9. Economic Fluctuations

Based on Mankiw, Chapter 12: *Introduction to Economic Fluctuations*

Attila Gyetvai | University of Florida, Department of Economics

© 2025 Attila Gyetvai & Worth Publishers

Empirics
Theory
Policy

The business cycle

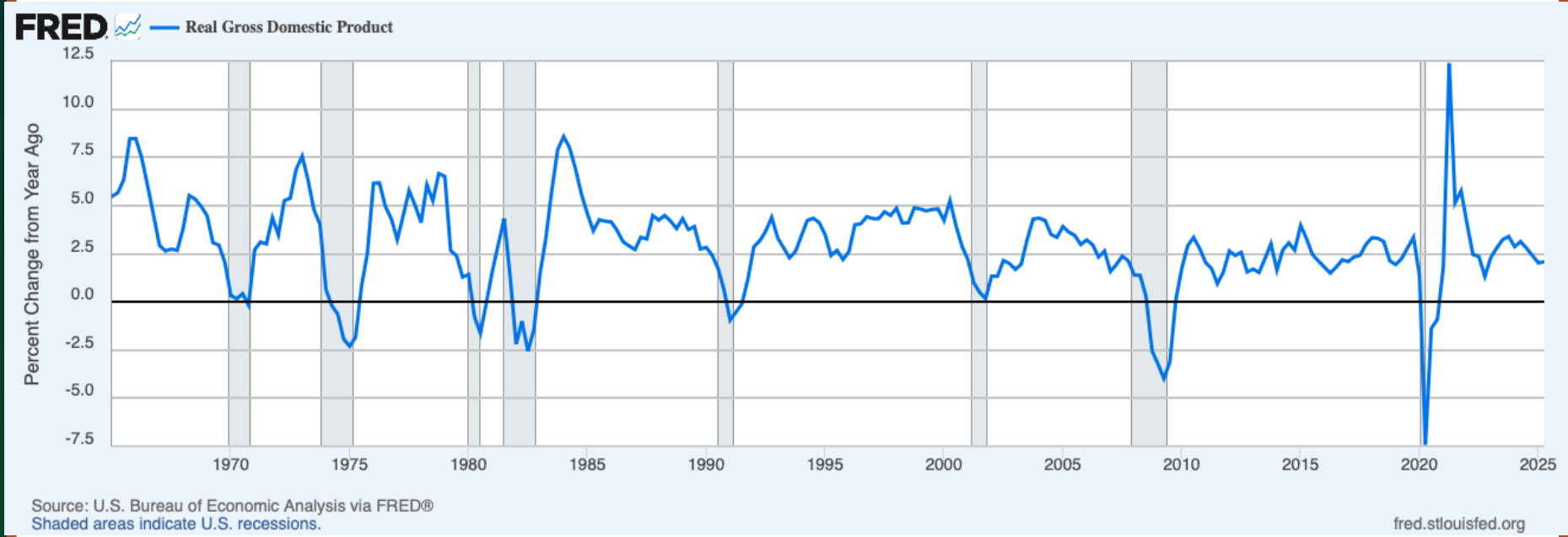
- Business cycle:

The business cycle

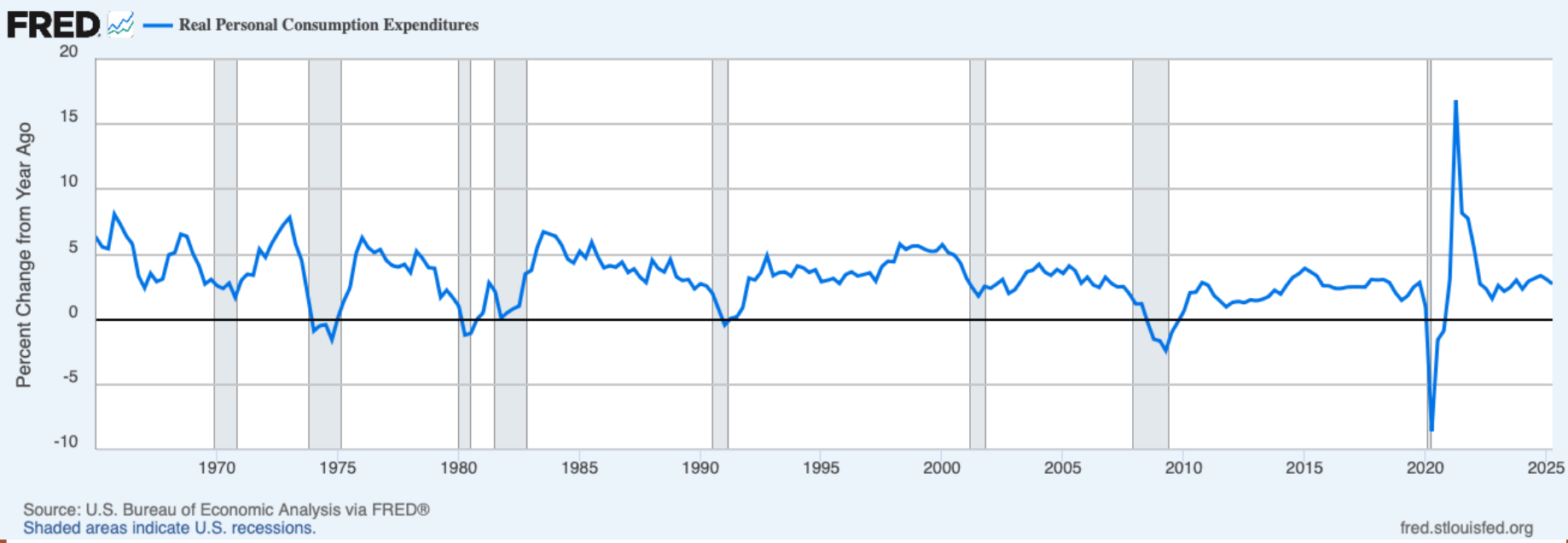
- Business cycle: expansions and recessions
- National Bureau of Economic Research (NBER)'s Business Cycle Dating Committee (link)

"The NBER's Business Cycle Dating Committee maintains a chronology of US business cycles. The chronology identifies the months of peaks and troughs of economic activity. Expansions are the periods between a trough and a peak; recessions are the periods between a peak and a trough. By convention, the NBER classifies the peak month as the last month of the expansion and the trough month as the last month of the recession. Expansion is the normal state of the economy; most recessions are brief. However, the time that it takes for the economy to return to its previous peak level of activity or its previous trend path may be quite extended. According to the NBER chronology, the most recent peak occurred in February 2020. The most recent trough occurred in April 2020."

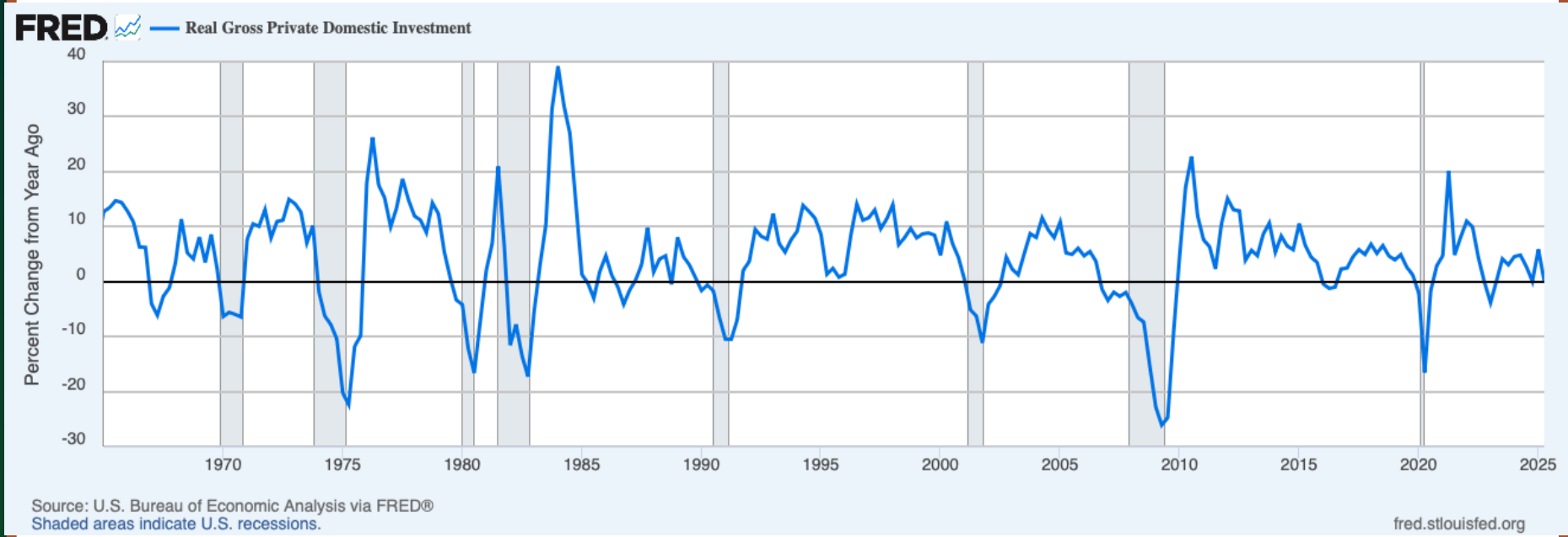
Growth rate of real GDP



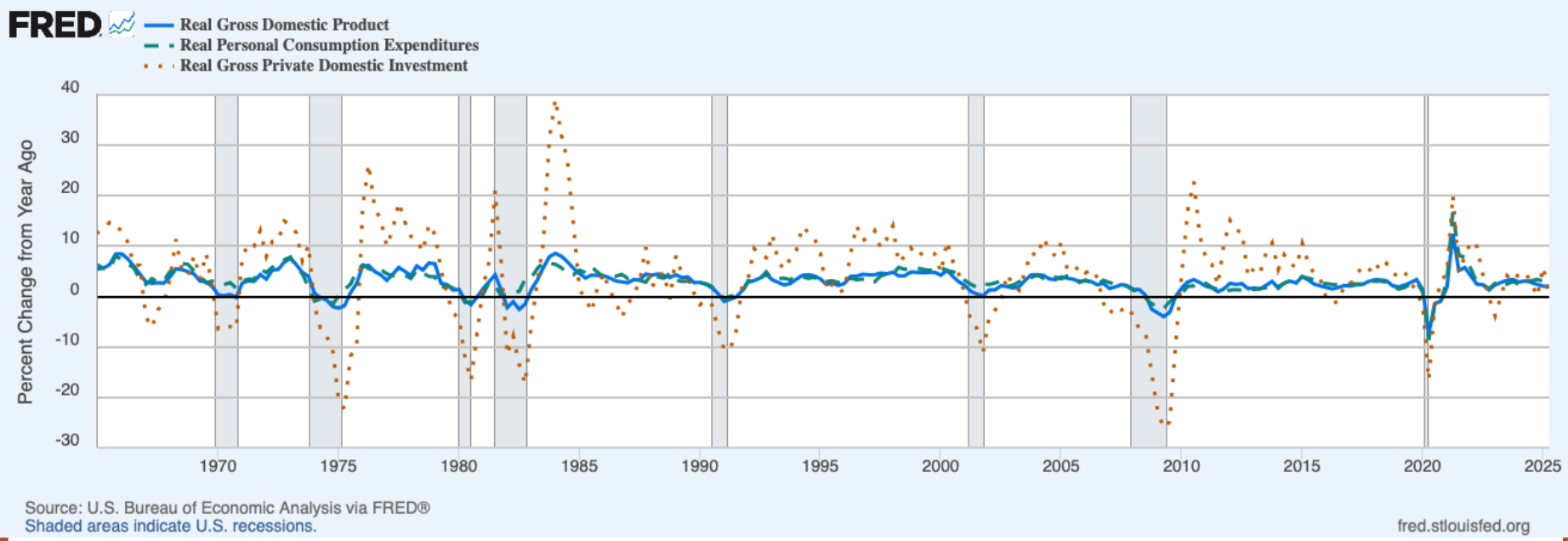
Growth rate of consumption



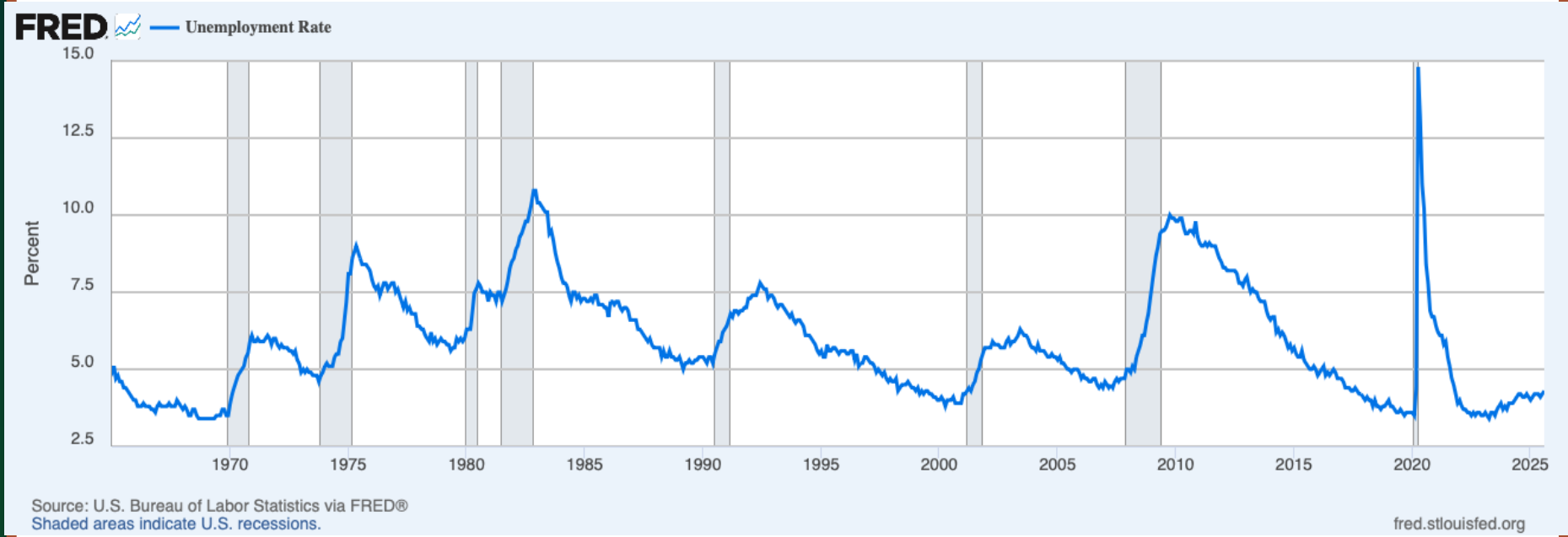
Growth rate of investment



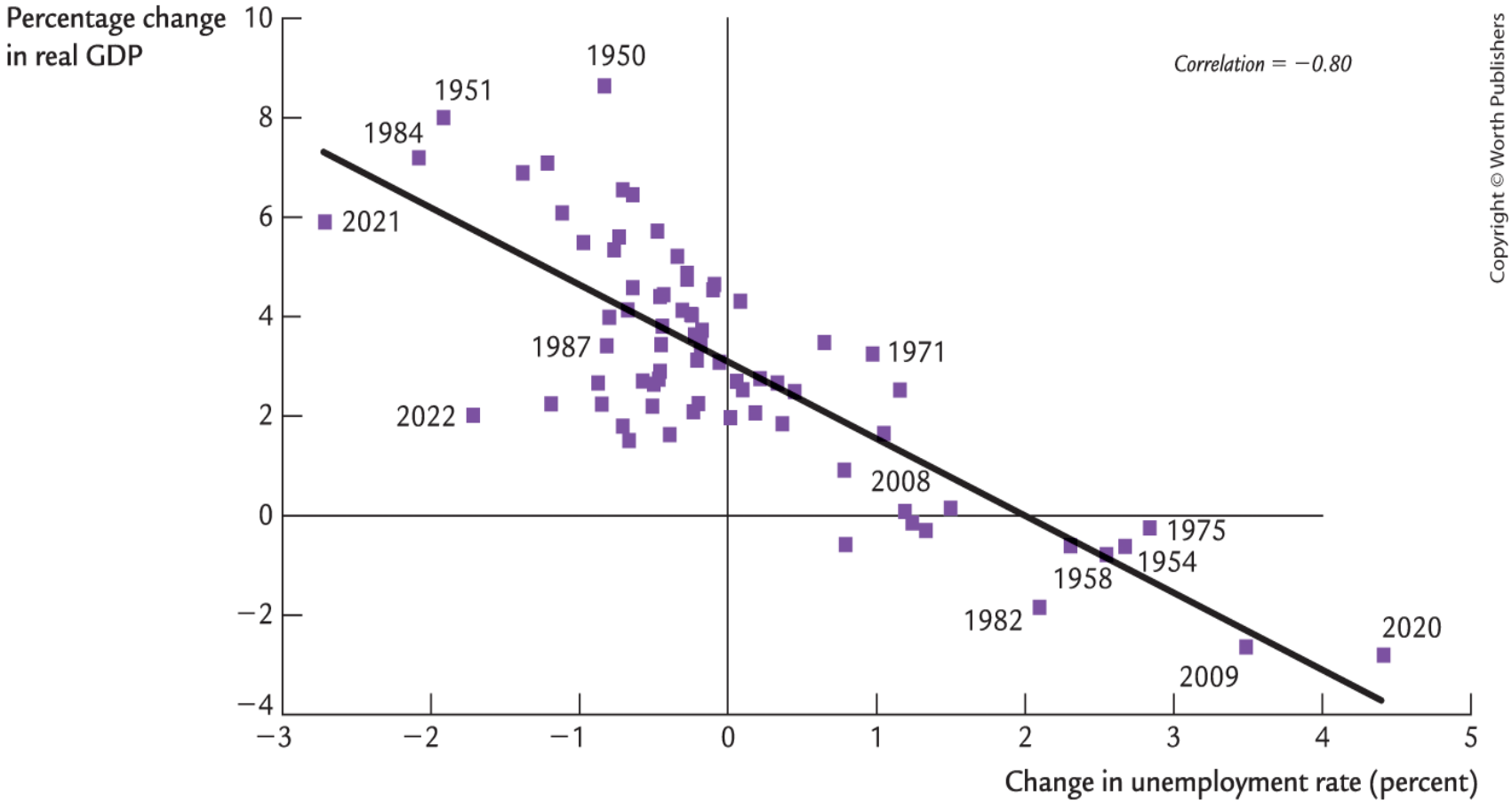
Growth rates together



Unemployment rate



Okun's law



Copyright © Worth Publishers

Empirical facts about the business cycle

- GDP growth averages 3 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 real GDP growth and changes in unemployment

Rough forecasts of the economy

- Leading Economic Index (LEI)
- Published monthly by the Conference Board (link)
- Aims to forecast changes in economic activity six to nine months into the future
- Used in planning by businesses and government, despite not being a perfect predictor

10 LEI components

- Average weekly hours in manufacturing
- Average weekly initial claims for unemployment insurance
- Manufacturers' new orders for consumer goods and materials
- ISM® Index of New Orders
- Manufacturers' new orders for nondefense capital goods excluding aircraft orders
- Building permits for new private housing units
- S&P 500® Index of Stock Prices
- Leading Credit Index™
- Interest rate spread (10-year Treasury bonds less federal funds rate)
- Average consumer expectations for business conditions

Empirics
Theory
Policy

Time horizons in macroeconomics

- Long run
  Prices are flexible, responding 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 (Modules 1 & 2)

- Output is determined by the supply side:
  - supplies of capital, labor
  - technology
- Changes in demand for goods and 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 in the long run

Aggregate demand

- The aggregate demand curve shows the relationship between the price level and the quantity of output demanded.
- For this intro to the *AD—AS* model, we use a simple theory of aggregate demand based on the quantity theory of money.
- We will later develop the theory of aggregate demand in more detail.

The quantity equation as aggregate demand

- From the Money & Inflation lecture in Module 1, recall the quantity equation:

The quantity equation as aggregate demand

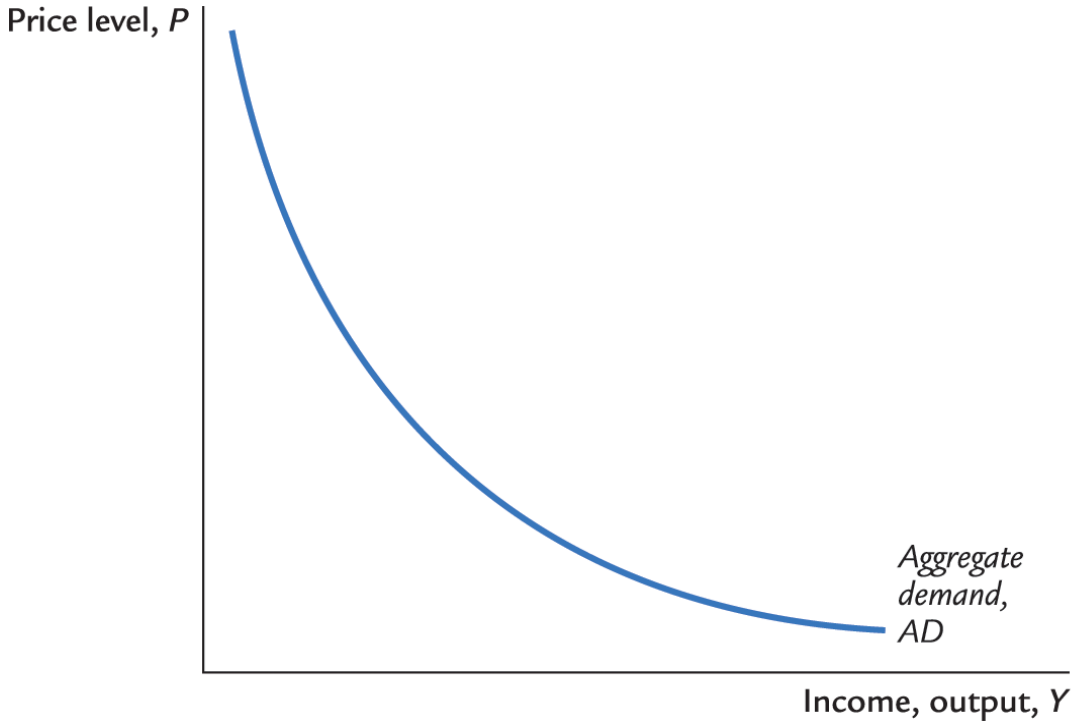
- From the Money & Inflation lecture in Module 1, recall the quantity equation:

$$M \times V = P \times Y$$

- For given values of money supply ***M*** and velocity ***V***, this equation implies an inverse relationship between the price level ***P*** and output ***Y*** .

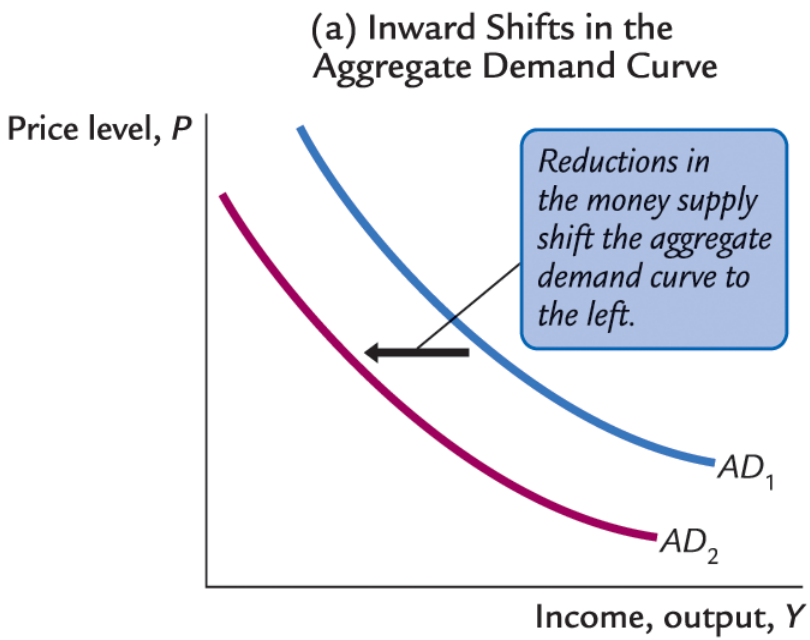
The downward-sloping AD curve

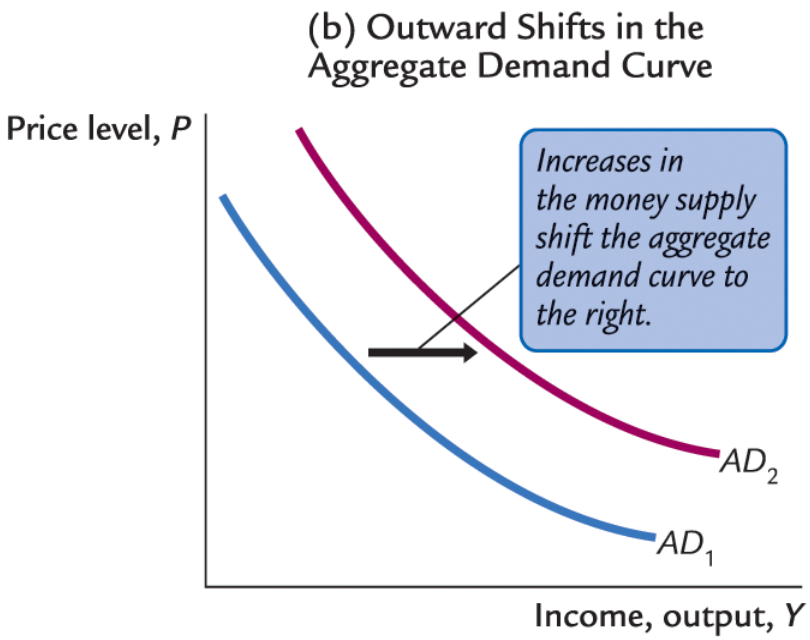
An increase in the price level causes a fall in real money balances (***M/P***), causing a decrease in the demand for goods and services.



Copyright © Worth Publishers

Shifting the AD curve





Copyright © Worth Publishers

Aggregate supply in the long run

- Recall from the National Income lecture (Module 1): in the long run, output is determined by factor supplies and technology

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

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

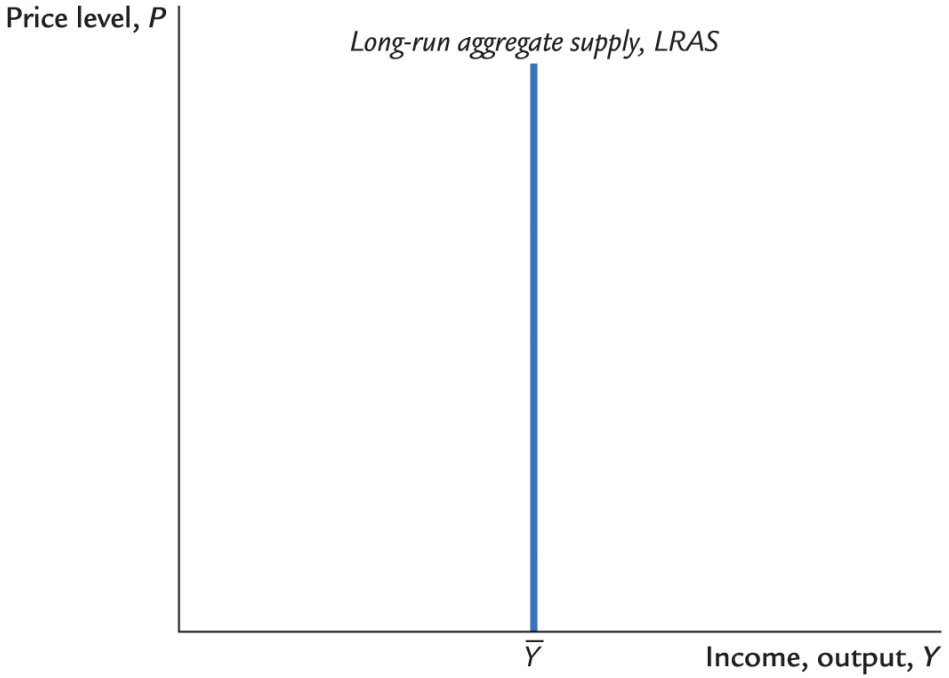
"Full employment" means that unemployment equals its natural rate (not zero!).

The long-run aggregate supply curve

In the long run, output is determined by the amounts of capital and labor and by the available technology; it does not depend on the price level. Therefore, the long-run aggregate supply (LRAS) curve is…

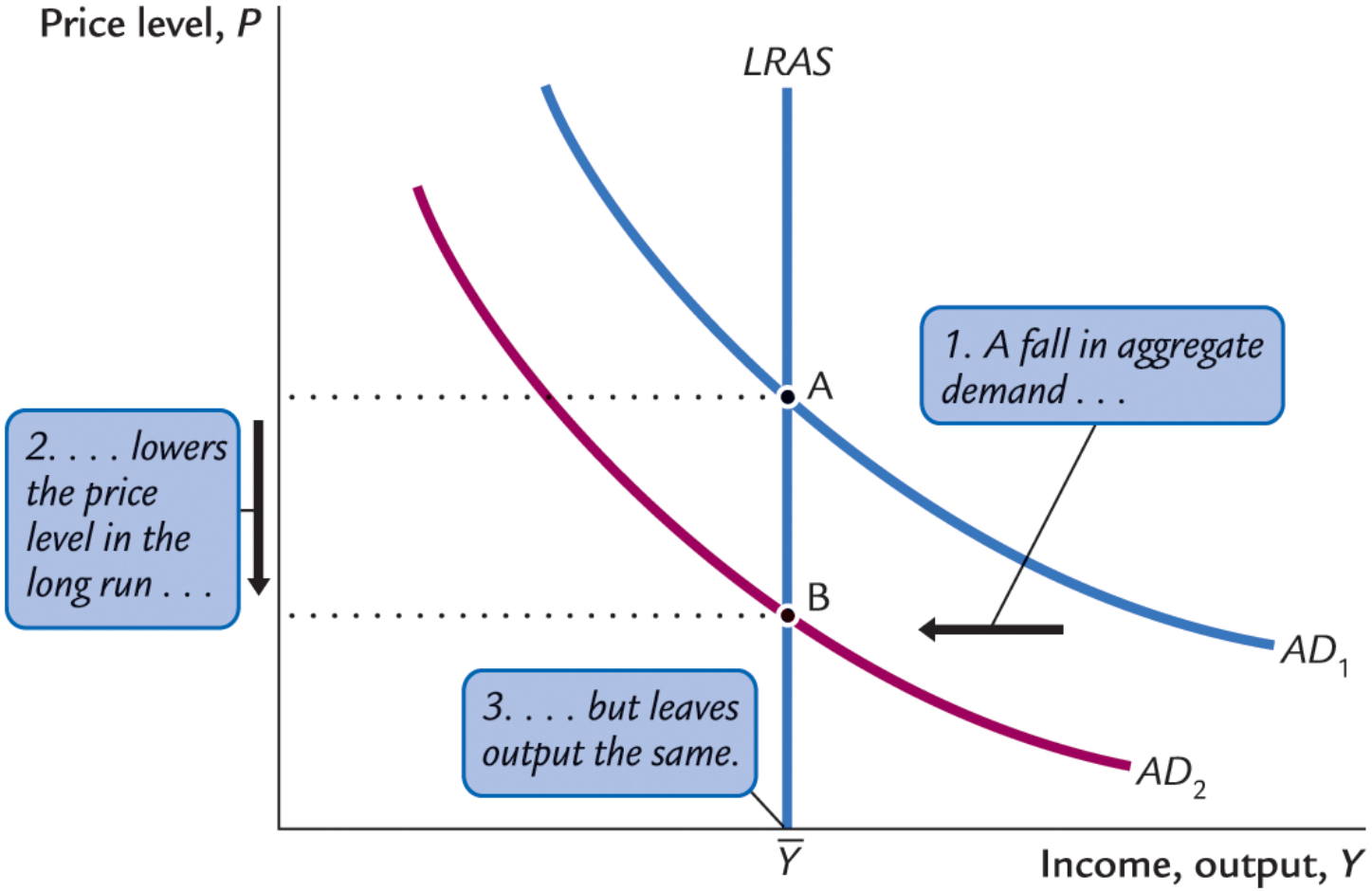
The long-run aggregate supply curve

In the long run, output is determined by the amounts of capital and labor and by the available technology; it does not depend on the price level. Therefore, the long-run aggregate supply (LRAS) curve is vertical.



Copyright © Worth Publishers

Long-run effects of a decrease in *M*



Copyright © Worth Publishers

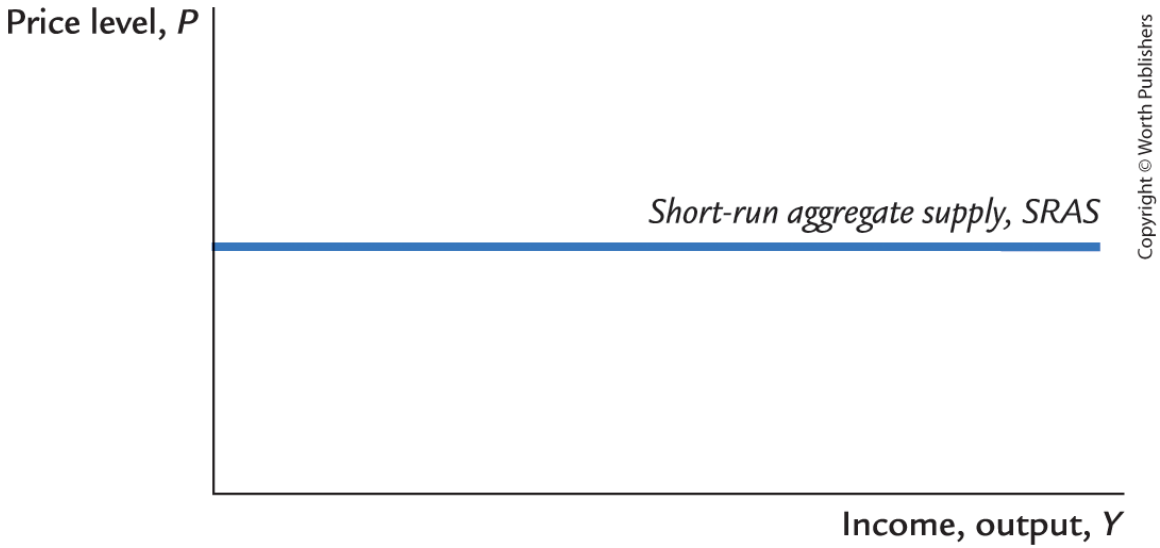
Aggregate supply in the short run

- Many prices are sticky in the short run.
- For now (and for the rest of this module), 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…

The short-run aggregate supply curve

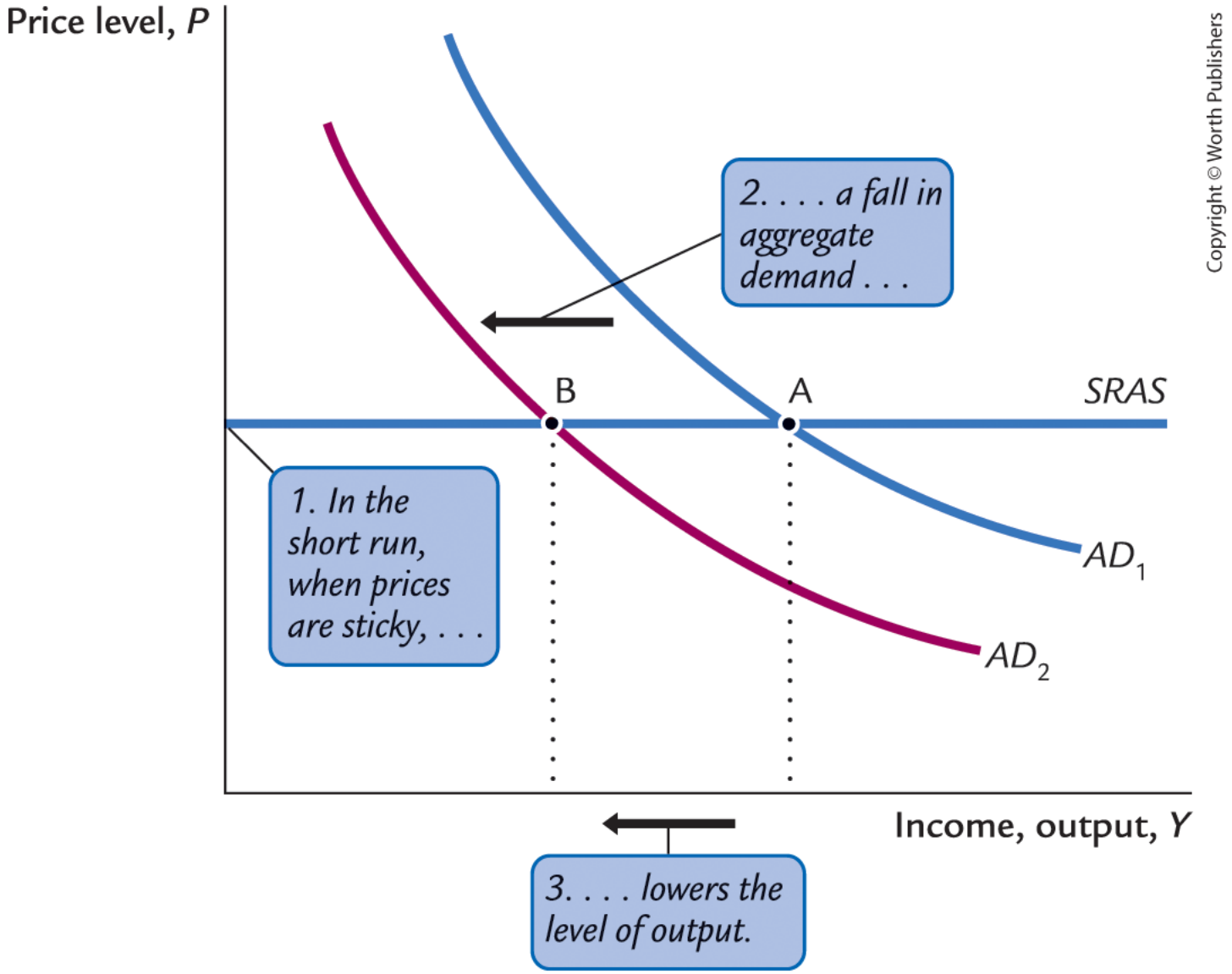
The *SRAS* curve is horizontal:

The price level is fixed at a predetermined level ($\bar{P}$), and firms sell as much as buyers demand.



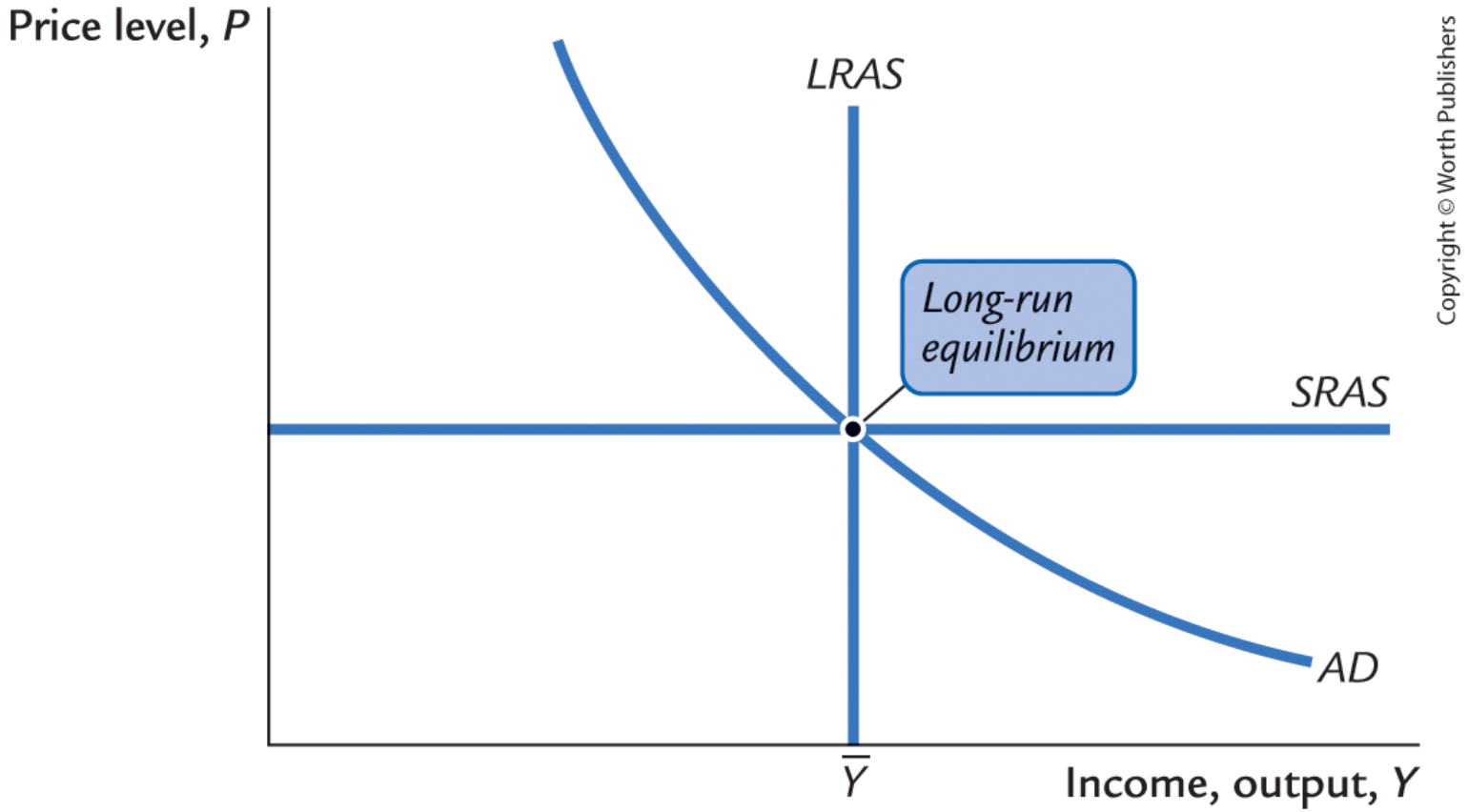
Copyright © Worth Publishers

Short-run effects of a decrease in *M*



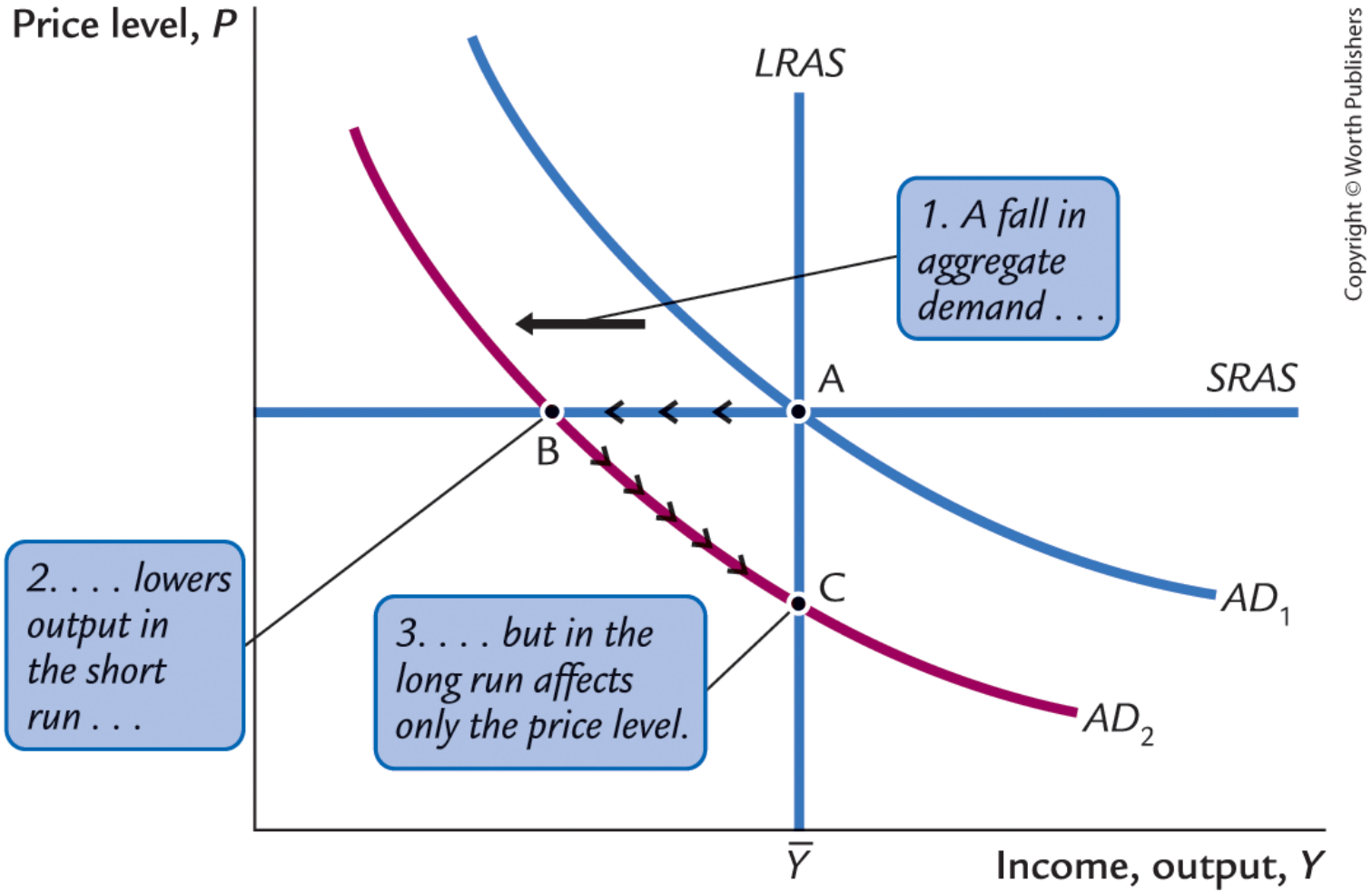
Copyright © Worth Publishers

The short and long-run equilibrium in the *AD/AS* model



Copyright © Worth Publishers

The short and long-run effects of a decrease in *M*



Copyright © Worth Publishers

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

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

Shocks

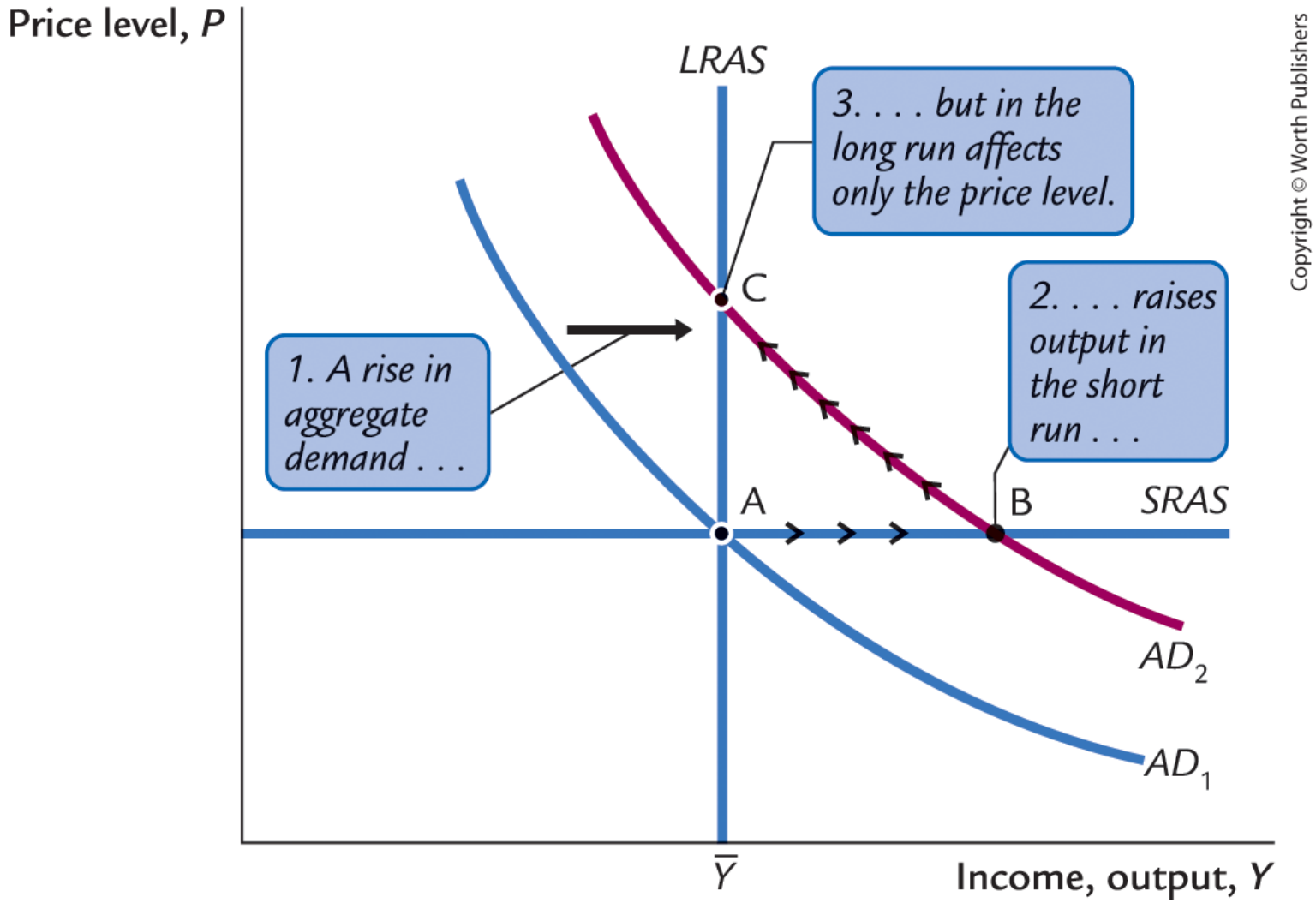
- **Shocks**: exogenous changes in aggregate supply or demand
- Shocks temporarily push the economy away from full employment (its long-run equilibrium).

Demand shocks

- Shocks to aggregate demand
- Example 1: exogenous decrease in money supply $M \Longrightarrow$ negative demand shock
  (this has been the leading example in the previous slides)
- Example 2: exogenous increase in velocity $V \Longrightarrow$ positive demand shock

  With money supply is held constant, an increase in V means people will be using their money in more transactions, causing an increase in demand for goods and services.

The effects of a positive demand shock



Copyright © Worth Publishers

Supply shocks

- A **supply shock** alters production costs and affects the prices that firms charge (also called **price shocks**).
- Examples of *adverse* supply shocks:
  - Bad weather reduces crop yields, pushing up food prices.
  - Oil cartel raises the price of oil.
  - …
- *Favorable* supply shocks lower costs and prices.
  - A new battery technology pushes EV prices down.
  - A breakthrough in autonomous driving dwarfs shipping costs.
  - …

CASE STUDY: The 1970s oil shocks, part 1

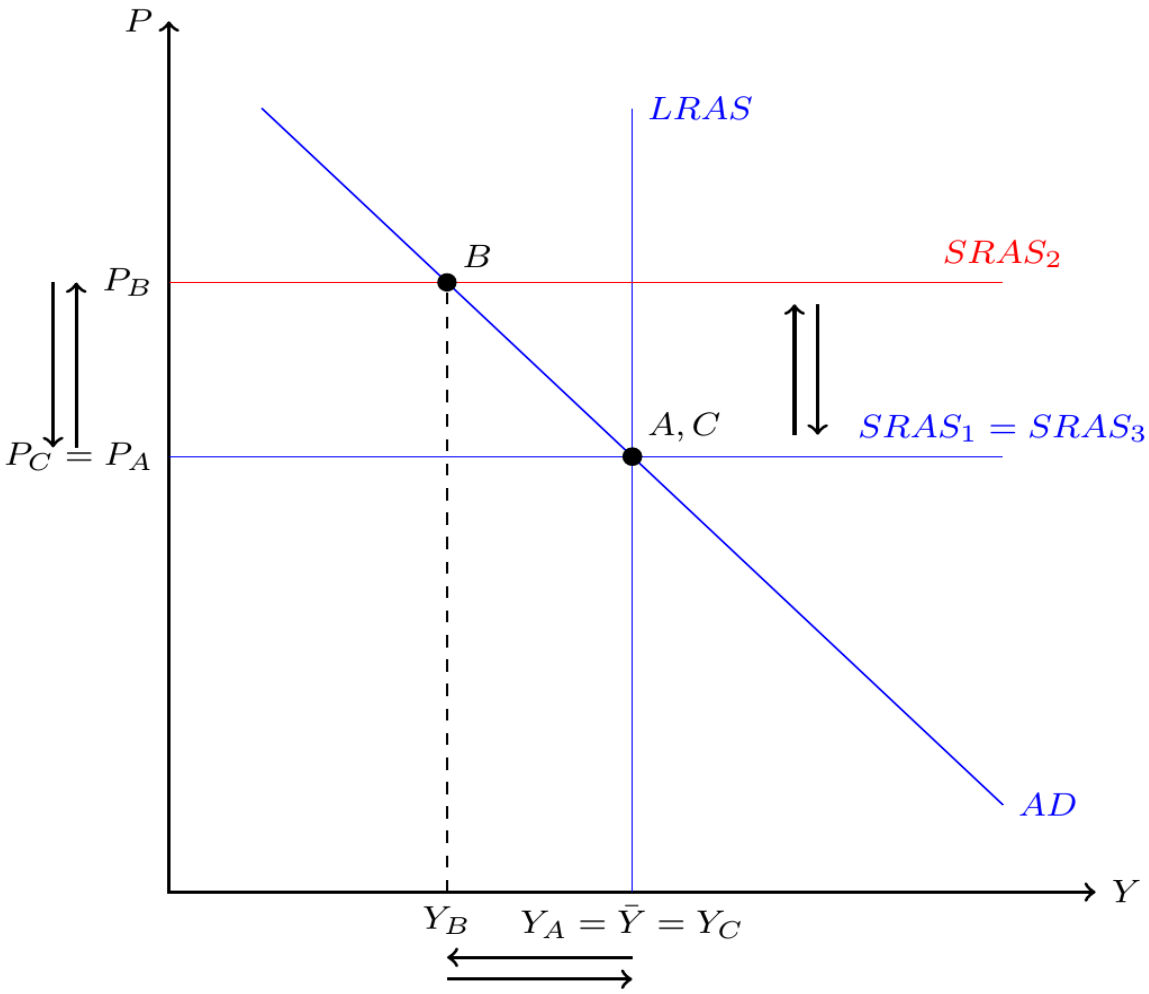
- Early 1970s: OPEC coordinated a reduction in the supply of oil.
- Oil prices rose

  11 percent in 1973

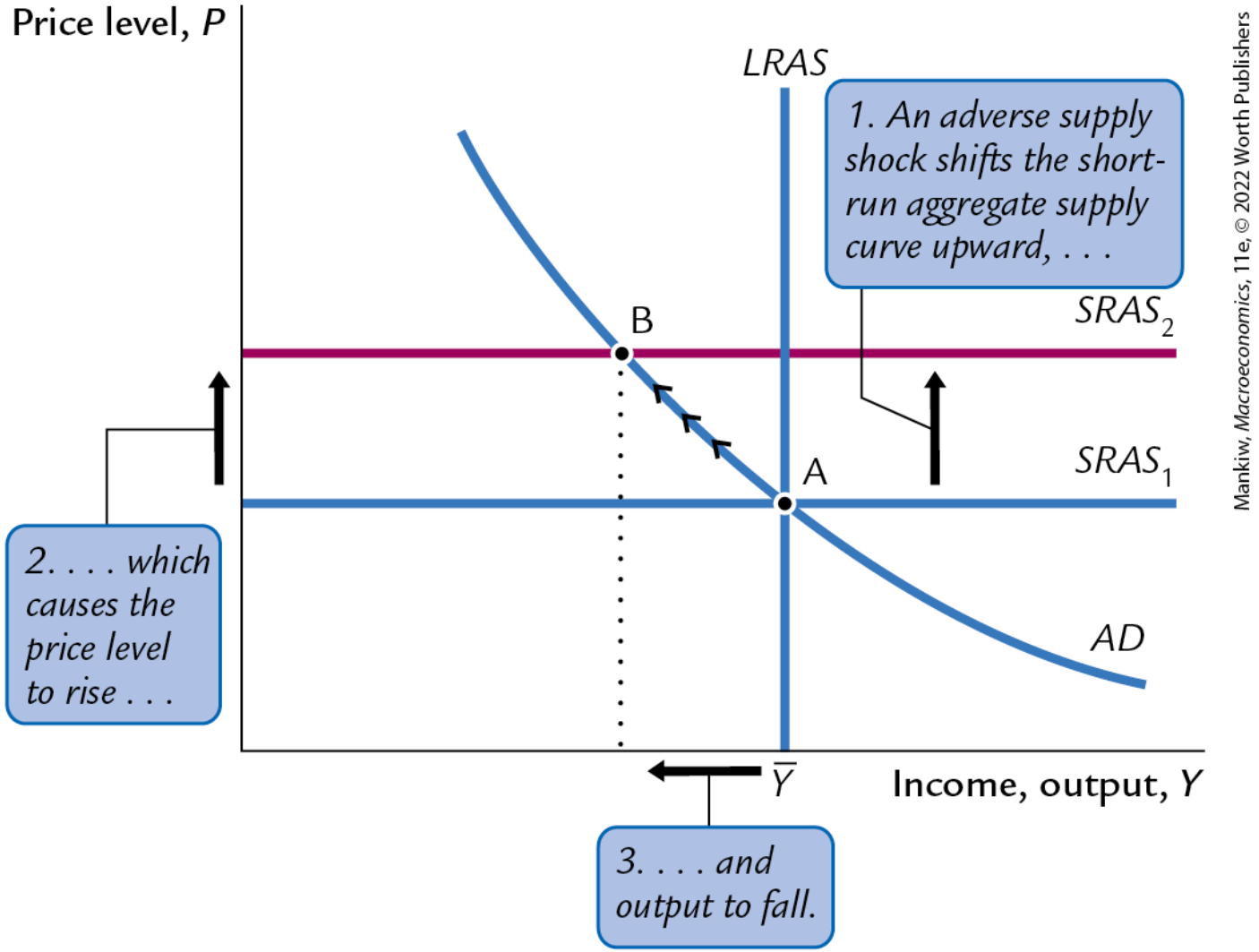
  68 percent in 1974

  16 percent in 1975
- Such sharp oil price increases are supply shocks because they significantly impact production costs and prices.

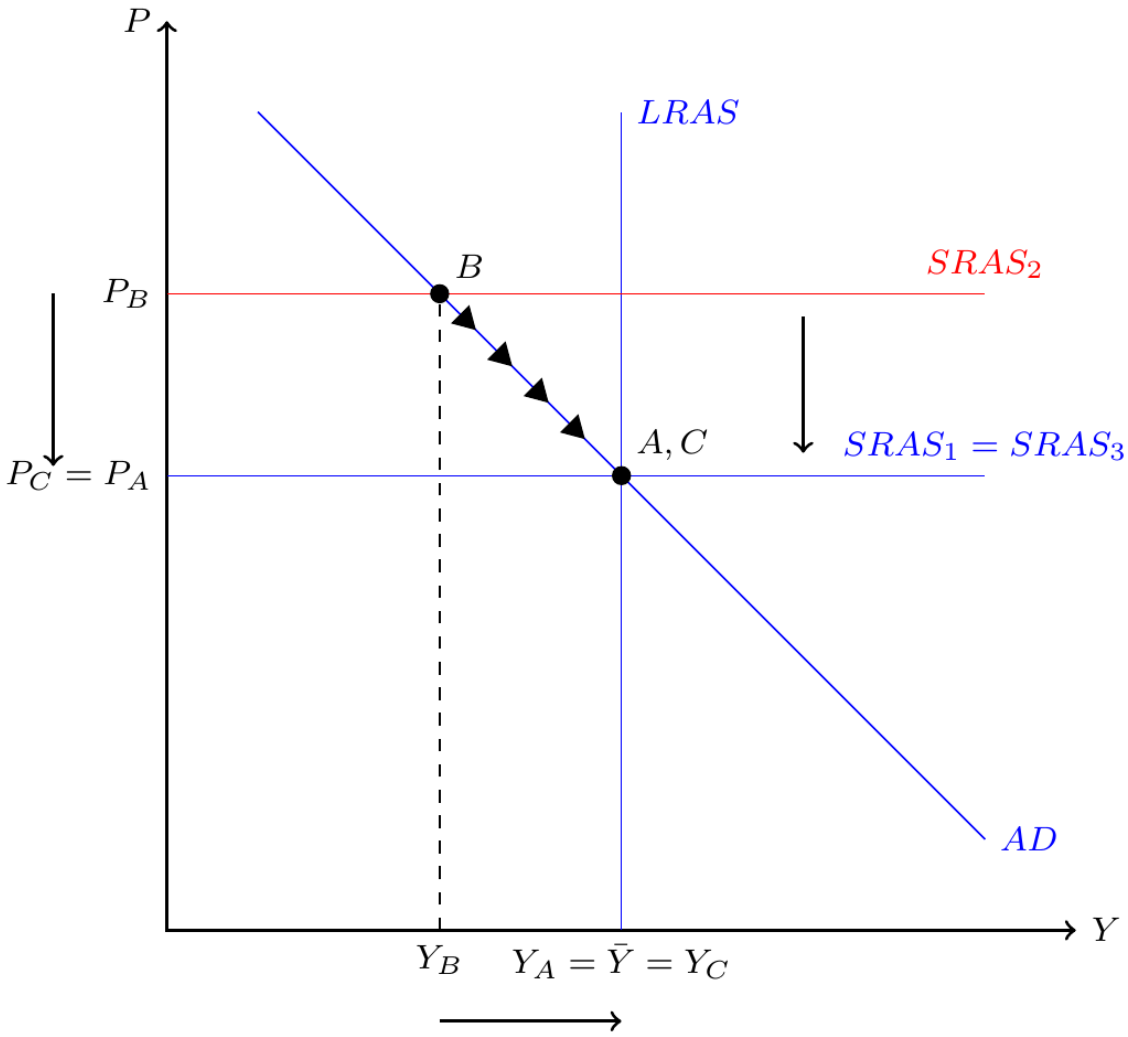
CASE STUDY: The 1970s oil shocks, part 2 (1 of 3)



CASE STUDY: The 1970s oil shocks, part 2 (2 of 3)



CASE STUDY: The 1970s oil shocks, part 2 (3 of 3)

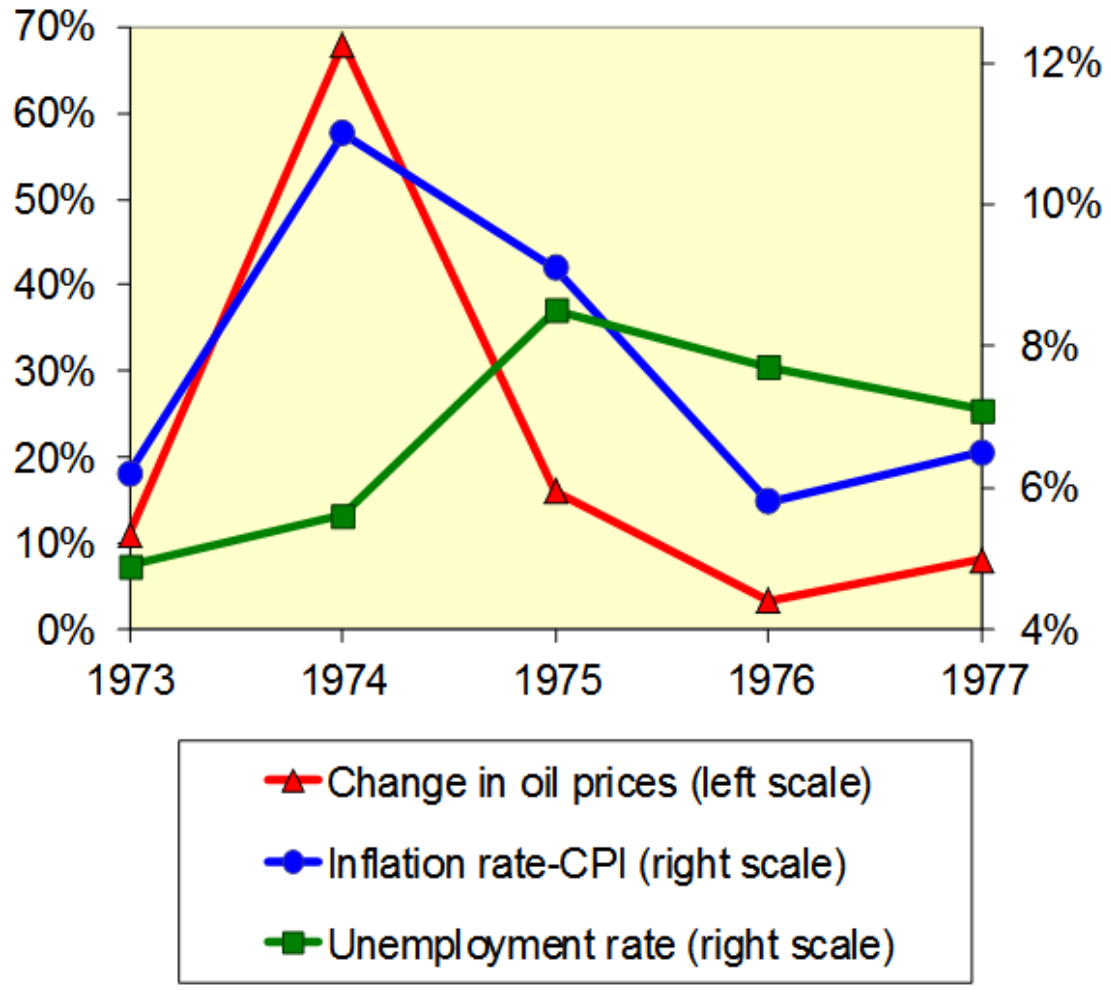


CASE STUDY: The 1970s oil shocks, part 3

Predicted effects of the oil shock:

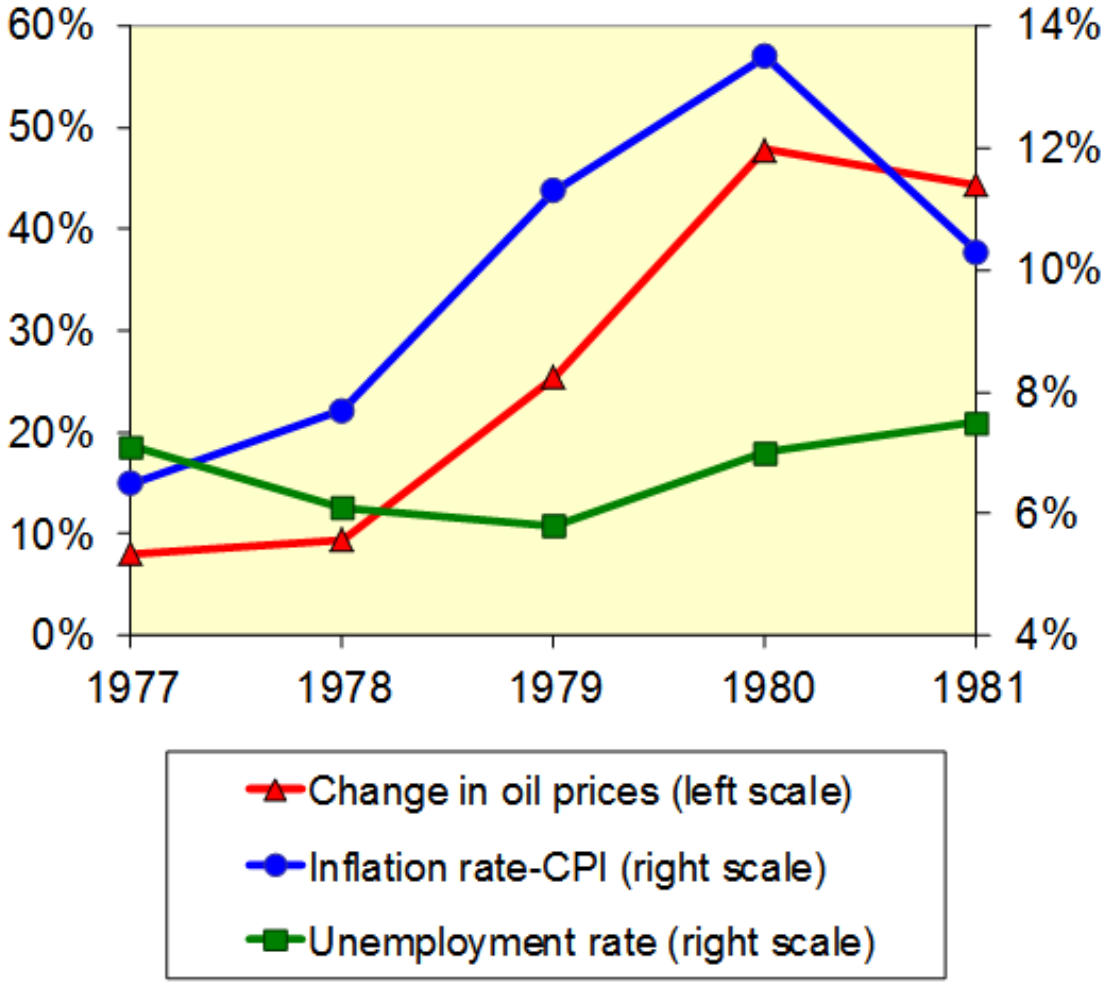
- inflation rate up
- (output down)
- unemployment up

. . . and then a gradual recovery



CASE STUDY: The 1970s oil shocks, part 4

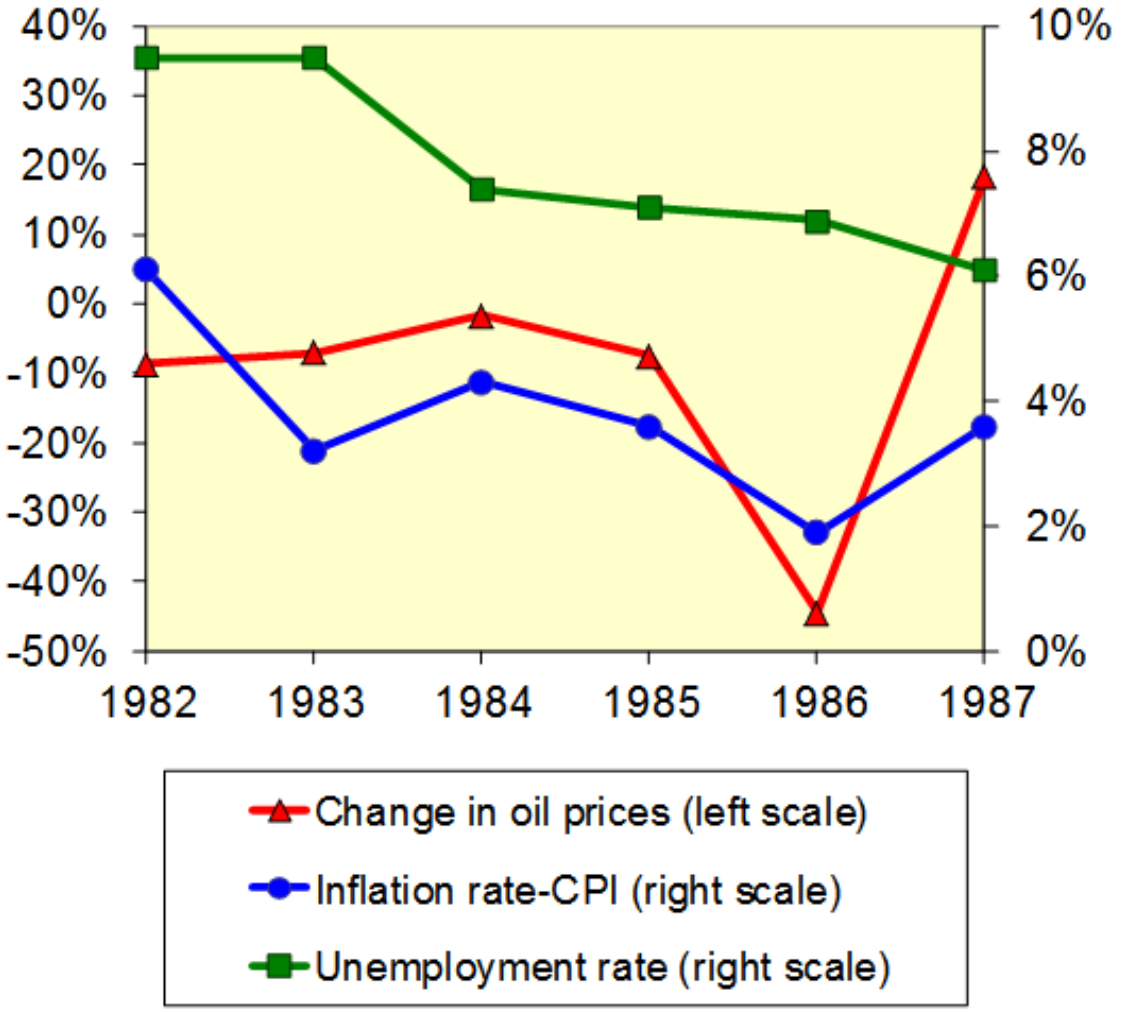
Late 1970s: As the economy was recovering, oil prices shot up again, causing another huge supply shock!



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.



Demand vs. supply shocks: a summary

- Demand shocks change output in the short run…
- But in the long run, prices adjust so that output reverts to its natural state
- Supply shocks change prices and output in the short run…
- But in the long run, prices adjust so that output reverts to its natural state…
- And the final price level is the same as before

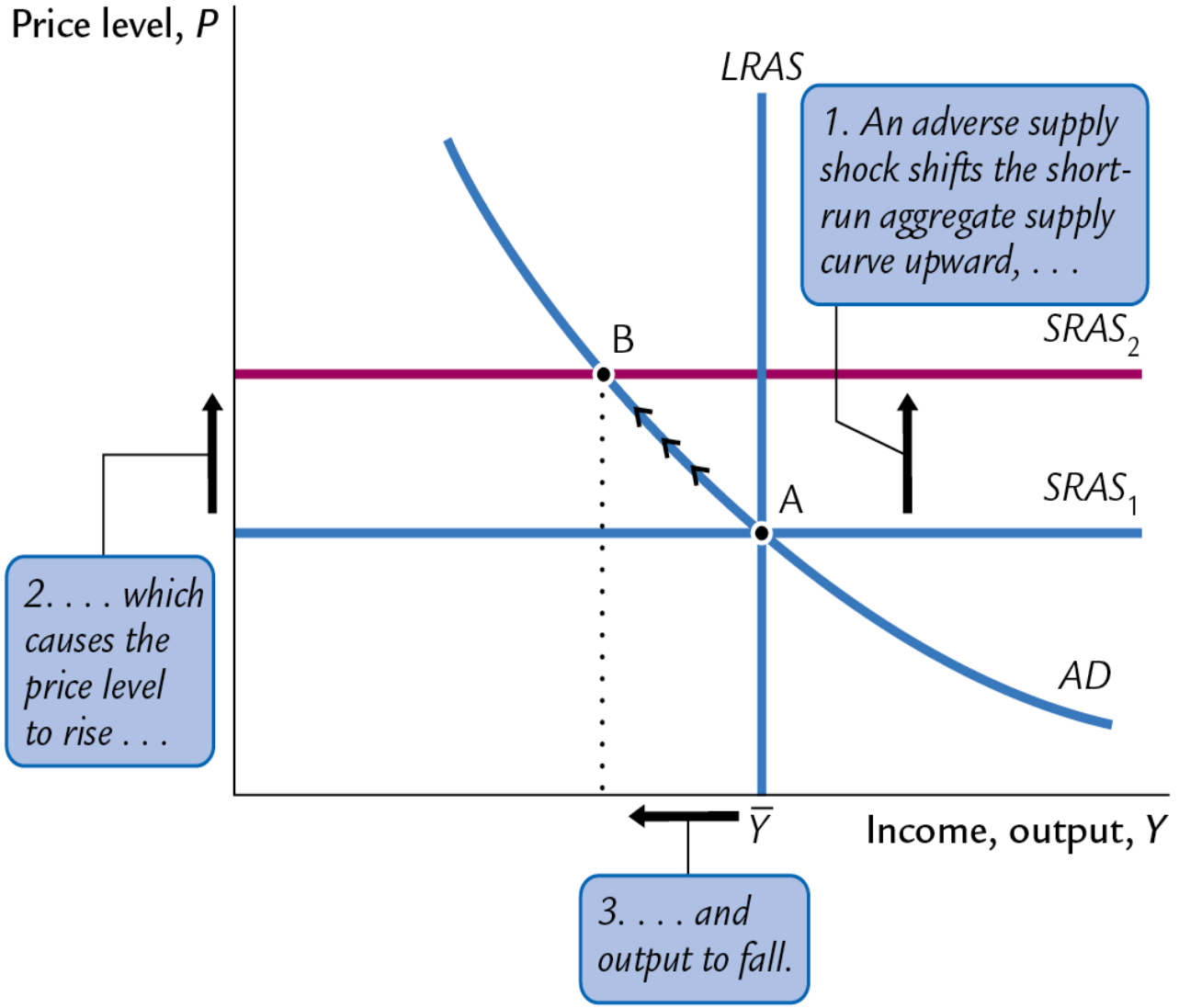
Empirics
Theory
Policy

What can policymakers do?

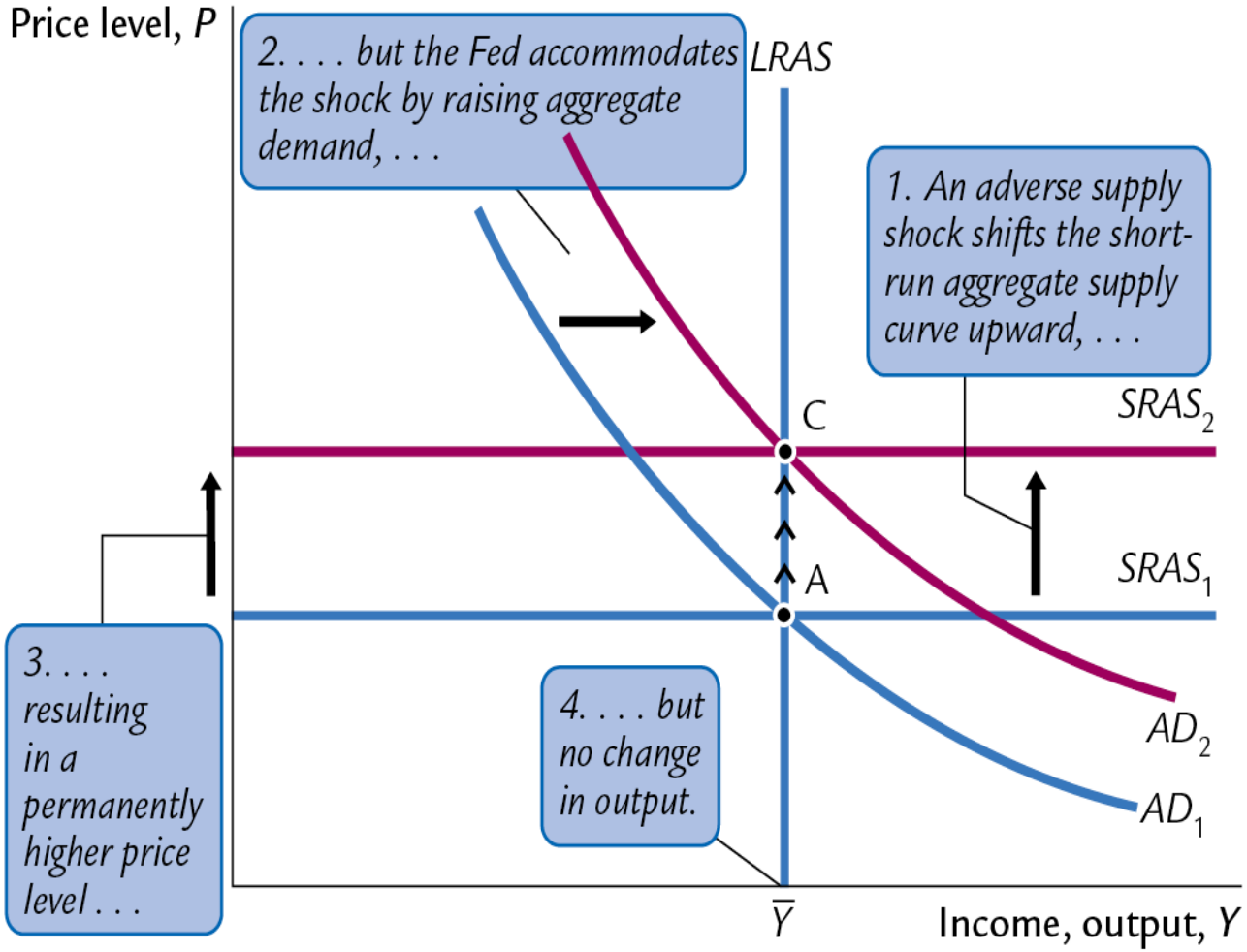
Stabilization policy: policy actions aimed at reducing the severity of short-run economic fluctuations

For example: using monetary policy to combat the effects of adverse supply shocks

Stabilizing output with monetary policy (1 of 2)



Stabilizing output with monetary policy (2 of 2)



Mankiw, *Macroeconomics*, 11e, © 2022 Worth Publishers

Analyzing the Covid-19 recession

- Initially, the shock to the economy was an inward shift in ***LRAS***.
  - Businesses closed
  - Businesses that remained open saw decreased productivity because of social distancing.
- However, as businesses closed, consumers lost the ability to spend money, ***AD*** shifted in.
  - Unable to dine-in at restaurants, travel, or attend concerts, movies, sporting events, museums, etc.

SUMMARY, PART 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, and shocks can push output and employment away from their natural rates.
- Aggregate demand and supply: a framework to analyze economic fluctuations

SUMMARY, PART 2

- The aggregate demand curve slopes downward.
- The long-run aggregate supply curve is vertical because output depends on technology and factor supplies but not prices.
- The short-run aggregate supply curve is horizontal because prices are sticky at predetermined levels.

SUMMARY, PART 3

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