




Chapter 10: Introduction to Economic Fluctuations




Chapter objectives

- Facts about the business cycle
- difference between short run & long run
- introduction to aggregate demand
- aggregate supply in the short run & long run
- see how model of aggregate supply and demand can be used to analyze short-run and long-run effects of economic “shocks”



Facts about the business cycle

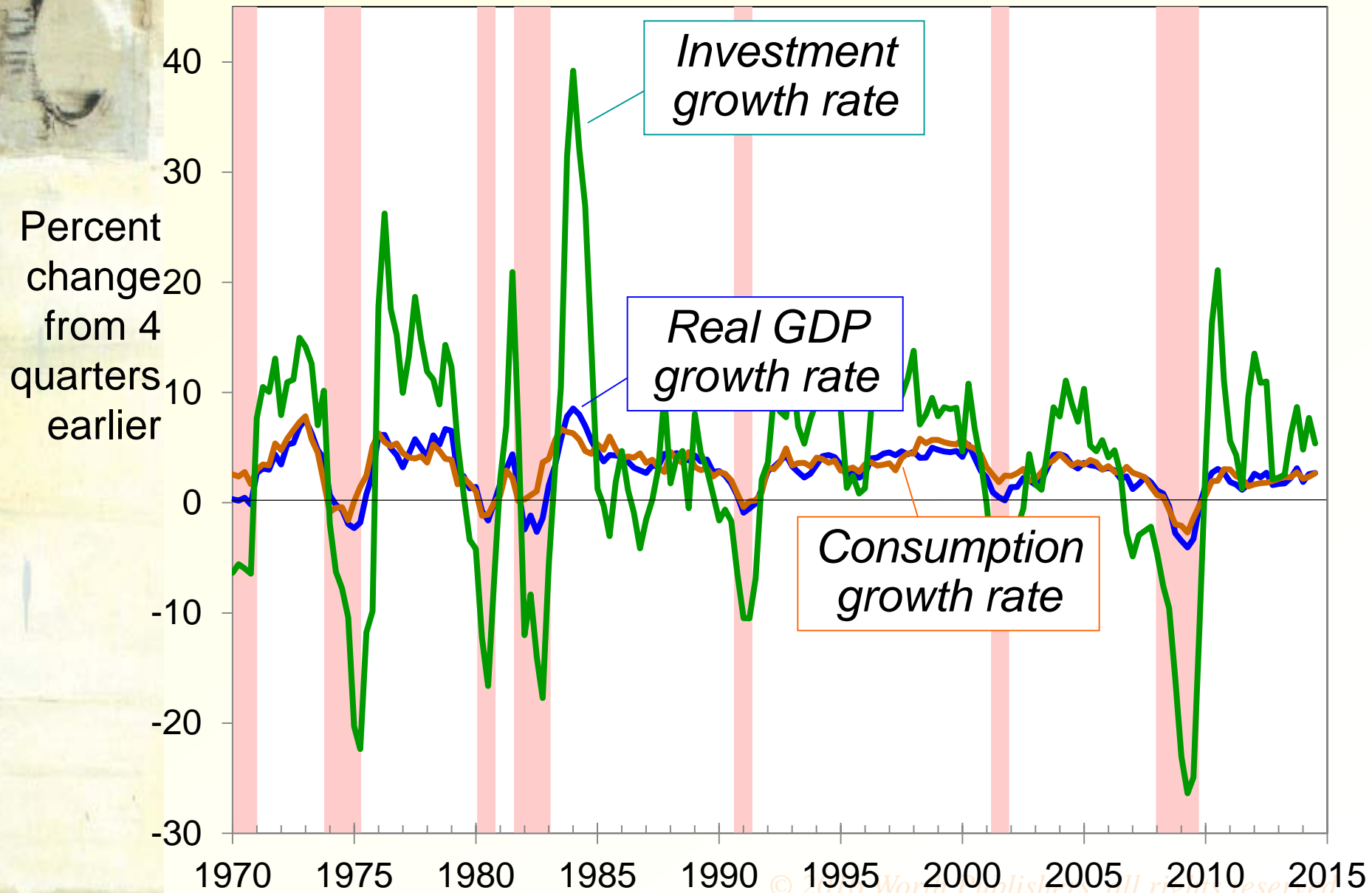
- GDP growth averages 3–3.5 percent per year over the long run with large fluctuations in the short run.
- Consumption and investment fluctuate with GDP, but consumption tends to be less volatile and investment more volatile than GDP.
- Unemployment rises during recessions and falls during expansions.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



Okun's Law (奥肯定律)

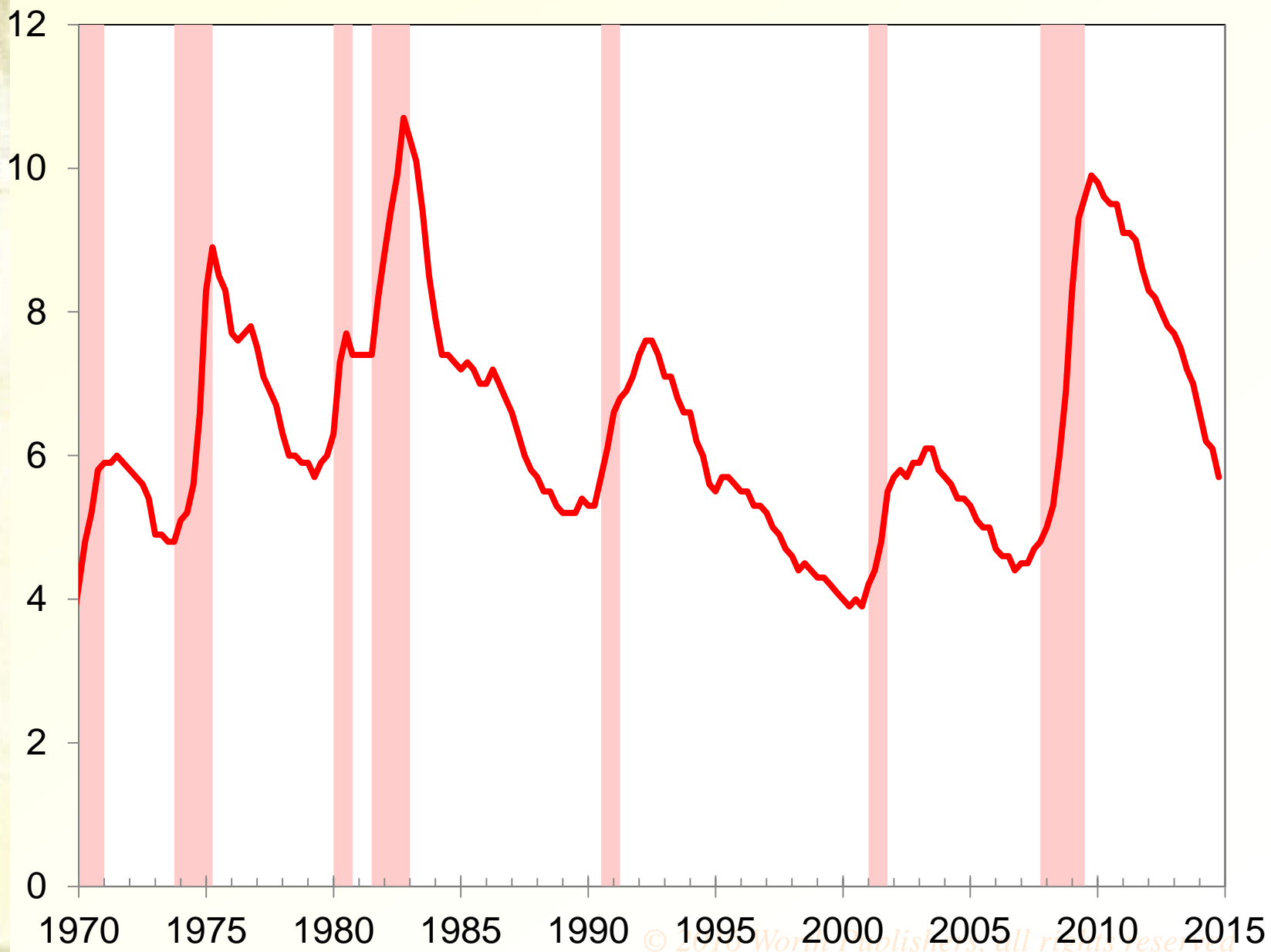
- shows the relationship between real GDP and unemployment rate:
percentage change in real GDP
= $3\% - 2 \times \text{change in unemployment rate}$

Growth rates of real GDP, consump., investment

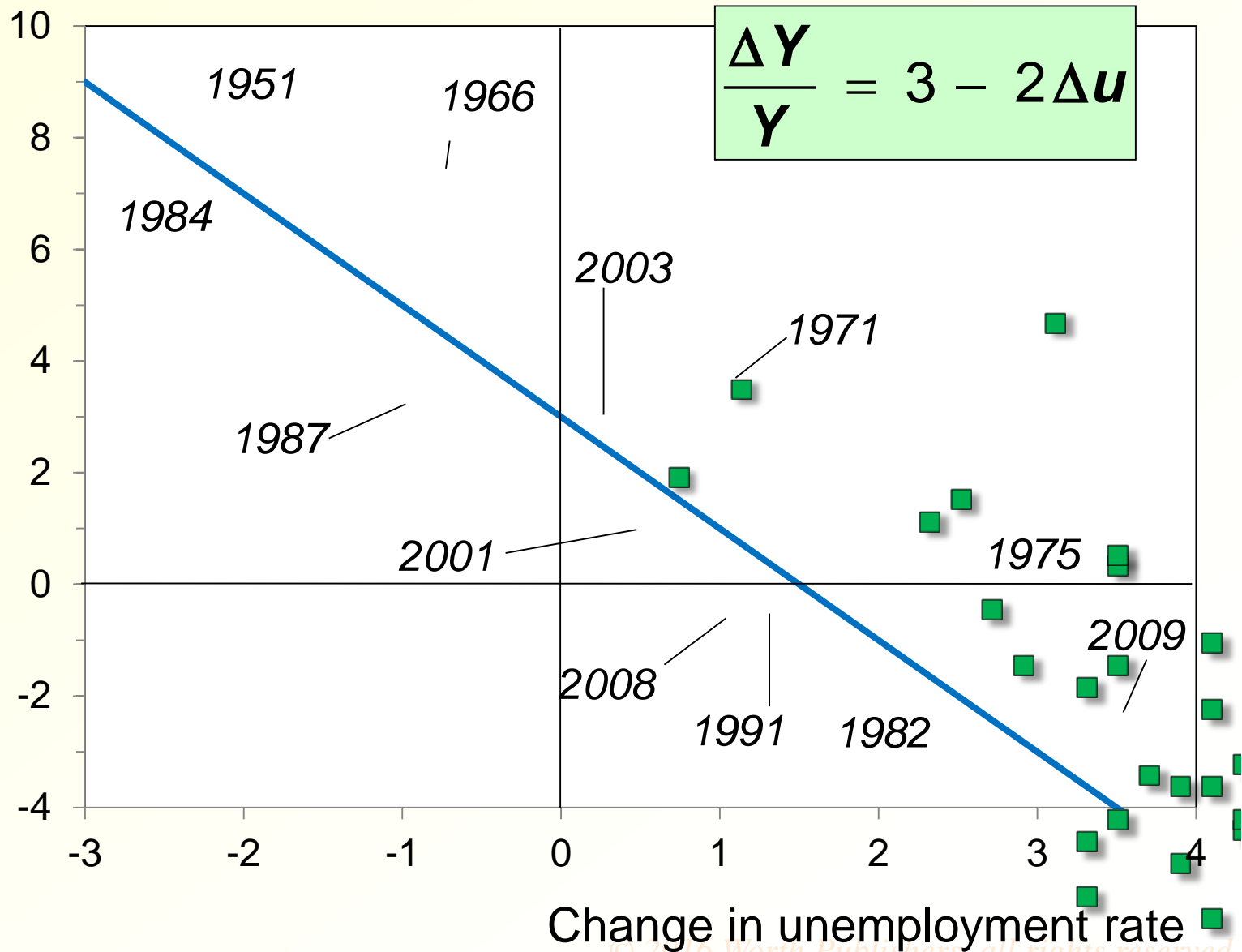



Unemployment

Percent
of labor
force



Okun's Law





Index of Leading Economic Indicators

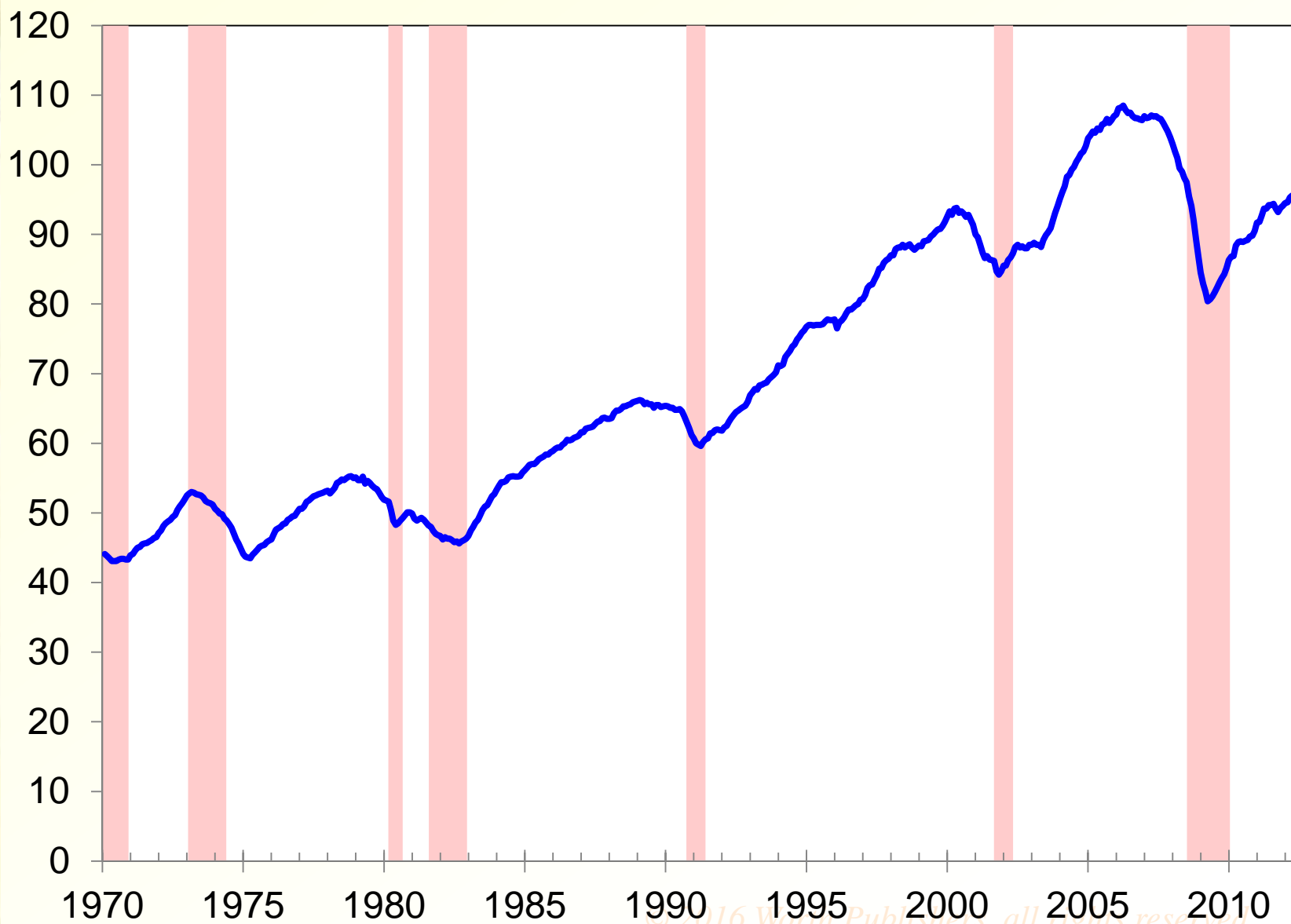
- Published monthly by the Conference Board.
- Aims to forecast changes in economic activity 6-9 months into the future.
- Used in planning by businesses and govt, despite not being a perfect predictor.



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
- Vendor performance
- New building permits issued
- Index of stock prices
- M2
- Yield spread (10-year minus 3-month) on Treasuries
- Index of consumer expectations

Index of Leading Economic Indicators, 1970-2012



2004 = 100

Source:
Conference
Board


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Time horizons

- 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.



In Classical Macroeconomic Theory,

(what we studied in chapters 3-9)

- 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.
- Complete price flexibility is a crucial assumption, so classical theory applies in the long run.



When prices are sticky

...output and employment also depend on demand for goods & services, which is affected by

- fiscal policy (**G** and **T**)
- monetary policy (**M**)
- other factors, like exogenous changes in **C** or **I** .




The model of aggregate demand and supply

- the paradigm that most mainstream economists & 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 in the short run differs from the long run



Aggregate demand

- 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 11-13 will develop the theory of aggregate demand in more detail.



The Quantity Equation as Agg. Demand

- From Chapter 4, recall the quantity equation

$$M V = P Y$$

The money demand function implies:

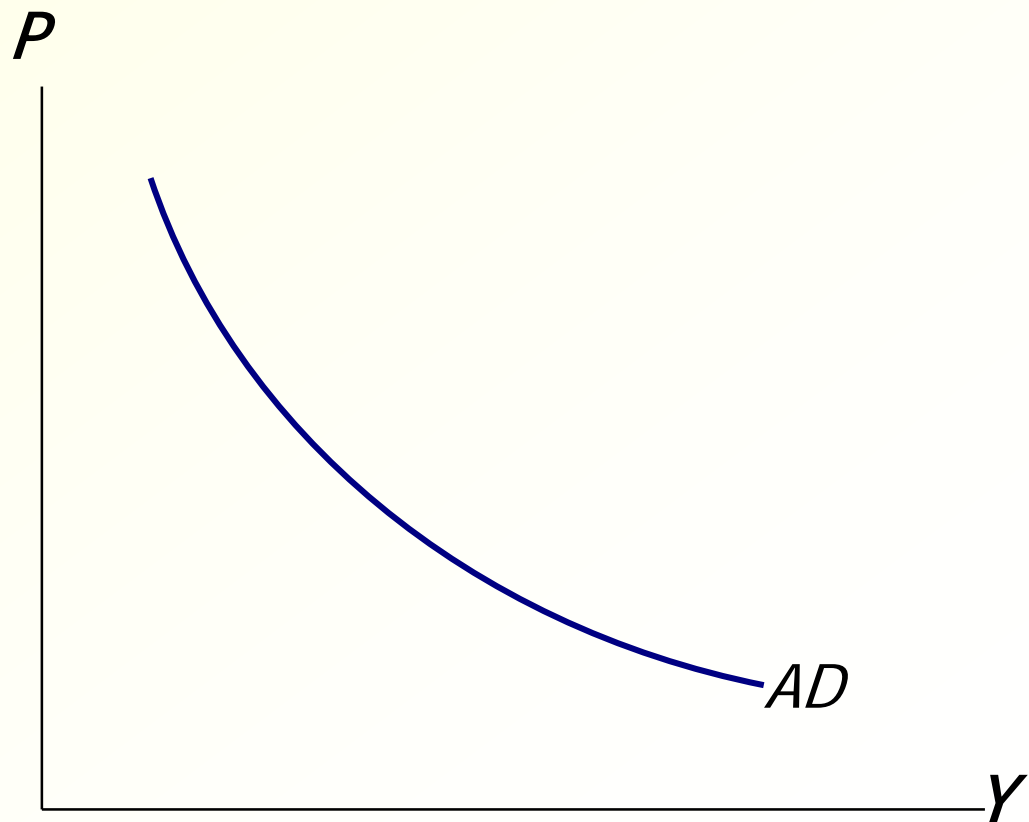
$$(M/P)^d = k Y$$

where $V = 1/k = \text{velocity}$.

- For given values of M and V , these equations imply an inverse relationship between P and Y :

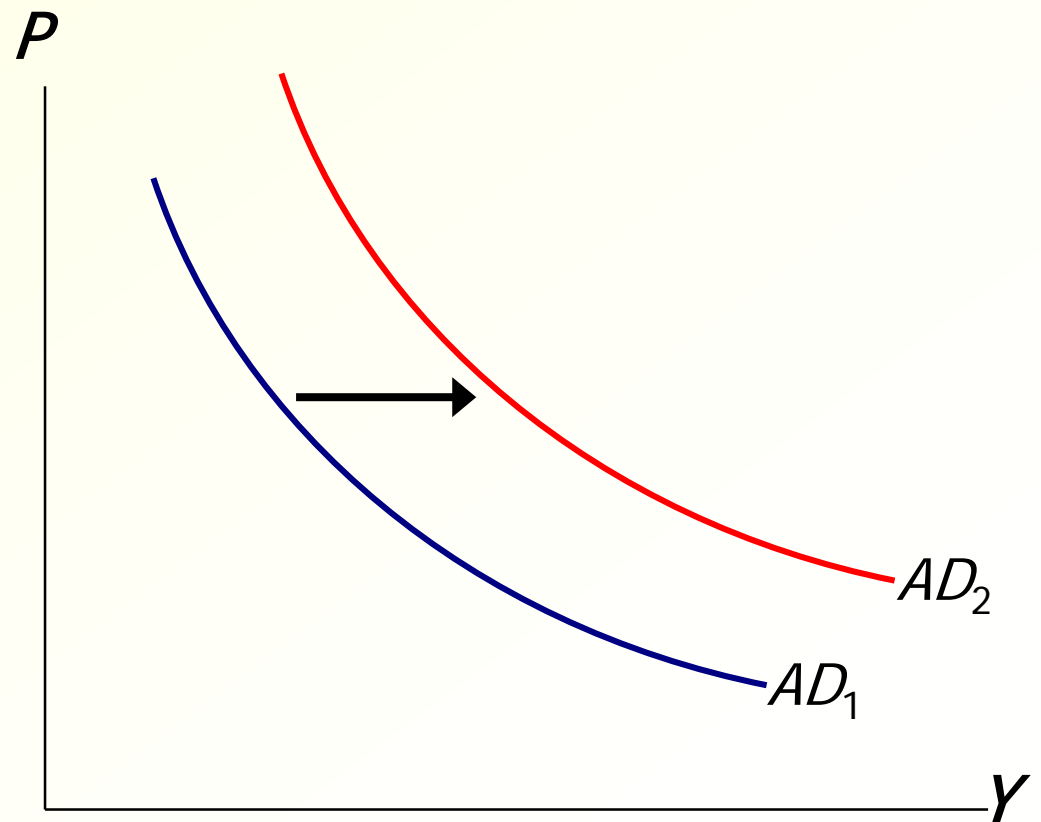
The downward-sloping AD curve


An increase in the price level causes a fall in real money balances (M/P), causing a decrease in the demand for goods & services.



Shifting the AD curve

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






Aggregate Supply in the Long Run

- Recall from chapter 3:
In the long run, output is determined by factor supplies and technology

$$\bar{Y} = F(\bar{K}, \bar{L})$$

\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.



Aggregate Supply in the Long Run

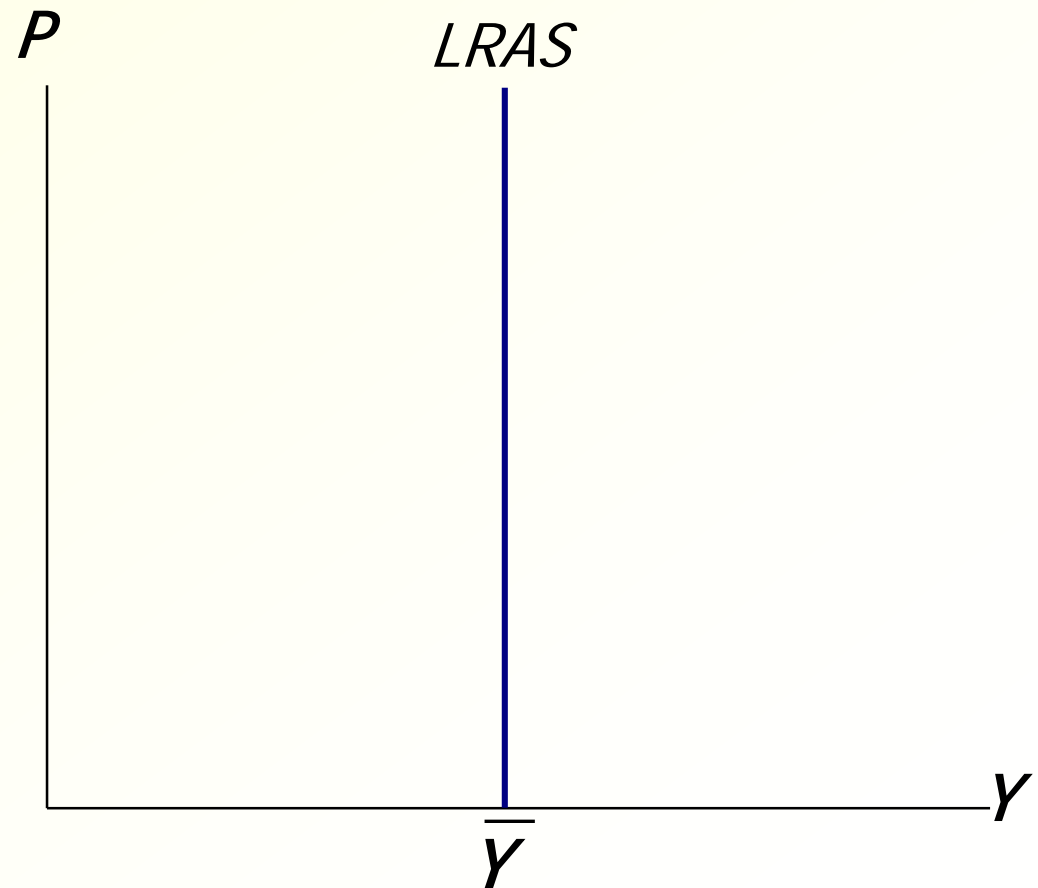
- Recall from chapter 3:
In the long run, output is determined by factor supplies and technology

$$\bar{Y} = F(\bar{K}, \bar{L})$$

- Full-employment output does not depend on the price level, so the long run aggregate supply (LRAS) curve must be vertical:

The long-run aggregate supply curve (长期总供给曲线)

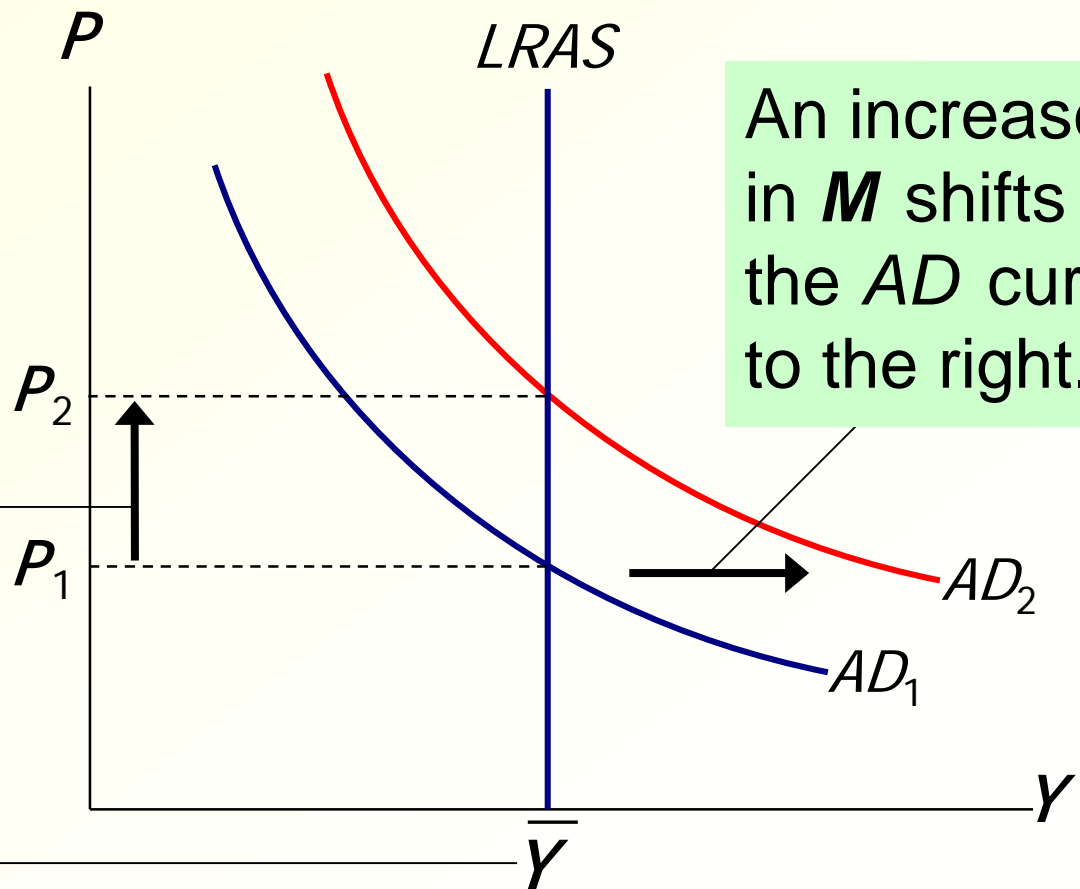
The LRAS curve is vertical at the full-employment level of output.




Long-run effects of an increase in M

In the long run, this increases the price level...

...but leaves output the same.



An increase in M shifts the AD curve to the right.

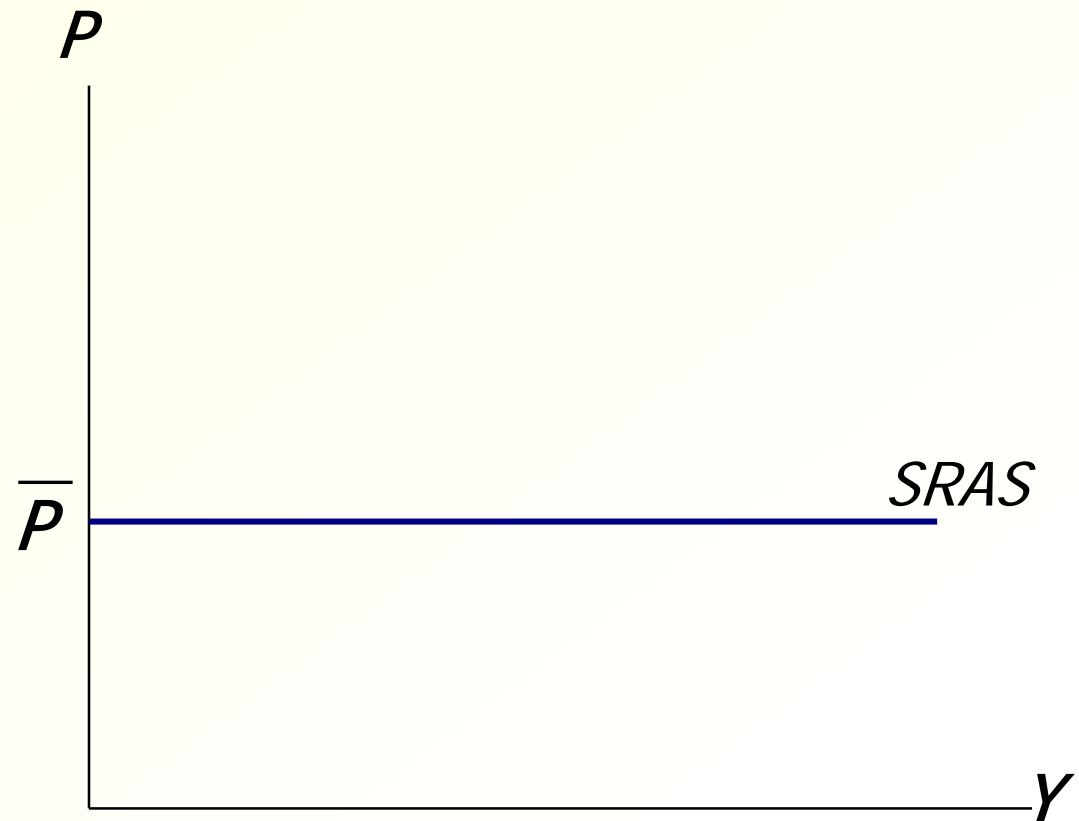


Aggregate Supply in the Short Run

- In the real world, many prices are sticky.
- For now (and throughout Chapters 10-13), we assume that all prices are stuck at a predetermined level in the short run...
- ...and that firms are willing to sell as much as their customers are willing to buy at that price level.
- Therefore, the short-run aggregate supply (SRAS) curve is horizontal:

The short run aggregate supply curve

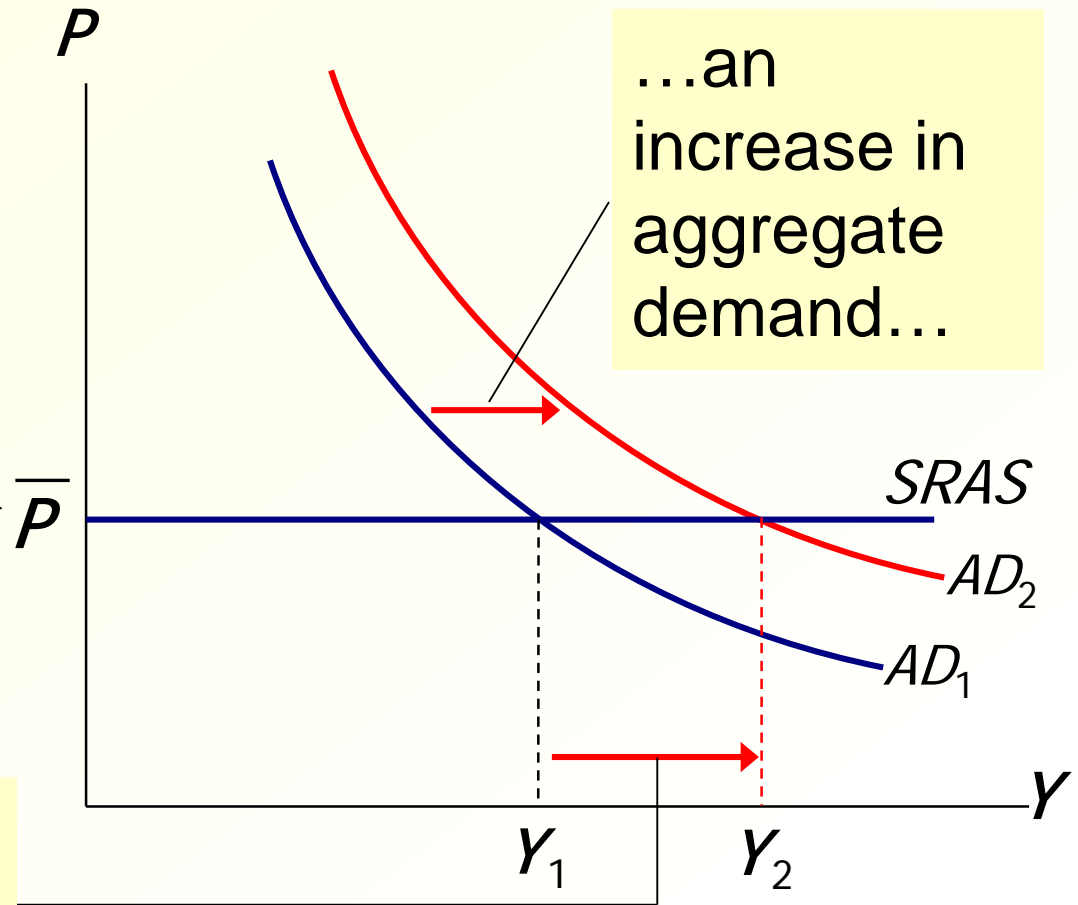
The SRAS curve is horizontal:
The price level is fixed at a predetermined level, and firms sell as much as buyers demand.



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.



From the short run to the long run

Over time, prices gradually adjust. When they do, will they rise or fall?

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

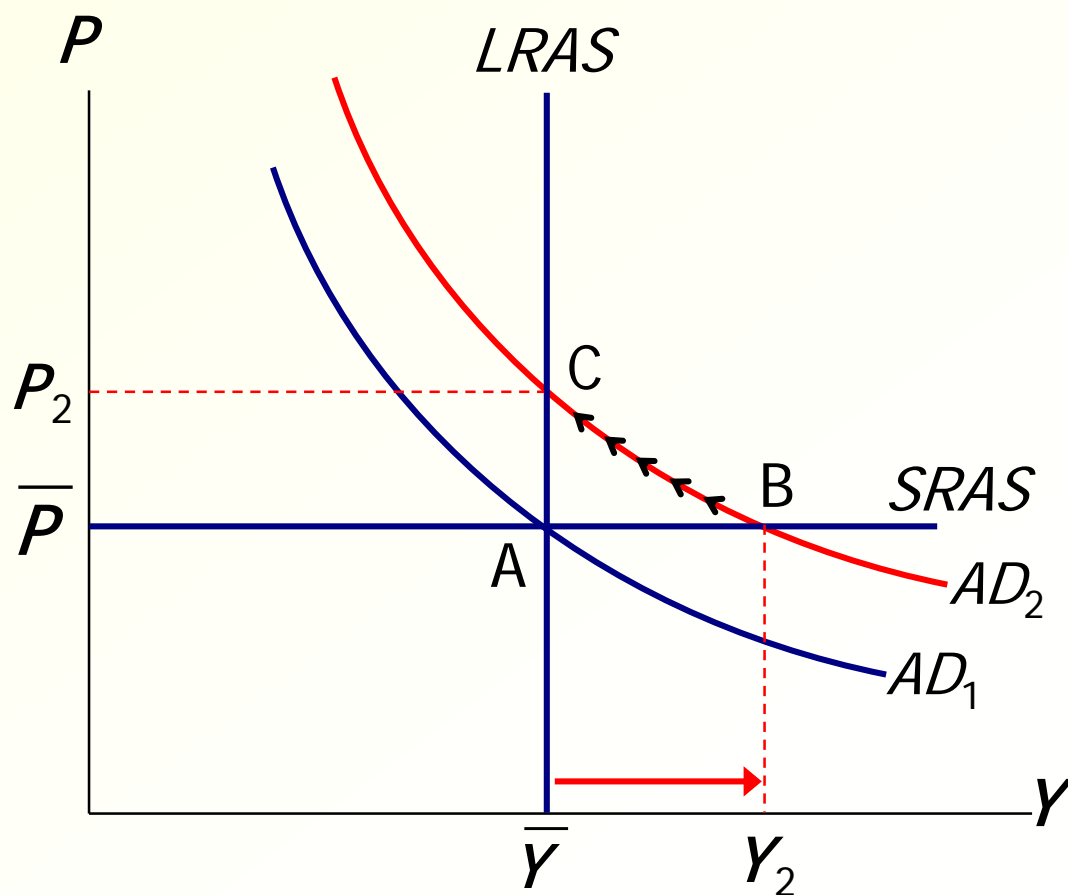
This adjustment of prices is what moves the economy to its long-run equilibrium.

The SR & LR effects of $\Delta M > 0$

A = initial equilibrium

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

C = long-run equilibrium





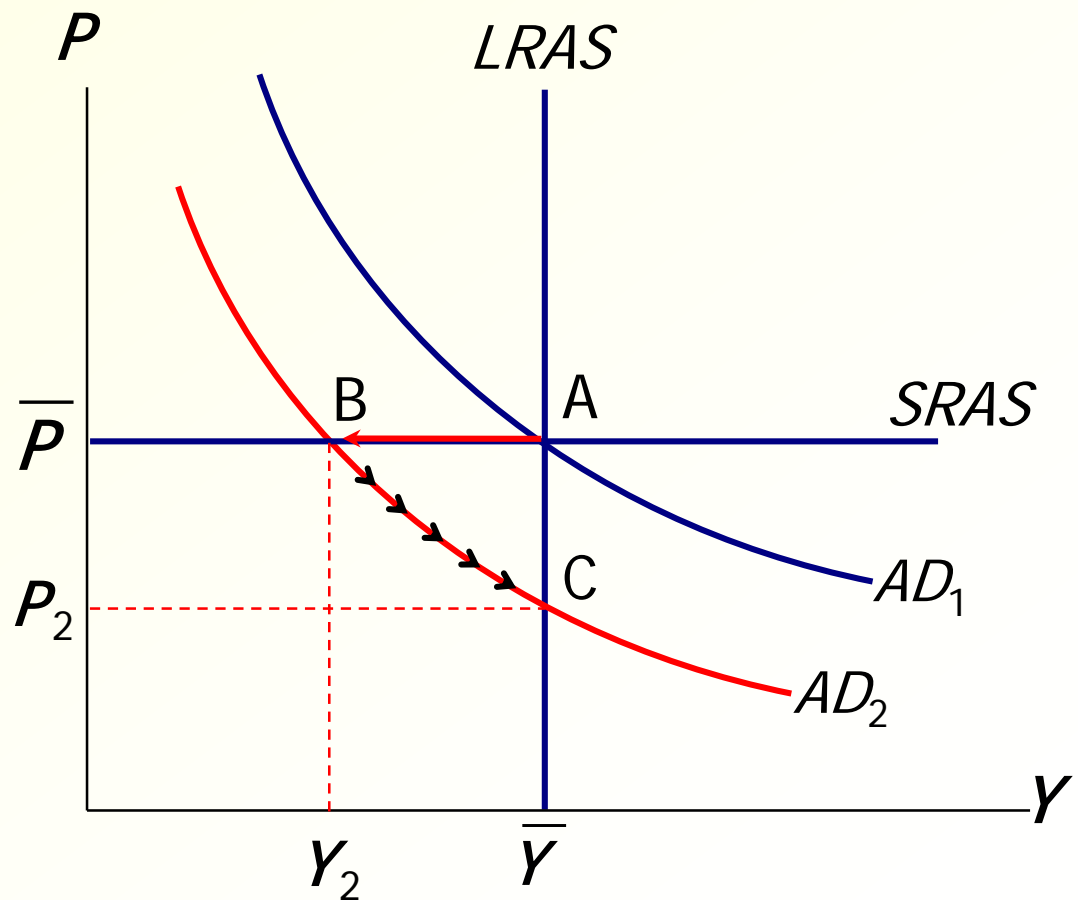
Economic Shocks (冲击)


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

The effects of a negative demand shock

The shock shifts AD left, causing output and employment to fall in the short run

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





Supply shocks


A **supply shock** alters production costs, and therefore 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.)



CASE STUDY:

The 1970s oil shocks

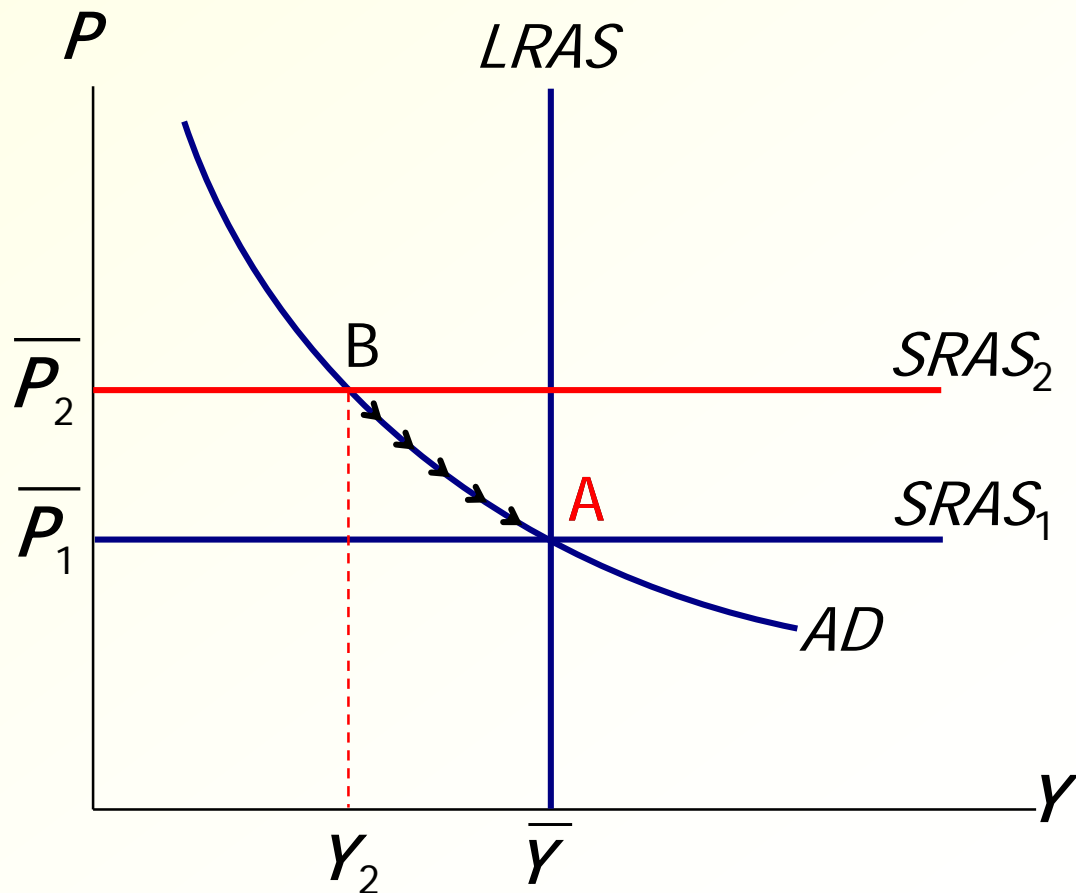
- Early 1970s: OPEC coordinates a reduction in the supply of oil.
- Oil prices rose
 - 11% in 1973
 - 68% in 1974
 - 16% in 1975
- Such sharp oil price increases are supply shocks because they significantly impact production costs and prices.

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.

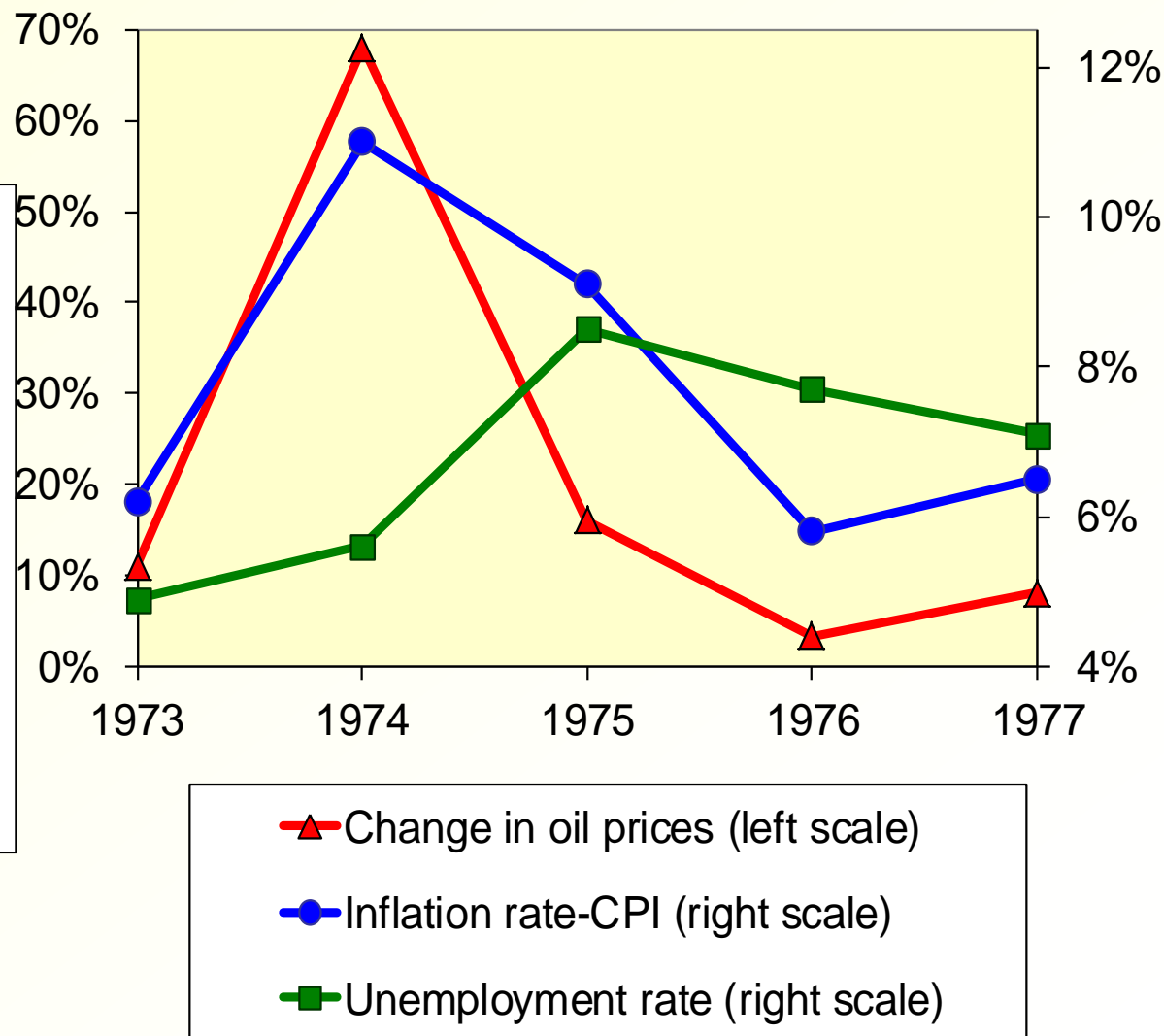


CASE STUDY: The 1970s oil shocks

Predicted effects
of the oil shock:

- inflation \uparrow
- output \downarrow
- unemployment \uparrow

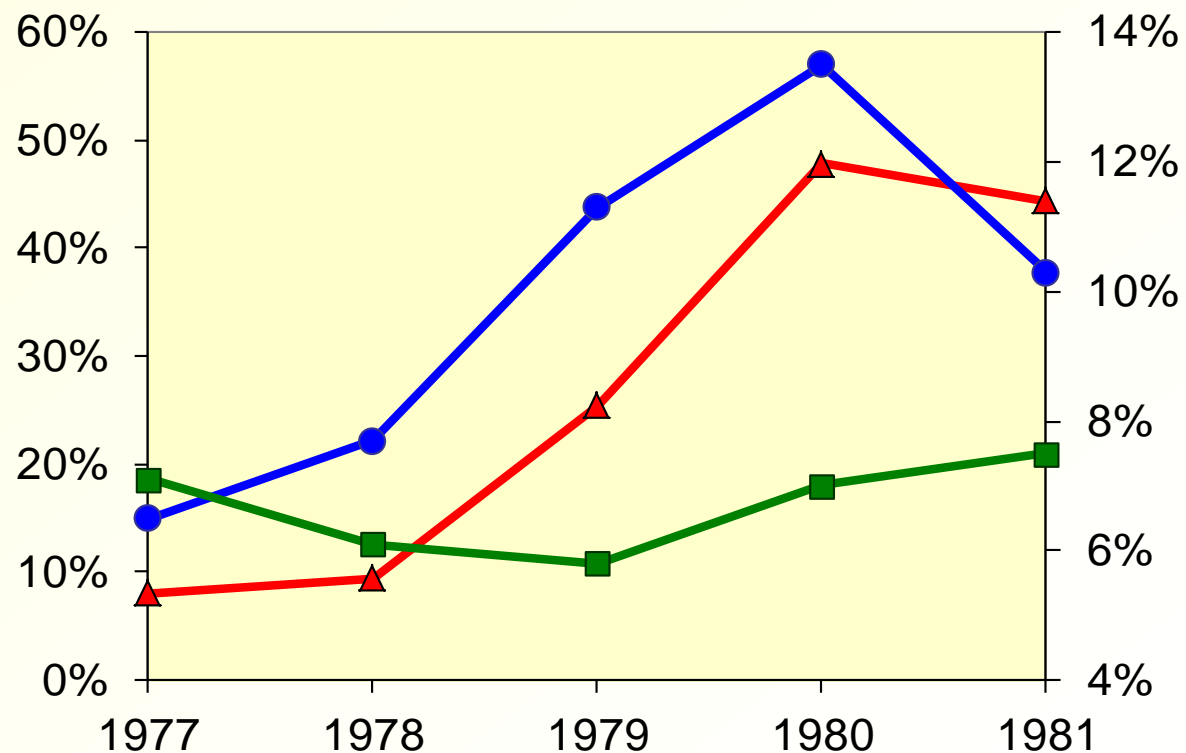
...and then a
gradual recovery.



CASE STUDY: The 1970s oil shocks

Late 1970s:

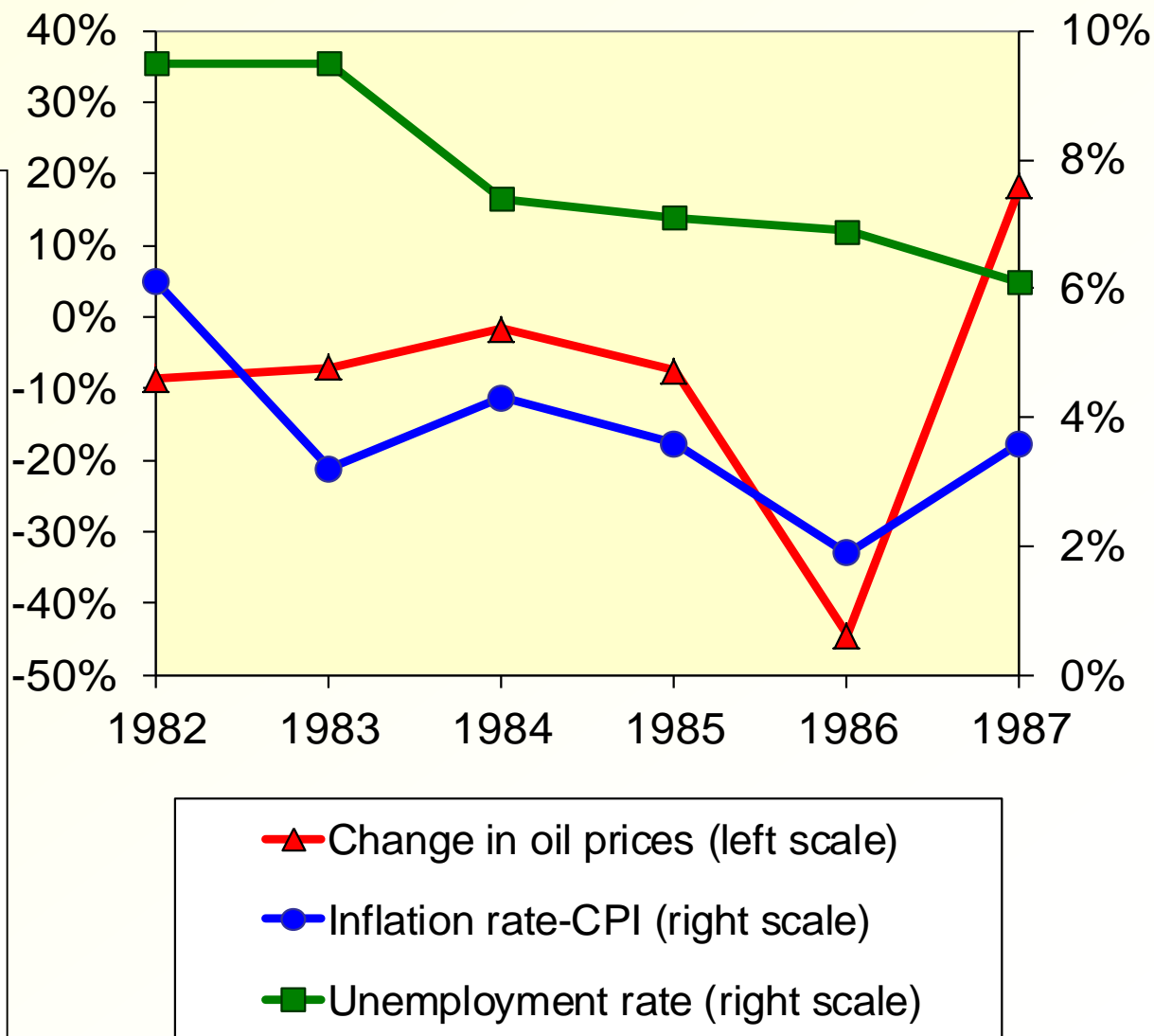
As economy was recovering, oil prices shot up again, causing another huge supply shock!



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

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.



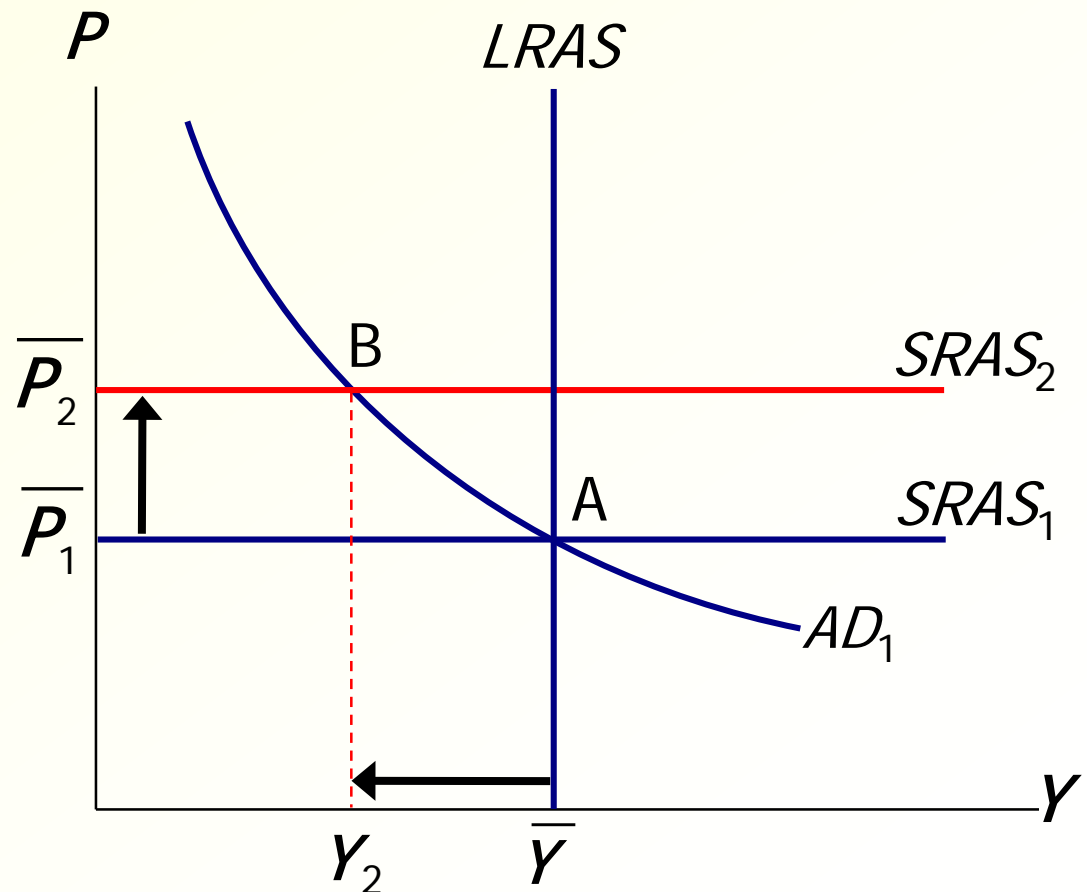


Stabilization policy

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

Stabilizing output with monetary policy

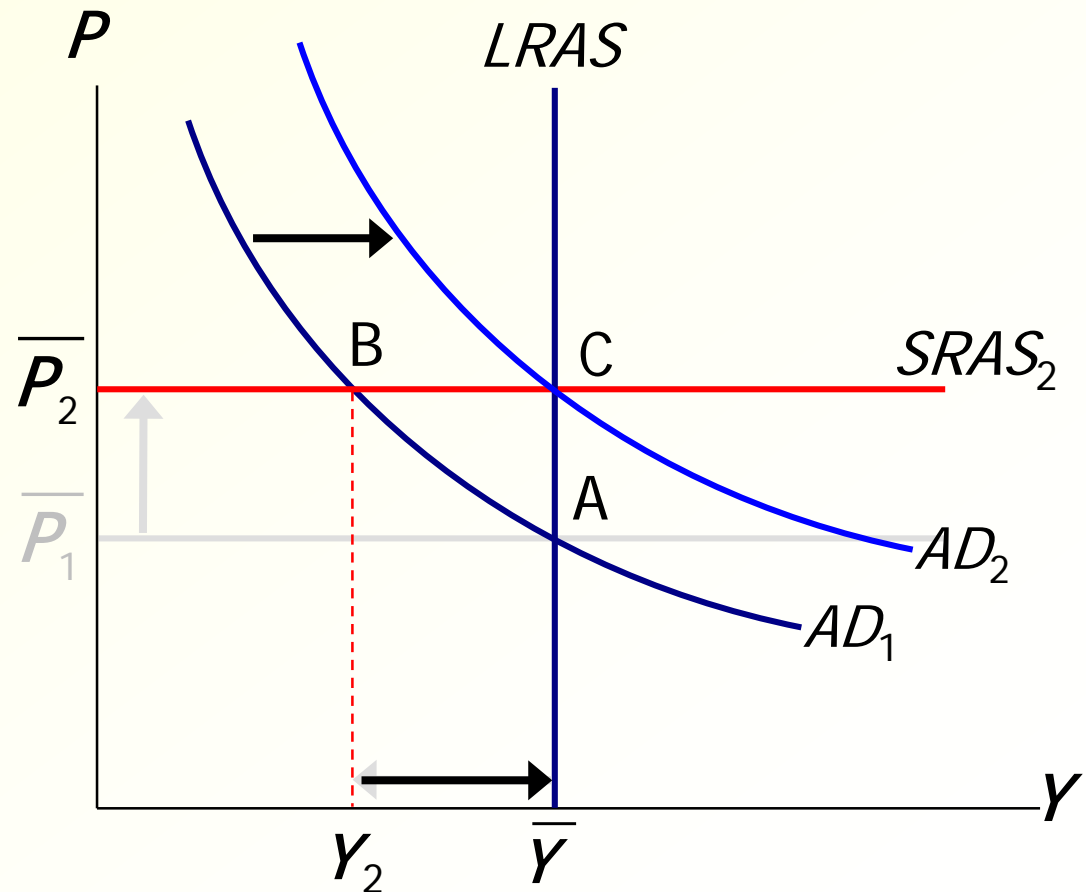
The adverse supply shock moves the economy to point B.




Stabilizing output with monetary policy

But the central bank accommodates the shock by raising A.D.

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



Chapter summary

3. The aggregate demand curve slopes downward.
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.



Chapter summary

6. Shocks to aggregate demand and supply cause fluctuations in GDP and employment in the short run.
7. The monetary authority can attempt to stabilize the economy with monetary policy.