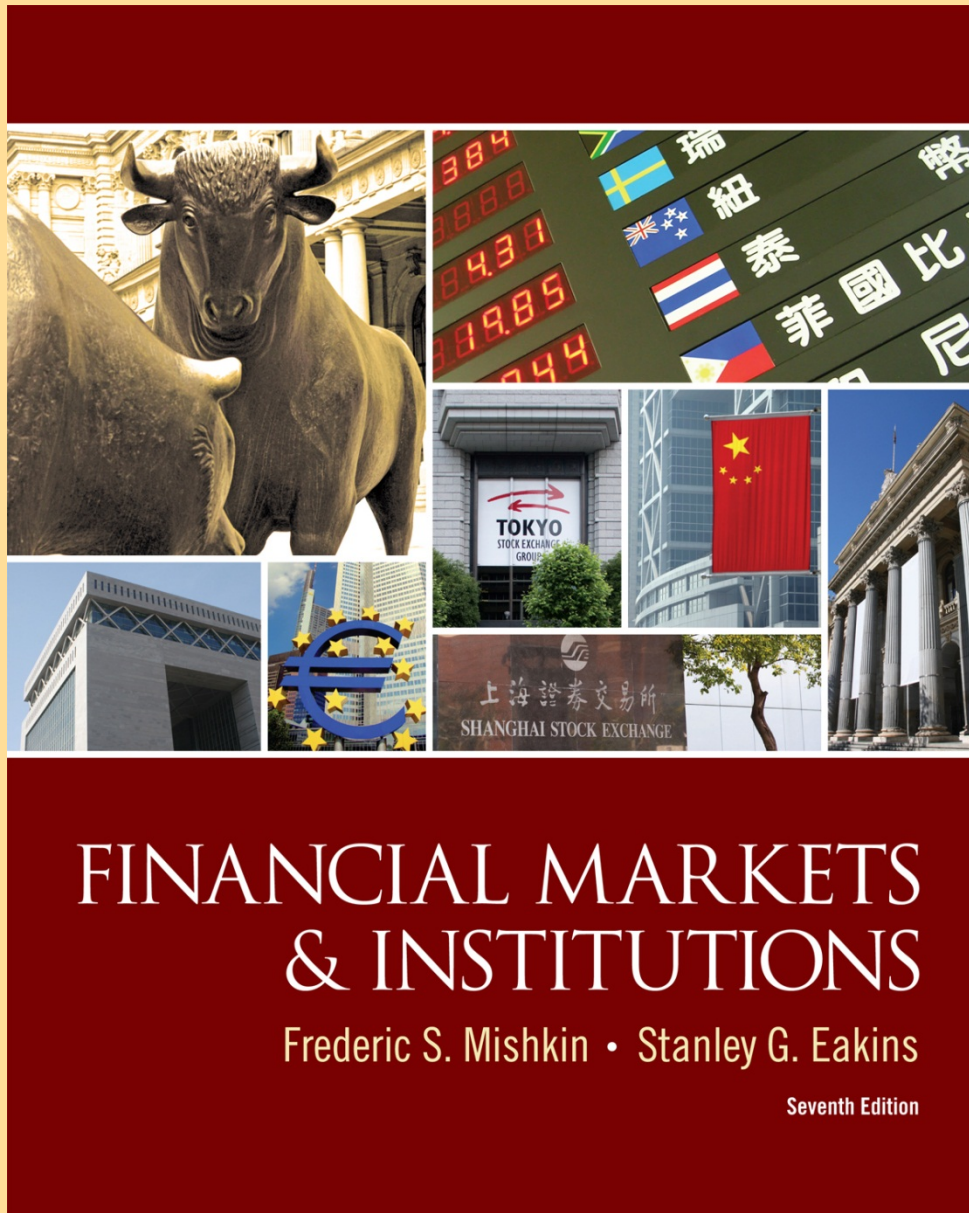


CHAPTER 10

Conduct of Monetary Policy: Tools, Goals, Strategy, and Tactics



Prentice Hall
is an imprint of

Copyright © 2012 Pearson Prentice Hall.
All rights reserved.

PEARSON



Chapter Preview

“Monetary policy” refers to the management of the money supply. Although the idea is simple enough, the theories guiding the Federal Reserve are complex and often controversial. But, we are affected by this policy, and a basic understanding of how it works is, therefore, important.



Chapter Preview

We examine how the conduct of monetary policy affects the money supply and interest rates. We focus primarily on the tools and the goals of the U.S. Federal Reserve System, and examine its historical success. Topics include:

- The Federal Reserve's Balance Sheet
- The Market for Reserves and the Federal Funds Rate



Chapter Preview (cont.)

- Tools of Monetary Policy
- Discount Policy
- Reserve Requirements
- Monetary Policy Tools of the ECB
- The Price Stability Goal and the Nominal Anchor
- Other Goals of Monetary Policy



Chapter Preview (cont.)

- Should Price Stability be the Primary Goal of Monetary Policy?
- Inflation Targeting
- Central Banks' Responses to Asset-Price Bubbles: Lessons from the 2007–2009 Financial Crisis
- Tactics: Choosing the Policy Instrument



The Federal Reserve's Balance Sheet

The conduct of monetary policy by the Federal Reserve involves actions that affect its balance sheet. This is a simplified version of its balance sheet, which we will use to illustrate the effects of Fed actions.

Federal Reserve System	
Assets	Liabilities
Government securities	Currency in circulation
Discount loans	Reserves



The Federal Reserve's Balance Sheet: Liabilities

- The *monetary liabilities* of the Fed include:
 - Currency in circulation: the physical currency in the hands of the public, which is accepted as a medium of exchange worldwide.
 - Reserves: All banks maintain deposits with the Fed, known as reserves. The required reserve ratio, set by the Fed, determines the *required reserves* that a bank must maintain with the Fed. Any reserves deposited with the Fed beyond this amount are *excess reserves*. The Fed does not pay interest on reserves, but that may change because of legislative changes for 2011.



The Federal Reserve's Balance Sheet: Assets

- The *monetary assets* of the Fed include:
 - Government Securities: These are the U.S. Treasury bills and bonds that the Federal Reserve has purchased in the open market. As we will show, purchasing Treasury securities increases the money supply.
 - Discount Loans: These are loans made to member banks at the current *discount rate*. Again, an increase in discount loans will also increase the money supply.



Open Market Operations

- In the next two slides, we will examine the impact of open market operation on the Fed's balance sheet and on the money supply. As suggested in the last slide, we will show the following:
 - Purchase of bonds increases the money supply
 - Making discount loans increases the money supply
- Naturally, the Fed can decrease the money supply by reversing these transactions.



The Federal Reserve Balance Sheet

■ Open Market Purchase from Public

Public		The Fed	
Assets	Liabilities	Assets	Liabilities
Securities		Securities	Reserves
-\$100		+\$100	+\$100
Deposits			
+\$100			

Banking System	
Assets	Liabilities
Reserves	Deposits
+\$100	+\$100

■ Result $R \uparrow \$100$, $MB \$100$



The Federal Reserve Balance Sheet

- Discount Lending

Banking System	
Assets	Liabilities
Reserves	Discount loans
+\$100	+\$100

The Fed	
Assets	Liabilities
Discount loans	Reserves
+\$100	+\$100

- Result $R \uparrow \$100$, $MB \$100$



Supply and Demand in the Market for Reserves

We now have some understanding of the effect of open market operations and discount lending on the Fed's balance sheet and available reserves. Next, we will examine how this change in reserves affects the *federal funds rate*, the rate banks charge each other for overnight loans. Further, we will examine a third tool available to the Fed—the ability to set the *required reserve ratio* for deposits held by banks.



Supply and Demand in the Market for Reserves

1. Demand curve slopes down because $i_{ff} \downarrow$, $ER \uparrow$ and R^d up
2. Supply curve slopes down because $i_{ff} \uparrow$, $DL \uparrow$, $R^s \uparrow$
3. Equilibrium i_{ff}^* where $R^s = R^d$

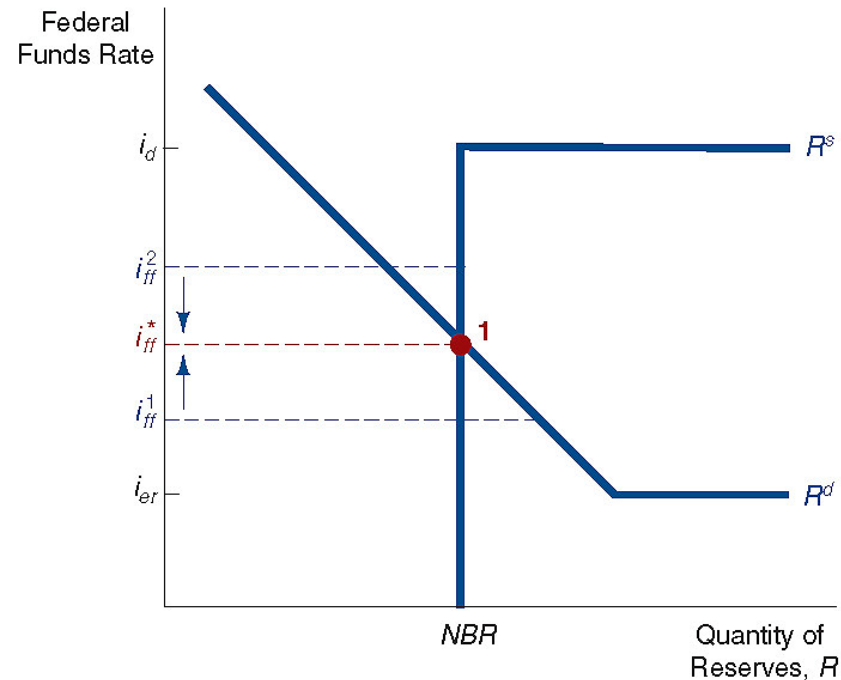


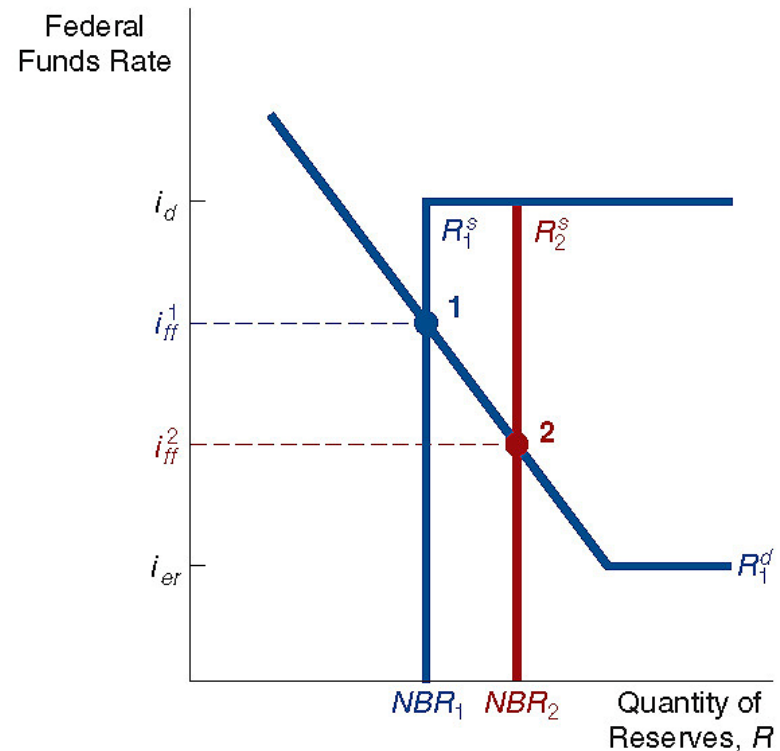
FIGURE 10.1 Equilibrium in the Market for Reserves

Equilibrium occurs at the intersection of the supply curve R^s and the demand curve R^d at point 1 and an interest rate of i_{ff}^* .



Response to Open Market Operations: Case 1—downward sloping demand

1. Open market purchase shifts supply curve to the right (NBR_1 to NBR_2).
2. R^s shifts down, fed funds rate falls.
3. Reverse for sale.

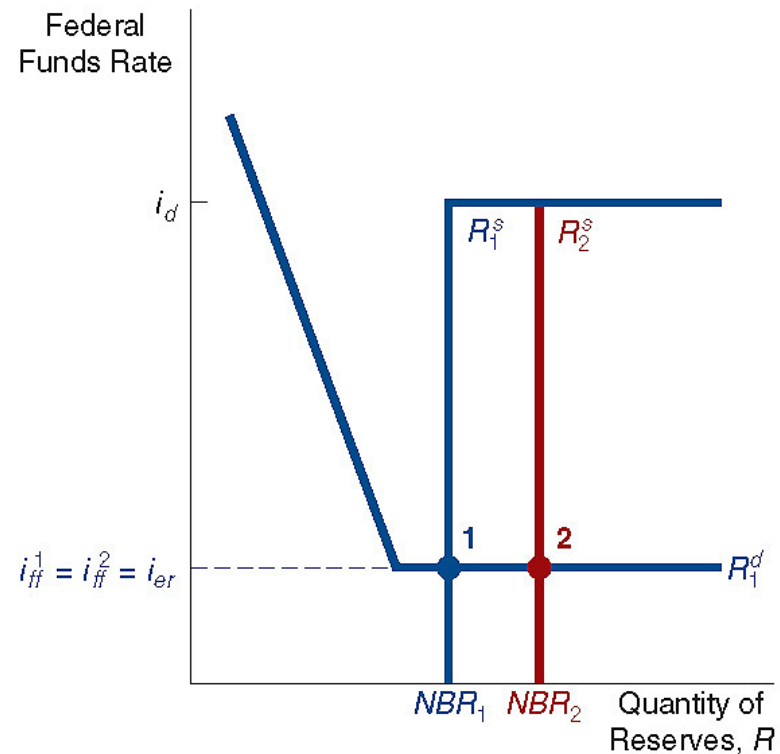


(a) Supply curve initially intersects demand curve in its downward-sloping section



Response to Open Market Operations: Case 2—flat demand

1. Open market purchase shifts supply curve to the right (NBR_1 to NBR_2).
2. R^s parallel, fed funds rate unchanged.
3. Reverse for sale.

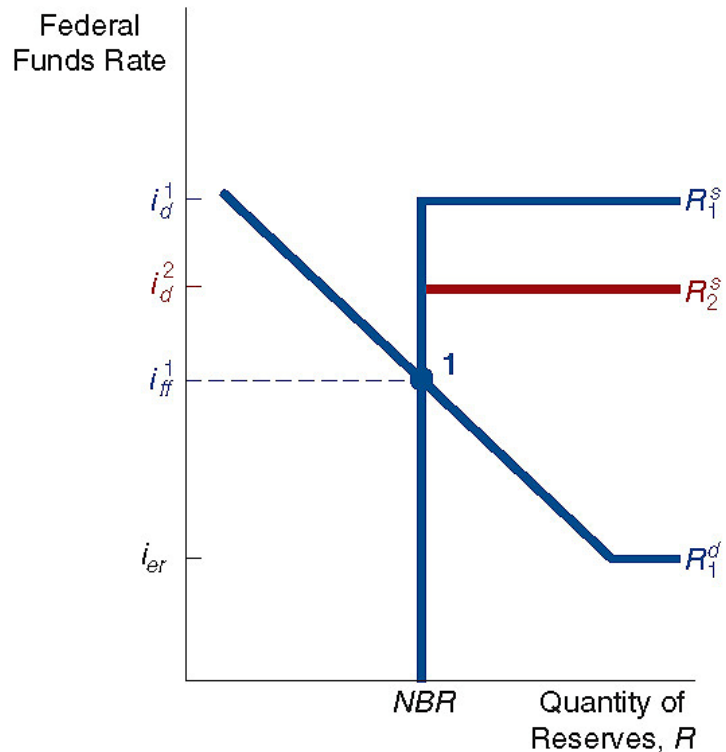


(b) Supply curve initially intersects demand curve in its flat section



Response to Change in Discount Rate: Case 1—no intersection

1. The Fed lowers i_d , and does not cross the demand curve
2. R^s shifts down
3. i_{ff} is unchanged

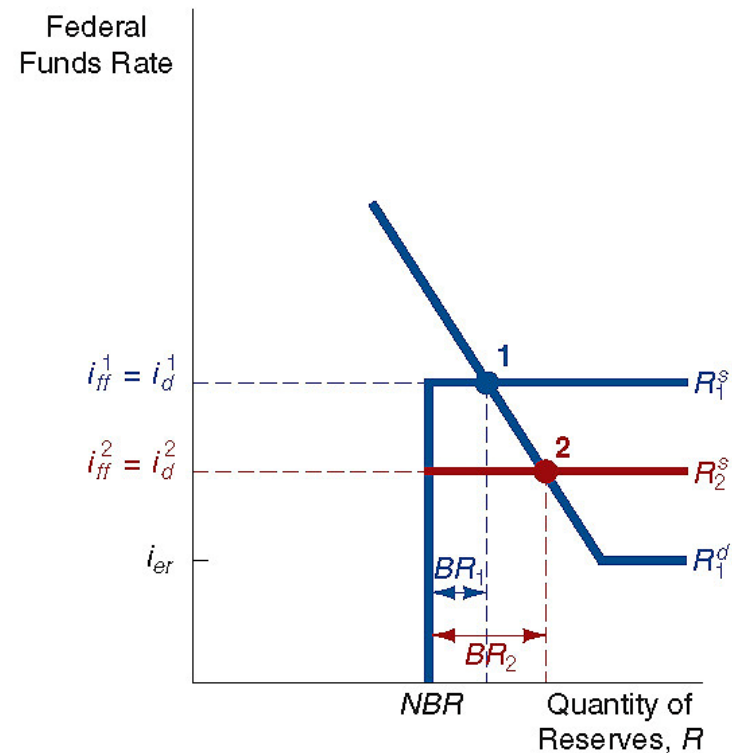


(a) No discount lending ($BR = 0$)



Response to Change in Discount Rate: Case 2—demand intersected

1. The Fed lowers i_d , and does cross the demand curve
2. R^s shifts down
3. i_{ff} falls



(b) Some discount lending ($BR > 0$)



Supply and Demand in the Market for Reserves

- $RR \uparrow$, R^d shifts to right, $i_{ff} \uparrow$

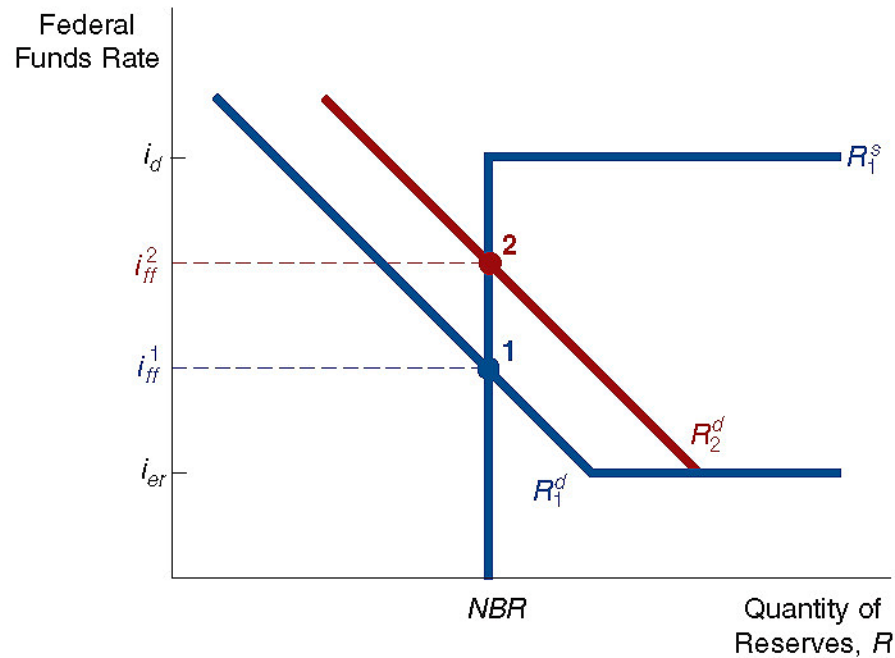


FIGURE 10.4 Response to a Change in Required Reserves

When the Fed raises reserve requirements, required reserves increase, which increases the demand for reserves. The demand curve shifts from R_1^d to R_2^d , the equilibrium moves from point 1 to point 2, and the federal fund rate rises from i_{ff}^1 to i_{ff}^2 .



CASE: How Operating Procedures Limit Fluctuations in Fed Funds Rate

An advantage of current operating procedures. Any changes in the demand for reserves will not affect the fed funds rate because borrowed reserves will increase to match the demand increase. This is true whether the demand increases, or decreased, as seen in Figure 10.5 (next slide).



CASE: How Operating Procedures Limit Fluctuations in Fed Funds Rate

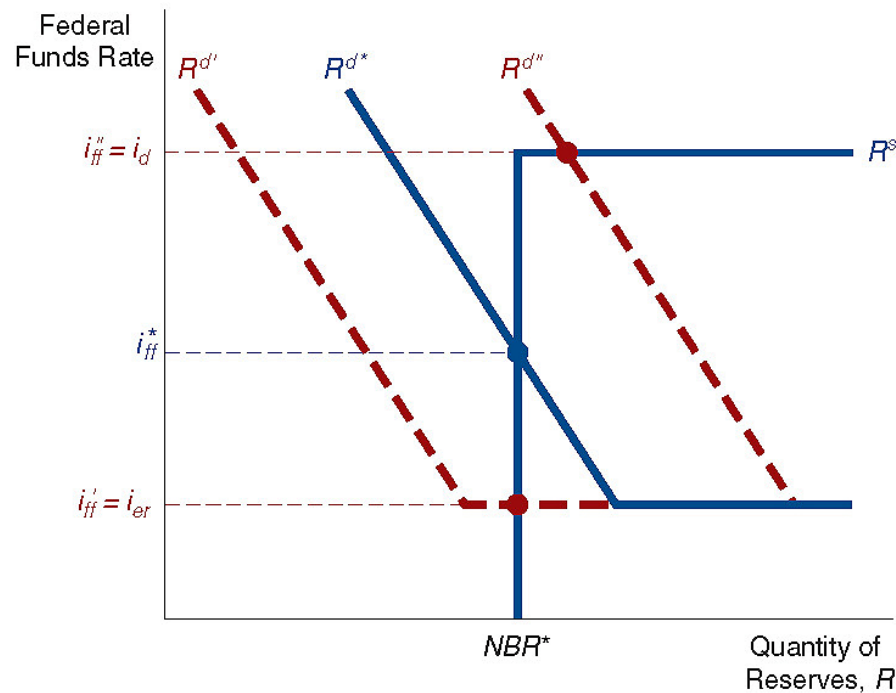


FIGURE 10.5 How the Federal Reserve's Operating Procedures Limit Fluctuations in the Federal Funds Rate

A shift to the right in the demand curve for reserves to $R^{d''}$ will raise the equilibrium federal funds rate to a maximum of $i_{ff}'' = i_d$ while a shift to the left of the demand curve to $R^{d'}$ will lower the federal funds rate to a minimum of $i_{ff}' = i_{er}$.



Tools of Monetary Policy

Now that we have seen and understand the tools of monetary policy, we will further examine each of the tools in turn to see how the Fed uses them in practice and how useful each tools is.



Tools of Monetary Policy: Open Market Operations

- Open Market Operations
 1. Dynamic: Meant to change Reserves
 2. Defensive: Meant to offset other factors affecting Reserves, typically uses repos
- Advantages of Open Market Operations
 1. Fed has complete control
 2. Flexible and precise
 3. Easily reversed
 4. Implemented quickly

Information about the FOMC <http://www.federalreserve.gov/fomc>



Tools of Monetary Policy: Open Market Operations at the Trading Desk

- The staff reviews the activities of the prior day and issue forecasts of factors affecting the supply and demand for reserves.
- This information is used to determine reserve changes needed to obtain a desired fed funds rate.
- Government securities dealers are contacted to better determine the condition of the market.
- Projections are compared with the Monetary Affairs Division of the BOG, and a course of action is determined.
- Once the plan is approved, the desk carries out the required trades, via the TRAPS system.



Tools of Monetary Policy: Open Market Operations at the Trading Desk

- The trading desk typically uses two types of transactions to implement their strategy:
 - **Repurchase agreements:** the Fed purchases securities, but agrees to sell them back within about 15 days. So, the desired effect is reversed when the Fed sells the securities back—good for taking defense strategies that will reverse.
 - **Matched sale-purchase transaction:** essentially a reverse repo, where the Fed sells securities, but agrees to buy them back.



Discount Policy

- The Fed's discount loans are primarily of three types:
 - Primary Credit: Policy whereby healthy banks are permitted to borrow as they wish from the primary credit facility.
 - Secondary Credit: Given to troubled banks experiencing liquidity problems.
 - Seasonal Credit: Designed for small, regional banks that have seasonal patterns of deposits.



Discount Policy

- Lender of Last Resort Function
 - To prevent banking panics
 - Example: Continental Illinois
- Really needed? What about the FDIC?
 - Problem 1: FDIC only has about 1% of deposits in the insurance trust—people need the Fed for additional confidence in the system
 - Problem 2: over \$1.8 trillion are large deposits not insured by the FDIC



Discount Policy

- Lender of Last Resort Function
 - Can also help avoid panics
 - Ex: Market crash in 1987 and terrorist attacks in 2001—bad events, but no real panic in our financial system
- But there are costs!
 - Banks and other financial institutions may take on more risk (moral hazard) knowing the Fed will come to the rescue



Inside the Fed

- **The 2007–2009 Financial Crisis** tested the Fed's ability to act as a lender of last resort. Here are some of the details of the Fed's efforts during this period to provide liquidity to the banking system:
 - The Fed lowered the discount rate to 0.5% above the fed funds rate, and then by March 2008, lowered that to just 0.25%.
 - Discount loan maturity was extended from overnight loans to loans maturity in 30 days, and then 90 days.



Inside the Fed

- The Fed set up the Term Auction Facility as an alternative to discount lending. Rates were set by auction. Initially, the facility was funded with \$20 billion. It increased to over \$400 billion as the crisis worsened.
- In March 2008, the Fed created the Term Securities Lending Facility to lend T-securities to primary dealers to provide liquid collateral. At the same time, the Fed increased lending of US dollars to foreign central banks so they could, in turn, provide dollar liquidity to their domestic banks.



Inside the Fed

- When Bear Sterns failed, the Fed purchased \$30 billion of Bear's mortgages-related securities to facilitate the sale of Bear to JP Morgan. This transaction clearly pushed the limits of the Fed's lawful powers to act during a crisis.
- Further details of the Fed's role as lender-of-last resort are detailed in the "Inside the Fed" box on pages 229 and 230.



Reserve Requirements

Reserve Requirements are requirements put on financial institutions to hold liquid (vault) cash against checkable deposits.

- Everyone subject to the same rule for checkable deposits:
 - 3% of first \$48.3M, 10% above \$48.3M
 - Fed can change the 10%
- Rarely used as a tool
 - Raising causes liquidity problems for banks
 - Makes liquidity management unnecessarily difficult

FOMC calendar and meeting minutes

<http://www.federalreserve.gov/fomc/#calendars>



Monetary Policy Tools of the ECB

The ECB signals its intended policy by setting a **target financing rate**, which in turn establishes the **overnight cash rate**. Like the Fed, the EBC then has several tools at its disposal to implement its intended policy: open market operations, lending to banks, and reserve requirements. We will discuss each.



ECB Open Market Operations

- Like the Fed, open market operations are the primary tool to implement the policy.
- The ECB primarily uses **main refinancing operations** (like repos) via a bid system from its credit institutions.
- Operations are decentralized—carried out by each nation's central bank.
- Also engage in **long-term refinancing operations**, but not really to implement policy.



ECB Lending to Banks

- Like the Fed, the ECB lends to its member banks via its **marginal lending facility**.
- Banks can borrow at the **marginal lending rate**, which is 100 basis points above the target lending rate.
- Also has the **deposit facility**. This provides a floor for the overnight market interest rate.



ECB Reserve Requirements

- Like the Fed, ECB requires banks to hold 2% of checkable deposits, plus a minimum reserve requirement.
- The ECB does pay interest on reserves, unlike the Fed.



Price Stability Goal & the Nominal Anchor

Policymakers have come to recognize the social and economic costs of inflation.

- Price stability, therefore, has become a primary focus.
- High inflation seems to create uncertainty, hampering economic growth.
- Indeed, *hyperinflation* has proven damaging to countries experiencing it.



Price Stability Goal & the Nominal Anchor

- Policymakers must establish a **nominal anchor** which defines price stability. For example, “maintaining an inflation rate between 2% and 4%” might be an anchor.
- An anchor also helps avoid the **time-inconsistency problem**.



Price Stability Goal & the Nominal Anchor

- The **time-inconsistency problem** is the idea that day-by-day policy decisions lead to poor long-run outcomes.
 - Policymakers are tempted in the short-run to pursue expansionary policies to boost output. However, just the opposite usually happens.
 - Central banks will have better inflation control by avoiding surprise expansionary policies.
 - A nominal anchor helps avoid short-run decisions.



Other Goals of Monetary Policy

- Goals
 - High employment
 - Economic growth
 - Stability of financial markets
 - Interest-rate stability
 - Foreign exchange market stability
- Goals often in conflict



Should Price Stability be the Primary Goal?

- Price stability is *not* inconsistent with the “other goals” in the long-run. For example, there is no trade-off between inflation and employment in the long-run.
- However, there are short-run trade-offs. For example, an increase in interest rates will help prevent inflation, but does increase unemployment in the short-run.



Should Price Stability be the Primary Goal?

- The ECB uses a **hierarchical mandate**, placing the goal of price stability above all other goals.
- The Fed, in contrast, uses a **dual mandate**, where “maximizing employment, stable prices, and moderate long-term interest rates” are all given equal importance.



Should Price Stability be the Primary Goal?

Which is better?

- If “maximum employment” is defined as the natural rate of unemployment, then both hierarchical and dual mandates achieve the same goal. However, it’s usually more complicated in practice.
- Also, short-run inflation may be needed to maintain economic output. So, long-run inflation control should be the focus.



Should Price Stability be the Primary Goal?

Which is better?

- But the dual mandate can lead to expansionary policies that increase employment, output, but also increases long-run inflation.
- However, a hierarchical mandate can lead to over-emphasis on inflation alone—even in the short-run.
- The answer? It depends. As long as it helps the central bank focus on long-run price stability, either is acceptable.



Inflation Targeting

Inflation targeting involves:

1. Announcing a medium-term inflation target
2. Commitment to monetary policy to achieve the target
3. Inclusion of many variables to make monetary policy decisions
4. Increasing transparency through public communication of objectives
5. Increasing accountability for missed targets



Inflation Targeting

- New Zealand
 - Passed the Reserve Bank of New Zealand Act (1990)
 - Policy target agreement set an annual inflation target in the range of 0% to 2%, and higher in subsequent years
 - Initially checked inflation, but caused recession / unemployment
 - Conditions have improved since 1992
- Canada
 - Established formal inflation targets, starting in 1991
 - Targets have also been adjusted as needed, but have had similar unemployment problems as NZ



Inflation Targeting

- United Kingdom
 - Established formal inflation targets, starting in 1992, published in *Inflation Report*
 - Targets have also been adjusted as needed
 - By 1994, target range inflation was achieved, and has generally remained close since.
 - Growth in the UK remained strong, and unemployment has not been an issue.



Inflation Targeting: Pros and Cons

■ Advantages

- Relationship between target and goal is not as critical for success
- Easily understood by the public
- Helps avoid the time-inconsistency problem since public can hold central bank accountable to a clear goal
- Forces policymakers to communicate goals and discuss progress regularly



Inflation Targeting: Pros and Cons

- Advantages (continued)
 - Allows for better private sector planning since the central bank must communicate
 - Inflation goals
 - Regular measures of inflation
 - How to achieve the goals given current conditions
 - Explanation of deviations from targets
 - Performance has been good!



Inflation Targeting: Pros and Cons

- Disadvantages
 - Signal of progress is delayed
 - Affects of policy may not be realized for several quarters.
 - Policy tends to promote too much rigidity
 - Limits policymakers ability to react to unforeseen events
 - Usually “flexible targeting” is implemented, focusing on several key variables and targets modified as needed



Inflation Targeting: Pros and Cons

- Disadvantages
 - Potential for increasing output fluctuations
 - May lead to a tight policy to check inflation at the expense of output, although policymakers usually pay attention to output
 - Usually accompanied by low economic growth
 - Probably true when getting inflation under control
 - However, economy rebounds



Global: the ECB's Strategy

- The ECB pursues a hybrid monetary policy, including both monetary targeting and inflation targeting.
- Two key pillars:
 - Monetary and credit aggregates are monitored for implications on future inflation and growth
 - Many other variables examined to assess the future economic outlook



Inside the Fed: Ben Bernanke and Inflation Targeting

- Well-authored on the implementation and impact of inflation targeting while a professor at Princeton.
- Speech in 2004 suggests the Fed will continue to move toward inflation targeting.
- However, comments since taking over the Fed suggest he will look for consensus here before acting.



Inside the Fed: Ben Bernanke and Inflation Targeting

- The 2007 announcement of the new communication strategy of three year inflation projects will certainly impact the FOMC's objectives.
- The FOMC will also have to reach a consensus for the inflation objective.
- Together, this will give us (the public) a clear inflation objective, essentially serving a inflation targeting.



Central Banks' Responses to Asset-Price Bubbles: Lessons from 2007–2009

Asset pricing bubbles occur when an asset's prices diverge significantly from fundamental values, and then subsequently return to the fundamental value (or lower) quite rapidly. We discuss the effects of such bubbled in Chapter 8. In the context of this chapter, these bubbles raise some difficult questions!



Central Banks' Responses to Asset-Price Bubbles: Lessons from 2007–2009

- What should central banks do about pricing bubbles?
- Should monetary policy be used to end a pricing bubble?
- Are there measures that would be effective to rein in a bubble?



Central Banks' Responses to Asset-Price Bubbles: Lessons from 2007–2009

To help answer this, we first must define the types of pricing bubbles.

- A **credit-driven bubble** is created when easy credit terms spill over into asset prices. And as asset prices increase, further lending is encouraged.
- Very dangerous when the bubble ends. Just the opposite occurs, and the downward spiral may be more extensive than the asset bubble.



Central Banks' Responses to Asset-Price Bubbles: Lessons from 2007–2009

To help answer this, we first must define the types of pricing bubbles.

- An **optimism-driven bubble** is driven only by overly optimistic expectations of asset pricing. The tech bubble of the late-1990s is a good example. Banks had little involvement.
- These bubbles are less dangerous, as the impact on the financial system is limited. But the resulting wealth transfers are still not good for the economy.



Should Central Banks Respond?

Under Greenspan, the answer was no! We have to assume that the government is smarter than the market. Greenspan preferred to let the market sort these things out. However, this policy is dangerous when a bubble is also accompanied by a credit boom. As we just experienced, such a bubble has far reaching impacts when the bubble bursts.



Should Central Banks Respond?

But even if we agree that a response is appropriate, *what* response is not clear. For example, should the Fed take actions to raise interest rates to stem a bubble?

- Not clear that rates can fix the problem
- Too blunt of an instrument to affect only one asset price in the economy
- The collateral damage (slow economy, unemployment, etc.) may be worse than the bubble we are trying to avoid



Other responses?

Macroprudential regulation may be the answer

- Increase disclosure requirements and capital requirements, prompt corrective action, monitoring risk-management procedures, and close supervision.

For example, countercyclical capital requirements would dampen credit-booms. As asset prices increase, increase required capital. During slower times, lessen them. Make sense? Try to borrow money for house and see how much capital (down payment) a bank wants. Lenders are doing just the opposite!



Tactics: Choosing the Instrument

- Now we turn to how monetary policy is conducted on a daily basis. First, understand that a **policy instrument** (for example, the fed funds rate) responds to the Fed's tools. There are two basic types of instruments: reserve aggregates and short-term interest rates.
- An **intermediate target** (for example, a long-term interest rate) is not directly affected by a Fed tool, but is linked to actual goals (e.g., long-run price stability).



Tactics: Choosing the Instrument

- The key thing to understand is that the Fed can only attempt to implement its goals using either reserve aggregates or short-term interest rates. Not both. For example, suppose the Fed believed it could achieve its employment goals by achieving a 3% growth rate in nonborrowed reserves. Or by setting the fed funds rate at 4%. Why can't the Fed do both?



Nonborrowed Reserves Target

- The Fed targets nonborrowed reserves, shifting to either $R^{d'}$ or $R^{d''}$
- The federal funds rate will then fluctuate to either i' or i''

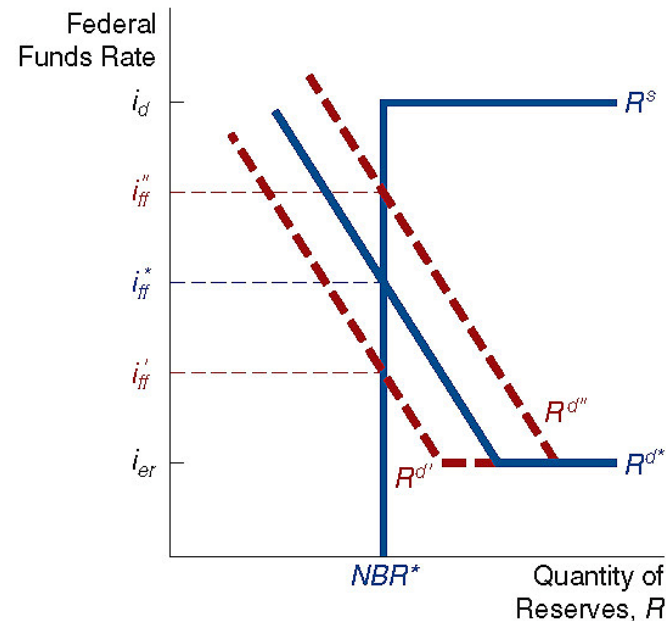


FIGURE 10.6 Result of Targeting on Nonborrowed Reserves

Targeting on nonborrowed reserves of NBR^* will lead to fluctuations in the federal funds rate between i'_{ff} and i''_{ff} because of fluctuations in the demand for reserves between $R^{d'}$ and $R^{d''}$.



Federal Funds Rate Target

- The Fed targets the federal funds rate, shifting to either i' or i''
- The non-borrowed reserves shift to either $R^{d'}$ or $R^{d''}$

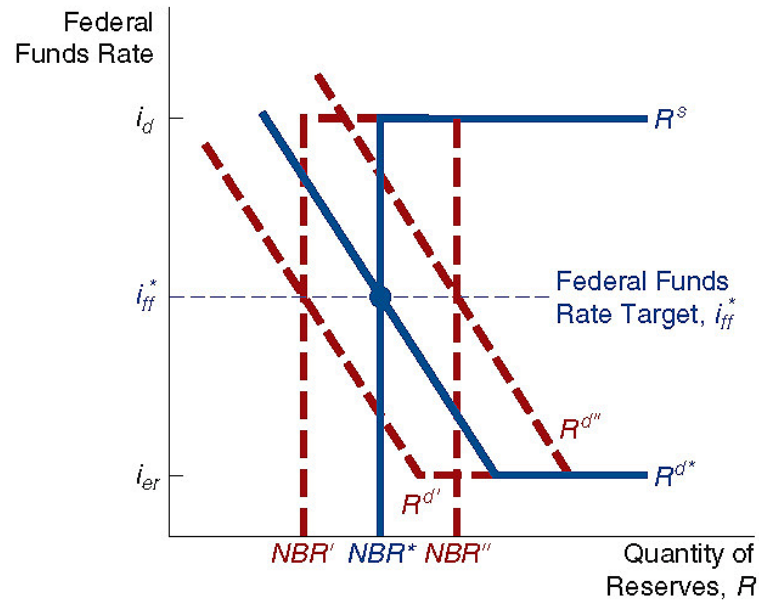


FIGURE 10.7 Result of Targeting on the Federal Funds Rate

Targeting on the interest rate i_{ff}^* will lead to fluctuation in nonborrowed reserves because of fluctuations in the demand for reserves between $R^{d'}$ and $R^{d''}$.



Criteria for Choosing Policy Instruments

- Criteria for Policy Instruments
 - Observable and Measurable
 - Some are observable, but with a lag (eg. reserve aggregates)
 - Controllable
 - Controllability is not clear-cut. Both aggregates and interest rates have uncontrollable components.
 - Predictable effect on goals
 - Generally, short-term rates offer the best links to monetary goals. But reserve aggregates are still used.



Using a Fed Watcher

- Fed watcher predicts monetary tightening, $i \uparrow$
 1. Acquire funds at current low i
 2. Buy \$ in FX market
- Fed watcher predicts monetary loosening, $i \downarrow$
 1. Make loans now at high i
 2. Buy bonds, price rise in future
 3. Sell \$ in FX market



Chapter Summary

- The Federal Reserve's Balance Sheet: the Fed's actions change both its balance sheet and the money supply. Open market operations and discount loans were examined.
- The Market for Reserves and the Federal Funds Rate: supply and demand analysis shows how Fed actions affect market rates.
- Tools of Monetary Policy: the Fed can use open market operations, discount loans, and reserve ratios to enact Fed directives.



Chapter Summary (cont.)

- Discount Policy: the Fed's role in making loans and as a lender of last resort were discussed.
- Reserve Requirements: the Fed and other central banks set the required reserves for banks. The U.S. will allow for interest on reserves in the future.
- Monetary Policy Tools of the ECB: We compared the ECB and Fed in its stance on monetary policy, tools, and targets.



Chapter Summary (cont.)

- The Price Stability Goal and the Nominal Anchor: stable inflation has become the primarily goal of central banks, but this has pros and cons.
- Other Goals of Monetary Policy: such as employment, growth, and stability, need to be considered along with inflation.



Chapter Summary (cont.)

- Should Price Stability be the Primary Goal of Monetary Policy?: We outlined conditions when this goal is both consistent and inconsistent with other monetary goals.
- Inflation Targeting: This policy has advantages: clear, easily understood, and keeps central bankers accountable. But is this at the cost of growth and employment?



Chapter Summary (cont.)

- Asset Price Bubbles: Should a central bank respond? In the case of credit-driven bubbles, the answer appears to be yes! But the right tool is not obvious.
- Tactics: Choosing the Policy Instrument: the day-to-day conduct of monetary policy requires an instrument, and banks usually choose between monetary aggregates or interest rates to achieve the goals.