

# Economics

ELEVENTH EDITION

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31

MONETARY POLICY

## **After studying this chapter, you will be able to:**

- ◆ Describe the objectives of U.S. monetary policy, and the framework for setting and achieving them
- ◆ Explain how the Federal Reserve makes its interest rate decision and achieves its interest rate target
- ◆ Explain the transmission channels through which the Federal Reserve influences real GDP, jobs, and inflation
- ◆ Explain the Fed's extraordinary policy actions



At eight regularly scheduled meetings a year and in an emergency between regular meetings, the Federal Reserve decides whether it will change its interest rate target.

How does the Fed make its interest rate decision?

What does the Fed do to keep the interest rate where it wants it?

Can the Fed speed up economic growth by lowering the interest rate and keep inflation in check by raising it?

What special measures can the Fed take in a financial crisis like the one in 2008?



# Monetary Policy Objectives and Framework

A nation's monetary policy objectives and the framework for setting and achieving that objective stems from the relationship between the central bank and the government.

# Monetary Policy Objectives and Framework

## Monetary Policy Objectives

Monetary policy objectives stem from the mandate of the Board of Governors of the Federal Reserve System as set out in the Federal Reserve Act of 1913 and its amendments. The law states:

The Fed and the FOMC shall maintain long-term growth of the monetary and credit aggregates commensurate with the economy's long-run potential to increase production, ...

so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates.



# Monetary Policy Objectives and Framework

## Goals and Means

The Fed's monetary policy objective has two distinct parts:

1. A statement of the goals or ultimate objectives
2. A prescription of the means by which the Fed should pursue its goals

# Monetary Policy Objectives and Framework

## Goals of Monetary Policy

Goals are maximum employment, stable prices, and moderate long-term interest rates

In the long run, these goals are in harmony and reinforce each other, but in the short run, they might be in conflict.

*The key goal is price stability.*

Price stability is the source of maximum employment and moderate long-term interest rates.





# Monetary Policy Objectives and Framework

## Means of Achieving the Goals

By keeping the growth rate of the quantity of money in line with the growth rate of potential GDP, the Fed is expected to be able to maintain full employment and keep the price level stable.

How does the Fed operate to achieve its goals?

# Monetary Policy Objectives and Framework

## Operational “Stables Prices” Goal

The Fed also pays close attention to the CPI excluding fuel and food—the core CPI.

The rate of increase in the core CPI is the **core inflation rate**.

The Fed believes that the core inflation rate provides a better measure of the underlying inflation trend and a better prediction of future CPI inflation.

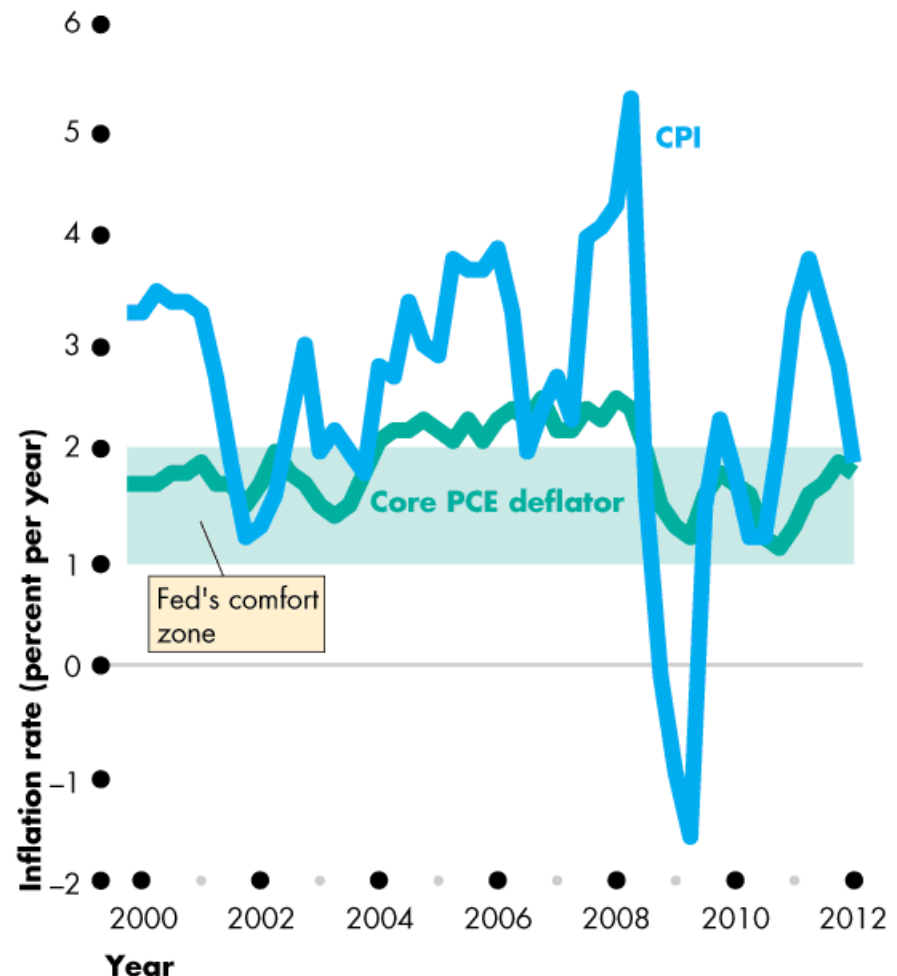
# Monetary Policy Objectives and Framework



Figure 31.1 shows the core inflation rate and the CPI inflation rate.

The CPI inflation rate is volatile and the core inflation rate is a better indicator of price stability.

Except from 2004 to 2008, the core inflation rate was within the Fed's comfort zone.



# Monetary Policy Objectives and Framework

## Operational “Maximum Employment” Goal

Stable prices is the primary goal but the Fed pays attention to the business cycle.

To gauge the overall state of the economy, the Fed uses the output gap—the percentage deviation of real GDP from potential GDP.

A positive output gap indicates an increase in inflation.

A negative output gap indicates unemployment above the natural rate.

The Fed tries to minimize the output gap.

# Monetary Policy Objectives and Framework

## Responsibility for Monetary Policy

What is the role of the Fed, the Congress, and the President?

The Fed's FOMC makes monetary policy decisions.

The Congress plays no role in making monetary policy decisions. The Fed makes two reports a year and the Chairman testifies before Congress (February and June).

The formal role of the President is limited to appointing the members and Chairman of the Board of Governors.

# The Conduct of Monetary Policy

How does the Fed conduct monetary policy?

1. What is the Fed's monetary policy instrument?
2. How does the Fed make its policy decision?

## The Monetary Policy Instrument

The **monetary policy instrument** is a variable that the Fed can directly control or closely target.





# The Conduct of Monetary Policy

The Fed has two possible instruments:

1. Monetary base
2. **Federal funds rate**—the interest rate at which banks borrow monetary base overnight from other banks.

The Fed's choice of policy instrument (which is the same choice as that made by most other major central banks) is the federal funds rate.

The Fed sets a target for the federal funds rate and then takes actions to keep it close to its target.



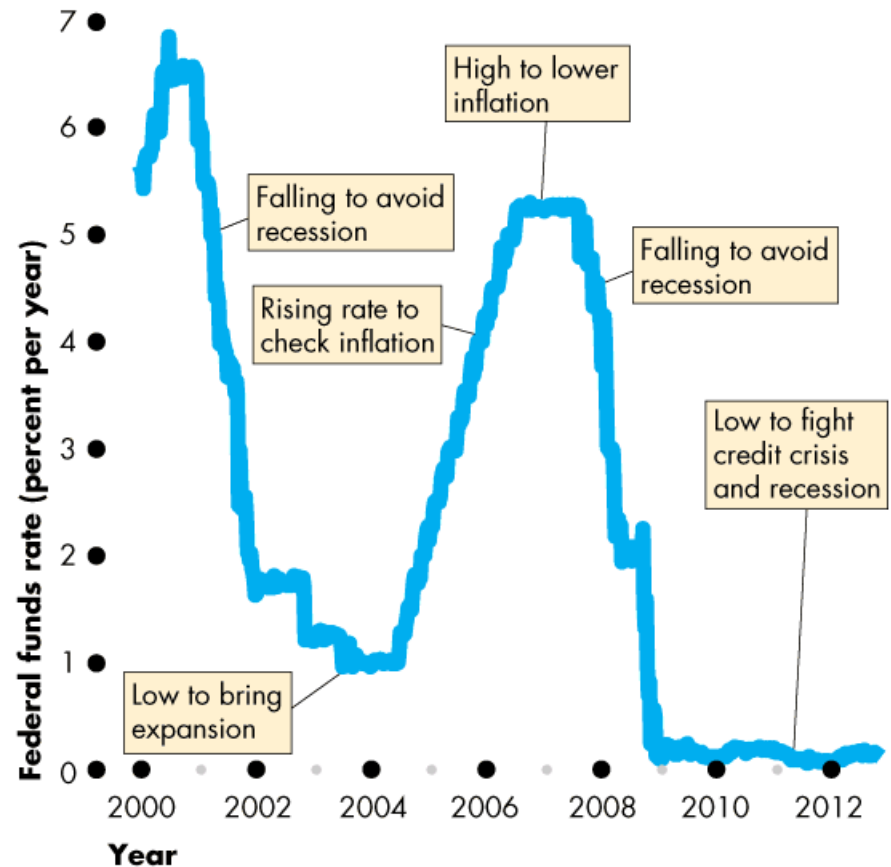
# The Conduct of Monetary Policy



Figure 31.2 shows the federal funds rate.

When the Fed wants to avoid recession, it lowers the Federal funds rate.

When the Fed wants to check rising inflation, it raises the Federal funds rate.





# The Conduct of Monetary Policy

Although the Fed can change the federal funds rate by any (reasonable) amount that it chooses, it normally changes the rate by only a quarter of a percentage point.

Having decided the appropriate level for the federal funds rate, how does the Fed get the federal funds rate to move to the target level?

The answer is by using open market operations to adjust the quantity of monetary base.



# The Conduct of Monetary Policy

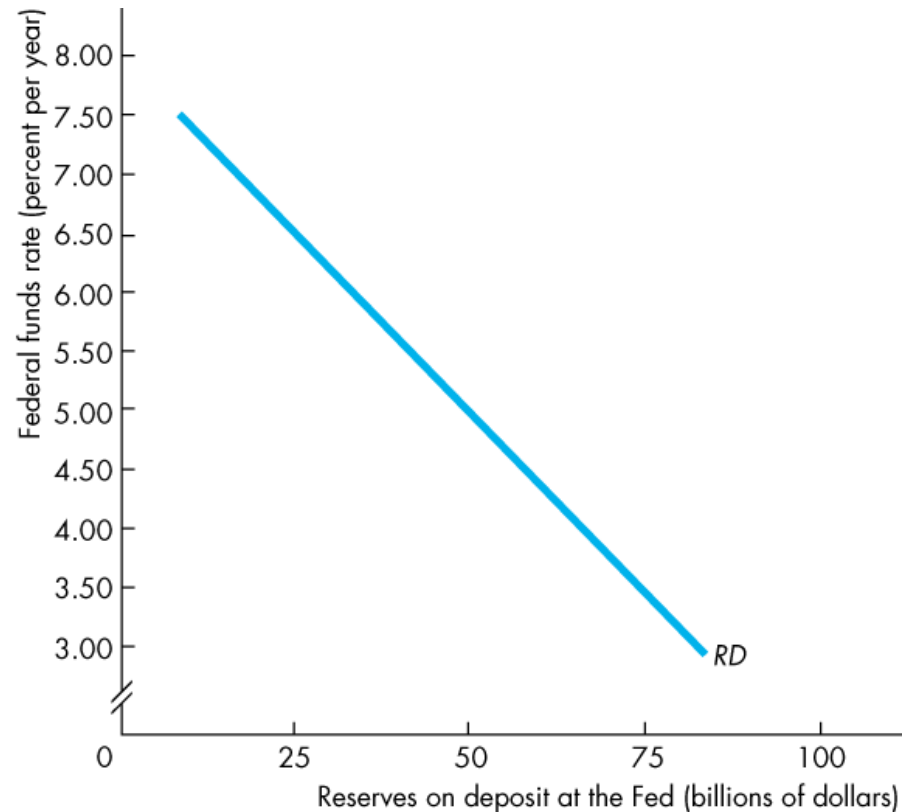


Figure 31.3 illustrates the market for reserves.

The  $x$ -axis measures the quantity of reserves held.

The  $y$ -axis measures the federal funds rate.

The banks' demand curve for reserves is  $RD$ .



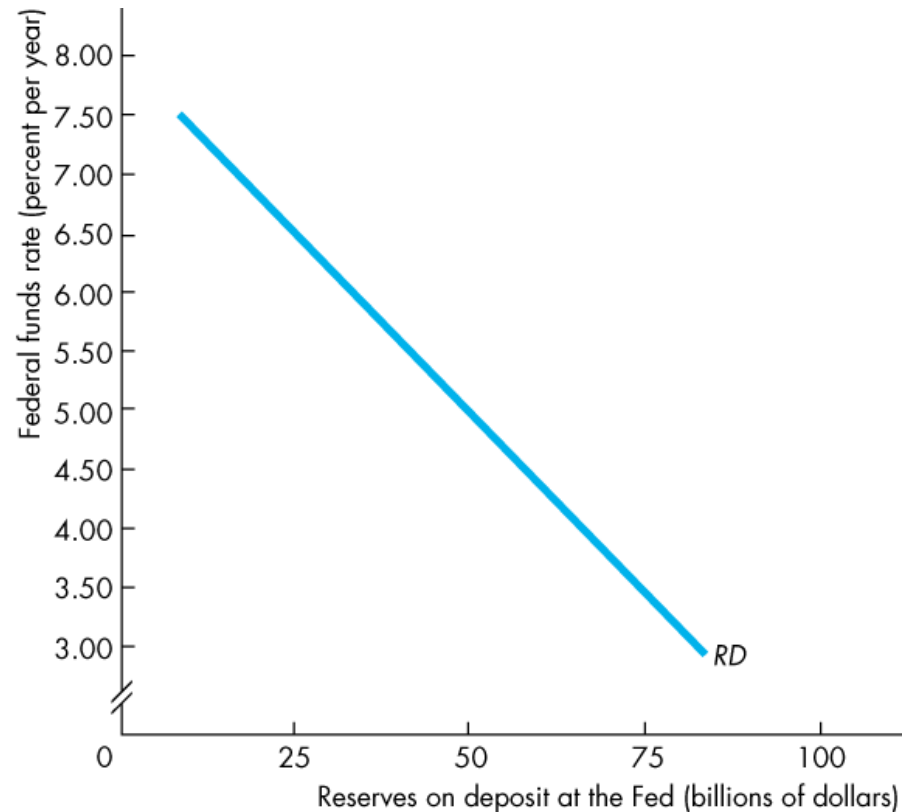


# The Conduct of Monetary Policy

The demand for reserves slopes downward because

...

the federal funds rate is the opportunity cost of holding reserves and the higher the federal funds rate, the fewer are the reserves demanded.

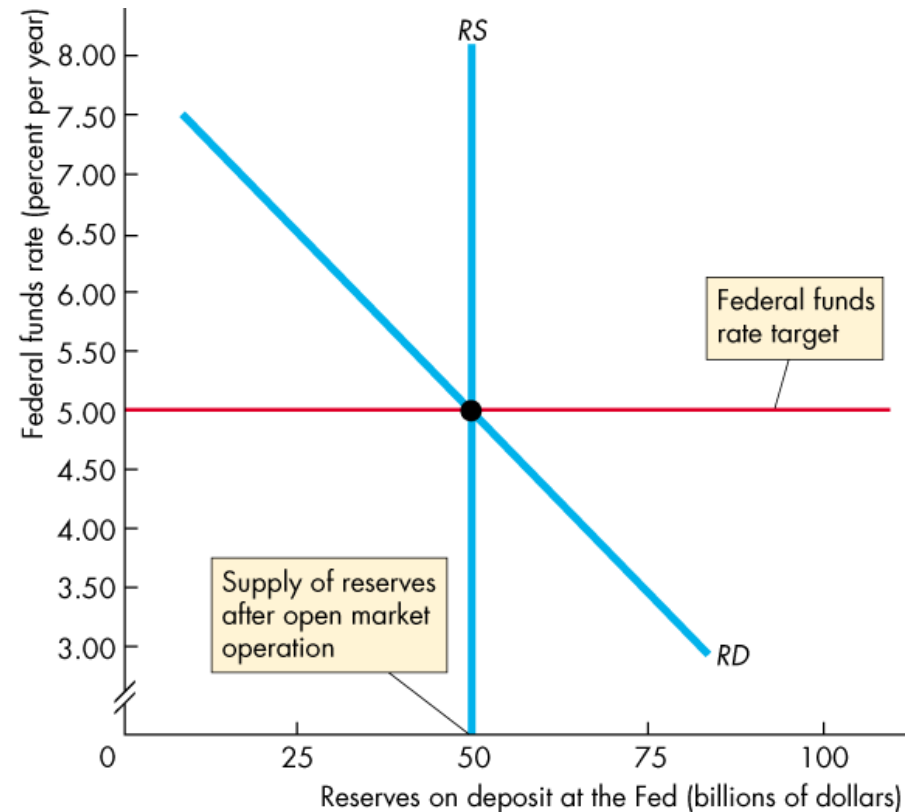


# The Conduct of Monetary Policy

The red line shows the Fed's target for the federal funds rate.

The Fed uses open market operations to make the quantity of reserves supplied equal to the quantity demanded at the target rate.

The supply curve of reserves is *RS*.



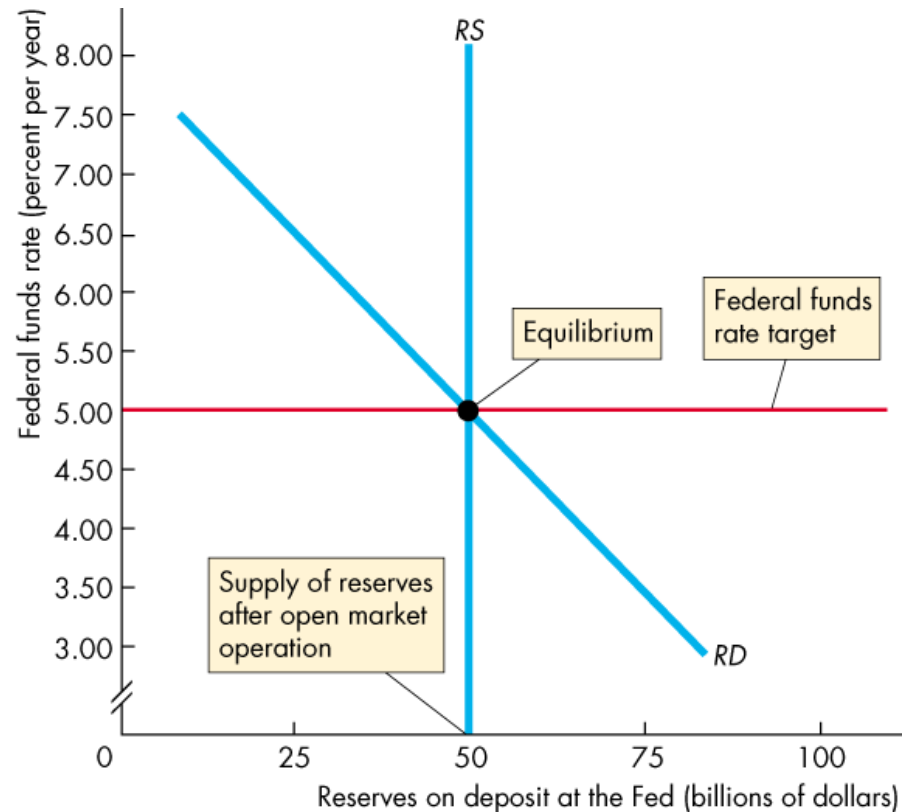




# The Conduct of Monetary Policy

Equilibrium in the market for reserves determines the actual federal funds rate.

By using open market operations, the Fed adjusts the supply of reserves to keep the federal funds rate on target.





# The Conduct of Monetary Policy

## The Fed's Decision-Making Strategy

The Fed's decision begins with an intensive assessment of the current state of the economy.

Then the Fed forecasts three variables

- Inflation rate
- Unemployment rate
- Output gap



# The Conduct of Monetary Policy

## Inflation Rate

Is the inflation rate inside the Fed's comfort zone?

If it is above the comfort zone or expected to move above it, the Fed considers raising the federal funds rate target.

If it is below the comfort zone or expected to move below it, the Fed considers lowering the federal funds rate target.



# The Conduct of Monetary Policy

## Unemployment Rate

If the unemployment rate is below the natural unemployment rate, a labor shortage might put pressure on wage rates to rise, which might feed into inflation.

The Fed might consider raising the federal funds rate.

If the unemployment rate is above the natural unemployment rate, a lower inflation rate is expected.

The Fed might consider lowering the federal funds rate.



# The Conduct of Monetary Policy

## Output Gap

If the output gap is positive, an inflationary gap, the inflation rate will most likely accelerate.

The Fed might consider raising the federal funds rate.

If the output gap is negative, a recessionary gap, inflation might ease.

The Fed might consider lowering the federal funds rate.

# Monetary Policy Transmission

## Quick Overview

When the Fed lowers the federal funds rate:

1. Other short-term interest rates and the exchange rate fall.
2. The quantity of money and the supply of loanable funds increase.
3. The long-term real interest rate falls.
4. Consumption expenditure, investment, and net exports increase.



# Monetary Policy Transmission

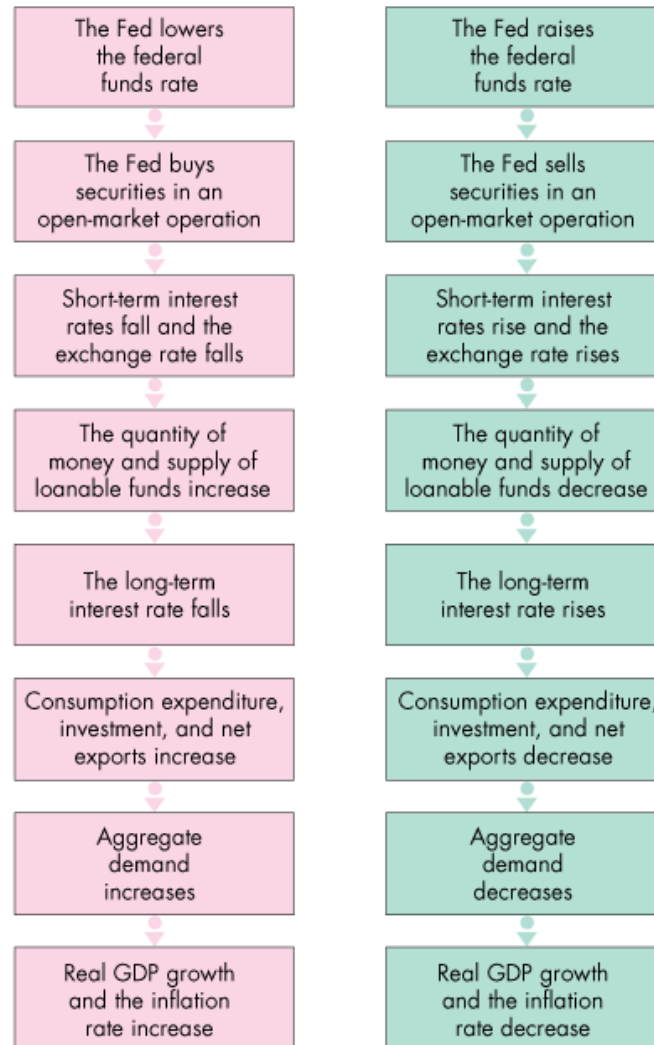
5. Aggregate demand increases.
6. Real GDP growth and the inflation rate increase.

When the Fed raises the federal funds rate, the ripple effects go in the opposite direction.

Figure 31.4 provides a schematic summary of these ripple effects, which stretch out over a period of between one and two years.



# Monetary Policy Transmission



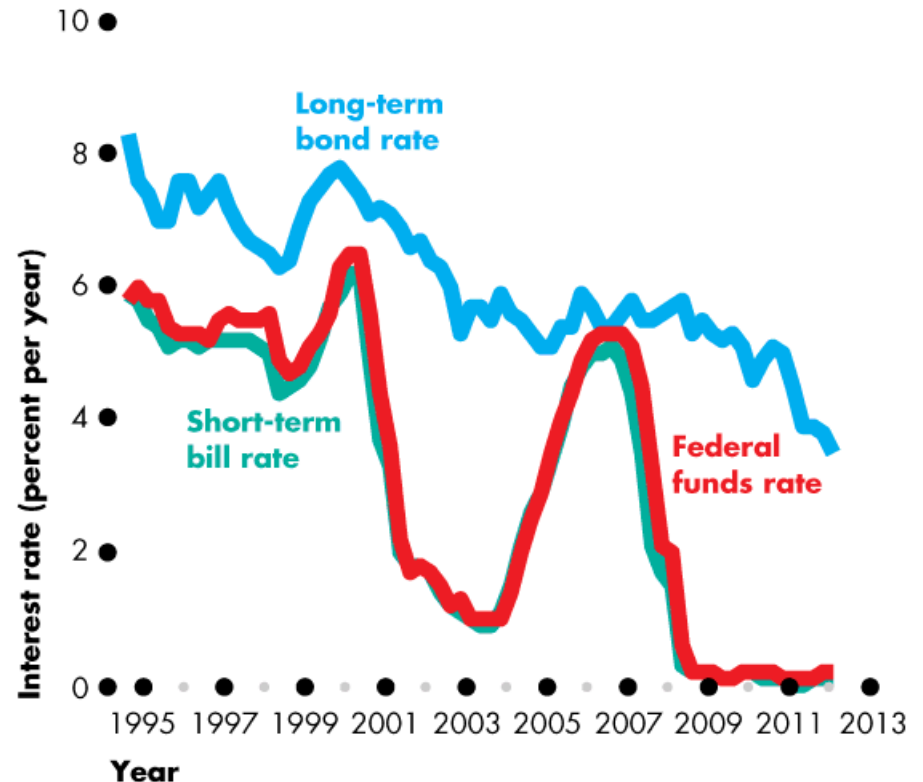
# Monetary Policy Transmission



## Interest Rate Changes

Figure 31.5 shows the fluctuations in three interest rates:

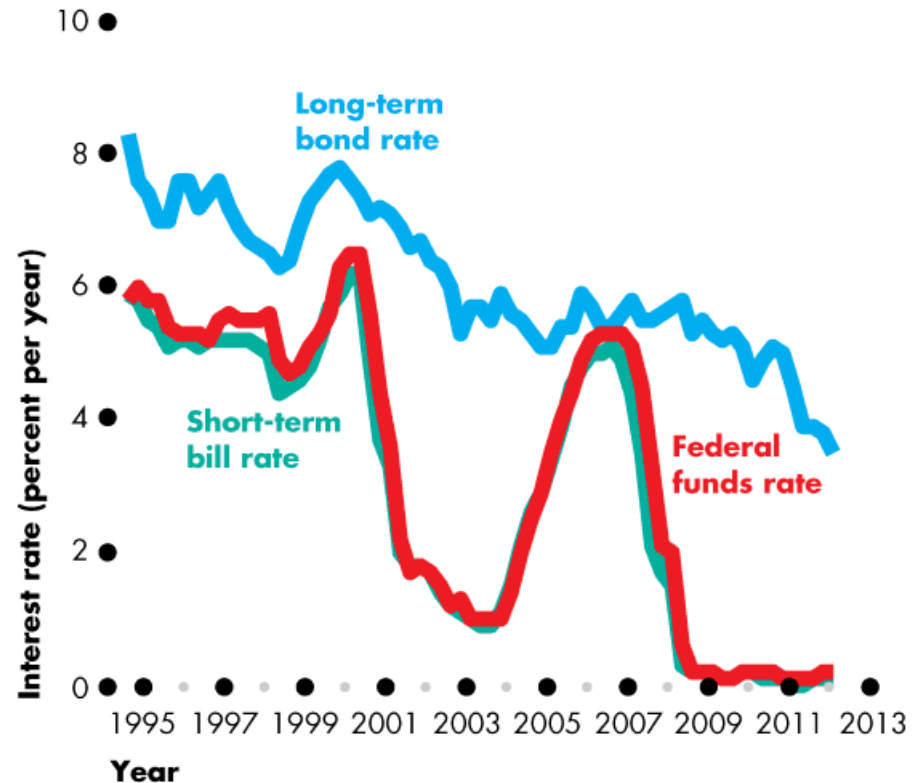
- The short-term bill rate
- The long-term bond rate
- The federal funds rate



# Monetary Policy Transmission

Short-term rates move closely together and follow the federal funds rate.

Long-term rates move in the same direction as the federal funds rate but are only loosely connected to the federal funds rate.



# Monetary Policy Transmission

## Exchange Rate Fluctuations

The exchange rate responds to changes in the interest rate in the United States relative to the interest rates in other countries—the *U.S. interest rate differential*.

But other factors are also at work, which make the exchange rate hard to predict.

# Monetary Policy Transmission

## Money and Bank Loans

When the Fed lowers the federal funds rate, the quantity of money and the quantity of bank loans increase.

Consumption and investment plans change.

## Long-Term Real Interest Rate

Equilibrium in the market for loanable funds determines the long-term real interest rate, which equals the nominal interest rate minus the expected inflation rate.

The long-term real interest rate influences expenditure plans.



# Monetary Policy Transmission

## Expenditure Plans

The ripple effects that follow a change in the federal funds rate change three components of aggregate expenditure:

- Consumption expenditure
- Investment
- Net exports

A change in the federal funds rate changes aggregate expenditure plans, which in turn change aggregate demand, real GDP, and the price level.

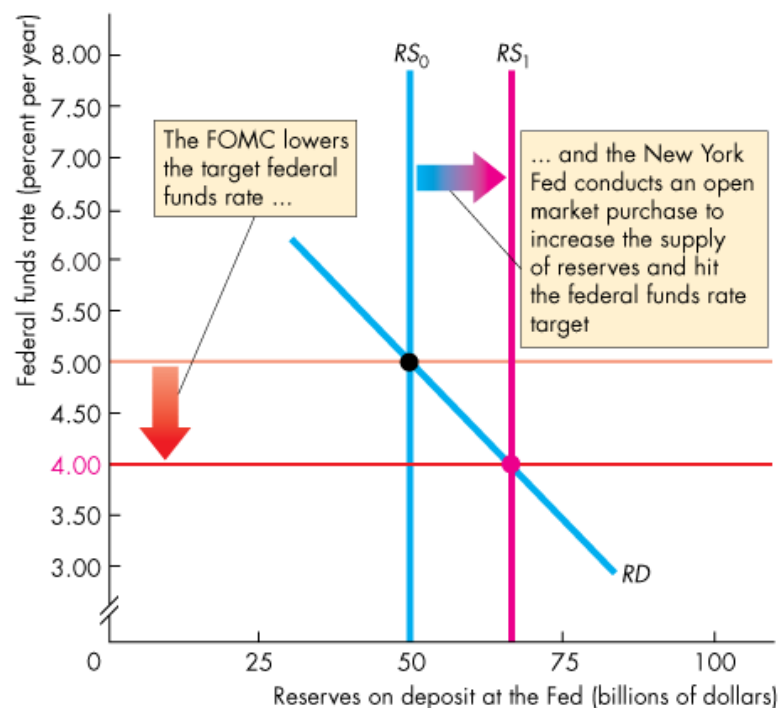
So the Fed influences the inflation rate and the output gap.

# Monetary Policy Transmission

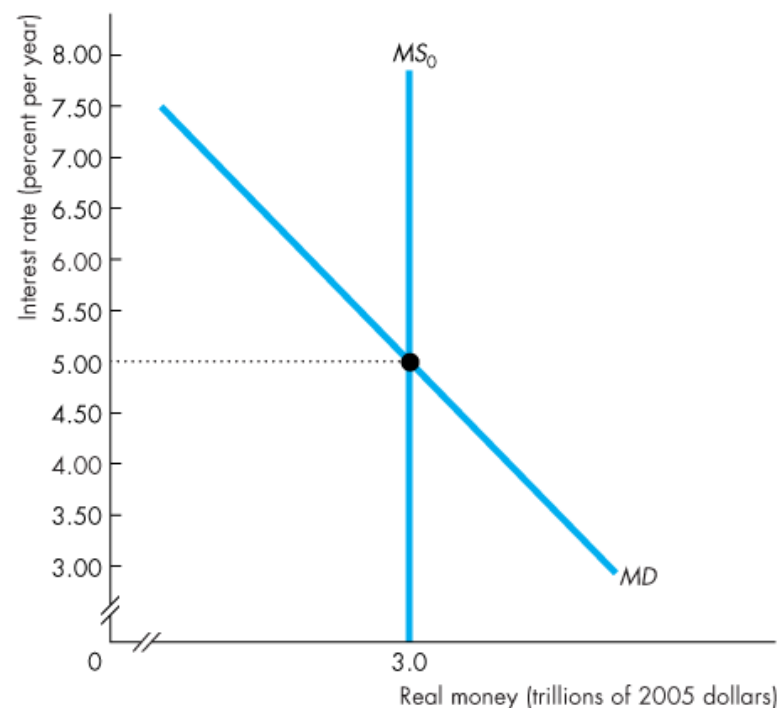


## The Fed Fights Recession

If inflation is low and the output gap is negative, the FOMC lowers the federal funds rate target.



(a) The market for bank reserves

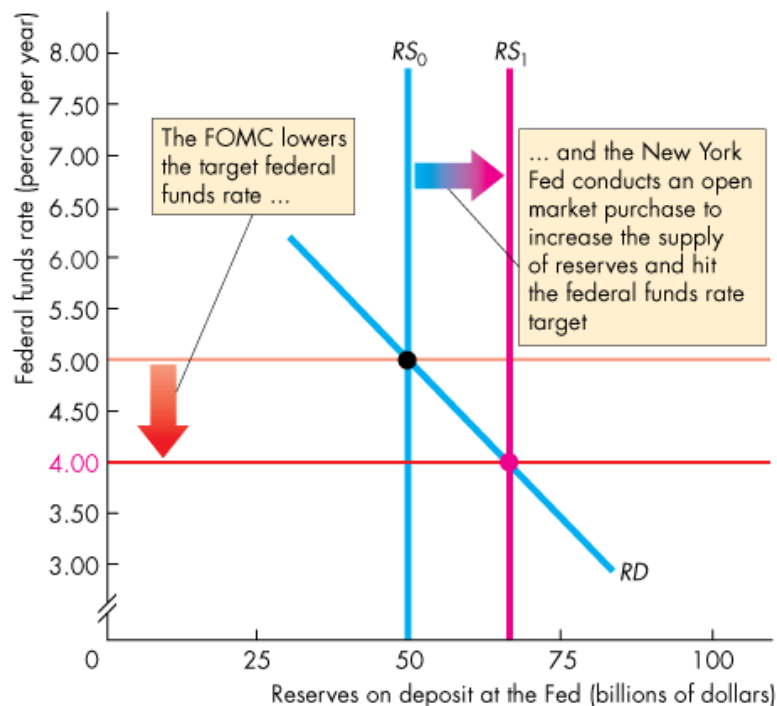


(b) Money market

# Monetary Policy Transmission

An increase in the monetary base increases the supply of money.

The short-term interest rate falls.



(a) The market for bank reserves



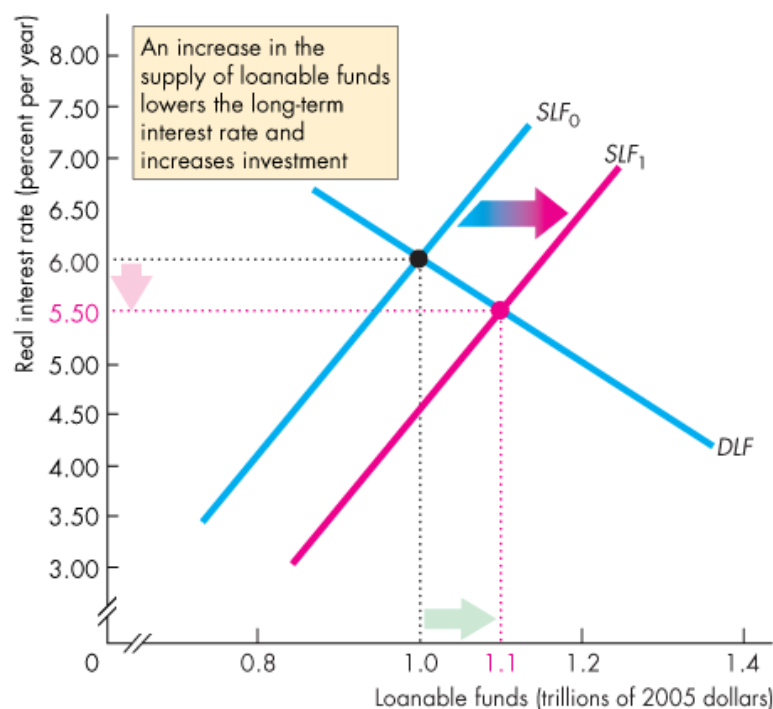
(b) Money market

# Monetary Policy Transmission

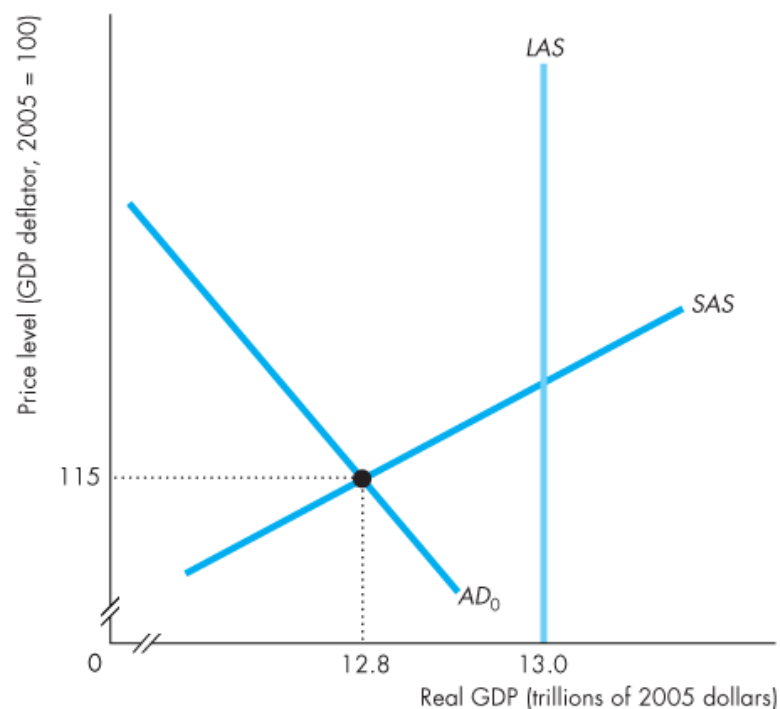


The increase in the supply of money increases the supply of loanable funds.

The real interest rate falls.



(c) The market for loanable funds

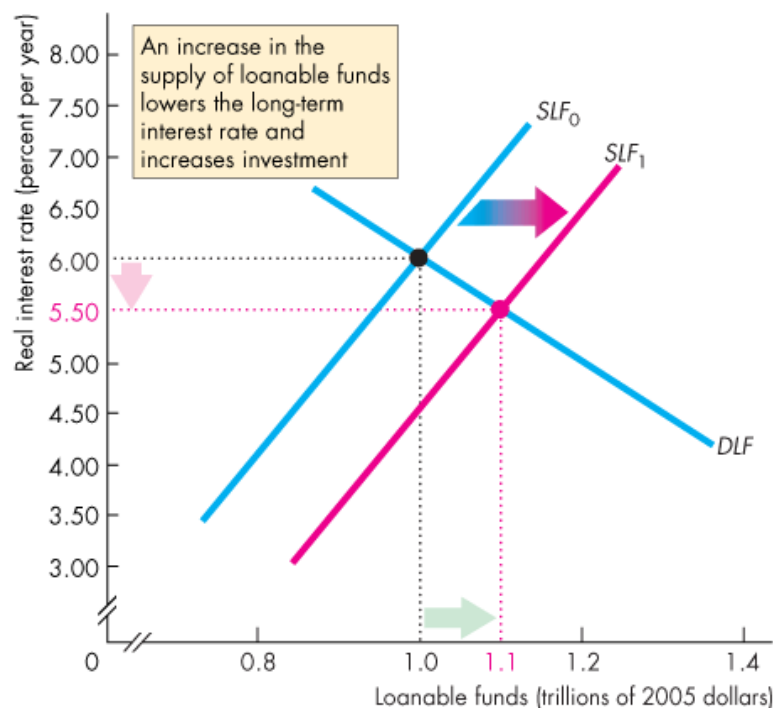


(d) Real GDP and the price level

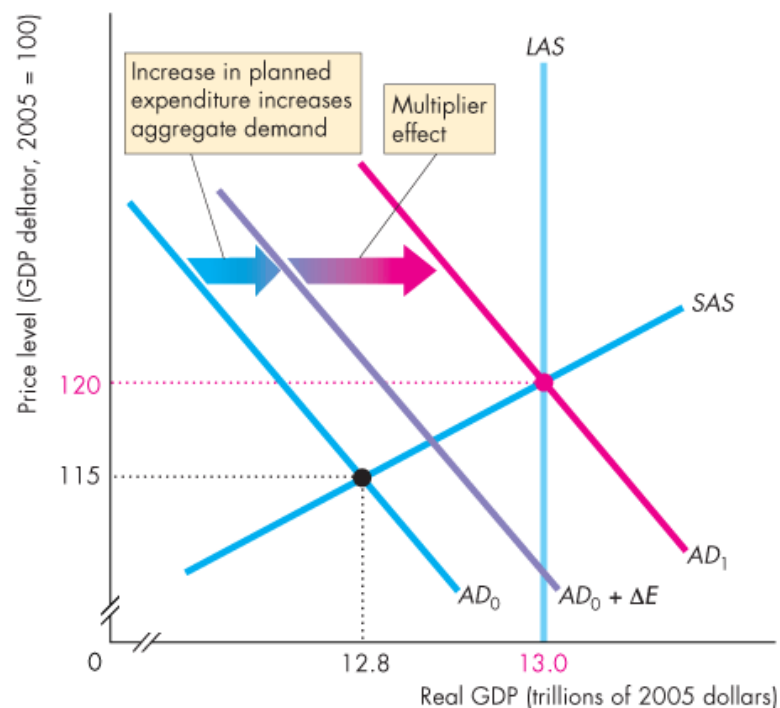
# Monetary Policy Transmission

The fall in the real interest rate increases aggregate planned expenditure.

Real GDP increases to potential GDP.



(c) The market for loanable funds



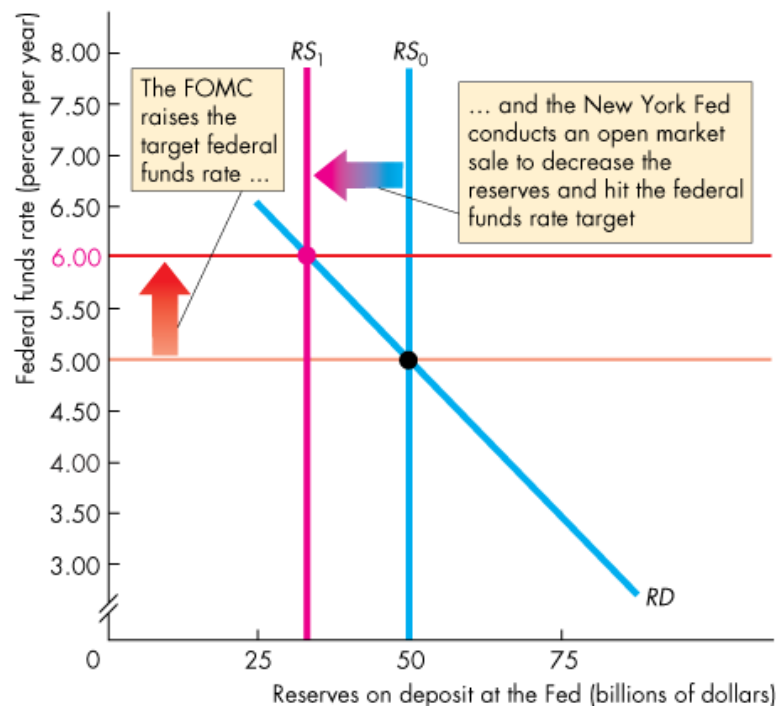
(d) Real GDP and the price level

# Monetary Policy Transmission

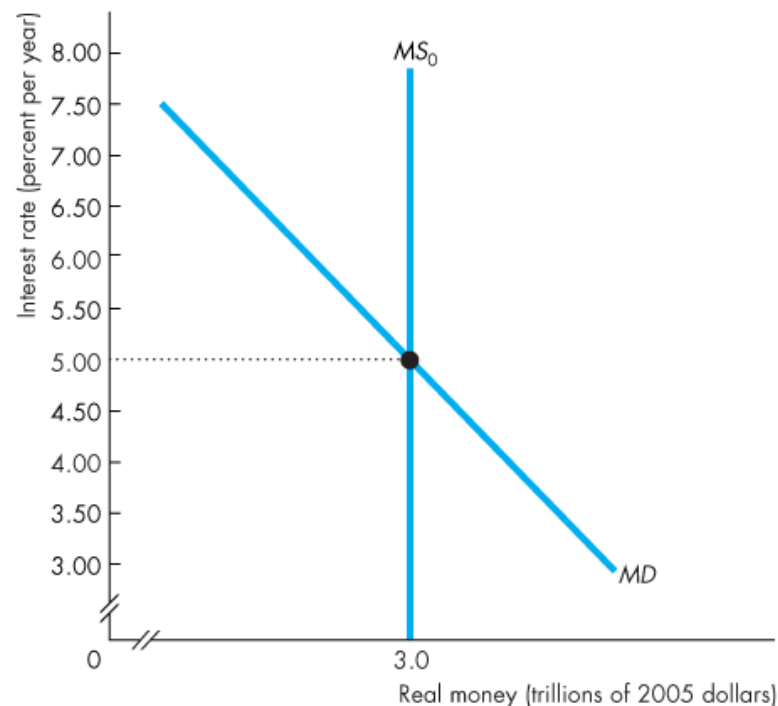


## The Fed Fights Inflation

If inflation is too high and the output gap is positive, the FOMC raises the federal funds rate target.



(a) The market for bank reserves

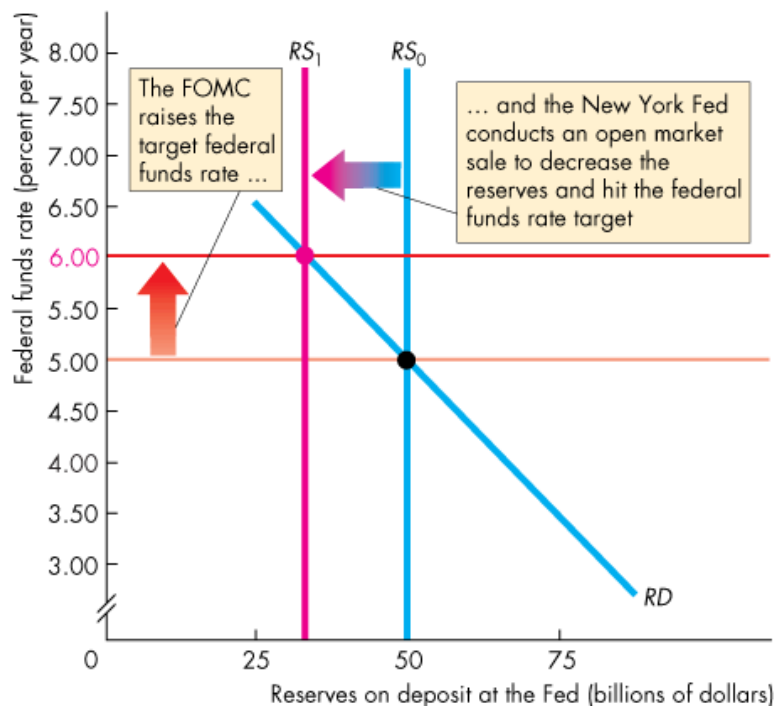


(b) Money market

# Monetary Policy Transmission

A decrease in the monetary base decreases the supply of money.

The short-term interest rate rises.



(a) The market for bank reserves



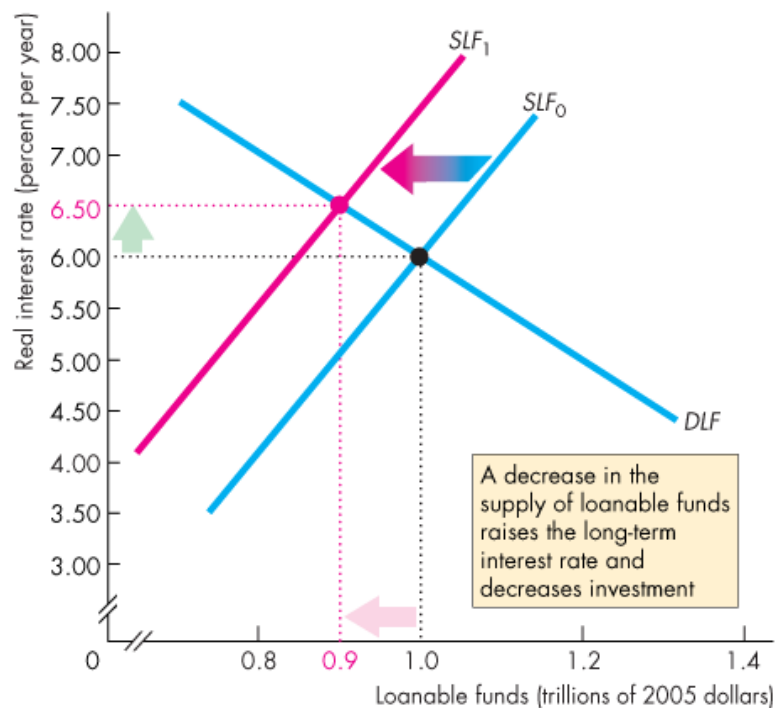
(b) Money market

# Monetary Policy Transmission

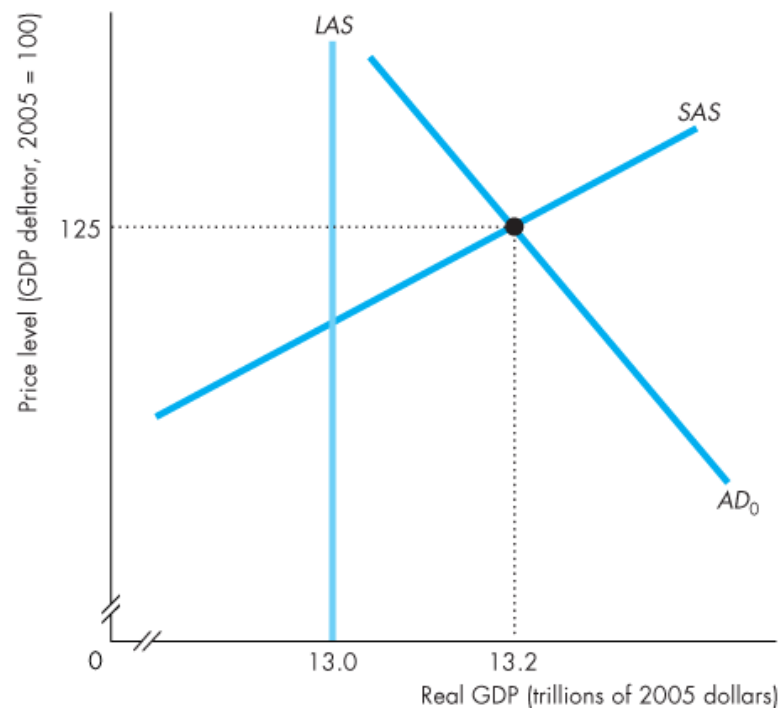


The decrease in the supply of money decreases the supply of loanable funds.

The real interest rate rises.



(c) The market for loanable funds



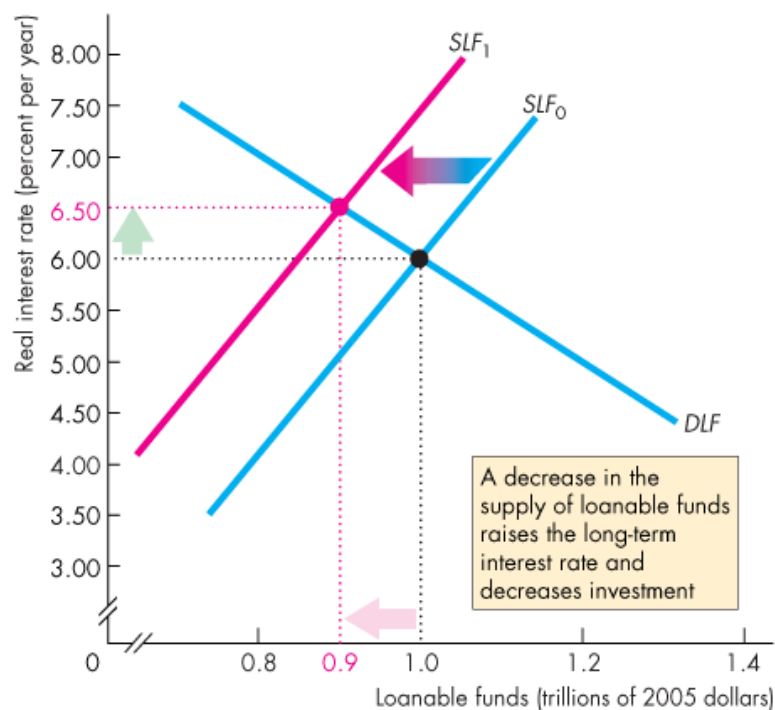
(d) Real GDP and the price level



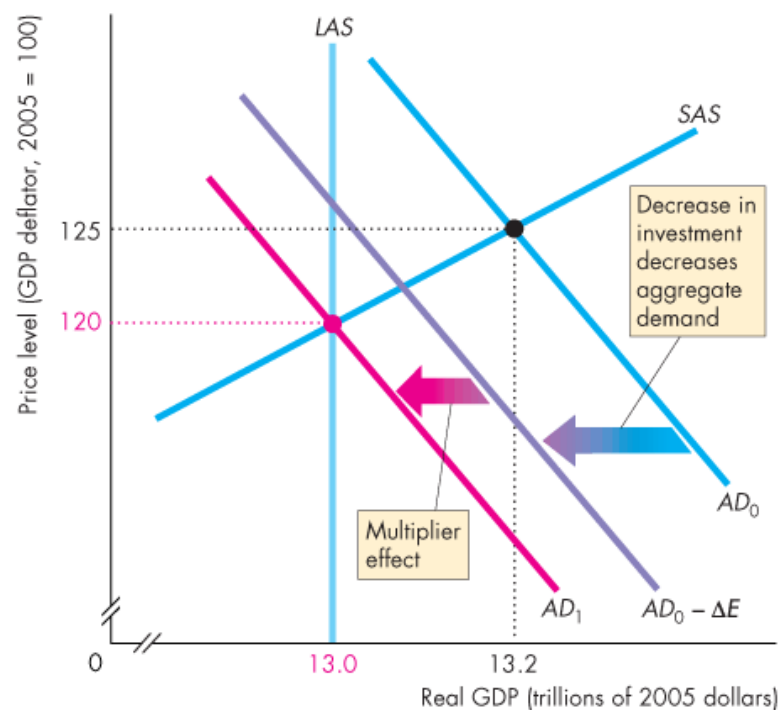
# Monetary Policy Transmission

The increase in the real interest rate decreases aggregate planned expenditure.

Real GDP decreases and closes the inflationary gap.



(c) The market for loanable funds



(d) Real GDP and the price level

# Monetary Policy Transmission

## Loose Links and Long and Variable Lags

Long-term interest rates that influence spending plans are linked loosely to the federal funds rate.

The response of the *real* long-term interest rate to a change in the nominal rate depends on how inflation expectations change.

The response of expenditure plans to changes in the real interest rate depends on many factors that make the response hard to predict.

The monetary policy transmission process is long and drawn out and doesn't always respond in the same way.

# Extraordinary Monetary Stimulus

During the financial crisis and recession of 2008-2009, the Fed lowered the federal funds rate to the floor.

What can the Fed do to stimulate the economy when it cannot lower the federal funds rate?

## **The Key Elements of the Crisis**

The three main events that put banks under stress were:

1. Widespread fall in asset prices
2. A significant currency drain
3. A run on the bank

# Extraordinary Monetary Stimulus

When asset prices fall, banks incur a capital loss and if prices fall enough, banks' liabilities exceed their assets.

A large currency drain leaves the banks short of reserves.

A run on a bank occurs when depositors lose confidence and withdraw funds. The bank loses reserves, calls in loans, sells securities at low prices, and its equity shrinks.

Event	Deposits + Equity = Reserves + Loans and securities				Problem
Widespread fall in asset prices		▼		▼	Solvency
Currency drain	▼		▼		Liquidity
Run on bank	▼	▼	▼	▼	Liquidity and solvency

**Figure 1 The Ingredients of a Financial and Banking Crisis**

# Extraordinary Monetary Stimulus

## The Policy Actions

Policy actions dribbled out for more than a year.

1. Massive open market operations were used to increase bank reserves.
2. Deposit insurance was expanded.
3. The Fed bought troubled assets from banks

These actions provided banks with more reserves, more secure depositors, and safe liquid assets in place of troubled assets.

# Extraordinary Monetary Stimulus

## Policy Strategies and Clarity

Two other approaches to monetary policy that other countries have used are

- Inflation rate targeting
- Taylor rule

# Extraordinary Monetary Stimulus

## Inflation Rate Targeting

**Inflation rate targeting** is a monetary policy strategy in which the central bank makes a public commitment

1. To achieve an explicit inflation target
2. To explain how its policy actions will achieve that target

Several central banks practice inflation targeting and have done so since the mid-1990s.

Inflation targeting is a strategy that avoids serious inflation and persistent deflation.

# Extraordinary Monetary Stimulus

## Taylor Rule

The Taylor rule is a formula for setting the interest rate.

By using a rule to set the interest rate, monetary policy contributes towards lessening uncertainty.

With less uncertainty, financial markets, labor markets, and goods markets work better as traders are more willing to make long-term commitments.