CHAPTER 10

Introduction to Economic Fluctuations

Presentation Slides

Macroeconomics

N. Gregory Mankiw

Part IV Business Cycle Theory: The Economy in the Short Run

Chapter 10

Introduction to Economic Fluctuations

N. Gregory Mankiw, Macroeconomics (10e)

IN THIS CHAPTER, YOU WILL LEARN:

- facts about the business cycle
- how the short run differs from the long run
- an introduction to aggregate demand
- an introduction to aggregate supply in the short run and long run
- how the model of aggregate demand and aggregate supply can be used to analyze the short-run and long-run effects of “shocks.”

- **The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2004**
- Finn E. Kydland and Edward C. Prescott "for their contributions to dynamic macroeconomics: the time consistency of economic policy and the driving forces behind business cycles"

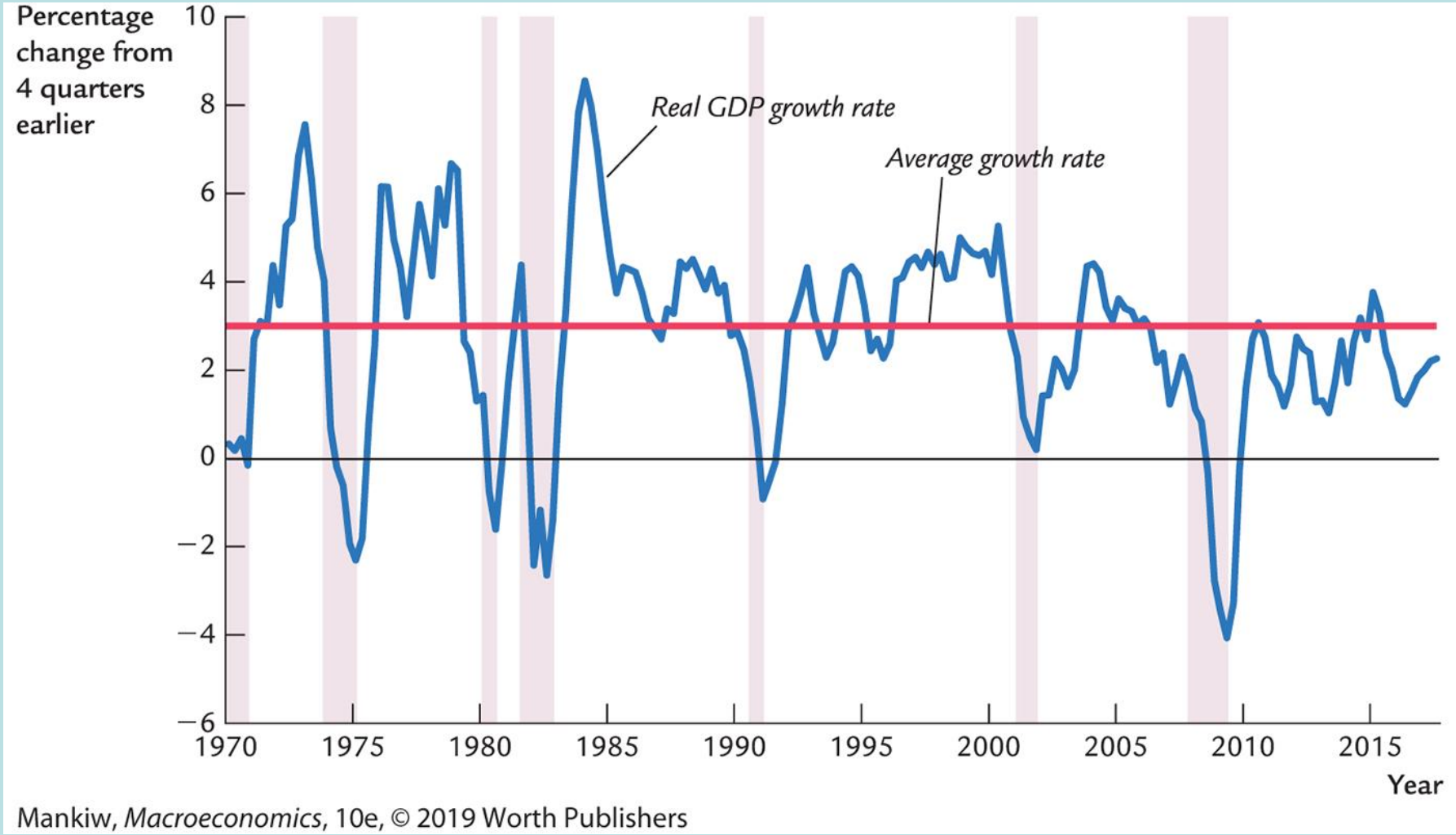
https://www.nobelprize.org/prizes/lists/all-prizes-in-economic-sciences/

10.1 The Facts About the Business Cycle

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.

Growth rates of real GDP, consumption



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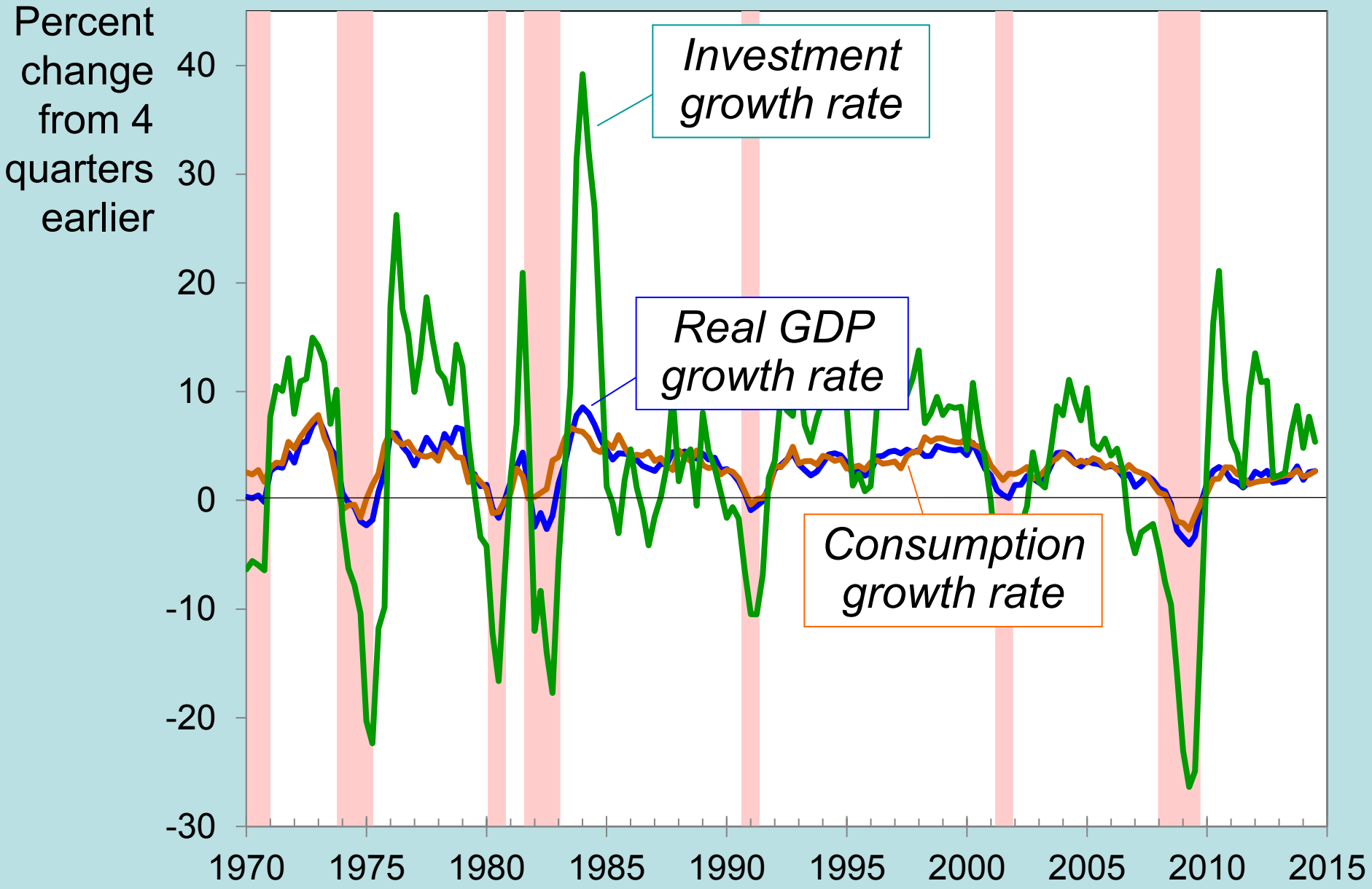
Growth rates of real GDP, consump., investment



Unemployment

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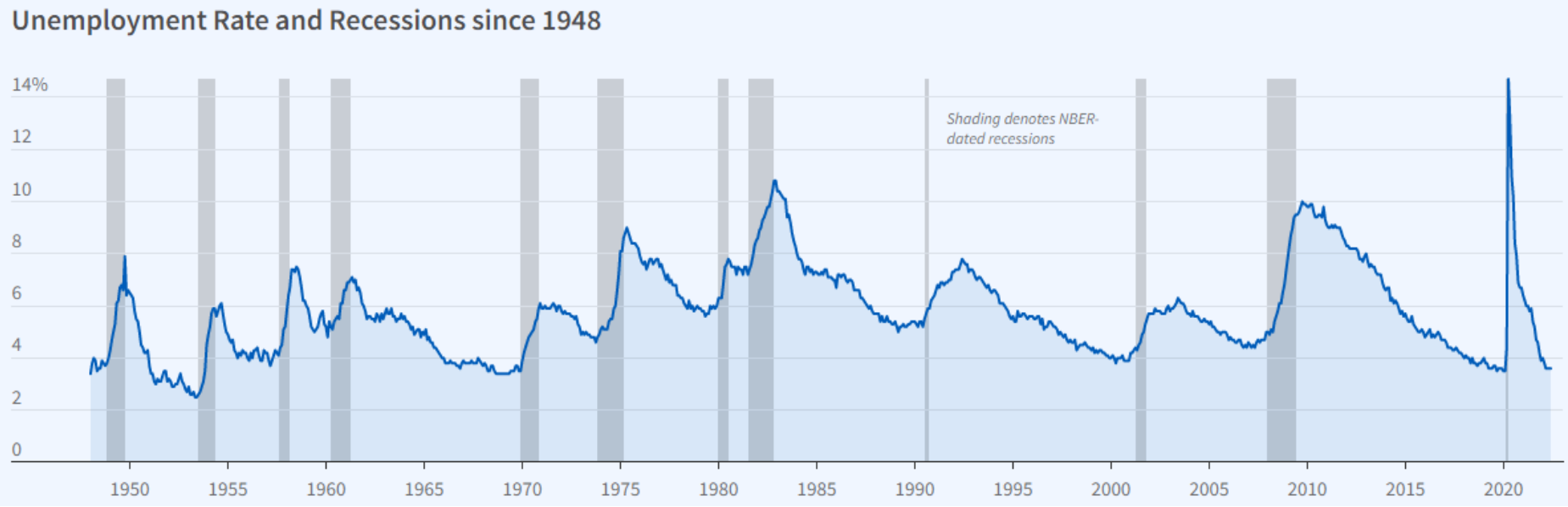
National Bureau of Econ Research

US Business Cycle – NBER（补充）

- *Contractions (recessions) start at the peak of a business cycle and end at the trough.*
- The NBER does not define a recession in terms of two consecutive quarters of decline in real GDP.
- Rather, a recession is a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales.

Business Cycle Dating - NBER



Business Cycle Dating Committee Announcements

July 19, 2021 Determination of the April 2020 Trough in US Economic Activity

June 8, 2020 Determination of the February 2020 Peak in US Economic Activity

September 20, 2010 Announcement of June 2009 business cycle trough/end of last recession

April 12, 2010 Memo from the Business Cycle Dating Committee

December 1, 2008 Announcement of December 2007 business cycle peak/beginning of last recession

January 7, 2008 Memo from the Business Cycle Dating Committee

October 21, 2003 Memo from the Business Cycle Dating Committee

July 17, 2003 Announcement of November 2001 business cycle trough/end of last recession

November 26, 2001 Announcement of March 2001 business cycle peak/beginning of last recession

December 22, 1992 Announcement of March 1991 business cycle trough/end of last recession

April 25, 1991 Announcement of July 1990 business cycle peak/beginning of last recession

Determination of the April 2020 Trough in US Economic Activity

Cambridge, July 19, 2021 - The Business Cycle Dating Committee of the National Bureau of Economic Research maintains a chronology of the peaks and troughs of US business cycles. The committee has determined that a trough in monthly economic activity occurred in the US economy in April 2020. The previous peak in economic activity occurred in February 2020. The recession lasted two months, which makes it the shortest US recession on record.

The NBER chronology does not identify the precise moment that the econo entered a recession or expansion. In the NBER's convention for measuring the duration of a recession, the first month of the recession is the month following the peak and the last month is the month of the trough. Because the most recent trough was in April 2020, the last month of the recession was April 2020, and May 2020 was the first month of the subsequent expansion.

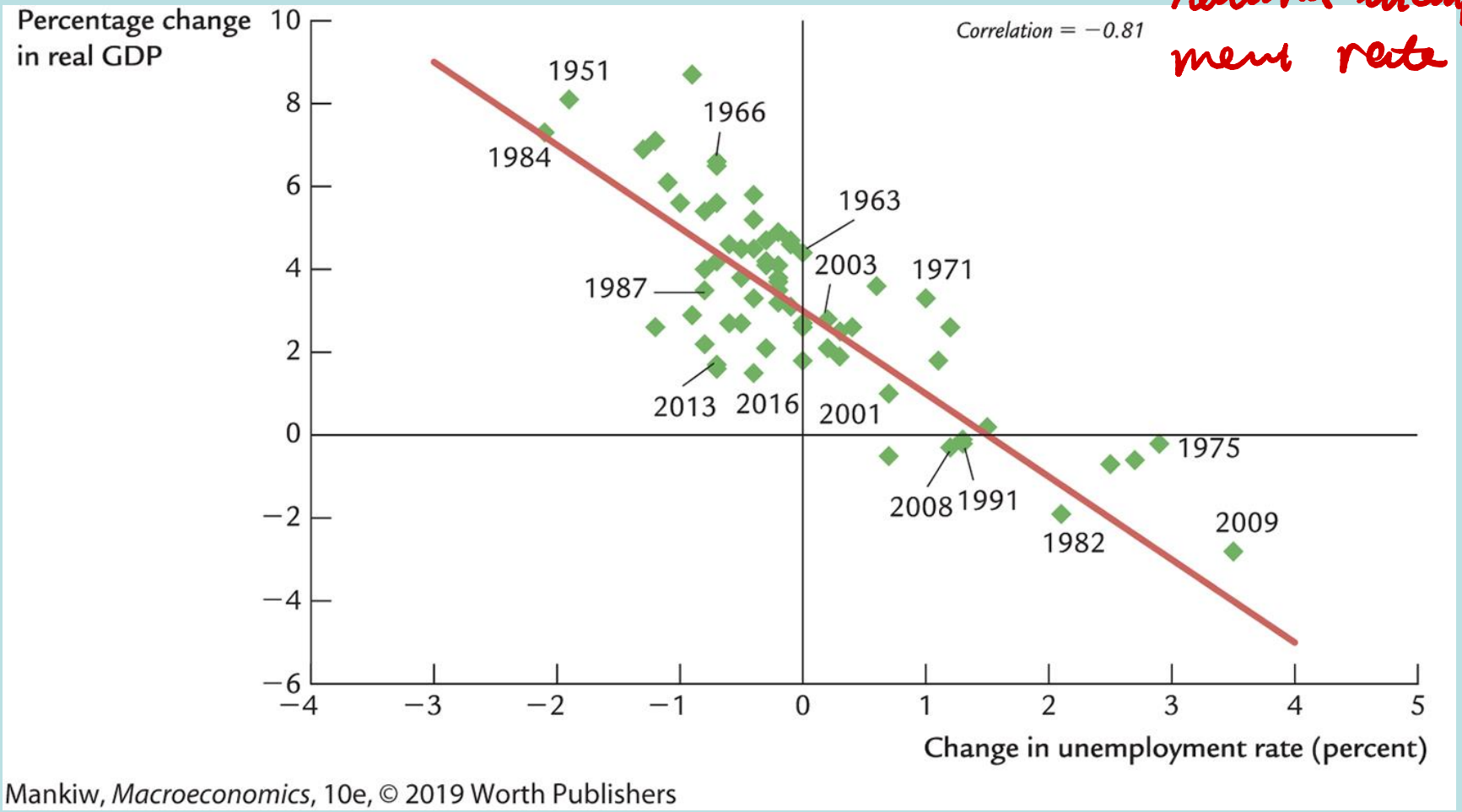
In determining that a trough occurred in April 2020, the committee did not conclude that the economy has returned to operating at normal capacity. An expansion is a period of rising economic activity spread across the economy, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales. Economic activity is typically below normal in the early stages of an expansion, and it sometimes remains so well into the expansion.

The committee decided that any future downturn of the economy would be a new recession and not a continuation of the recession associated with the February 2020 peak. The basis for this decision was the length and strength of the recovery to date.

Okun's Law

$$\%\Delta GDP = 3\% - 2 \times (u - u^n)$$

u^n: natural unemployment rate



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领先经济指标

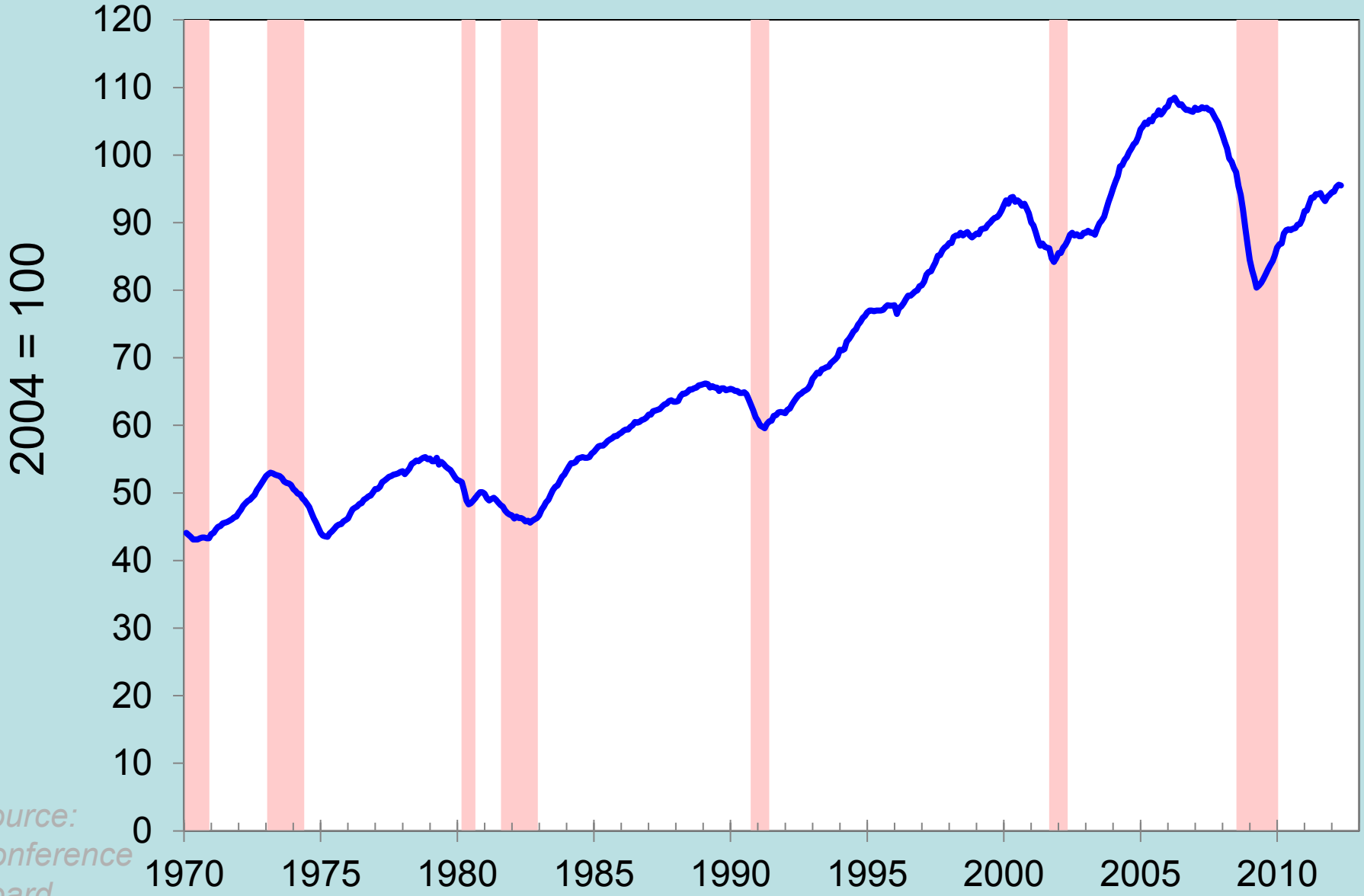
Index of Leading Economic Indicators

- 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



Source: Conference Board

10.2 Time Horizons in Macroeconomics

Time horizons in macroeconomics

- Long run
  Prices are flexible, respond to changes in supply or demand.
- Short run
  Many prices are "sticky" at a predetermined level.

The economy behaves much differently when prices are sticky.

Recap of classical macro theory
(Chaps. 3-9)

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

- 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.

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***

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.

10.3 Aggregate Demand

Aggregate demand

AD: P, Y

- 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 11–12 develop the theory of aggregate demand in more detail.

The Quantity Equation as Aggregate Demand

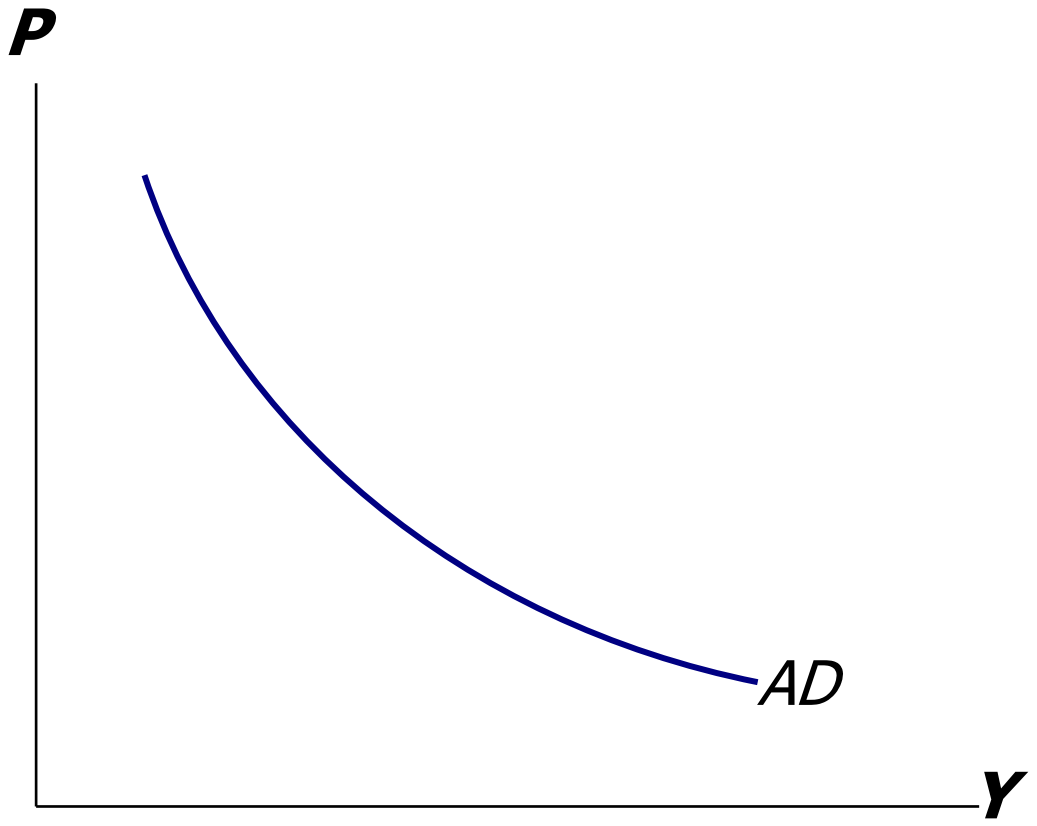
- From Chapter 5, recall the quantity equation

$$MV = PY$$

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

The downward-sloping *AD* curve

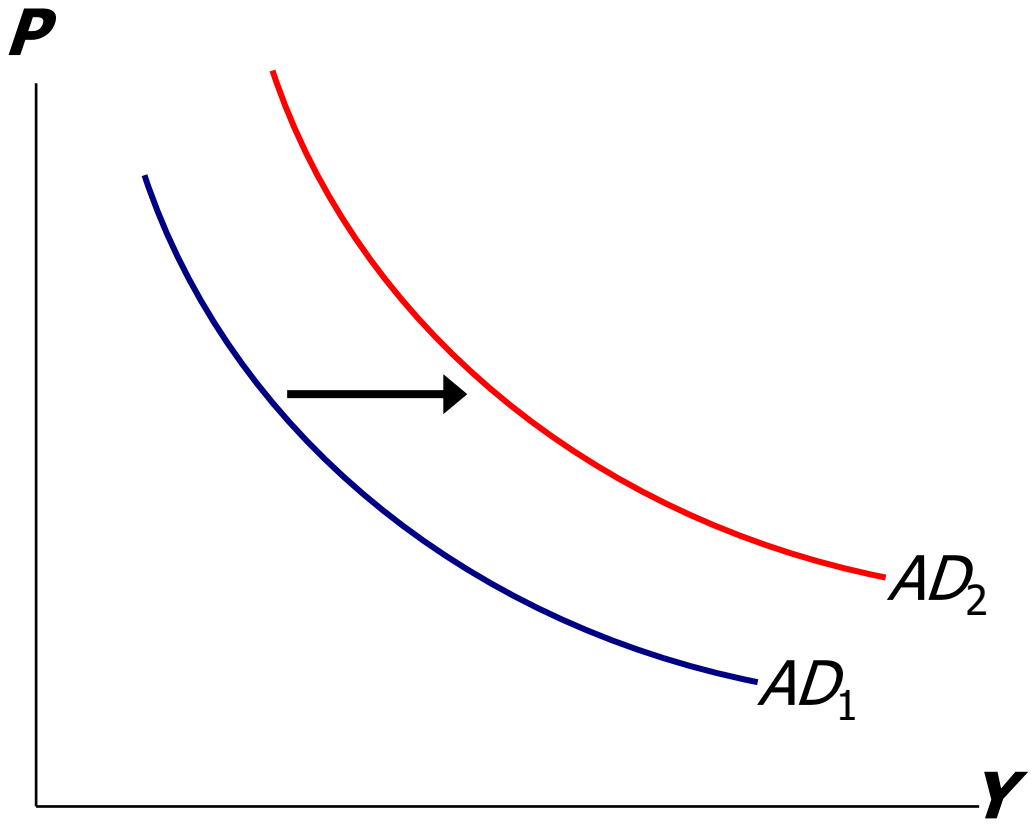
An increase in the price level causes a fall in real money balances (***M/P***), causing a decrease in the demand for goods & services.



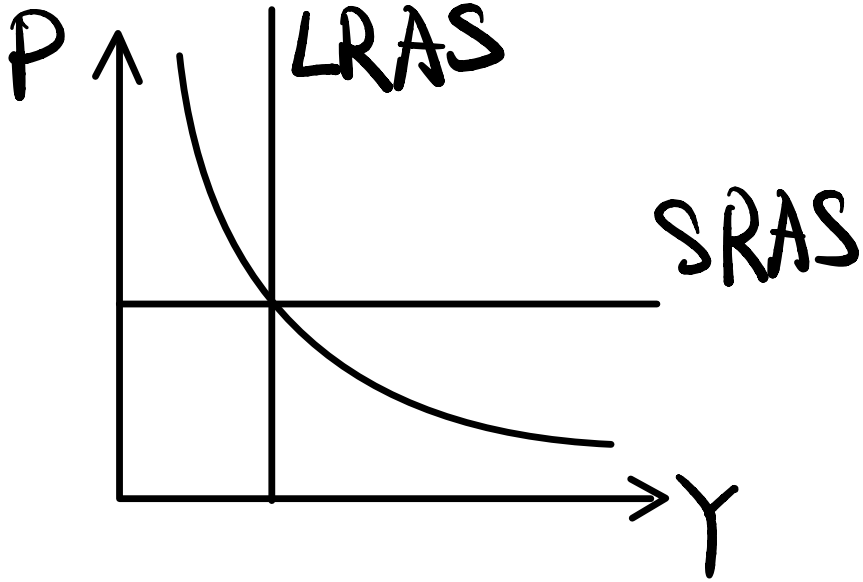
Shifting the *AD* curve

PY=MV

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



10.4 Aggregate Supply



Aggregate supply

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

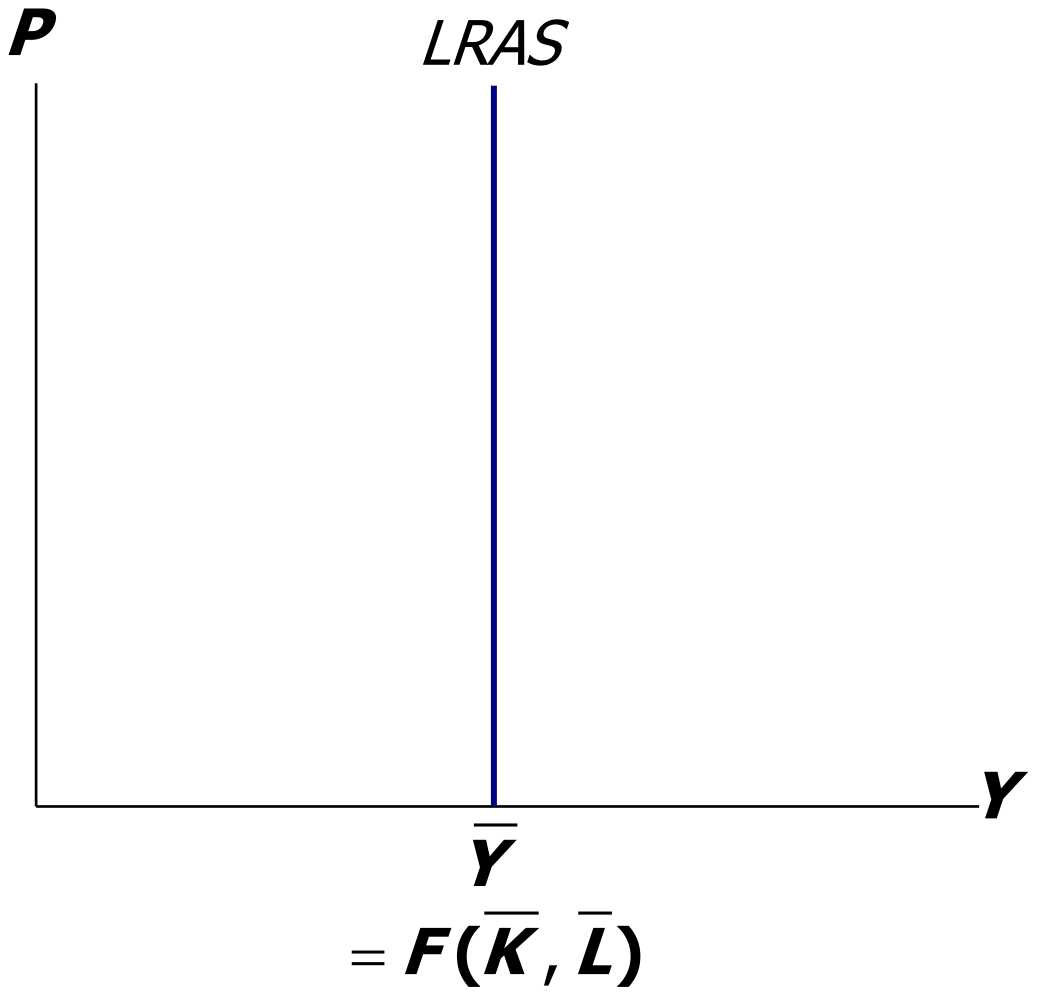
$$\bar{Y} = F(\bar{K}, \bar{L})$$

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

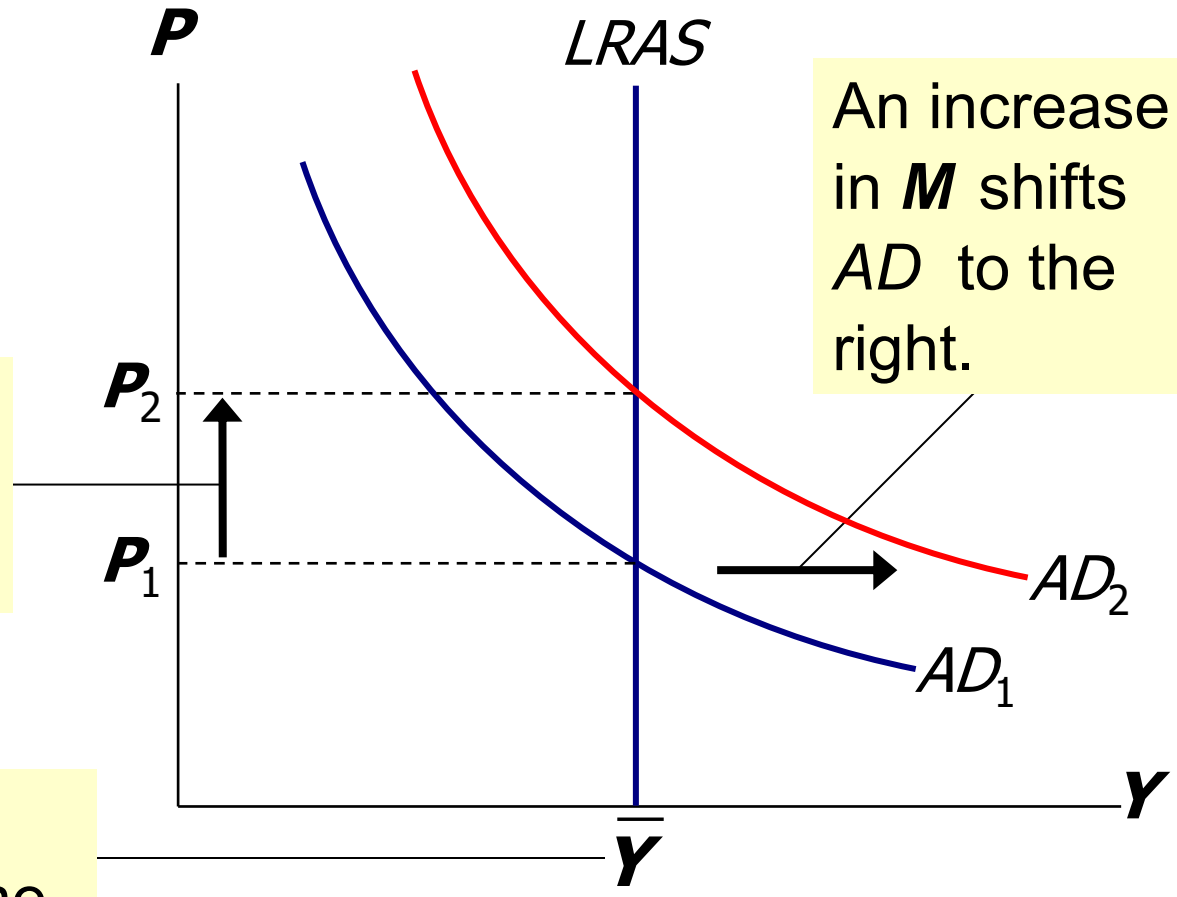
"Full employment" means that unemployment equals its natural rate (not zero).

The long-run aggregate supply curve

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



Long-run effects of an increase in *M*



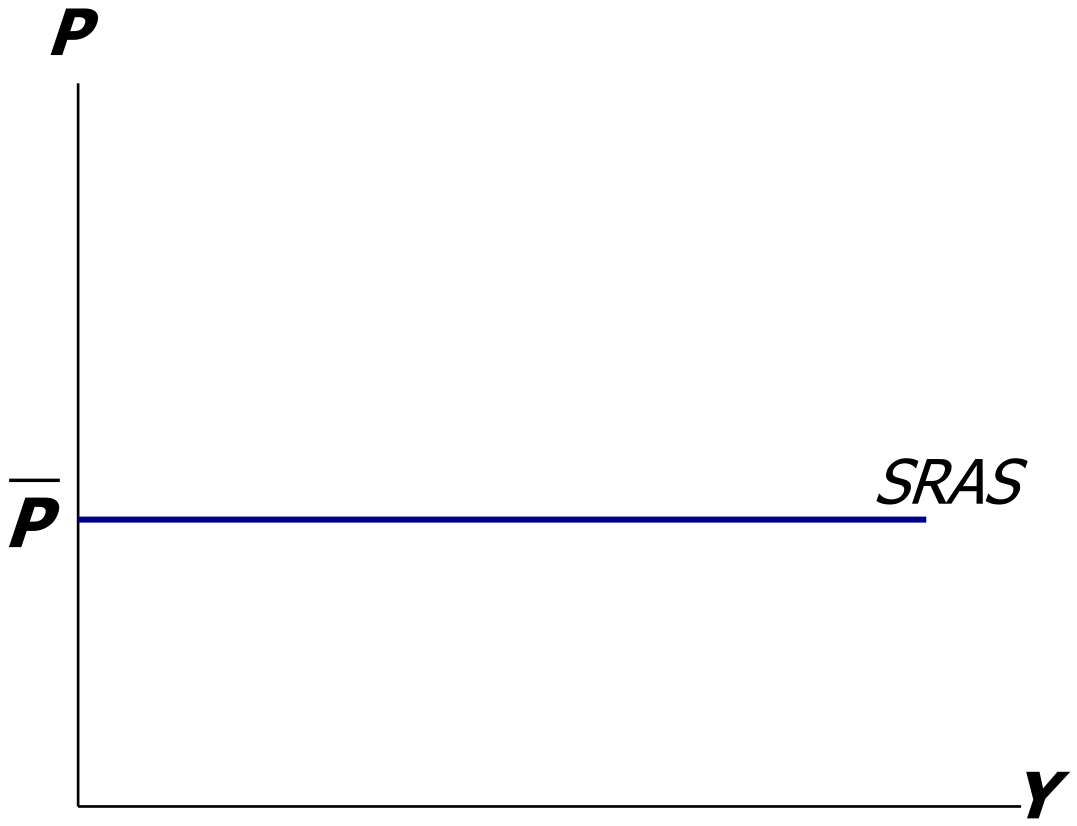
Aggregate supply in the short run

- 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.
  - 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:

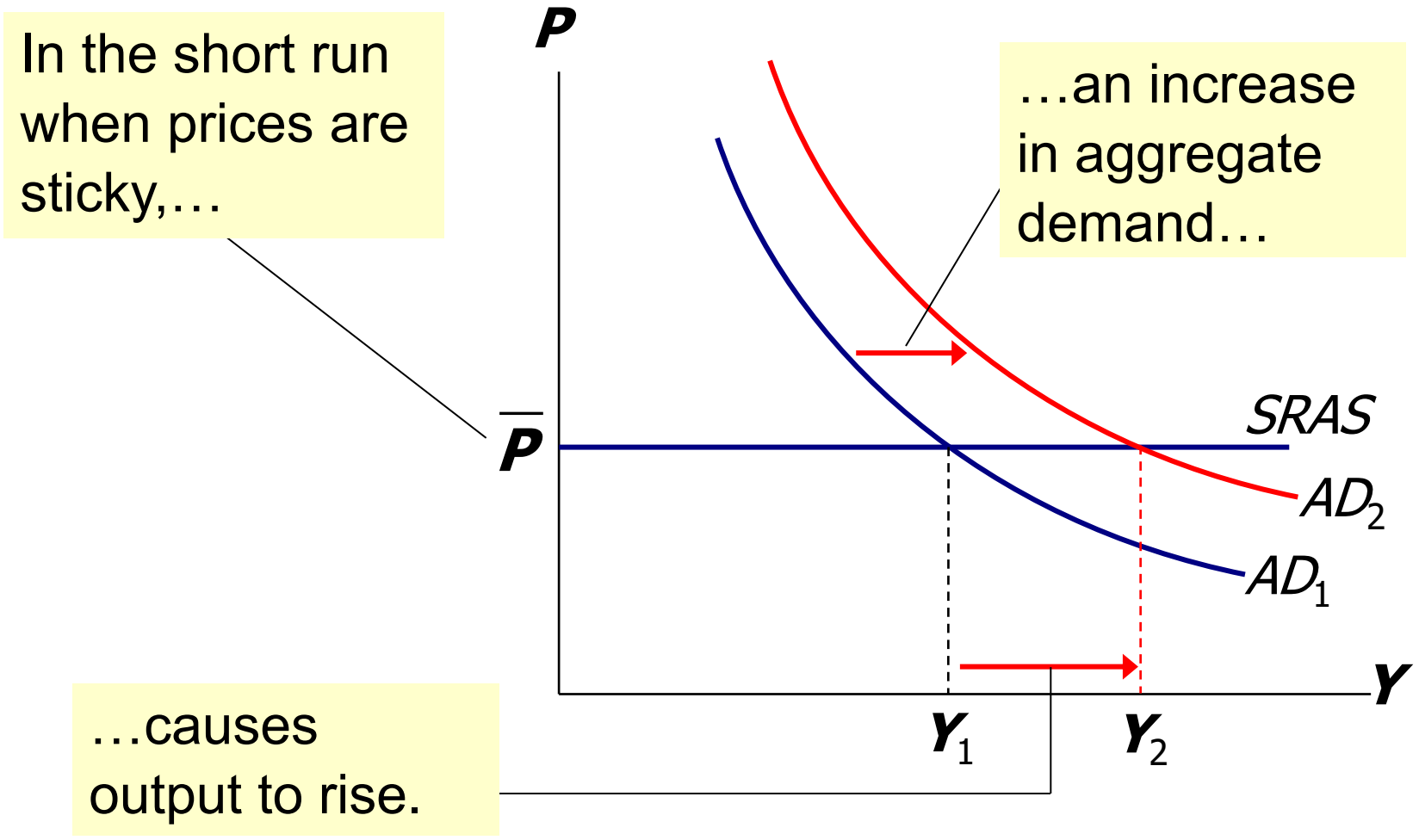
The short-run aggregate supply curve

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*



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…
$Y > \overline{Y}$	*rise*
$Y < \overline{Y}$	*fall*
$Y = \overline{Y}$	*remain constant*

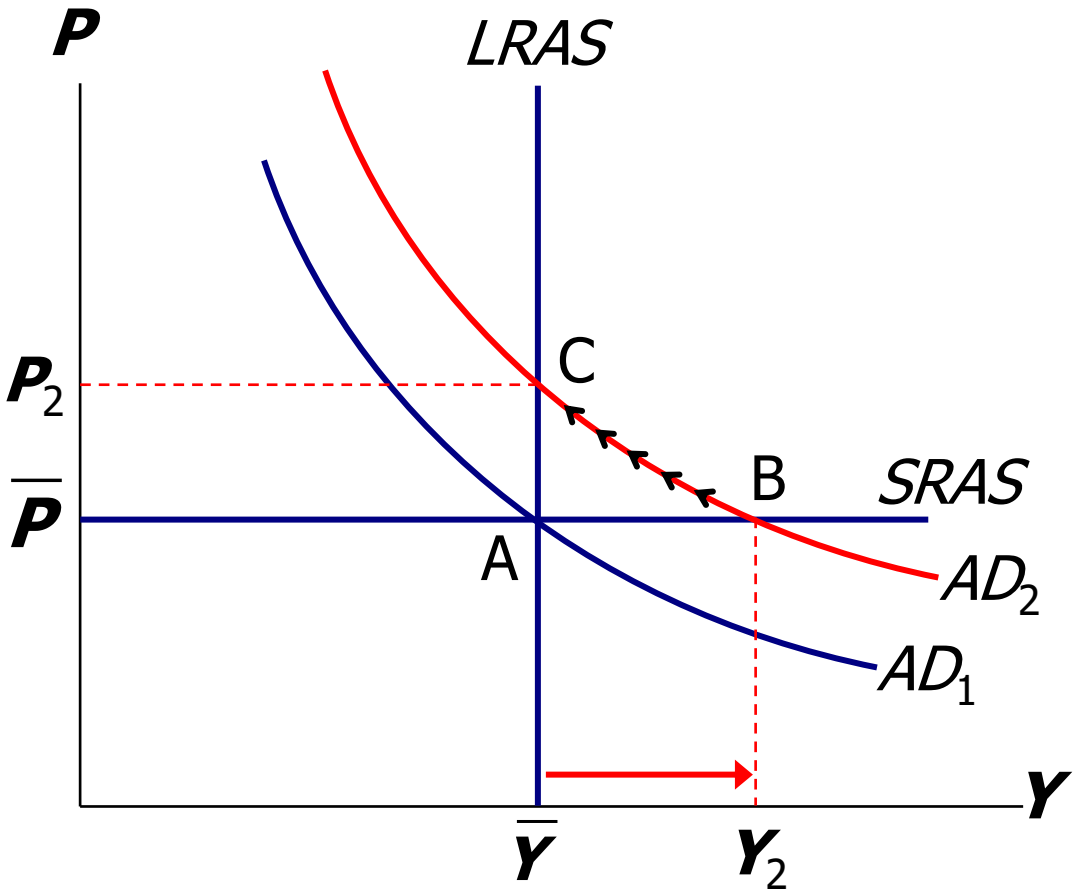
The adjustment of prices is what moves the economy to its long-run equilibrium.

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

A = initial equilibrium

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

C = long-run equilibrium



10.5 Stabilization Policy

Shocks!

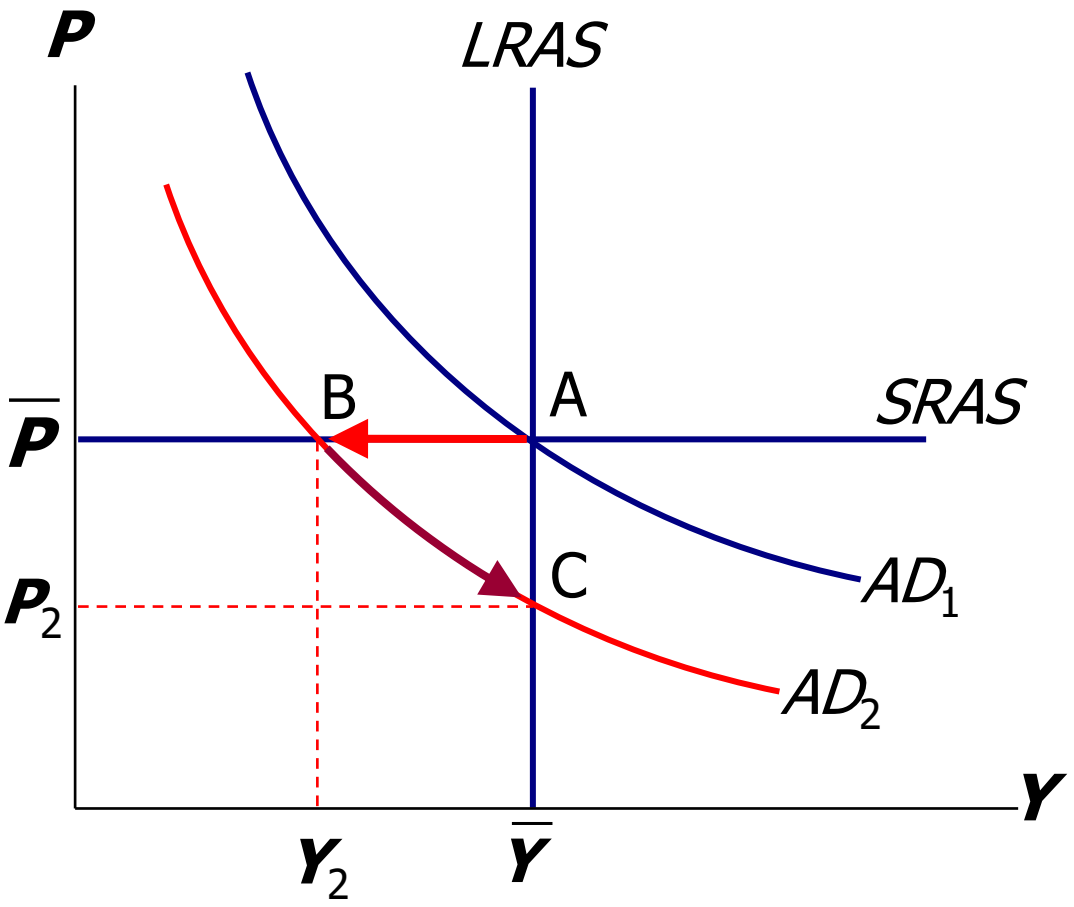
- **shocks**: exogenous changes in agg. supply or demand
- Shocks temporarily push the economy away from full employment.
- Example: exogenous decrease in velocity

  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.

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.



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.

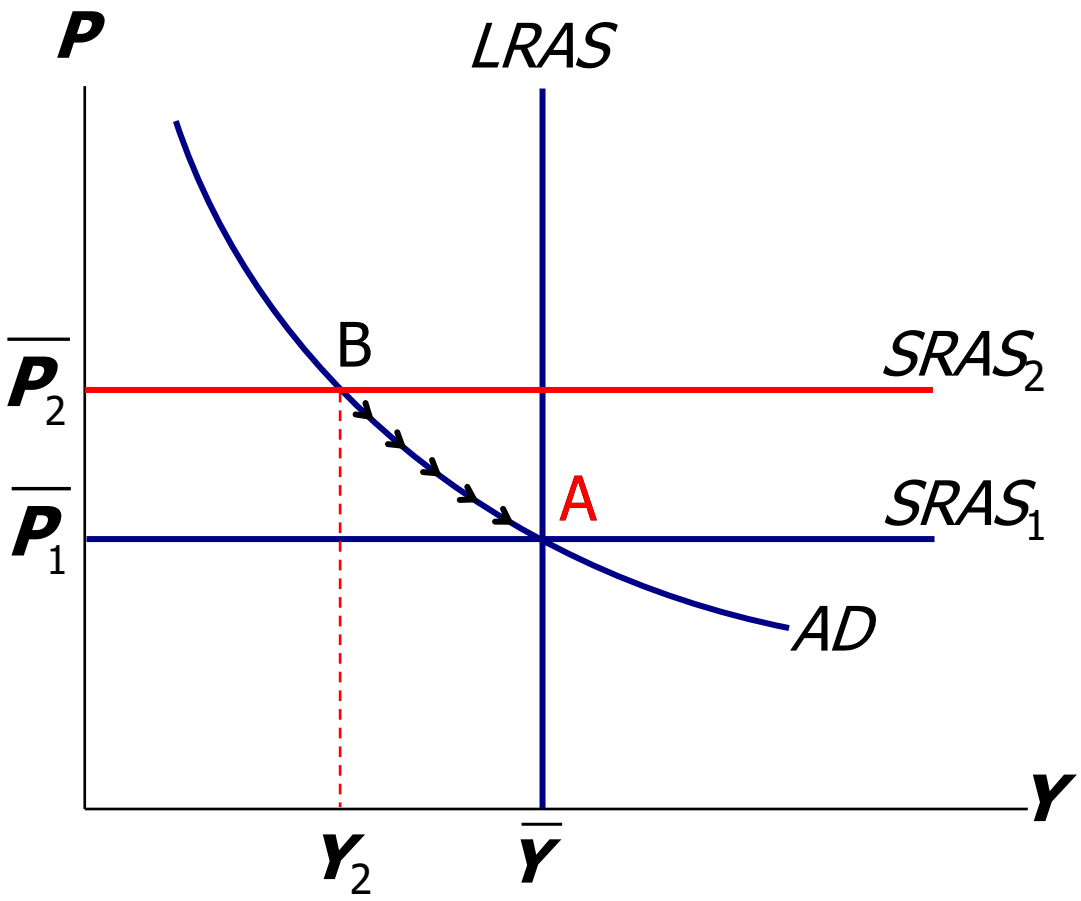
CASE STUDY:
The 1970s oil shocks

- 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.

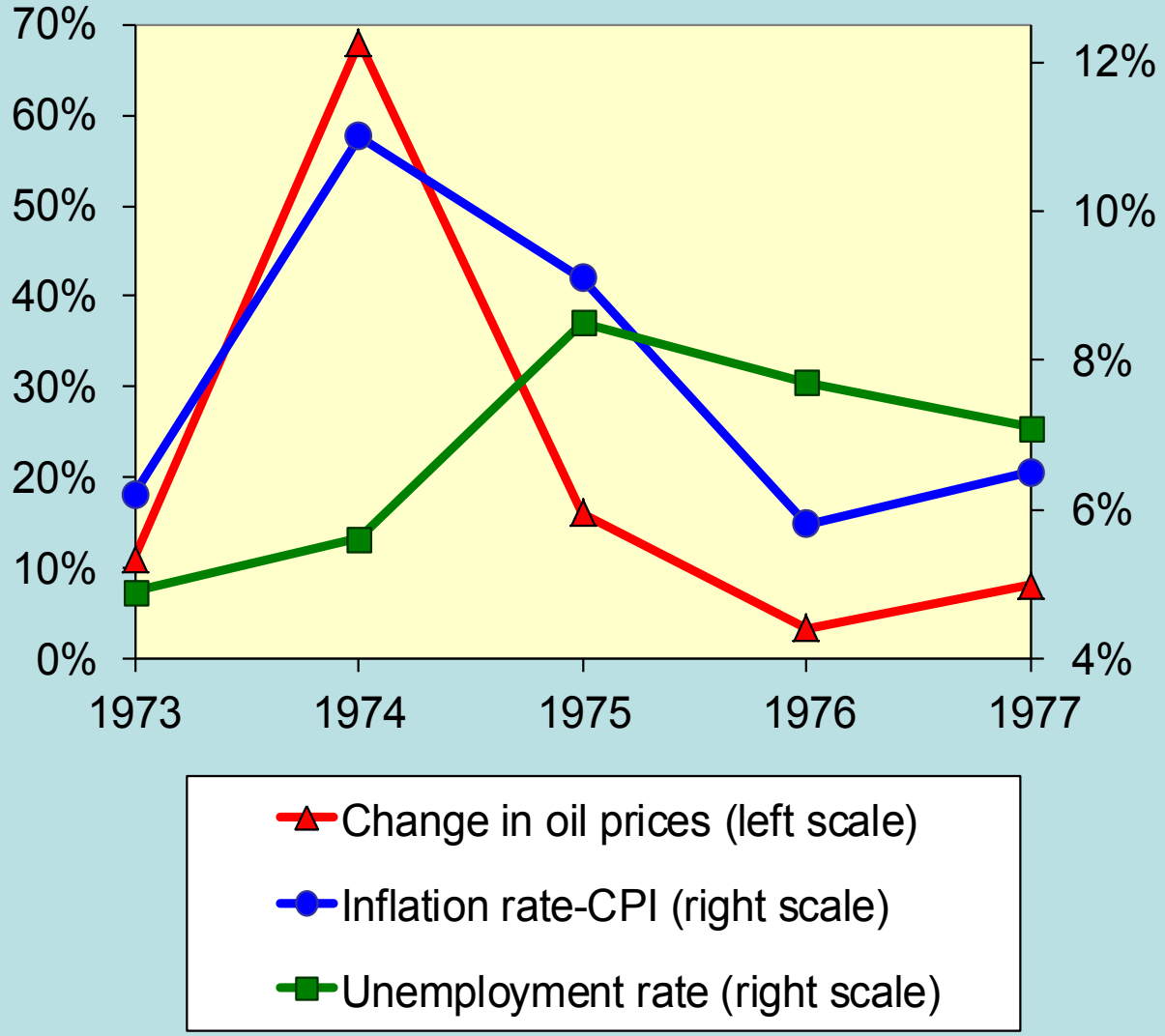


CASE STUDY:
The 1970s oil shocks

Predicted effects of the oil shock:

- inflation ↑
- output ↓
- unemployment ↑

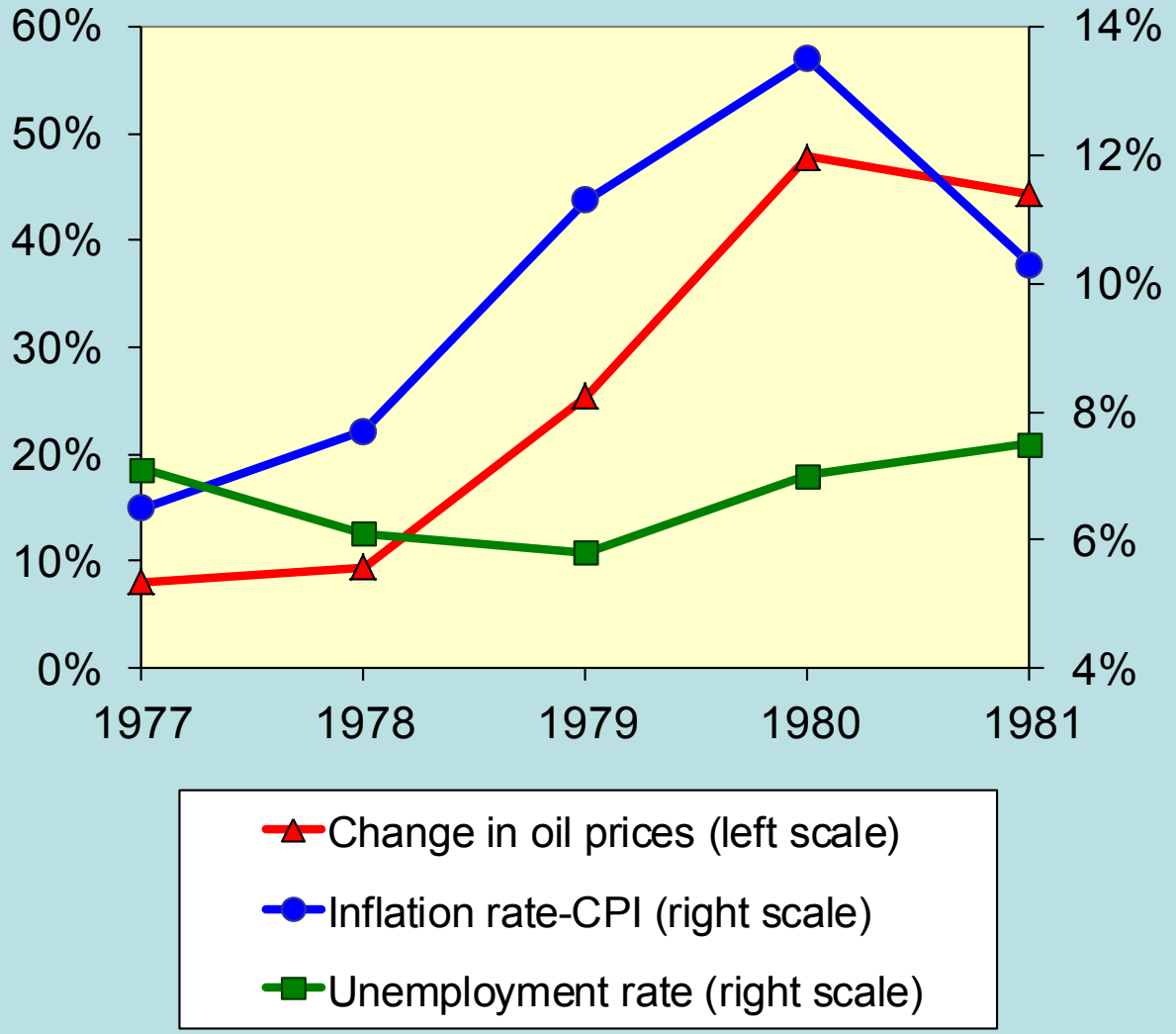
…and then a gradual recovery.



CASE STUDY:
The 1970s oil shocks

Late 1970s:

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

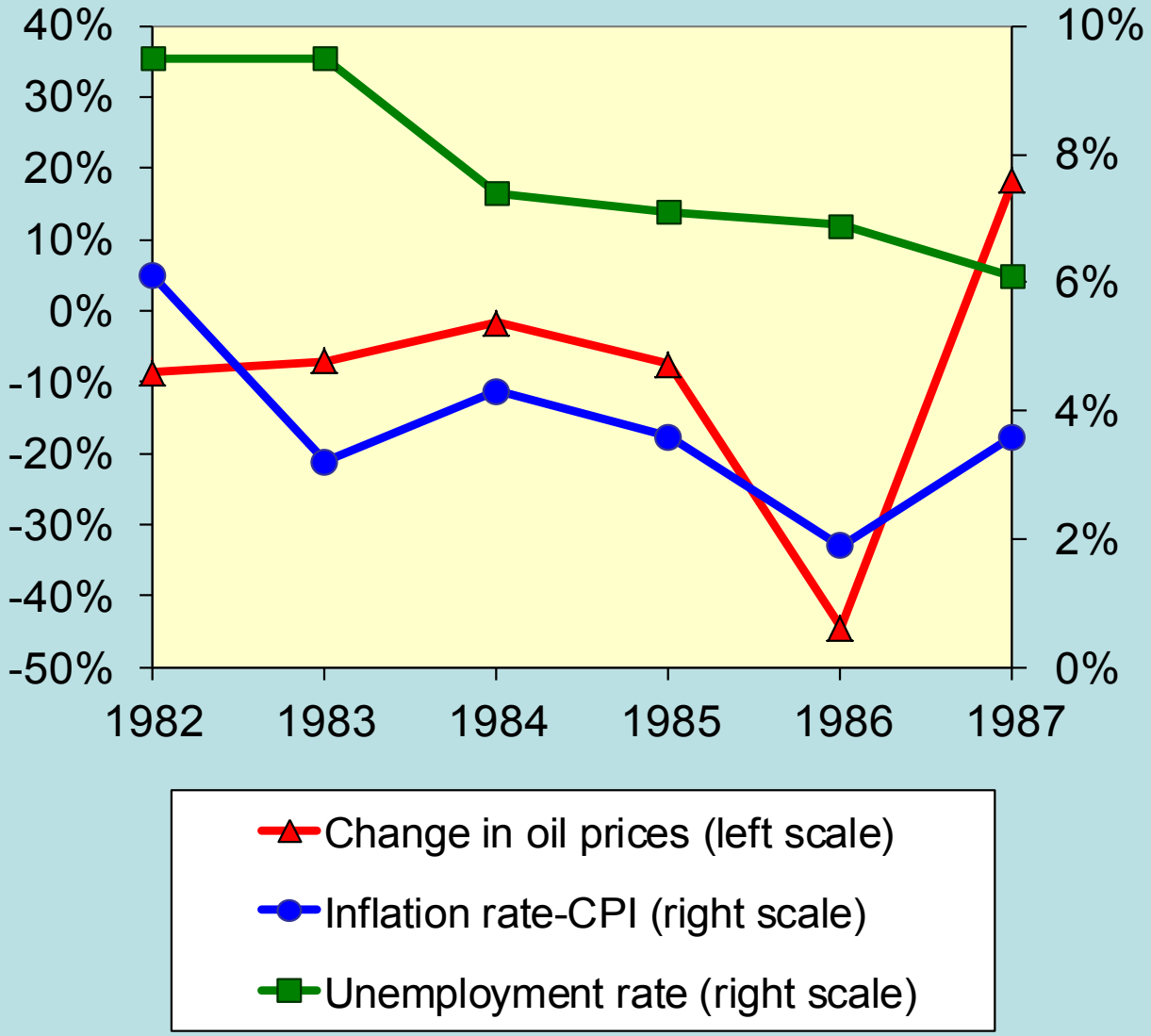


CASE STUDY:
The 1980s oil shocks

1980s:

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

As the model predicts, inflation and unemployment fell.

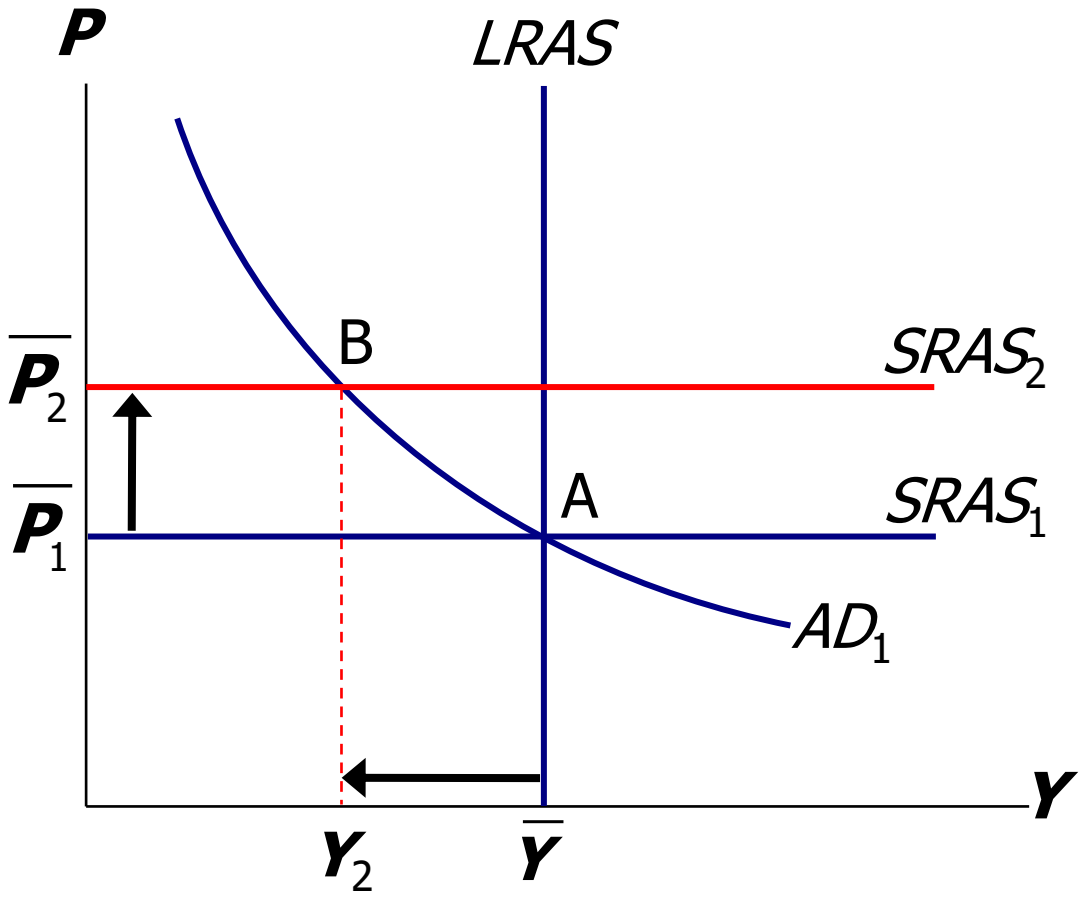


Stabilization policy

- 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

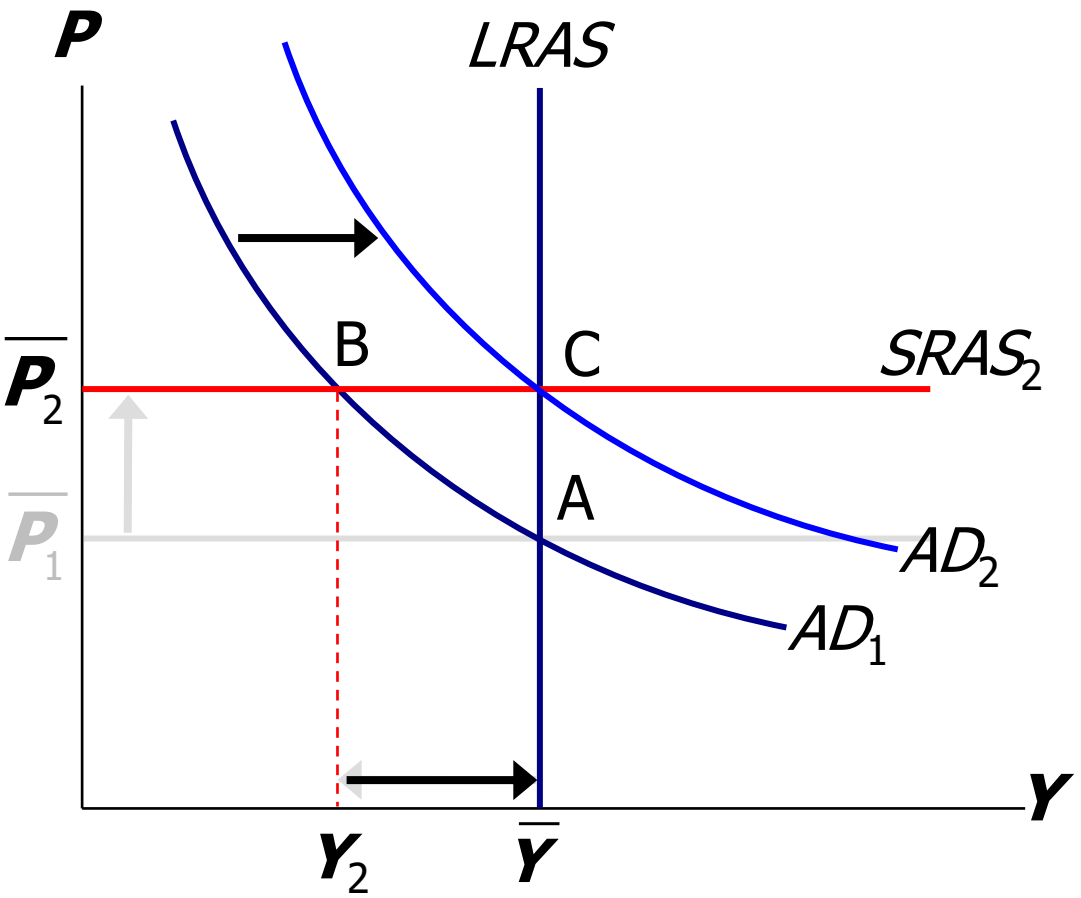
The adverse supply shock moves the economy to point B.



Stabilizing output with monetary policy

But the 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

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 Fed can attempt to stabilize the economy with monetary policy.