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# Aggregate Demand & Aggregate Supply

Adding Swings in the Overall Price Level  
to our Model of the Economy

# Outline

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1. Aggregate Demand
  2. Aggregate Supply
  3. Macroeconomic Equilibrium
- Textbook Readings: Ch. 13

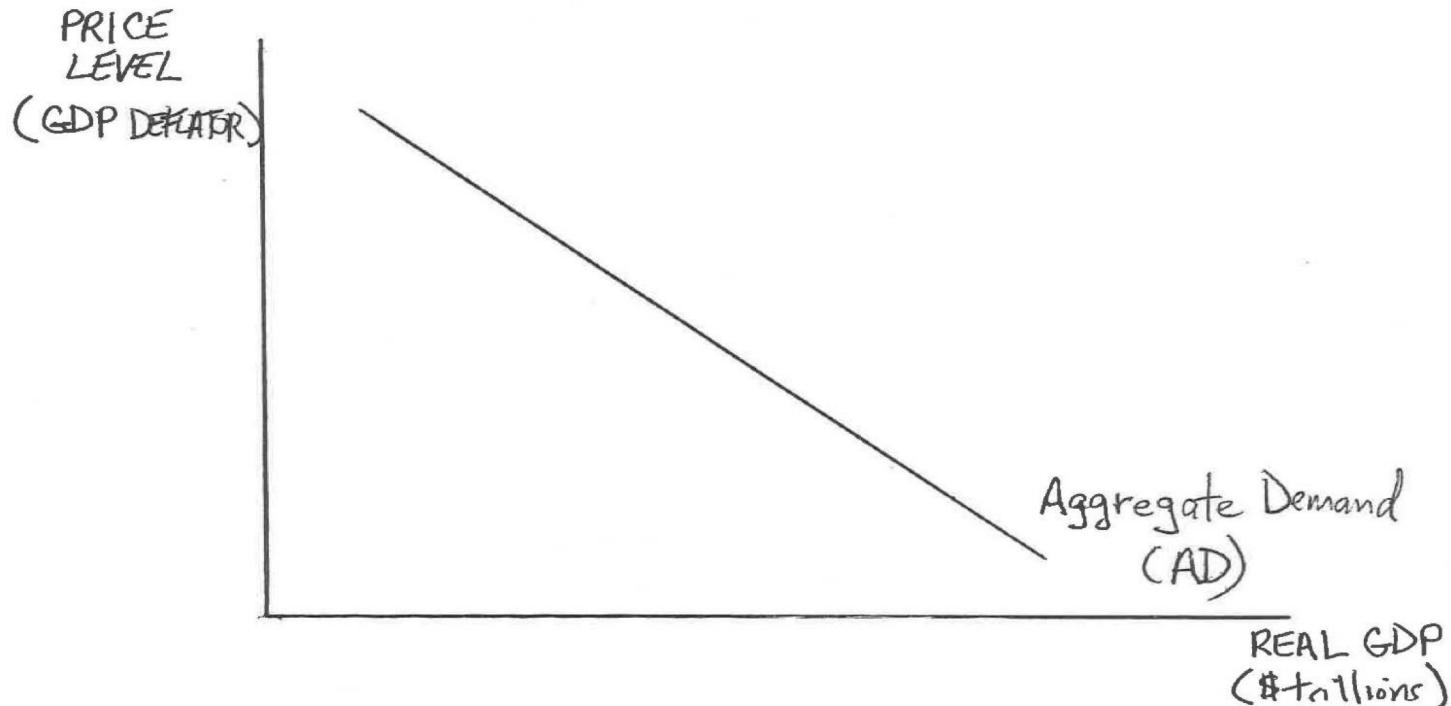
# AD-AS Model

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- New model: Links **output changes** to **changes in the price level**
  - AE model looks only at output swings
- How do changes in **demand** affect aggregate output **and the price level?**
- How do changes in **supply** affect aggregate output **and the price level?**
- How do changes in **price level** affect aggregate output level?

# The Aggregate Demand Curve

- A downward sloping AD curve
  - As the overall price level falls, the level of output rises



# Why the AD Curve is Downward Sloping?

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- Microeconomic theory:
  - Law of demand: When the price of an individual good falls, demand rises
  - **Assuming all other prices are stable!**
  - Why demand curves slope downward?
  - When the price of the good falls, people are willing to buy more, why?
    - ❖ **Substitution effect** – Good is cheaper relative to other goods
    - ❖ Income effect – Increase in purchasing power
- The AD curve is DIFFERENT!
  - Aggregate Demand is a **macroeconomic concept**

# Why the AD Curve is Downward Sloping?

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- Macroeconomic Theory:
  - Substitution effects **do not** explain the AD curve
- Aggregate Demand curve depicts the effects on **overall demand**, given a change in the prices of **all goods and services**
- Clearly, substitution of one good for another cannot explain a shift in **overall demand** given a shift in **overall prices**

# Why Fall In Price Level Associated With Higher Output?

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- **Wealth Effect:**

- Some HH wealth is held in nominal assets
- As price level rises, real value of HH wealth declines → **Less consumption**

- **Interest Rate Effect:**

- When prices rise, HH and firms need more money to finance buying and selling (increase in demand for money)
- “Price” of holding money (interest rate) rises, **discouraging investments**

- **International-Trade Effect:**

- As price level rises, **NX fall**

# The Wealth Effect Explained

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- Ernie has **\$20,000** in the bank
- A moped cost **\$8,900**. A 12' flat screen TV costs **\$9,200**. A vacation to Paris for a month costs **\$9,700**. He plans to buy **two** of these three items, after graduation
- By then, prices leap (inflation is 20%)
- New prices: Moped = **\$10,680** TV = **\$11,040** Vacation = **\$11,640**
- Ernie now buys only **one** of the items

# The Interest Rate Effect Explained

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- HH keep financial wealth in various places: cash, bonds, stocks
- HH **hold enough cash** to make it easy to pay their bills
- **If prices jump**, HH must sell some bonds and stocks to **increase** their **cash holdings**
- Sell bonds → Prices fall → Interest rates rise → Less investment

# The Interest Rate Effect Explained: Example

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- Bert, Ernie, Big Bird, Miss Piggy and the Count all keep, on average, **\$5,000** in their checking account to pay bills
- **Prices fall** (inflation is -1%)
- They all decide they only need **\$3,000** in their accounts now to pay bills
- They all buy bonds → Supply of funds rise → **Interest rates fall**
- Lower real rates **boost** home building (**investment spending**)

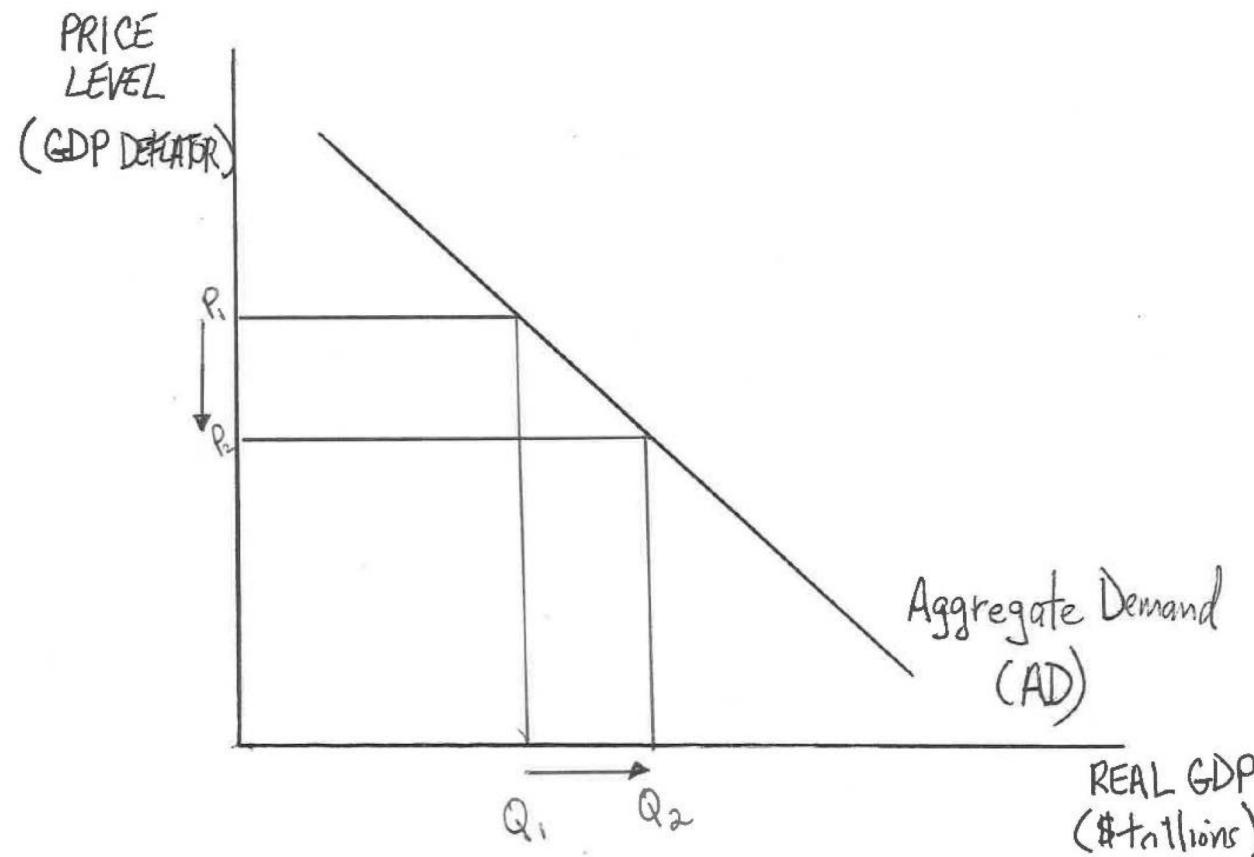
# The International-Trade Effect Explained

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- As **prices go up**, foreigners can afford less domestic goods → Exports go down
- Likewise, it is easier to import → Imports go up
- **Net exports go down unambiguously**

# A Movement Along the AD Curve

- As the price level falls, output rises



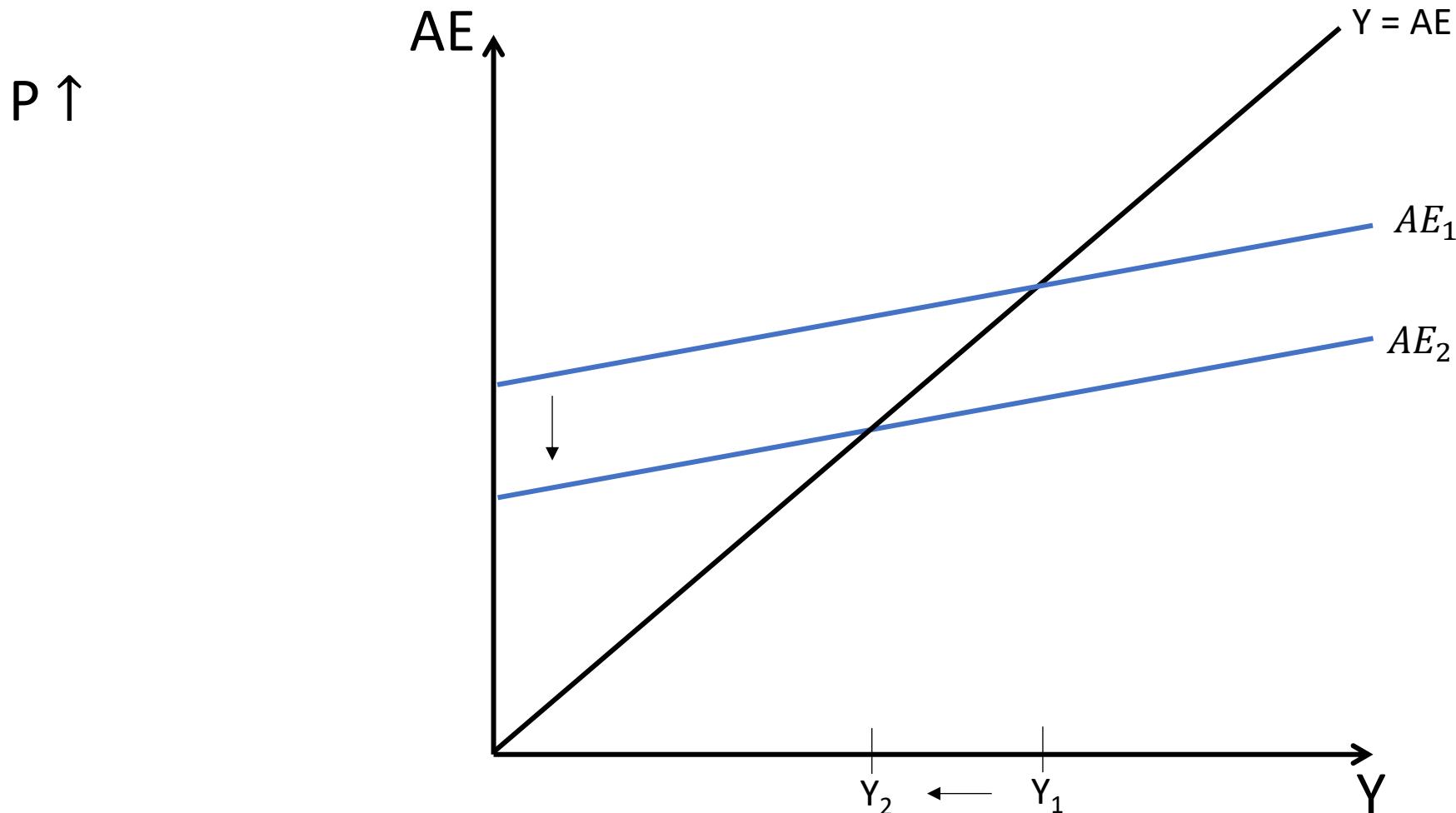
# From AE Model to AD-AS Model: A Simple Derivation

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- Our AE model assumes that the overall price level is fixed
  - Reflects our assumption that there is enough capacity to increase output
- Here we relax that assumption
- Prices jump from period 1 to period 2, what happens to AE?
  - AE line falls at any level of output
  - Equilibrium is now lower
- Thus, we can ‘derive’ the AD line by manipulating our AE model

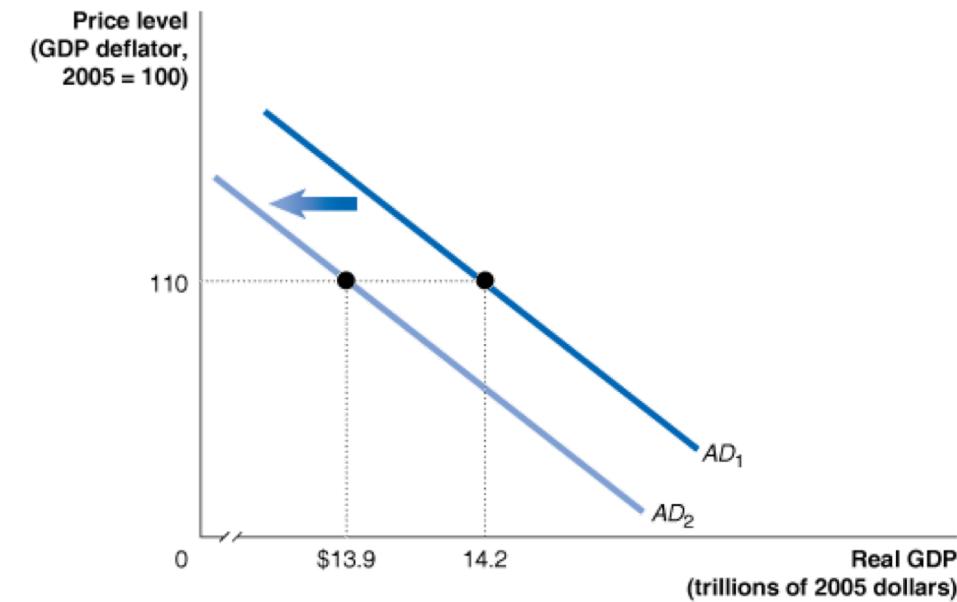
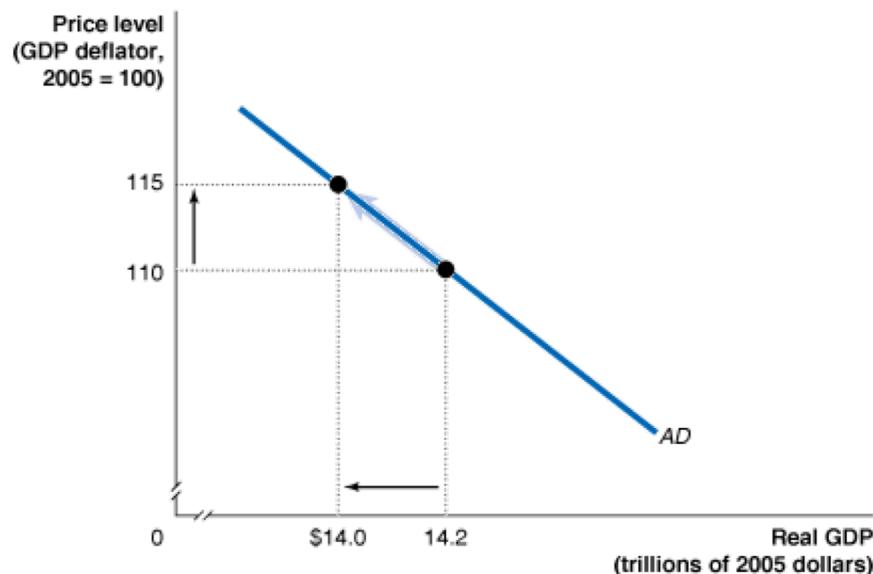
# AE Model: ‘Embedded’ in the AD-AS Model

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# Shifts vs Movements Along the AD Curve

- AD curve shows the relationship between the price level and real GDP *demanded, holding everything else constant*
- A change in a variable **other than the price level** will shift AD curve



# Shifts in the AD Curve

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- Demand shock: Unexpected event that causes AD curve to shift
- AD shifts when:
  - Government policies change
  - Expectations of HH and firms about the future change
  - Foreign variables change

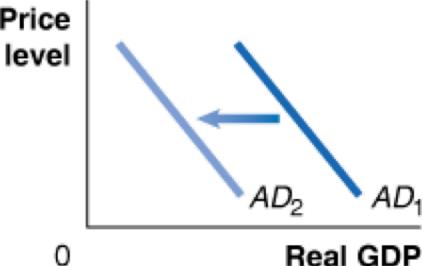
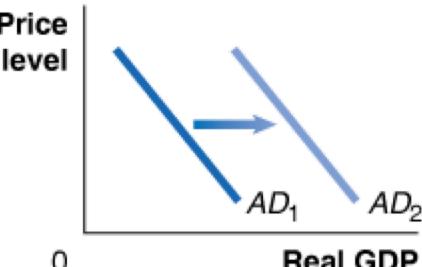
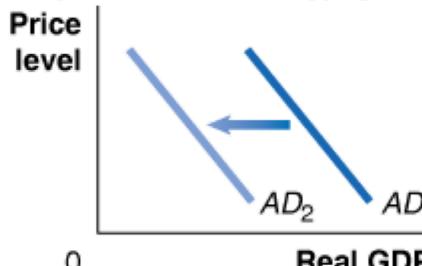
# AD Shifts: Changes in Government Policy

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- Changes in government policies could shift aggregate demand
- Two categories of government policies:
  1. **Monetary policy**: Central bank manages the money supply and interest rates
    - If it causes interest rates to rise, investment spending will fall
  2. **Fiscal policy**: Government collects taxes ( $T$ ) and spends ( $G$ ) on goods and services
    - Decisions about  $T$  and  $G$

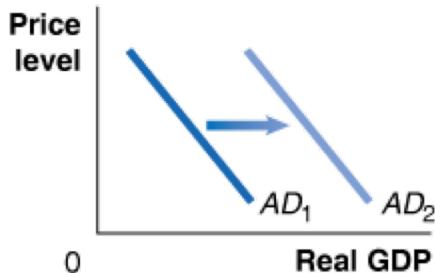
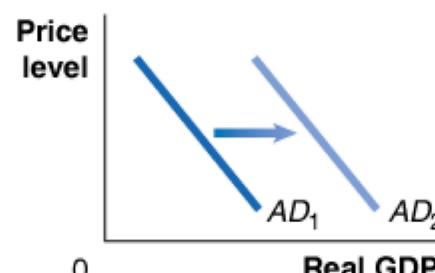
# AD Shifts: Changes in Government Policy

## Variables That Shift the Aggregate Demand Curve

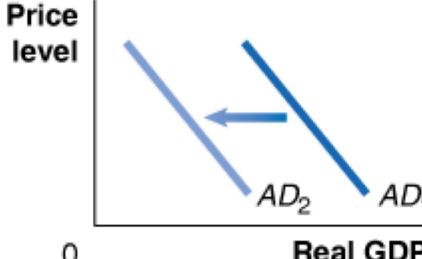
| AN INCREASE IN ...                      | SHIFTS THE AGGREGATE DEMAND CURVE ...  | BECAUSE ...  |
|---|--|--|
| interest rates                          |  A graph with 'Price level' on the vertical axis and 'Real GDP' on the horizontal axis. The vertical axis has a mark at 0. Two downward-sloping aggregate demand curves are shown: the initial one is labeled $AD_1$ and the new one after a shift is labeled $AD_2$ . A blue arrow points from $AD_1$ to $AD_2$ , indicating a leftward shift.   | higher interest rates raise the cost to firms and households of borrowing, reducing consumption and investment spending. |
| government purchases                    |  A graph with 'Price level' on the vertical axis and 'Real GDP' on the horizontal axis. The vertical axis has a mark at 0. Two downward-sloping aggregate demand curves are shown: the initial one is labeled $AD_1$ and the new one after a shift is labeled $AD_2$ . A blue arrow points from $AD_1$ to $AD_2$ , indicating a rightward shift. | government purchases are a component of aggregate demand.  |
| personal income taxes or business taxes |  A graph with 'Price level' on the vertical axis and 'Real GDP' on the horizontal axis. The vertical axis has a mark at 0. Two downward-sloping aggregate demand curves are shown: the initial one is labeled $AD_1$ and the new one after a shift is labeled $AD_2$ . A blue arrow points from $AD_1$ to $AD_2$ , indicating a leftward shift. | consumption spending falls when personal taxes rise, and investment falls when business taxes rise.                      |

# AD Shifts: Changes in Expectations

## Variables That Shift the Aggregate Demand Curve

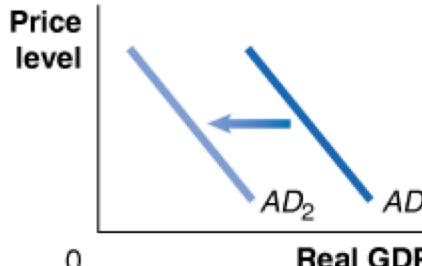
| AN INCREASE IN ...   | SHIFTS THE AGGREGATE DEMAND CURVE ...   | BECAUSE ...                     |
|--|---|---------------------------------|
| households' expectations of their future incomes                       |  A graph illustrating a rightward shift in the Aggregate Demand (AD) curve. The vertical axis is labeled "Price level" and the horizontal axis is labeled "Real GDP". Two downward-sloping curves are shown: the initial curve $AD_1$ and a new, shifted-right curve $AD_2$ . A blue arrow points from $AD_1$ to $AD_2$ , indicating the shift.  | consumption spending increases. |
| firms' expectations of the future profitability of investment spending |  A graph illustrating a rightward shift in the Aggregate Demand (AD) curve. The vertical axis is labeled "Price level" and the horizontal axis is labeled "Real GDP". Two downward-sloping curves are shown: the initial curve $AD_1$ and a new, shifted-right curve $AD_2$ . A blue arrow points from $AD_1$ to $AD_2$ , indicating the shift. | investment spending increases.  |

# AD Shifts: Changes Relative to Foreign Variables

| AN INCREASE IN ...   | SHIFTS THE AGGREGATE DEMAND CURVE ...   | BECAUSE ...  |
|--|---|--|
| the growth rate of domestic GDP relative to the growth rate of foreign GDP |  | imports will increase faster than exports, reducing net exports. |

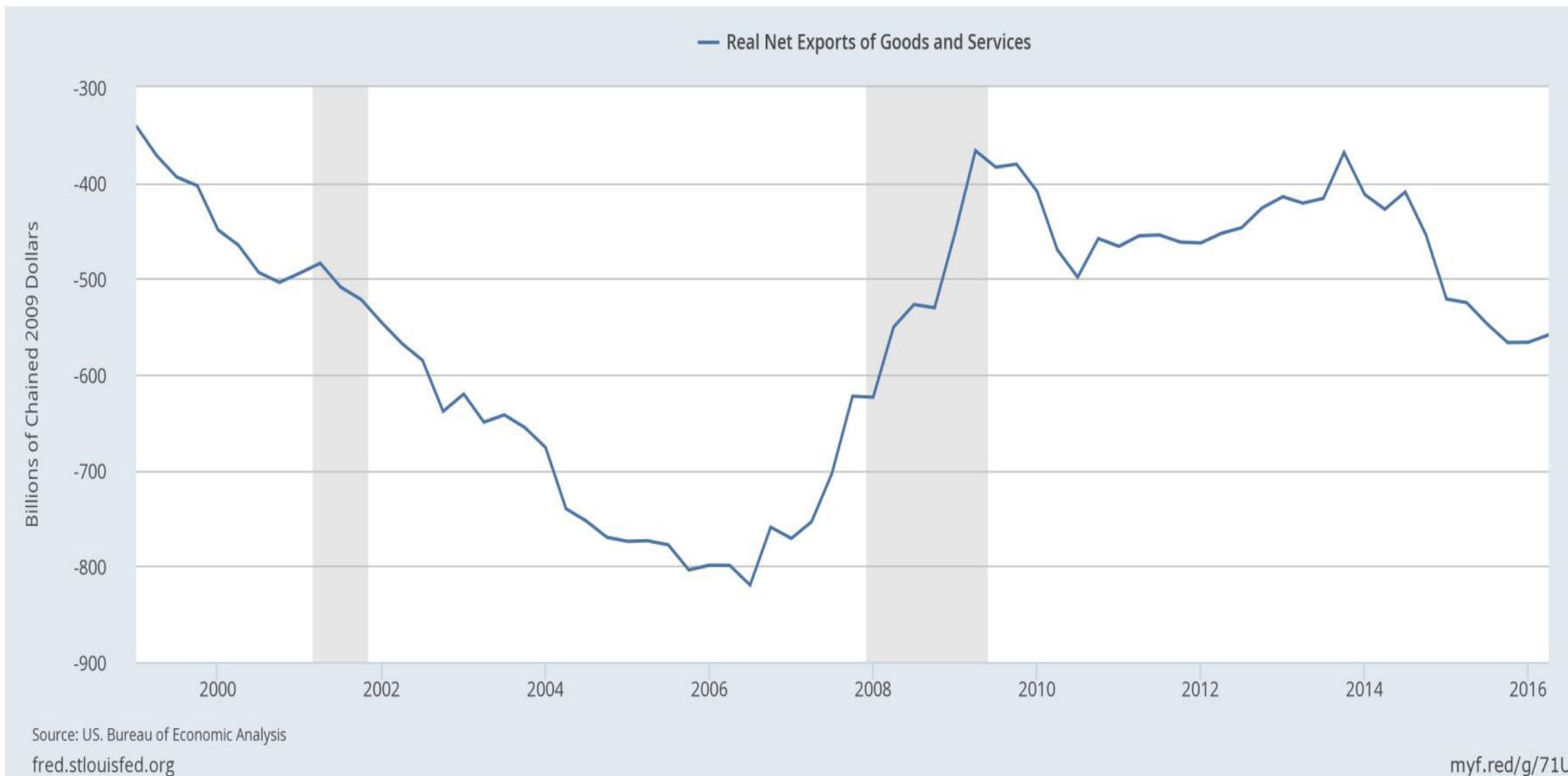
- In 2015, many emerging economies fell into **recessions**
  - Their incomes and spending shrunk
  - Their **imports of US goods fell**

# AD Shifts: Changes Relative to Foreign Variables

| AN INCREASE IN ...   | SHIFTS THE AGGREGATE DEMAND CURVE ...   | BECAUSE ...  |
|--|---|--|
| the exchange rate<br>(the value of the dollar)<br>relative to foreign currencies |  | imports will rise and exports will fall, reducing net exports. |

- In 2015, Brazil's **currency rate fell sharply**
  - US exports became more expensive, so foreigners bought less of them

# US Net Exports



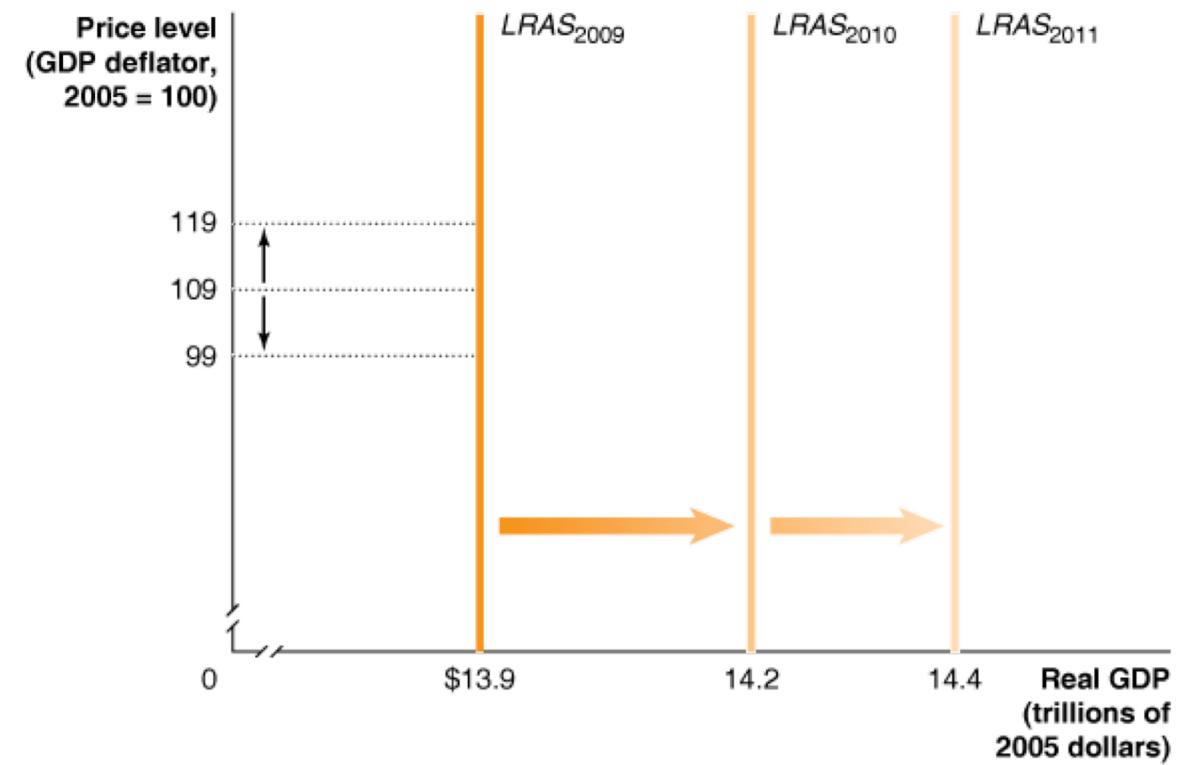
# Aggregate Supply and Time Frame

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- Aggregate Supply refers to the quantity of G&S that firms are willing and able to supply
- The relationship between this quantity and the price level is **different in the long and short run**
- So we will develop **both** curves: short-run Aggregate Supply and long-run Aggregate Supply
  - They show the relationship between the price level and quantity of real GDP supplied in different time frames

# The Long-Run Aggregate Supply Curve

- In the long run, the level of real GDP is determined by the number of workers, the level of technology, and the capital stock (factories, machinery, etc.)
  - **None of these elements is affected by the price level**
- So the long-run AS curve is a **vertical line**, at the level of **potential or full-employment GDP**



# The Vertical Long-Run Supply Curve

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- In the **short run**, there is evidence that an economy **can produce more**, if you allow a **rising price level**
- But the **long-term** trajectory for output **cannot** be lifted by allowing prices to rise faster
  - You can't get more output just by allowing more inflation
  - As we learned:

$$LTSG = \textit{Labor Productivity Growth} + \textit{Labor Force Growth}$$

# The Short-Run Aggregate Supply Curve

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- The short-run Aggregate Supply curve is upward sloping
  - As the overall price level rises, the level of output rises
- Why the SRAS curve is upward sloping?
  - Who provides us with the output (the supply)?

Firms

- What drives firm decisions?

Profits

- The simplest profit formula?

**Profit = Revenues -Costs**

# Profits per Item Sold

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- Profits = Revenues - Costs
- Profits/pizza = (Revenues/pizza) – (Cost/pizza)
  - Revenues/pizza = Price of the pizza
  - Cost/pizza: 80% are labor costs (wages)
- Wages are sticky
- If the price level is rising and wages are sticky, you make **more money per unit sold**

# Why Do You Increase Production?

|            |              | pizzas       | cost per worker | non labor costs per pizza |             | total non-labor costs | total costs | price per pizza | cost per pizza | profit or loss |
|------------|--------------|--------------|-----------------|---------------------------|-------------|-----------------------|-------------|-----------------|----------------|----------------|
| # of ovens | # of workers | sold per day | per day         | per day                   | labor costs | costs                 | costs       |                 |                |                |
| 1          | 5            | 50           | \$80            | \$2                       | \$400       | \$100                 | \$ 500      | \$11            | \$ 10.00       | \$1.00         |
| 1          | 8            | 65           | \$80            | \$2                       | \$640       | \$130                 | \$ 770      | \$11            | \$ 11.85       | (\$0.85)       |
| 1          | 8            | 65           | \$80            | \$2                       | \$640       | \$130                 | \$ 770      | \$15            | \$ 11.85       | \$3.15         |

- If I can raise my prices and not pay my people more, it's profitable to make more pizza

# So Why the SRAS Curve is Upward Sloping?

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- Contracts make some wages and prices “**sticky**”
  - Prices and wages are said to be “sticky” when they do not respond quickly to changes in demand or supply
- Firms are often slow to adjust wages
  - Annual salary reviews are “normal”
  - Also, firms dislike cutting wages—it’s bad for morale
- Other situations of sticky prices?
  - Magazine prices, menu costs

# Shifts in the SRAS Curve

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- Supply shock: Unexpected event that causes SRAS curve to shift
- SRAS shifts when:
  - Input prices change
    - ❖ Nominal wages
    - ❖ Commodity (e.g. natural resource) prices
  - Factors of production change
  - Technology changes

# SRAS Shifts: Change in Nominal Wages

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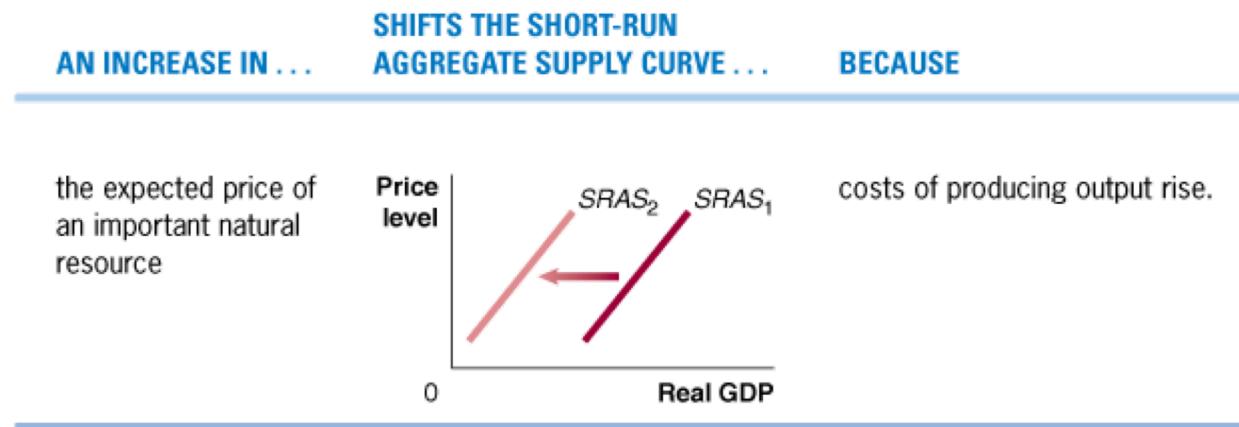
- Recall: Shifting the SRAS curve requires to look at the change in relationship between a given overall price level and the quantity produced
- What happens if the government raises the minimum wage?
  - What happens if you must pay \$100/day instead of \$80/day?

# What Happens to Pizza Output?

|       |         | pizzas  | cost per | non labor     |             | total     |        |           |          | profit    |          |
|-------|---------|---------|----------|---------------|-------------|-----------|--------|-----------|----------|-----------|----------|
| # of  | # of    | sold    | worker   | costs per     | total       | non-labor | total  | price per | cost per | or loss   | total    |
| ovens | workers | per day | per day  | pizza per day | labor costs | costs     | costs  | pizza     | pizza    | per pizza | profits  |
| 1     | 5       | 50      | \$80     | \$2           | \$400       | \$100     | \$ 500 | \$11      | \$ 10.00 | \$1.00    | \$50.00  |
| 1     | 8       | 65      | \$80     | \$2           | \$640       | \$130     | \$ 770 | \$11      | \$ 11.85 | (\$0.85)  | -\$55.00 |
| 1     | 8       | 65      | \$80     | \$2           | \$640       | \$130     | \$ 770 | \$14      | \$ 11.85 | \$2.15    | \$140.00 |
| 1     | 8       | 65      | \$100    | \$2           | \$800       | \$130     | \$ 930 | \$14      | \$ 14.31 | (\$0.31)  | -\$20.00 |
| 1     | 5       | 50      | \$100    | \$2           | \$500       | \$100     | \$ 600 | \$14      | \$ 12.00 | \$2.00    | \$100.00 |

# SRAS Shifts: Unexpected Changes in Prices of Resources

- Unexpected input price increases would shift SRAS to the left
  - Example: Oil prices increase suddenly
  - With no change in final goods prices, same as an increase in labor costs
  - Produce less at a given price so SRAS shifts to the left



# SRAS Shifts: Change in Technology

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- What happens if we experience a big change in labor productivity (a technological change)?
- Let's go back to the pizza parlor:

|               |                 | pizzas<br>sold<br>per day | pizzas<br>per<br>worker |
|---------------|-----------------|---------------------------|-------------------------|
| # of<br>ovens | # of<br>workers |                           |                         |
| 1             | 5               | 50                        | 10                      |
| 1             | 8               | 64                        | 8                       |
| 1             | 8               | 80                        | 10                      |

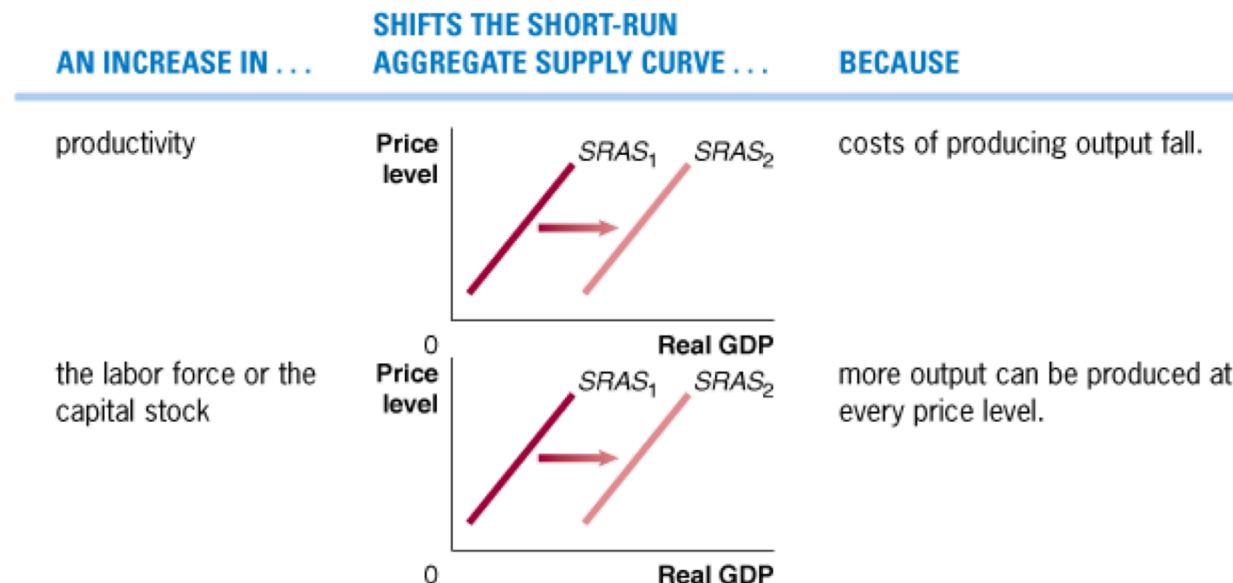
# SRAS Shifts: Change in Technology

|       |         | pizzas  | cost per | non labor     |             | total     |        |           |          | profit    |          |
|-------|---------|---------|----------|---------------|-------------|-----------|--------|-----------|----------|-----------|----------|
| # of  | # of    | sold    | worker   | costs per     | total       | non-labor | total  | price per | cost per | or loss   | total    |
| ovens | workers | per day | per day  | pizza per day | labor costs | costs     | costs  | pizza     | pizza    | per pizza | profits  |
| 1     | 8       | 64      | \$100    | \$2           | \$800       | \$128     | \$ 928 | \$14      | \$ 14.50 | (\$0.50)  | -\$32.00 |
| 1     | 8       | 80      | \$100    | \$2           | \$800       | \$160     | \$ 960 | \$14      | \$ 12.00 | \$2.00    | \$160.00 |

- Labor productivity jumped → Cost/pizza fell
- We increase pizza production and still are profitable

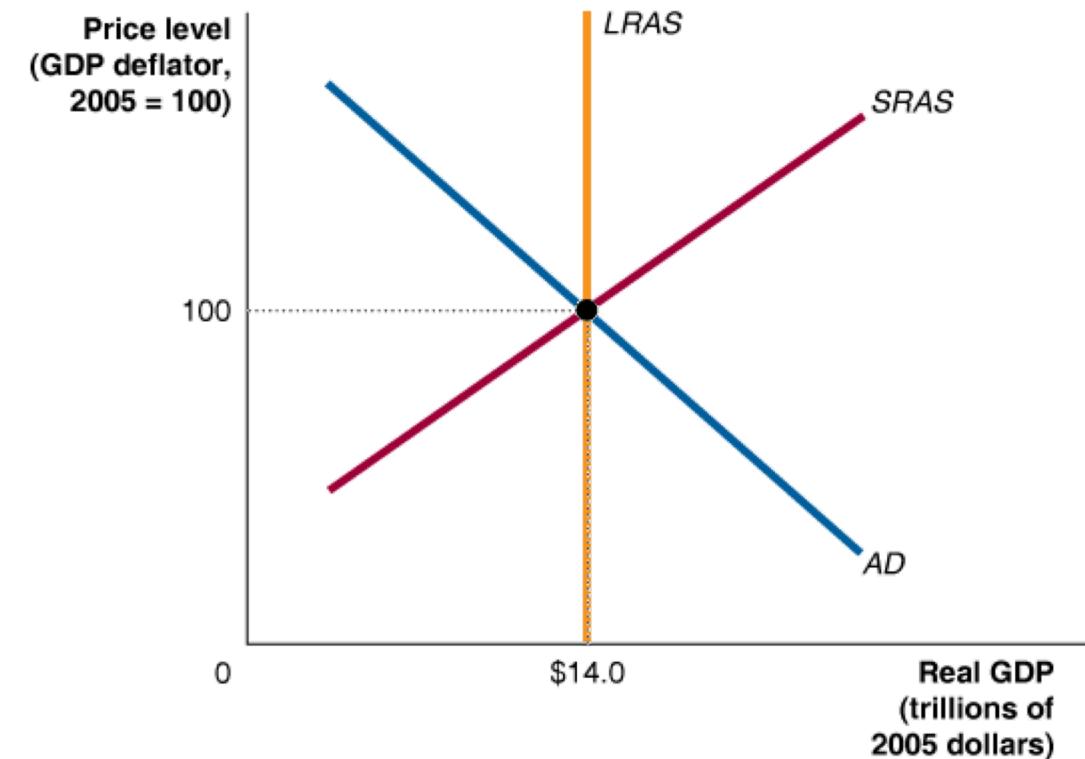
# SRAS Shifts: Technology and Factors of Production

- **Improvements in technology** allow productivity to improve, and hence level of production at any given price level increases
- An increase in the **availability of the factors of production**, like labor and capital, allows more production at any price level



# Long-Run Macroeconomic Equilibrium

- In the long-run, we expect the economy to produce at the level of **potential GDP**—i.e., the LRAS level
- So **long-run macroeconomic equilibrium** occurs when the AD and SRAS curves intersect at the LRAS level



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# Analysis of Shocks to Aggregate Demand and Aggregate Supply

# Static Model

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- For simplicity, assume:
  1. No inflation; the current and expected-future price level is 100
  2. No long-run growth; i.e. the LRAS curve is not moving
- These assumptions will help us analyze **recessions**, **expansions** and **supply shocks**
- We will see **why** long-run macroeconomic equilibrium cannot occur at any other level of output (other than potential GDP)

# Characterizing Changes in Key Variables as Shocks

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- Why call them shocks?
- Most economic models are **equilibrium seeking**
- When something occurs outside of the forces that drive the model, it **SHOCKS** the system and the model pushes toward a different equilibrium

# Types of AD Shocks

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- Changes in variables that determine the position of the AD curve

$\Delta$  HH expectations  $\rightarrow$   $\Delta$  Autonomous consumption

$\Delta$  Personal taxes  $\rightarrow$   $\Delta Y_d \rightarrow \Delta C$

$\Delta$  Profit expectations  $\rightarrow$   $\Delta$  Investment

$\Delta$  Interest Rates  $\rightarrow$   $\Delta$  Investment

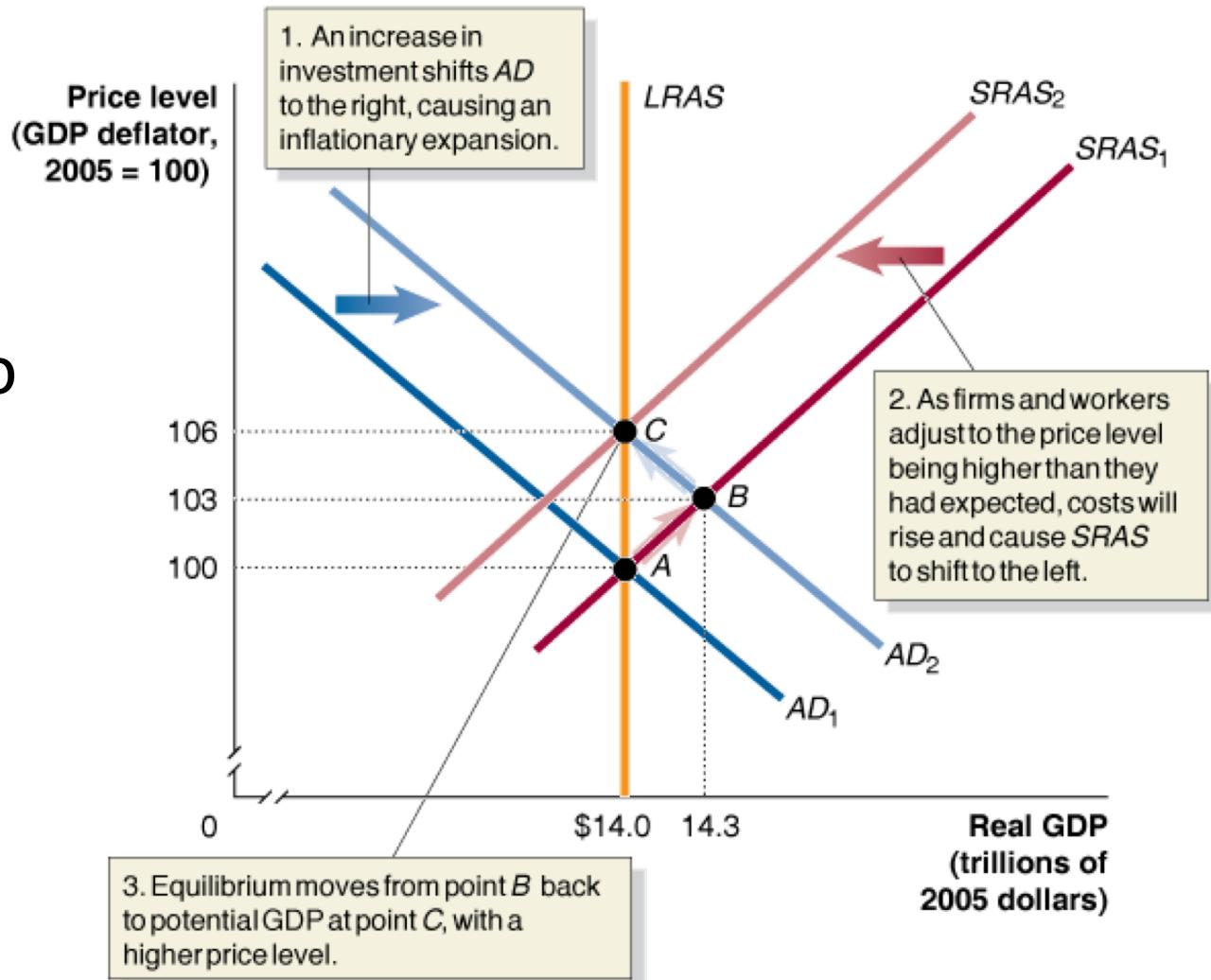
# Types of AS Shocks

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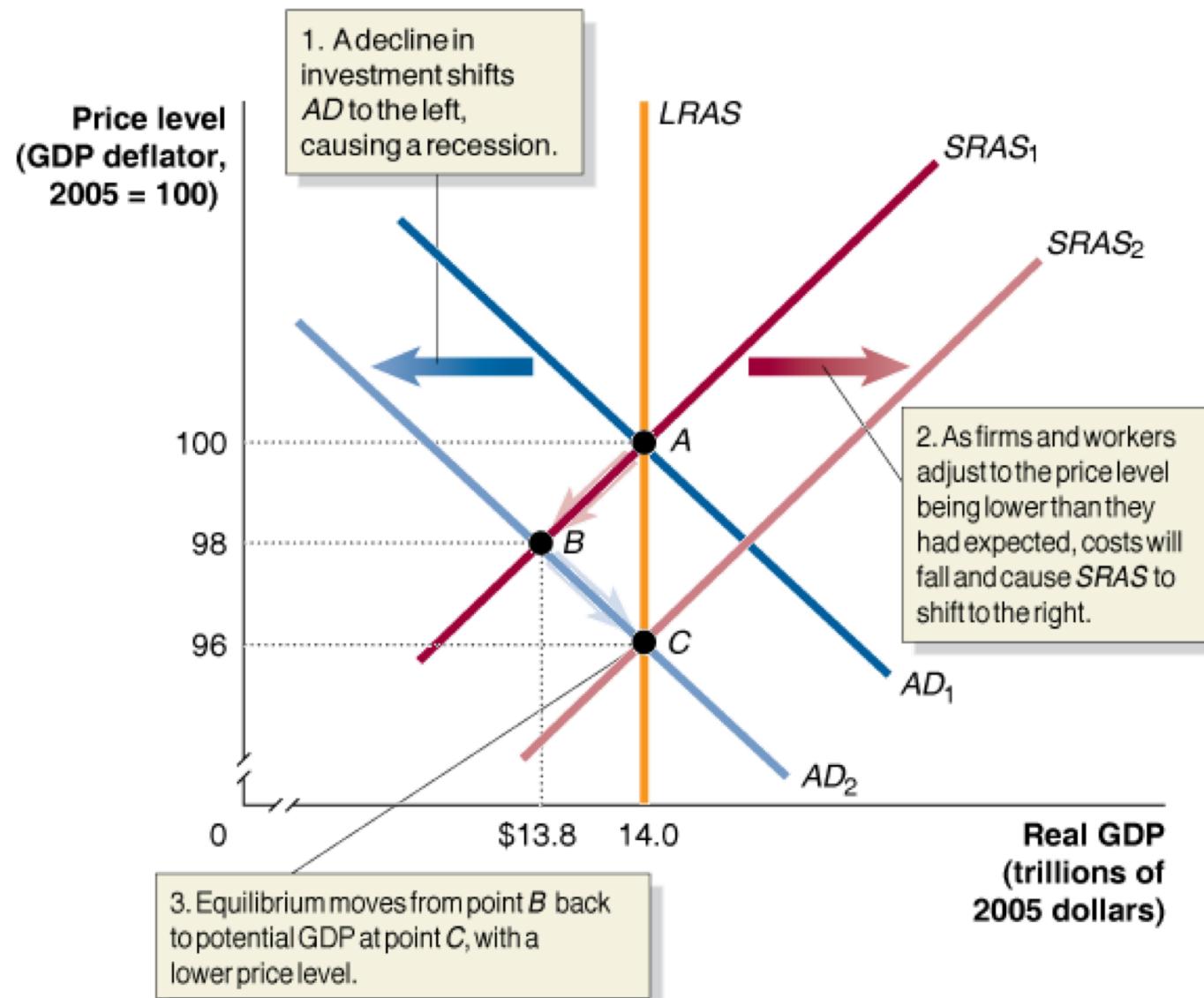
- Changes in variables that determine the position of the AS curve
  - Wages ( $W$ )
  - Productivity ( $Z$ )
  - Capital Stock ( $K$ )
  - Resource Prices ( $RP$ )

# Expansion

- Start in LR equilibrium
- Firms more optimistic → Investment raises → **AD shifts right**
- Unemployment falls below its **natural rate**, forcing employers to pay more
- Increased demand for goods **raises prices**
- Firms and workers raise their expectations about price level → **SRAS shifts left** – restoring LR equilibrium

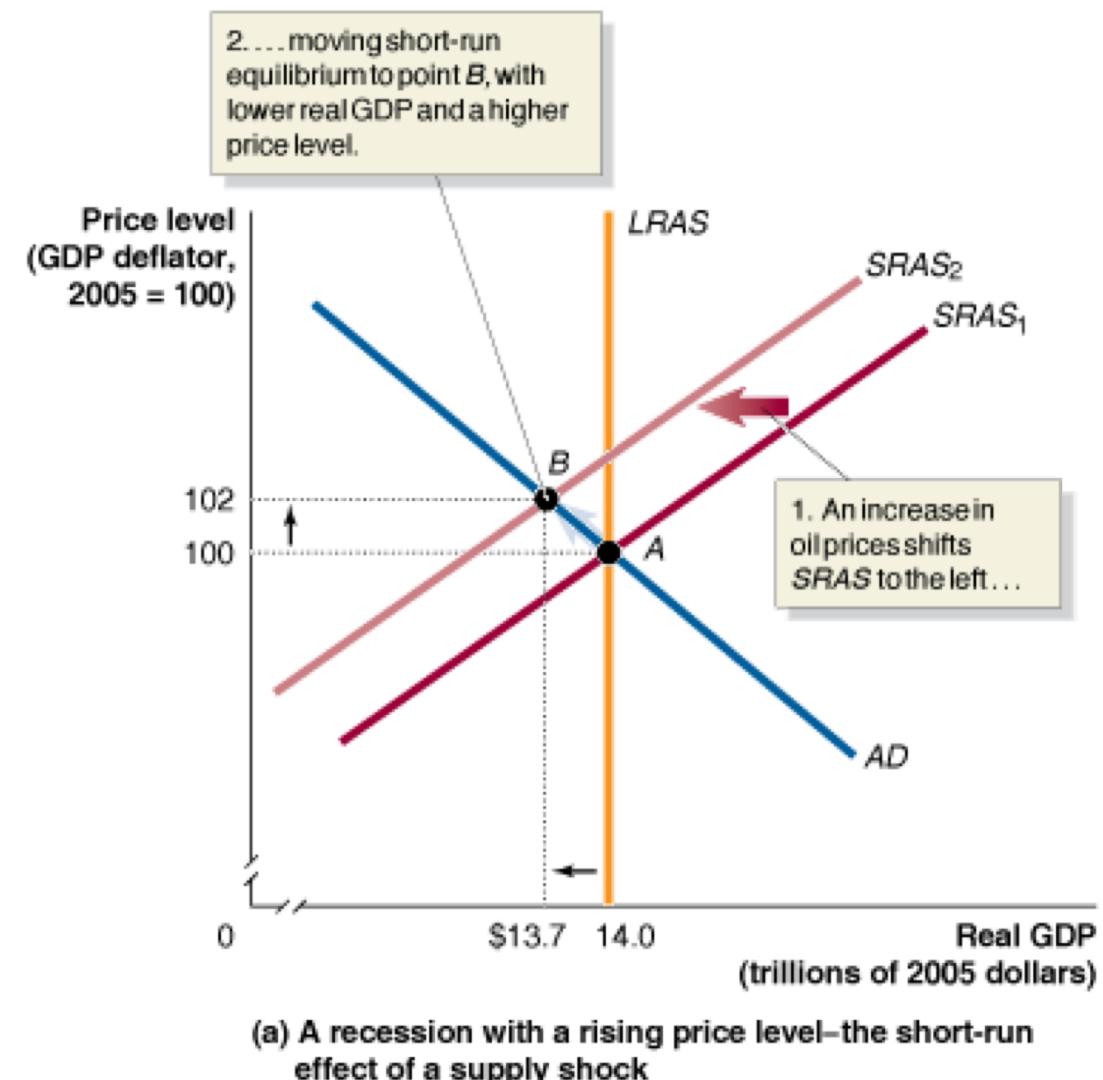


# Recession



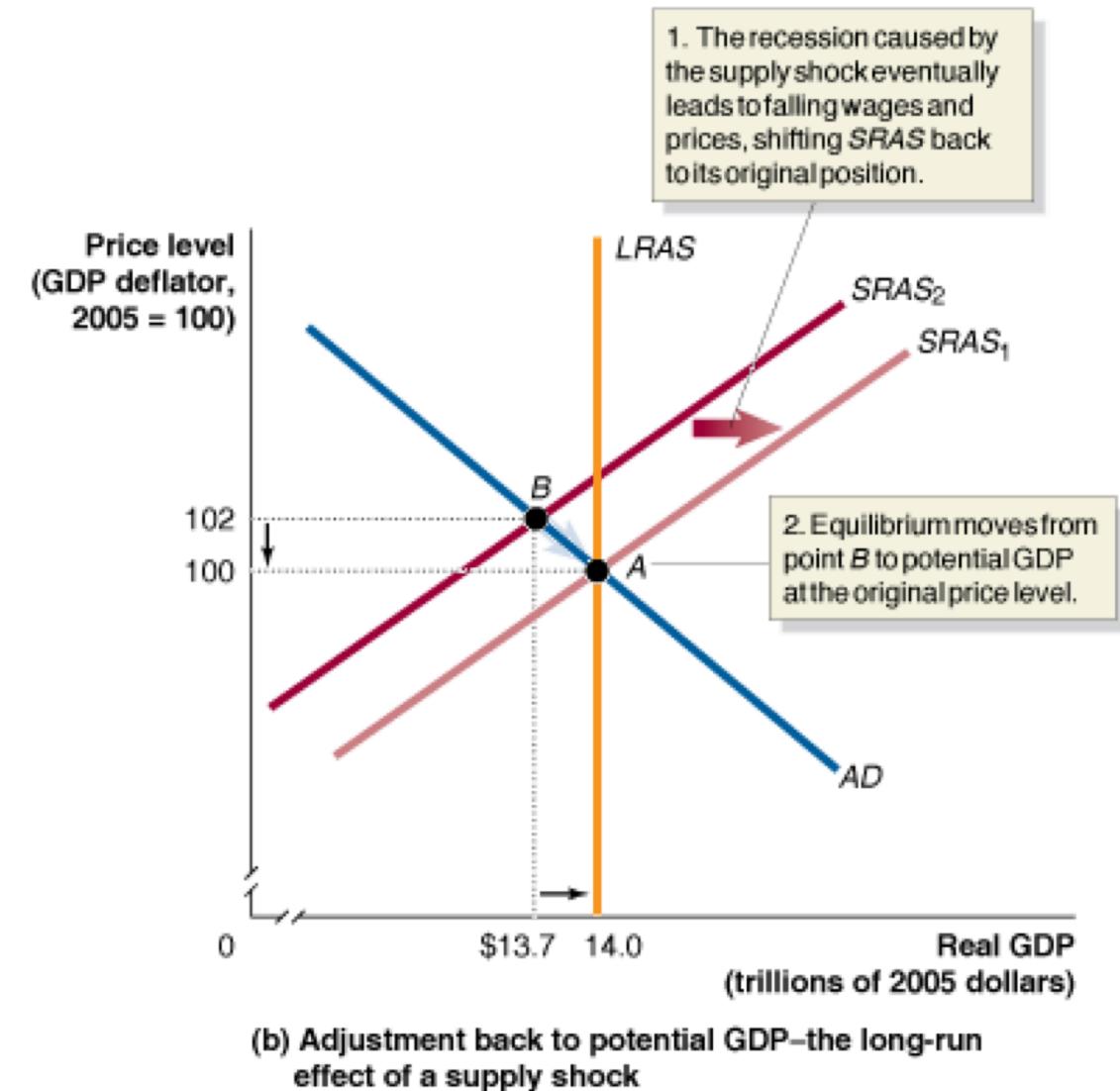
# Supply Shocks

- What happens when we have a Mid-East war?
- **Supply shock:** SRAS of oil shrinks suddenly
- This causes **stagflation**, a combination of inflation and recession, usually resulting from a supply shock

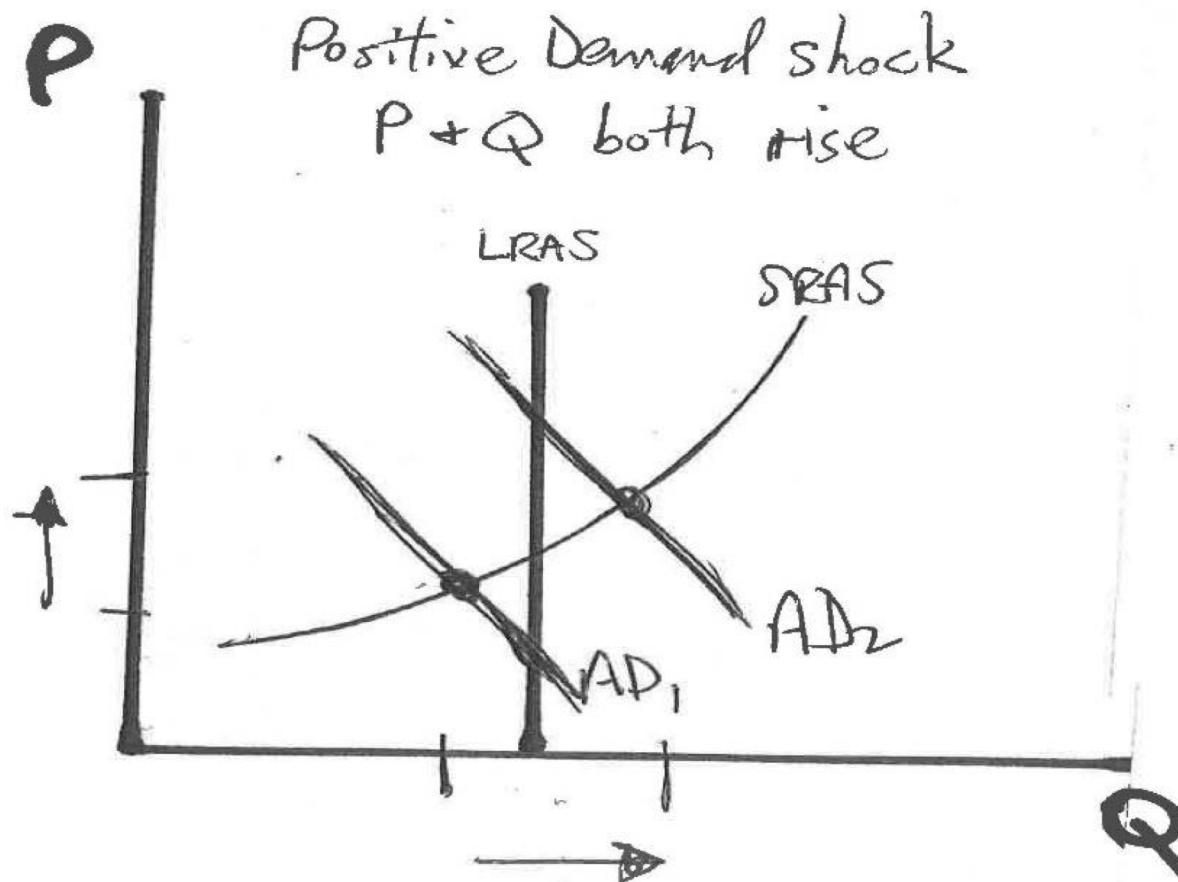


# Adjustment Back to Potential GDP from A Supply Shock

- Lower output + Unsold products (higher inventories, lay off people) → Lower employment
- **Higher unemployment** → Workers accept lower wages → **Firms cut prices** to clear inventories
- Decrease in expected prices → **SRAS moves right** – restoring LR equilibrium



# A Positive Demand Shock May Be A Mixed Blessing



# Dynamic Interpretation

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- Few focus on the price level, or the level of GDP
- $\frac{\Delta P}{\Delta t} = \pi$       The world watches the inflation rate.  
More specifically:
- $\frac{\Delta \pi}{\Delta t}$  = The change in the pace of price changes.
- $\frac{\Delta Y}{\Delta t} = \dot{Y}$        $\dot{Y}$  = real growth rate for the economy
- A Positive demand Shock:

$\pi$  accelerates

$\dot{Y}$  accelerates

# Static vs Dynamic Model

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- Our model of aggregate demand and aggregate supply so far has been **static**, in the sense that:
  - Price levels were constant (no inflation)
  - There was no long-run growth
- We can form a **dynamic** aggregate demand and aggregate supply model by incorporating:
  - Continually-increasing real GDP, shifting LRAS to the right
  - AD also ordinarily shifting to the right
  - SRAS shifting to the right except when workers and firms expect high rates of inflation

# How Policymakers and Businessmen Think About AD-AS

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- We don't have a stable price level
- We have a **stable inflation rate**
- We don't have a stable output level
- We have a **stable growth rate**

# What Constitutes a Dynamic Equilibrium

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- We posited before that

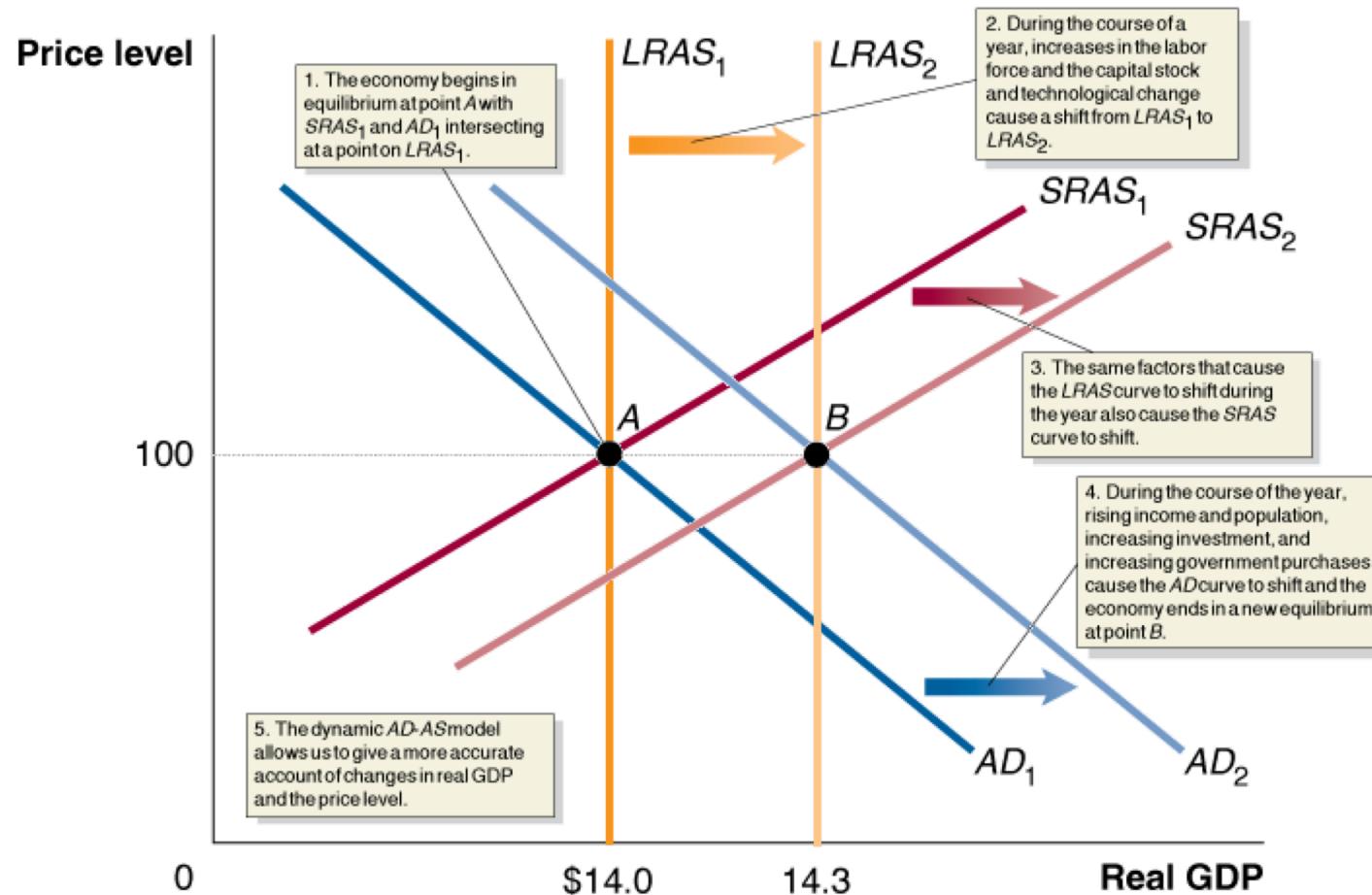
Long-term Sustainable Growth Rate = 2%

- We now posit that

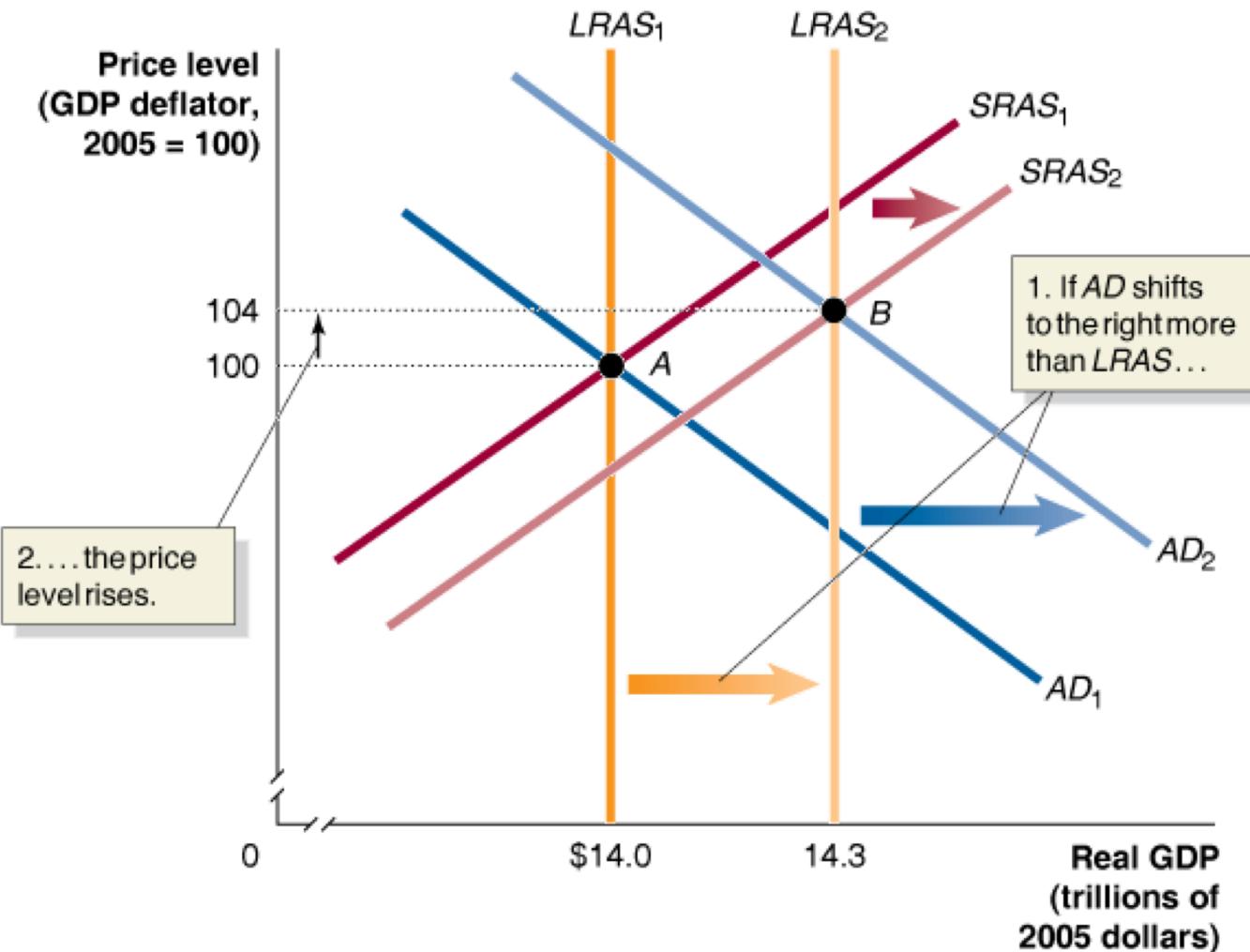
Ideal Inflation Rate = 2%

- **Dynamic equilibrium:** Output and prices are shifting so that **prices** are rising 2% per year and **output** is growing 2% per year

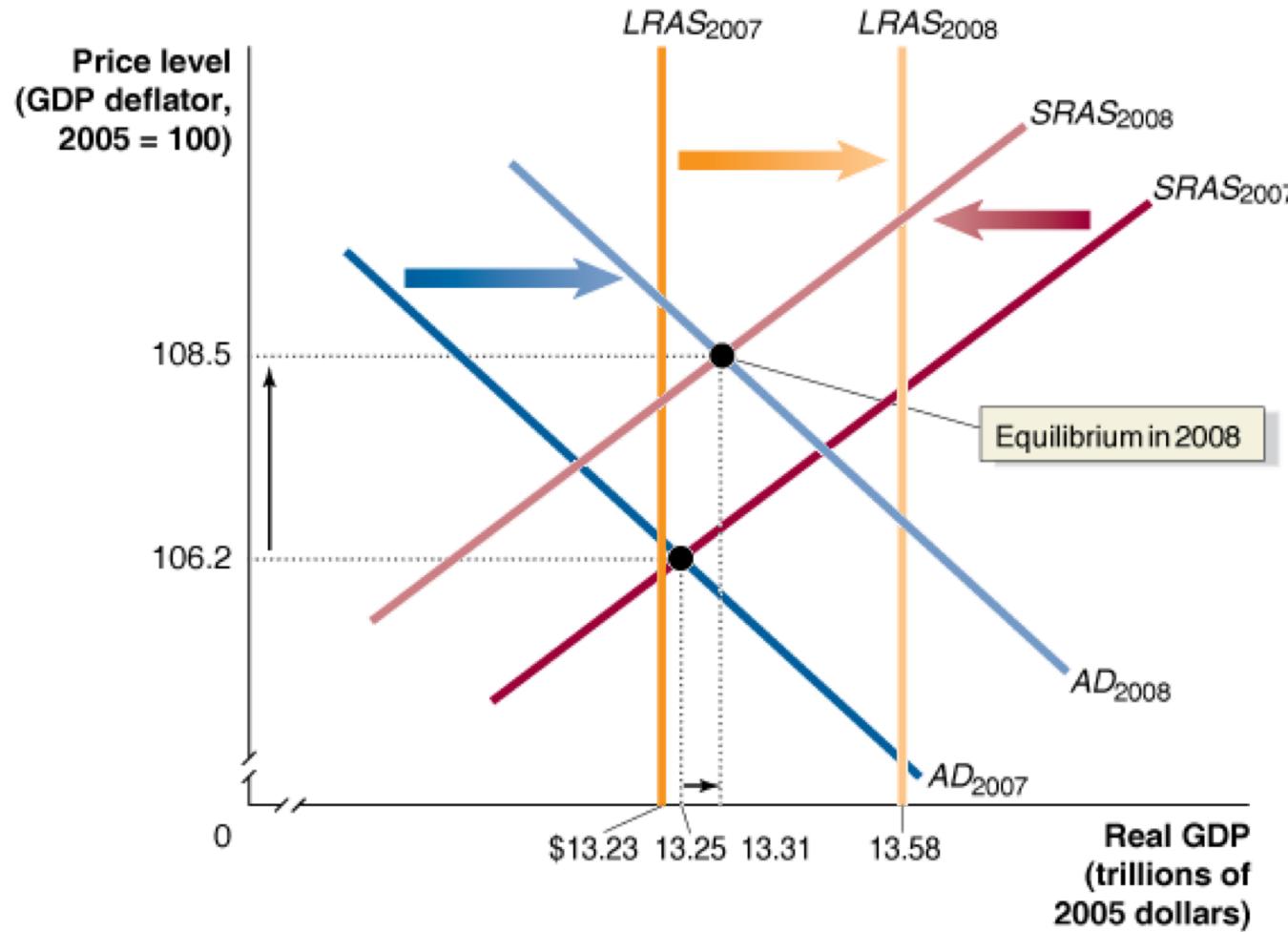
# A Dynamic AD-AS Model



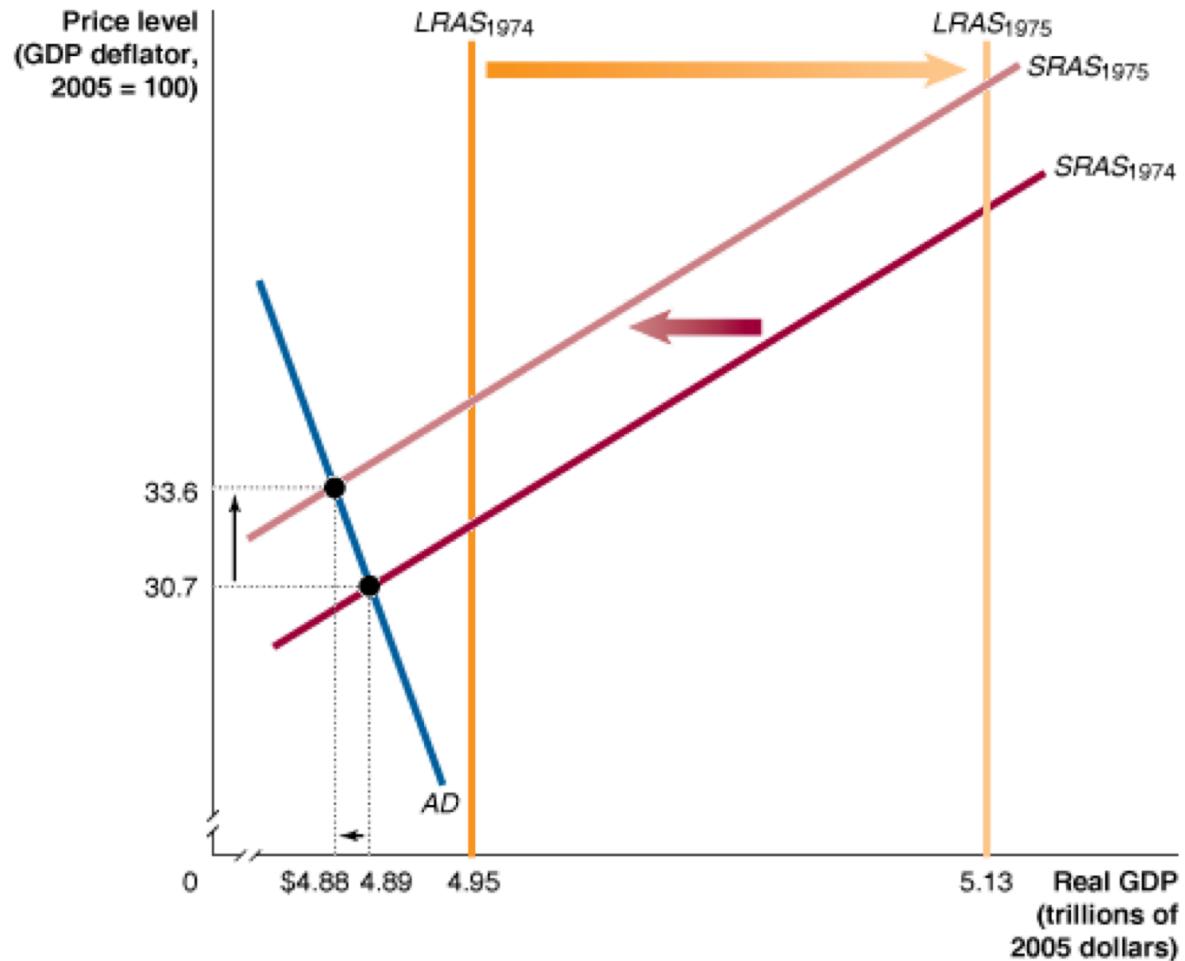
# What Is the Usual Cause of Inflation?



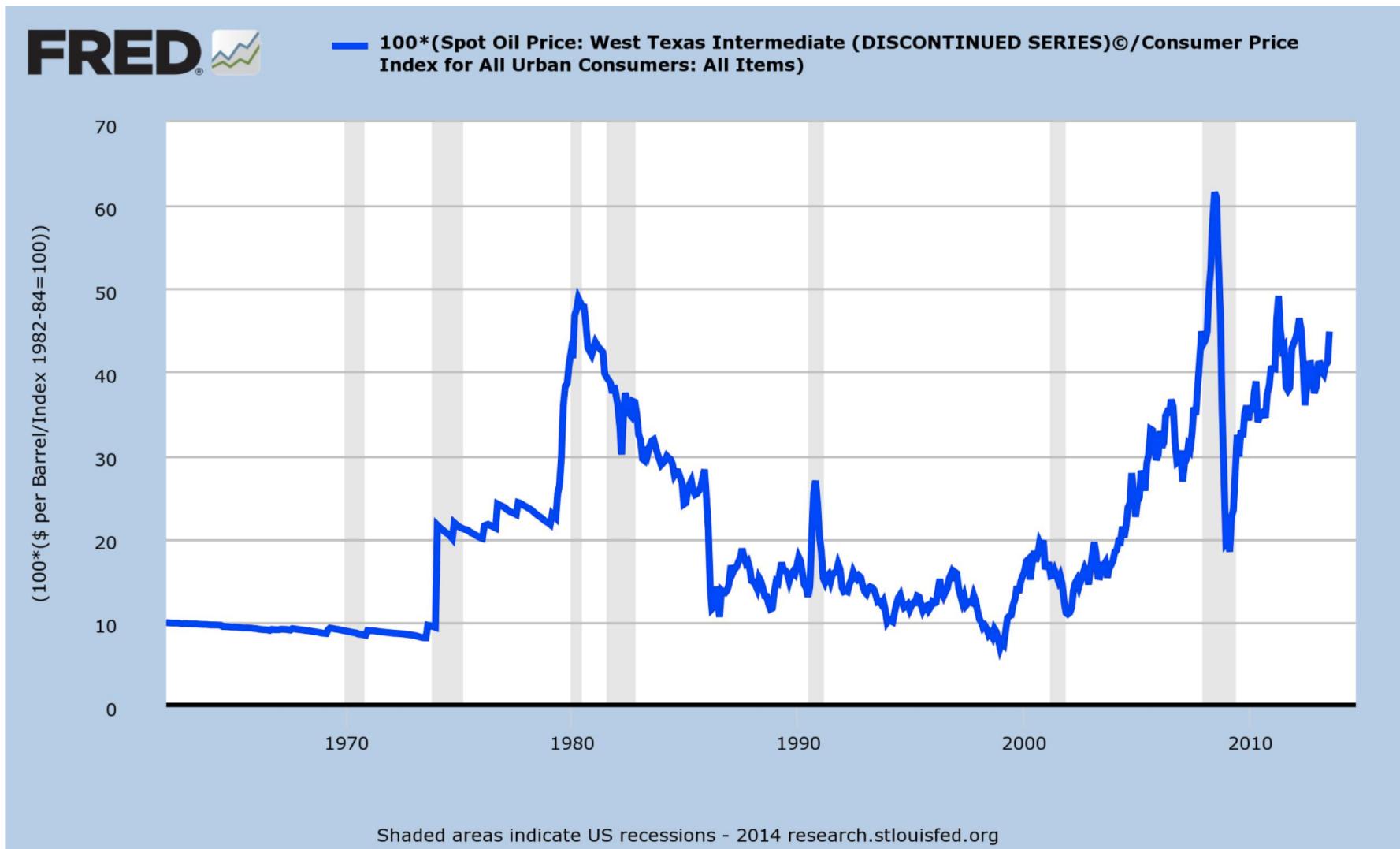
# The Recession of 2007-2009



# The Oil Shock of 1974–1975

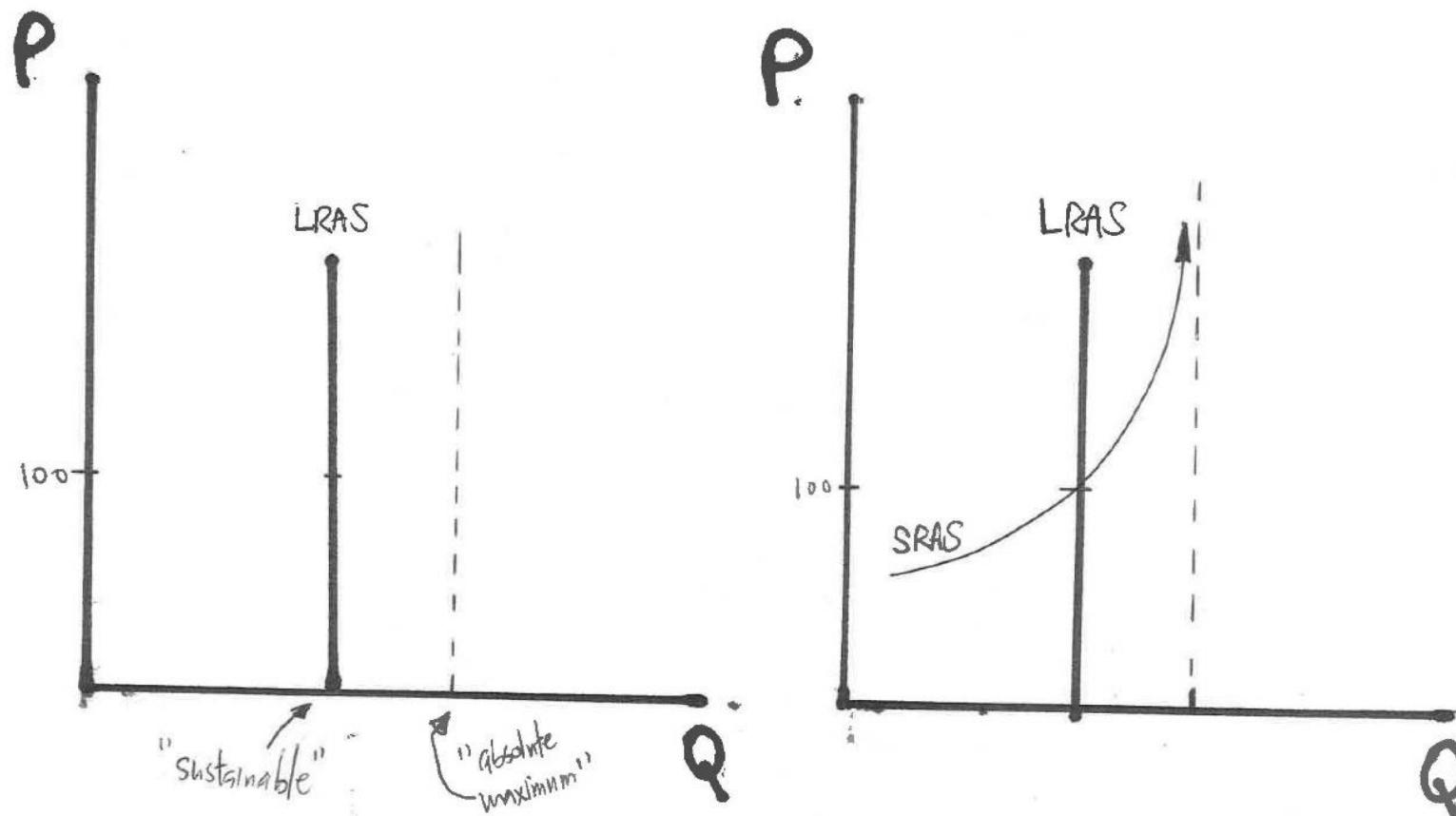


# Oil Shocks: A Part of Every Recession 1970 to 2014



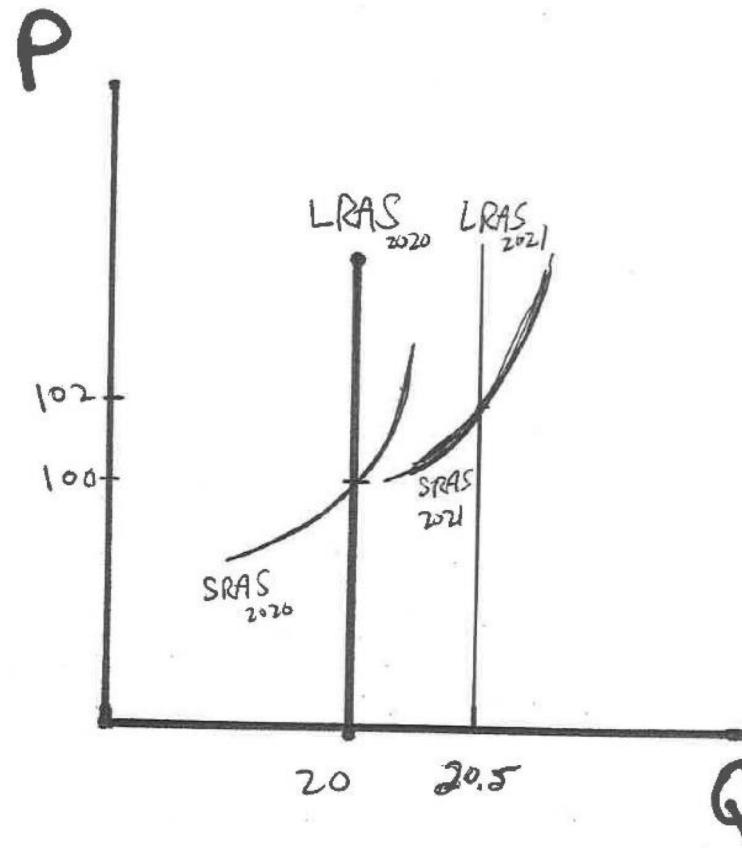
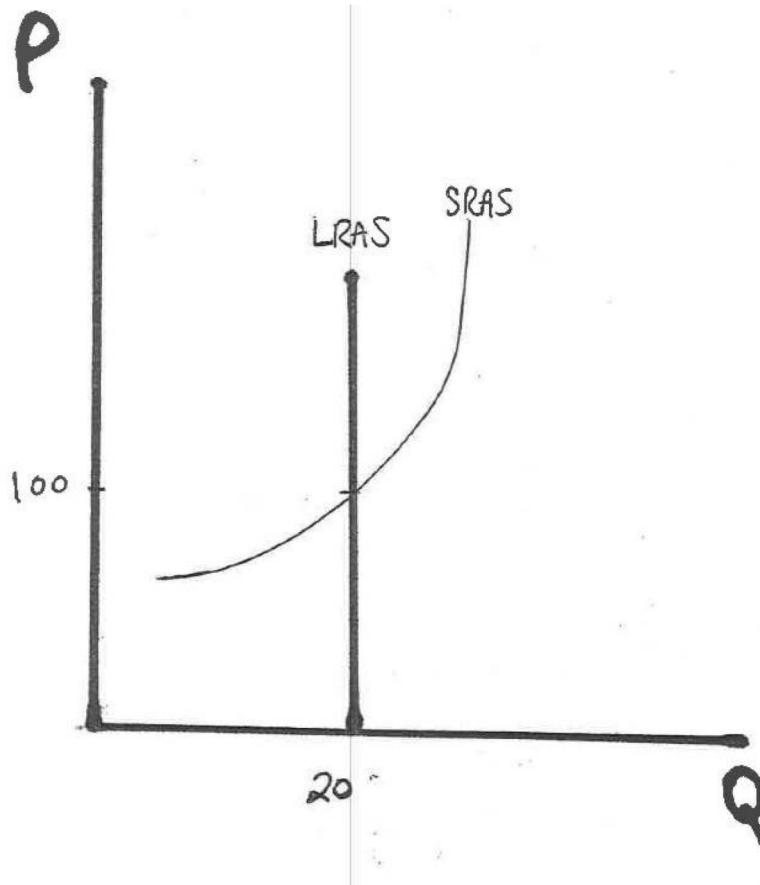
# AS Curve

- A ‘**curve**’ for AS allows us to better characterize economic snapshots



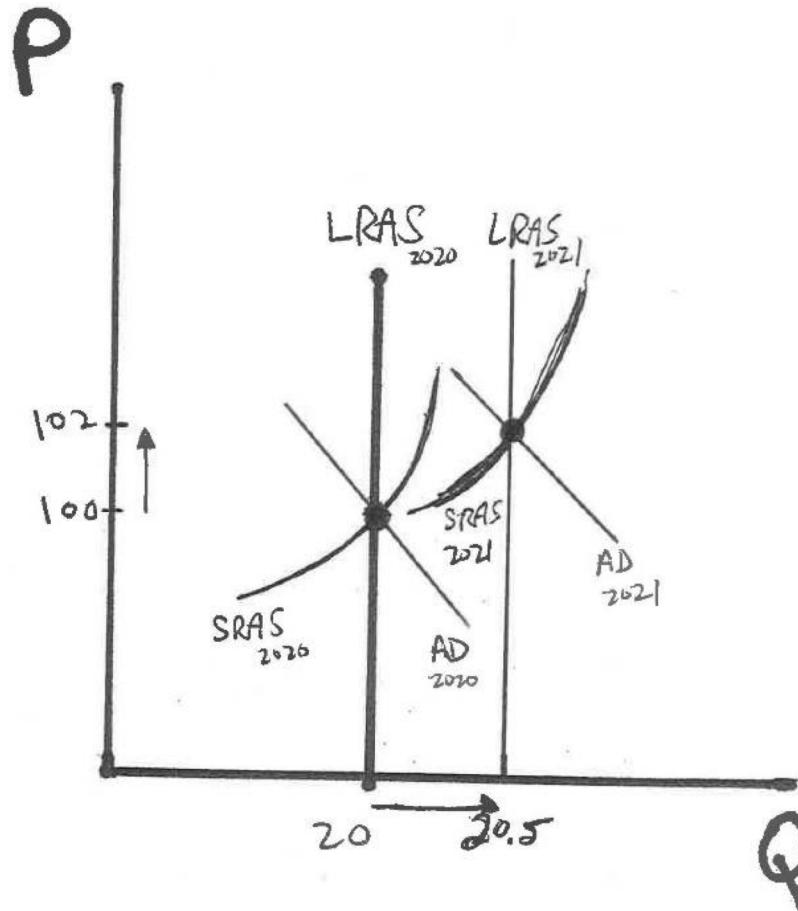
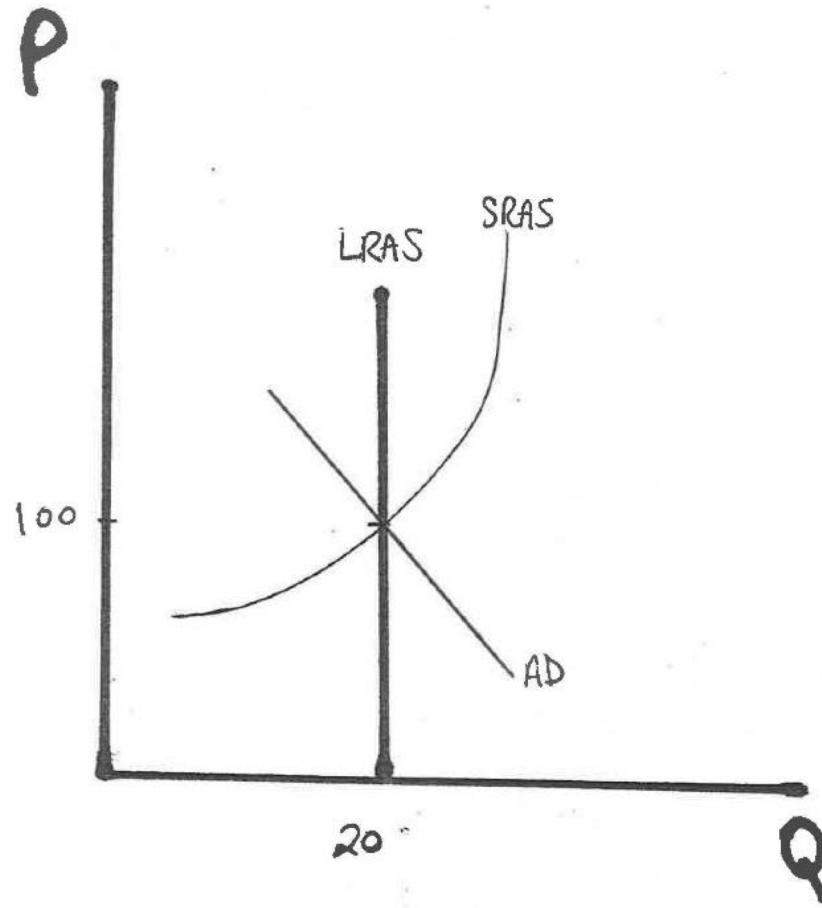
# A Dynamic Depiction: 2020 to 2021

1. Supply potential grows as population lifts **labor force** and **productivity** gains increase output per hour



# A Dynamic Depiction: 2020 to 2021

2. Increased incomes lift **consumption** and **investment** → **AD grows**



# Dynamic Equilibrium

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- Over a year, potential GDP (LRAS) rises by 2%
  - Labor force and productivity
- Over the year,
  - SRAS curve similarly shifts
  - Demand shifts, reflecting larger workforce and more investment
- A 2% rise in prices accompanies this equilibrium shift
  - Inflation expectations well anchored
- Real GDP gains 2%, prices rise 2%
- $\text{LRAS} = \text{SRAS} = \text{AD}$

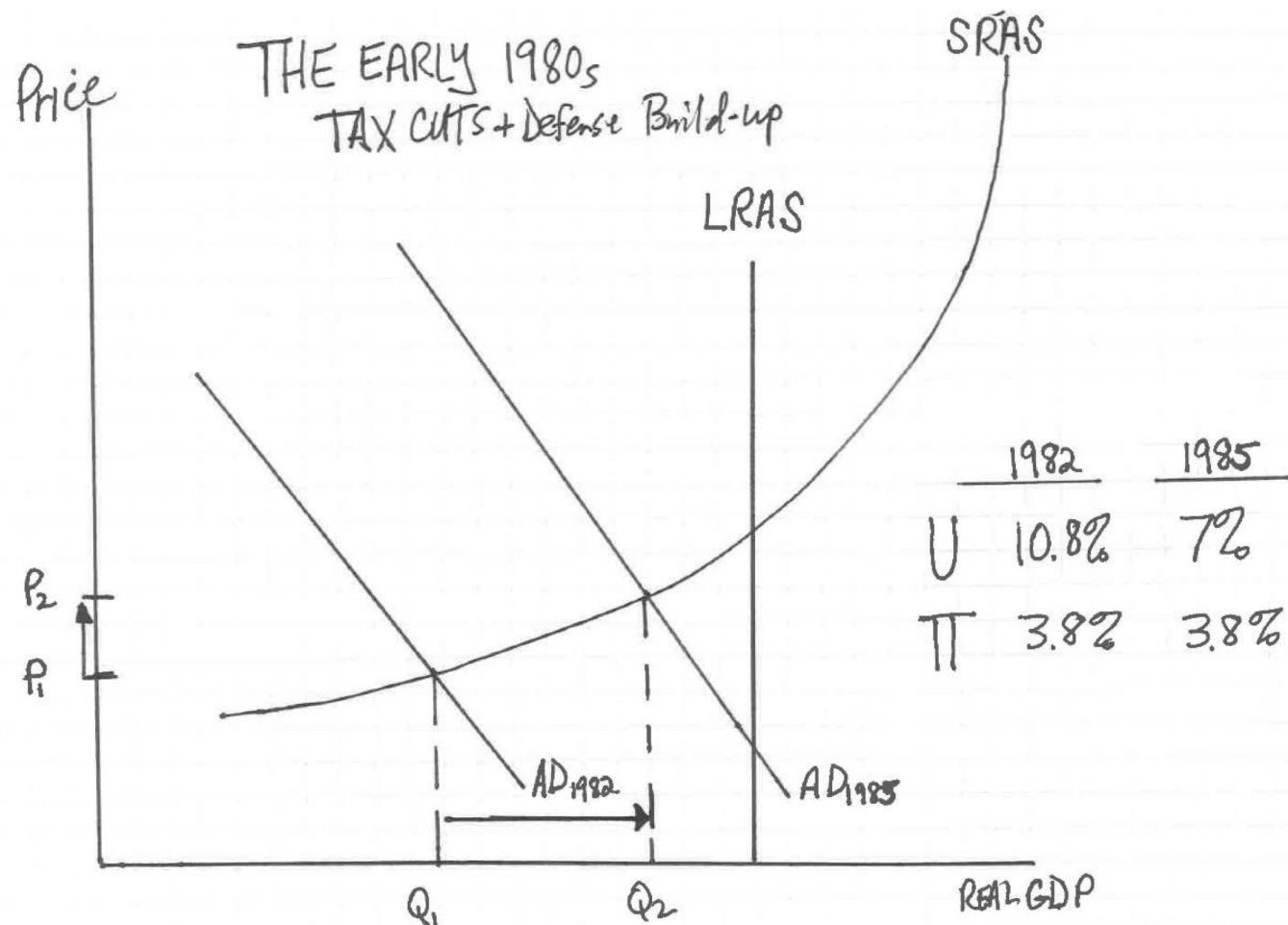
# Shocks Deliver What?

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- The **effects** of demand and supply shocks **depend** in part **on** the **state of the economy before the shock**
- With high U and ample capacity, the supply curve is **flattish**
- With very low U and little room to grow, the supply curve is **very steep**

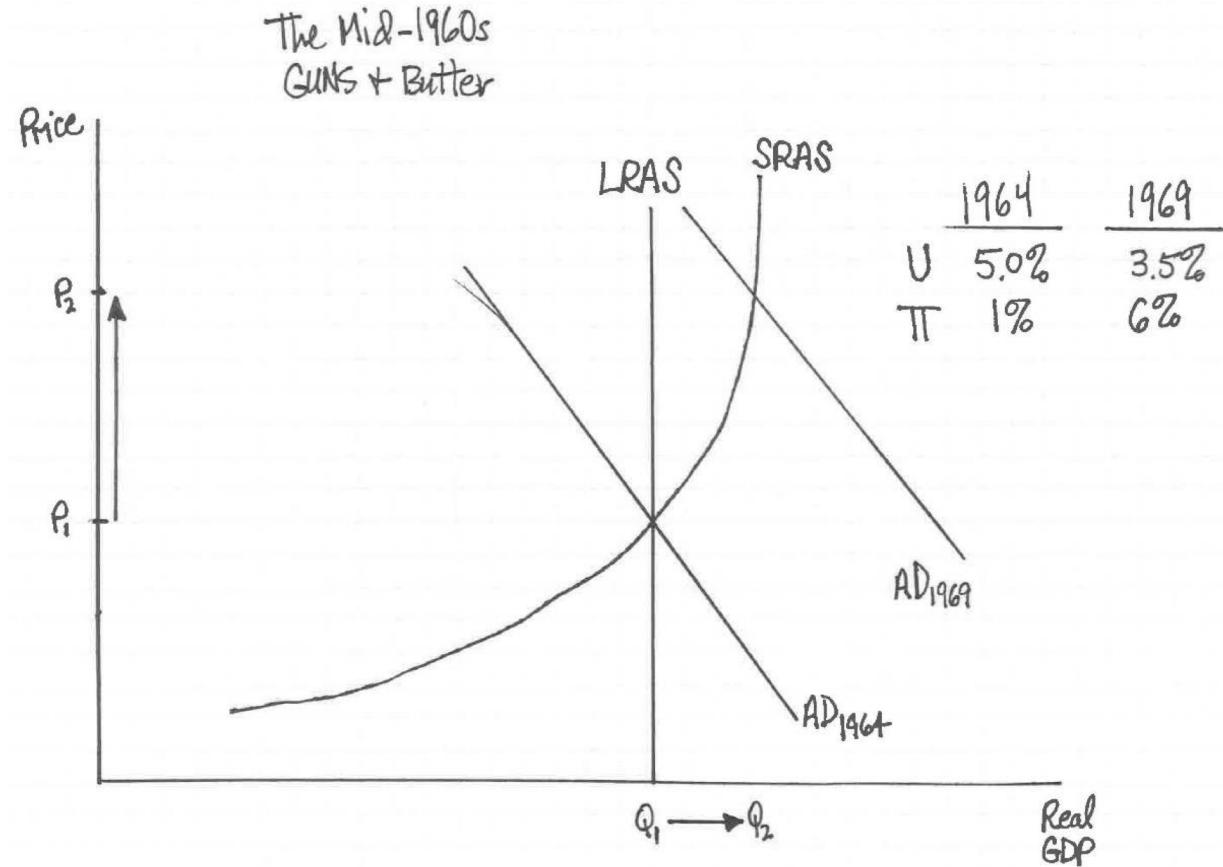
# With Ample Excess Capacity...

- ... a positive demand shock lifts **output meaningfully** and does **little to prices**



# If the Economy Is Operating At Full Employment...

- ... a positive demand shock lifts **output modestly** and **prices leap**



# Types of Aggregate Supply Shocks

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- **Adverse** AS Shocks: Changes in variables that shift AS to the **left**
  - Rising Wages
  - Rising Resource Price
  - Falling Productivity
  - Falling Capital
- **Favorable** AS Shocks: Changes in variables that shift AS to the **right**
  - Falling Wages
  - Falling Resource Price
  - Rising Productivity
  - Rising Capital

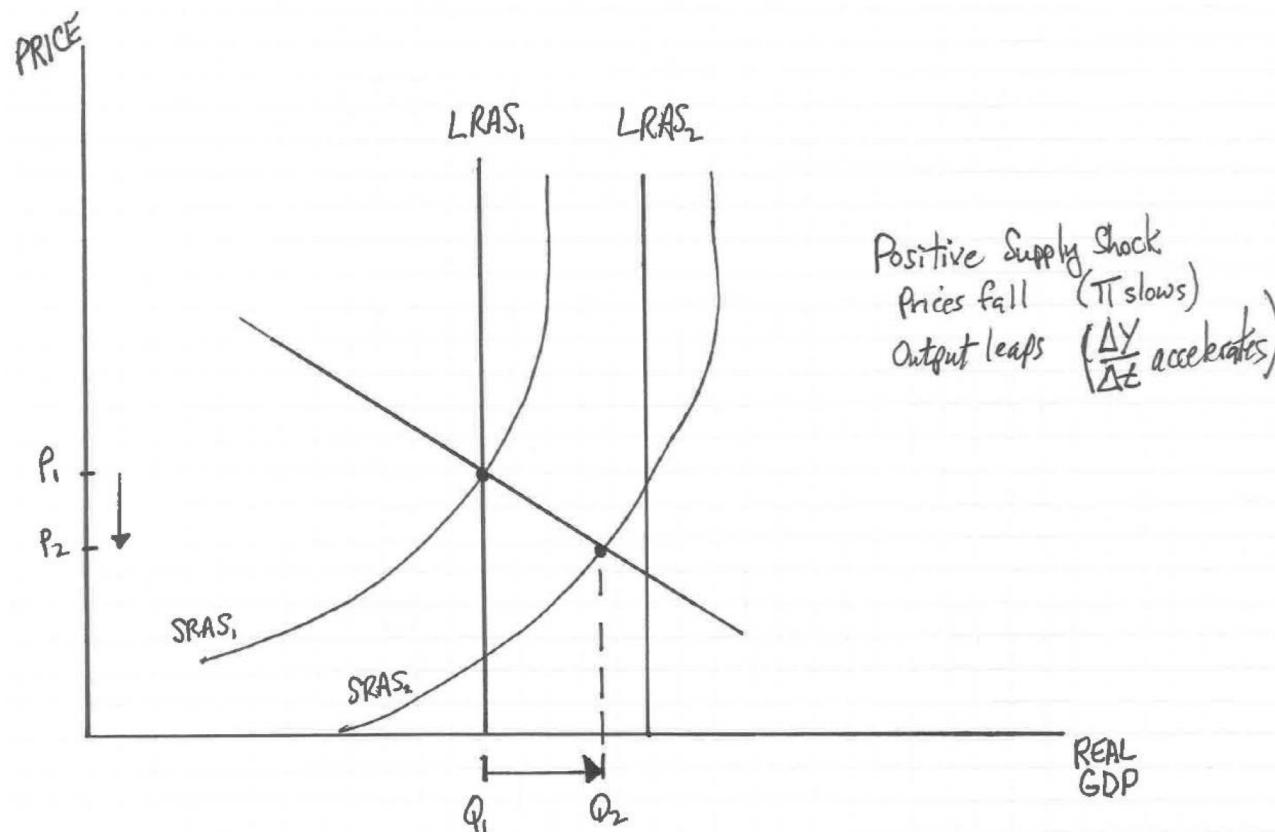
# A Positive Productivity Shock

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- The best news for the long run
- Technology inventions lay the groundwork
- With productivity, we shift people to new endeavors
- That means we have more output, at a given price level
- **AS shifts to the right**
  - Prices Fall
  - Output Rises

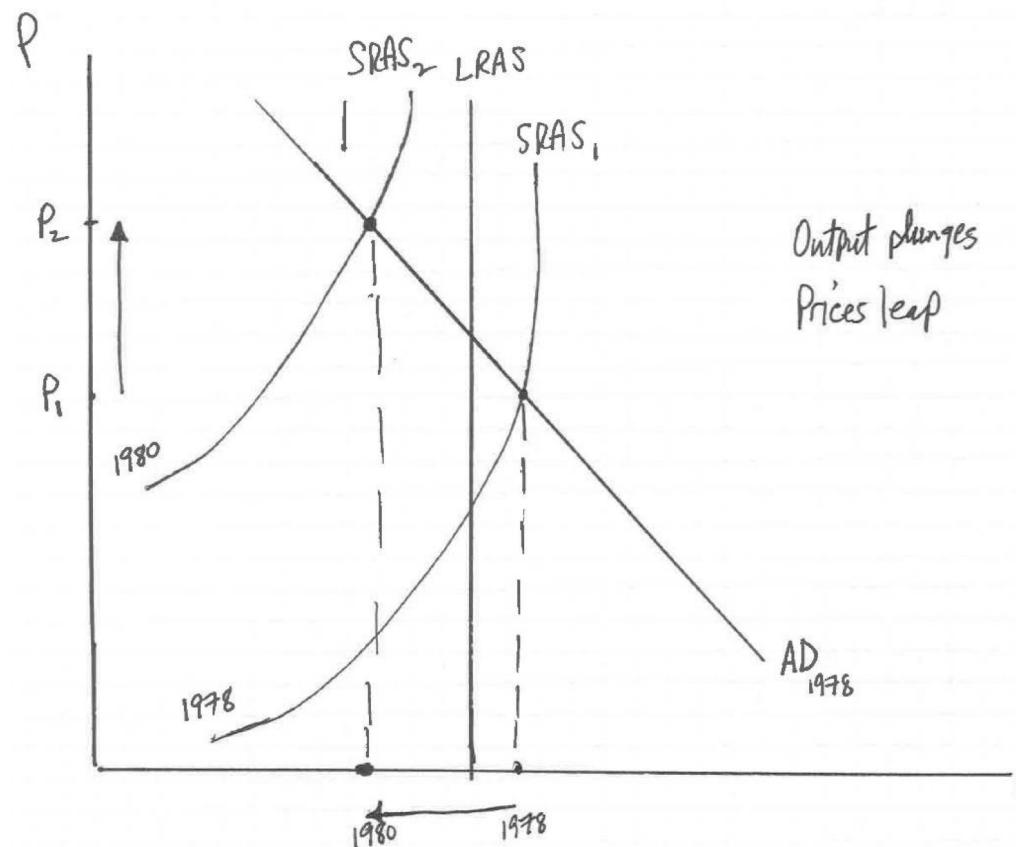
# A Positive Productivity Shock

- A jump in productive capacity allows for **more growth** amid **little price pressure**



# Oil Shock

- OPEC quadrupled oil prices in 1978 → **Inflation surged** and **output plunged**



# AS Shocks

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- Equilibrium price and output move in **opposite directions**
- A **positive** supply shock (e.g. surge in labor force):
  - Prices Fall
  - Output Rises
- An **adverse** supply shock (e.g. oil prices surge):
  - Prices Rise
  - Output Falls

# The Great Recession/Recovery: A Three Part Story

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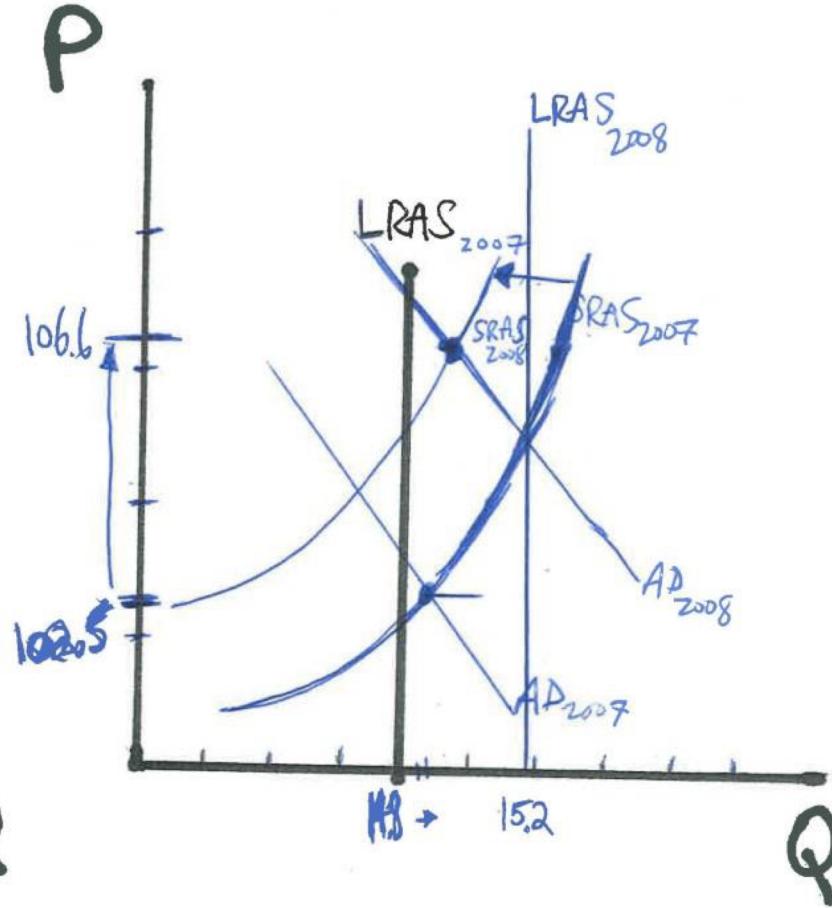
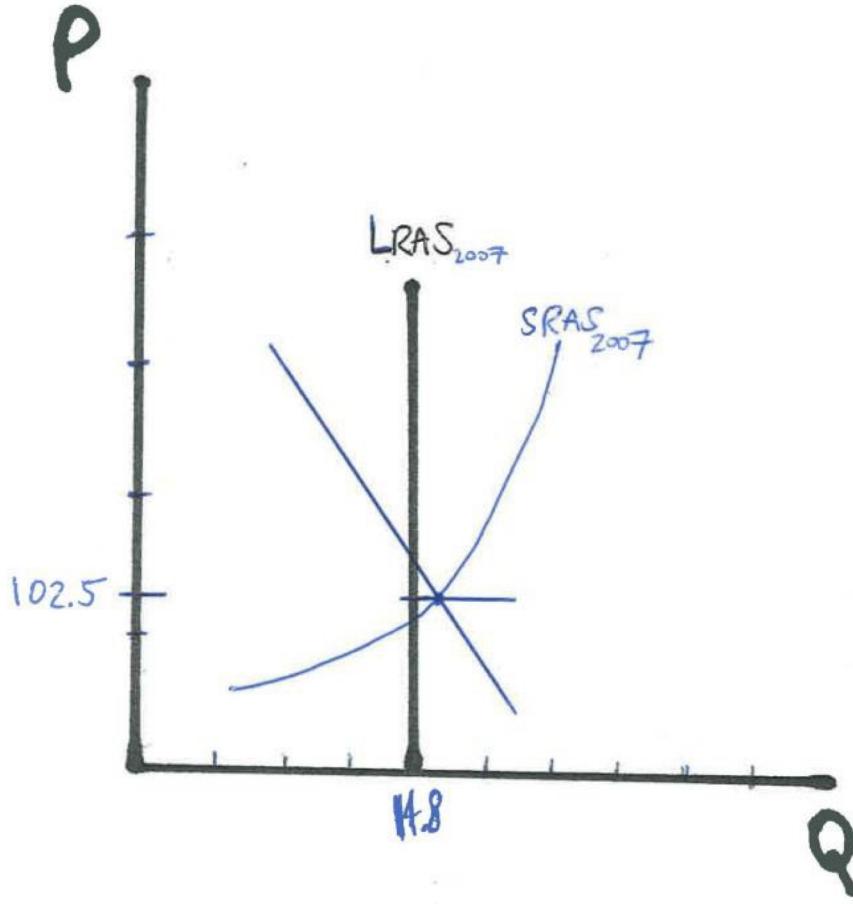
- **Act I:** Q2:2007 to Q2:2008
  - A standard **adverse supply shock** as oil prices surge
- **Act II:** Q2:2008 to Q2:2009
  - An **adverse demand shock** as interest rates surge and consumer and business confidence plunge
- **Act III:** Q2:2009 to Q2:2010
  - A **positive demand reversal** as government spending jumps, confidence rises and interest rates fall

# Bare Facts of the 3-Year Swing for Output and Inflation

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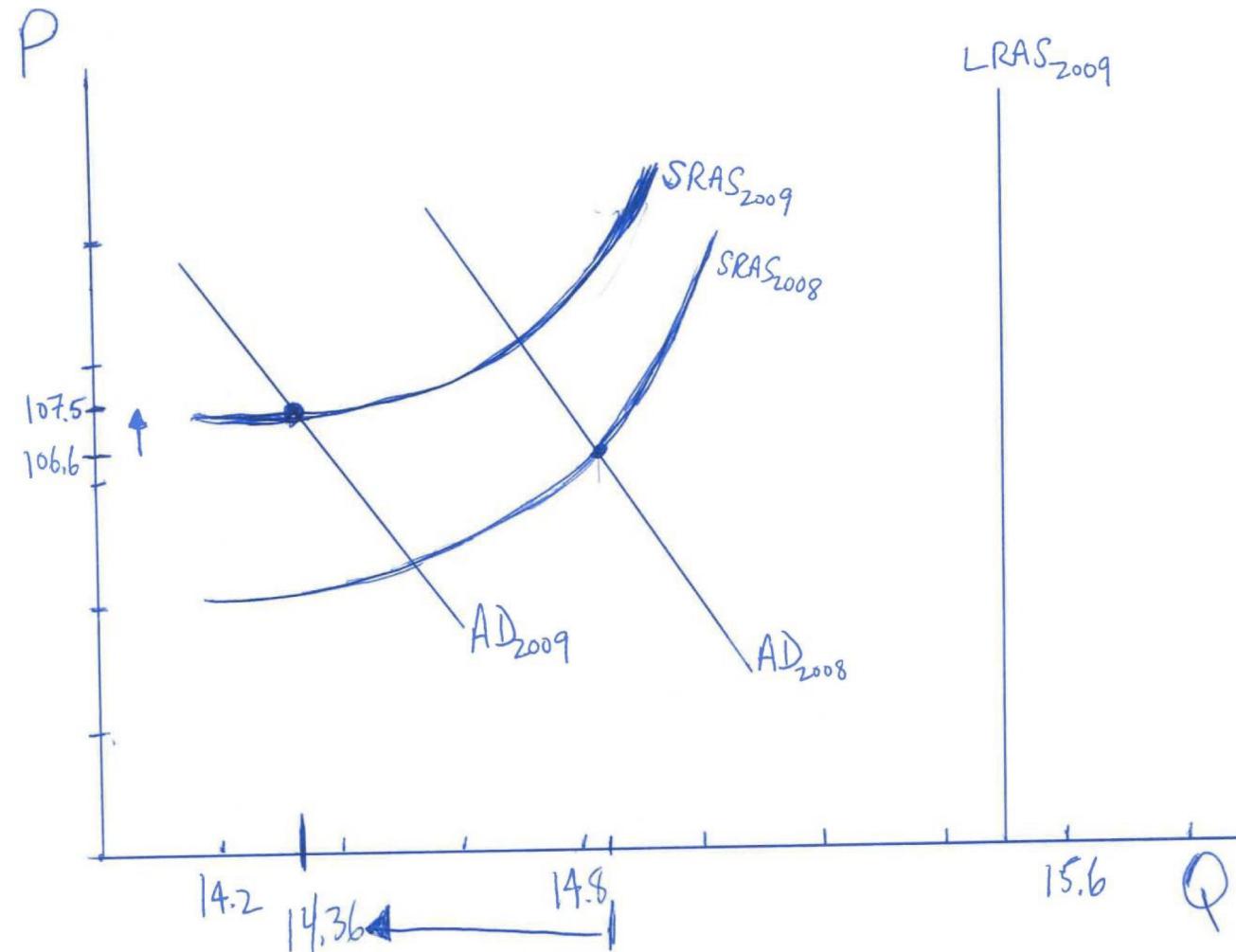
|         | REAL GDP<br>(\$ BILLIONS) | 4-QTR<br>CHANGE | CPI INDEX<br>(LEVEL) | 4-QTR<br>CHANGE | Potential<br>GDP | 4-QTR<br>CHANGE |
|---------|---------------------------|-----------------|----------------------|-----------------|------------------|-----------------|
| Q2:2007 | 14,839                    |                 | 102.5                | 2.5%            | 14,800           |                 |
| Q2:2008 | 14,963                    | 0.8%            | 106.6                | 4.0%            | 15,170           | 2.5%            |
| Q2:2009 | 14,356                    | -4.1%           | 107.5                | 0.8%            | 15,473           | 2.0%            |
| Q2:2010 | 14,746                    | 2.7%            | 108.7                | 1.2%            | 15,783           | 2.0%            |

# Act I: Oil Prices Surge - A Negative SRAS Shock



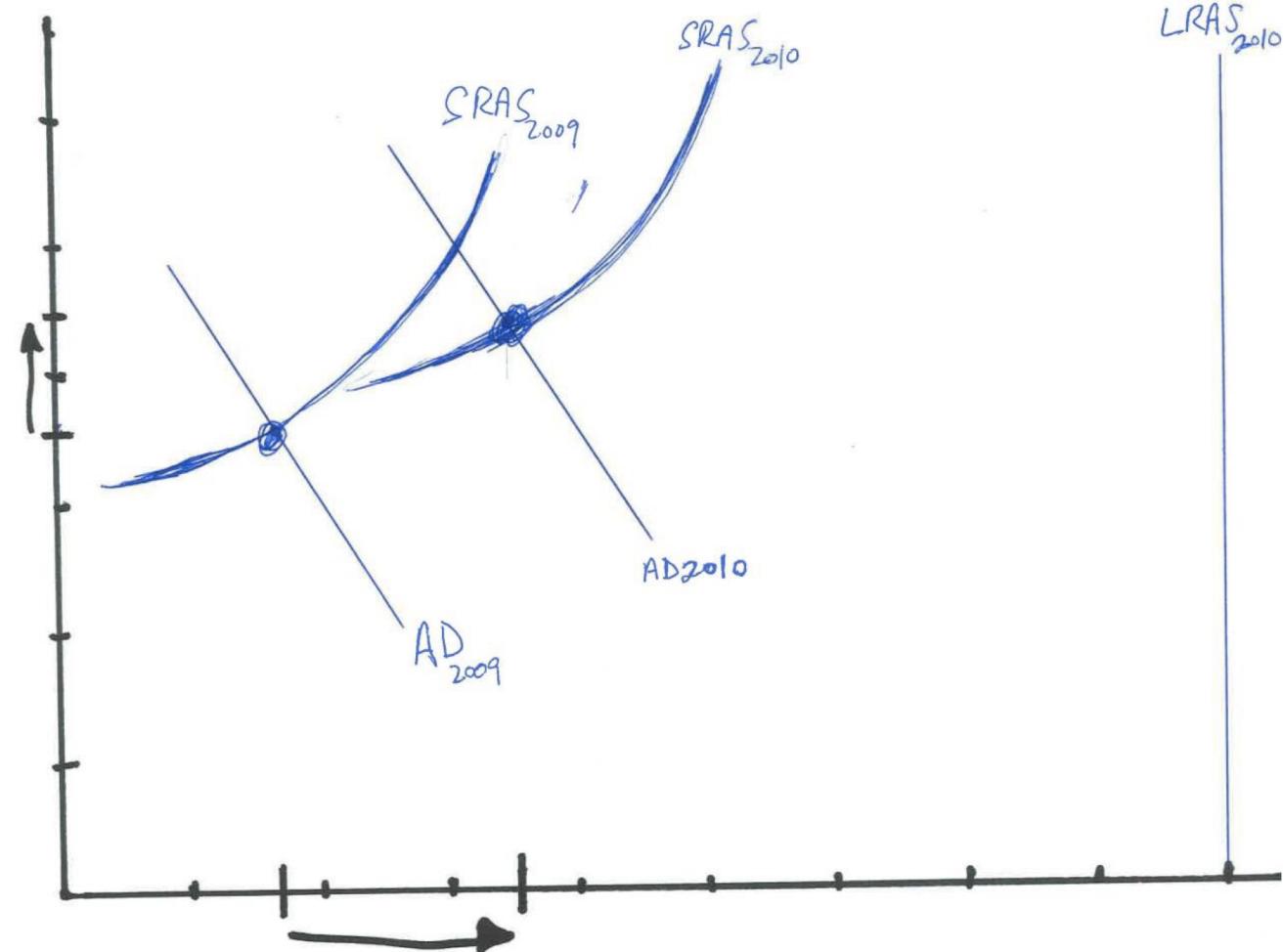
# Act II: A Mild Supply Shock, A Violent Demand Shock

- A **mild supply shock** as productivity is soft
- A **violent demand shock**: Interest rates rise and confidence falls
  - Investment down
  - Consumption plunges, despite falling oil
  - Note: prices rise **less than 2%**, not dynamic equilibrium, as output falls



# Act III: A Positive Supply Shock, A Positive Demand Shock

- A **positive supply shock**:  
Productivity jumps
- A **positive demand shock**:
  - Government stimulus lifts growth
  - Rising confidence lifts C
  - Falling interest rates lift I
  - **NONETHELESS**, inflation rises less than 2%



# Things to Ponder About 2010

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- Why did inflation rise less than 2% despite aggressive government fiscal stimulus?
- Why did risky interest rates fall despite an explosive increase in government borrowing?
- Why did confidence rise despite an explosive rise in the size of the U.S. budget deficit?
- Why SRAS curve was drawn ‘very flat’?
- Despite stimulus, where is GDP vs potential?

# Conclusion 1: Supply Shocks

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- **Adverse supply shocks** are the **worst** of both worlds:
  - Inflation accelerates **and** output falls
- **Positive supply shocks** are the **best** of all possible worlds:
  - Inflation rates fall **and** real GDP growth accelerates

# Conclusion 2: Demand Shocks

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- **Adverse demand shocks** have **good and bad** elements:
  - Inflation decelerates as output falls (assuming you are not in or near a deflation)
- **Positive demand shocks** have **good and bad** elements:
  - Inflation rates accelerate as real GDP growth accelerates

# Optimal Macroeconomic Adjustment

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- **Stabilization policy:** Monetary and fiscal policies designed to keep output at (or near) its **full employment** level
- We want to understand:
  - How employment and inflation **respond** to monetary and fiscal policies
  - How monetary and fiscal policies should be used **in response to shocks**

# Keynesian Framework

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- How to **reduce imbalances** with two policy instruments: **fiscal policy** and **monetary policy**?

