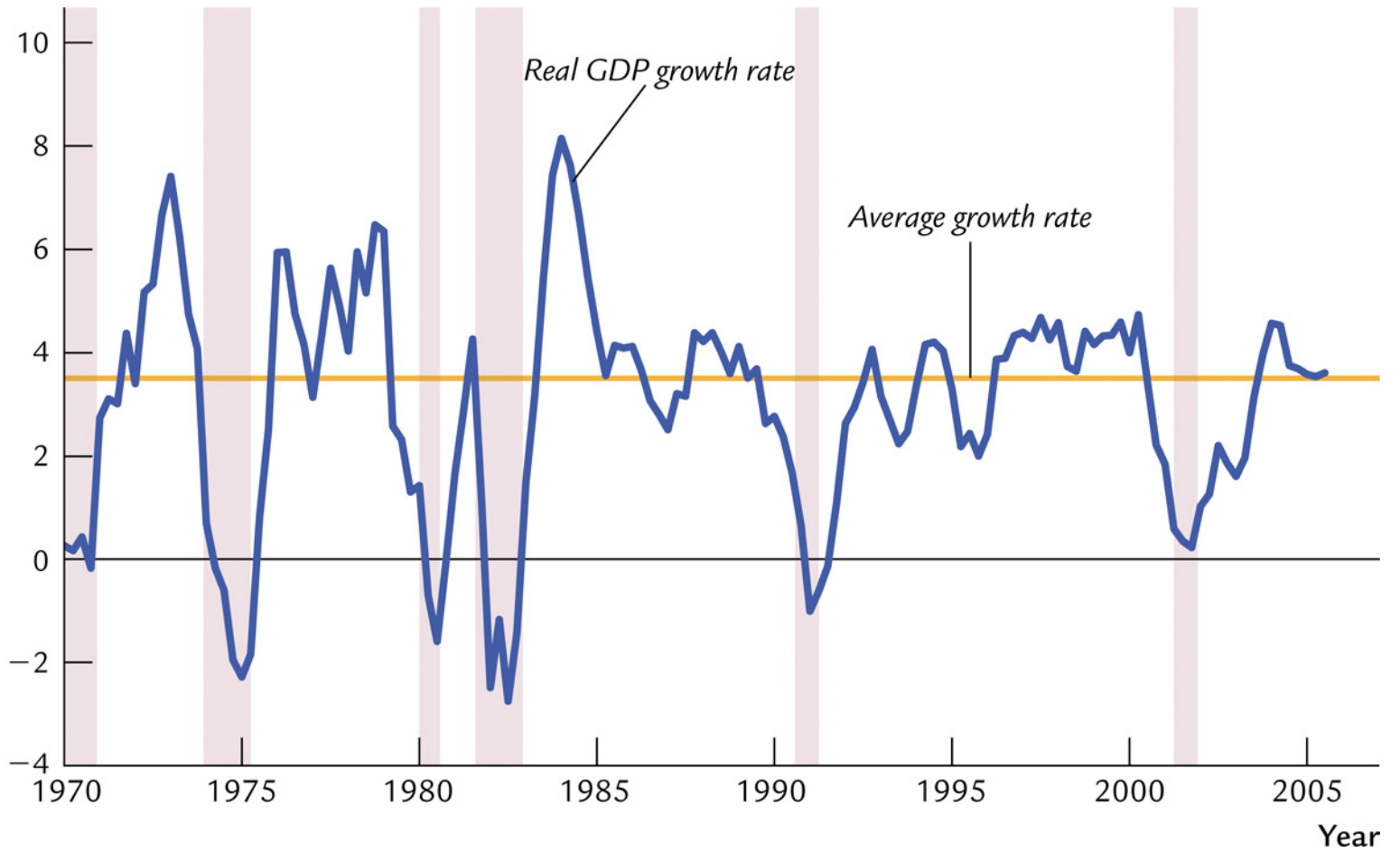# CHAPTER 9: INTRODUCTION TO ECONOMIC FLUCTUATIONS

Instructor: Dmytro Hryshko

WHY SHORT RUN ECONOMICS?

- For the long run, we predict smooth evolution of real variables (e.g., the real interest rate is constant, real output is growing at the rate $n + g$).

- However, dynamics of most of the variables is not smooth. The short run year-to-year fluctuations of the economy are called business cycles. (Refers to recurring periods of expansions and recessions in the economy.)

- Short run economics allows for stabilization policies: we can push the economy back to its trend in recessions, or pull down to its trend in expansions.
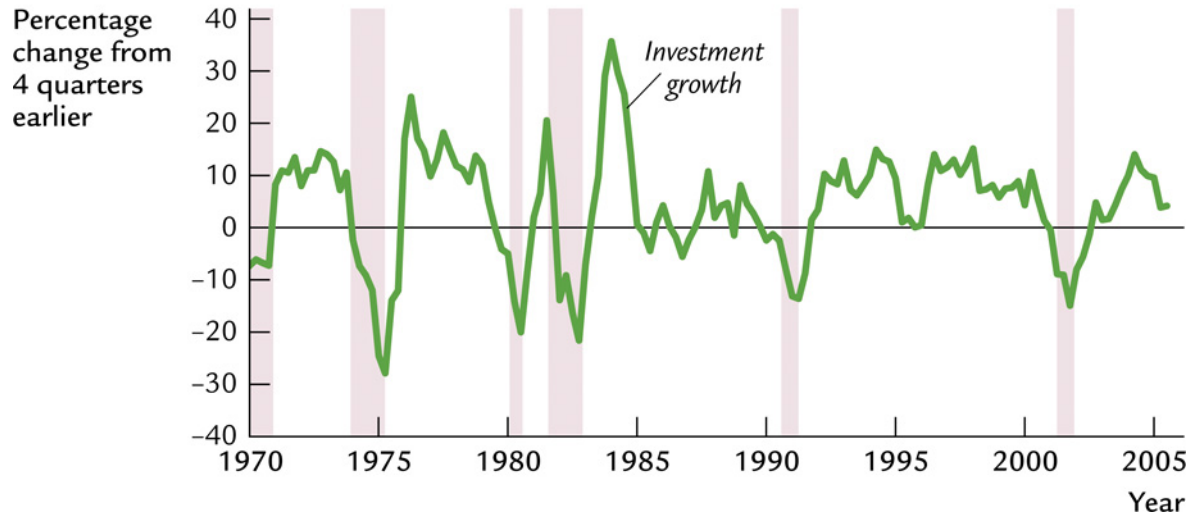
Percentage change from 4 quarters earlier

Real GDP growth rate

Average growth rate

Year

(a) Growth in Consumption

Percentage change from 4 quarters earlier

Consumption growth

(b) Growth in Investment

Percentage change from 4 quarters earlier
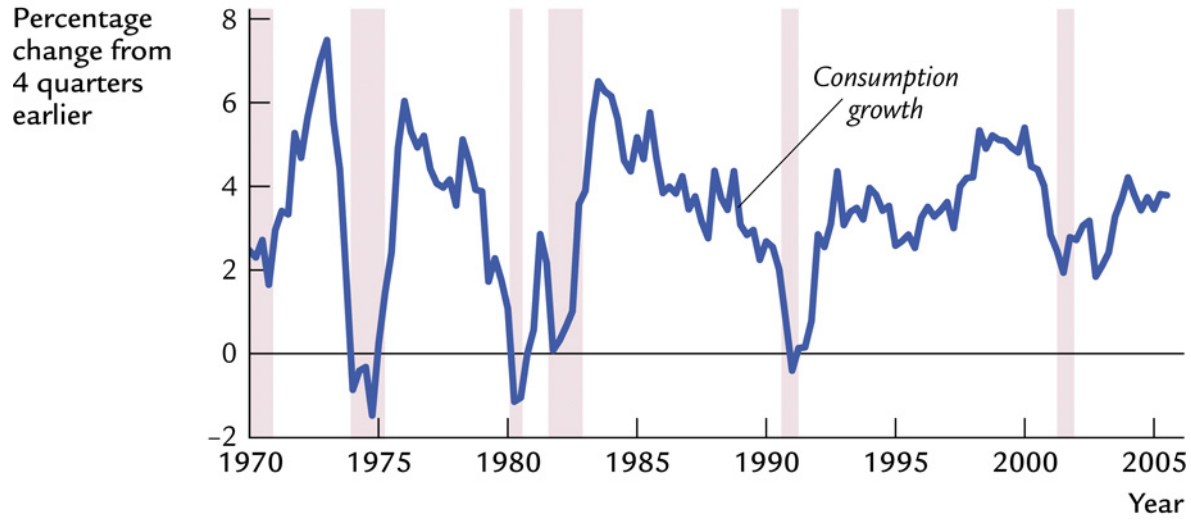
Investment growth

Short and Long Runs: Once Again

1. In the LR, prices of goods and factors of production are flexible.

2. In the SR, prices are 'sticky' at some predetermined level (e.g., nominal wages are preset in contracts).

Aggregate Demand

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

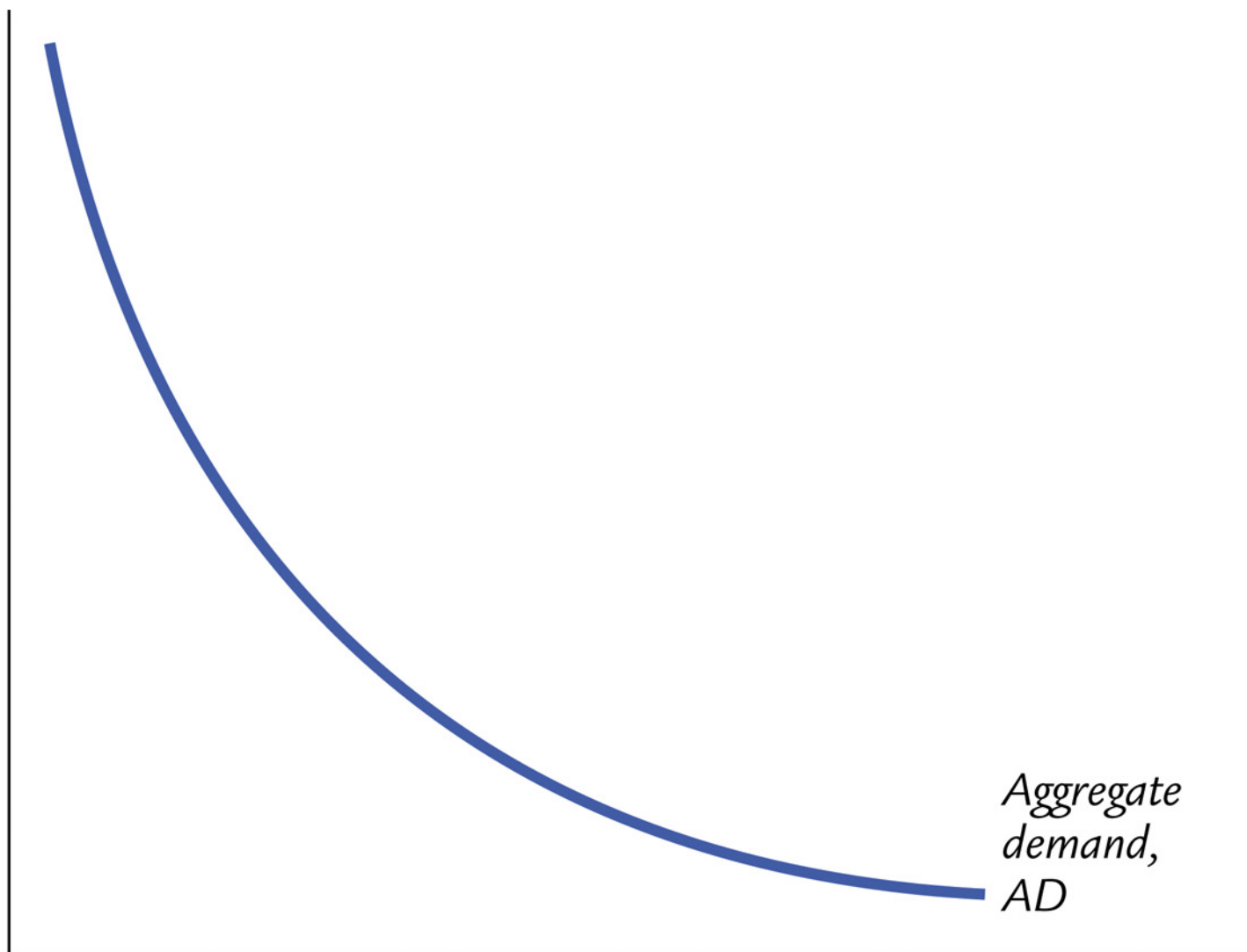- Use the quantity of money equation as the aggregate demand curve:
  $M \times V = P \times Y$.
  $(M/P)^d = k \times Y \Longrightarrow M/P = (M/P)^d = k \times Y$.

For any given k, and therefore velocity, 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*

Simple Explanation for the Downward Sloping AD Curve

If Y goes up, the demand for real money balances M/P goes up. For a given level of M, higher real money balances require lower P.

If P is lower, the real money balances are higher, and allow greater amount of transactions, which results in a higher Y.
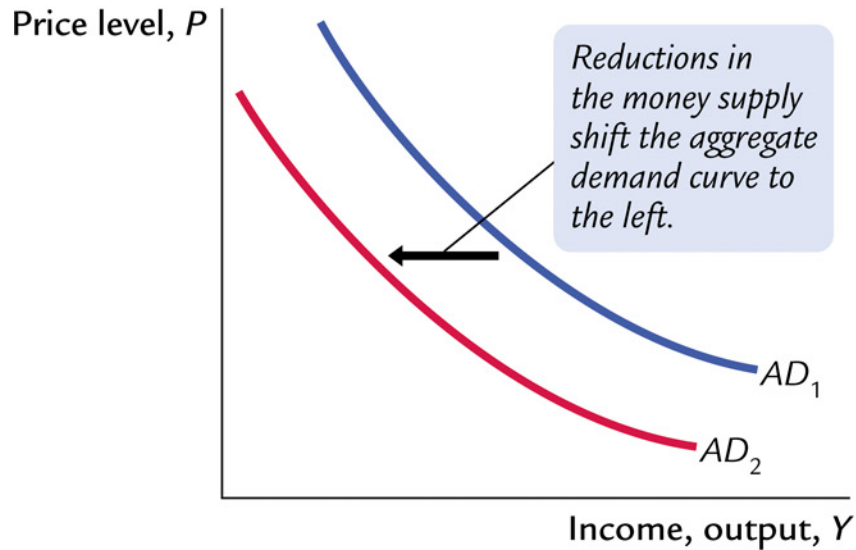
AD curve is defined for given (fixed) values of M and V.
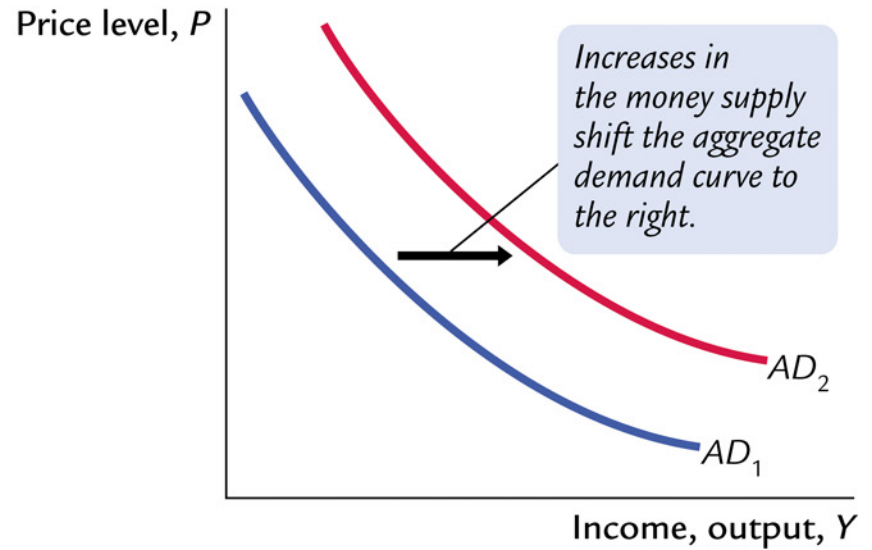
AD shifts following the changes in M <u>or</u> V.

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.

AD_1

AD_2

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.

AD_2

AD_1

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, $Y = F(\overline{K}, \overline{L}) = \overline{Y}$, and output does not depend on prices. Thus, LRAS curve is vertical, i.e., output in the LR is insensitive to the price level.

Thus, changes in AD affect the price level in the LR, <u>not</u> the level of output.
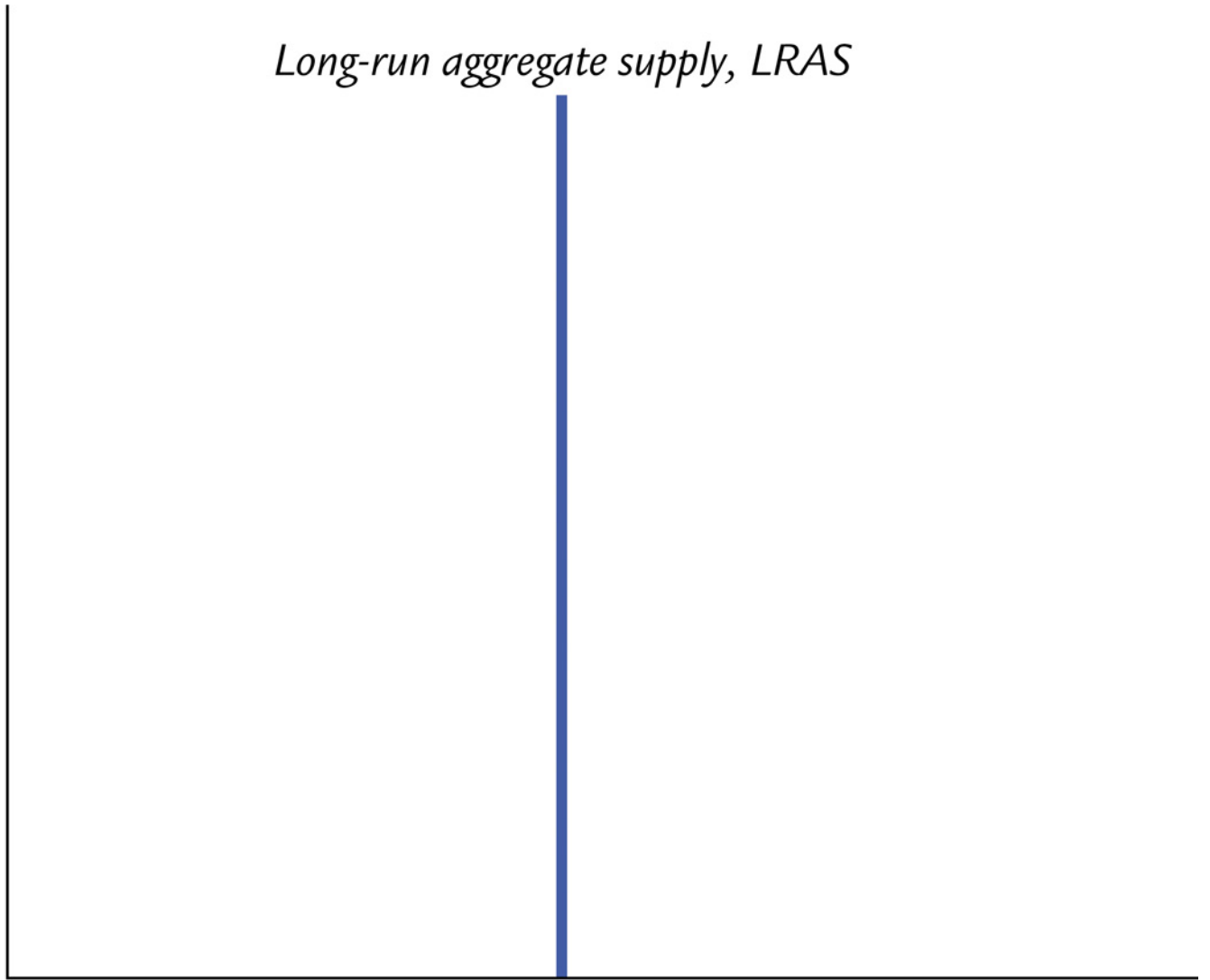
$\overline{Y}$ is called the full employment, or natural level of output, i.e., the level of output when the economy's unemployment rate is at its natural rate.

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

3. … but leaves output the same.

AD_1

AD_2

$\overline{Y}$
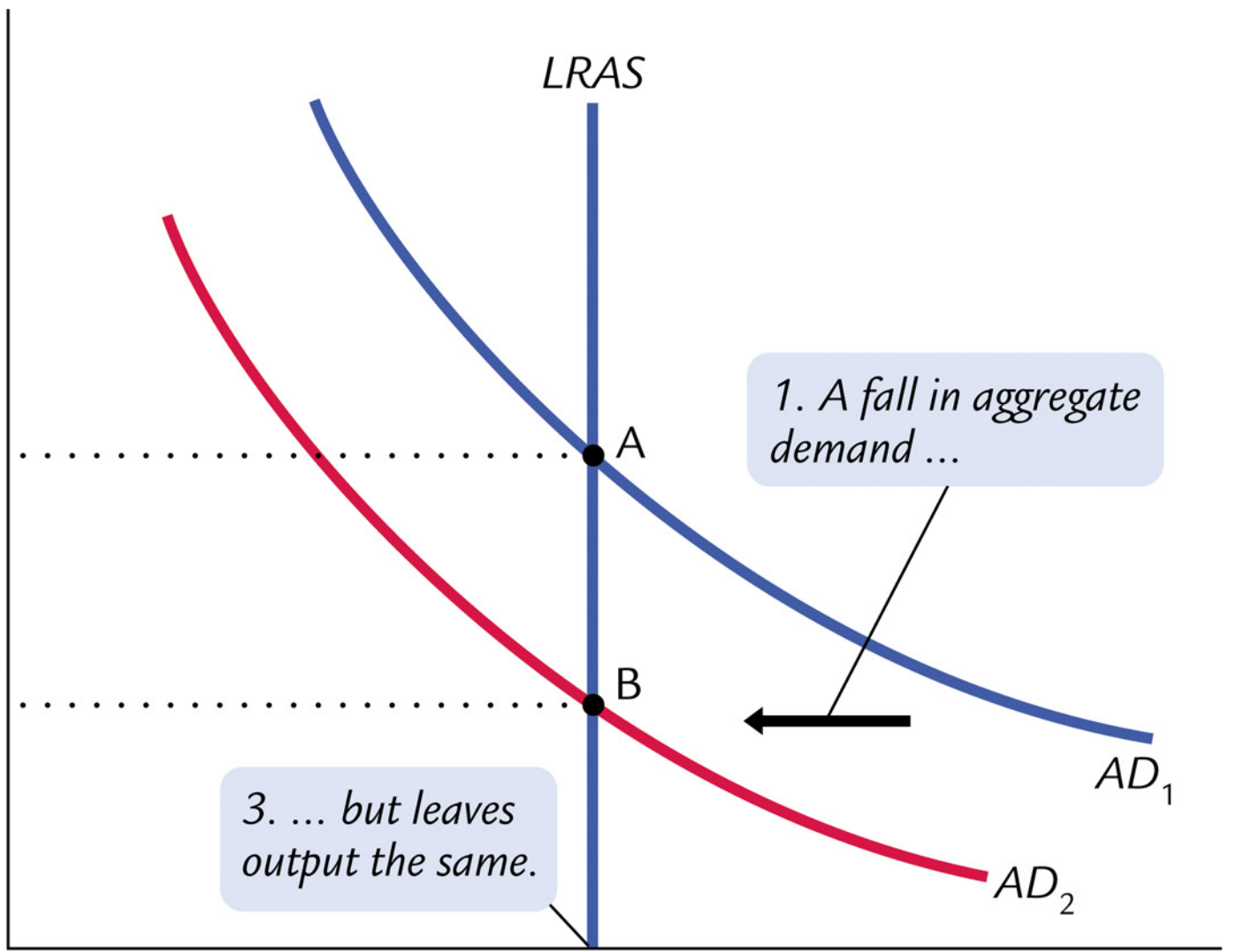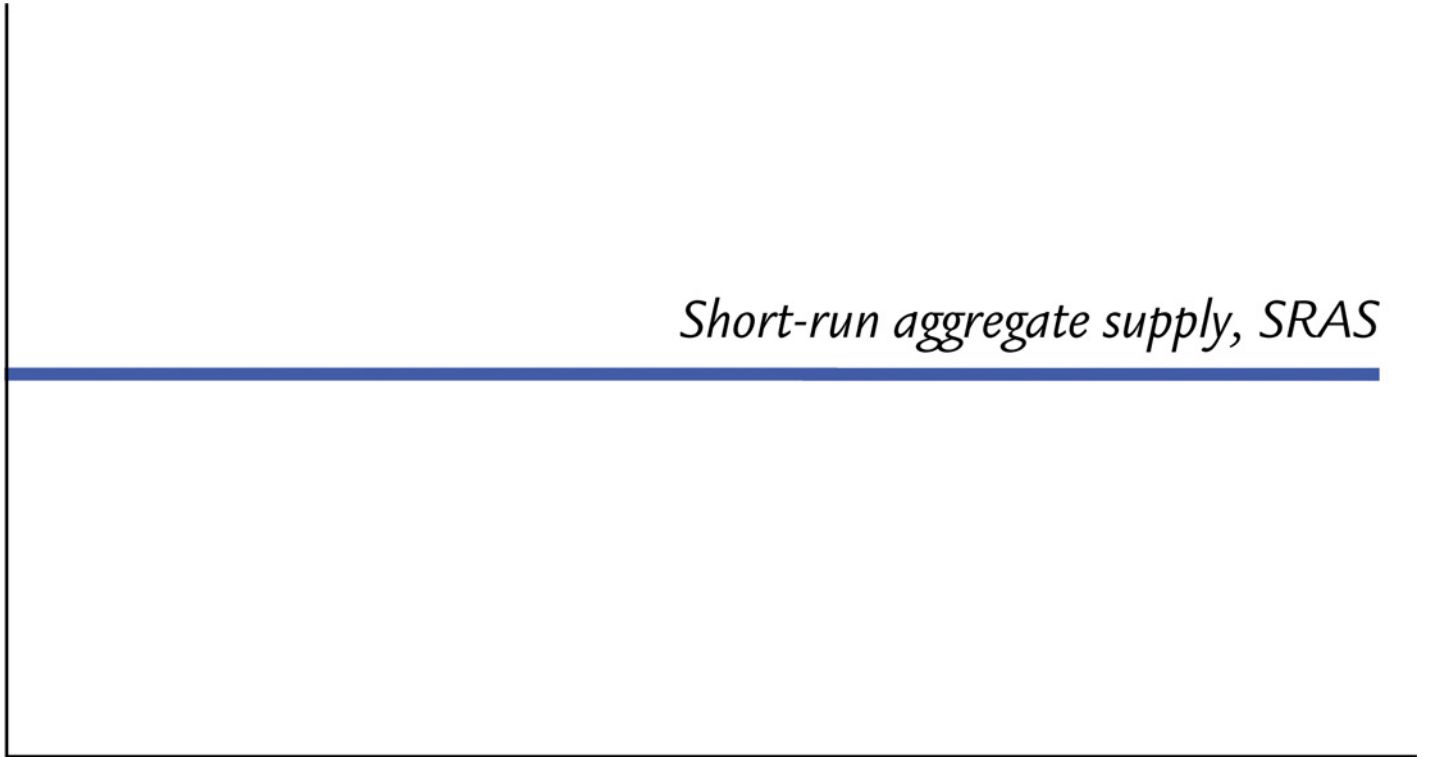
Income, output, Y

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.
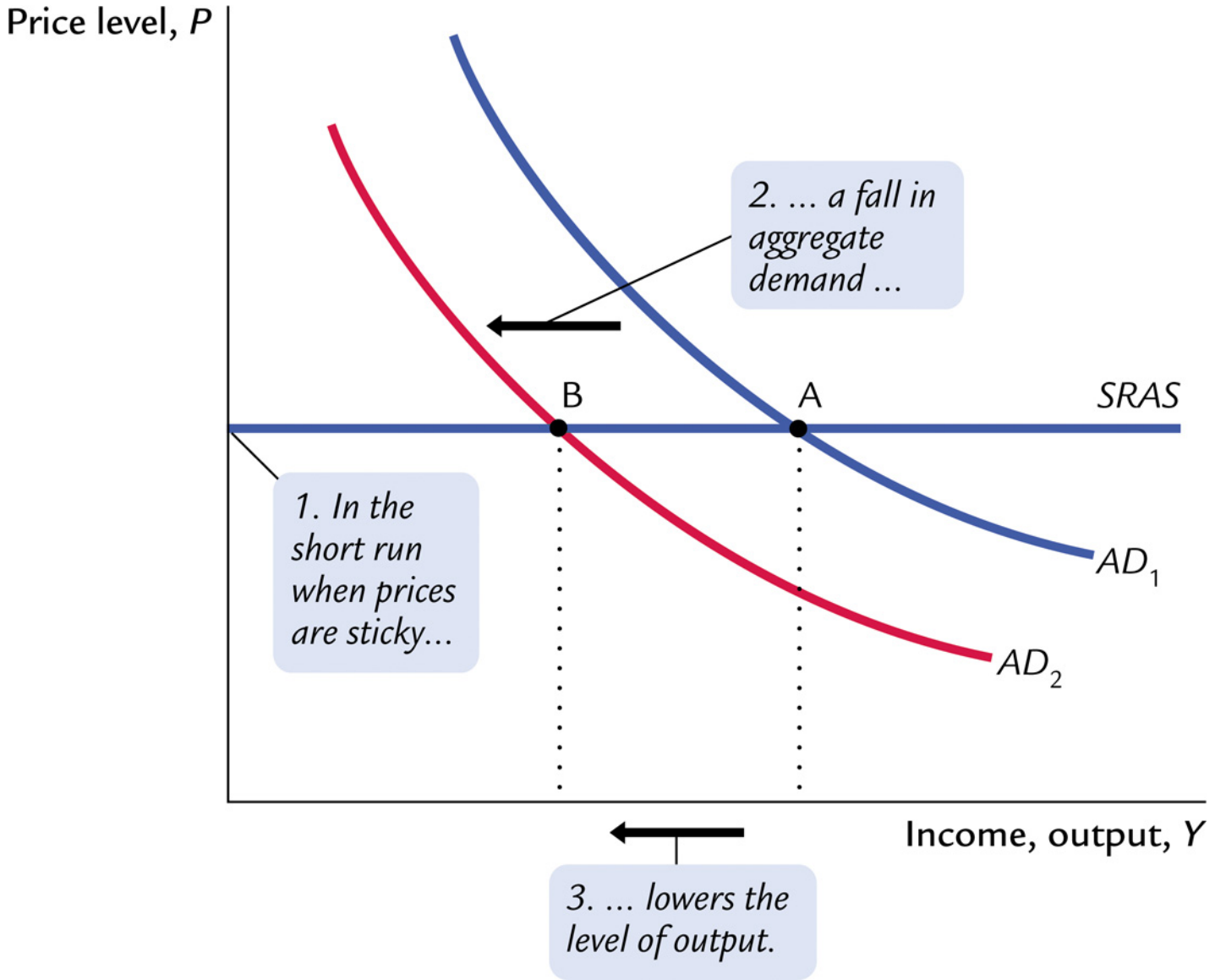
Equilibrium in the SR: at the intersection of the SRAS and AD curves.

Price level, P

Short-run aggregate supply, SRAS

Income, output, Y

Price level, P

2. ... a fall in aggregate demand ...

B   A   SRAS

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

AD_1

AD_2

Income, output, Y

3. ... lowers the level of output.

Combining the SR and LR

How do we transition from the LR to the SR?

- Suppose we are in the LR. Then prices adjust to bring the LRAS and AD in equilibrium.

- This price level is sticky in the SR, and so SRAS curve should pass through this price level.

A fall in AD, e.g., due to reduction of money supply M, causes output to fall below its natural level and, thus, recession. Prices and wages will adjust over time downwards in response to lower AD, and the output will revert to the natural level.

Important: In the SR, changes in M cause changes in Y, in the LR, though, changes in M feed into the changes in P only—the exact prediction of classical economics.

Price level, P

LRAS

Long-run
equilibrium

SRAS

AD

$\overline{Y}$

Income, output, Y
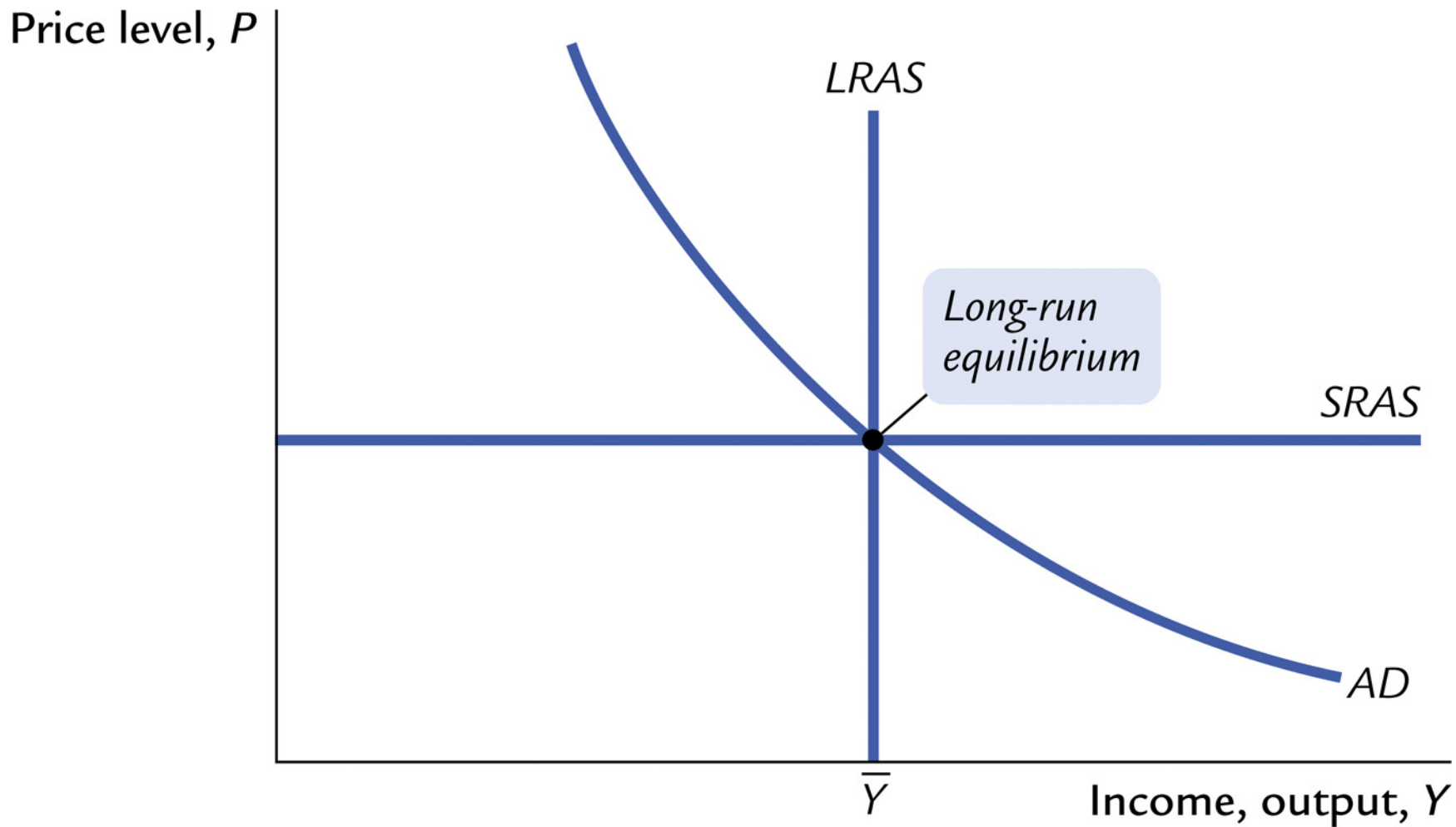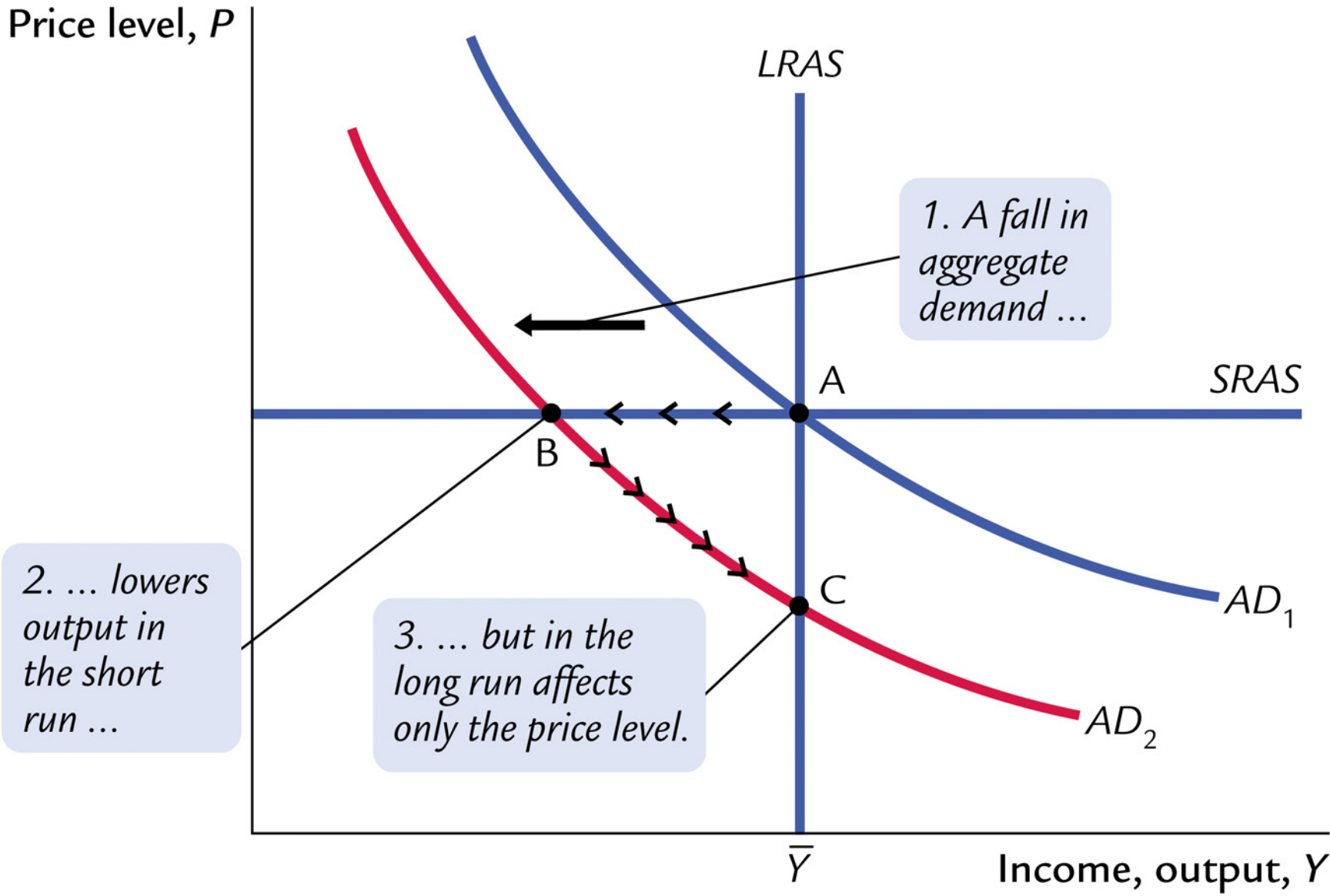
STABILIZATION POLICY

Exogenous changes in AD or AS curves are called <u>shocks</u>.

- A shock that shifts AD curve is called the <u>demand shock</u> (e.g., changes in income velocity of money or changes in money supply).

- A shock that shifts AS curve is called the <u>supply shock</u> (e.g., oil price shocks, technological advances, discovery of new sources of natural resources, etc).

  Shocks cause economic fluctuations, changing the prices and pushing output away from its natural level.

  <u>Stabilization policies</u> by the government are designed to counteract the adverse effects of shocks.

SHOCKS TO AD

With the introduction of credit cards, money demand fell and velocity increased.

- Thus, for a given level of money supply, nominal spending increased and AD shifted outward, to the right.

- At the given level of prices, output Y increases: workers work longer hours, and capital is used more extensively.

- In the LR, higher demand pushes up wages and prices and the economy is at the natural level of output, $\overline{Y}$, with a higher level of aggregate prices, P.
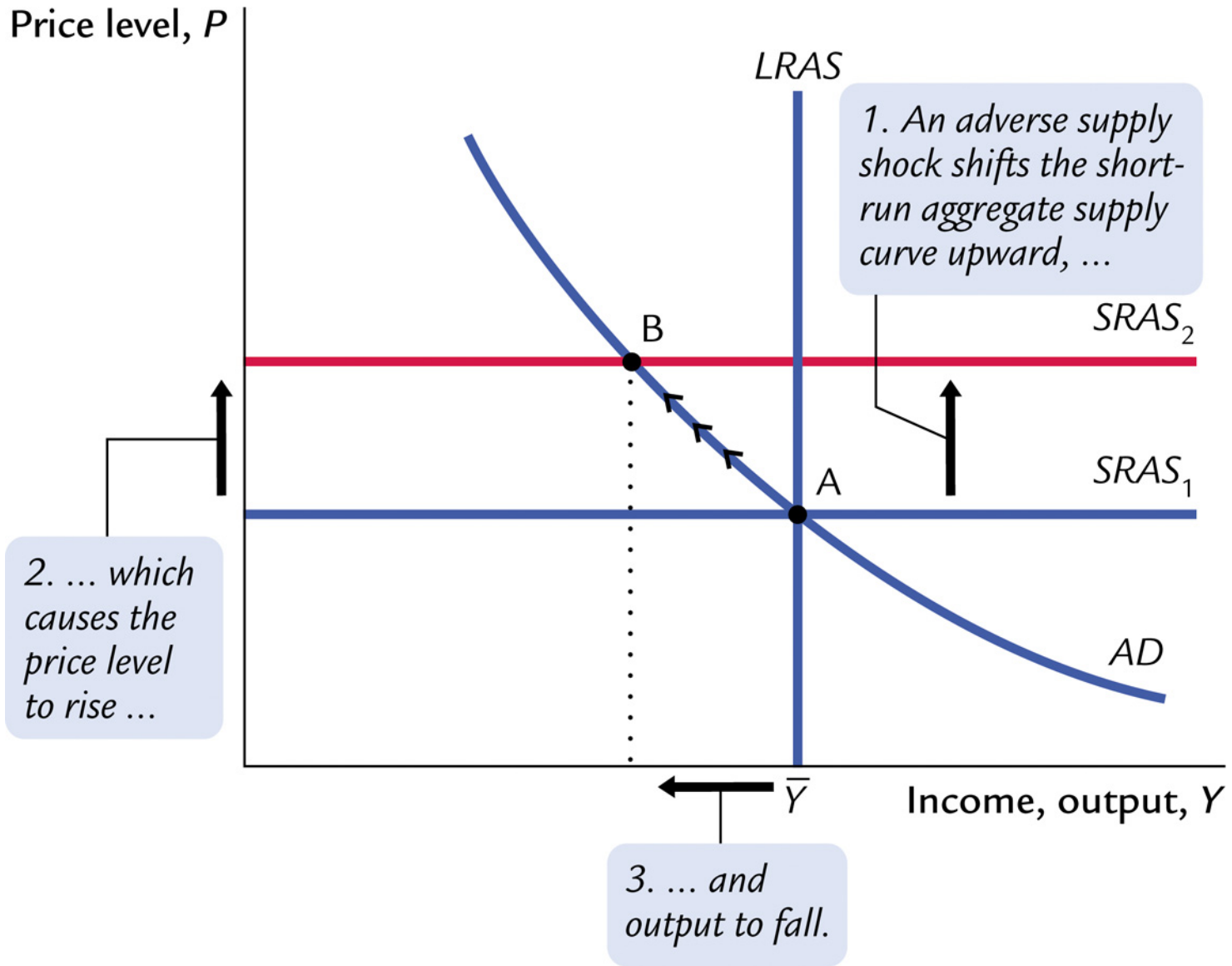
Shocks to AS

Supply shocks alter the costs of producing the output (e.g., oil price changes, stronger unions, etc.) or reflect the shocks that affect the productive capacity of the economy (e.g., droughts in developing countries, discovery of oil/natural gas resources, etc.)

Adverse supply shocks push costs and prices up.

Favorable supply shocks reduce costs and prices.

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.