

PART IV

BUSINESS CYCLE THEORY: THE ECONOMY IN THE SHORT RUN

Chapter 9: Introduction to Economic Fluctuations*

MACROECONOMICS

Seventh Edition

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* Slides based on Ron Cronovich's slides, adjusted for course in Macroeconomics for International Masters Program at the Wang Yanan Institute for Studies in Economics at Xiamen University.

Learning Objectives

This chapter introduces you to understanding:

- business cycle
- time horizons in Macroeconomics
- aggregate demand
- aggregate supply
- stabilization policy



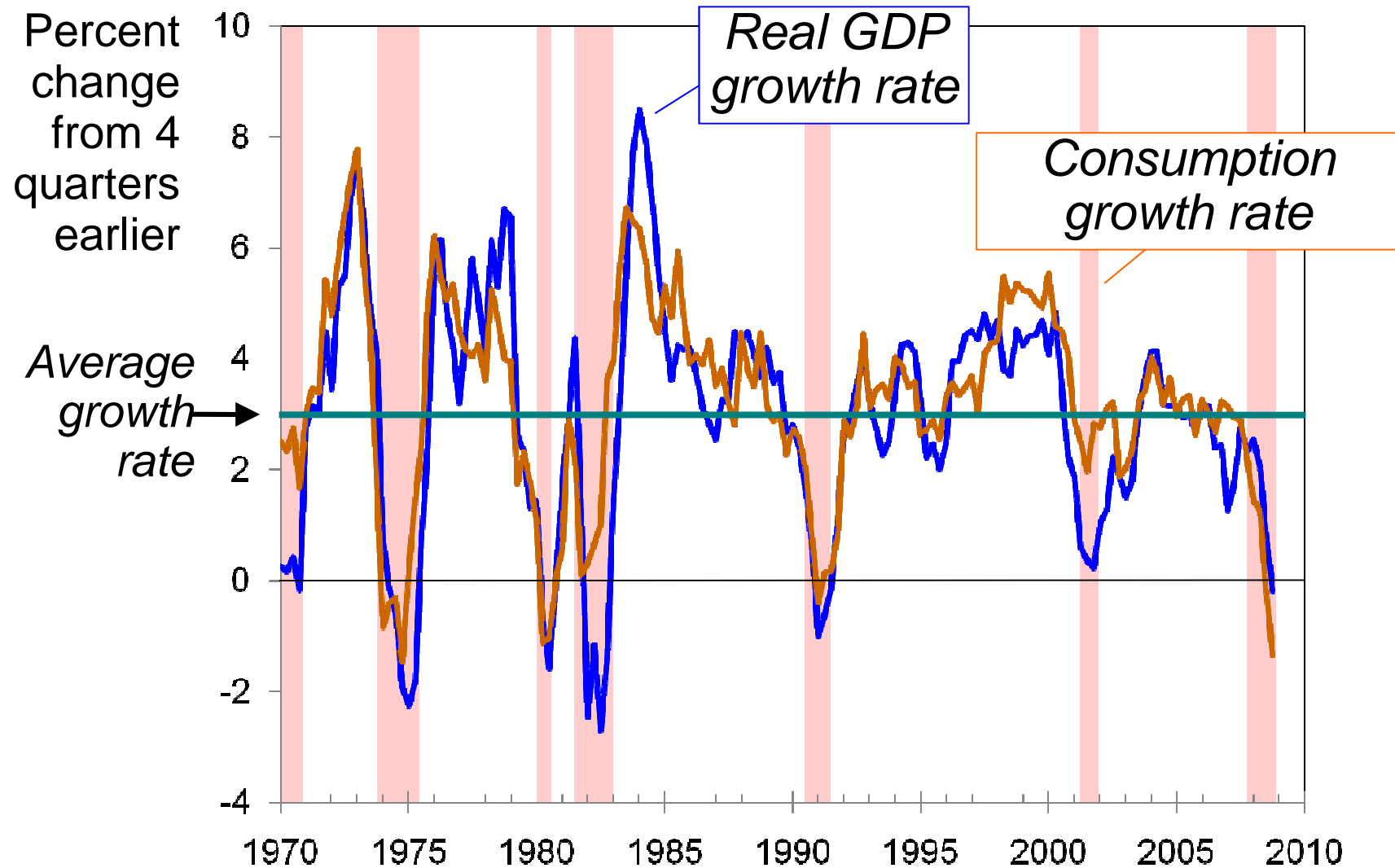
9.1) Business Cycle

→ Some Facts

- GDP growth averages 3–3.5 percent per year over the long run with large fluctuations in the short run.
- Consumption and investment fluctuate with GDP, but consumption tends to be less volatile and investment more volatile than GDP.
- Unemployment rises during recessions and falls during expansions.
- **Okun's Law**: the negative relationship between GDP and unemployment.

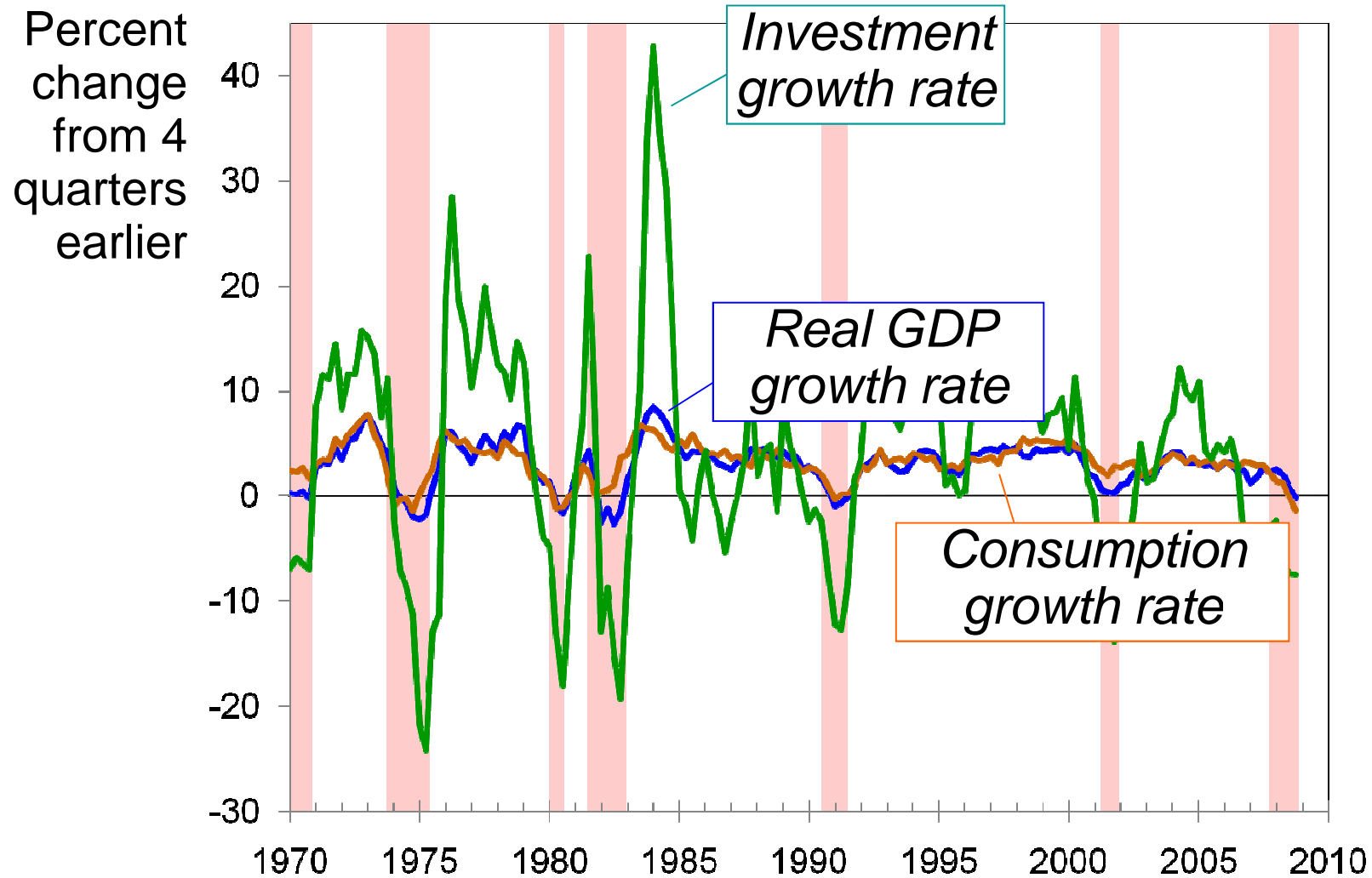
9.1) Business Cycle

→ Growth Rates of Real GDP, Consumption



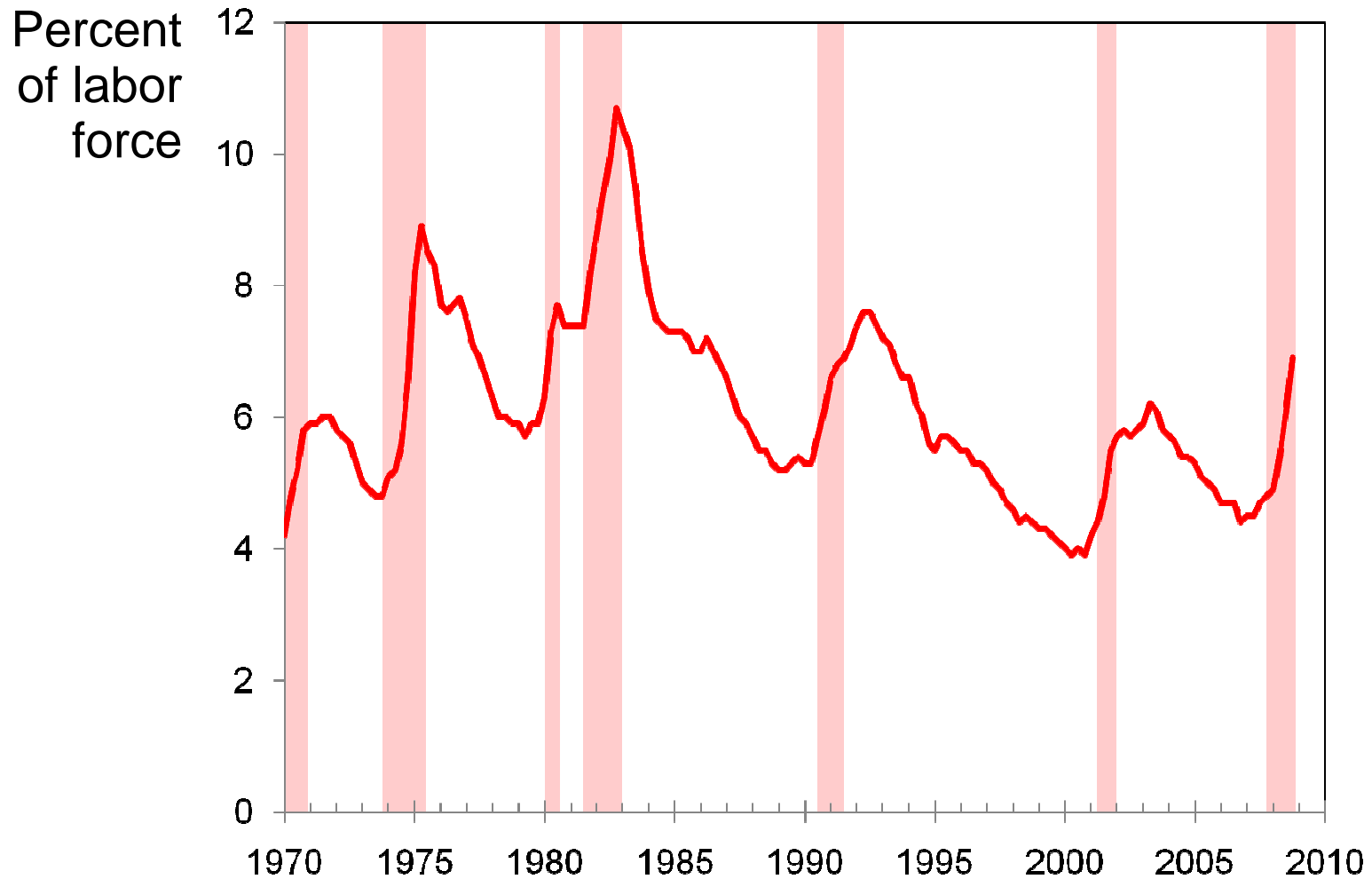
9.1) Business Cycle

→ Growth Rates of RGDP, C, I



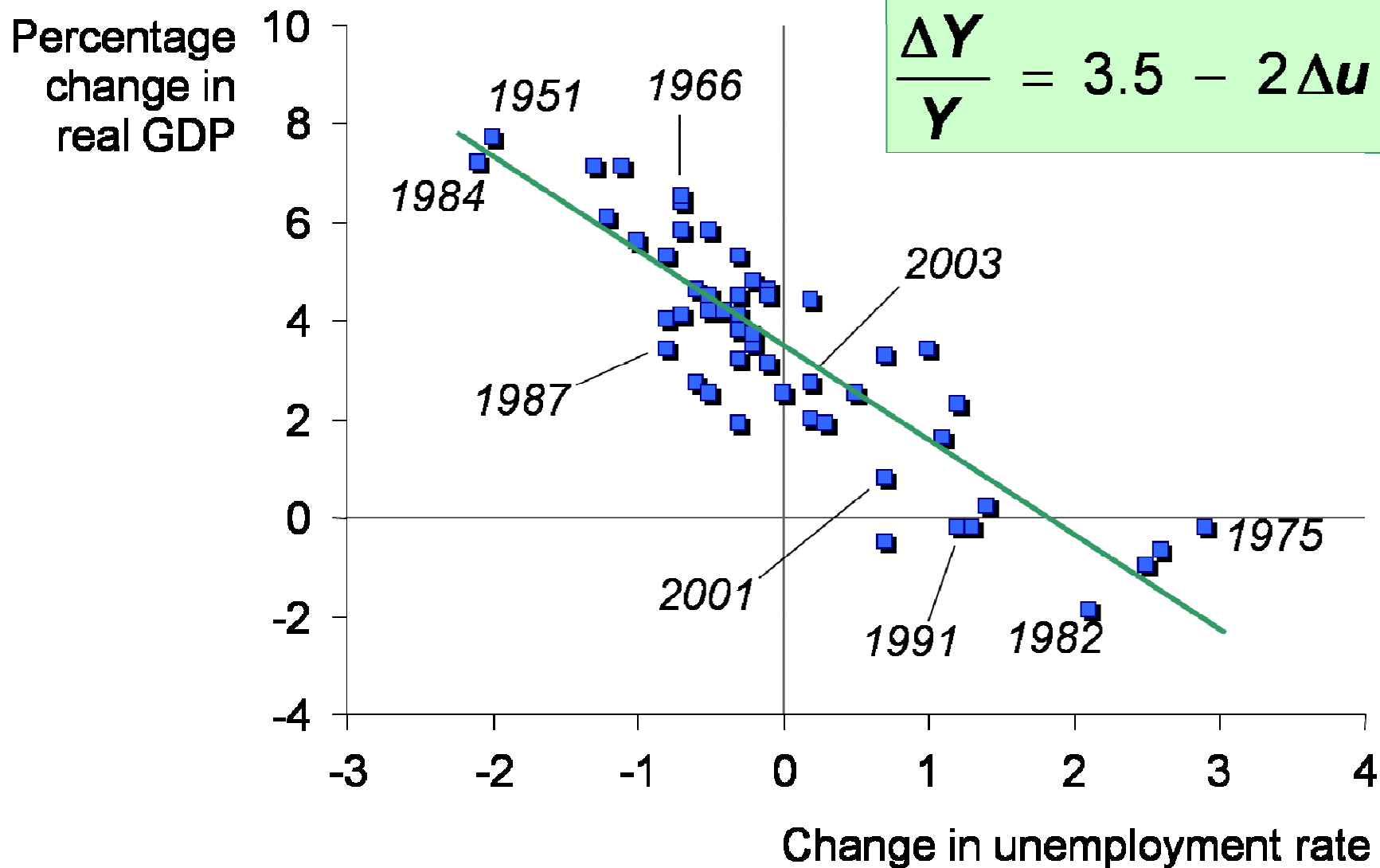
9.1) Business Cycle

→ Unemployment



9.1) Business Cycle

→ Okun's Law



9.1) Business Cycle

→ Index of Leading Economic Indicators

- Published monthly by the Conference Board.
- Aims to forecast changes in economic activity 6-9 months into the future.
- Used in planning by businesses and govt, despite not being a perfect predictor.

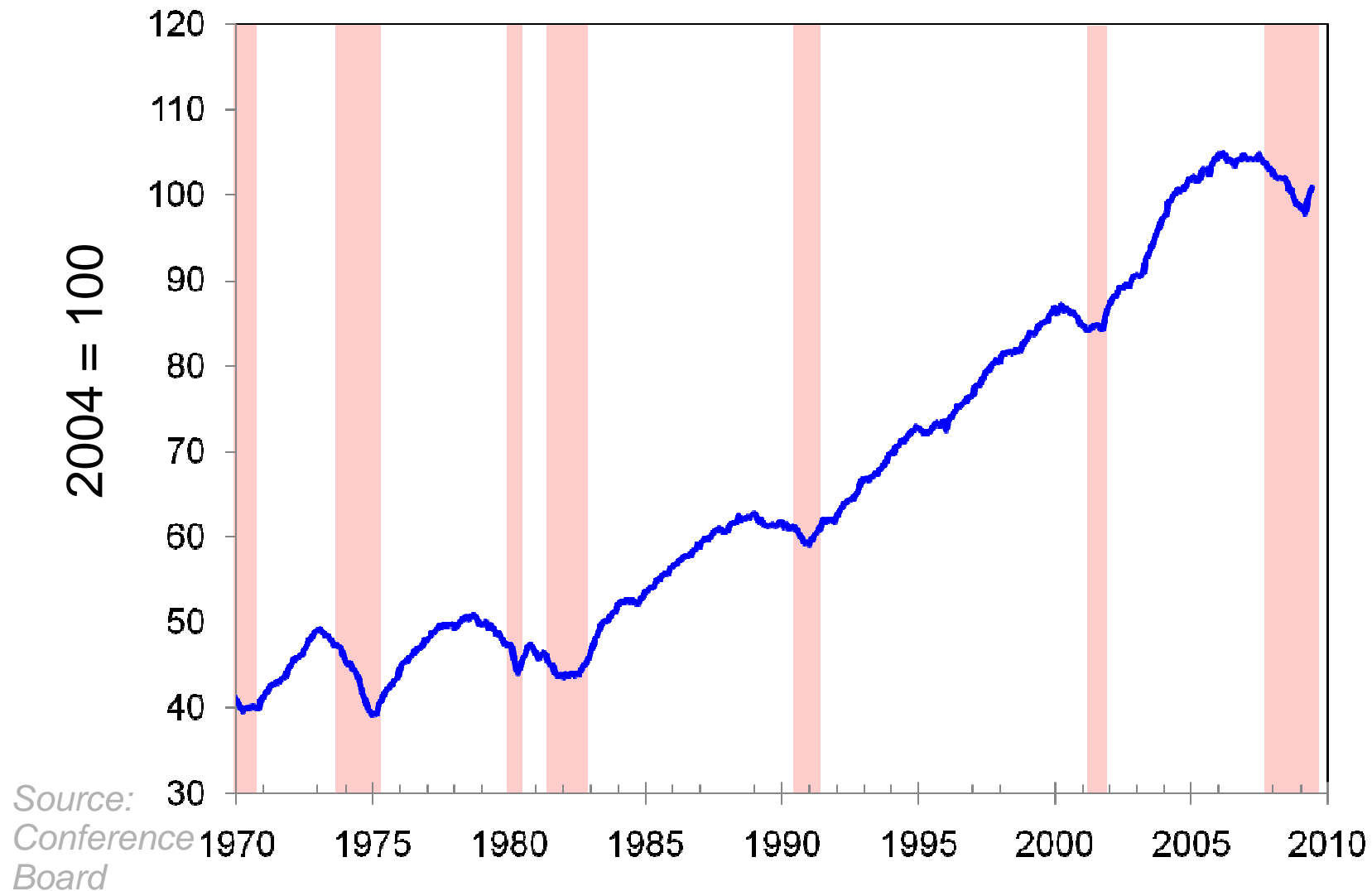
9.1) Business Cycle

→ Components of the LEI Index

- Average workweek in manufacturing
- Initial weekly claims for unemployment insurance
- New orders for consumer goods and materials
- New orders, nondefense capital goods
- Index of supplier deliveries
- New building permits issued
- Index of stock prices
- *M2*
- Yield spread (10-year minus 3-month) on Treasuries
- Index of consumer expectations

9.1) Business Cycle

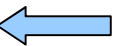
➔ Index of Leading Economic Indicators



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9.2) Time Horizons in Macro

→ Long Run and Short Run

- Long run:
Prices are flexible, respond to changes in supply or demand.
- Short run:
Many prices are “sticky” at some predetermined level.

The economy behaves much differently when prices are sticky.

9.2) Time Horizons in Macro

→ Recap. of Classical Macro Theory (Chaps 3-8)

- Output is determined by the supply side:
 - supplies of capital, labor
 - technology.
- Changes in demand for goods & services (**C**, **I**, **G**) only affect prices, not quantities.
- Assumes complete price flexibility.
- Applies to the long run.

9.2) Time Horizons in Macro

→ When Prices are Sticky...

- ...output and employment also depend on demand, which is affected by
- fiscal policy (***G*** and ***T***)
 - monetary policy (***M***)
 - other factors, like exogenous changes in ***C*** or ***I***.

9.2) Time Horizons in Macro

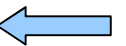
→ The Model of Aggregate Demand and Supply

- the paradigm most mainstream economists and policymakers use to think about economic fluctuations and policies to stabilize the economy
- shows how the price level and aggregate output are determined
- shows how the economy's behavior is different in the short run and long run

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9.3) Aggregate Demand

→ Outline

- The aggregate demand curve shows the relationship between the price level and the quantity of output demanded.
- For this chapter's intro to the *AD/AS* model, we use a simple theory of aggregate demand based on the quantity theory of money.
- Chapters 10-12 develop the theory of aggregate demand in more detail.

9.3) Aggregate Demand

→ The Quantity Equation as Aggregate Demand

- From Chapter 4, recall the quantity equation

$$MV = PY$$

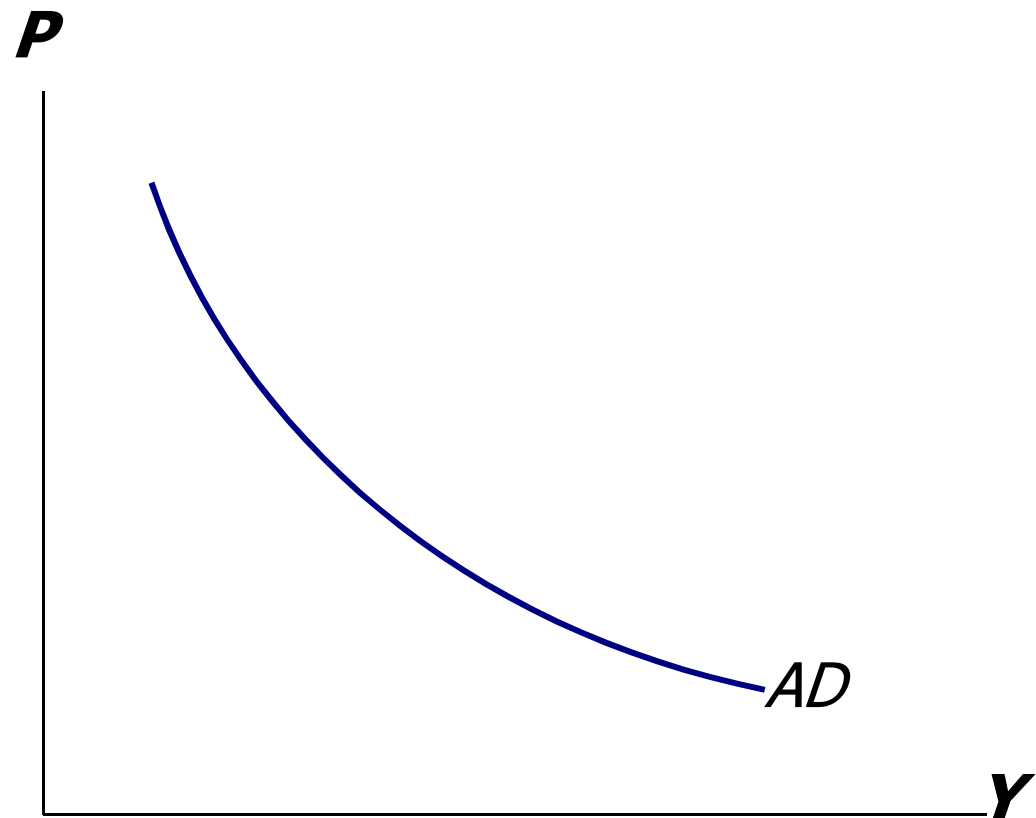
- For given values of M and V , this equation implies an inverse relationship between P and Y .

9.3) Aggregate Demand

→ The Downward-Sloping *AD* Curve

If output increases people engage in more transactions and demand more money...

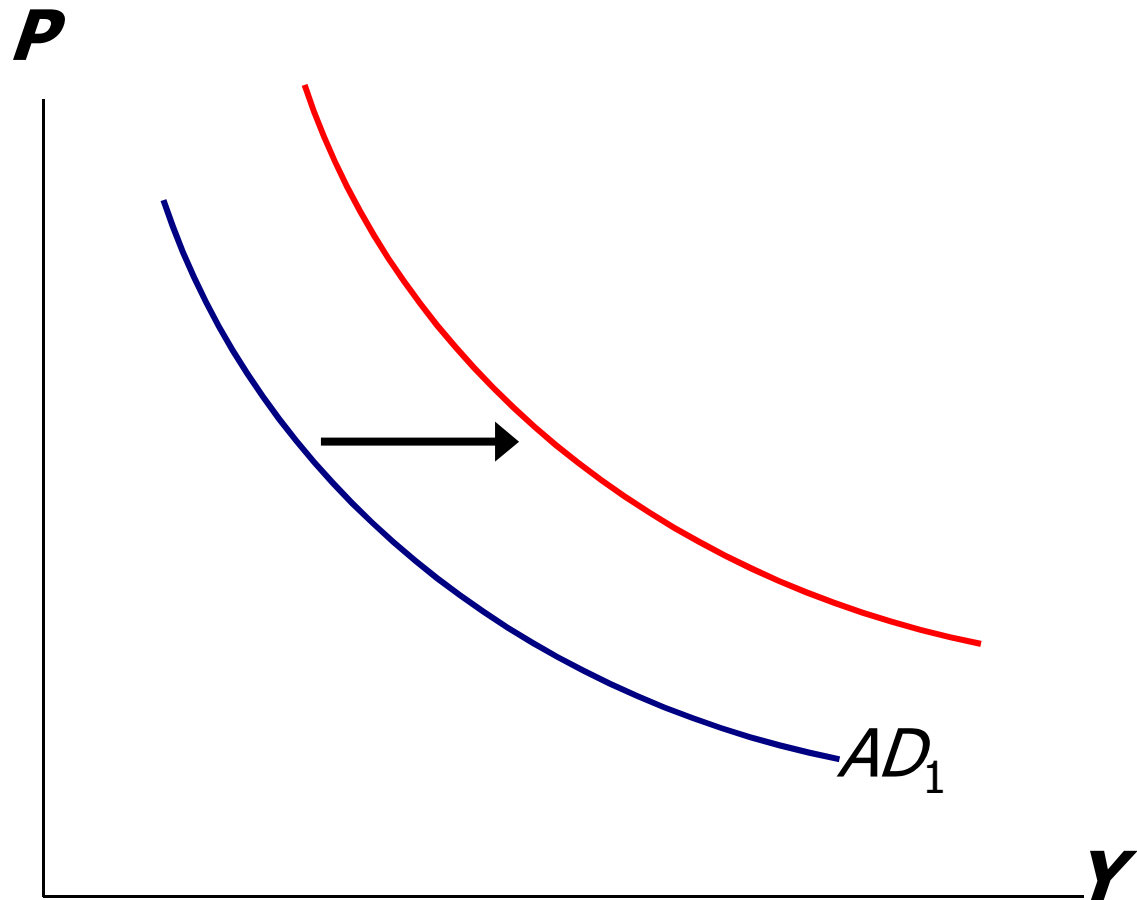
...However, at constant money supply, prices must fall to fulfill the mathematical equality from the quantity equation.



9.3) Aggregate Demand

→ Shifting the *AD* Curve

An increase in the money supply shifts the *AD* curve to the right.



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9.4) Aggregate Supply

→ Aggregate Supply in the Long Run

Recall from Chapter 3:

In the long run, output is determined by factor supplies and technology:

$$Y = F(K, L)$$

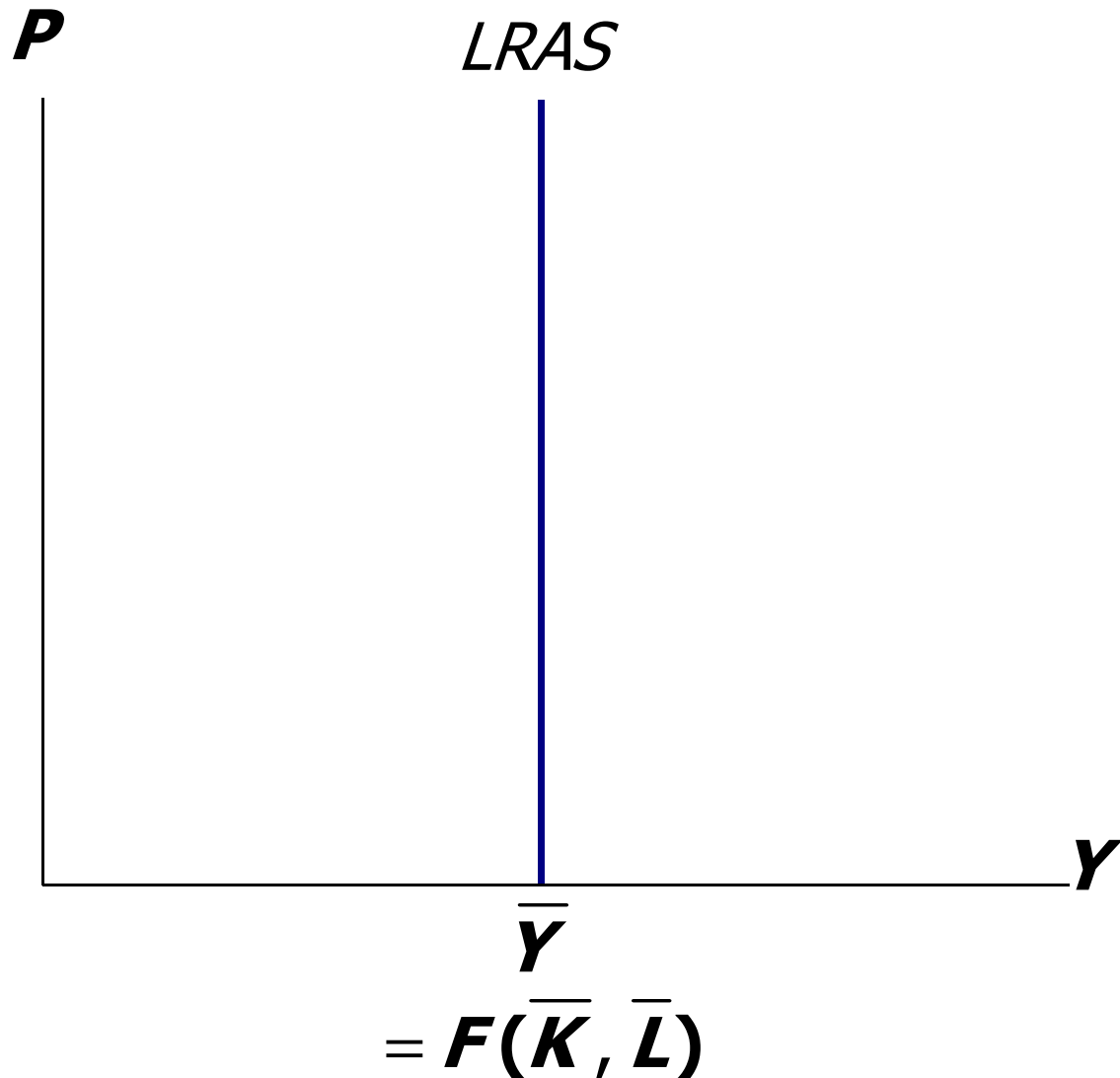
where \bar{Y} is the **full-employment** or **natural** level of output, the level of output at which the economy's resources are fully employed.

“Full employment” means that unemployment equals its natural rate (not zero).

9.4) Aggregate Supply

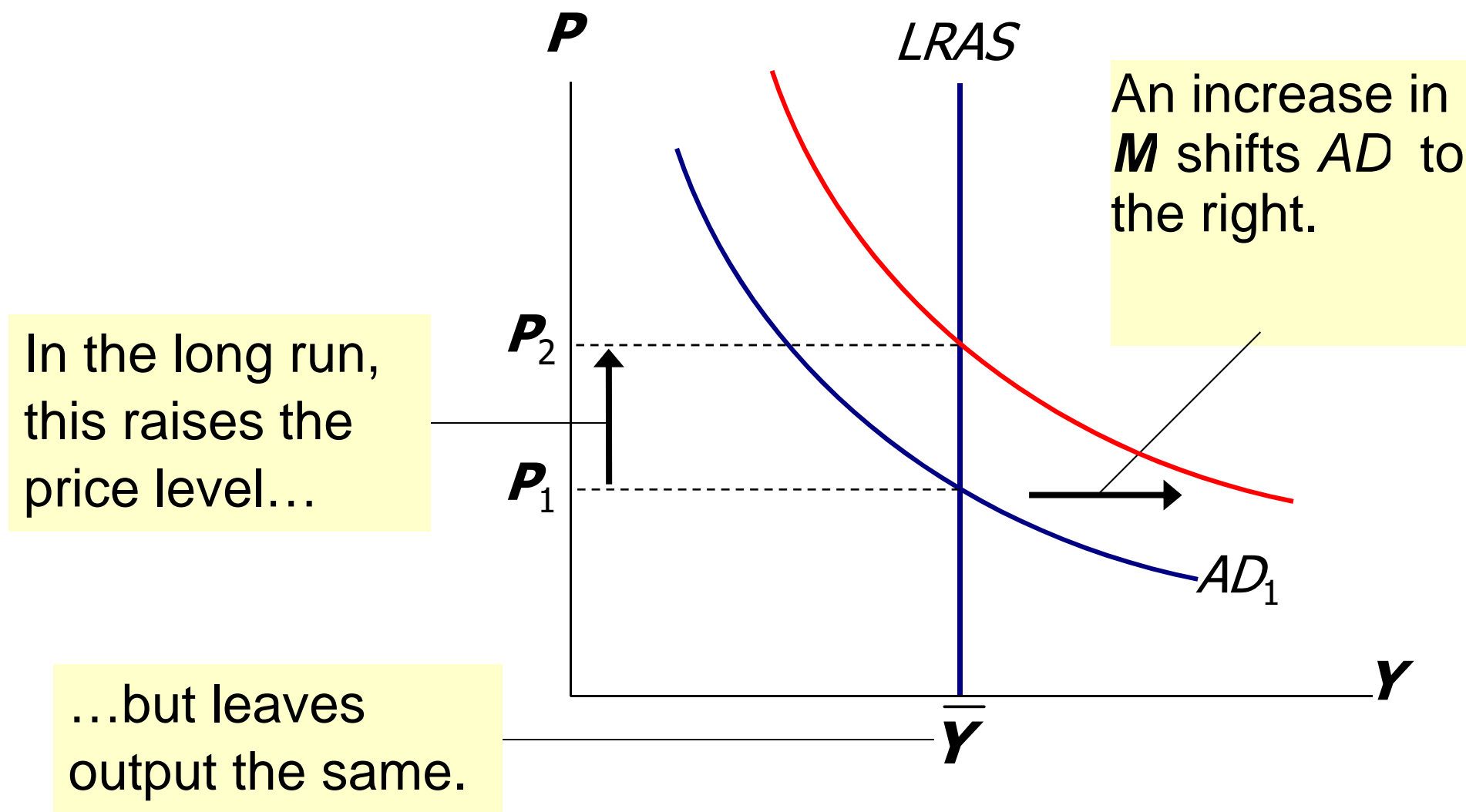
→ The Long-Run Aggregate Supply Curve

\bar{Y} does not depend on P , so $LRAS$ is vertical.



9.4) Aggregate Supply

→ Long-run Effects of an Increase in M



9.4) Aggregate Supply

→ Aggregate Supply in the Short Run

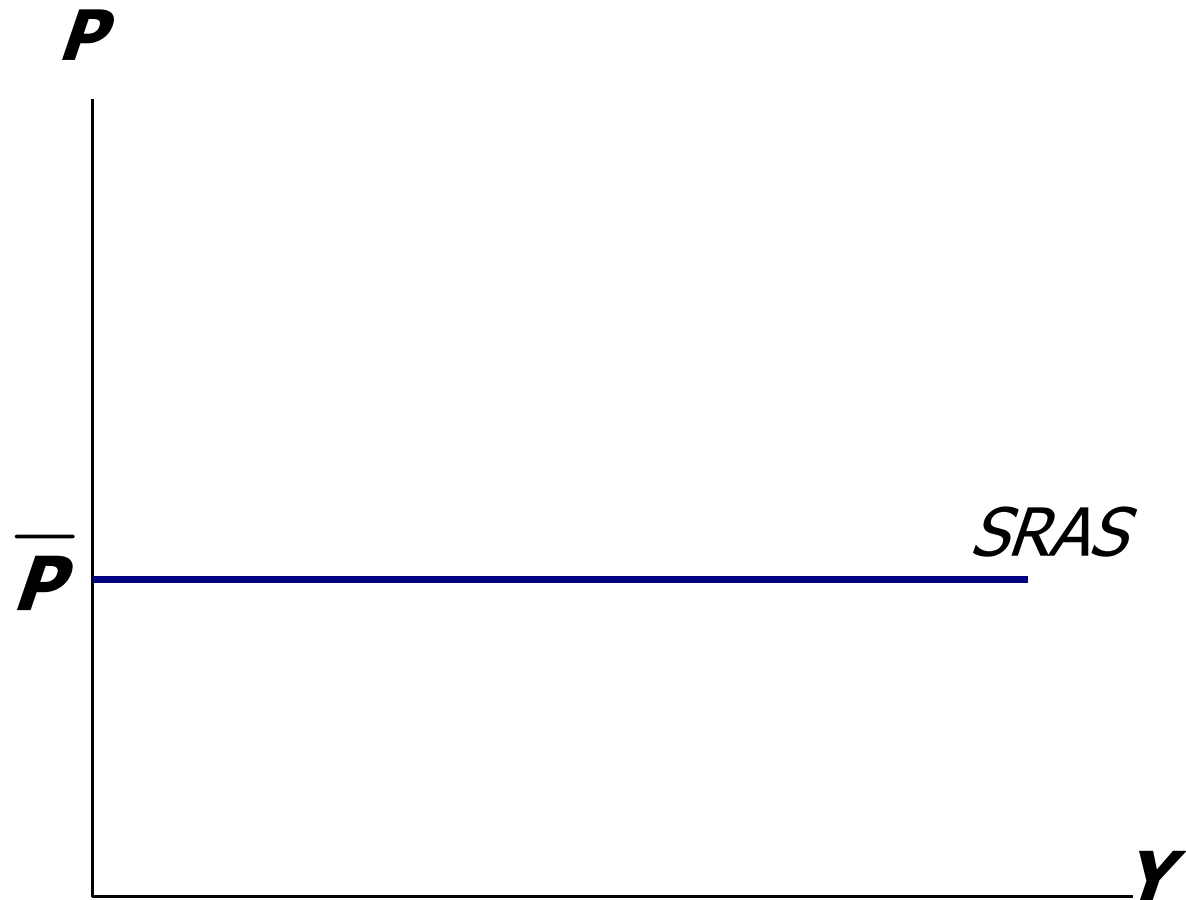
- Many prices are sticky in the short run.
- For now (and through Chap. 12), we assume all prices are stuck at a predetermined level in the short run, and firms are willing to sell as much at that price level as their customers are willing to buy.
- Therefore, the short-run aggregate supply (*SRAS*) curve is horizontal.

9.4) Aggregate Supply

→ The Short-run Aggregate Supply Curve

The *SRAS* curve is horizontal:

The price level is fixed at a predetermined level, and firms sell as much as buyers demand.

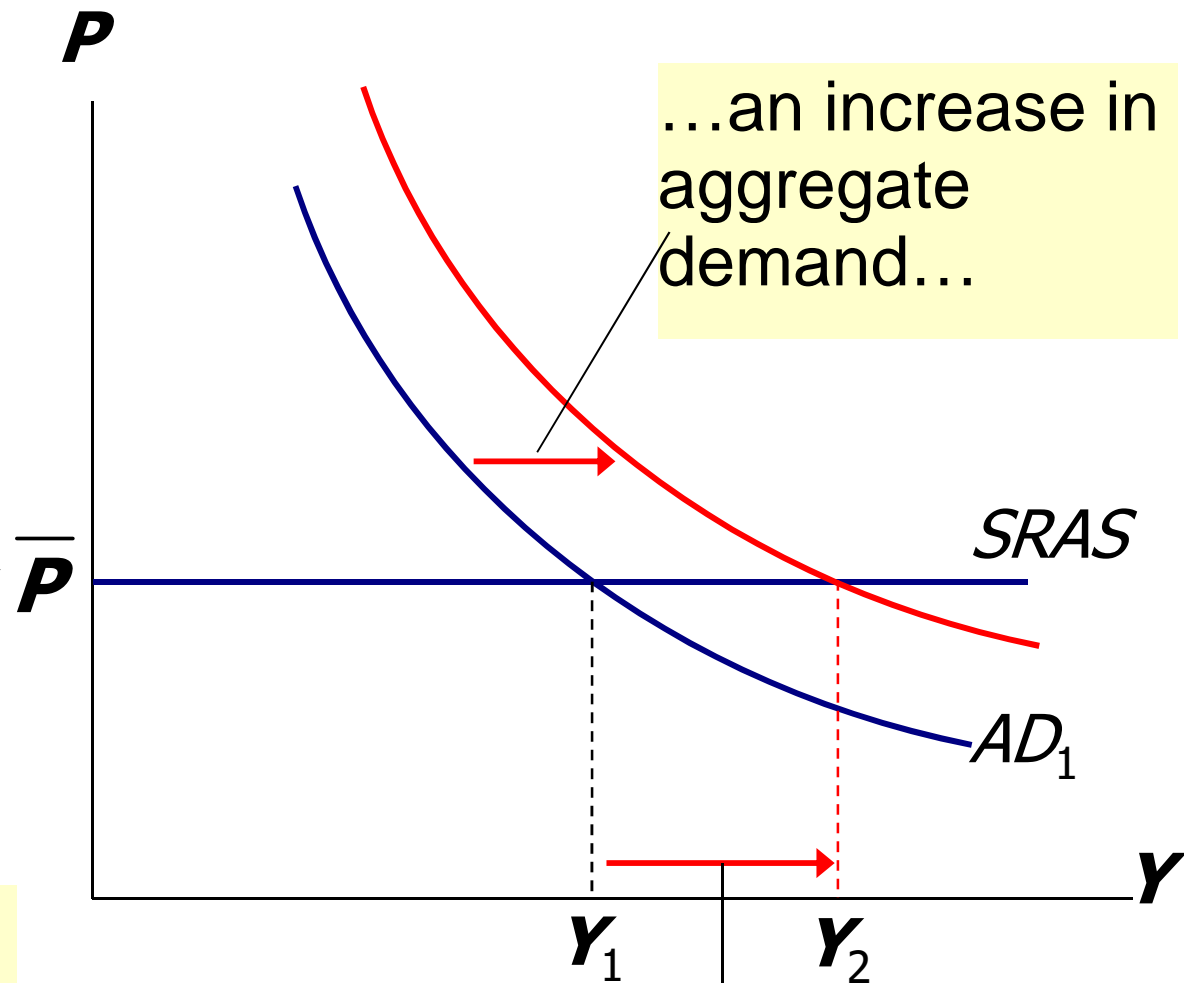


9.4) Aggregate Supply

→ Short-run Effects of an Increase in M

In the short run
when prices are
sticky,...

...an increase in
aggregate
demand...



...causes output
to rise.

9.4) Aggregate Supply

→ From the Short Run to the Long Run

Over time, prices gradually become “unstuck.” When they do, will they rise or fall?

In the short-run equilibrium, if	then over time, P will...
$Y > \bar{Y}$	<i>rise</i>
$Y < \bar{Y}$	<i>fall</i>
$Y = \bar{Y}$	<i>remain constant</i>

The adjustment of prices is what moves the economy to its long-run equilibrium.

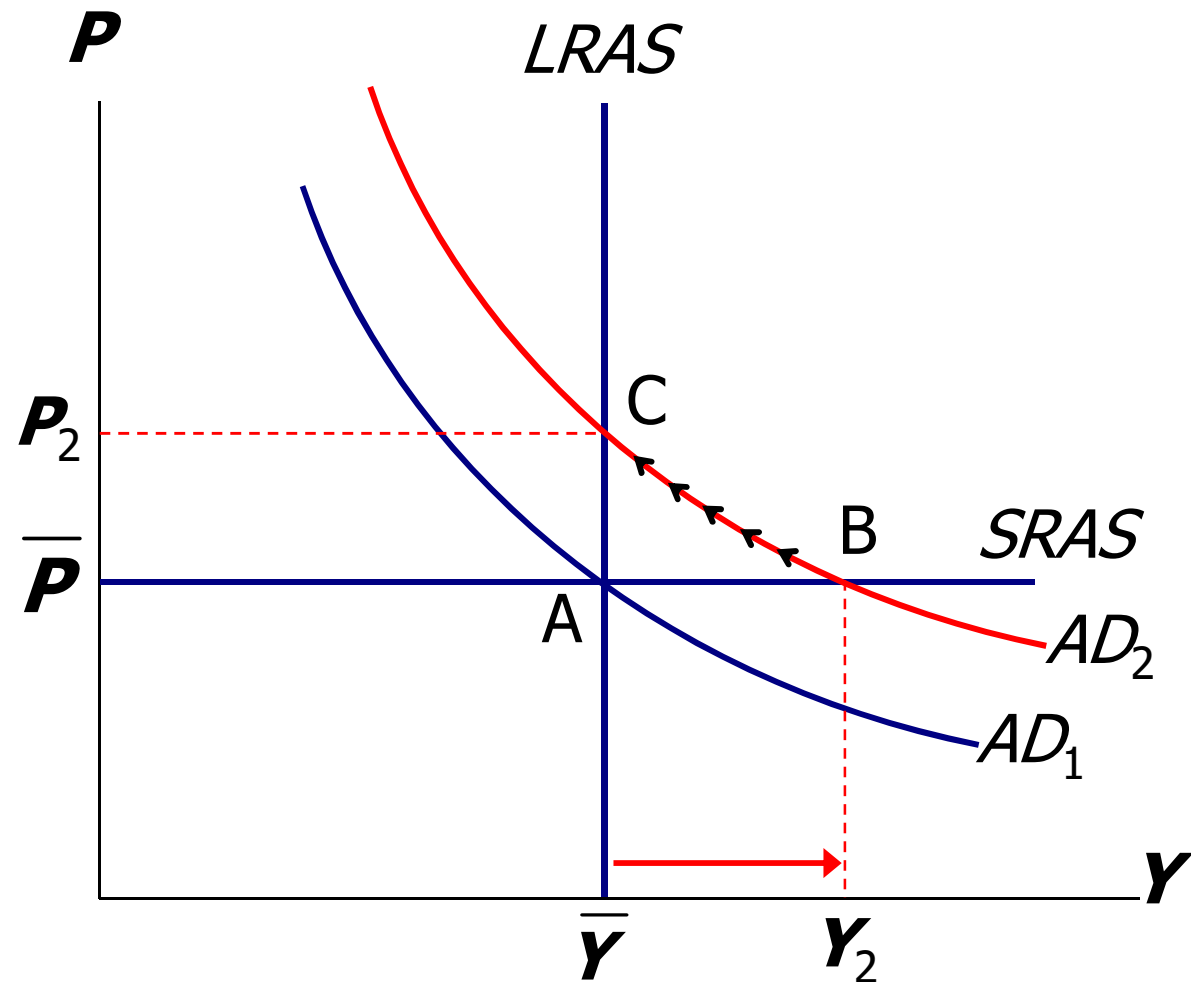
9.4) Aggregate Supply

→ The SR & LR Effects of $\Delta M > 0$

A = initial equilibrium

B = new short-run eq'm after Fed increases M

C = long-run equilibrium



9.4) Aggregate Supply

→ *Shocks to Aggregate Supply and Demand*

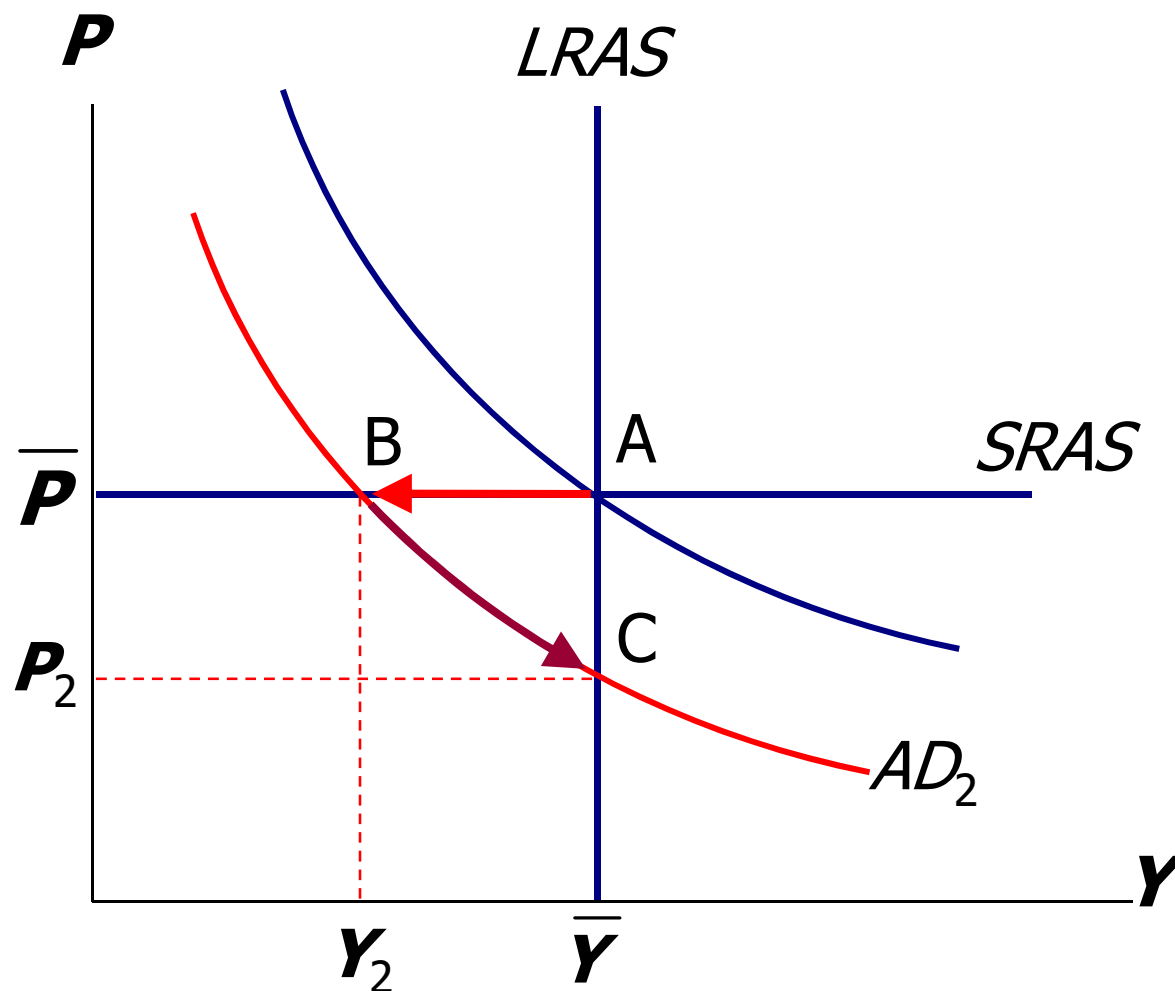
- **Shocks:** exogenous changes in agg. supply or demand
- Shocks temporarily push the economy away from full employment.
- Example: exogenous decrease in velocity.
If the money supply is held constant, a decrease in V means people will be using their money in fewer transactions, causing a decrease in demand for goods and services.

9.4) Aggregate Supply

→ The Effects of a Negative Demand Shock

AD shifts left, depressing output and employment in the short run.

Over time, prices fall and the economy moves down its demand curve toward full-employment.



9.4) Aggregate Supply

→ Supply Shocks

- A **supply shock** alters production costs, affects the prices that firms charge. (also called **price shocks**)
- Examples of *adverse* supply shocks:
 - Bad weather reduces crop yields, pushing up food prices.
 - Workers unionize, negotiate wage increases.
 - New environmental regulations require firms to reduce emissions. Firms charge higher prices to help cover the costs of compliance.
- *Favorable* supply shocks lower costs and prices.

9.4) Aggregate Supply

→ CASE STUDY: The 1970s Oil Shocks

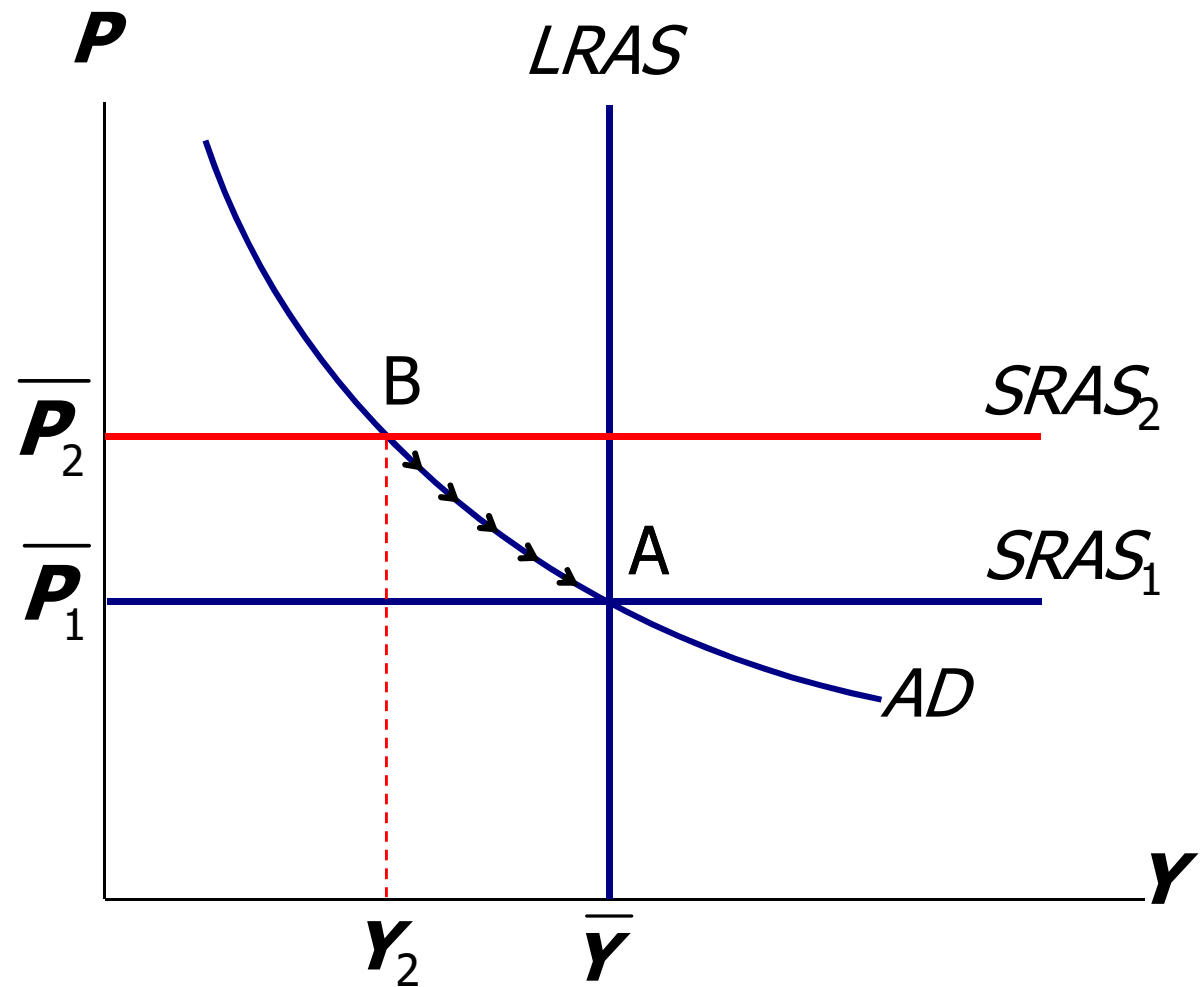
- Early 1970s: OPEC coordinates a reduction in the supply of oil.
- Oil prices rose
 - 11% in 1973
 - 68% in 1974
 - 16% in 1975
- Such sharp oil price increases are supply shocks because they significantly impact production costs and prices.

9.4) Aggregate Supply

→ CASE STUDY: The 1970s Oil Shocks

The oil price shock shifts $SRAS$ up, causing output and employment to fall.

In absence of further price shocks, prices will fall over time and economy moves back toward full employment.



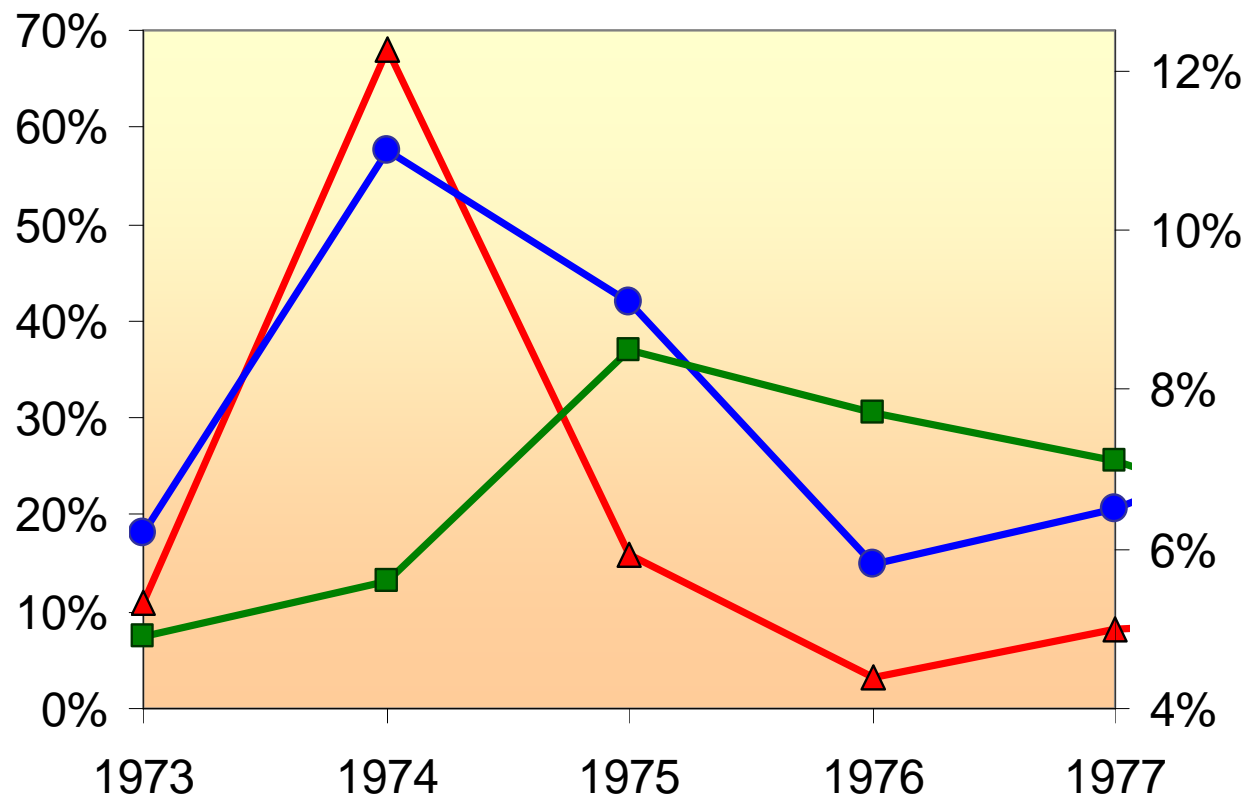
9.4) Aggregate Supply

→ CASE STUDY: The 1970s Oil Shocks

Predicted effects
of the oil shock:

- inflation ↑
- output ↓
- unemployment ↑

...and then a gradual
recovery.



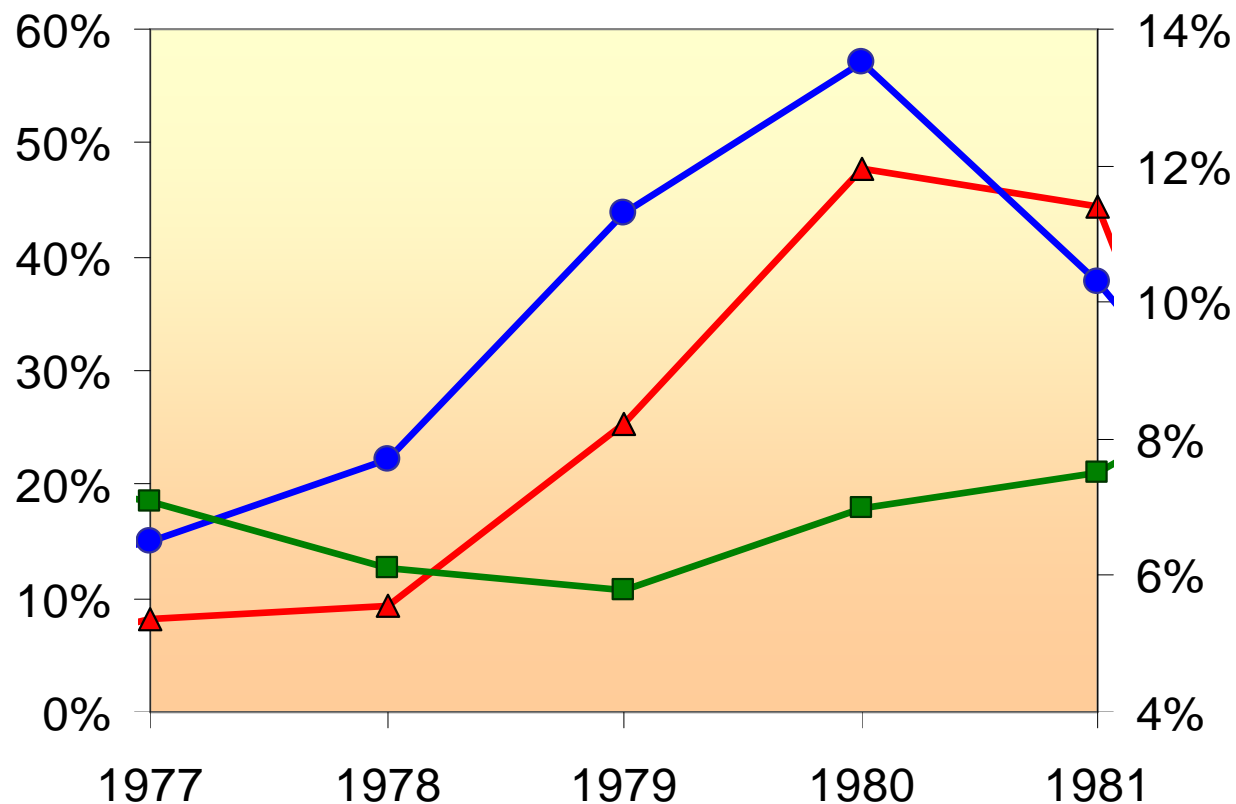
- ▲— Change in oil prices (left scale)
- Inflation rate-CPI (right scale)
- Unemployment rate (right scale)

9.4) Aggregate Supply

→ CASE STUDY: The 1970s Oil Shocks

Late 1970s:

As economy was recovering, oil prices shot up again, causing another huge supply shock.



- ▲ Change in oil prices (left scale)
- Inflation rate-CPI (right scale)
- Unemployment rate (right scale)

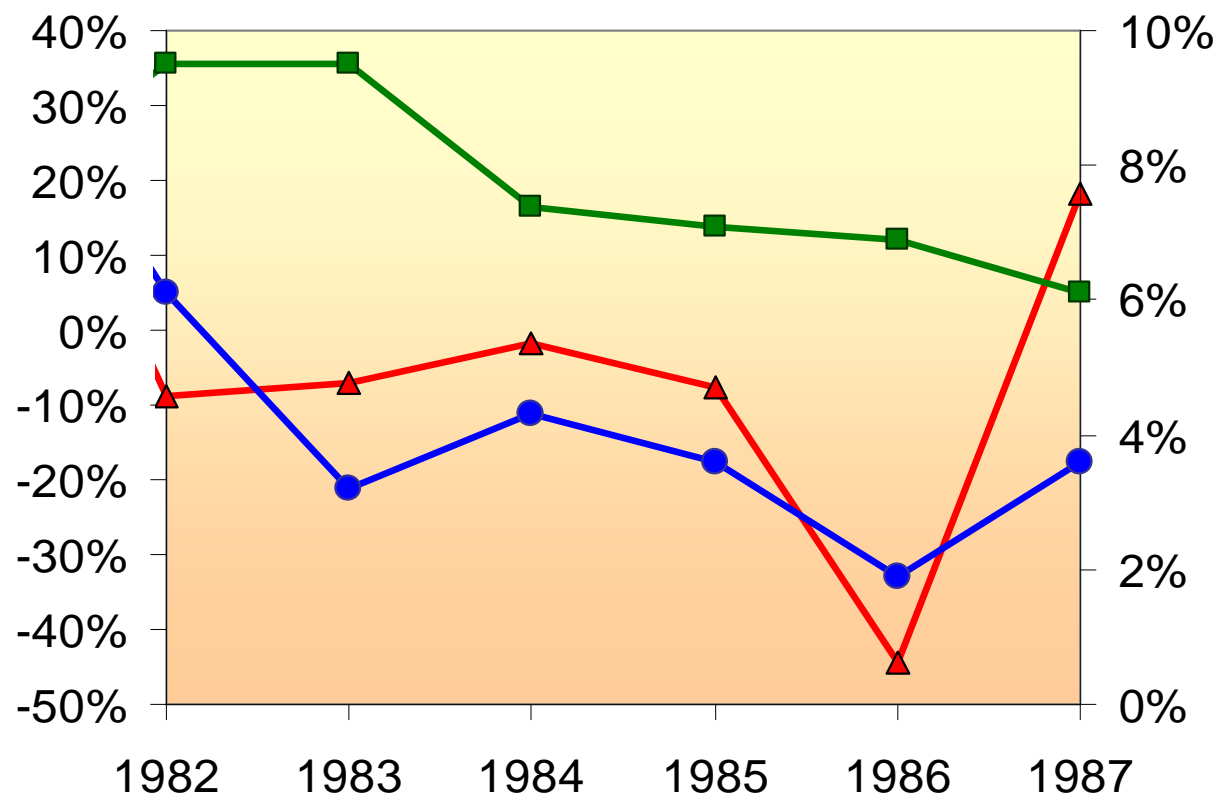
9.4) Aggregate Supply

→ CASE STUDY: The 1980s Oil Shocks

1980s:

A favorable supply shock-- a significant fall in oil prices.

As the model predicts, inflation and unemployment fell:



- ▲ Change in oil prices (left scale)
- Inflation rate-CPI (right scale)
- Unemployment rate (right scale)

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9.5) Stabilization Policy

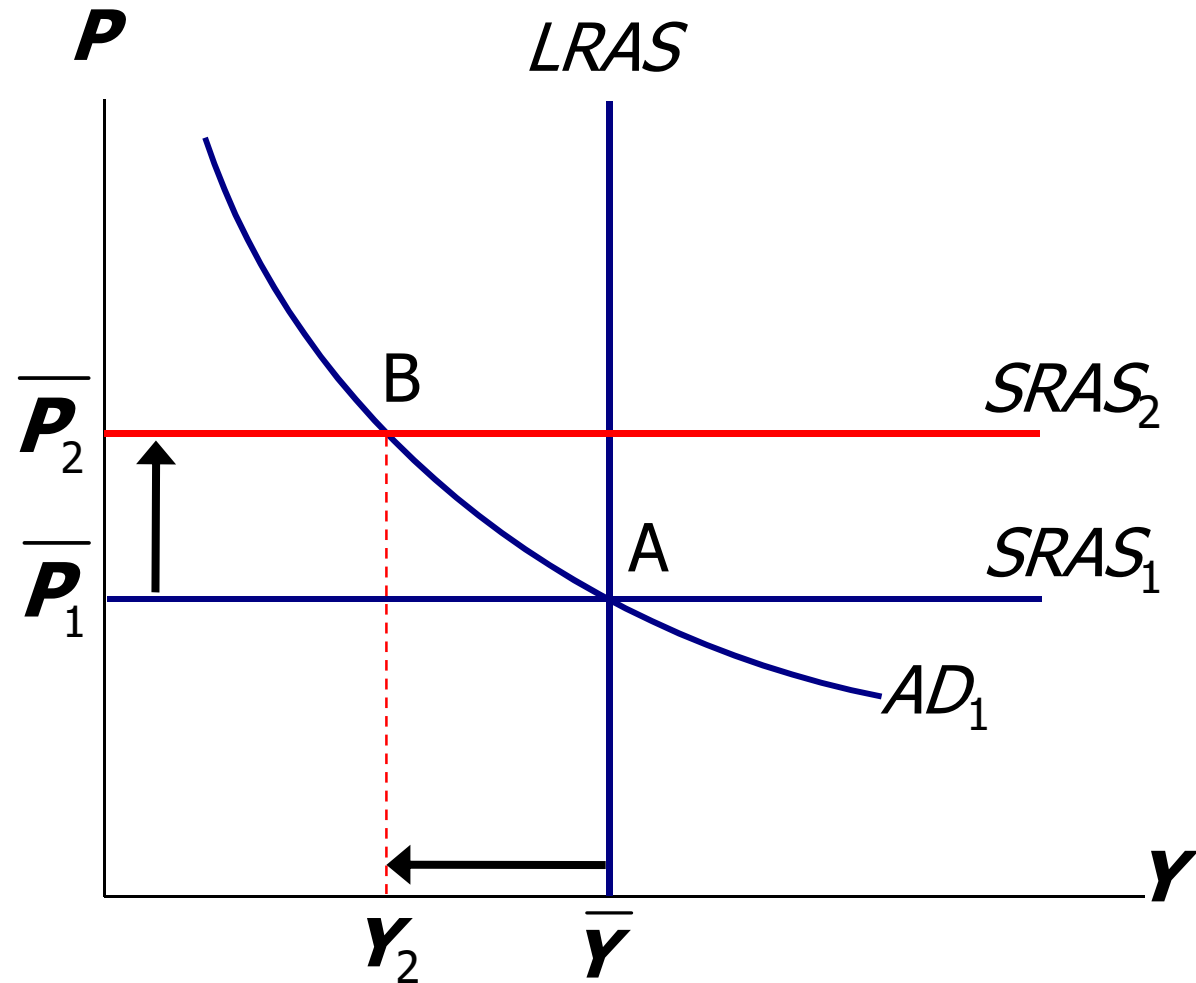
→ Definition and Example

- Definition: policy actions aimed at reducing the severity of short-run economic fluctuations.
- Example: Using monetary policy to combat the effects of adverse supply shocks:

9.5) Stabilization Policy

→ Stabilizing Output with Monetary Policy

The adverse supply shock moves the economy to point B.

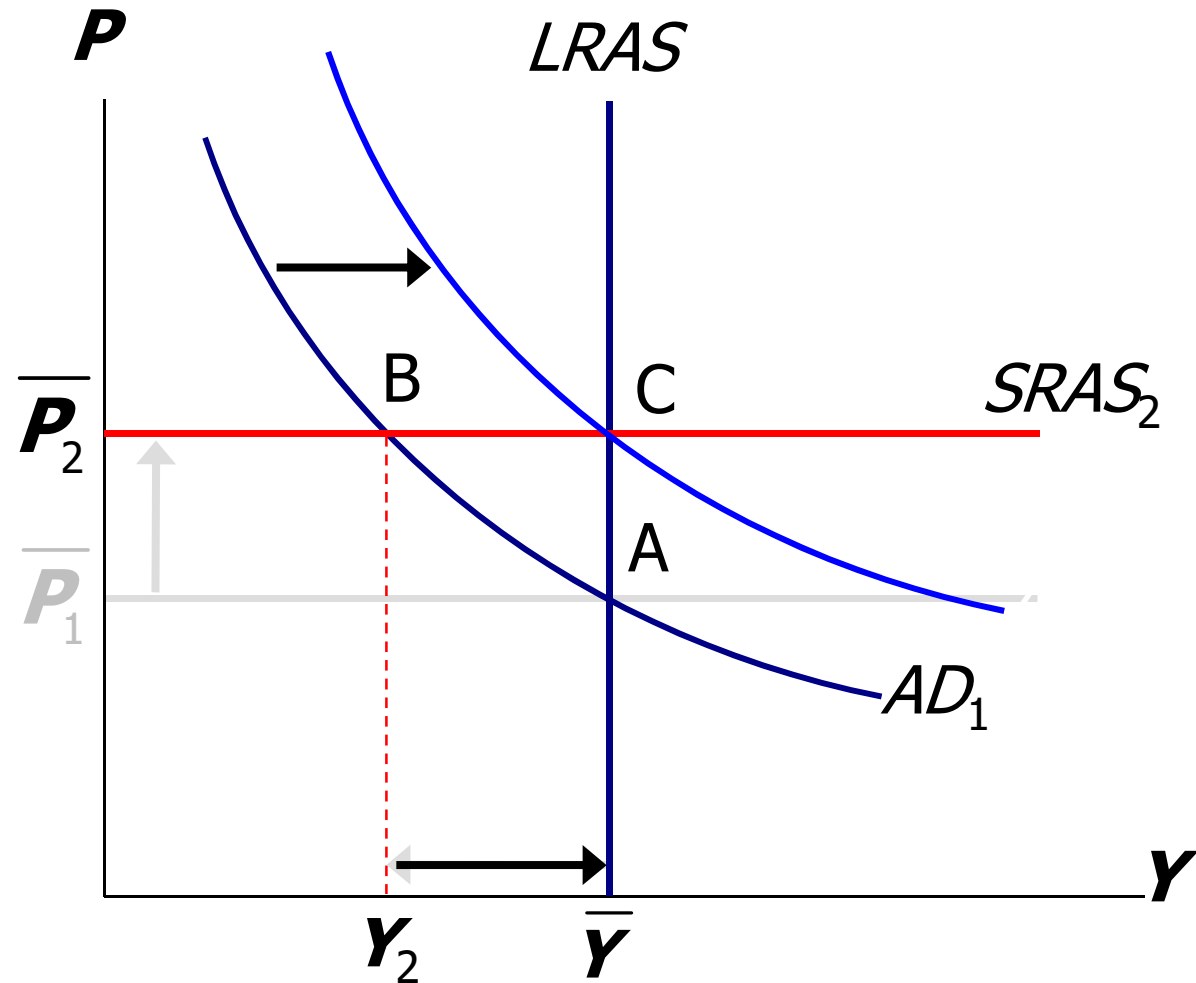


9.5) Stabilization Policy

→ Stabilizing Output with Monetary Policy

But the Fed accommodates the shock by raising agg. demand.

Results:
 P is permanently higher, but Y remains at its full-employment level.



Chapter Summary

1. Long run: prices are flexible, output and employment are always at their natural rates, and the classical theory applies.

Short run: prices are sticky, shocks can push output and employment away from their natural rates.

2. Aggregate demand and supply:
a framework to analyze economic fluctuations
3. The aggregate demand curve slopes downward.

Chapter Summary

4. The long-run aggregate supply curve is vertical, because output depends on technology and factor supplies, but not prices.
5. The short-run aggregate supply curve is horizontal, because prices are sticky at predetermined levels.
6. Shocks to aggregate demand and supply cause fluctuations in GDP and employment in the short run.
7. The Fed can attempt to stabilize the economy with monetary policy.