Introduction to Economic Fluctuations

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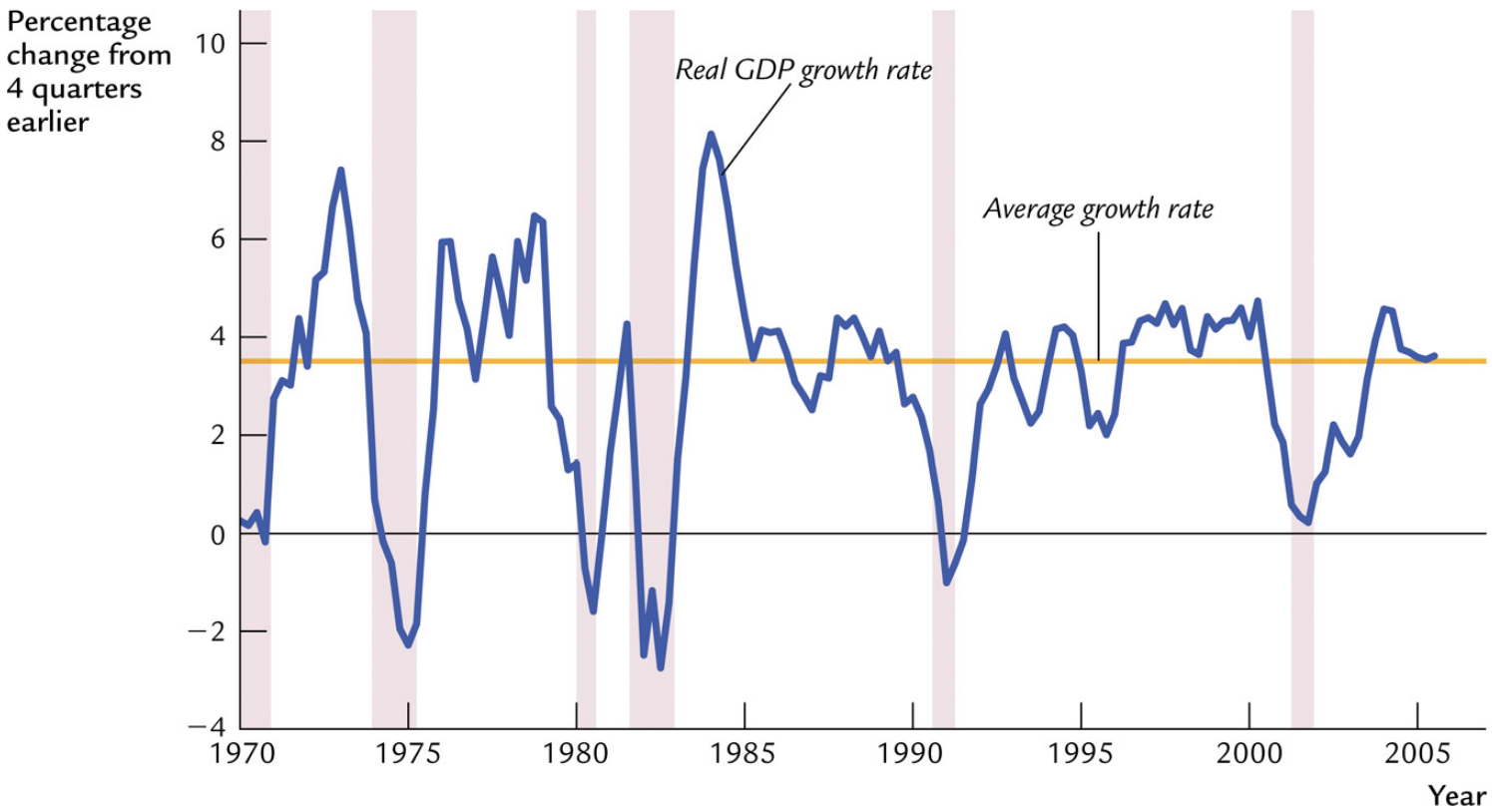
Outline

- 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."

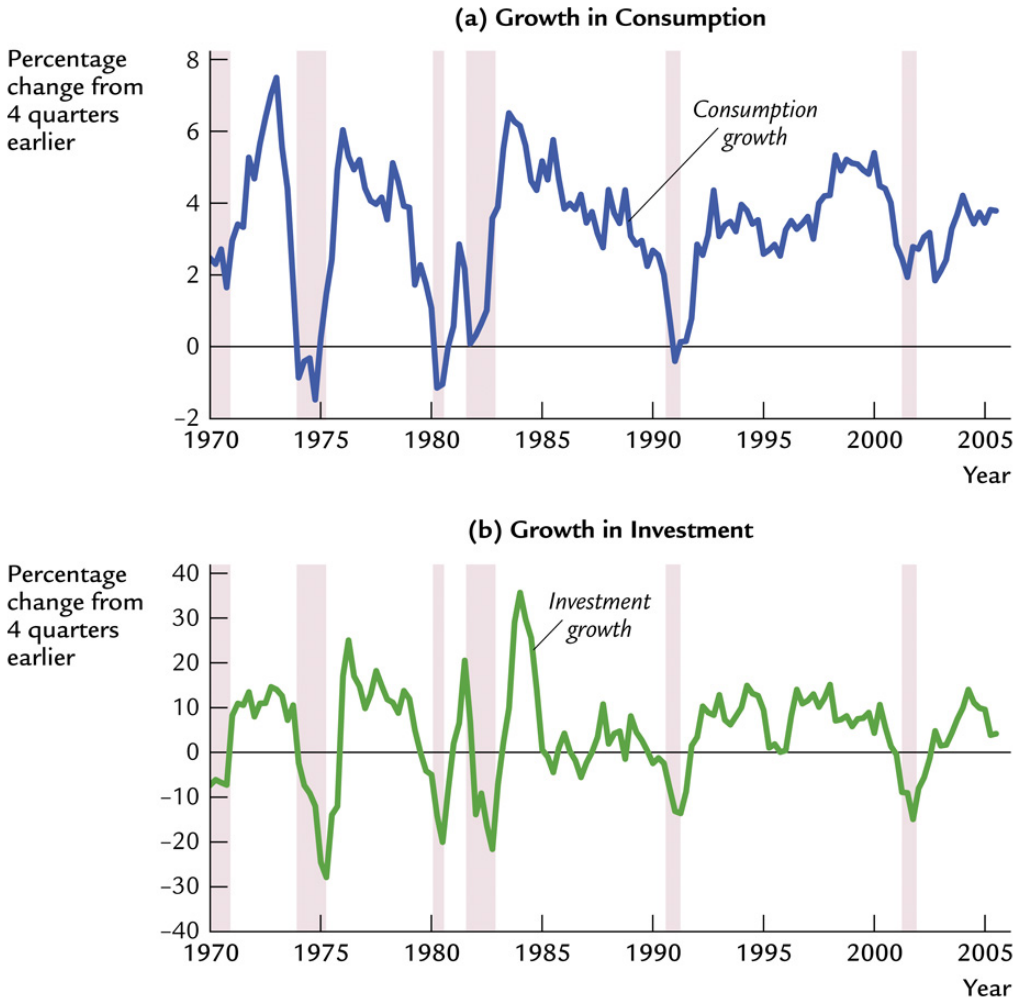
Facts about the business cycle

- GDP growth averages 3–3.5 percent per year over the long run ($n + g$ in the Solow model), with large fluctuations in the short run. ◂ Fig
- Consumption and investment fluctuate with GDP, but consumption tends to be *less volatile* and investment more volatile than GDP. ◂ Fig
- Unemployment rises during recessions and falls during expansions. ◂ Fig

GPD growth in the US



Consumption and investment growth in the US



Consumption and investment growth in the US

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 (e.g., nominal wages are preset in contracts).

The economy behaves much differently when prices are sticky.

Recap of classical macro theory

- Output is determined by the supply side (supplies of capital, labor and 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

Aggregate Demand

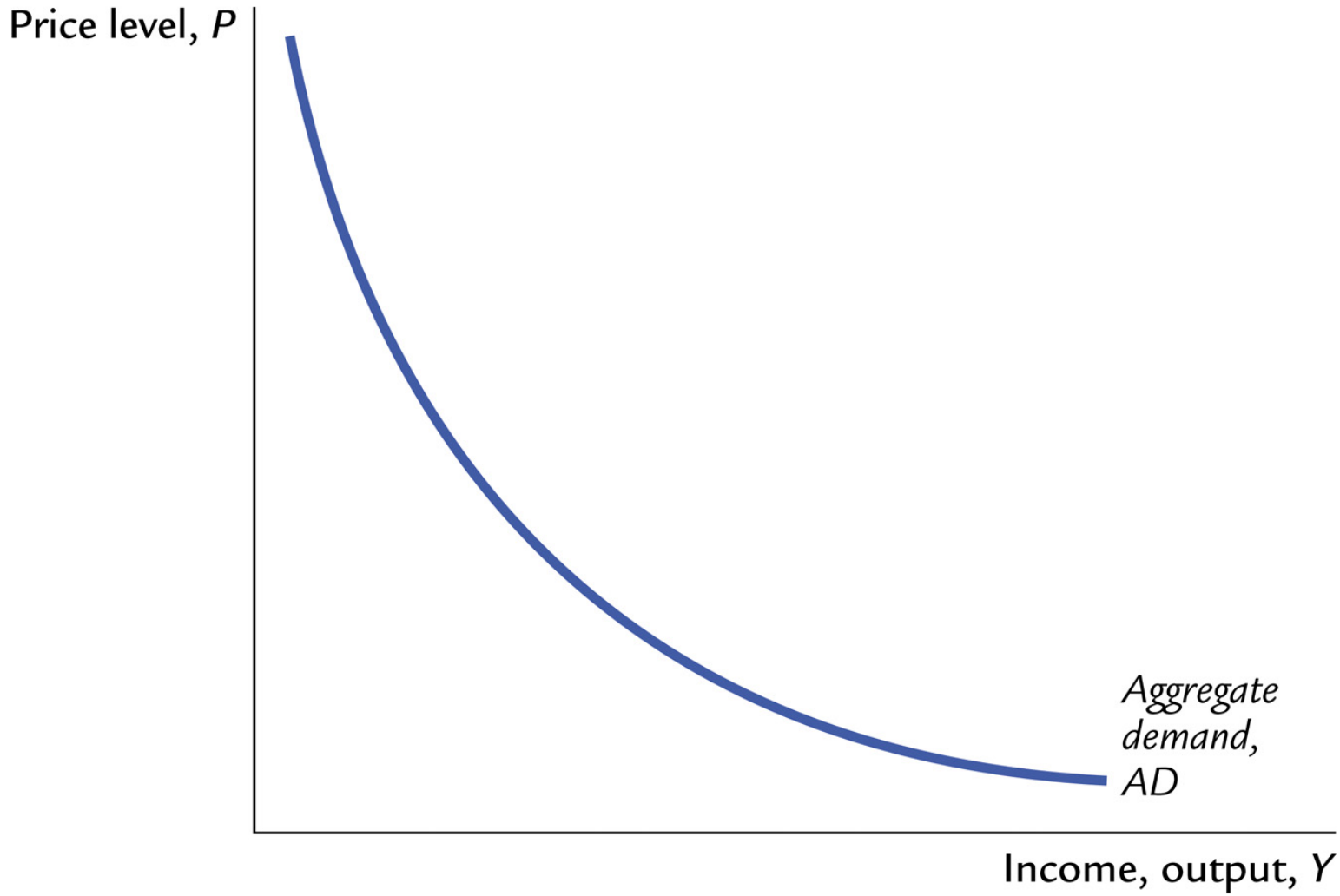
Aggregate Demand (AD) is the relationship between the quantity of total output demanded and the aggregate price level.

- Use the quantity of money equation as the aggregate demand curve:

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

$$(M/P)^d = k \times Y \Rightarrow M/P = (M/P)^d = k \times Y.$$

- For any given k (and so V), and money supply, M, there is a **negative** relationship between the aggregate price level and total output.
- For a given M and V, aggregate demand shows the combinations of P and Y that satisfy the quantity equation of money.

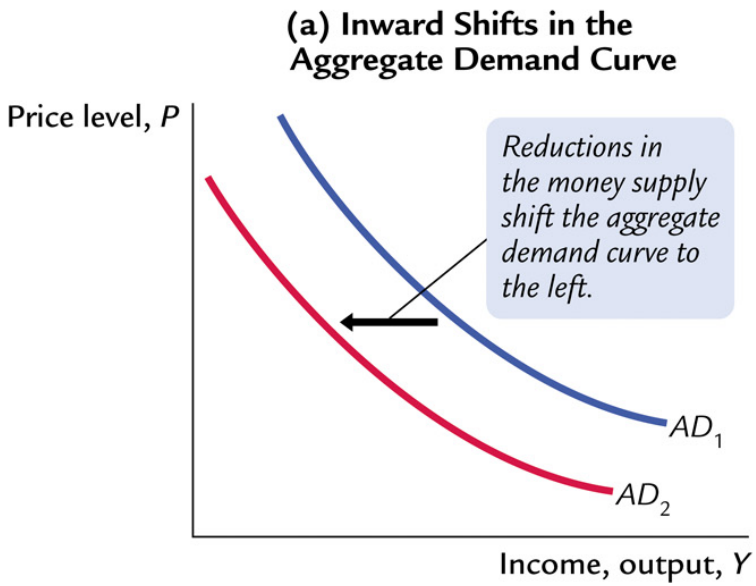

Price level, P
Aggregate demand, AD
Income, output, Y

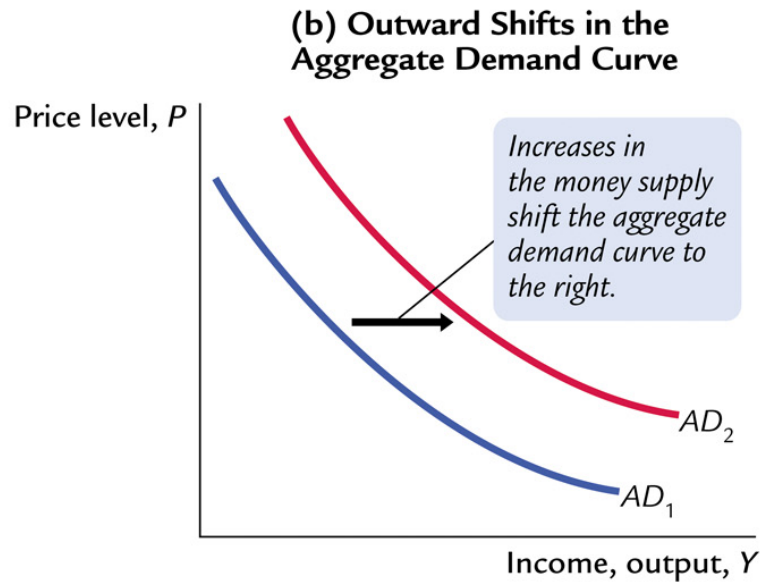
An increase in the price level causes a fall in real money balances (M/P), causing a decrease in the demand for goods & services.

Shifts in Aggregate Demand

- AD curve is defined for given (fixed) values of M and V.
- AD shifts following the changes in M or V.
- Assume V is constant. Then AD shifts when M changes.

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


(a) Inward Shifts in the Aggregate Demand Curve
Price level, P
Reductions in the money supply shift the aggregate demand curve to the left.
AD1
AD2
Income, output, Y


(b) Outward Shifts in the Aggregate Demand Curve
Price level, P
Increases in the money supply shift the aggregate demand curve to the right.
AD2
AD1
Income, output, Y

Aggregate Supply

- **Aggregate Supply** (AS) is the relationship between the total quantity of goods and services supplied and the aggregate price level.
- AS curve differs in the LR, when the prices are flexible, and SR, when the prices are sticky.

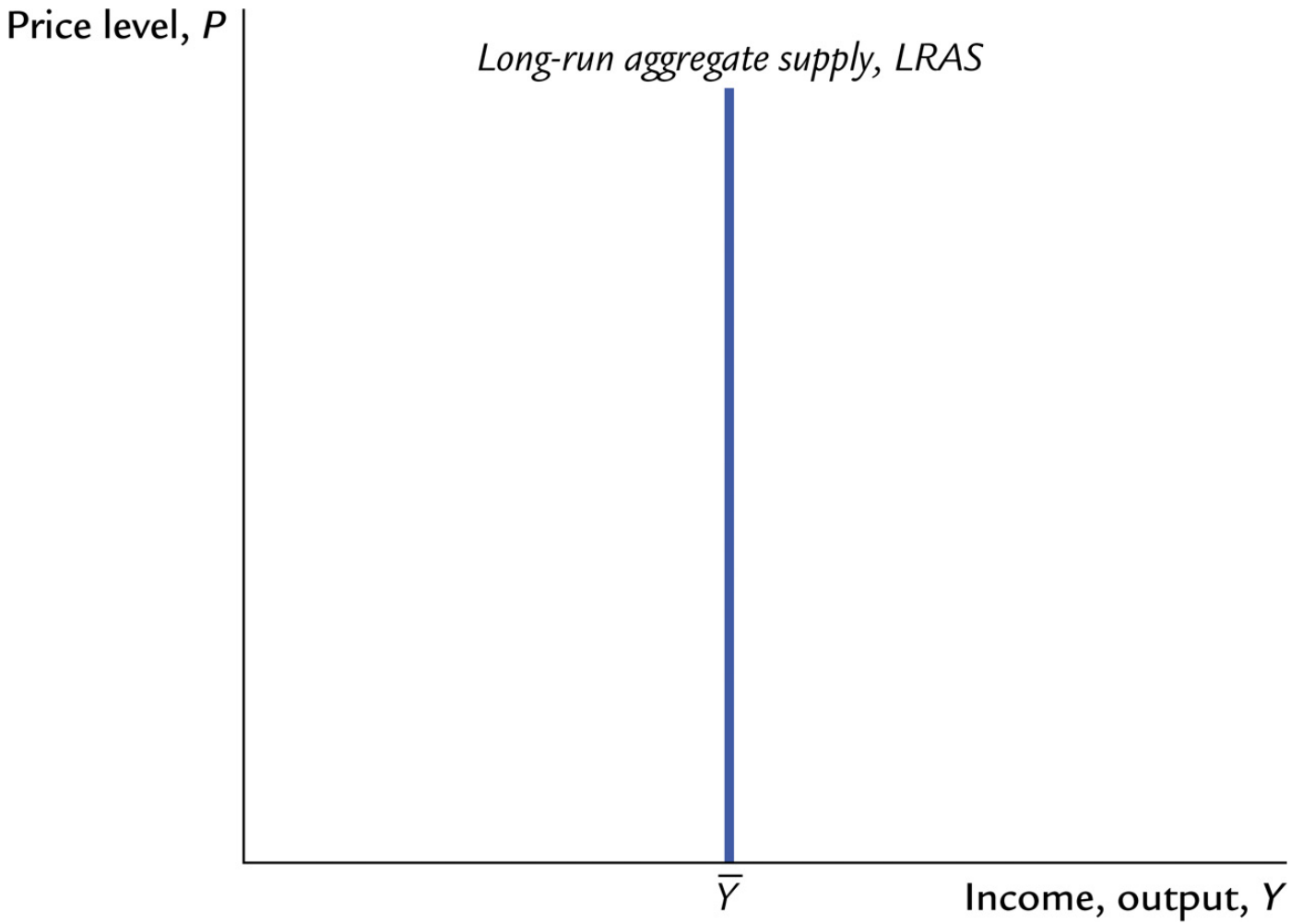
Long Run AS Curve (LRAS)

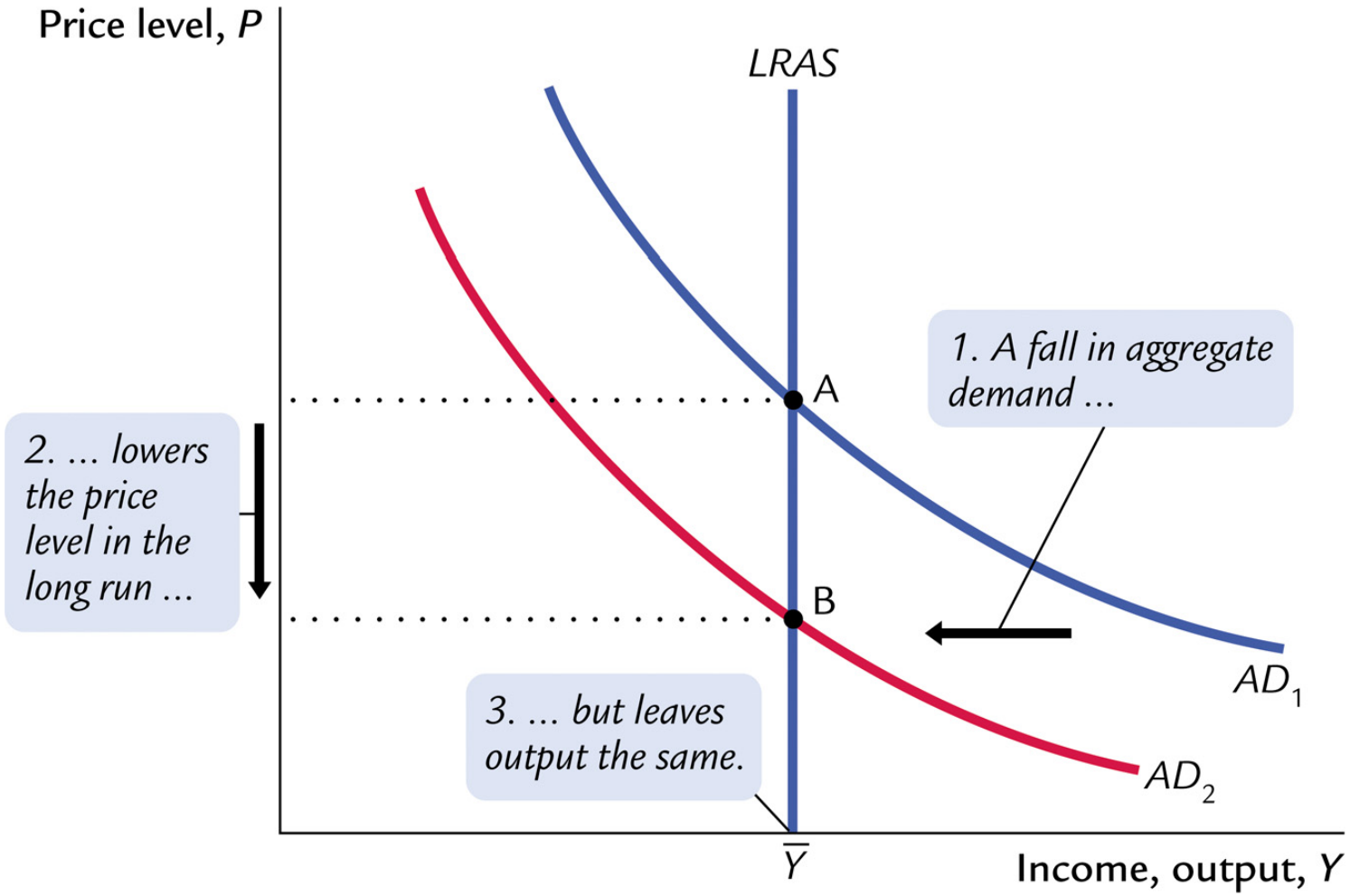
- In the LR,

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

and output does not depend on prices. Thus, LRAS curve is vertical, i.e., output in the LR is insensitive to the price level. ◂ Fig

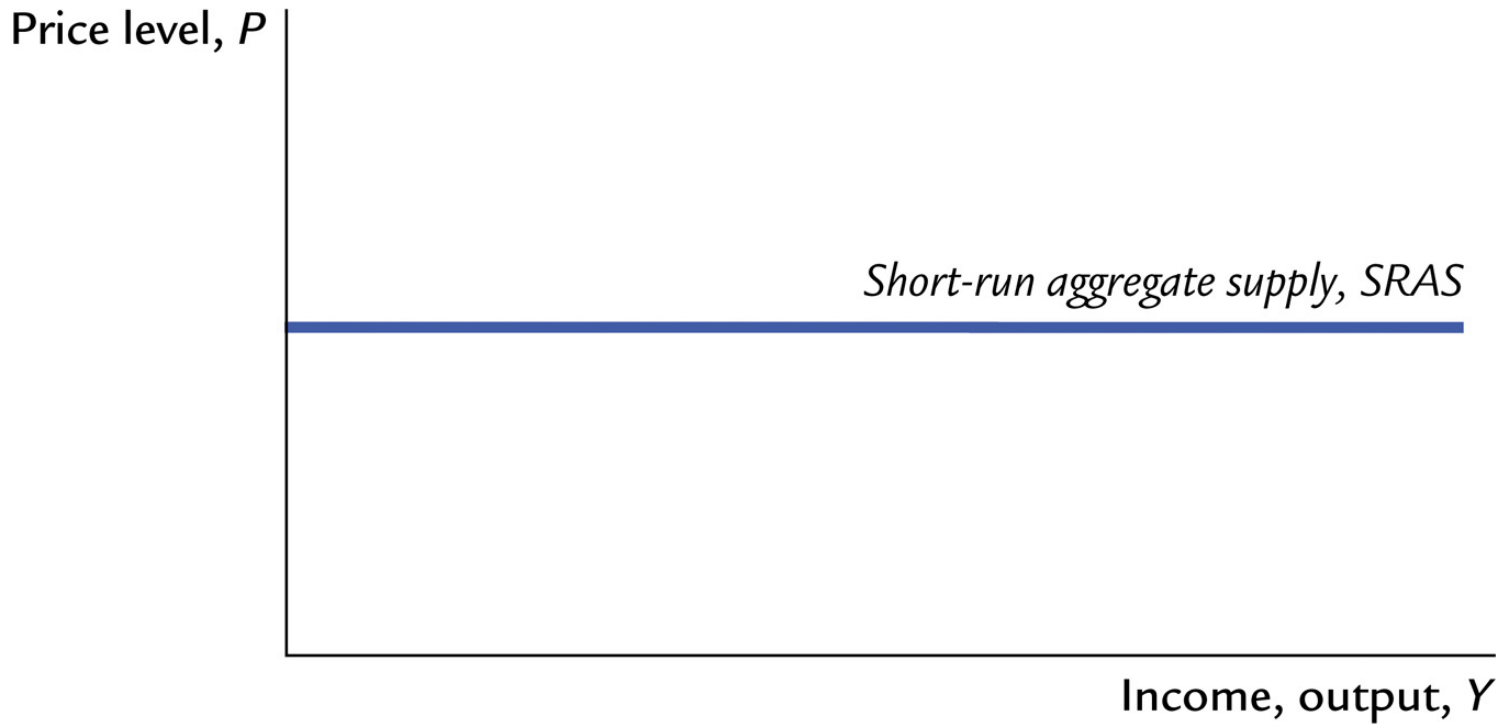
- Thus, changes in AD affect the price level in the LR, **not** the level of output. ◂ Fig
- $\bar{Y}$ is called the **full employment, or natural level of output**, i.e., the level of output when the economy's unemployment rate is at its natural rate.

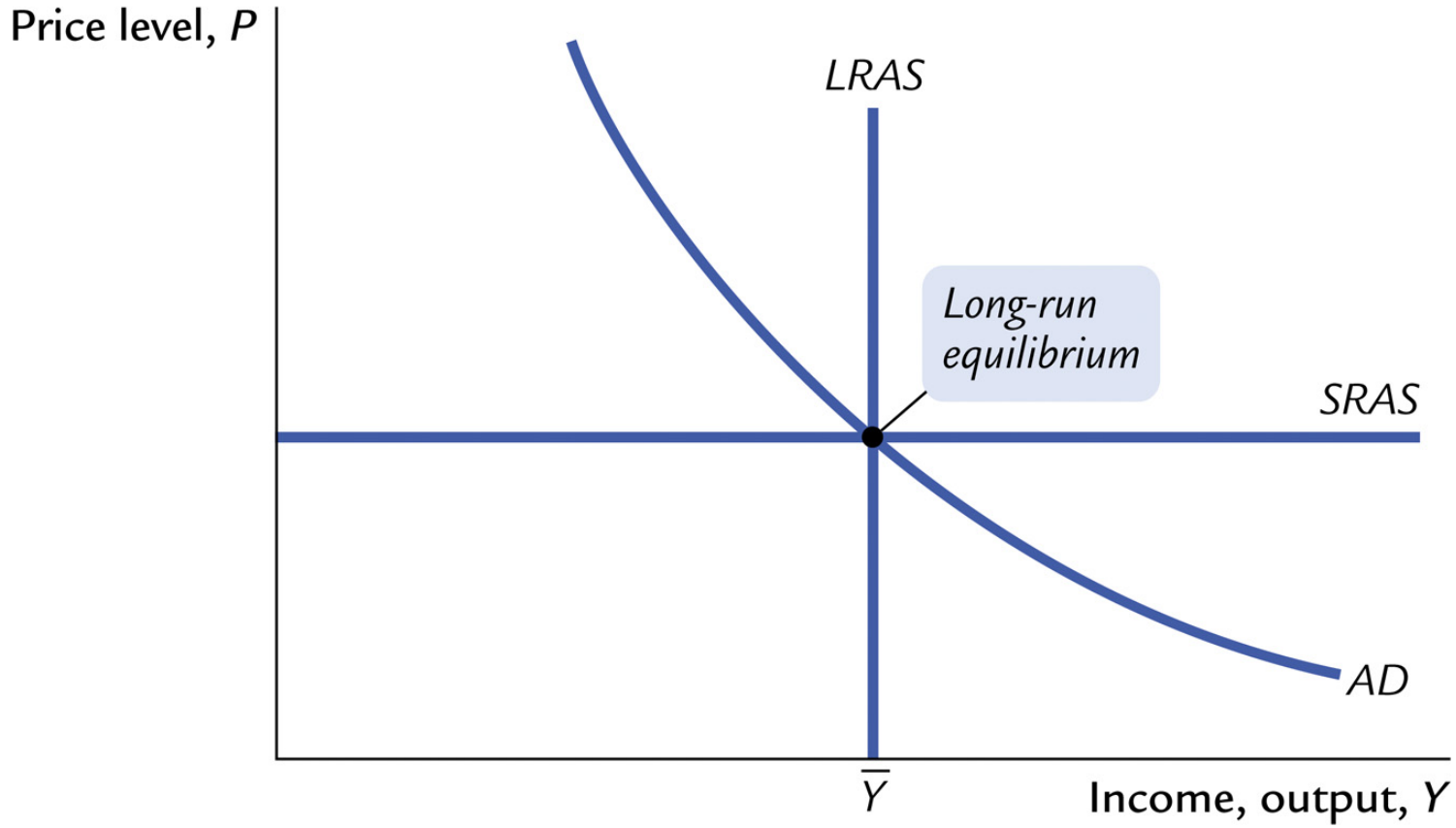

Price level, P
Long-run aggregate supply, LRAS
$\overline{Y}$
Income, output, Y


Price level, P
LRAS
1. A fall in aggregate demand ...
A
2. ... lowers the price level in the long run ...
B
AD1
3. ... but leaves output the same.
AD2
Y
Income, output, Y

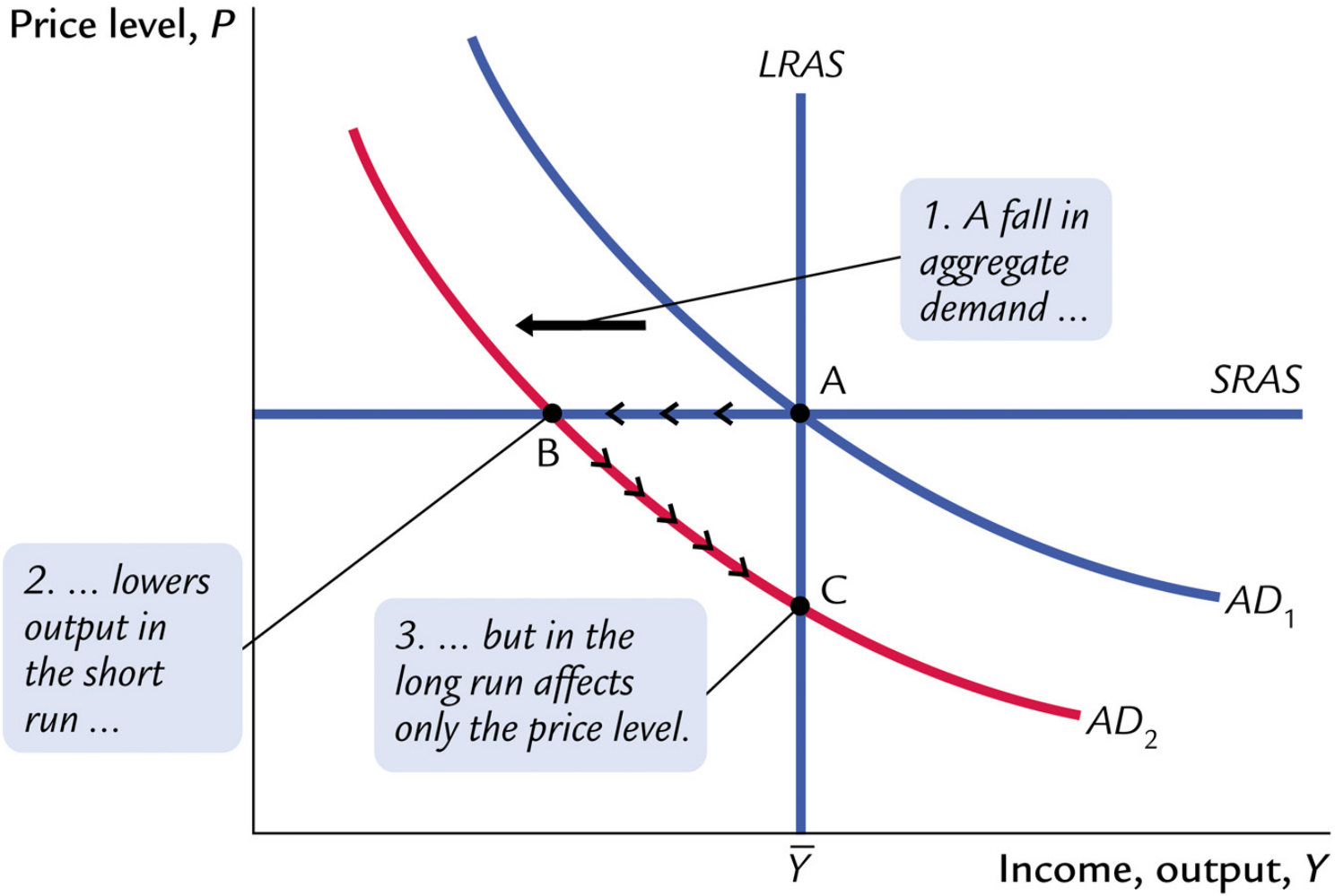
Short Run AS Curve (SRAS)

- Extreme case: all of the prices are sticky in the short run. Then, the SRAS is horizontal—firms produce as much as consumers are willing to buy at the fixed price level. ◂ Fig
- Equilibrium in the SR: at the intersection of the SRAS and AD curves. ◂ Fig


Price level, P
Short-run aggregate supply, SRAS
Income, output, Y


Price level, P
LRAS
Long-run equilibrium
SRAS
AD
$\overline{Y}$
Income, output, Y

Short-run and long-run effects of reduction in M



From the short run to the long run

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

If in the SR eqm	then over time, P will
$Y > \bar{Y}$	$\uparrow$
$Y < \bar{Y}$	$\downarrow$
$Y = \bar{Y}$	remain constant

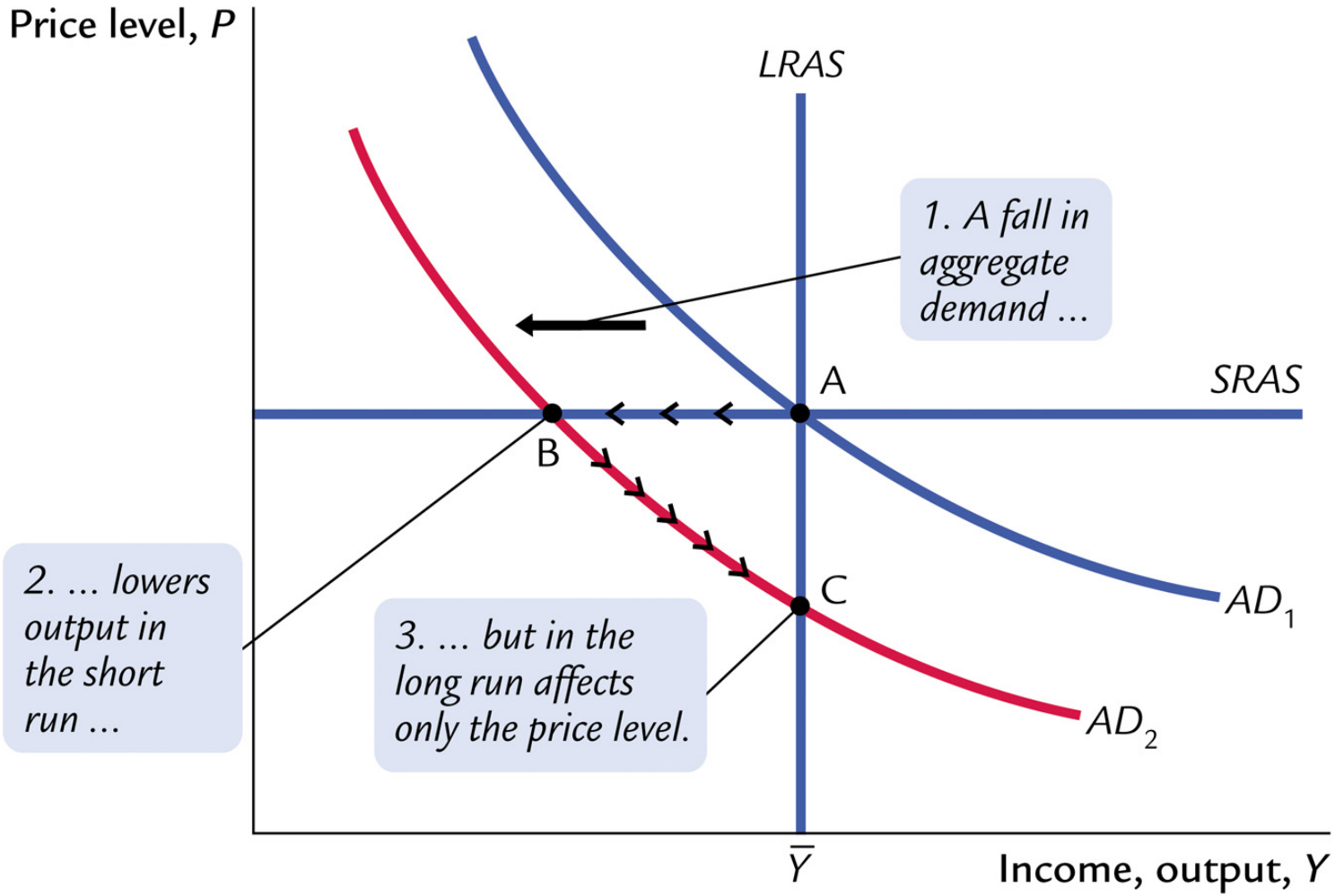
The adjustment of prices is what moves the economy to its long-run equilibrium.

Shocks

Exogenous changes in aggregate supply or demand⇒source of fluctuations

- 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.

Short-run and long-run effects of reduction in V



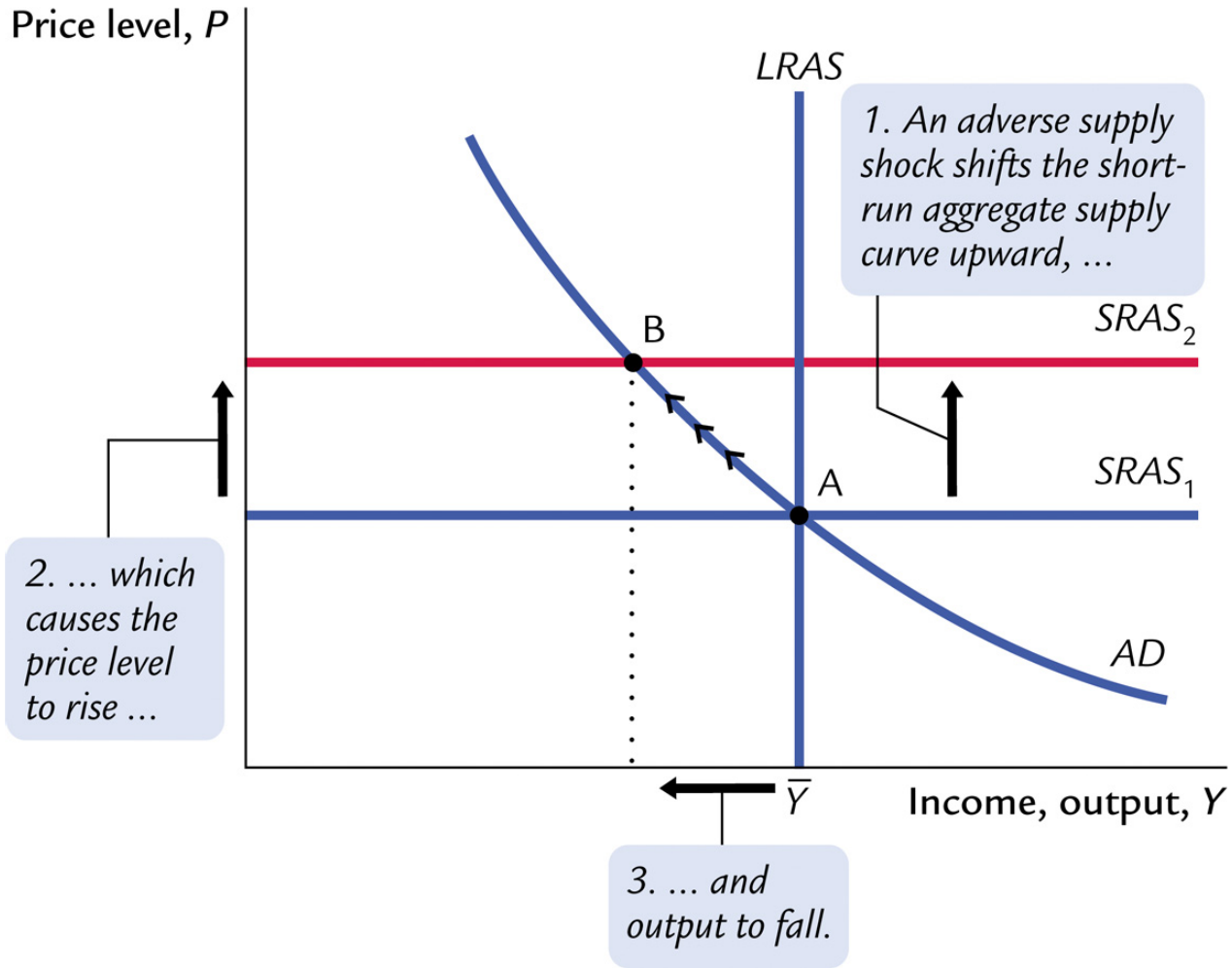
Supply shocks

- 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 (e.g., a positive TFP shock)

Example: an increase in the price of oil

- SRAS curve shifts upwards, since the costs of producing one unit of good increases
- If AD is unchanged, the P rises and Y falls
- A phenomenon of falling output and rising prices is called stagflation

Adverse supply shock

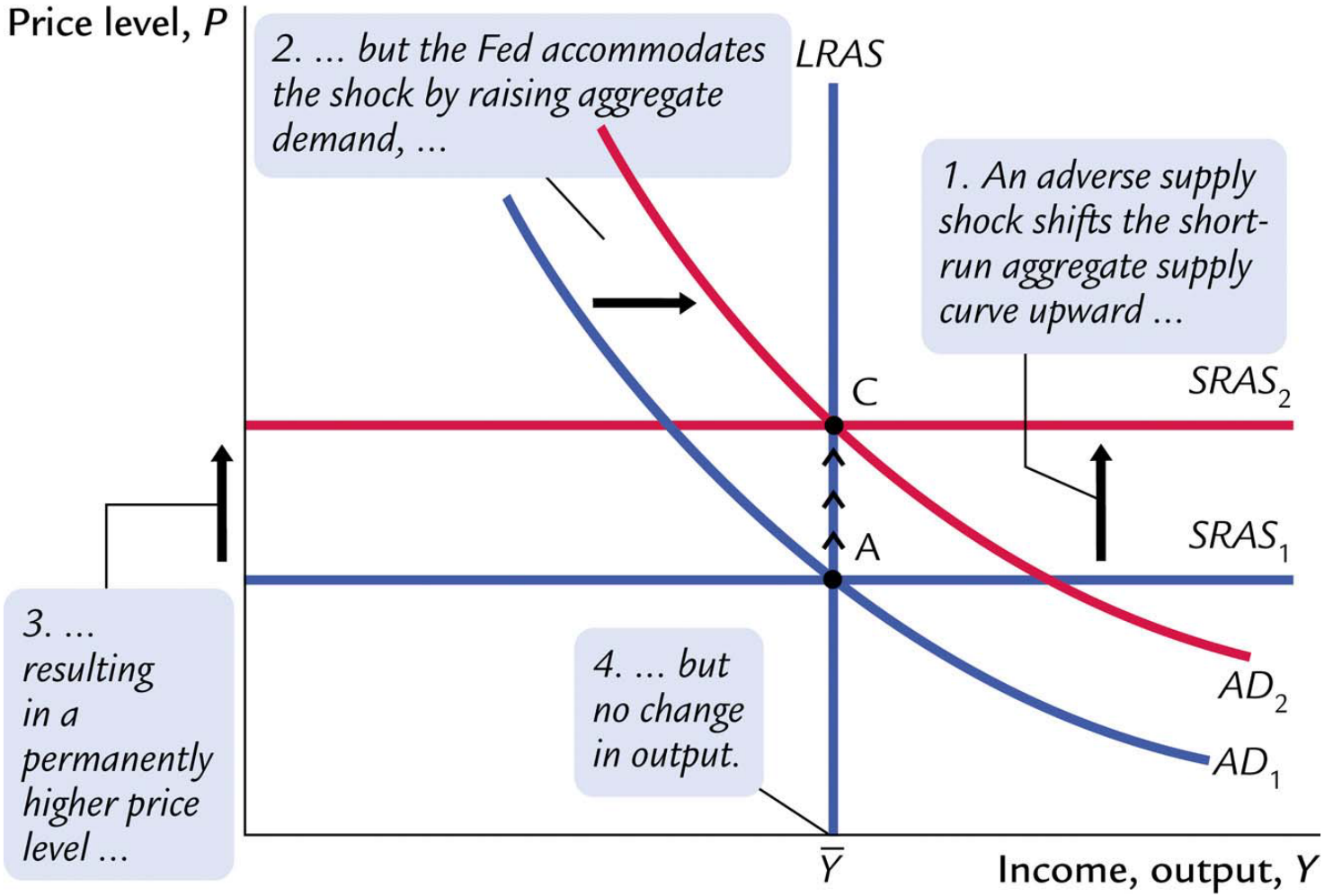


Stabilization policy

Policy actions aimed at reducing the severity of short-run economic fluctuations

- Example: Using monetary policy to combat the effects of adverse supply shocks

Adverse supply shock and monetary policy



Summary

- 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.
- Aggregate demand and supply: a framework to analyze economic fluctuations
- 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.

Readings

Mankiw and Scarth. Fifth Canadian Edition. Chapter 9.