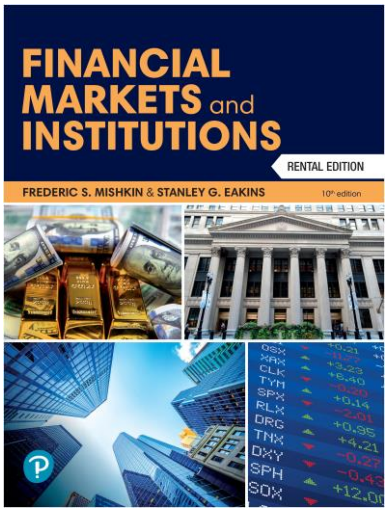
Financial Markets and Institutions

Tenth Edition



Chapter 10

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

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Chapter Preview (1 of 3)

"Monetary policy" refers to the management of the money supply. The theories guiding the Federal Reserve are complex and often controversial. We are affected by this policy, and a basic understanding of how it works is, therefore, important.

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Chapter Preview (2 of 3)

- How Fed Actions Affect Reserves in the Banking System
- The Market for Reserves and the Federal Funds Rate
- Conventional Monetary Policy Tools
- Nonconventional Monetary Policy Tools and Quantitative Easing
- Monetary Policy Tools of the ECB
- The Price Stability Goal and the Nominal Anchor

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Chapter Preview (3 of 3)

- Other Goals of Monetary Policy
- Should Price Stability Be the Primary Goal of Monetary Policy?
- Inflation Targeting
- Should Central Banks Respond to Asset-Price Bubbles? Lessons from the Global Financial Crisis

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How Fed Actions Affect Reserves in the Banking System (1 of 2)

All banks have an account at the Fed in which they hold deposits. **Reserves** consist of deposits at the Fed plus currency that is physically held by banks.

Reserves are divided into two categories:

- Required reserves
- Excess reserves

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How Fed Actions Affect Reserves in the Banking System (2 of 2)

The Fed sets the **required reserve ratio—**the portion of deposits banks must hold in cash. Any reserves deposited with the Fed beyond this amount are **excess reserves**.

The Fed injects reserves into the banking system in two ways:

- **Open market operations**
- Loans to banks, referred to as **discount loans**.

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Open Market Operations

- In the next two slides, we will examine the impact of **open market operations** conducted through **primary dealers**. 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.

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The Federal Reserve Balance Sheet (1 of 2)

- Open Market Purchase from Primary Dealer

Banking System	
Assets	Liabilities
Securities	
–$100 m	
Reserves	
+$100 m	

The Fed	
Assets	Liabilities
Securities	Reserves
+$100 m	+$100 m

- **Result** ***R*** **↑ $100,** ***MB*** **$100**

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The Federal Reserve Balance Sheet (2 of 2)

- Discount Lending

Banking System			
Assets		Liabilities	
Reserves	+$100 m	Loans	+$100 m

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

- **Result *R* ↑ $100, *MB* $100**

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The Market for Reserves and the Federal Funds Rate

We will now examine how this change in reserves affects the **federal funds rate**, the rate banks charge each other for overnight loans.

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Figure 10.1

Equilibrium in the Market for Reserves

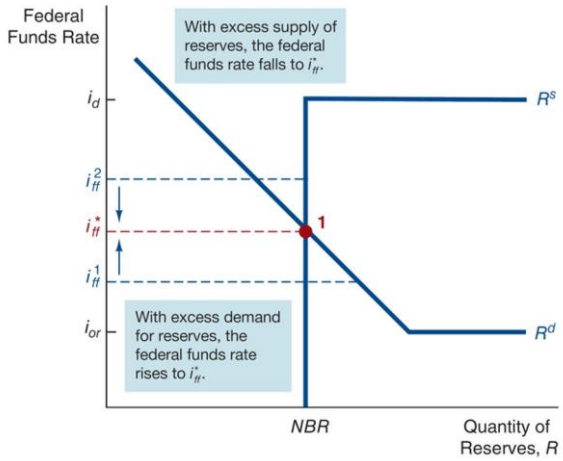

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Figure 10.2

Response to Open Market Operations

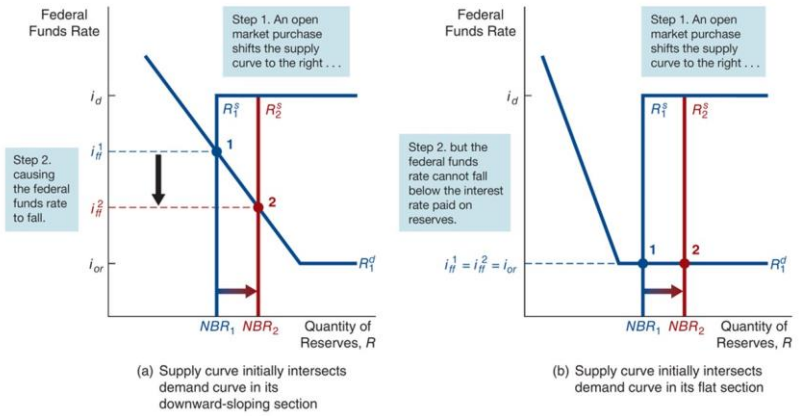

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Figure 10.3

Response to Change in Discount Rate

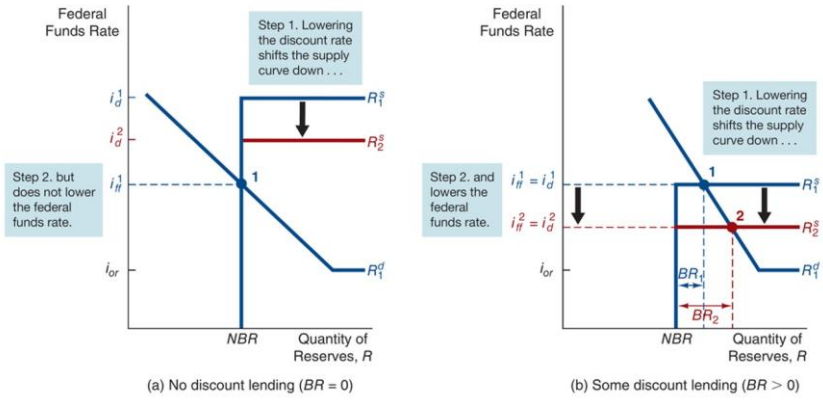

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Figure 10.4

Response to Change in Required Reserves

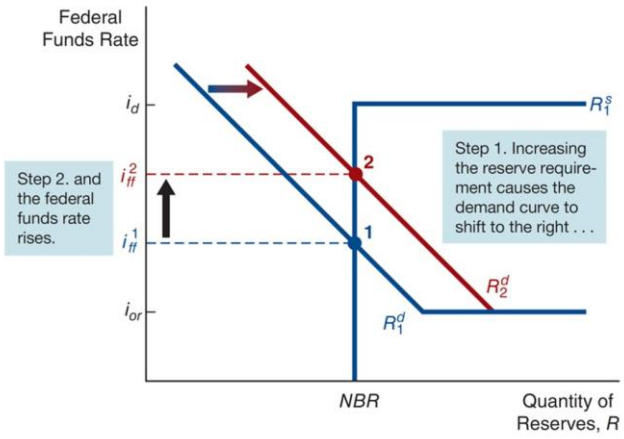

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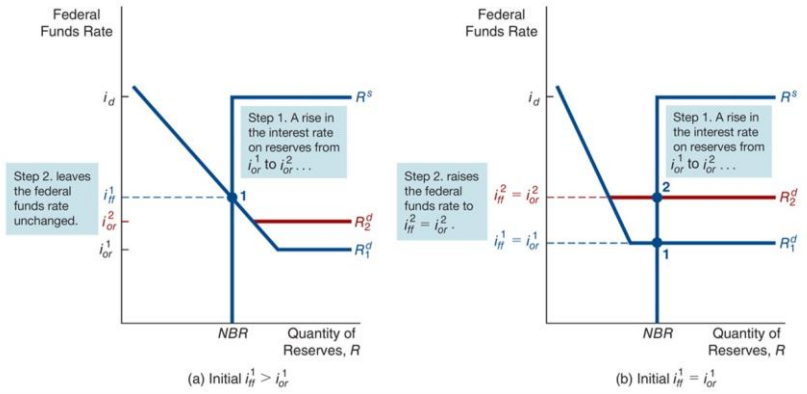
Figure 10.5

Response to Change in Discount Rate



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Case: How Operating Procedures Limit Fluctuations in Fed Funds Rate

Changes in the demand for reserves will not affect the fed funds rate—borrowed reserves will increase to match the demand!

This is true whether the demand increases, or decreased.

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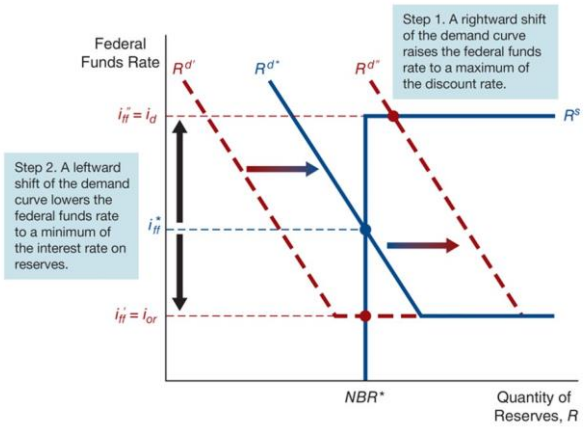
Figure 10.6

How Operating Procedures Limit Fluctuations in Fed Funds Rate



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Conventional Monetary Policy Tools

We further examine each of the tools in turn to see how the Fed uses them in practice and how useful each tools is.

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Tools of Monetary Policy: Open Market Operations

- Open Market Operations
  1. Dynamic: Change reserves and monetary base
  2. Defensive: Offset 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

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Inside the Fed: A Day at the Trading Desk (1 of 2)

- 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.

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Inside the Fed: A Day at the Trading Desk (2 of 2)

- 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 repro, where the Fed sells securities, but agrees to buy them back.

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Tools of Monetary Policy: Discount Policy (1 of 3)

- The Fed's discount loans, through the **discount window**, are:
  - Primary Credit: Healthy banks borrow as they wish from the primary credit facility or **standing lending facility**.
  - Secondary Credit: Given to troubled banks experiencing liquidity problems.
  - Seasonal Credit: Designed for small, regional banks that have seasonal patterns of deposits.

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Tools of Monetary Policy: Discount Policy (2 of 3)

- 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
  - Problem 2: Over $1.1 trillion are large deposits not insured by the FDIC

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Tools of Monetary Policy: Discount Policy (3 of 3)

- Lender of Last Resort Function
  - Can also help avoid panics
    - E.g.: 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

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Tools of Monetary Policy: Reserve Requirements

Reserve Requirements are requirements put on financial institutions to hold liquid (vault) cash again 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

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Nonconventional Monetary Policy Tools and Quantitative Easing

The global financial crisis challenged the Fed's ability to stabilize the economy:

- Financial system seized
- Zero-lower-bound problem—could take rates below zero

The problems called for the use of nonconventional tools.

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Liquidity Provisions

- Discount windows expansion—discount rate lowered several times.
- Term auction facility—another loan facility, offering another $400 billion to institutions.
- New lending programs—included lending to IBs, and lending to promote purchase of asset-backed securities.

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Inside the Fed

- **The global financial crisis** tested the Fed's ability to act as a lender of last resort.
- The next two slides detail some of the Fed's efforts during this period to provide liquidity to the banking system.

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Fed Lending Facilities During the Global Financial Crisis (1 of 3)

Lending Facility	Date of Creation	Function
Term Auction Facility (TAF)	December 12, 2007	To make borrowing from the Fed more widely used; extends loans of fixed amounts to banks at interest rates that are determined by competitive auction rather than being set by the Fed, as with normal discount lending
Term Securities Lending Facility (TSLF)	March 11, 2008	To provide sufficient Treasury securities to act as collateral in credit markets; lends Treasury securities to primary dealers for terms longer than overnight against a broad range of collateral
Swap Lines	March 11, 2008	Lends dollars to foreign central banks in exchange for foreign currencies so that these central banks can in turn make dollar loans to their domestic banks

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Fed Lending Facilities During the Global Financial Crisis (2 of 3)

Lending Facility	Date of Creation	Function
Loans to J.P. Morgan to buy Bear Stearns	March 14, 2008	Bought $30 billion of Bear Stearns assets through nonrecourse loans to J.P. Morgan to facilitate its purchase of Bear Stearns
Primary Dealer Credit Facility (PDCF)	March 16, 2008	Lends to primary dealers (including investment banks) so that they can borrow on similar terms to banks using the traditional discount window facility
Loans to AIG	September 16, 2008	Loaned $85 billion to AIG

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Fed Lending Facilities During the Global Financial Crisis (3 of 3)

Lending Facility	Date of Creation	Function
Commercial Paper Funding Facility (CPFF)	October 7, 2008	Finances purchase of commercial paper from issuers
Money Market Investor Funding Facility (MMIFF)	October 21, 2008	Lends to special-purpose vehicles so that they can buy a wider range of money market mutual fund assets
Term Asset-Backed Securities Loan Facility (TALF)	November 25, 2008	Lends to issuers of asset-backed securities against these securities as collateral to improve functioning of this market

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Large-Scale Asset Purchases (Quantitative Easing)

- Nov. 2008—QE1 established, purchasing $1.25 trillion in MBSs.
- Nov. 2010—QE2, Fed purchases $600 billion in Treasuries, lower long-term rates.
- Sept. 2012—QE3, Fed commits to buying $40 billion in MBSs each month.

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Quantitative Easing Vs Credit Easing

- QE programs dramatically increases the Fed's balance sheet.
- Power force to stimulate the economy, but perhaps also lead to inflation?

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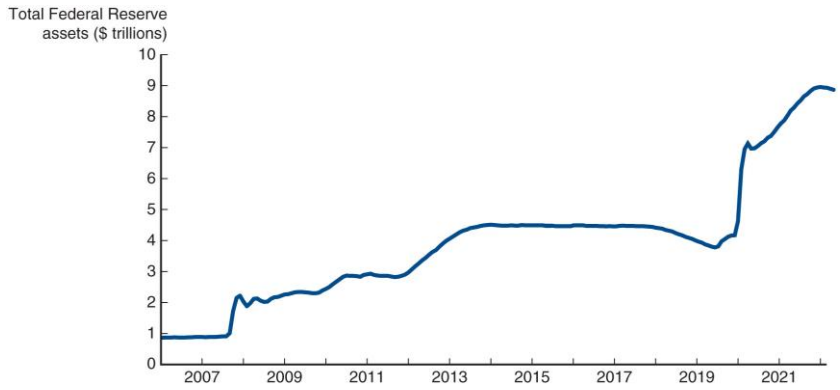
Figure 10.7

Total Federal Reserve Assets, 2007–2022



Source: Federal Reserve Bank of St. Louis, FRED database: https://fred.stlouisfed.org/series/WALCL#0 .

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Quantitative Easing Vs Credit Easing
(1 of 3)

Quantitative Easing Vs Credit Easing

- However, short-term rate is already near zero—not clear further action helps.
- Banks are not lending
- Money supply did not expand

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Quantitative Easing Vs Credit Easing
(2 of 3)

- Fed Chairman Ben Bernanke argues that the Fed has been engaged in **credit easing**, actions to impact credit markets.
- How does this work?

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Quantitative Easing Vs Credit Easing (3 of 3)

- Liquidity can help unfreeze markets that have seized.
- Asset purchases can lower rates on those assets, focusing on specific markets.

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Forward Guidance (1 of 4)

- By committing to maintain short-term rates near zero, future short-term rates should also be zero, meaning long-term rates fall.
- This is known as **forward guidance**.

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Forward Guidance (2 of 4)

- Fed started this policy in late 2008, committing to hold rates low through mid-2015.
- Long rates fell, although cause not clear.

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Forward Guidance (3 of 4)

- Commitment to low fed funds rate is **conditional**, predicated on weak economy.
- Could make an **unconditional** commitment to keep rates low, regardless of the economy.

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Forward Guidance (4 of 4)

- However, **unconditional** commitments can be tough, especially if circumstances change. Becomes a credibility problem.
- 2003 experience confirmed this—Fed's unconditional commitment of low rates needed to change.
- With the unemployment rate over 6%, at its March 2014 meeting the FOMC dropped forward guidance based on unemployment and inflation thresholds.

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Negative Interest Rates on Banks' Deposits (1 of 2)

- Central banks in Europe and Japan have started experimenting with charging banks negative interest rates on deposits held at the central bank.
- Sweden 2009, Denmark 2012, etc.
- Supposed to encourage banks to lend, as opposed to holding deposits.

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Negative Interest Rates on Banks' Deposits (2 of 2)

- Banks could just hold cash instead of depositing money with the central bank. But the costs of that (vaults, guards, security systems) is high.
- Lower profitability might lead to banks to lend less.
- Results not clear. The U.S. Fed announced that it would not use negative interest rates as a tool.

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Monetary Policy Tools of the European Central Bank

ECB policy signals by

- setting a **target financing rate**,
- which establishes the **overnight cash rate**.

The EBC has tools to implement its intended policy: (1) open market operations, (2) lending to banks, and (3) reserve requirements.

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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.

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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.

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ECB Interest on Reserves

- Like the Fed, ECB has a deposit facility, where banks can store excess cash and earn interest.
- As previously discussed, the interest rate is not always positive (negative starting in July 2014).

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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.

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Price Stability Goal & the Nominal Anchor (1 of 3)

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.

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Price Stability Goal & the Nominal Anchor (2 of 3)

- 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.**

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Price Stability Goal & the Nominal Anchor (3 of 3)

- 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.

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Other Goals of Monetary Policy

- Goals
  - High employment
    - Want demand = supply, or **natural rate of unemployment**
  - Economic growth **(natural rate of output)**
  - Stability of financial markets
  - Interest-rate stability
  - Foreign exchange market stability
- Goals often in conflict

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Should Price Stability Be the Primary Goal? (1 of 4)

- Price stability is **not** inconsistent with the other goals in the long-run.
- However, there are short-run trade-offs.
- An increase in interest rates will help prevent inflation, but increases unemployment in the short-run.

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Should Price Stability Be the Primary Goal? (2 of 4)

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

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Should Price Stability Be the Primary Goal? (3 of 4)

Which is better?

- Both hierarchical and dual mandates achieve the natural rate of unemployment. However, 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.

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Should Price Stability Be the Primary Goal? (4 of 4)

Which is better?

- Dual mandate can lead to increased employment and output, but also increases long-run inflation.
- Hierarchical mandate can lead to over-emphasis on inflation alone—even in the short-run.
- Answer? It depends. Both help the central bank focus on long-run price stability.

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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

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Inflation Targeting (1 of 2)

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

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Inflation Targeting (2 of 2)

- New Zealand
  - Passed the Reserve Bank of New Zealand Act (1990)
- Canada
  - Established formal inflation targets, starting in 1991
- United Kingdom
  - Established formal inflation targets, starting in 1992, published in **Inflation**
- Sweden, Finland, Australia, and Spain
  - Followed suit in 1993 and 1994.

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Inflation Targeting: Pros and Cons (1 of 3)

- Advantages
  - 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
  - Performance has been good!

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Inflation Targeting: Pros and Cons (2 of 3)

- 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

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Inflation Targeting: Pros and Cons (3 of 3)

- 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

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Inside the Fed: Ben Bernanke and Inflation Targeting (1 of 2)

- 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.

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Inside the Fed: Ben Bernanke and Inflation Targeting (2 of 2)

- The 2007 announcement of the new communication strategy of three year inflation projects will certainly impact the FOMC's objectives.
- In 2012, FOMC set inflation target at 2% on the PCE deflator.
- Indicated this was flexible—focus on both inflation and employment.

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Should Central Banks' Respond to Asset-Price Bubbles? Lessons from the Global Financial Crisis

Asset pricing bubbles occur when

1. asset's prices climb above fundamental values
2. ⋯ then fall back to the fundamental value (or below) quite rapidly

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Should Central Banks Respond to Asset-Price Bubbles? (1 of 3)

- What should central banks do about pricing bubbles?
  - Should response be different from inflation and employment goals?
  - Should response minimize damage when bubble bursts?
  - Clean-up after bubble bursts?

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Should Central Banks Respond to Asset-Price Bubbles? (2 of 3)

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

- **Credit-driven bubble:** 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—the downward spiral can be more damaging than the asset bubble.

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Should Central Banks Respond to Asset-Price Bubbles? (3 of 3)

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

- **Optimism-driven bubble:** driven by overly optimistic expectations of asset pricing. E.g., the tech bubble of the late-1990s.
- These bubbles are less dangerous, as the impact on the financial system is limited. Resulting wealth transfers are not good for the economy.

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Should Central Banks Respond? (1 of 3)

The “Greenspan” doctrine for why the answer is no:

- Bubbles are difficult to identify
- Rate changes may do nothing
- Rates are a blunt instrument—affect many asset prices in the economy

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Should Central Banks Respond? (2 of 3)

The “Greenspan” doctrine for why the answer is no:

- Resulting slow economy, unemployment, etc., may be worse than the bubble.
- Policy reactions after the bubble bursts may keep damage at a reasonable level.

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Should Central Banks Respond? (3 of 3)

The global financial crisis suggests the answer is yes:

- Suggests leaning against credit-driven bubbles.
- Seems easy to identify, but what policies are most effective?

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Macroprudential Regulation

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.

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Monetary Policy (1 of 2)

Low interest rates may be the “risk-taking channel of monetary policy”

- Asset managers search for high yield
- Asset demand may increase
- Lenders consider riskier projects

Perhaps just use macroprudential policies?

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Monetary Policy (2 of 2)

Macroprudential policies can be more difficult to enact:

- Subject to political pressure
- Can impact bottom line of firms
- Institutions are good at finding ways around regulation

Best policy is not clear.

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Tactics: Choosing the Policy Instrument

- A **policy instrument** (e.g., 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** (e.g., 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).

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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

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Chapter Summary (1 of 5)

- How Fed Actions Affect Reserves in the Banking System: 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.
- Conventional Monetary Policy Tools: the Fed can use open market operations, discount loans, and reserve ratios to enact Fed directives.

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Chapter Summary (2 of 5)

- Nonconventional Monetary Policy Tools and Quantitative Easing: Tools the Fed used to battle the effects of the global financial crisis.
- Monetary Policy Tools of the ECB: The ECB vs the Fed on monetary policy, tools, and targets.

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Chapter Summary (3 of 5)

- 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.

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Chapter Summary (4 of 5)

- 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?

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Chapter Summary (5 of 5)

- Should Central Banks Respond to Asset Price Bubbles? In the case of credit-driven bubbles, the answer appears to be yes! But the right tool is not obvious.

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