

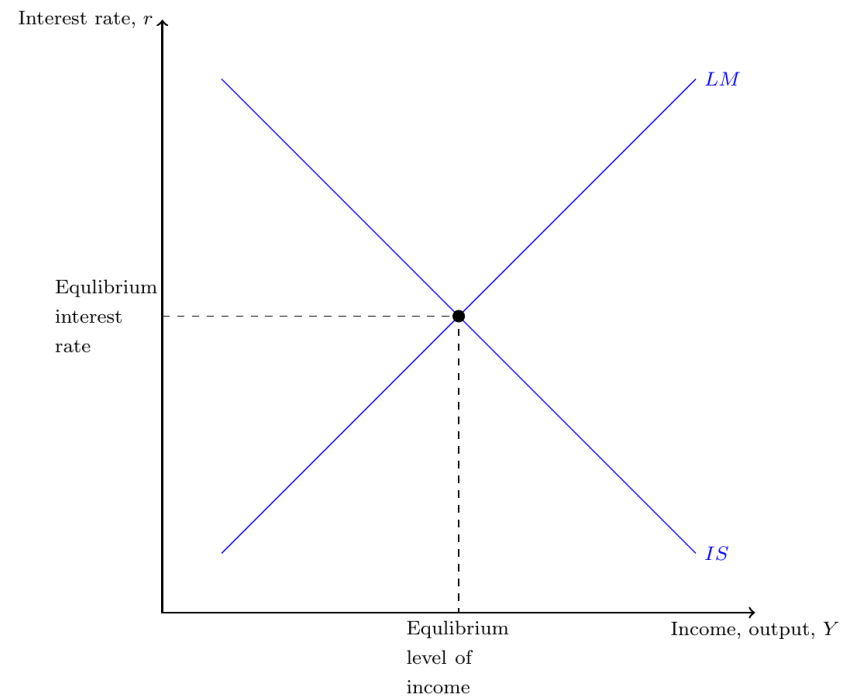
Macroeconomic Theory I

Aggregate Demand II

The Plan

- How to use the *IS–LM* model to analyze the effects of shocks, fiscal policy, and monetary policy
- How to derive the aggregate demand curve from the *IS–LM* model
- Several theories about what caused the Great Depression

The Equilibrium in the IS-LM Model

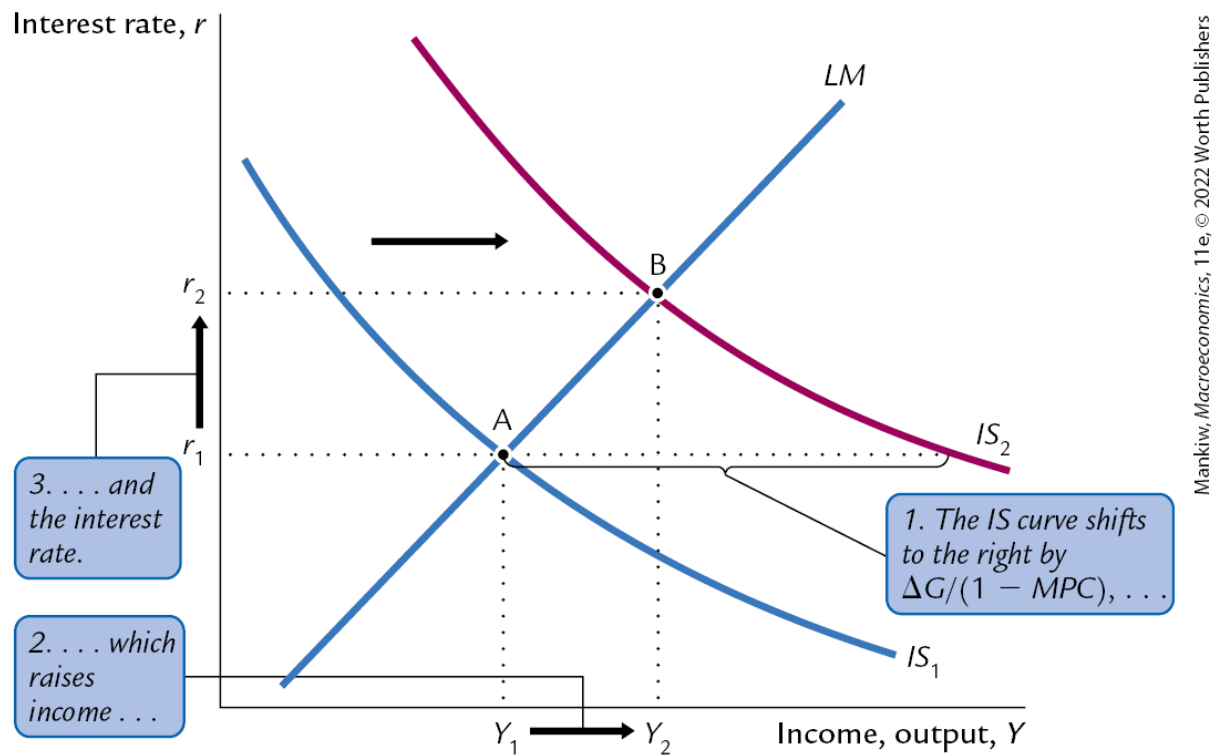


Analyzing Policy Effects

We can use the *IS–LM* model to analyze the effects of

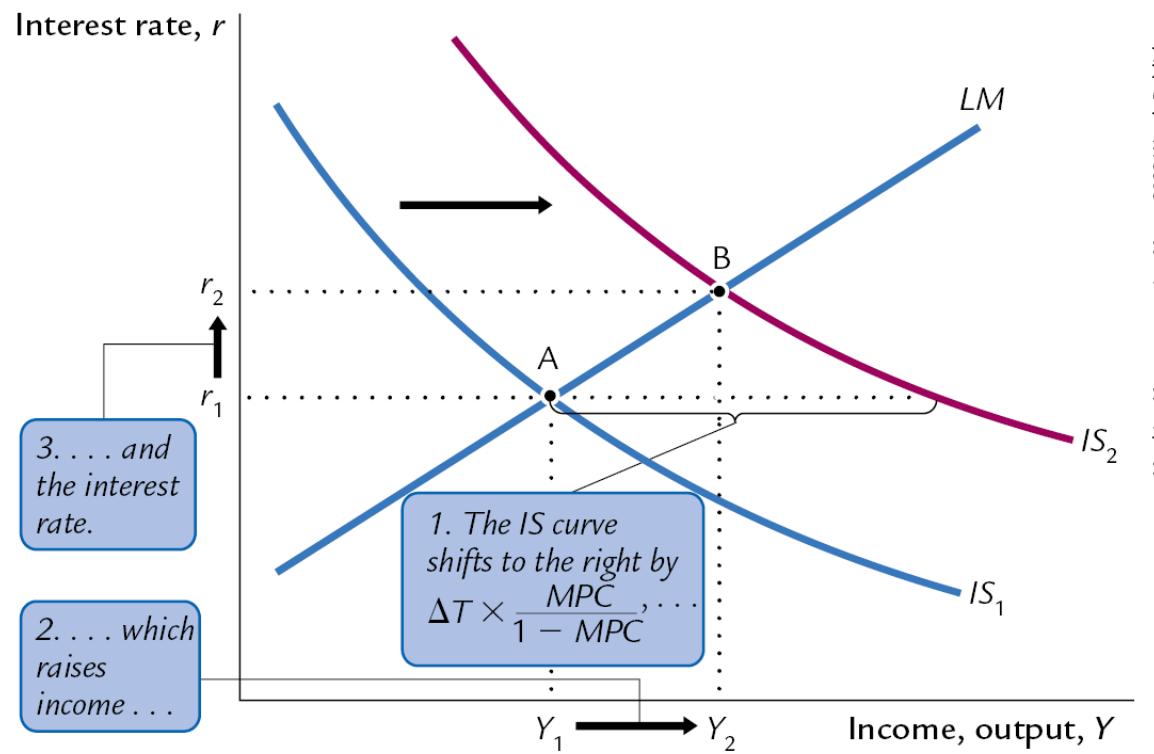
- fiscal policy: ΔG and/or ΔT
- monetary policy: ΔM

An Increase in Government Purchases

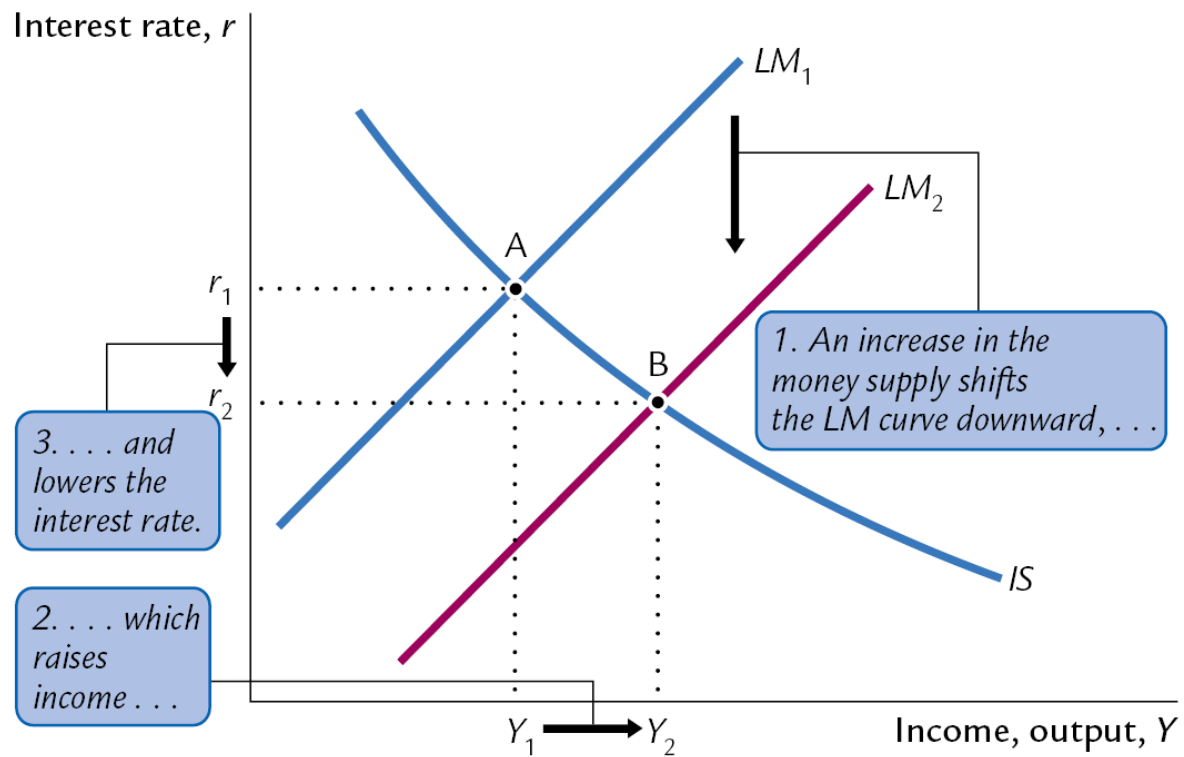


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A Tax Cut



Monetary Policy



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Interaction between Monetary and Fiscal Policy

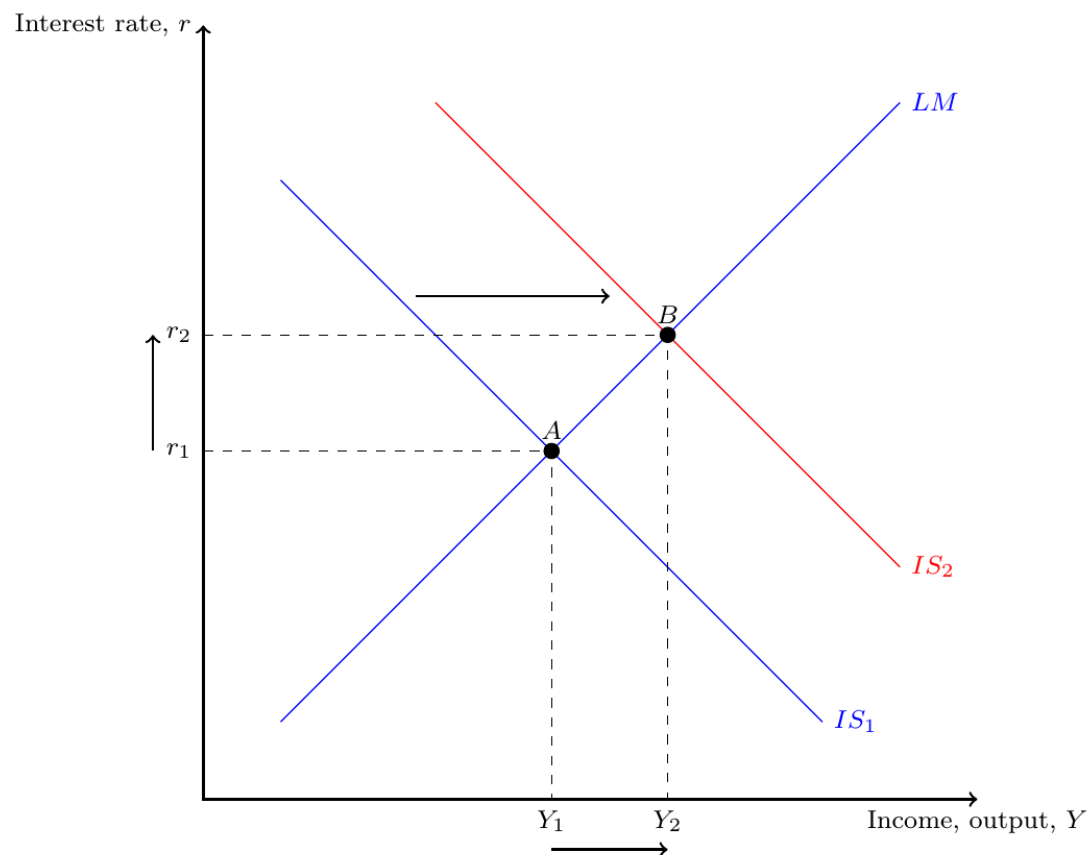
- Model:
 - Monetary and fiscal policy variables (M , G , and T) are exogenous.
- Real world:
 - Monetary policymakers may adjust M in response to changes in fiscal policy or vice versa.
 - Such interactions may alter the impact of the original policy change.

The CB's response to $\Delta G > 0$

- Suppose Government increases **G**.
- Possible CB responses:
 1. Hold **M** constant
 2. Hold **r** constant
 3. Hold **Y** constant
- In each case, the effects of ΔG are different . . .

Response 1: Hold M constant

An increase in G shifts the IS curve out.
The CB holds the money supply constant, and therefore, the LM curve stays the same.
Both income and the interest rate rise.

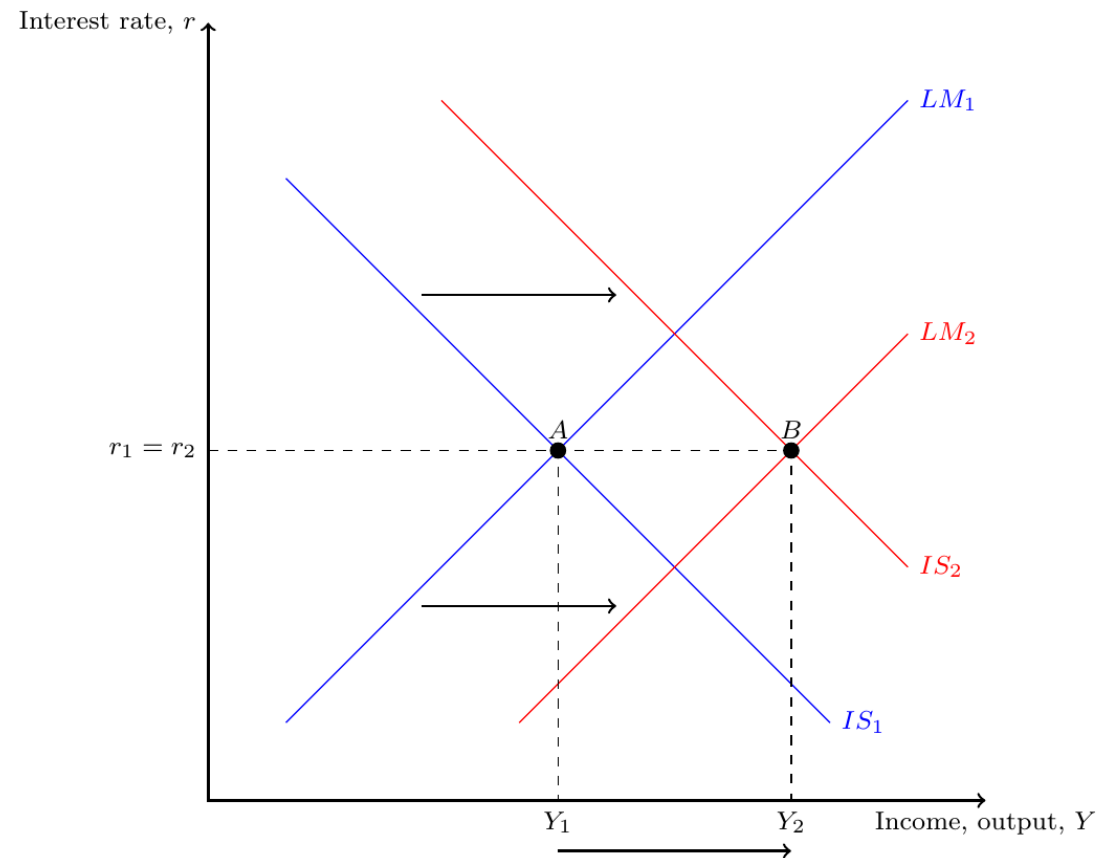


Response 2: Hold r constant

An increase in G shifts the IS curve out.

To keep r constant, the CB then increases the money supply.

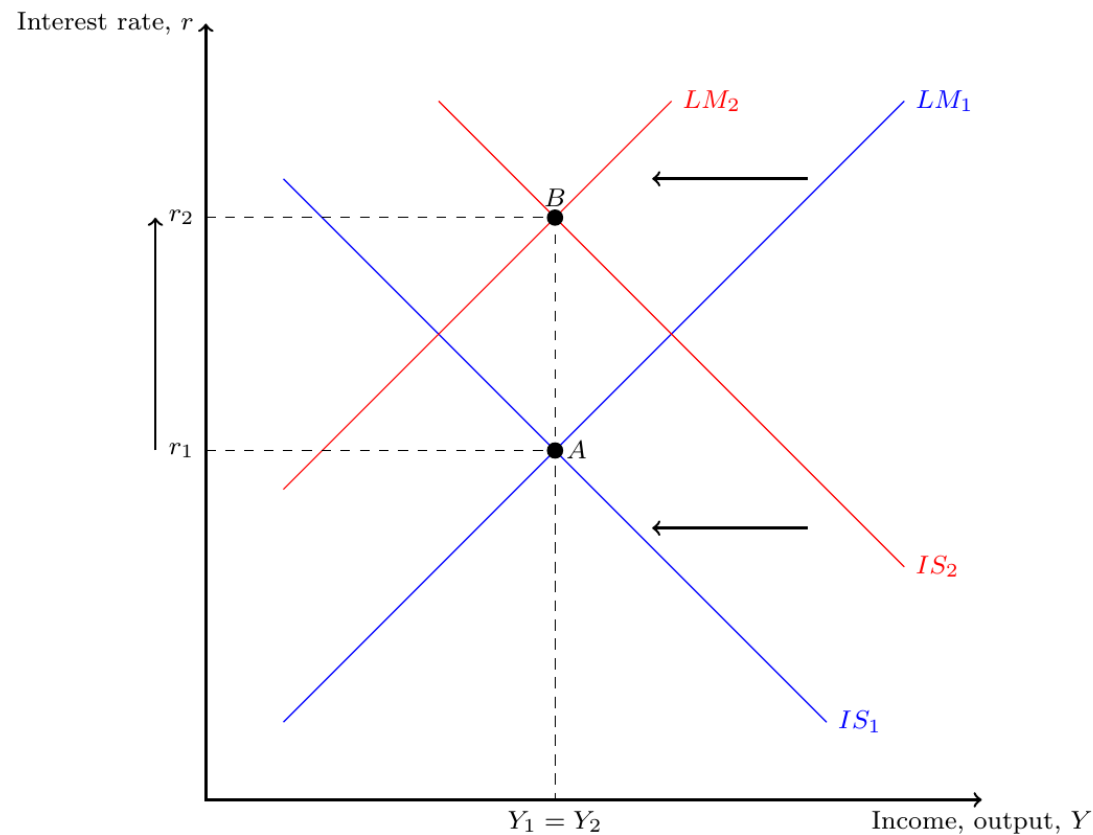
Income increases by more than if the CB held M constant.



Response 3: Hold Y constant

An increase in G shifts the IS curve out.

To keep Y constant, the CB then decreases the money supply.



Shocks in the IS–LM model

IS shocks: exogenous changes in the demand for goods and services

For example:

- stock market boom or crash
→ change in households' wealth
→ ΔC
- change in business or consumer confidence or expectations
→ ΔI and/or ΔC

LM shocks: exogenous changes in the demand for money

For example:

- During Covid-19, consumers and companies did not wish to handle cash and switched to more cashless methods of payments.
- More ATMs or the internet reduce money demand.

CASE STUDY: The U.S. recession of 2001

Causes: 1) Stock market decline $\rightarrow \Delta C$

- S&P 500 fell from 1500 in August 2000 to 1150 in December 2001

Causes: 2) 9/11

- increased uncertainty
- fall in consumer and business confidence
- result: lower spending, *IS* curve shifted left

Causes: 3) Corporate accounting scandals

- Enron, WorldCom, etc.
- reduced stock prices, discouraged investment

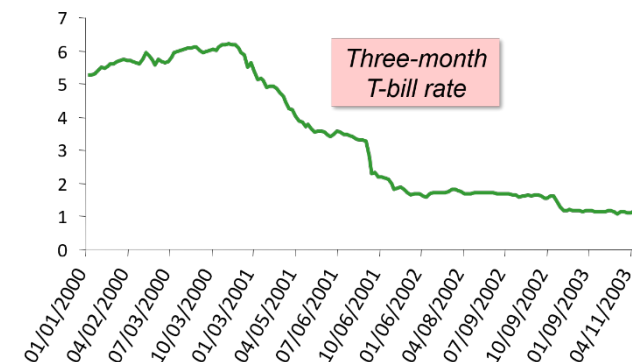
CASE STUDY: The U.S. recession of 2001

Fiscal policy response: shifted IS curve right

- tax cuts in 2001 and 2003
- spending increases
 - airline industry bailout
 - NYC reconstruction
 - Afghanistan war

Monetary policy response: shifted LM curve right

- Open market operations



CASE STUDY: The U.S. recession of 2001

What is the Fed's policy instrument?

- The news media commonly report the Fed's policy changes as interest rate changes, as if the Fed has direct control over market interest rates.
- In fact, the Fed **targets** the *federal funds rate*—the interest rate banks charge one another on overnight loans.
- The Fed changes the money supply and shifts the *LM* curve to achieve its target.
- Other short-term rates typically move with the federal funds rate.

CASE STUDY: The U.S. recession of 2001

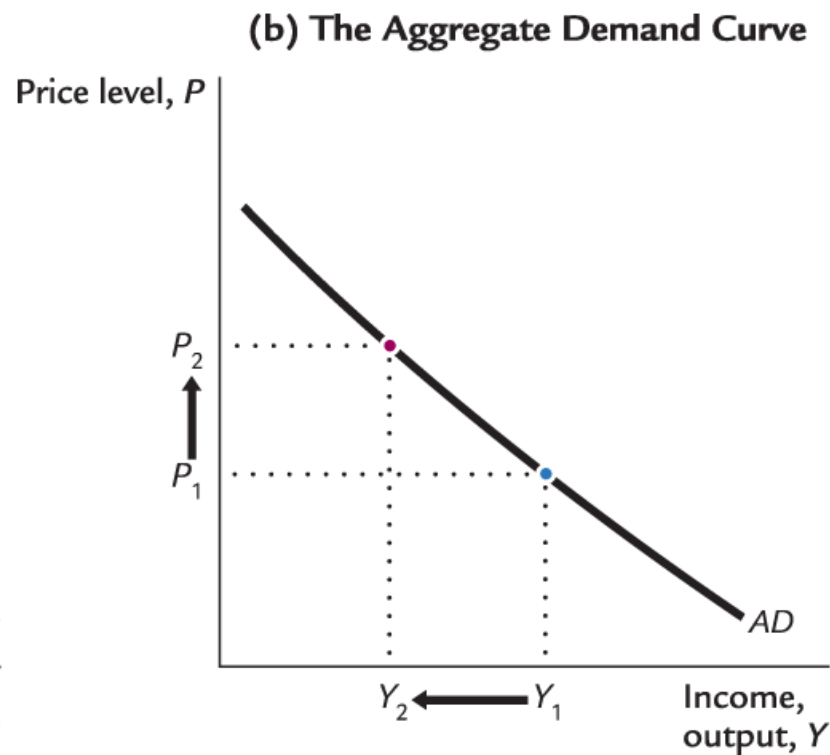
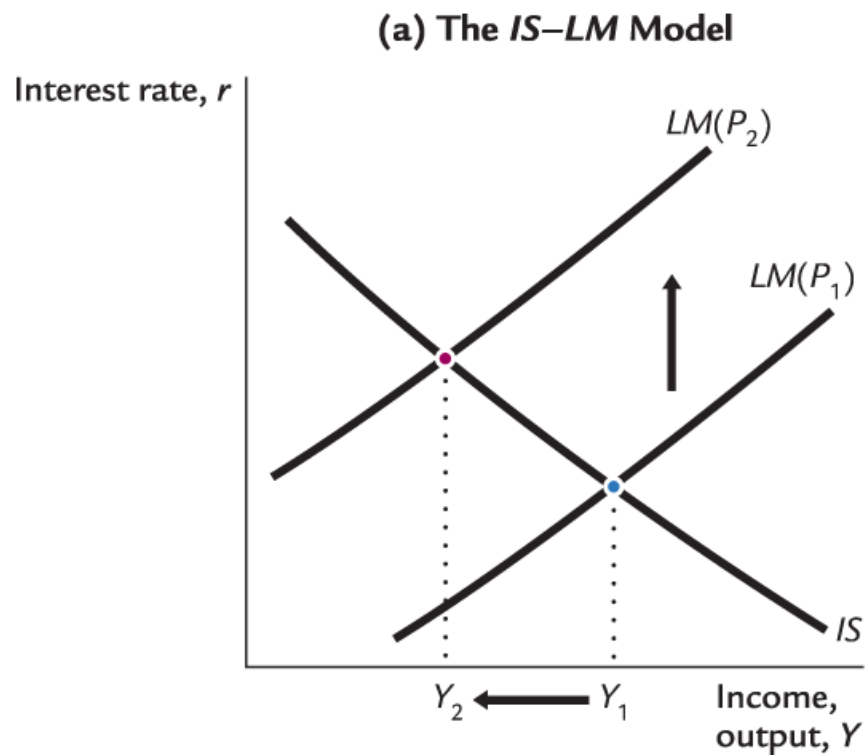
Why does the Fed target interest rates instead of the money supply?

1. They are easier to measure than the money supply.
2. The Fed might believe that *LM* shocks are more prevalent than *IS* shocks. If so, targeting the interest rate stabilizes income better than targeting the money supply.

IS–LM and Aggregate Demand

- So far, we've been using the *IS–LM* model to analyze the short run, when the price level is assumed to be fixed.
- However, a change in P would shift *LM* and would therefore affect Y .
- The **aggregate demand curve** captures this relationship between P and Y .

Deriving the AD curve

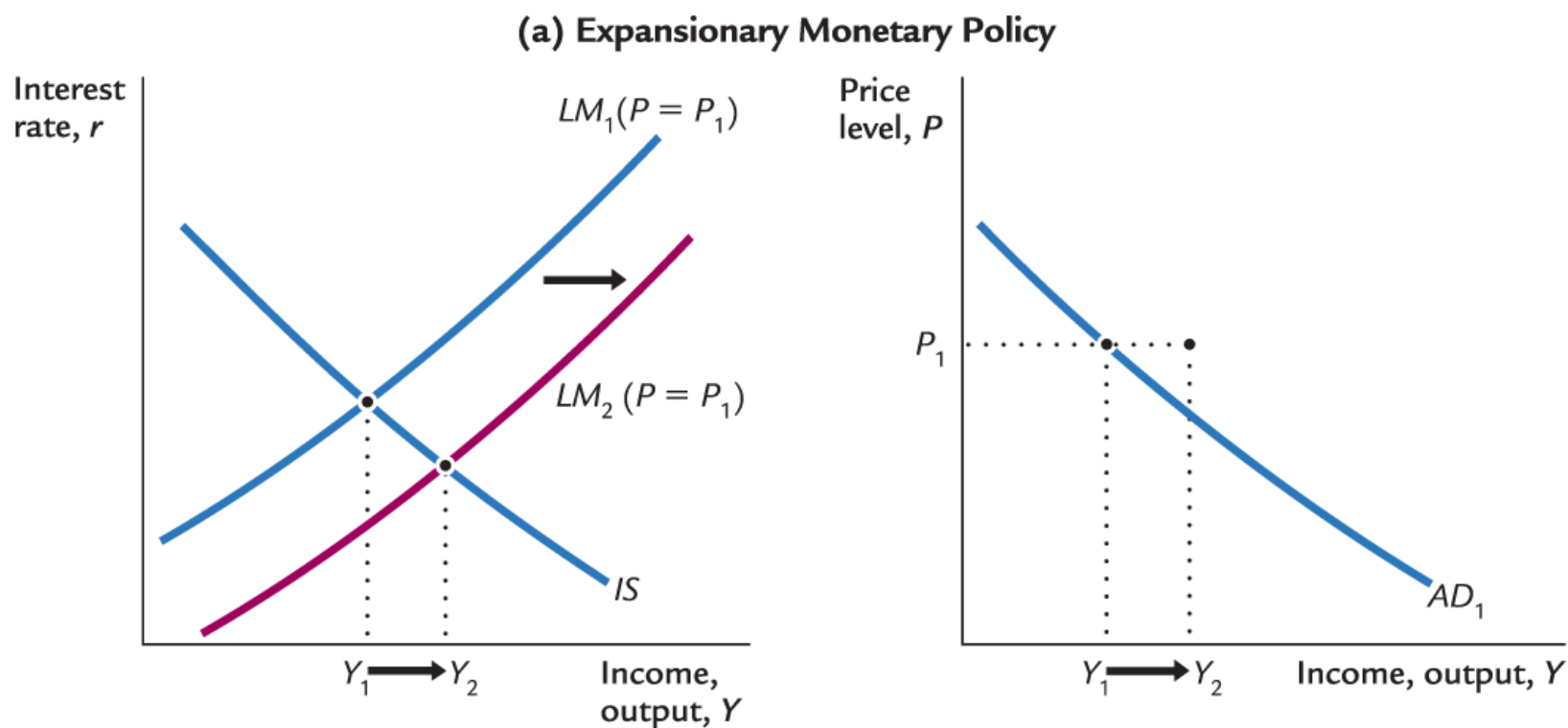


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Monetary policy and the AD curve

The CB can increase aggregate demand:

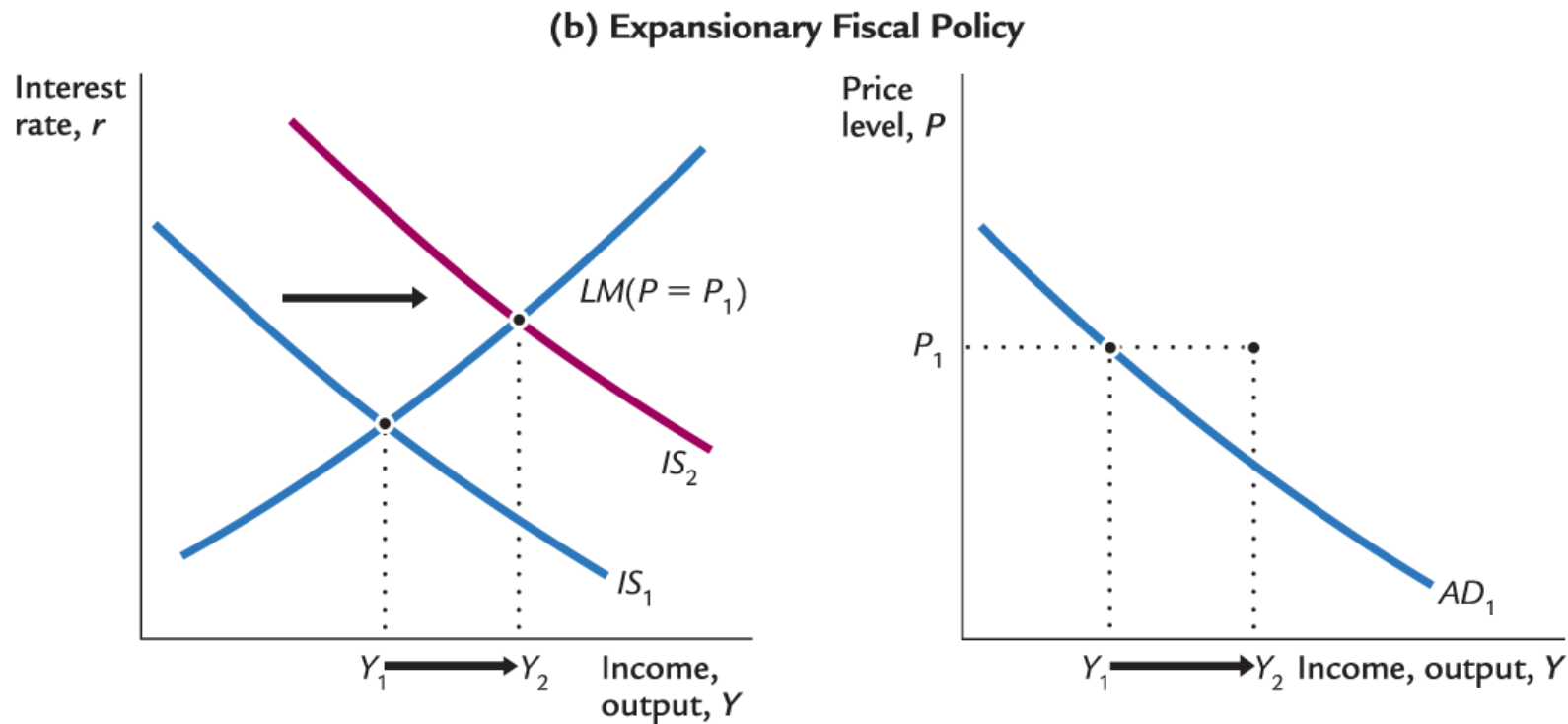
$\uparrow M \rightarrow LM$ shifts right, $\rightarrow \downarrow r$, $\rightarrow \uparrow I$, $\rightarrow \uparrow Y$ at each value of P .



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Fiscal policy and the AD curve

Expansionary fiscal policy (ΔG and/or ΔT) increases aggregate demand: $\uparrow G$, $\rightarrow IS$ shifts right, $\rightarrow \uparrow Y$ at each value of P .



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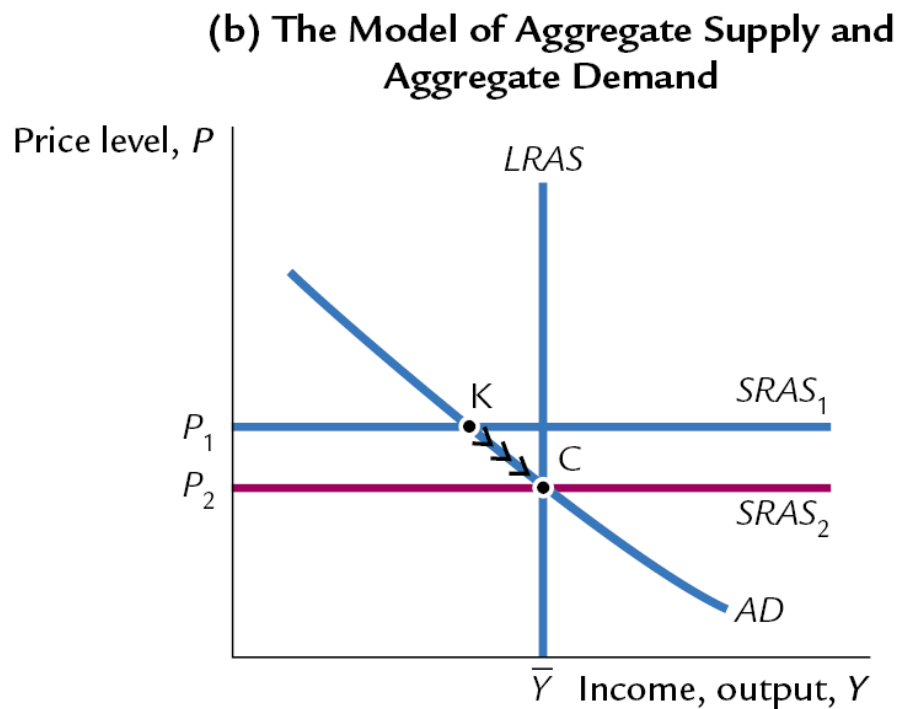
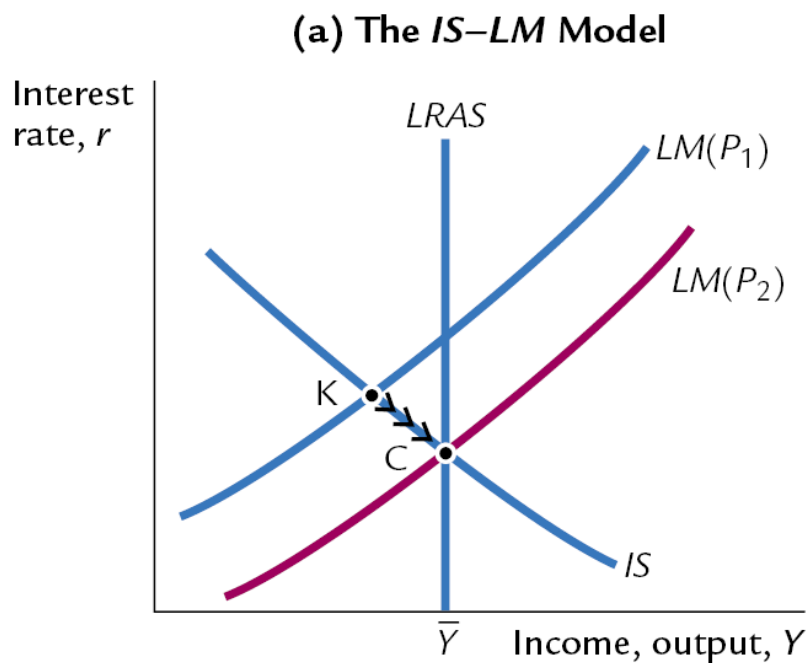
IS–LM and *AD–AS* in the short run and in the long run

Recall: The force that moves the economy from the short run to the long run is the gradual adjustment of prices.

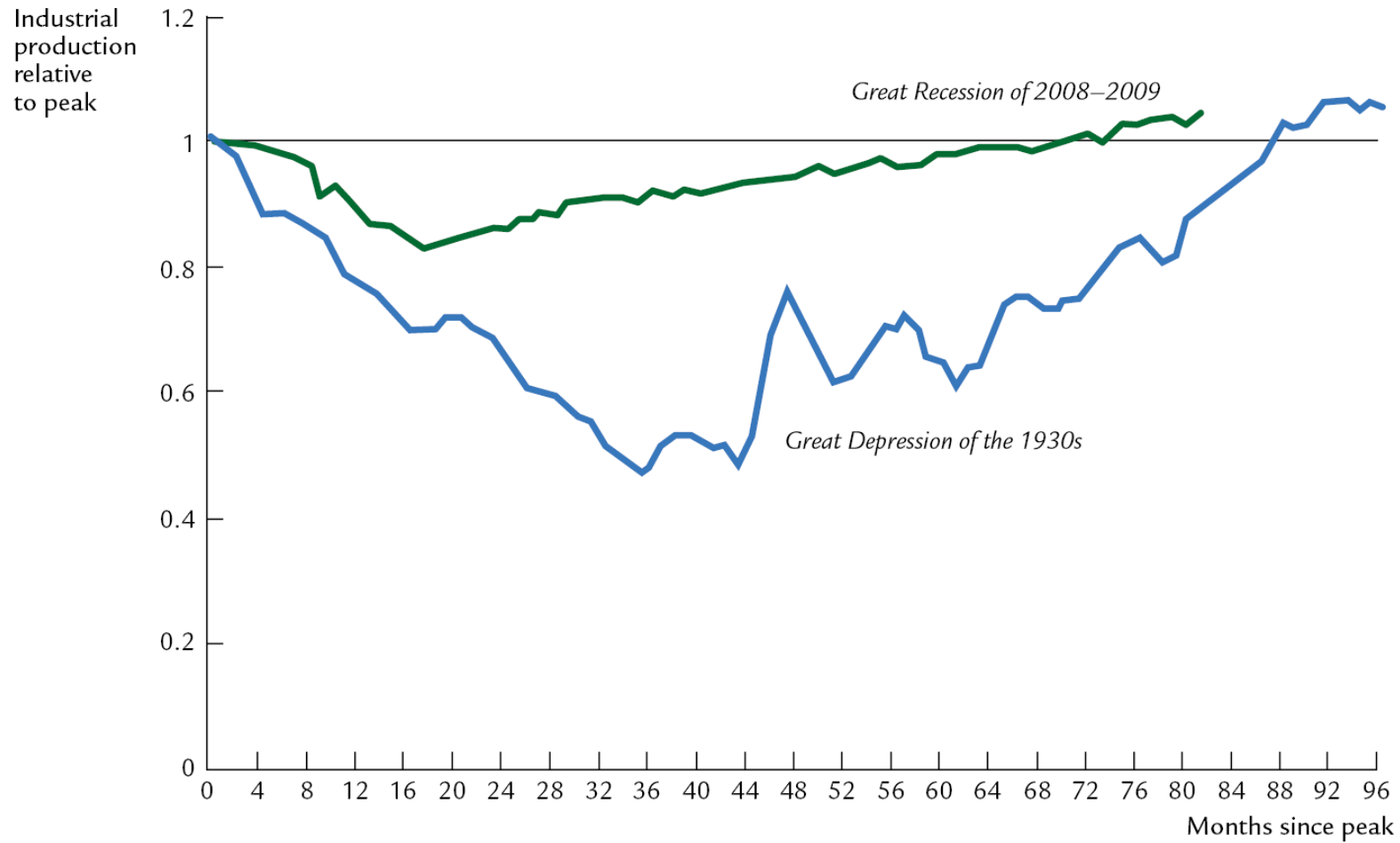
In the short run equilibrium, if	then over time, the price level will
$Y > \bar{Y}$	rise
$Y < \bar{Y}$	fall
$Y = \bar{Y}$	remain constant

If $Y > Y_p$ price level will fall (from P_1 to P_2) causing both the LM and $SRAS$ curves to shift down.

The short-run (Keynesian) equilibrium at K moves to the new long-run (Classical) equilibrium at C .



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THE SPENDING HYPOTHESIS: Shocks to the *IS* curve

- Asserts the Depression was largely due to an exogenous fall in the demand for goods and services—a leftward shift of the *IS* curve.
- Evidence:
Output and interest rates both fell, which is what a leftward *IS* shift would cause.
- Stock market crash reduced consumption
 - October 1929–December 1929: S&P 500 fell 17 percent
 - October 1929–December 1933: S&P 500 fell 71 percent
- Drop in investment
 - Correction after overbuilding in the 1920s.
 - Widespread bank failures made it harder to obtain financing for investment.

THE MONEY HYPOTHESIS: A shock to the LM curve

- Asserts that the Depression was largely due to the huge fall in the money supply.
- Evidence: $M1$ fell 25 percent during 1929–1933.
- But, two problems with this hypothesis:
 - P fell even more, so M/P actually rose slightly during 1929–1931.
 - Nominal interest rates fell, which is the opposite of what a leftward LM shift would cause.

THE MONEY HYPOTHESIS AGAIN: The effects of falling prices, part 1

- Asserts that the severity of the Depression was due to a huge deflation:

P fell 25 percent during 1929–1933.

- This deflation was probably caused by the fall in M , so perhaps money played an important role after all.
- In what ways does a deflation affect the economy?

THE MONEY HYPOTHESIS AGAIN: The effects of falling prices, part 2

- The stabilizing effects of deflation:
- $\downarrow P \rightarrow \uparrow(M/P) \rightarrow LM$ shifts right $\rightarrow \uparrow Y$
- Pigou effect:

$$\downarrow P \rightarrow \uparrow(M/P)$$

\rightarrow consumers' wealth \uparrow

$\rightarrow \uparrow C$

$\rightarrow IS$ shifts right

$\rightarrow \uparrow Y$

THE MONEY HYPOTHESIS AGAIN: The effects of falling prices, part 3

The destabilizing effects of expected deflation:

$\downarrow E \pi$

- $\rightarrow r \uparrow$ for each value of i
- $\rightarrow I \downarrow$ because $I = I(r)$
- \rightarrow planned expenditure and aggregate demand \downarrow
- \rightarrow income and output \downarrow

THE MONEY HYPOTHESIS AGAIN: The effects of falling prices, part 4

The destabilizing effects of unexpected deflation:
debt-deflation theory

↓ P (if unexpected)

- transfers purchasing power from borrowers to lenders
- borrowers spend less, lenders spend more
- if borrowers' propensity to spend is larger than lenders', then aggregate spending falls, the IS curve shifts left, and Y falls

CASE STUDY: The 2008–2009 financial crisis and recession (1 of 2)

- 2009: Real GDP fell, unemployment rate approached 10 percent
- Important factors in the crisis:
 - early 2000s Federal Reserve interest rate policy
 - subprime mortgage crisis
 - bursting of house price bubble, rising foreclosure rates
 - falling stock prices
 - failing financial institutions
 - declining consumer confidence, drop in spending on consumer durables and investment goods

Fiscal Policy:

- American Recovery and Reinvestment Act (ARRA) was \$787 billion passed in early 2009
- Yet, later in 2010–2014, government spending decreased due to austerity measures (over a \$300 billion drop)

Monetary Policy:

- Lowered the federal funds rate to zero
- Engaged in nontraditional monetary policy (forward guidance and quantitative easing)

Liquidity trap and unconventional monetary policy

- Liquidity trap: A situation where interest rates have fallen to zero, and therefore, it is possible that (conventional) monetary policy is no longer effective. At times referred to as the “zero lower bound”
- Unconventional monetary policies:
 - Forward guidance: a policy of announcing *future* monetary actions, for example, “we expected... to maintain [low interest rates] until labor market conditions have reached levels consistent with maximum employment...”
 - Quantitative easing (QE): buying of long-term government debt, mortgage-backed securities, corporate debt, state and local debt, etc.