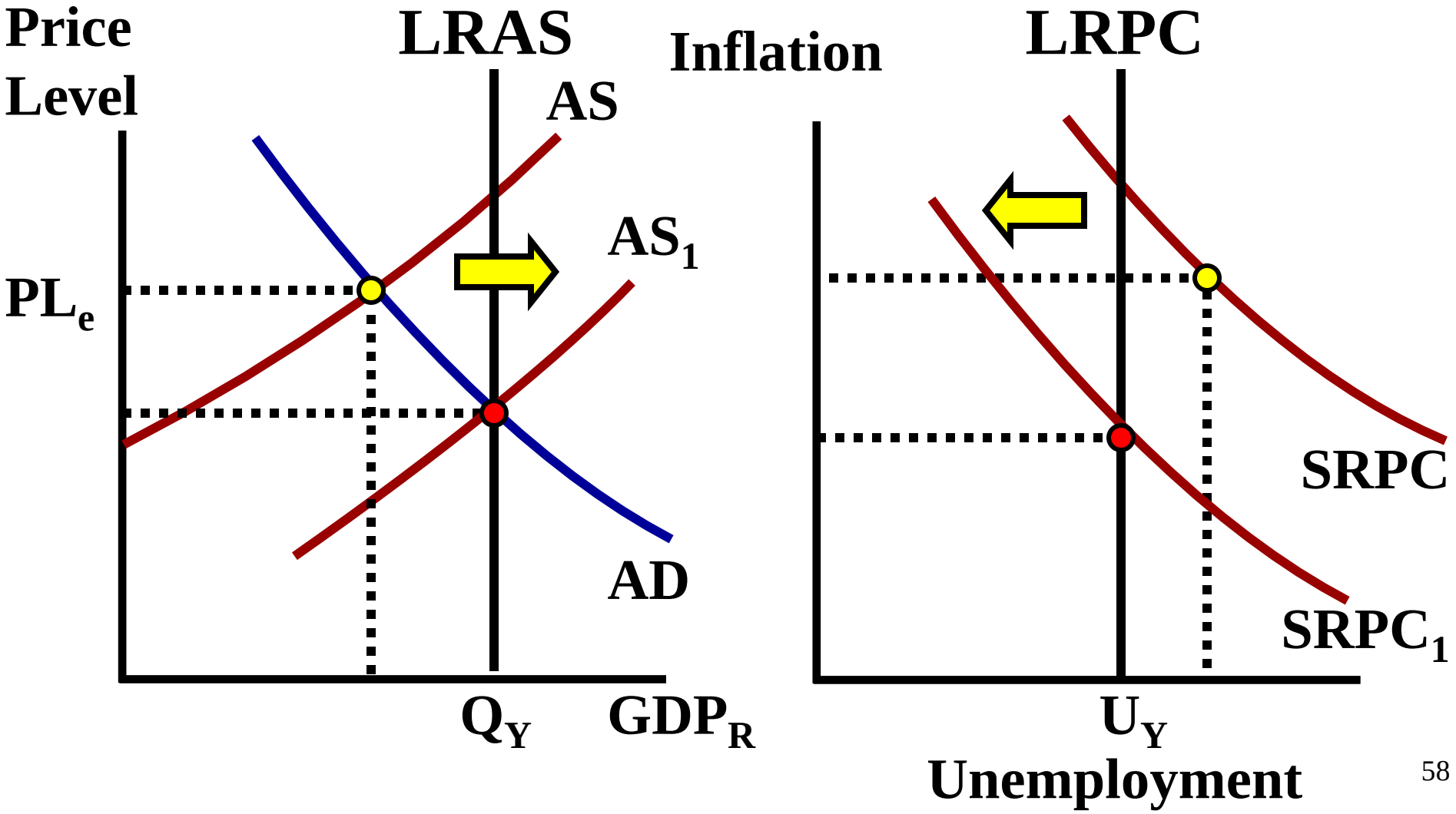
AD/AS and the Phillips Curve

Correctly draw the LRPC and SRPC at full employment. What happens when AS falls?

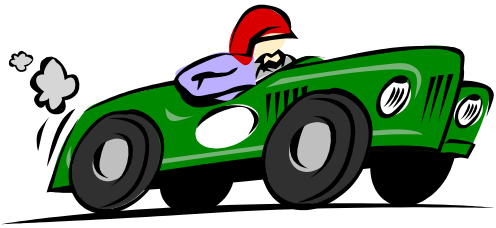


AD/AS and the Phillips Curve

Correctly draw the LRPC and SRPC with an recessionary gap. What happens when AS goes up?



The Car Analogy



The economy is like a car…

- **You can drive 120mph but it is not sustainable. (Extremely Low unemployment)**
- **Driving 20mph is too slow. The car can easily go faster. (High unemployment)**
- **70mph is sustainable. (Full employment)**
- **Some cars have the capacity to drive faster then others. (industrial nations vs. 3rd world nations)**
- **If the engine (technology) or the gas mileage (productivity) increase then the car can drive at even higher speeds. (Increase LRAS)**

The government's job is to brake or speed up when needed as well as promote things that will improve the engine. (Shift the PPC outward)

How does the Government Stabilizes the Economy?

The Government has two different tool boxes it can use:

1. Fiscal Policy-

Actions by Congress to stabilize the economy.

OR

2. Monetary Policy-

Actions by the Federal Reserve Bank to stabilize the economy.

Fiscal Policy

Two Types of Fiscal Policy

Discretionary Fiscal Policy-

- Congress creates a new bill that is designed to change AD through government spending or taxation.
- Problem is time lags due to bureaucracy.
- Takes time for Congress to act.
- Ex: In a recession, Congress increase spending.

Non-Discretionary Fiscal Policy

- AKA: Automatic Stabilizers
- Permanent spending or taxation laws enacted to work counter cyclically to stabilize the economy
- Ex: Welfare, Unemployment, Min. Wage, etc.
- When there is high unemployment, unemployment benefits to citizens increase consumer spending.

Contractionary Fiscal Policy (The BRAKE)

Laws that reduce inflation, decrease GDP (Close a Inflationary Gap)

- **Decrease Government Spending**
- **Tax Increases**
- **Combinations of the Two**

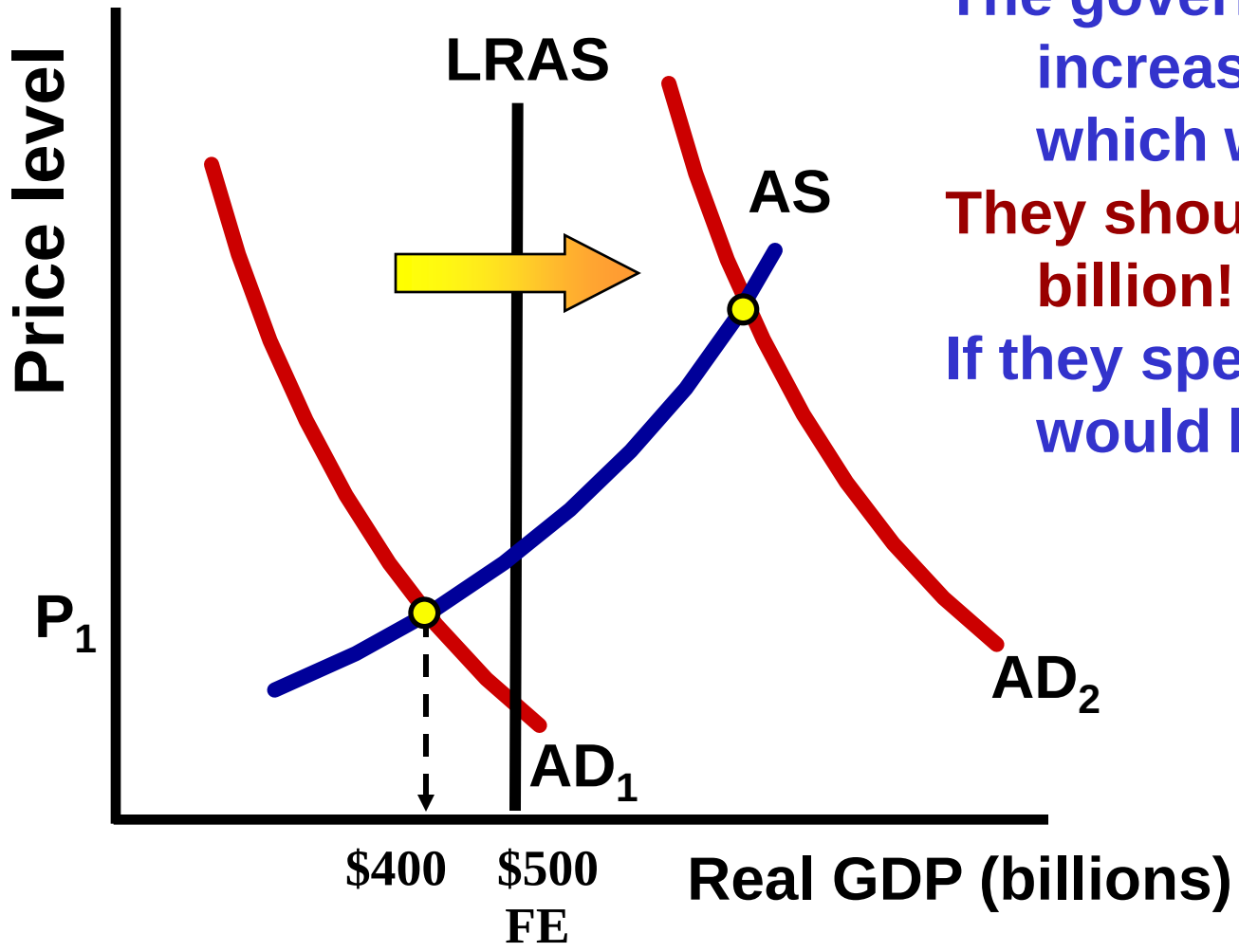
Expansionary Fiscal Policy (The GAS)

Laws that reduce unemployment and increase GDP (Close a Recessionary Gap)

- **Increase Government Spending**
- **Decrease Taxes on consumers**
- **Combinations of the Two**

How much should the Government Spend?

- **What type of gap and what type of policy is best?**
- **What should the government do to spending? Why?**
- **How much should the government spend?**



The government should increasing spending which would increase AD

They should NOT spend 100 billion!!!!!!!!!!

If they spend 100 billion, AD would look like this:

WHY?

The Multiplier Effect

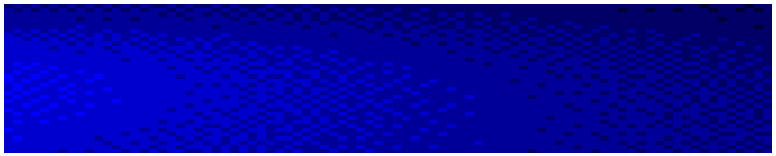
Why do cities want the Superbowl in their stadium?

An initial change in spending will set off a spending chain that is magnified in the economy.

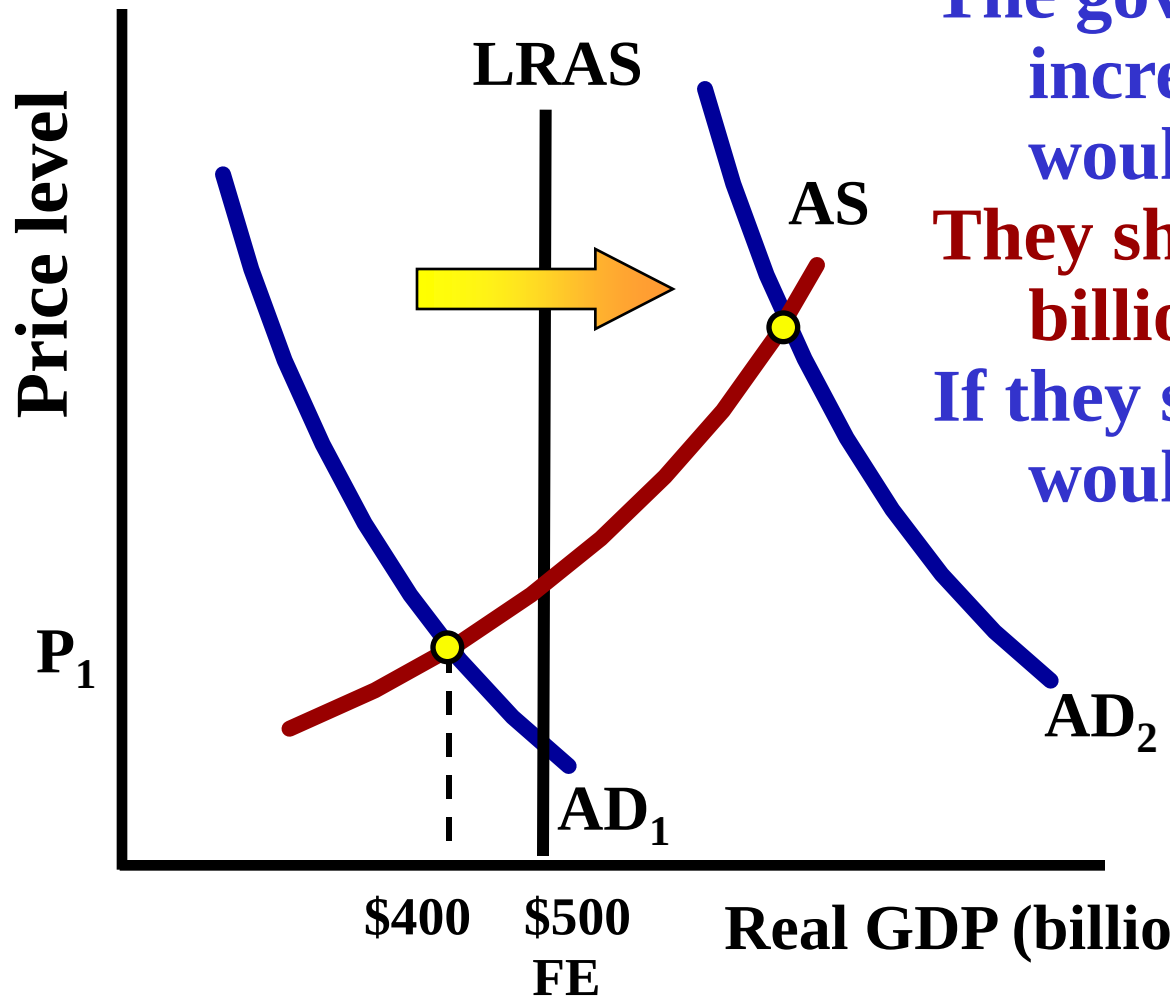
Example:

- **Bobby spends $100 on Jason's product**
- **Jason now has more income so he buys $100 of Nancy's product**
- **Nancy now has more income so she buys $100 of Tiffany's product.**
- **The result is an $300 increase in consumer spending**

The Multiplier Effect shows how spending is magnified in the economy.



- **What type of gap and what type of policy is best?**
- **What should the government do to spending? Why?**
- **How much should the government spend?**



The government should increasing spending which would increase AD

They should NOT spend 100 billion!!!!!!!!!

If they spend 100 billion, AD would look like this:

WHY?

The Multiplier Effect

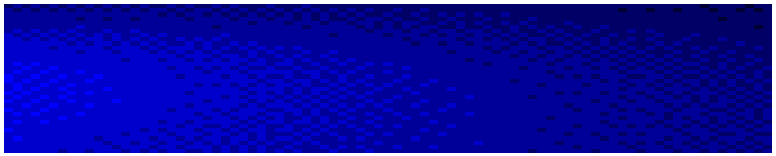
Why do cities want the Superbowl in their stadium?

An initial change in spending will set off a spending chain that is magnified in the economy.

Example:

- **Bobby spends $100 on Jason's product**
- **Jason now has more income so he buys $100 of Nancy's product**
- **Nancy now has more income so she buys $100 of Tiffany's product.**
- **The result is an $300 increase in consumer spending**

The Multiplier Effect shows how spending is magnified in the economy.



Effects of Government Spending

If the government spends $5 Million, will AD increase by the same amount?

- **No, AD will increase even more as spending becomes income for consumers.**
- **Consumers will take that money and spend, thus increasing AD.**

How much will AD increase?

- **It depends on how much of the new income consumers save.**
- **If they save a lot, spending and AD will increase less.**
- **If the save a little, spending and AD will be increase a lot.**

Marginal Propensity to Consume

Marginal Propensity to Consume (MPC)

- How much people consume rather than save when there is an change in income.
- It is always expressed as a fraction (decimal).

$$MPC = \frac{\text{Change in Consumption}}{\text{Change in Income}}$$

Examples:

1. If you received $100 and spent $50.
2. If you received $100 and spent $80.
3. If you received $100 and spent $100.

Marginal Propensity to Save

Marginal Propensity to Save (MPS)

- **How much people save rather than consume when there is an change in income.**
- **It is also always expressed as a fraction (decimal)**

$$MPS = \frac{\text{Change in Saving}}{\text{Change in Income}}$$

Examples:

1. **If you received $100 and save $50.**
2. **If you received $100 your MPC is .7 what is your MPS?**

MPS = 1 - MPC

Why is this true?

Because people can either save or consume

How is Spending "Multiplied"?

Assume the MPC is .5 for everyone

- Assume the Super Bowl comes to town and there is an increase of $100 in Ashley's restaurant.
- Ashley now has $100 more income.
- She saves $50 and spends $50 at Carl's Salon
- Car now has $50 more income
- He saves $25 and spends $25 at Dan's fruit stand
- Dan now has $25 more income.

This continues until every penny is spent or saved

$$\text{Change in GDP} = \text{Multiplier} \times \text{Initial Change in Spending}$$

Calculating the Spending Multiplier

If the MPC is .5 how much is the multiplier?

$$\text{Simple Multiplier} = \frac{1}{\text{MPS}} \text{ or } \frac{1}{1 - \text{MPC}}$$

- **If the multiplier is 4, how much will an initial increase of $5 in Government spending increase the GDP?**
- **How much will a decrease of $3 in spending decrease GDP?**

$$\text{Change in GDP} = \text{Multiplier} \times \text{initial change in spending}$$

The Multiplier Effect

Let's practice calculating the spending multiplier

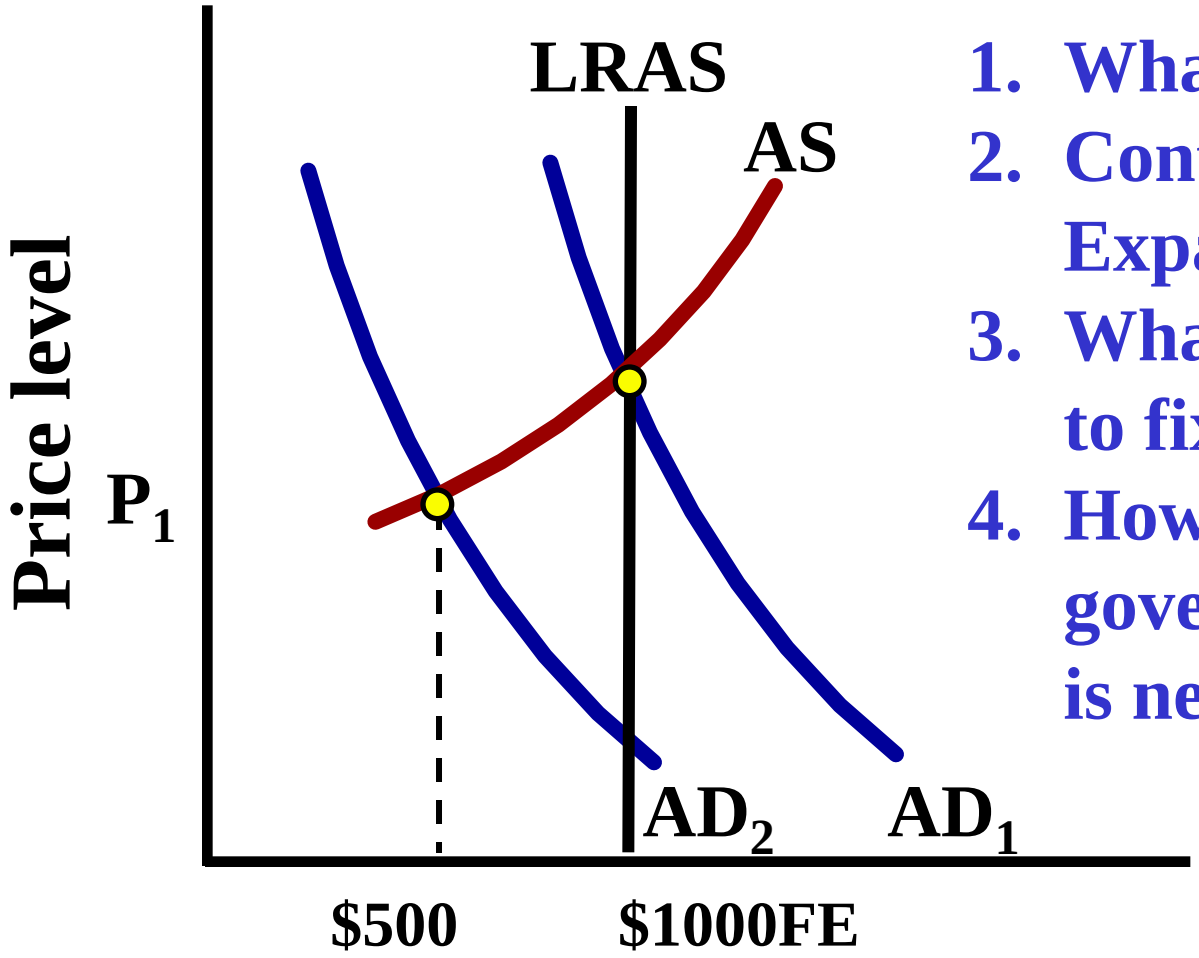
$$\text{Simple Multiplier} = \frac{1}{\text{MPS}} \textit{ or } \frac{1}{1 - \text{MPC}}$$

1. If MPC is .9, what is multiplier?
2. If MPC is .8, what is multiplier?
3. If MPC is .5, and consumption increased $2M. How much will GDP increase?
4. If MPC is 0 and investment increases $2M. How much will GDP increase?

Conclusion: As the Marginal Propensity to Consumer falls, the Multiplier Effect is less

Fiscal Policy Practice

Congress uses discretionary fiscal policy to the manipulate the following economy (MPC = .8)

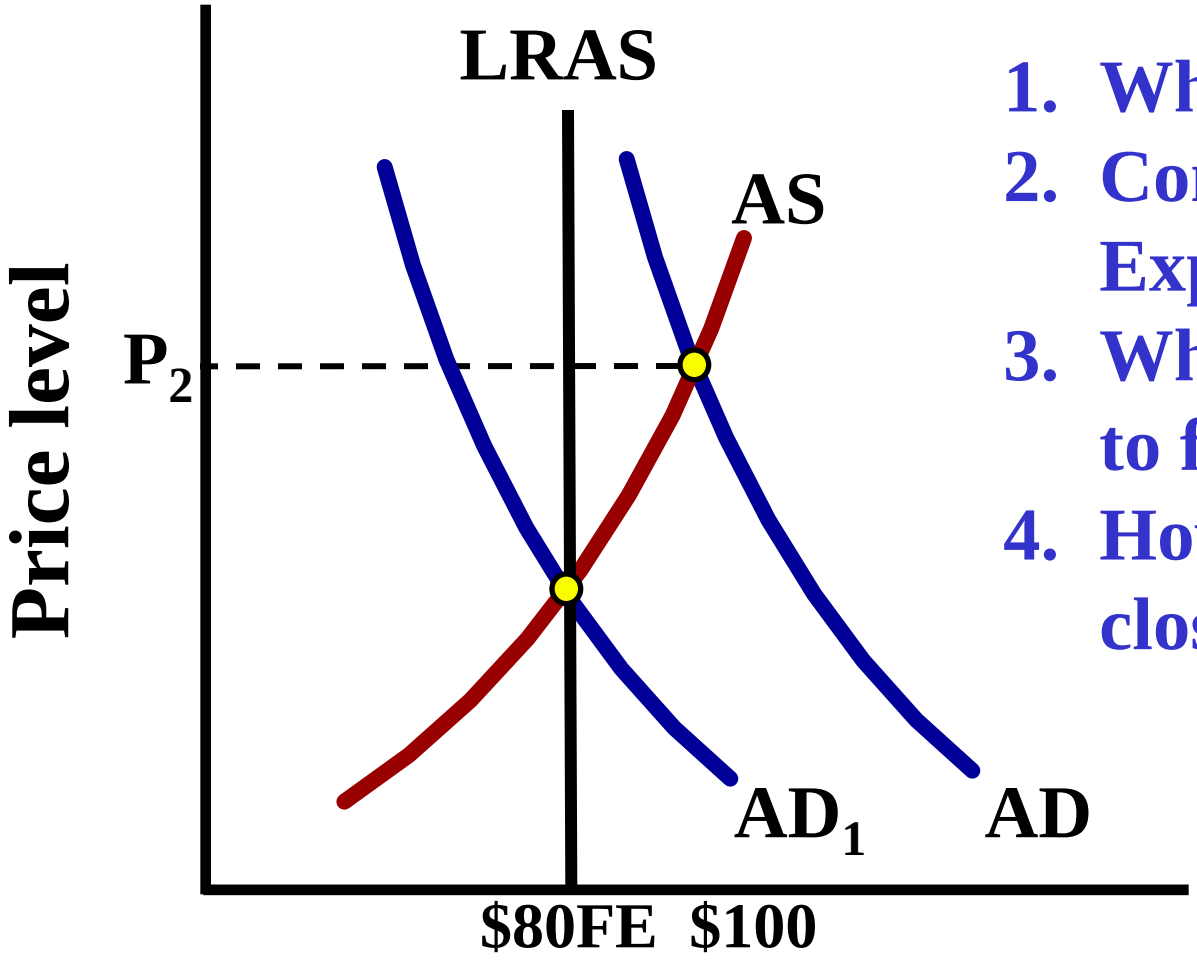


1. What type of gap?
2. Contractionary or Expansionary needed?
3. What are two options to fix the gap?
4. How much initial government spending is needed to close gap?

$100 Billion

Fiscal Policy Practice

Congress uses discretionary fiscal policy to the manipulate the following economy (MPC = .5)



1. What type of gap?
2. Contractionary or Expansionary needed?
3. What are two options to fix the gap?
4. How much needed to close gap?

-$10 Billion

What about taxing?

- **The multiplier effect also applies when the government cuts or increases taxes.**
- **But, changing taxes has less of an impact of changing GDP. Why?**

Expansionary Policy (Cutting Taxes)

- **Assume the MPC is .75 so the multiplier is 4**
- **If the government cuts taxes by $4 million how much will consumer spending increase?**
- **NOT 16 Million!!**
- **When they get the tax cut, consumers will save $1 million and spend $3 million.**
- **The $3 million is the amount magnified in the economy.**
- **$3 x 4 = $12 Million increase in consumer spending**

Non-Discretionary Fiscal Policy

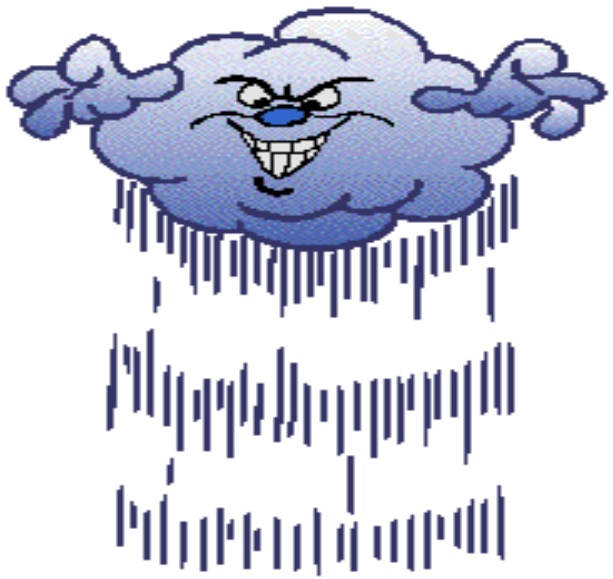
Non-Discretionary Fiscal Policy

Legislation that act counter cyclically without explicit action by policy makers.
AKA: Automatic Stabilizers

The U.S. Progressive Income Tax System acts counter cyclically to stabilize the economy.

1. **When GDP is down, the tax burden on consumers is low, promoting consumption, increasing AD.**
2. **When GDP is up, more tax burden on consumers, discouraging consumption, decreasing AD.**

The more progressive the tax system, the greater the economy's built-in stability.



Problems With Fiscal Policy

Problems With Fiscal Policy

- **When there is a recessionary gap what two options does Congress have to fix it?**
- **What's wrong with combining both?**

Deficit Spending!!!!

- **A Budget Deficit is when the government's expenditures exceeds its revenue.**
- **The National Debt is the accumulation of all the budget deficits over time.**
- **If the Government increases spending without increasing taxes they will increase the annual deficit and the national debt.**

Most economists agree that budget deficits are a necessary evil because forcing a balanced budget would not allow Congress to stimulate the economy.

Additional Problems with Fiscal Policy

1. Problems of Timing

- **Recognition Lag- Congress must react to economic indicators before it's too late**
- **Administrative Lag- Congress takes time to pass legislation**
- **Operational Lag- Spending/planning takes time to organize and execute (changing taxing is quicker)**

2. Politically Motivated Policies

- **Politicians may use economically inappropriate policies to get reelected.**
- **Ex: A senator promises more welfare and public works programs when there is already an inflationary gap.**

Additional Problems with Fiscal Policy

3. Crowding-Out Effect

- **In basketball, what is "Boxing Out"?**
- **Government spending might cause unintended effects that weaken the impact of the policy.**

Example:

- **We have a recessionary gap**
- **Government creates new public library. (AD increases)**
- **Now but consumer spend less on books (AD decreases)**

Another Example:

- **The government increases spending but must borrow the money (AD increases)**
- **This increases the price for money (the interest rate).**
- **Interest rates rise so Investment to fall. (AD decrease)**

The government "crowds out" consumers and/or investors

Additional Problems with Fiscal Policy

4. Net Export Effect

International trade reduces the effectiveness of fiscal policies.

Example:

- **We have a recessionary gap so the government spends to increase AD.**
- **The increase in AD causes an increase in price level and interest rates.**
- **U.S. goods are now more expensive and the US dollar appreciates…**
- **Foreign countries buy less. (Exports fall)**
- **Net Exports (Exports-Imports) falls, decreasing AD.**