Aggregate Demand and Aggregate Supply

0

MACROECONOMICS

- National income accounts
- **Aggregate demand and Aggregate Supply**
- Inflation and Unemployment
- Financial, Money and Banking system
- Macroeconomic policies

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In this chapter,
look for the answers to these questions:

- What are economic fluctuations? What are their characteristics?
- How does the model of aggregate demand and aggregate supply explain economic fluctuations?
- Why does the Aggregate-Demand curve slope downward? What shifts the *AD* curve?
- What is the slope of the Aggregate-Supply curve in the short run? In the long run?
  What shifts the *AS* curve(s)?

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Introduction

- Over the long run, real GDP grows about 3% per year on average.
- In the short run, GDP fluctuates around its trend.
  - **Recessions**: periods of falling real incomes and rising unemployment
  - **Depressions**: severe recessions (very rare)
- Short-run economic fluctuations are often called **business cycles**.

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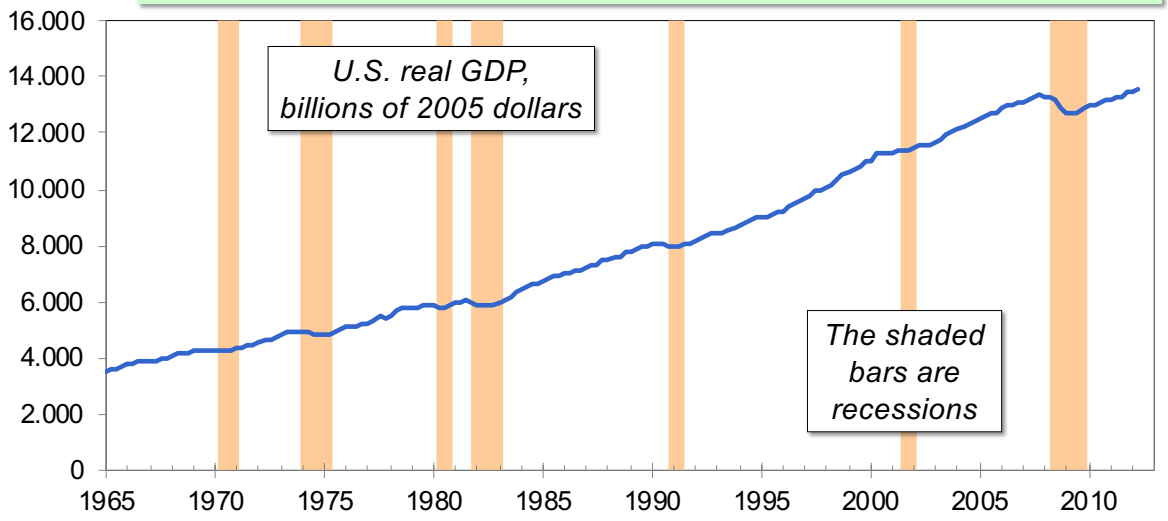
Three Facts About Economic Fluctuations

FACT 1: Economic fluctuations are irregular and unpredictable.



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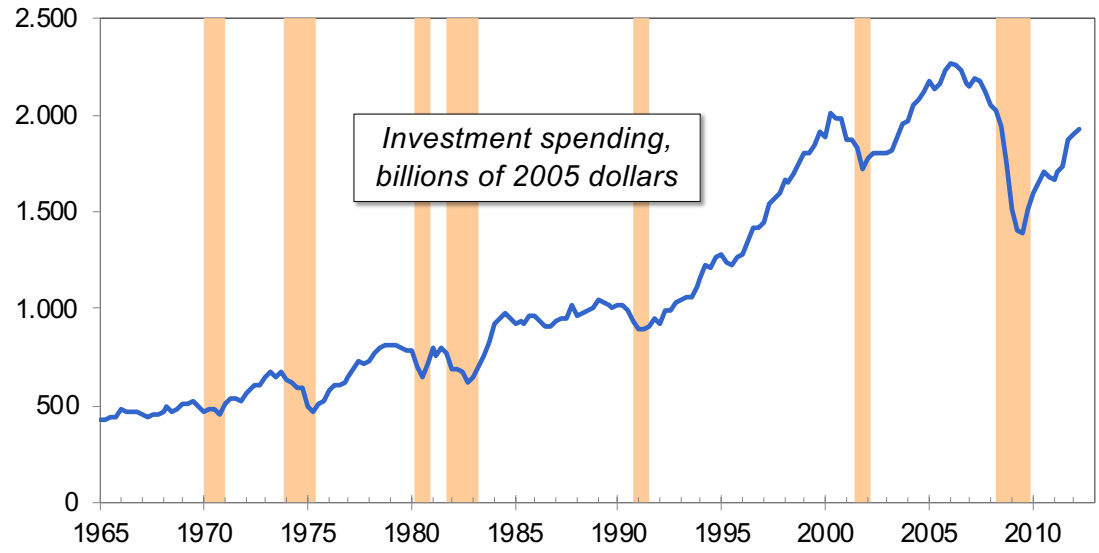
Three Facts About Economic Fluctuations

FACT 2: Most macroeconomic quantities fluctuate together.



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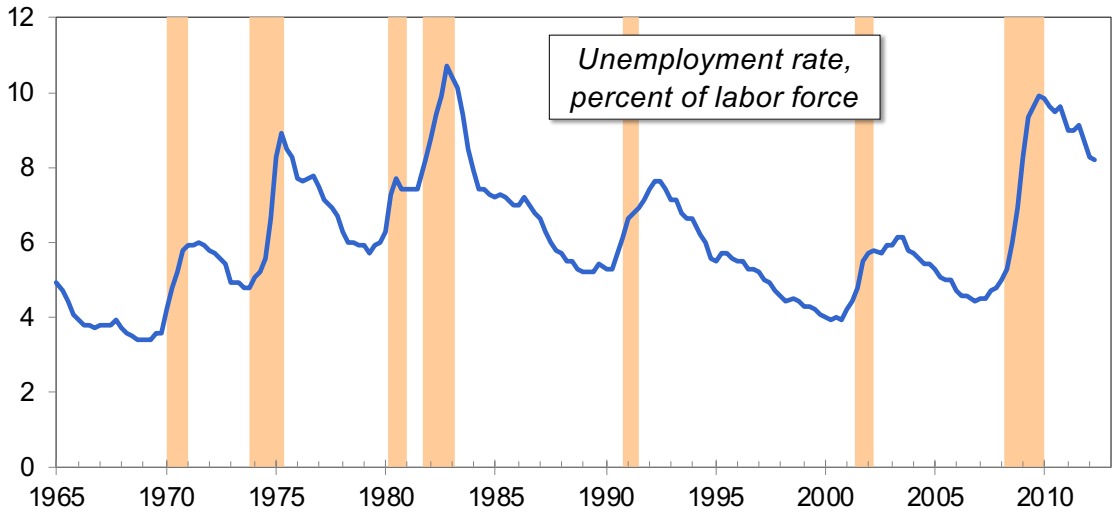
Three Facts About Economic Fluctuations

FACT 3: As output falls, unemployment rises.



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Introduction, *continued*

- Explaining these fluctuations is difficult, and the theory of economic fluctuations is controversial.
- Most economists use the **model of aggregate demand and aggregate supply** to study fluctuations.
- This model differs from the classical economic theories economists use to explain the long run.

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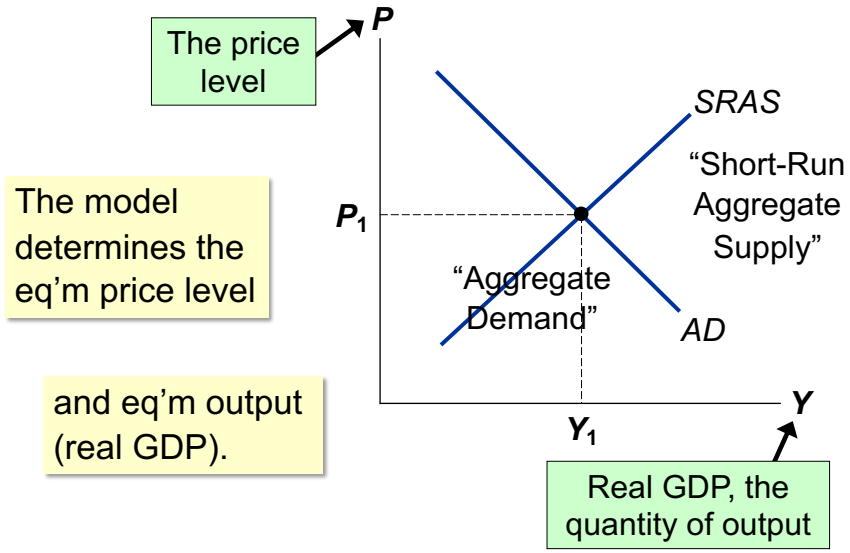
The Model of Aggregate Demand and Aggregate Supply



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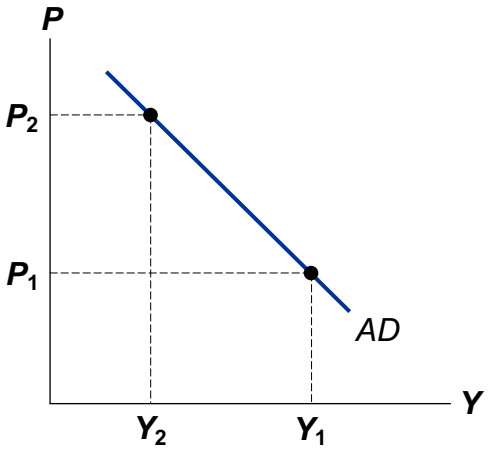
The Aggregate-Demand (*AD*) Curve

The ***AD* curve** shows the quantity of all g&s demanded in the economy at any given price level.



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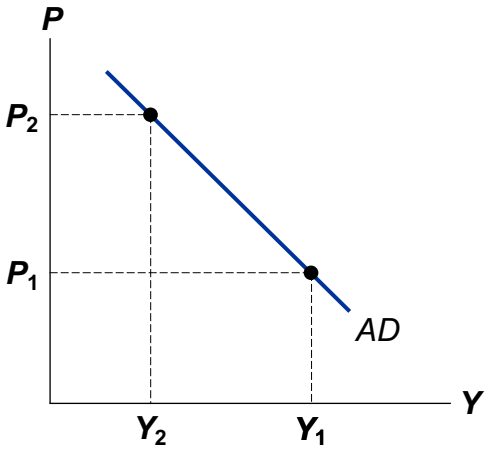
Why the *AD* Curve Slopes Downward

$Y = C + I + G + NX$

Assume ***G*** fixed by govt policy.

To understand the slope of *AD*, must determine how a change in ***P*** affects ***C***, ***I***, and ***NX***.



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The Wealth Effect (*P* and *C*)

Suppose ***P*** rises.

- The dollars people hold buy fewer g&s, so real wealth is lower.
- People feel poorer.

Result: ***C*** falls.

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The Interest-Rate Effect (*P* and *I*)

Suppose ***P*** rises.

- Buying g&s requires more dollars.
- To get these dollars, people sell bonds or other assets.
- This drives up interest rates.

Result: ***I*** falls.
(Recall, ***I*** depends negatively on interest rates.)

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The Exchange-Rate Effect (*P* and *NX*)

Suppose ***P*** rises.

- U.S. interest rates rise (the interest-rate effect).
- Foreign investors desire more U.S. bonds.
- Higher demand for $ in foreign exchange market.
- U.S. exchange rate appreciates.
- U.S. exports more expensive to people abroad, imports cheaper to U.S. residents.

Result: ***NX*** falls.

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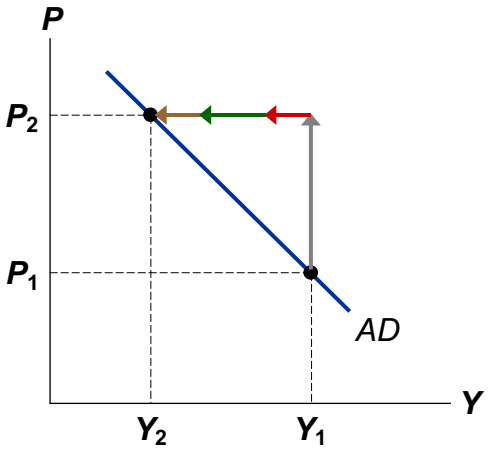
The Slope of the *AD* Curve: Summary

An increase in ***P*** reduces the quantity of g&s demanded because:

- the wealth effect (***C*** falls)
- the interest-rate effect (***I*** falls)
- the exchange-rate effect (***NX*** falls)



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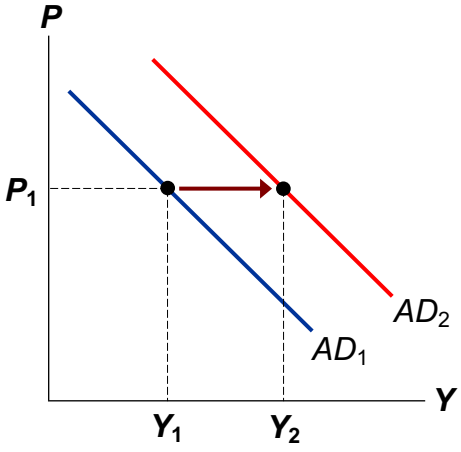
Why the *AD* Curve Might Shift

Any event that changes ***C***, ***I***, ***G***, or ***NX***—except a change in ***P***—will shift the *AD* curve.

Example:
A stock market boom makes households feel wealthier, ***C*** rises, the *AD* curve shifts right.



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Why the *AD* Curve Might Shift

- Changes in ***C***
  - Stock market boom/crash
  - Preferences re: consumption/saving tradeoff
  - Tax hikes/cuts
- Changes in ***I***
  - Firms buy new computers, equipment, factories
  - Expectations, optimism/pessimism
  - Interest rates, monetary policy
  - Investment Tax Credit or other tax incentives

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Why the *AD* Curve Might Shift

- Changes in ***G***
  - Federal spending, e.g., defense
  - State & local spending, e.g., roads, schools
- Changes in ***NX***
  - Booms/recessions in countries that buy our exports
  - Appreciation/depreciation resulting from international speculation in foreign exchange market

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ACTIVE LEARNING 1

The Aggregate-Demand curve

What happens to the *AD* curve in each of the following scenarios?

A. A ten-year-old investment tax credit expires.

B. The U.S. exchange rate falls.

C. A fall in prices increases the real value of consumers' wealth.

D. State governments replace their sales taxes with new taxes on interest, dividends, and capital gains.

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ACTIVE LEARNING 1

Answers

A. A ten-year-old investment tax credit expires.
I falls, *AD* curve shifts left.

B. The U.S. exchange rate falls.
NX rises, *AD* curve shifts right.

C. A fall in prices increases the real value of consumers' wealth.
Move down along *AD* curve (wealth-effect).

D. State governments replace sales taxes with new taxes on interest, dividends, and capital gains.
C rises, *AD* shifts right.

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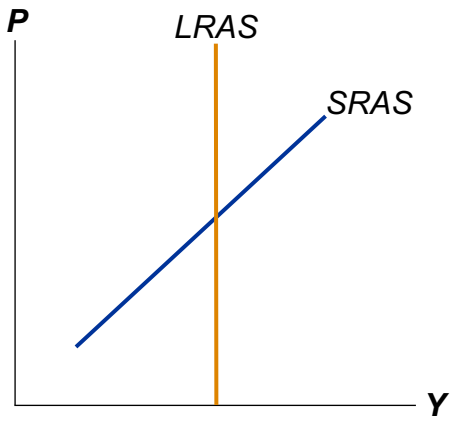
The Aggregate-Supply (*AS*) Curves

The ***AS* curve** shows the total quantity of g&s firms produce and sell at any given price level.

AS is:

- upward-sloping in short run
- vertical in long run



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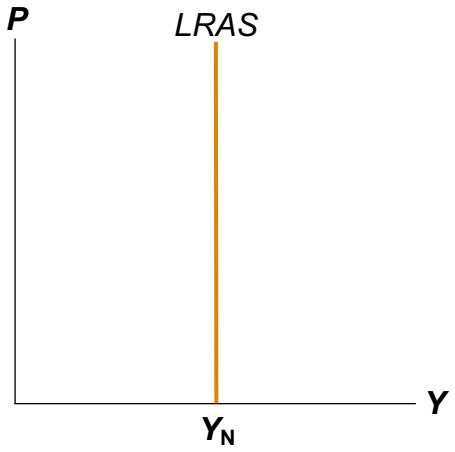
The Long-Run Aggregate-Supply Curve (*LRAS*)

The **natural rate of output** (Y_N) is the amount of output the economy produces when unemployment is at its natural rate.

Y_N is also called **potential output** or **full-employment output**.



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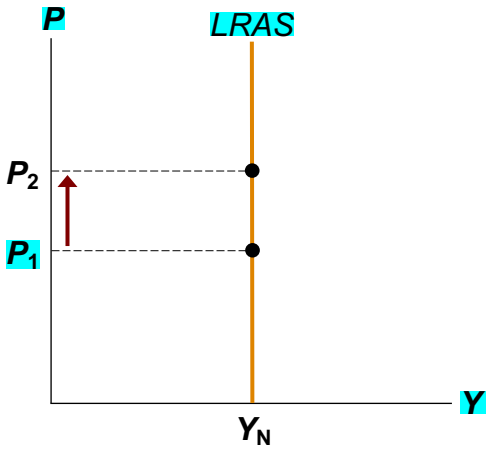
Why *LRAS* Is Vertical

Y_N determined by the economy's stocks of labor, capital, and natural resources, and on the level of technology.

An increase in ***P*** does not affect any of these, so it does not affect Y_N.

(Classical dichotomy)



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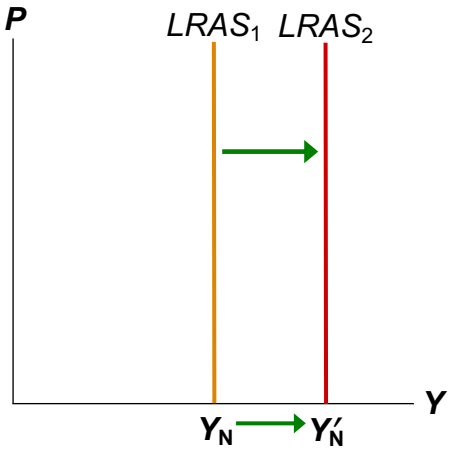
Why the *LRAS* Curve Might Shift

Any event that changes any of the determinants of Y_N will shift *LRAS*.

Example:
Immigration increases ***L***, causing Y_N to rise.



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Why the *LRAS* Curve Might Shift

- Changes in ***L*** or natural rate of unemployment
  - Immigration
  - Baby-boomers retire
  - Govt policies reduce natural u-rate
- Changes in ***K*** or ***H***
  - Investment in factories, equipment
  - More people get college degrees
  - Factories destroyed by a hurricane

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Why the *LRAS* Curve Might Shift

- Changes in natural resources
  - Discovery of new mineral deposits
  - Reduction in supply of imported oil
  - Changing weather patterns that affect agricultural production
- Changes in technology
  - Productivity improvements from technological progress

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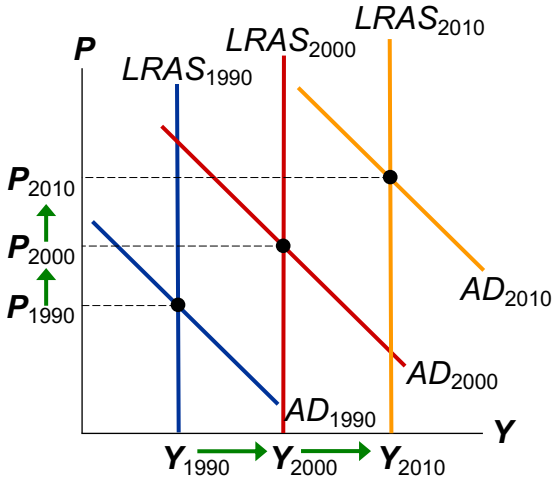
Using *AD* & *AS* to Depict Long-Run Growth and Inflation

Over the long run, tech. progress shifts *LRAS* to the right

and growth in the money supply shifts *AD* to the right.

Result: ongoing inflation and growth in output.



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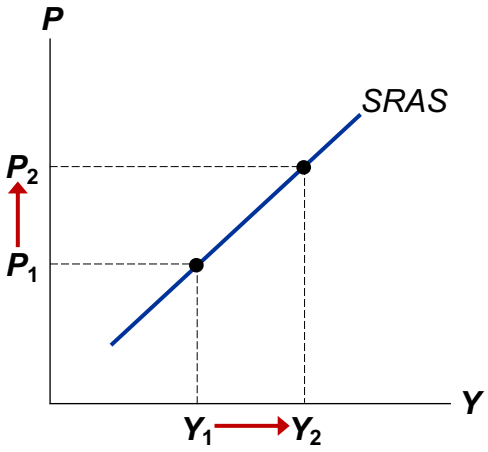
Short Run Aggregate Supply (*SRAS*)

The *SRAS* curve is upward sloping:

Over the period of 1–2 years, an increase in ***P*** causes an increase in the quantity of g & s supplied.



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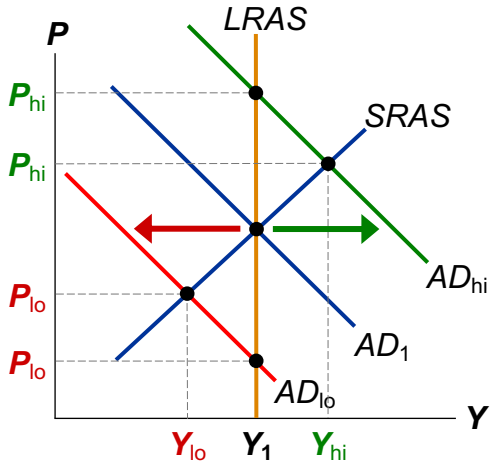
Why the Slope of *SRAS* Matters

If *AS* is vertical, fluctuations in *AD* do not cause fluctuations in output or employment.

If *AS* slopes up, then shifts in *AD* do affect output and employment.



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Three Theories of *SRAS*

In each,

- some type of market imperfection
- result:
  Output deviates from its natural rate when the actual price level deviates from the price level people expected.

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1. The Sticky-Wage Theory

lương không thay đổi trong short-run
thay vì giảm lương thì sa thải

- Imperfection:
  Nominal wages are **sticky** in the short run,
  they adjust sluggishly.
  - Due to labor contracts, social norms
- Firms and workers set the nominal wage in advance based on $\boldsymbol{P_E}$,
  the price level they expect to prevail.

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1. The Sticky-Wage Theory

- If $\boldsymbol{P} > \boldsymbol{P_E}$,
  revenue is higher, but labor cost is not.
  Production is more profitable,
  so firms increase output and employment.
- Hence, higher $\boldsymbol{P}$ causes higher $\boldsymbol{Y}$,
  so the ***SRAS curve slopes upward***.

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2. The Sticky-Price Theory

tốn thời gian đổi giá và đổi nhãn

- Imperfection:
  Many prices are sticky in the short run.
  - Due to **menu costs**, the costs of adjusting prices.
  - Examples: cost of printing new menus,
    the time required to change price tags
- Firms set sticky prices in advance based on P_E.

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2. The Sticky-Price Theory

- Suppose the Fed increases the money supply unexpectedly. In the long run, ***P*** will rise.
- In the short run, firms without menu costs can raise their prices immediately.
- Firms with menu costs wait to raise prices. Meanwhile, their prices are relatively low,
  which increases demand for their products,
  so they increase output and employment.
- Hence, higher ***P*** is associated with higher ***Y***,
  so the ***SRAS curve slopes upward***.

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3. The Misperceptions Theory

giá sản phẩm mình tăng nhưng tất cả mọi thứ cùng tăng

- Imperfection:
  Firms may confuse changes in ***P*** with changes in the relative price of the products they sell.
- If ***P*** rises above P_E, a firm sees its price rise before realizing all prices are rising.
  The firm may believe its *relative* price is rising, and may increase output and employment.
- So, an increase in ***P*** can cause an increase in ***Y***, making the ***SRAS curve upward-sloping.***

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What the 3 Theories Have in Common:

In all 3 theories, ***Y*** deviates from Y_N when ***P*** deviates from P_E.

$$Y = Y_N + a(P - P_E)$$

- Output
- Natural rate of output (long-run)
- $a > 0$, measures how much ***Y*** responds to unexpected changes in ***P***
- Actual price level
- Expected price level

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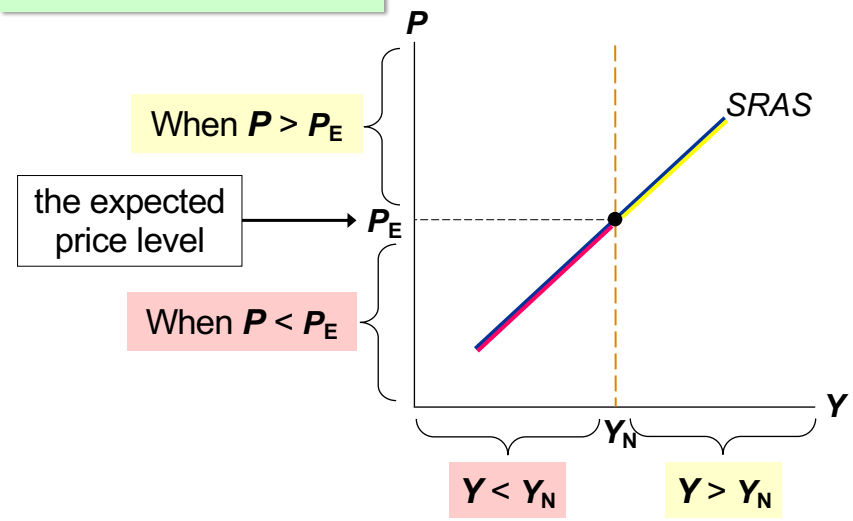
What the 3 Theories Have in Common:

$$Y = Y_N + a(P - P_E)$$



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SRAS and *LRAS*

- The imperfections in these theories are temporary. Over time,
  - sticky wages and prices become flexible
  - misperceptions are corrected
- In the LR,
  - $P_E = P$
  - *AS* curve is vertical

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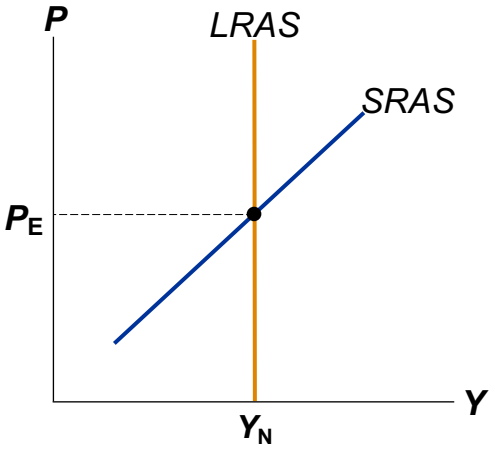
SRAS and *LRAS*

$$Y = Y_N + a(P - P_E)$$

In the long run,
$P_E = P$
and
$Y = Y_N$.



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Why the *SRAS* Curve Might Shift

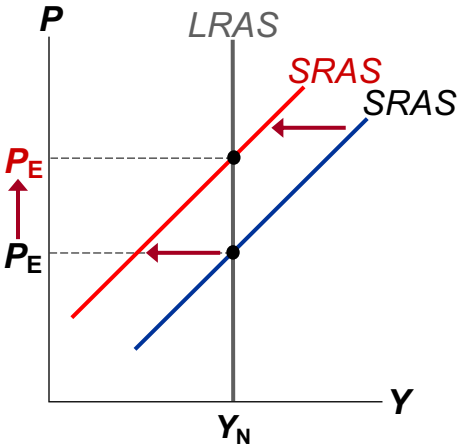
Everything that shifts *LRAS* shifts *SRAS*, too.

Also, P_E shifts *SRAS*:

If P_E rises, workers & firms set higher wages.

Pe tăng --> lương tăng

At each P, production is less profitable, Y falls, *SRAS* shifts left.



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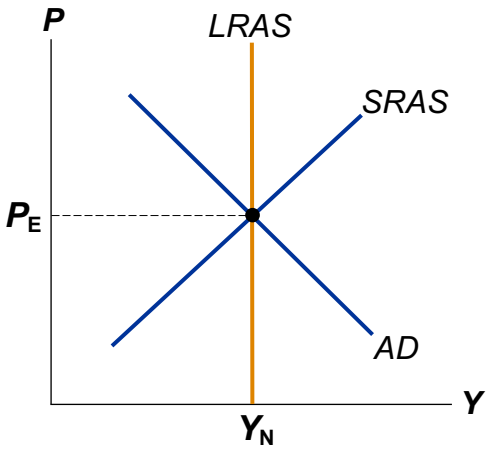
The Long-Run Equilibrium

In the long-run equilibrium,

$P_E = P$,

$Y = Y_N$,

and unemployment is at its natural rate.



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Economic Fluctuations

- Caused by events that shift the *AD* and/or *AS* curves.
- Four steps to analyzing economic fluctuations:
  1. Determine whether the event shifts *AD* or *AS*.
  2. Determine whether curve shifts left or right.
  3. Use *AD–AS* diagram to see how the shift changes ***Y*** and ***P*** in the short run.
  4. Use *AD–AS* diagram to see how economy moves from new SR eq'm to new LR eq'm.

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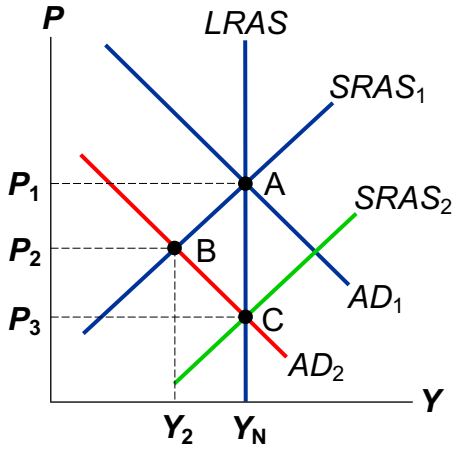
The Effects of a Shift in *AD*

Event: Stock market crash

1. Affects ***C***, *AD* curve
2. ***C*** falls, so *AD* shifts left
3. SR eq'm at B.
   P and ***Y*** lower,
   unemp higher
4. Over time, $\boldsymbol{P_E}$ falls,
   SRAS shifts right,
   until LR eq'm at C.
   Y and unemp back
   at initial levels.



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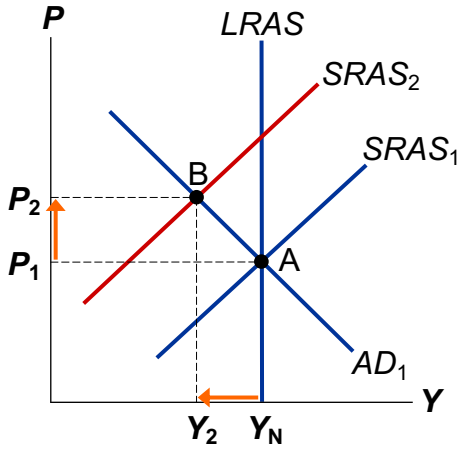
The Effects of a Shift in *SRAS*

Event: Oil prices rise

1. Increases costs,
   shifts *SRAS*
   (assume LRAS constant)
2. *SRAS* shifts left
3. SR eq'm at point B.
   P higher, ***Y*** lower,
   unemp higher

   From A to B, **stagflation**,
   a period of
   falling output
   and rising prices.



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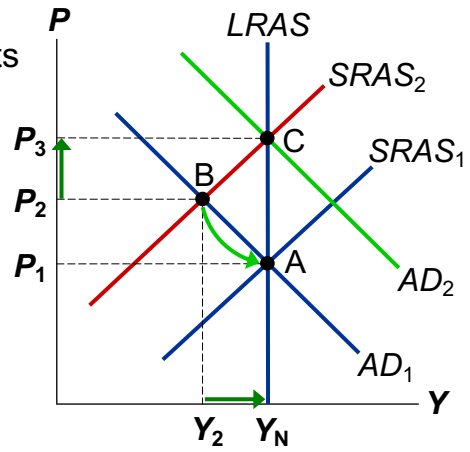
Accommodating an Adverse Shift in *SRAS*

If policymakers do nothing,

4. Low employment causes wages to fall, *SRAS* shifts right, until LR eq'm at A.

Or, policymakers could use fiscal or monetary policy to increase *AD* and accommodate the *AS* shift:
Y back to Y_N, but
P permanently higher.



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SUMMARY

- Short-run fluctuations in GDP and other macroeconomic quantities are irregular and unpredictable. Recessions are periods of falling real GDP and rising unemployment.
- Economists analyze fluctuations using the model of aggregate demand and aggregate supply.
- The aggregate demand curve slopes downward because a change in the price level has a wealth effect on consumption, an interest-rate effect on investment, and an exchange-rate effect on net exports.

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SUMMARY

- Anything that changes ***C***, ***I***, ***G***, or ***NX***—except a change in the price level—will shift the aggregate demand curve.
- The long-run aggregate supply curve is vertical because changes in the price level do not affect output in the long run.
- In the long run, output is determined by labor, capital, natural resources, and technology; changes in any of these will shift the long-run aggregate supply curve.

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SUMMARY

- In the short run, output deviates from its natural rate when the price level is different than expected, leading to an upward-sloping short-run aggregate supply curve. The three theories proposed to explain this upward slope are the sticky wage theory, the sticky price theory, and the misperceptions theory.
- The short-run aggregate-supply curve shifts in response to changes in the expected price level and to anything that shifts the long-run aggregate supply curve.

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SUMMARY

- Economic fluctuations are caused by shifts in aggregate demand and aggregate supply.
- When aggregate demand falls, output and the price level fall in the short run. Over time, a change in expectations causes wages, prices, and perceptions to adjust, and the short-run aggregate supply curve shifts rightward.
- In the long run, the economy returns to the natural rates of output and unemployment, but with a lower price level. A fall in aggregate supply results in stagflation—falling output and rising prices. Wages, prices, and perceptions adjust over time, and the economy recovers.

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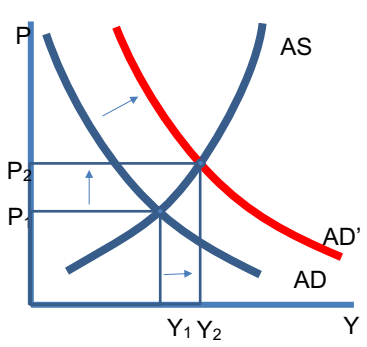

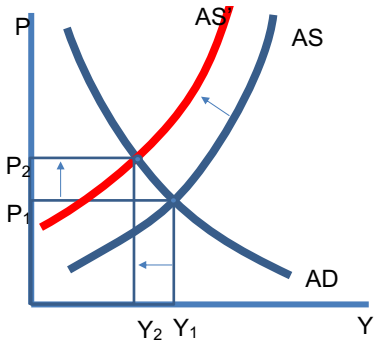

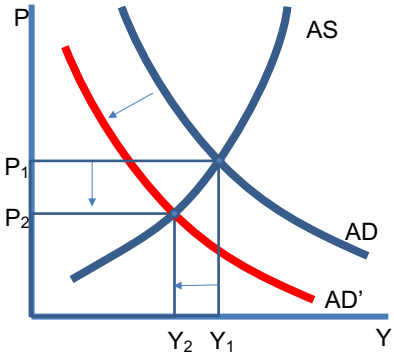

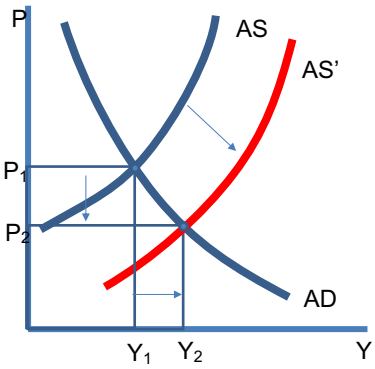

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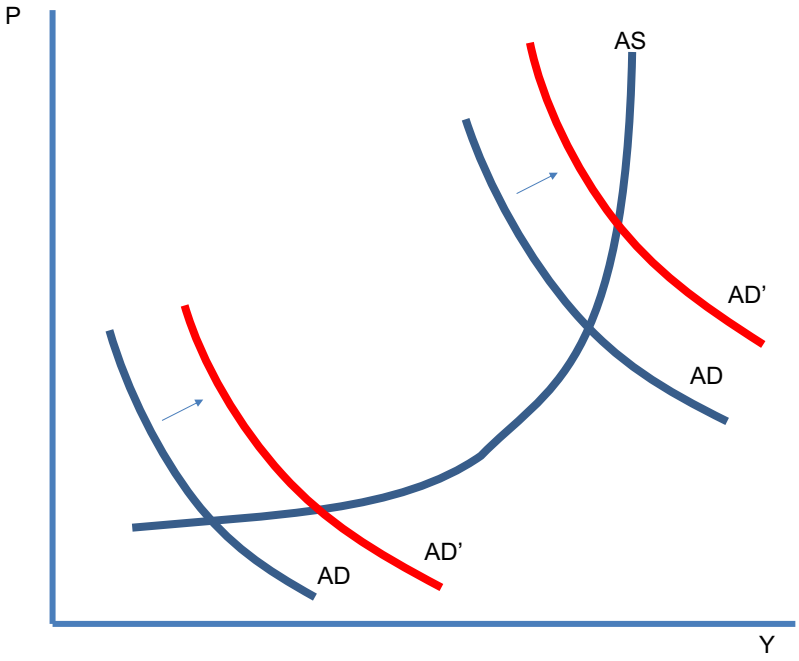

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