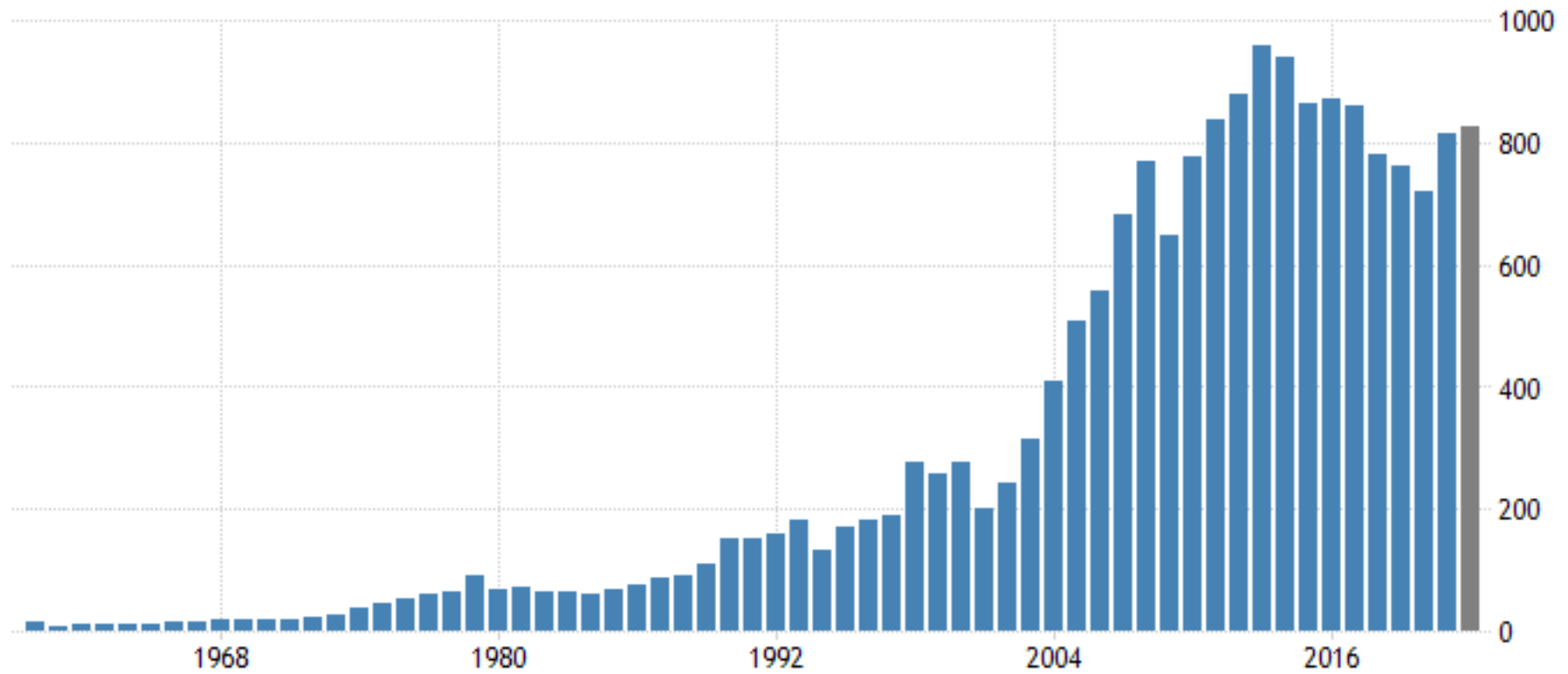


# Macroeconomic Theory I

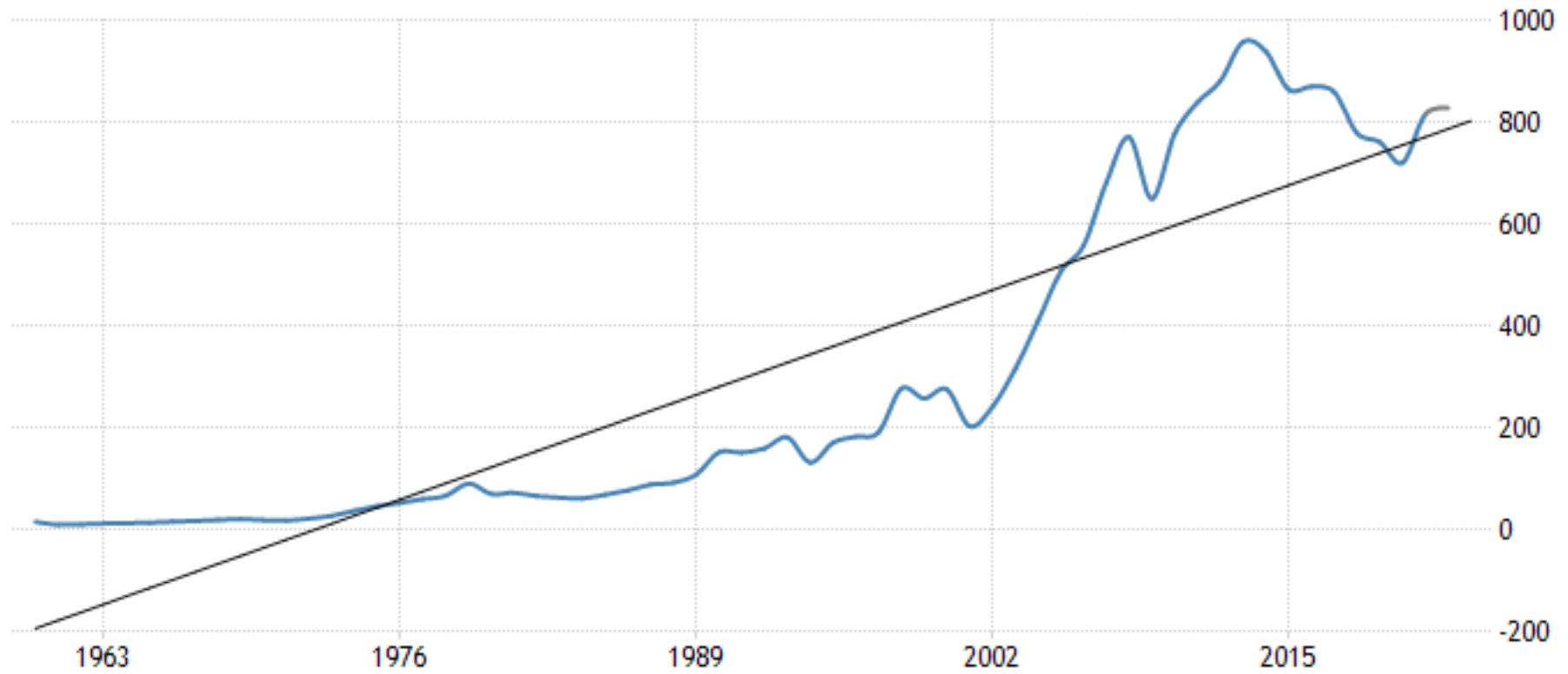
## Economy in the Short Run

# Long-run GDP



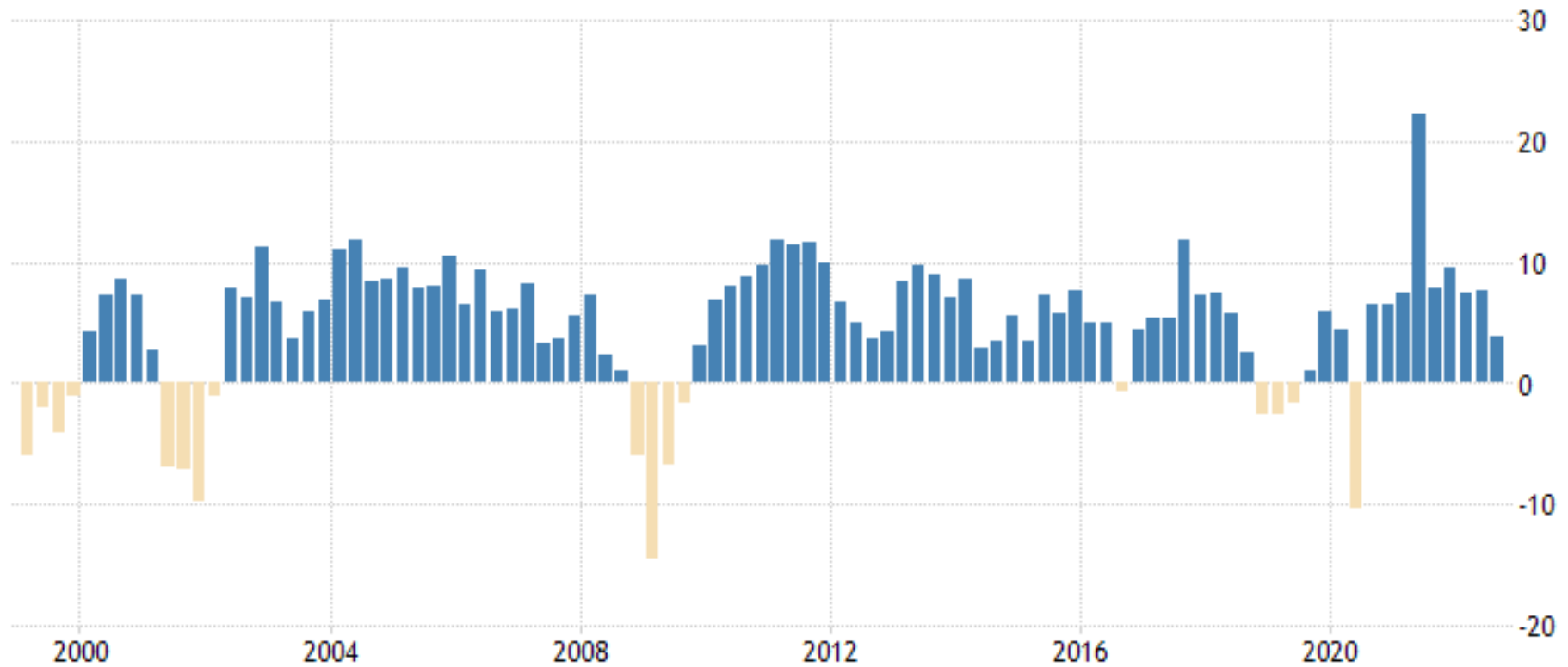
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# Long-run GDP



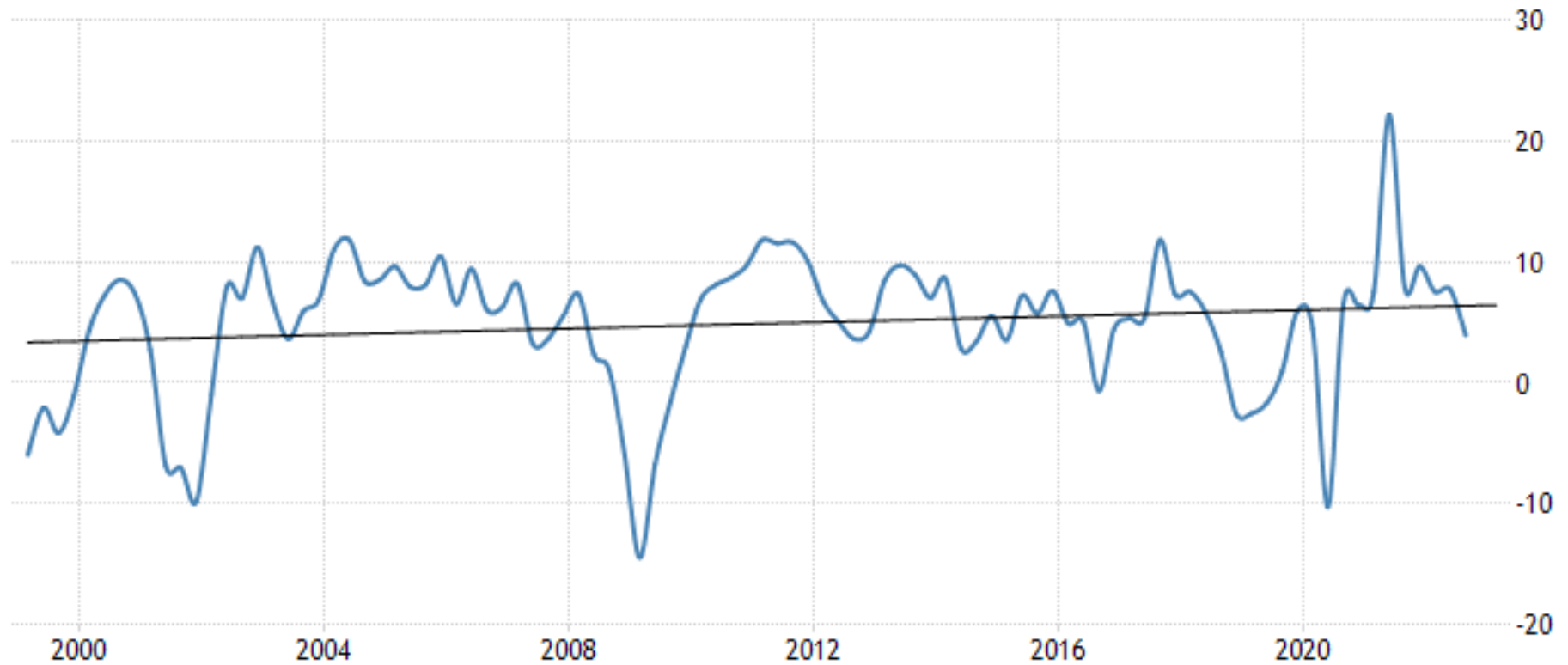
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# GDP Growth



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# GDP Growth

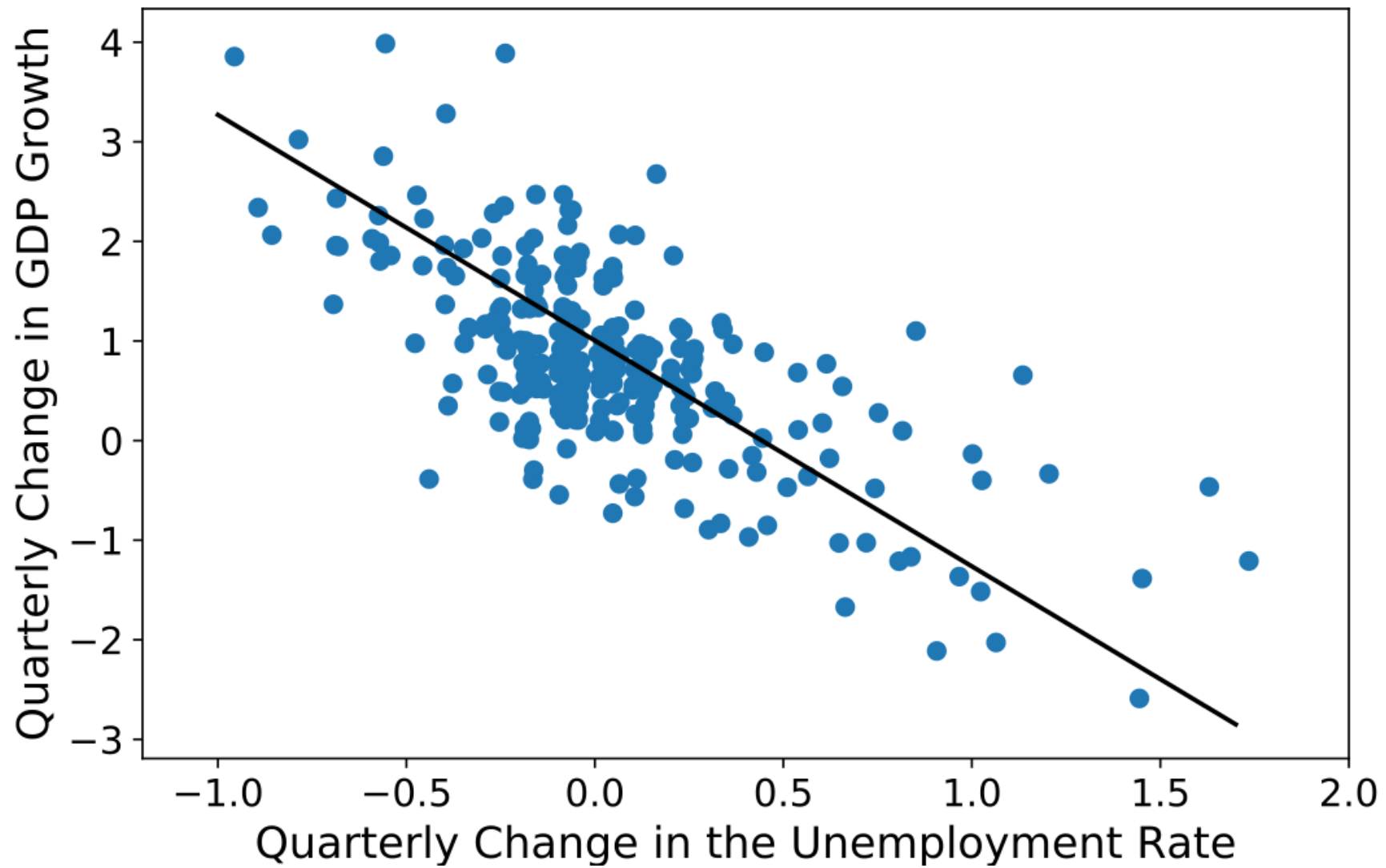


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# Unemployment



# Okun's Law: Growth - Unemployment

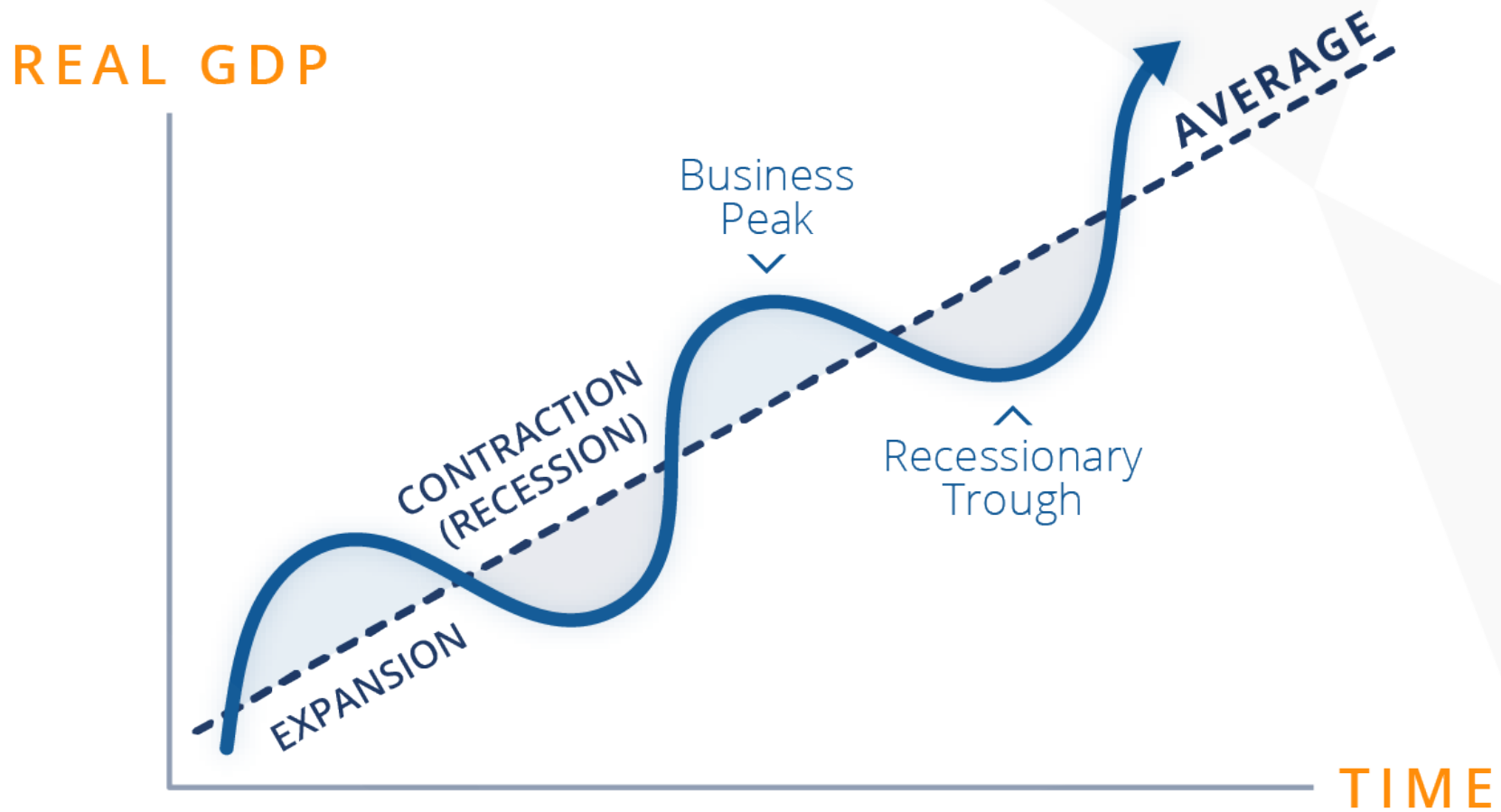


## Facts

- GDP growth average constant level 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



# THE ECONOMIC CYCLE



## 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.

## Classical macro theory

- 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 and short run.

## Keynesian macro theory

- Applies to the short run.
- 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
  - animal spirits, like pessimistic or optimistic expectations

## The model of aggregate demand and aggregate supply

- Most mainstream economists and policymakers use the model to think about economic fluctuations and policies to stabilize the economy.
- The model shows how the price level and aggregate output are determined.
- The model shows how the economy's behavior is different in the short run and in the long run.

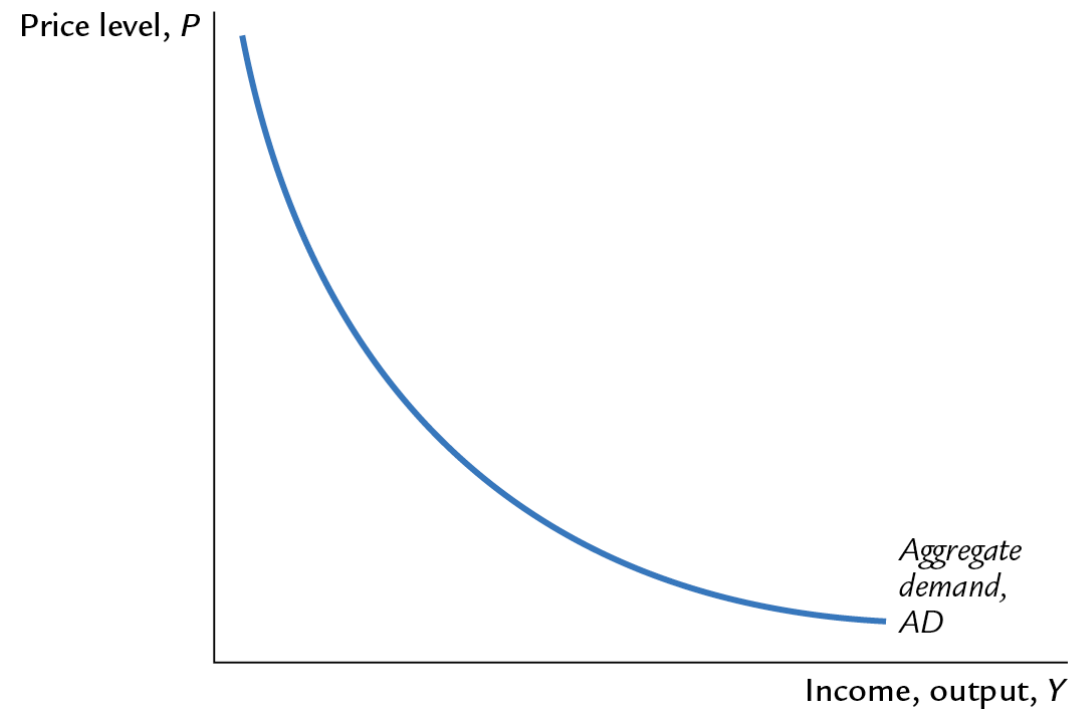
## Aggregate Demand

- The aggregate demand curve shows the relationship between the price level and the quantity of output demanded.
- For intro to the *AD/AS* model, we use a simple theory of aggregate demand based on the quantity theory of money.
- recall the quantity equation:

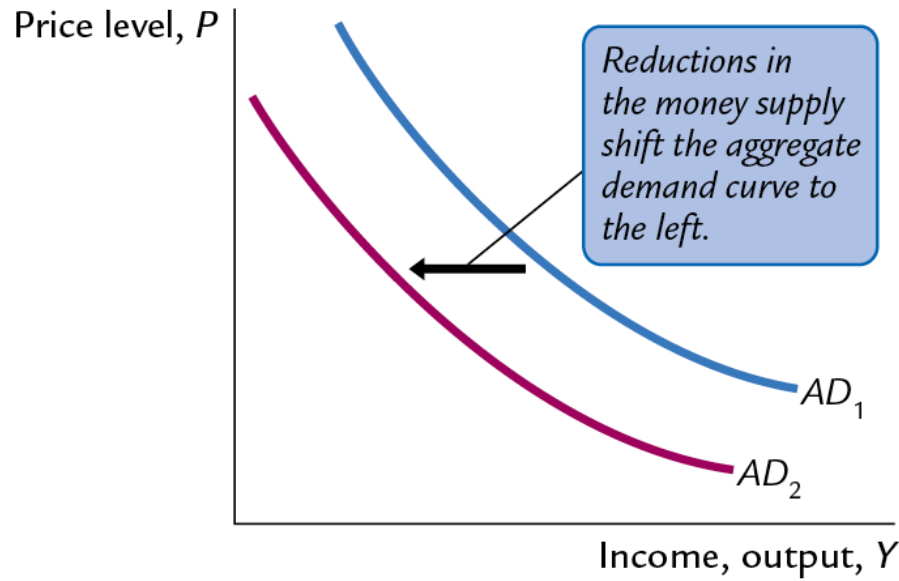
$$M V = P Y$$

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

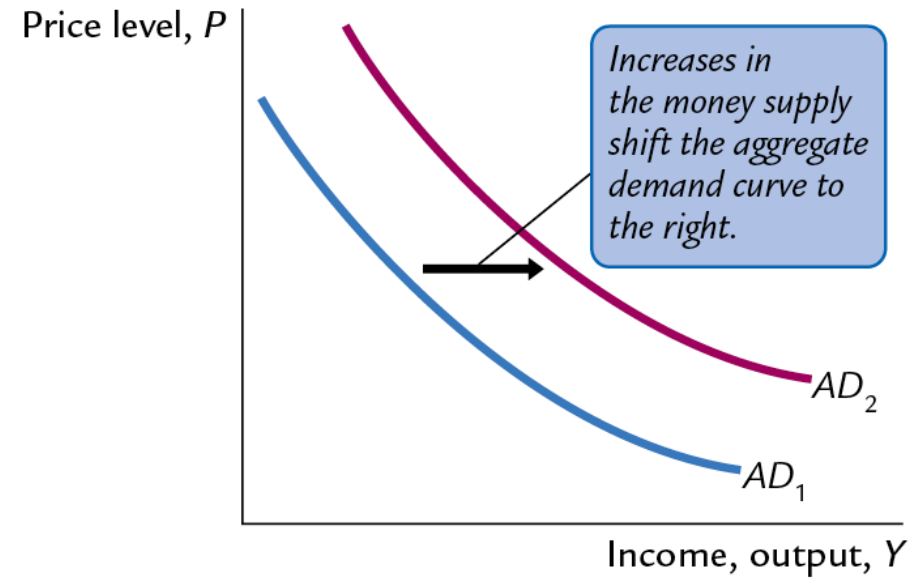
An increase in the price level causes a fall in **real money balances ( $M/P$ )**, causing a decrease in the demand for goods and services.



(a) Inward Shifts in the Aggregate Demand Curve



(b) Outward Shifts in the Aggregate Demand Curve



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## Aggregate Supply in the long run

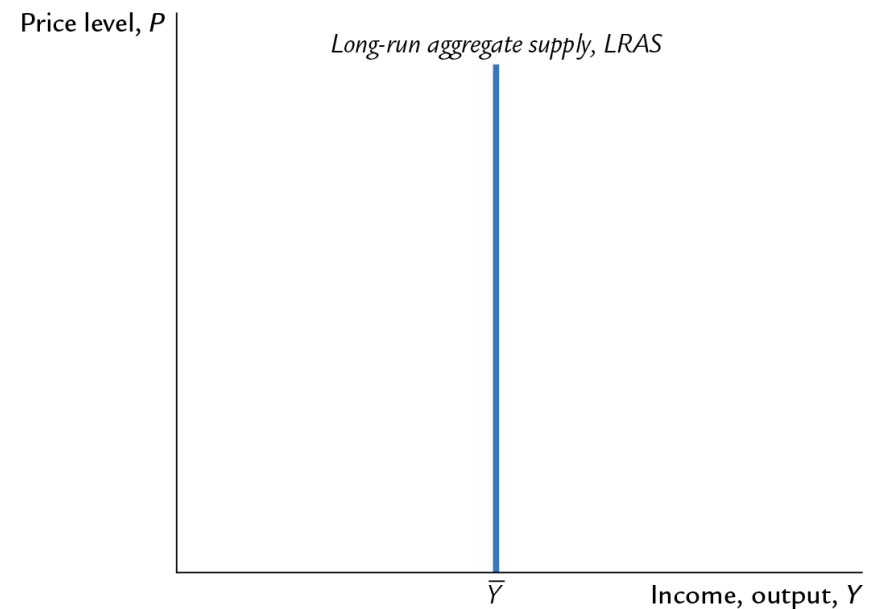
- In the long run, output is determined by factor supplies and technology.

$$Y = Af(K, L)$$

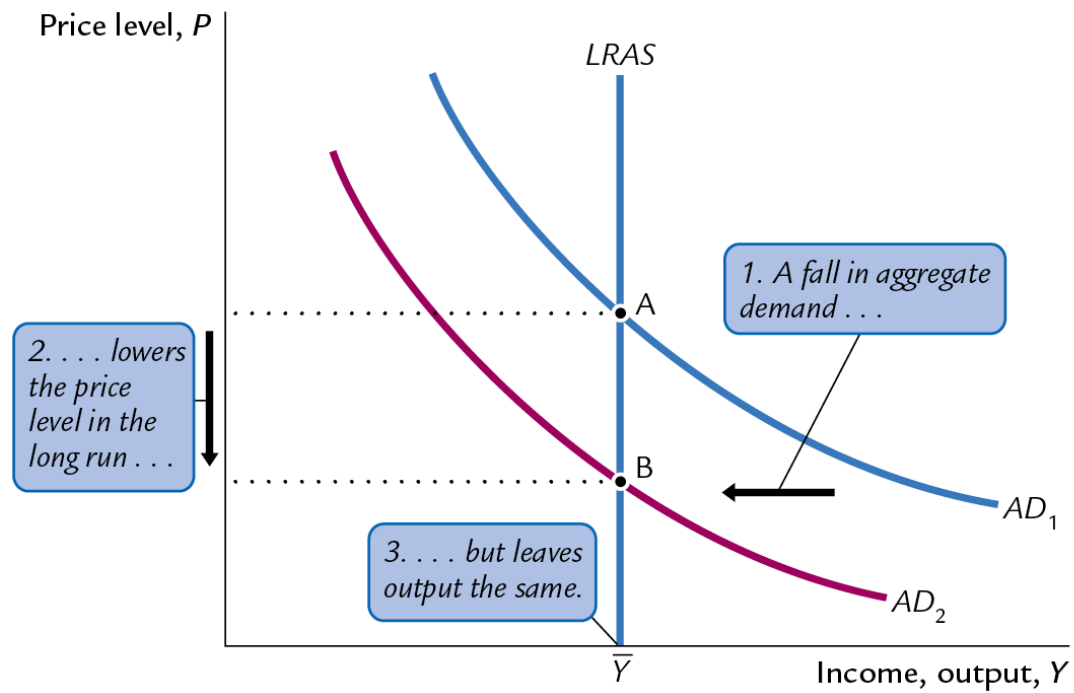
$\bar{Y}$  is the **full-employment** or **natural** level of output, at which the economy's resources are fully employed.

*Full employment => natural rate of unemployment*

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.



# Classical Dichotomy

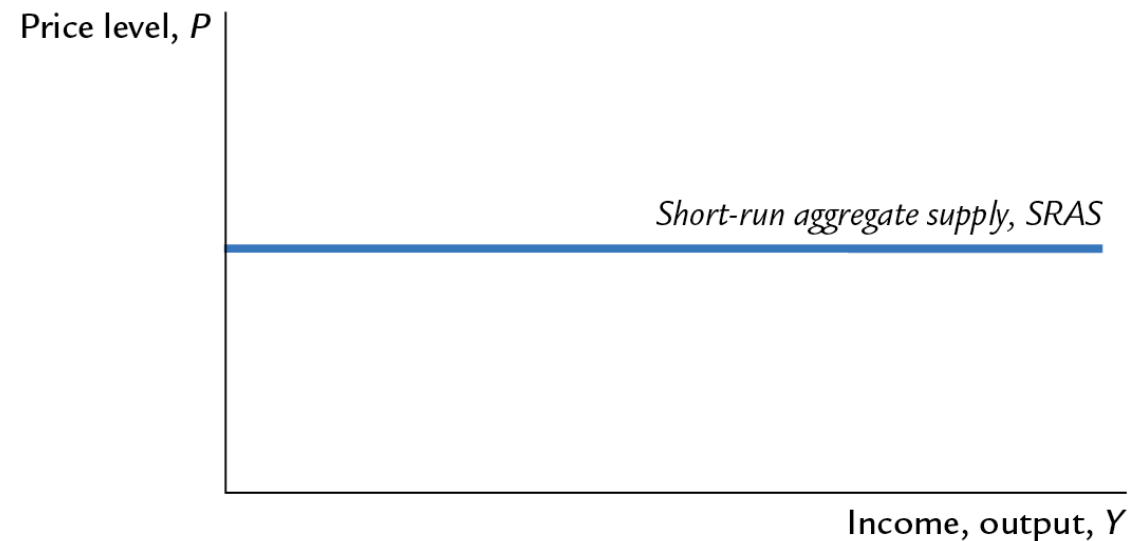


## Aggregate Supply in the short run

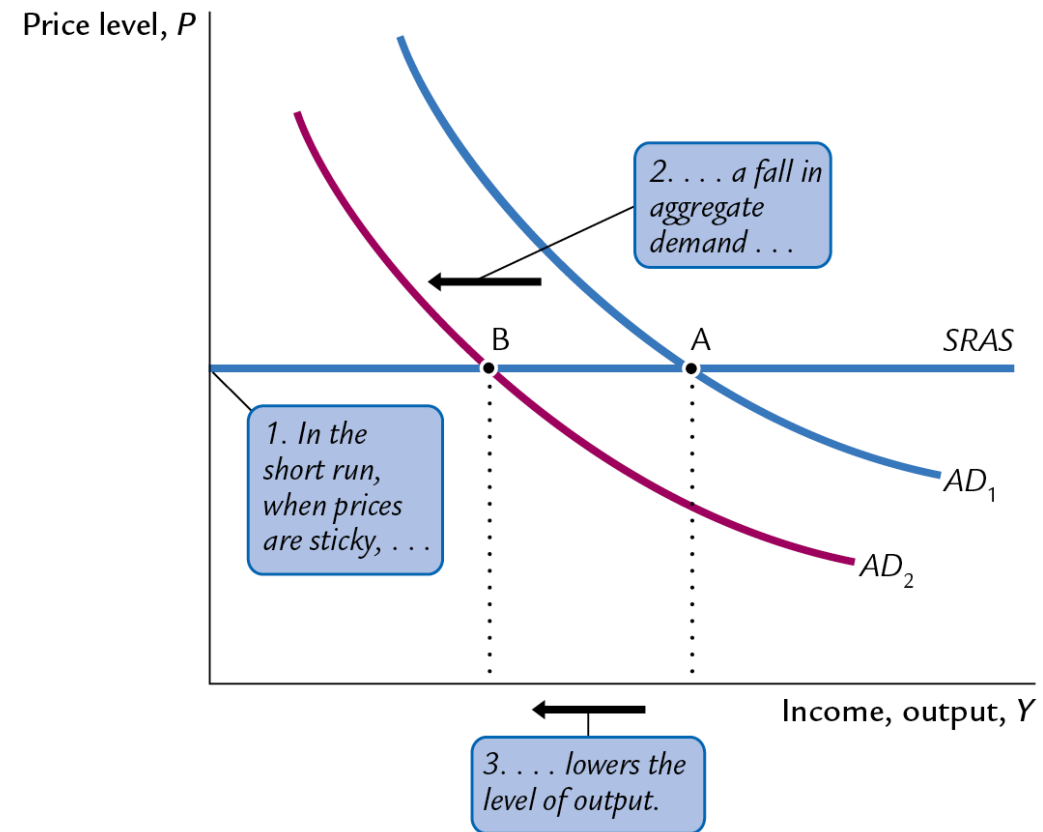
- Many prices are sticky in the short run.
- For now, we assume
  - all prices are stuck at a predetermined level in the short run.
  - firms are willing to sell as much at that price level as their customers are willing to buy.
- Therefore, the short-run aggregate supply (*SRAS*) curve is horizontal.

The *SRAS* curve is horizontal:

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



Starting in initial equilibrium at  $A$ ,  $M$  decreases.  $M$  down causes  $AD$  to shift in. The inward shift causes the economy to move to a new equilibrium at  $B$ , where output falls and price level remains the same.



## From the short run to long run

***In the short - run  
equilibrium, if***

***then over time,  
P will ...***

$$Y > \bar{Y}$$

*rise*

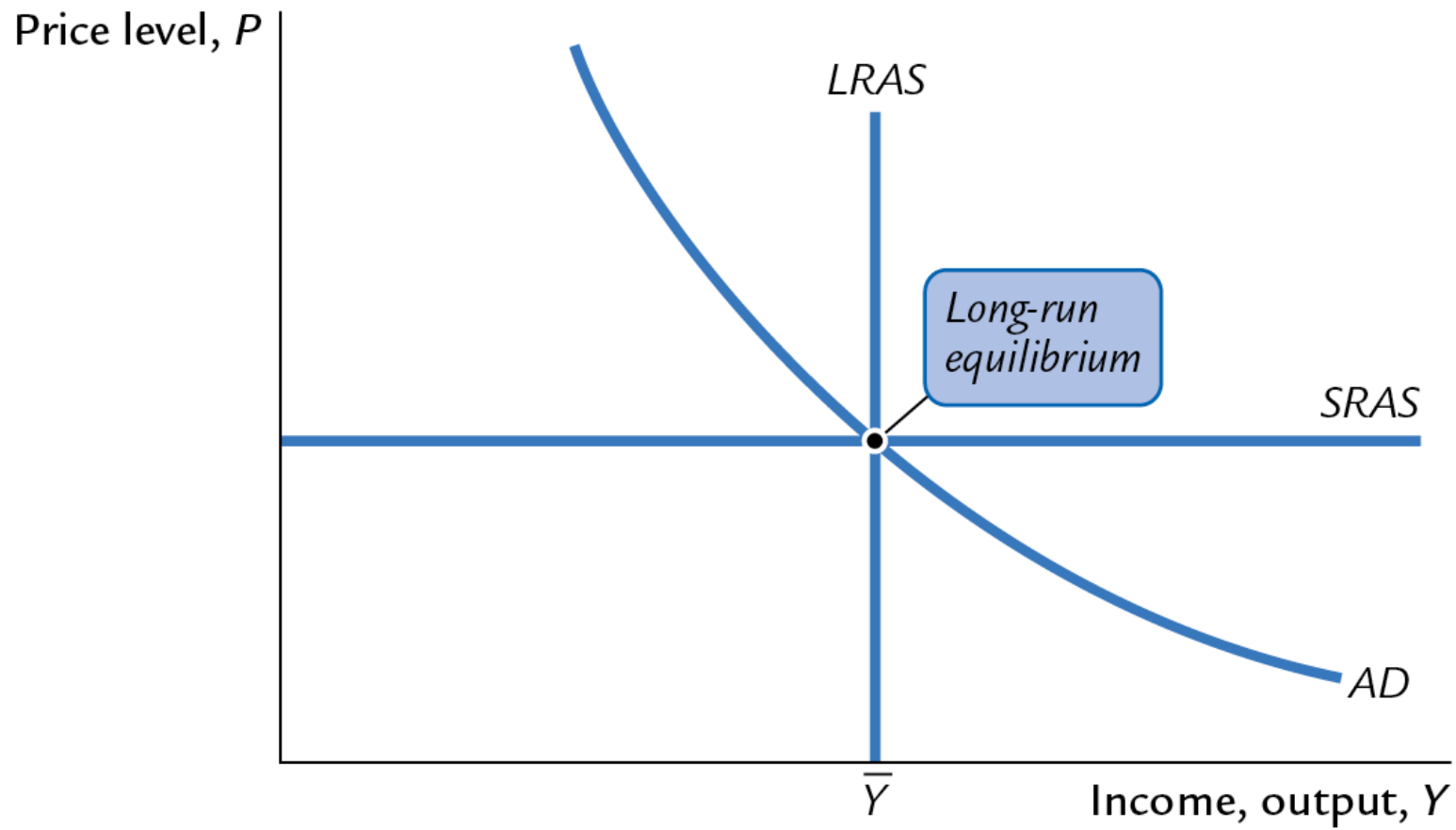
$$Y < \bar{Y}$$

*fall*

$$Y = \bar{Y}$$

*remain constant*

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



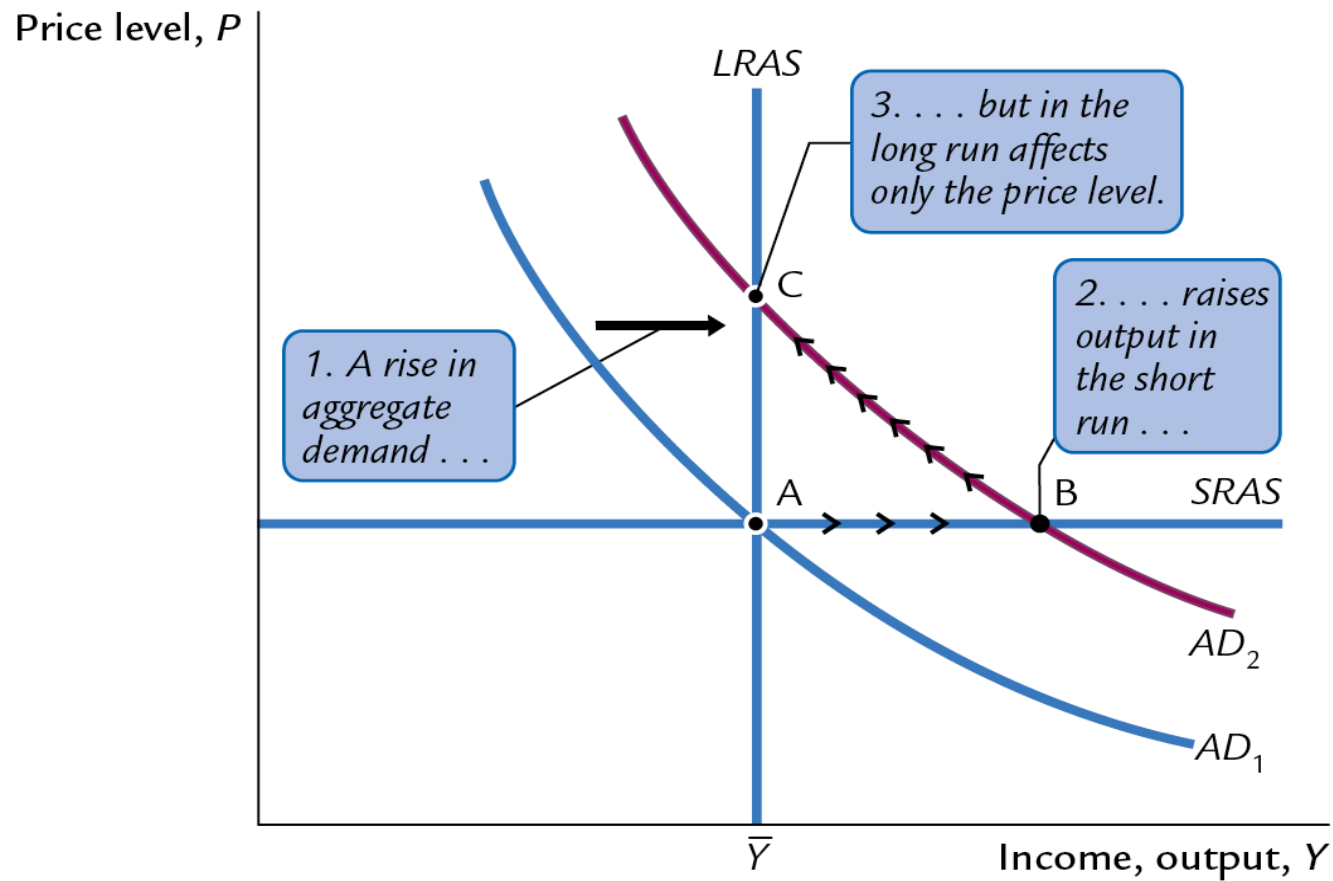
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- **Shocks**: exogenous changes in aggregate supply or demand.
- Shocks temporarily push the economy away from full employment.
- For example: exogenous decrease in velocity

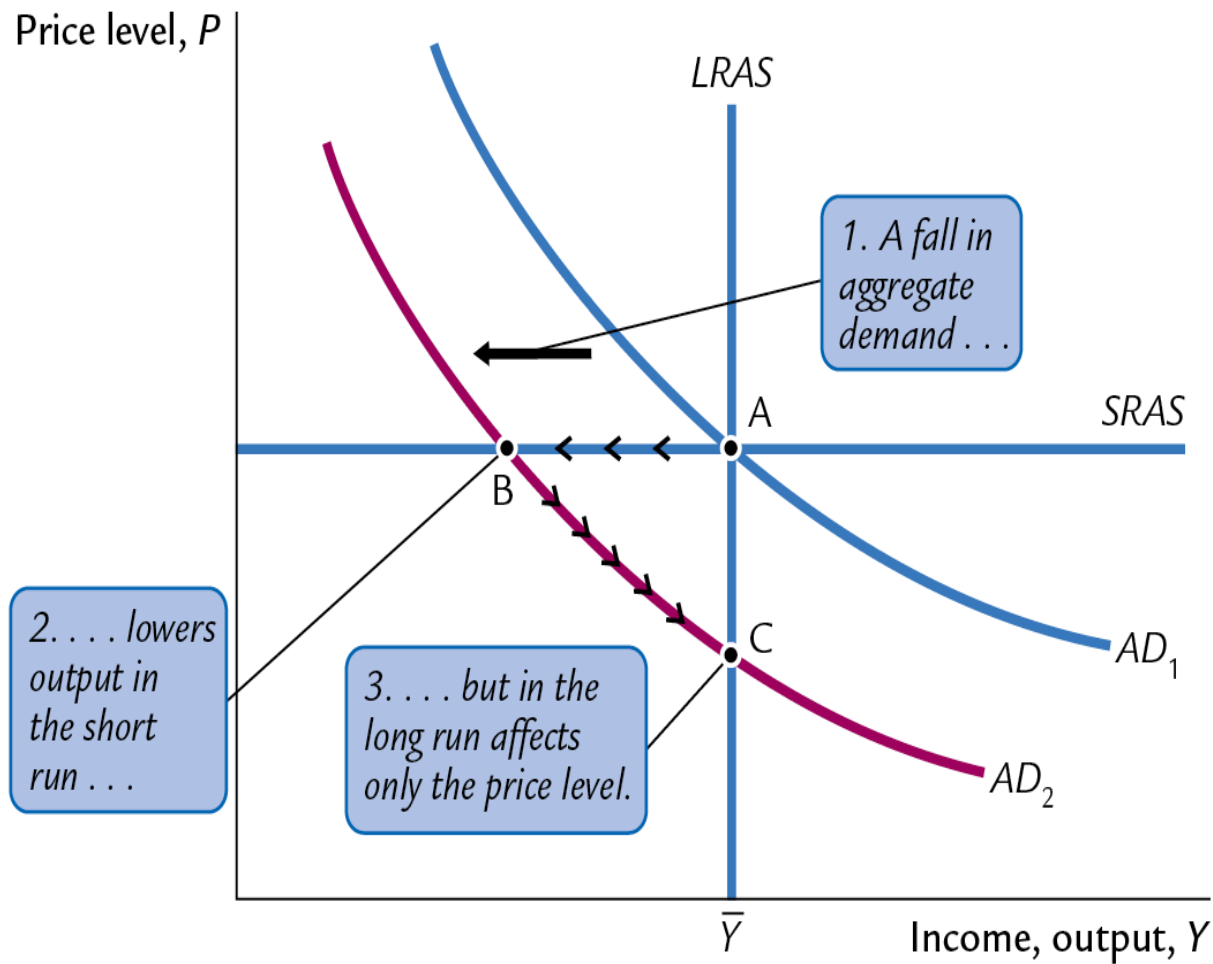
If the money supply is held constant, a decrease in  $V$  means people will be using their money in fewer transactions, causing a decrease in demand for goods and services.

# Demand Shocks



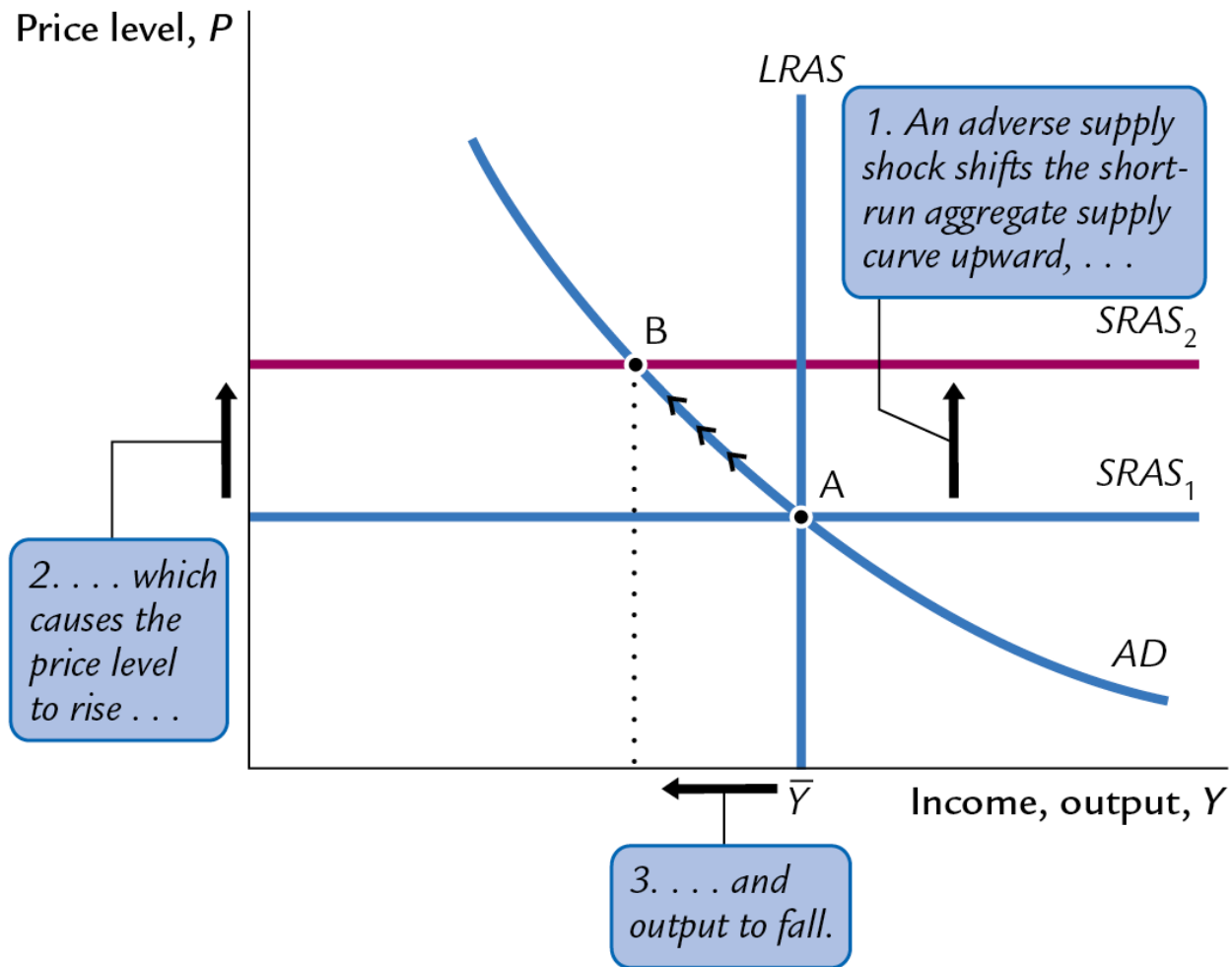
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# Demand Shocks



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- 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 raise the price of oil.
- *Favorable* supply shocks lower costs and prices.



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# Study

Macroeconomics, G. Mankiw

Chapter 11: Introduction to Economic Fluctuations