Macroeconomics in One Equation
Lecture 8: Central Bank Monetary Policy

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For His Glory and Mission

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Basic Concepts

Central Bank

The governmental institution responsible for issuing currency and monetary policy, which involves the overall growth of money and credit as well as the level of short-term interest rates.

Monetary policy

Central bank actions involving the use of interest rate or money supply tools to achieve such goals as maximum employment and stable prices.

Money Supply

The total amount of money available in the economy. Increasing the money supply can generate economic growth in the short run; however, when the growth of the money supply exceeds the growth of output in the economy for too long, inflation will be triggered.

Basic Concepts - Policy Stance

Accommodative Monetary Policy

Designed to stimulate economic growth by increasing the money supply, this policy usually features a series of decreases in the federal funds rate to make it easier and less expensive for businesses to borrow money.

Expansionary Monetary Policy

An expansionary monetary policy increases the quantity of bank reserves, causing short-term interest rates to fall and economic activity to decline.

Contractionary Monetary Policy

An contractionary monetary policy decreases the quantity of bank reserves, causing short-term interest rates to rise and economic activity to decline. A contractionary policy can reduce the risks of an extreme contraction by trying to cool off the economy before it overheats.

Basic Concepts - Bank Reserves

Reserves Balances

The sum of cash that banks hold in their vaults and the deposits they maintain with Federal Reserve Banks. Bank reserves can be calculated by subtracting a bank's total loans from its total deposits.

Reserve Requirement

The percentage of a bank's deposits it is required by law to hold.

Total Reserves = Required Reserves + Excess Reserves

Required reserves are funds that a depository institution must hold in reserve against specified deposits as vault cash or deposits with Federal Reserve Banks. Excess reserves are funds that a depository institution holds in its account at a Federal Reserve Bank in excess of its required reserves balance.

Basic Concepts - Policy Tools

Open Market Operation

In an open market operation, by the purchases or sales of government or agency securities, the Fed transacts with private banks to increase or decrease bank reserves held at the Fed.

Discount Window

Fed's lending programs; it refers to programs under which credit can be provided to eligible depository institutions (savings banks, commercial banks, savings and loan associations, and credit unions).

Lender of Last Resort

The Fed makes loans against high-quality collateral (assets pledged as security for the loans). Depository institutions may turn to the Fed as a lender of last resort during a financial crisis or a national/regional emergency.

Outline

1. Central Bank Overview

2. Federal Reserve System

3. Monetary Policy Framework

4. Policy Tools and Instruments

Central Bank History and Origins

- The earliest central banks were in Sweden, England, and France.
- Established in 1668 as a joint stock bank, the Swedish Riksbank was chartered to lend the government funds and to act as a clearing house for commerce.
- A few decades later (1694), the most famous central bank of the era, the Bank of England, was founded also as a joint stock company to purchase government debt.
- Early central banks typically began as private institutions; over time, governments increasingly took on central banking functions.
- An important responsibility of these central banks was issuing paper money, usually backed by gold.
- In the 19th century, central banks also began to serve as the lender of last resort during financial panics.

Bordo, Michael D., 2007. "A Brief History of Central Banks," FRB Cleveland, Economic Commentary. (w)

Oldest Central Bank in the World

1. Sweden (1668): Sveriges Riksbank
2. United Kingdom (1694): Bank of England
3. Scotland (1695): Bank of Scotland
4. Spain (1782): Banko de España (Bank of Spain)
5. France (1800): Banque de France
6. Norway (1816): Norges Bank or Noregs Bank
7. Austria (1816): Oesterreichische Nationalbank
8. Denmark National Bank (1818)
9. Bank of Finland (1819)
10. Netherlands (1884): De Nederlandsche Bank

https://www.collegenp.com/career/oldest-central-bank-in-the-world/


SVERIGES
RIKSBANK


中国人民银行

A History of Central Banking in the United States

Nearly every country around the world, and certainly every developed industrial nation, has a central bank. Most serve one or more of the following functions: acting as a bank for bankers, issuing a common currency, clearing payments, regulating banks and acting as a "lender of last resort" for banks in financial trouble. The one thing they all do is serve as banker to their own governments.

1. A New Nation: 1775-1790
2. The First Bank of the United States: 1791-1811
3. The Second Bank of the United States: 1816-1836
4. "Free" Banks: 1837-1863
5. National Banks: 1863-1913
6. Panic! 1873, 1893, 1907
7. Laying the Groundwork: 1908-1912
8. The Federal Reserve: 1913-present

https://www.minneapolisfed.org/about-us/our-history/history-of-central-banking

National Banking Before the Fed

1. The First Bank of the United States (1791-1811) Alexander Hamilton's grand experiment in central banking began in 1791 to assist a post-Revolutionary War economy and ended 20 years later.
2. The Second Bank of the United States (1816-1841) The nation made its second attempt at creating a central bank in 1816 following an economic downturn. But, like its predecessor, the institution's charter was not renewed.
3. Banking Panics of the Gilded Age (1863-1913) The late 19th century saw the expansion of the U.S. financial system but was also beset by banking panics.
4. The Panic of 1907. This global financial crisis inspired the monetary reform movement and led to the creation of the Fed.
5. The Meeting at Jekyll Island (1910.11.20-30) A secret gathering at a secluded island off the coast of Georgia laid the foundations for the Fed.

https://www.federalreservehistory.org/time-period/before-the-fed

Birth of the Federal Reserve System

The Federal Reserve System is the central bank of the United States. Founded by an act of Congress in 1913, the Federal Reserve's primary purpose was to enhance the stability of the American banking system.

- The Federal Reserve System ("Fed") is the central bank of the United States. Founded by an act of Congress in 1913, the Federal Reserve System was established with several goals in mind.
- Perhaps most important was to make the American banking system more stable. Banking panics—events characterized by widespread bank runs and payments suspensions and, to a degree, outright bank failures—had occurred often throughout the 19th century.
- More broadly, the Federal Reserve System was established to improve the flow of money and credit throughout the United States in an effort to ensure that banks had the resources to meet the needs of their customers in all parts of the country.

https://www.federalreservehistory.org/essays/federal-reserve-history

Central Banking at a Glance

1791–1811

Congress establishes first Bank of the United States in 1791

- Nation's first central bank
- Helps unify country's economy
- Faces major opposition
- Has eight branches
- 20-year charter not renewed

1816–1836

Congress establishes second Bank of the United States in 1816, which serves the same functions as the First Bank

- Finances debt from War of 1812
- Bank President Nicholas Biddle and U.S. President Andrew Jackson at odds over Second Bank
- 20-year charter not renewed
- Central banking not revived for more than 75 years

1913

Federal Reserve System established

- Nation's third central bank
- Banking Panic of 1907 raises issue of need for central bank
- Congress passes Federal Reserve Act, December 23, 1913
- Like predecessors, Fed has 20-year charter, but McFadden Act of 1927 gives Fed permanence

1930s

Nation faces grave economic woes; Great Depression leads to bank and business failures

- Congress passes laws to change financial system
  - Glass-Steagall Act passed
  - FDIC established
  - SEC established
- New laws help to restore faith in safety of banks and stocks

Source: History of Central Banking: From 1791 to the 21st Century.

1940s – 1950s

Nation weathers WWII

- Congress passes Employment Act of 1946, which defines goals of economic policy
- Treasury-Fed Accord reached in 1951; acknowledges Fed's independence in setting monetary policy

1960s – 1970s

Consumer protection laws take prominence beginning in late 1960s; high inflation and high unemployment plague nation in 1970s

- Congress passes Truth in Lending Act in 1968
- Community Reinvestment Act passed in 1977
- Humphrey-Hawkins Act of 1978 requires Fed to submit report to Congress on monetary policy twice each year

1980s – 1990s

Deregulation of the banking industry takes hold

- Congress changes the way the Fed provides services
- Consumers turn to electronic methods of payment, such as credit and debit cards
- Glass-Steagall Act of 1933 reversed in 1999. Banks can now combine with financial services firms in financial holding companies

2000 & Beyond

New century means changes and challenges

- After the terrorist attacks on September 11, 2001, the Fed maintains financial stability by pumping liquidity into the U.S. economy
- Enacted in 2003, Check 21 allows a paper check to be converted to an electronic image, further changing the U.S. payment system
- The Fed takes extraordinary steps to respond to the financial crisis of 2008, lowering short-term interest rates to near zero and establishing special lending programs

Source: History of Central Banking: From 1791 to the 21st Century.

National Banking Before the Fed

Meeting at Jekyll Island

The 1910 gathering that laid the Fed's foundations

Panic of 1907

The story of the crash that inspired monetary reform

Banking Panics of the Gilded Age

The late 19th century was beset by panics

Second Bank of the U.S.

The nation made its second attempt at creating a central bank in 1816

First Bank of the U.S.

Hamilton's grand experiment in central banking began in 1791

The United States made several attempts to regulate banks and manage the money supply at a national level before the creation of the Federal Reserve System. Source: Federal Reserve History (w)

The Fed's Formative Years

McFadden Act

The Fed's success led to this legislation in 1927, which rechartered the Federal Reserve Banks in perpetuity among other items

Liberty Bonds

The Treasury and the Fed worked together to finance World War I

Reserve Banks Open

The twelve Federal Reserve Banks opened for business in November 1914

Fed's Role During WWI

World War I was the first test of the nation's new central bank

Reserve Bank Organization Committee

The RBOC announced the location and district boundaries of the Reserve Banks in April 1914

Federal Reserve Act Signed

The Federal Reserve Act became law in December 1913, culminating three years of debate

The Fed came into its own in the two decades following the signing of the Federal Reserve Act in 1913

`https://www.federalreservehistory.org/time-period/feds-formative-years`

Great Depression to Recession

The Great Recession and After

The deep, protracted downturn in 2007-09 was followed by an unusually slow recovery

The Great Moderation

This period of relative macroeconomic stability lasted from the mid-1980s to 2007

The Great Inflation

The defining macroeconomic period of the second half of the 20th century lasted from 1965 to 1982

After the Accord

The Fed used its newly gained independence to create a new kind of monetary regime

WWII and After

The Fed pegged interest rates at a low level during WWII and enforced the peg after the war ended

The Great Depression

The worst downturn in U.S. history lasted from 1929 to 1941

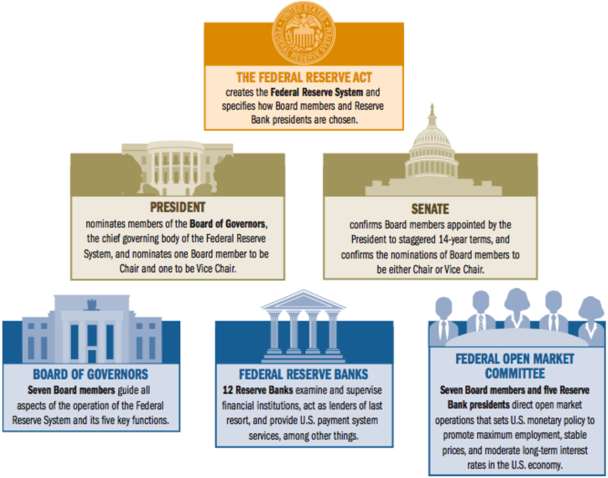
https://www.federalreservehistory.org/time-period/federal-reserve-history

	1791-1811	1816-1836	1913-Present
	First Bank of the United States	Second Bank of the United States	Federal Reserve System
			
Supervisory Duties	No	No	Yes
Monetary Policy	No, but it was large enough to affect credit conditions nationwide.	No, but it was large enough to affect credit conditions nationwide.	Yes, but in the early years, the Fed did not conduct monetary policy as we know it today.
Branches	Yes	Yes	Yes
20-Year Charter	Yes, but the charter was not renewed.	Yes, but the charter was not renewed.	Yes, the Fed originally had a 20-year charter, but the McFadden Act of 1927 gave the central bank permanency.

Source: Federal Reserve System The First 100 Years.

Outline

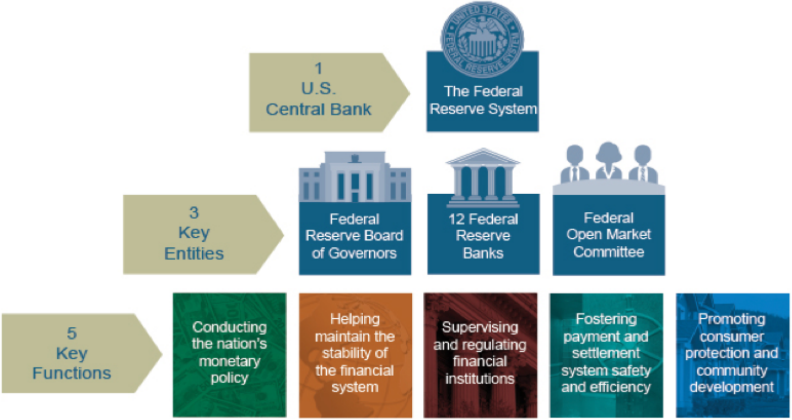
The Federal Reserve System: Statutory Framework



A statutory framework established by Congress guides the operation of the Federal Reserve System.

Source: The Fed Explained - What the Central Bank Does. 2021.

The Federal Reserve System: Structure and Function



https://www.federalreserve.gov/aboutthefed/structure-federal-reserve-system.htm

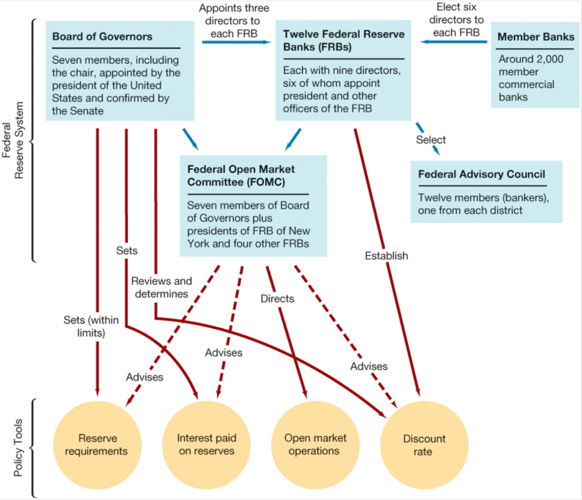
The Federal Reserve System: Functions

The Fed performs five general functions to promote the effective operation of the U.S. economy and, more generally, the public interest.

1. The Fed conducts the nation's monetary policy to promote maximum employment, stable prices, and moderate long-term interest rates ;
2. The Fed promotes the stability of the financial system and seeks to minimize and contain systemic risks through active monitoring and engagement in the U.S. and abroad;
3. The Fed promotes the safety and soundness of financial institutions and monitors their impact on the financial system as a whole;
4. The Fed fosters payment and settlement system safety and efficiency through services to the banking industry and the U.S. government that facilitate U.S.-dollar transactions and payments;
5. The Fed promotes consumer protection and community development through consumer-focused supervision and examination, research and analysis of emerging consumer issues and trends, community economic development activities, and the administration of consumer laws and regulations.

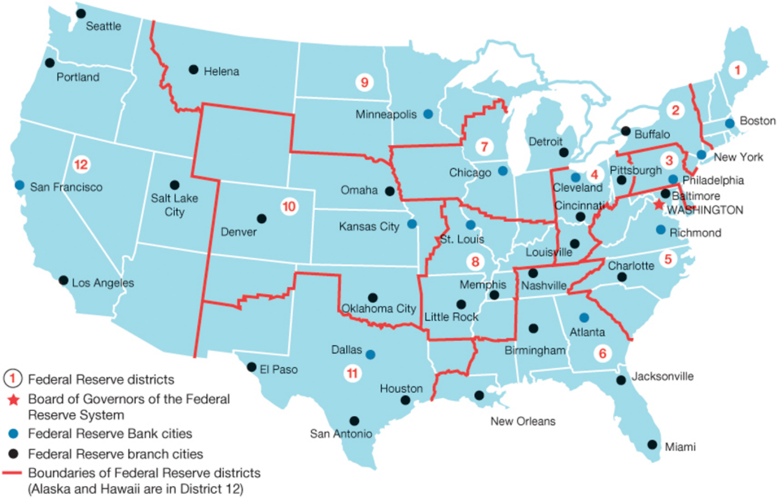
`https://www.federalreserve.gov/aboutthefed/structure-federal-reserve-system.htm`

Federal Reserve System: Organizational Structure



Source: Mishkin (2019).

Federal Reserve System: Geographical Structure



Source: Mishkin (2019).

Central Bank Mission and Policy Tools

A central bank is not an ordinary commercial bank, but a government agency. Central banks stand at the center of a nation's financial system and have played a key role in the development of the modern monetary system. Virtually all countries have a central bank.

—Ben S. Bernanke (2012)

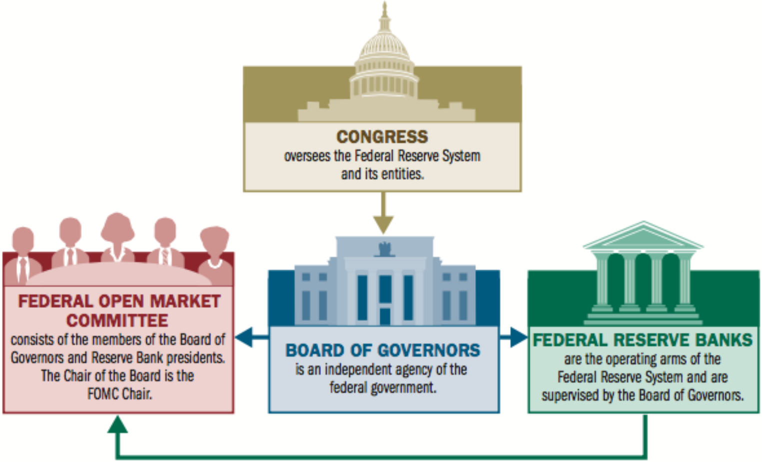
Key Missions

1. Macroeconomic stability
   - Price stability
   - Output and employment
2. Financial stability
   - Prevent or mitigate financial panics or crises

Policy Tools

1. Monetary policy
2. Provision of liquidity
3. Financial regulation and supervision

The Federal Reserve System: Key Entities



Three key Federal Reserve entities–the Federal Reserve Board of Governors (Board of Governors), the Federal Reserve Banks (Reserve Banks), and the Federal Open Market Committee (FOMC)–make decisions that help promote the health of the U.S. economy and the stability of the U.S. financial system.
https://www.federalreserve.gov/aboutthefed/structure-federal-reserve-system.htm

Federal Reserve Board: Selection and Function

- The Board of Governors–located in Washington, D.C.–is the governing body of the Federal Reserve System. It is run by seven members ("governors") who are nominated by the U.S. President and confirmed in their positions by the Senate.
- The Board of Governors guides the operation of the Federal Reserve System to promote the goals and fulfill the responsibilities given to the Federal Reserve by the Federal Reserve Act.
- All of the members of the Board serve on the FOMC. Each member of the Board of Governors is appointed for a 14-year term (non-renewable).
- The Chair and Vice Chair of the Board are also appointed by the President and confirmed by the Senate, but serve only four-year terms (renewable).
- The Board oversees the operations of the 12 Reserve Banks and shares with them the responsibility for supervising and regulating certain financial institutions and activities, providing general guidance, direction, and oversight.
- The Board also helps to ensure that the voices and concerns of consumers and communities are heard at the central bank by conducting consumer-focused supervision, research, and policy analysis, and, more generally, by promoting a fair and transparent consumer financial services market.

Source: The Fed Explained - What the Central Bank Does. 2021.

Federal Open Market Committee: Selection and Function

- The FOMC is the body of the Federal Reserve System that sets national monetary policy. The FOMC makes all decisions regarding the appropriate position or "stance" of monetary policy to help move the economy toward the congressionally mandated goals.
- FOMC has used forward guidance about its policy rate to influence expectations about the future course of monetary policy. In addition, the Committee sometimes leans on balance sheet policy.
- Membership. The FOMC consists of 12 voting members—the 7 members of the Board of Governors; the president of the Federal Reserve Bank of New York; and 4 of the remaining 11 Reserve Bank presidents, who serve one-year terms on a rotating basis.
- Responsibilities. Once the FOMC determines the appropriate stance of policy, it must then make sure this stance is effectively transmitted to financial markets. The Board and FOMC have many monetary policy implementation tools at their disposal.

Source: The Fed Explained - What the Central Bank Does. 2021.
`https://www.federalreserve.gov/aboutthefed/structure-federal-open-market-committee.htm`

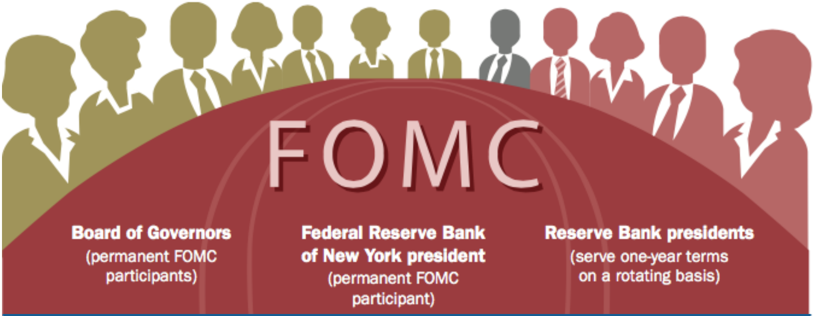
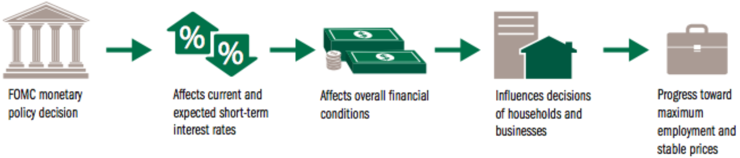


Figure 3.1. The Fed's statutory mandate: maximum employment and stable prices

The Federal Reserve conducts monetary policy in pursuit of the goals set for it by Congress. The mandated goals are considered essential to a well-functioning economy for households and businesses.



Source: The Fed Explained - What the Central Bank Does. 2021.

FOMC Voting Membership

So Who Votes?

In the early days of the FOMC, controversy swirled around how to structure the vote. Should monetary policy be set by the 12 Reserve Banks or the Board of Governors? Or both? In 1935 Congress decided that the seven Governors would vote along with only five of the 12 presidents. The president of the New York Fed always votes — since the Open Market Trading Desk operates in that District — along with four presidents who rotate from among the groups shown below. In that way, voting members always come from different parts of the country.

Always Votes		Rotating Vote (1 president from each group)			
		Group 1	Group 2	Group 3	Group 4
Chairman of the Board (Chair of FOMC) + Six Governors	President of the NY Fed (Vice Chair of FOMC)	Boston	Chicago	Atlanta	Kansas City
		Philadelphia	Cleveland	Dallas	Minneapolis
		Richmond		St. Louis	San Francisco

One-year voting terms begin with the first scheduled meeting in January, at which time the Committee formally elects its officers. Traditionally, the Chairman of the Board of Governors chairs the FOMC, and the New York Fed president serves as vice chairman. Despite the voting design, all 19 policymakers participate equally in the analysis and deliberations. Giving each president a seat at the FOMC table ensures that a "decentralized" central bank sets monetary policy that reflects regional as well as national economic conditions.

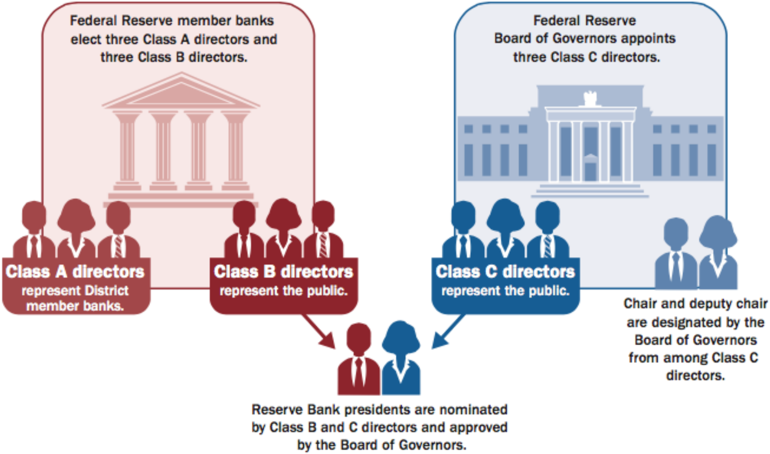
Source: A Day in the Life of FOMC (2021)

Federal Reserve Banks: Structure and Function

- The 12 Reserve Banks and their 24 Branches are the operating arms of the Federal Reserve System. Each Reserve Bank operates within its own particular geographic area, or district, of the United States.
- Each Reserve Bank gathers data and other information about the businesses and the needs of local communities in its region. That information is then factored into monetary policy decisions by the FOMC and other decisions made by the Board of Governors.
- Reserve Bank Leadership. As set forth in the Federal Reserve Act, each Reserve Bank is subject to "the supervision and control of a board of directors."
- The Reserve Banks carry out Federal Reserve core functions by 1) supervising and examining state member banks; 2) lending to depository institutions to ensure liquidity in the financial system; 3) providing key financial services that undergird the nation's payment system; 4) examining certain financial institutions to ensure and enforce compliance with federal consumer protection and fair lending laws, while also promoting local community development.

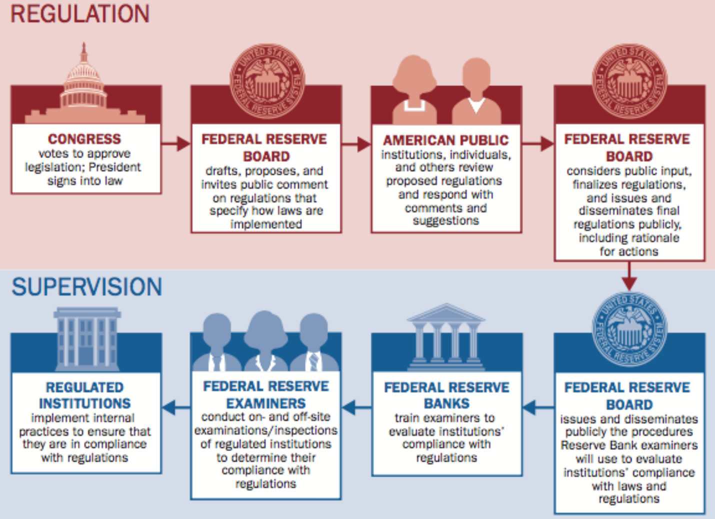
Source: The Fed Explained - What the Central Bank Does. 2021.

Reserve Banks Directors and Presidents



The boards of directors of the 12 Reserve Banks represent a cross-section of banking, commercial, agricultural, and industrial interests. Six of the nine members of each board of directors are chosen to represent the public interest; those six board directors nominate their Bank's president. Source: The Fed Explained - What the Central Bank Does. 2021

Federal Reserve's Financial Institution Oversight

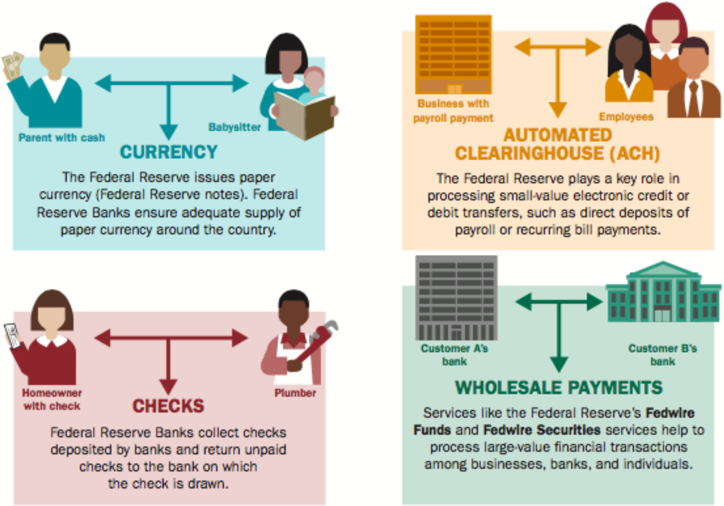


Source: The Fed Explained - What the Central Bank Does. CH5. 2021

Monitoring U.S. Financial Stability: Framework

Source: The Fed Explained - What the Central Bank Does. CH4. 2021

Federal Reserve's Role in Payment and Settlement System



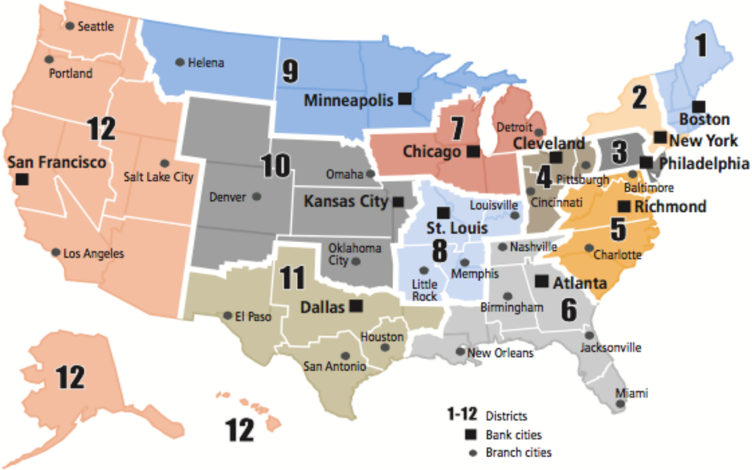
Source: The Fed Explained - What the Central Bank Does. CH6. 2021

Consumer Financial Protection Laws and Regulations

General banking	
Federal Trade Commission Act	Prohibits unfair or deceptive acts or practices in any aspect of banking transactions.
Gramm-Leach-Bliley Act (title V, subpart A), Disclosure of Nonpublic Personal Information*	Describes the conditions under which a financial institution may disclose nonpublic personal information about consumers to nonaffiliated third parties, provides a method for consumers to opt out of information sharing with nonaffiliated third parties, and requires a financial institution to notify consumers about its privacy policies and practices.
Depository accounts	
Electronic Fund Transfer Act/ Regulation E*	Requires disclosure of the terms and conditions of electronic fund transfers. Protects consumers against unauthorized transfers and establishes procedures for resolving errors and disputes.
Expedited Funds Availability Act/ Regulation CC	Limits hold periods on deposits made to depository institutions and requires appropriate consumer disclosures.
Truth in Savings Act/ Regulation DD*	Requires uniform disclosure of terms and conditions regarding interest rates and fees associated with deposit accounts. Prohibits misleading and inaccurate advertisements.
Credit/general lending	
Truth in Lending Act/ Regulation Z*	Requires lenders to clearly disclose lending terms and costs to borrowers, and incorporates the provisions of the Credit Card Accountability Responsibility and Disclosure Act, Fair Credit Billing Act, Fair Credit and Charge Card Disclosure Act, Home Equity Loan Consumer Protection Act, and Home Ownership and Equity Protection Act.
Fair Credit Reporting Act/ Regulation V*	Protects consumers from unfair credit reporting practices and requires credit-reporting agencies to allow credit applicants to correct inaccurate credit reports.
Equal Credit Opportunity Act/ Regulation B*	Prohibits creditors from discriminating on the basis of race, color, national origin, religion, sex, marital status, age, receipt of public assistance, and exercise of rights under the Consumer Credit Protection Act.
Community Reinvestment Act/ Regulation BB	Encourages financial institutions to help meet the credit needs of their entire communities, including low- and moderate-income neighborhoods.
Disclosure and Reporting of CRA-Related Agreements/ Regulation G	Requires banks and their affiliates and other parties to make public certain agreements that are in fulfillment of the Community Reinvestment Act, and to file annual reports concerning the agreements with the appropriate agency.
Fair and Accurate Credit Transactions Act*	Amends the Fair Credit Reporting Act. Enhances consumers' ability to combat identity theft, increases the accuracy of consumer reports, allows consumers to exercise greater control over the type and amount of marketing solicitations they receive, restricts the use and disclosure of sensitive medical information, and establishes uniform national standards in the regulation of consumer reporting.
Servicemembers Civil Relief Act and Military Lending Act	Provides members of the military certain financial protections while on active duty.
Mortgage lending	
Fair Housing Act	Prohibits discrimination in the sale, rental, and financing of dwellings and housing-related transactions on the basis of race, color, national origin, religion, sex, handicap, or familial status.
Real Estate Settlement Procedures Act/ Regulation X*	Requires that the nature and costs of real estate settlements be disclosed to borrowers. Also protects borrowers against abusive practices, such as kickbacks, and regulates the use of escrow accounts.
Home Mortgage Disclosure Act/ Regulation C*	Requires mortgage lenders to annually disclose to the public data on the geographic distribution of applications and loans for originations, purchases, home-improvement, and refinancings. Requires lenders to report data on the ethnicity, race, sex, income of applicants and borrowers, and other data. Also directs the Federal Financial Institutions Examination Council, of which the Federal Reserve is a member, to make summaries of the data available to the public.
Other financial topics	
Flood Disaster Protection Act/ Regulation H	Requires flood insurance in connection with loans secured by property located in a flood hazard area designated under the National Flood Insurance Program.
Consumer Leasing Act/ Regulation M*	Requires disclosure of information about the costs and terms of consumer leases for vehicles and other personal property.

Source: The Fed Explained - What the Central Bank Does. CH7. 2021

Federal Reserve Community Development



The Federal Reserve has dedicated community development staff in each of its offices throughout the country who work collaboratively to engage stakeholders; to understand issues and challenges in low- and moderate-income communities; and to provide research, policy insights, and technical assistance to support community and economic development programs. Source: The Fed Explained (2021) CH7

Other Significant Entities

1. Depository institutions–banks, thrifts, and credit unions. Depository institutions offer transaction, or checking, accounts to the public, and may maintain accounts of their own at their local Federal Reserve Banks. Depository institutions are required to meet reserve requirements in an account at a Reserve Bank.
2. Federal Reserve System advisory committees, which make recommendations to the Board of Governors and to the Reserve Banks regarding the System's responsibilities.
   - Federal Advisory Council (FAC)
   - Community Depository Institutions Advisory Council (CDIAC)
   - Model Validation Council (established in 2012 for stress tests)
   - Community Advisory Council (CAC)
3. Federal Reserve Banks also have their own advisory committees. Perhaps the most important of these are committees that advise the Banks on agricultural, small business, and labor matters.

`https://www.federalreserve.gov/aboutthefed/structure-federal-reserve-system.htm`

Outline

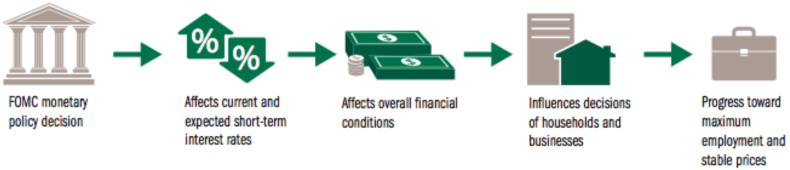
Monetary Policy Overview

- Monetary policy most directly affects the current and expected future path of short-term interest rates; the anticipated path of short-term interest rates then affects overall financial conditions including longer-term interest rates, stock prices, the exchange value of the dollar, and many other asset prices. Through these channels, monetary policy influences the decisions of households and businesses, thus affecting overall spending, investment, production, employment, and inflation in the United States.
- Conducting monetary policy effectively involves a number of important elements including **a basic strategy** that guides the adjustment of the stance of policy over time, **a policy process** involving the coordinated actions of the Federal Reserve's two decision-making bodies—the Board of Governors (Board) and the Federal Open Market Committee (FOMC)—**a communications effort** with the public to describe the rationale for the Federal Reserve's policy decisions, **a range of tools** used to implement the desired stance of policy, and **an institutional framework** that involves appropriate independence of the Federal Reserve in conducting policy while remaining fully accountable to Congress and the American people for its actions.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Figure 3.1. The Fed's statutory mandate: maximum employment and stable prices

The Federal Reserve conducts monetary policy in pursuit of the goals set for it by Congress. The mandated goals are considered essential to a well-functioning economy for households and businesses.



- What is monetary policy? It is the Federal Reserve's actions, as a central bank, to achieve the "dual mandate" goals specified by Congress: maximum employment and stable prices in the U.S..
- The Federal Reserve conducts monetary policy by using a variety of tools to manage financial conditions that encourage progress toward its dual mandate objectives.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

The Conduct of Monetary Policy

Monetary policy affects the U.S. economy–and the achievement of the dual mandate–primarily through its influence on interest rates and overall financial conditions. With this in mind, the FOMC decides on the appropriate position or "stance" of monetary policy. Over time, the Committee has raised and lowered its target range for the policy rate, which is the federal funds rate (FFR).

- When the FOMC changes the target range for the federal funds rate, other interest rates and financial conditions more broadly adjust in response, thus affecting household and business spending and saving decisions.
- The FOMC changes monetary policy primarily by raising or lowering its target range for the federal funds rate. Lowering the target range represents an "easing" of monetary policy, while increasing the target range is a "tightening" of policy.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

FOMC's Policy Rate Decisions

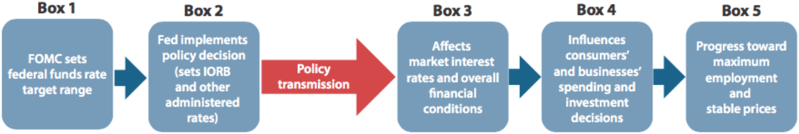


Table 1
The FOMC's Policy Rate Decisions

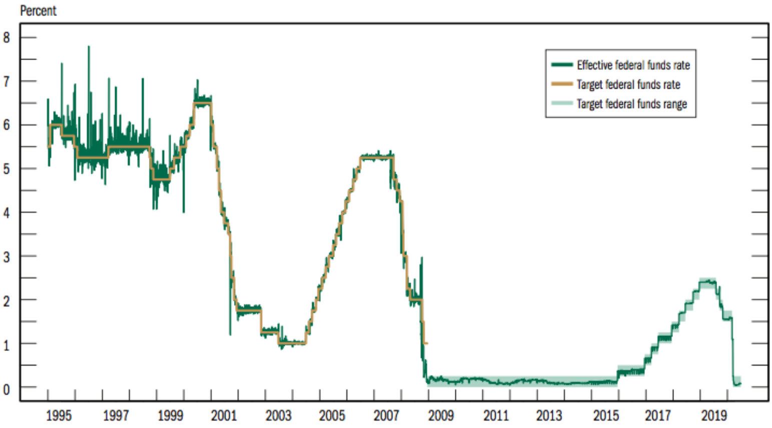
Desired change in policy stance	FOMC policy rate decision	Policy implementation
Tighten	FOMC raises the target range for the federal funds rate	Fed raises its administered rates including the IORB rate
Ease	FOMC lowers the target range for the federal funds rate	Fed lowers its administered rates including the IORB rate
No change	FOMC leaves the target range for the federal funds rate unchanged	Fed leaves its administered rates unchanged

The FOMC sets the stance of monetary policy by announcing a target range for its policy rate–the federal funds rate (FFR), the interest rate that banks charge each other for lending or borrowing reserve balances overnight. The FOMC may tighten (ease) the stance of monetary policy by raising (lowering) the target range for the FFR or leave the stance of its interest rate policy unchanged by making no change to the target range for the FFR.

Source: Ihrig and Wolla (2021) Teaching the Linkage Between Banks and the Fed: R.I.P. Money Multiplier.

Figure 3.2. The federal funds rate over time

The effective federal funds rate is the interest rate at which depository institutions—banks, savings institutions (thrifts), and credit unions—and government-sponsored enterprises borrow from and lend to each other overnight to meet short-term business needs. The target for the federal funds rate—which is set by the Federal Open Market Committee—has varied widely over the years in response to prevailing economic conditions.



Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Effects on Short-term Interest Rates

- Short-term interest rates–for example, the rate of return paid to holders of U.S. Treasury bills or commercial paper (a short-term debt security) issued by private companies–are affected by changes in the target range for the federal funds rate.
- Short-term interest rates would decline if the FOMC reduced its target range for the federal funds rate, or if unfolding events or Federal Reserve communications led the public to think that the FOMC would soon reduce the target range for the federal funds rate to a level lower than previously expected.
- Conversely, short-term interest rates would rise if the FOMC increased the federal funds rate target range, or if unfolding events or Federal Reserve communications prompted the public to believe that the target range for the federal funds rate would soon be moved to a higher level than had been anticipated.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Effects on Long-term Interest Rates

- Longer-term interest rates and the prices for a wide range of financial and nonfinancial assets, including stocks, bonds, and real estate, respond to changes in the current and expected path of the federal funds rate. That is, medium- and longer- term interest rates are affected by how people expect the federal funds rate to change in the future.
- If borrowers and lenders think, today, that the FOMC is likely to lower its target for the federal funds rate substantially over the next several years, medium- and longer-term interest rates today will incorporate those expectations, and those rates then will be lower than would otherwise be the case.
- Generally speaking, the effect on short-term interest rates of a single change in the FOMC's target range for the federal funds rate will be somewhat larger than the effect on longer-term rates because long-term rates typically reflect the expected course of short-term rates over a long period.
- However, the influence of a change in the FOMC's target range for the FFR on longer-term interest rates can also be substantial if it has clear implications for the expected course of short-term rates over a considerable period.

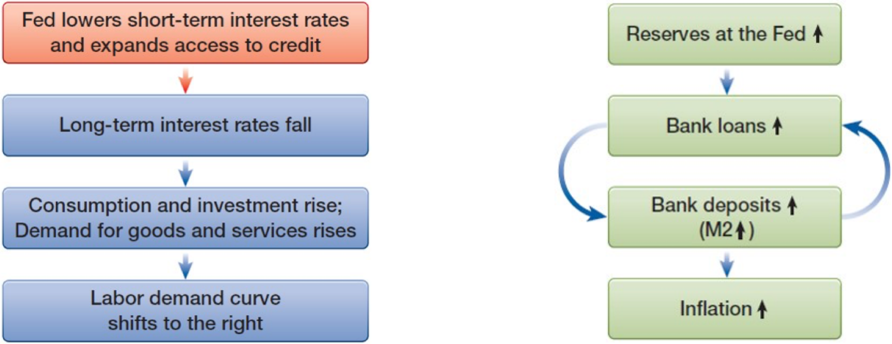
Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Effects on Aggregate Spending

- The level of longer-term interest rates affects household and business spending decisions, which in turn influence the level of economic output, employment, and inflation.
- For example, lowering mortgage rates will make buying a house more affordable, encouraging some individuals who were previously renters to purchase homes.
- As more individuals purchase homes, employment rises among homebuilders and many other types of home-supply industries. Lower mortgage rates may also allow some existing homeowners to refinance their mortgages at lower rates and thus free up income for spending on many other types of goods and services. In addition, lower interest rates on consumer loans may spur greater spending on durable goods (long-lasting manufactured goods) such as televisions and automobiles.
- The increased demand for all goods and services will boost employment across a variety of industries. Corresponding to the increased demand and change in employment, prices will adjust.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Monetary Policy Transmission



Source: Acemoglu, Laibso, and List (2022) CH13, Macroeconomics, 3e, Pearson

How the Fed Interprets and Achieves its Mandates

- The FOMC acknowledged that the level of the federal funds rate consistent with maximum employment and price stability over the longer run has declined relative to its historical average and so the federal funds rate is likely to be constrained by its effective lower bound more frequently than in the past. Reflecting this possible outcome, the Committee stated that it is prepared to use its full range of tools to achieve its maximum employment and price stability goals.
- The statement noted that in setting monetary policy, the FOMC seeks over time to mitigate shortfalls of employment from the Committee's assessment of its maximum level and deviations of inflation from its longer-run goal. Most of the time, the Federal Reserve's goals for employment and inflation are complementary.
- The FOMC could, however, face situations where its goals are pulling policy in opposite directions. In these circumstances, the Committee indicated that it will take into account the employment shortfalls and inflation deviations as well as the potentially different time horizons over which employment and inflation are projected to return to their desired levels.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

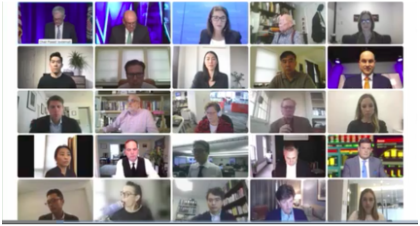
Maximum Employment and Price Stability Mandates

- **Employment**. The FOMC recognized that the maximum level of employment is a broad-based and inclusive goal that is not directly measurable and changes over time for reasons unrelated to monetary policy. Consequently, the Committee does not set a fixed goal for employment but bases its policy decisions on assessments of the shortfalls of employment from its maximum level. The Committee considers a wide range of indicators in making these assessments.
- **Inflation**. The Committee reaffirmed its judgment that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate. The Committee noted that longer-term inflation expectations that are well anchored at 2 percent foster price stability and moderate long-term interest rates and enhance the Committee's ability to promote maximum employment in the face of significant economic shocks. In order to anchor longer-term inflation expectations at this level, the Committee noted that it seeks to achieve inflation that averages 2 percent over time.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

FOMC Press Conference (w)

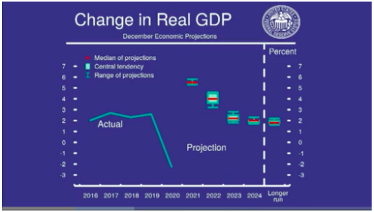
FOMC Press Conference December 15, 2021
Introductory Statement



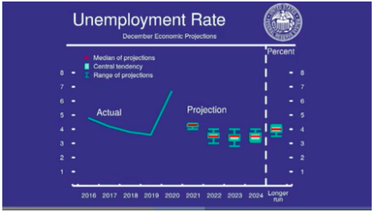
FOMC Press Conference December 15, 2021

https://www.federalreserve.gov/monetarypolicy/fomcpresconf20211215.htm

FOMC Economic Projects (w)



FOMC Press Conference December 15, 2021
Introductory Statement



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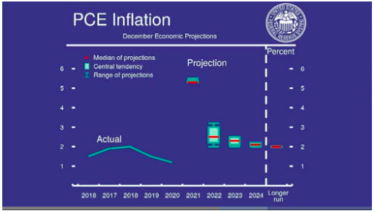

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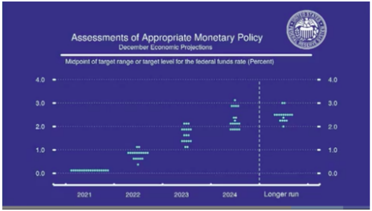


FOMC Press Conference December 15, 2021
Introductory Statement

FOMC Meeting: Workflows

The FOMC holds eight regularly scheduled meetings during the year and other meetings as needed. In preparation for each meeting, policymakers analyze economic and financial developments and evaluate the implications of these developments for the economic outlook and risks to the outlook.

- Reserve Bank input gathered. The staff of the Federal Reserve Banks collect and summarize information on current economic conditions in their Districts.
- Economic situation: FOMC participants, including Federal Reserve governors and Reserve Bank presidents, receive briefings and present their views.
- Monetary policy: FOMC participants briefed and discuss appropriate stance of policy; members vote. After a staff presentation on options for monetary policy, participants again share their individual judgments of how policy should be conducted over the period prior to the next FOMC meeting, how they expect policy to evolve over the medium run, and how the Committee?s policy intentions should be communicated to the public.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021
https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm

Monetary Policy Decision-Making Process

The members of the Board of Governors and the presidents of the 12 Federal Reserve Banks gather for eight regularly scheduled joint meetings of the Board and FOMC each year to discuss economic and financial conditions and deliberate on monetary policy.

1. FOMC Meetings: Assessing an Evolving U.S. and World Economy
2. FOMC Determines the Appropriate Stance of Monetary Policy
3. FOMC Statement and Chair's Press Conference. The statement summarizes the Committee's judgment about recent economic developments and the economic outlook, states the FOMC's policy decision, and provides information about the factors that the FOMC will consider in setting policy as the economy evolves.
4. Communicating Policy Regularly and Clearly via FOMC meeting minutes, summary of economic projections, Testimonies to Congress, speeches, transcripts, and policy statements.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Fed's Monetary Policy Regimes

William T. Gavin (2018) Monetary Policy Regimes and the Real Interest Rate. Federal Reserve Bank of St. Louis Review, 100(2), pp. 151-69. (w)

- Gavin characterizes a monetary regime by two properties: (i) the weight policymakers put on price stability relative to their concern about output stabilization and (ii) the day-to-day procedures used to implement policy.
- The regimes are defined by the different goals for policy and by the different procedures used to implement monetary policy decisions. In defining the Fed?s monetary policy regimes in this way, the distinctions among them depend on the relative emphasis given to price stability versus business cycle stabilization at policy meetings. The differences between regimes can be seen in the outcomes for inflation and nominal interest rates.
- During the period from 1965 to the end of 2015, the Federal Reserve operated monetary policy in a variety of ways associated with four distinct monetary policy regimes. These different monetary policy regimes display different outcomes for inflation, interest rates, and real consumption growth.

Fed's Monetary Policy Regimes

1. The Great Inflation: January 1965-October 1979, a period with an interest rate targeting procedure and a rising trend in both inflation and interest rates. Although policymakers expressed concern for price stability, their actions focused on business cycle stabilization and allowed inflation to become high and volatile.
2. The Volcker Reform: October 1979-October 1982, a short period in which a money supply (M1) targeting procedure was used to stop the acceleration of inflation and earn credibility for the price objective. Concern for output stabilization was dominated by the desire to end high inflation and gain credibility for price stability.
3. The Great Moderation: October 1982-December 2008, a period in which the Federal Reserve used interest rate targeting procedures to maintain the credibility for low inflation that was achieved in the second regime. The concerns were about evenly divided between price stability and output stabilization, as revealed in the Taylor-type interest rate rules used to describe policy during this period.
4. Zero Interest Rate Policy (ZIRP): December 2008-December 2015, a seven-year period in which the target range for the federal funds rate was pegged between 0 and 0.25 percent. The market was flooded with trillions of dollars of excess reserves as banks earned 0.25 percent on reserve balances at the Fed. The main concern was output stabilization, as output appeared to grow along a path that was considered to be well below the potential for GDP. Inflation tended to remain below the Fed's 2 percent long-term objective.

Source: Gavin (2018)

Average Values in Each Regime (percent)

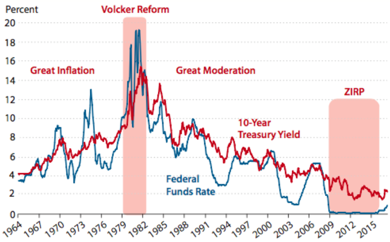
	Great Inflation	Volcker reform	Great Moderation	ZIRP
Federal funds rate (*FF*)	6.43	14.36	5.36	0.13
Yield on 10-year bonds (*GS10*)	6.71	12.77	6.79	2.58
Inflation (*CPI*)	5.55	10.15	3.10	1.38
Real per capita consumption growth (*Cdot*)	2.06	–0.85	2.27	0.57
FF-GS10 (*Spread*)	–0.28	1.58	–1.42	–2.45
FF-CPI (*rFF*)	0.88	4.20	2.27	–1.25
GS10-CPI (*rGS10*)	1.16	2.62	3.69	1.21
rFF-Cdot (*Rgap*)	–1.17	5.06	0.01	–1.87

Volatility (standard deviation of monthly changes in each regime, percent)

	Great Inflation	Volcker reform	Great Moderation	ZIRP
Federal funds rate (*FF*)	0.44	1.92	0.25	0.02
Yield on 10-year bonds (*GS10*)	0.20	0.72	0.28	0.20
Inflation (*CPI*)	0.33	0.46	0.37	0.42
Real per capita consumption growth (*Cdot*)	0.89	0.84	0.70	0.40

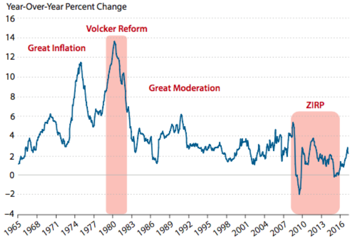
Source: Gavin (2018)

The Federal Funds Rate (*FF*) and Yield on 10-Year Treasury Bonds (*GS10*)



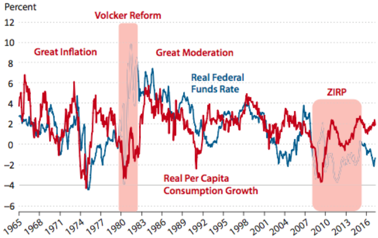
SOURCE: FRED®, Federal Reserve Bank of St. Louis, FEDFUNDS and GS10.

Inflation in the United States (*CPI*)



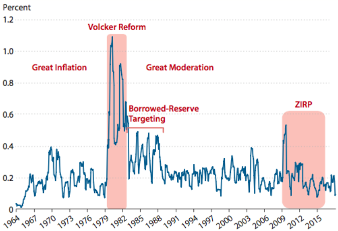
SOURCE: FRED®, Federal Reserve Bank of St. Louis, CPIAUCSL, and author's calculations.

The Real Federal Funds Rate (*rFF*) and Real Per Capita Consumption Growth Rate (*Cdot*)



SOURCE: FRED®, Federal Reserve Bank of St. Louis, DPCERAM1M225NBEA, CNP16OV, CDOT, and author's calculations.

Volatility in the Yield on 10-Year Treasury Bonds (*GS10*) (standard deviation of 7-month moving average)



SOURCE: FRED®, Federal Reserve Bank of St. Louis, GS10, and author's calculations.

Monetary Policy Evolution in Recent Decades

Since the mid-1990s, the FOMC has focused on conducting monetary policy by adjusting the level of short-term interest rates with the goal of influencing overall financial conditions in a way that will promote the attainment of the Committee's dual mandate objectives. Since 2007, with extraordinary shocks hitting the global economy, the Federal Reserve has expanded its policy tools to include some less-conventional policy measures as needed.

1. Monetary Policy during and after the 2007-09 Financial Crisis. The Federal Reserve responded aggressively to the financial crisis that emerged in the summer of 2007, including the implementation of a number of programs designed to support the liquidity of financial institutions and foster improved conditions in financial markets.
2. 2015-19: Normalizing Monetary Policy in a Normalizing Economy. FOMC took steps to return both short-term interest rates as well as the size and composition of the Federal Reserve's balance sheet to more-normal levels.
3. 2020 and Beyond: Taking Aggressive Action Amid the Global Pandemic, which increased the size of the Federal Reserve's balance sheet; total assets stood near $7 trillion or 35 percent as a ratio of nominal GDP by mid-2020

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Fed Policy Independence and Accountability

The U.S. Congress determines the goals of monetary policy (maximum employment, price stability, and moderate long-term interest rates), but it has given the Federal Reserve independence to achieve these goals.

- Along with that independence, the Fed is accountable to Congress for meeting its goals. Part of that accountability includes providing information to Congress and the public about its policy actions and the rationale for those decisions.
- Checks and balances. FOMC consists of up to 19 participants but 12 voting members, including seven Federal Reserve Board of governors (political appointments accountable to the public) and the presidents of the 12 Federal Reserve Banks (not political but intended to represent regional interests).
- The power of the purse. In the Federal Reserve Act, Congress gave the Federal Reserve the power to earn its own income. This income comes primarily from the interest the Fed earns on the government securities it acquires through open market operations.
- Is the Fed audited? The Board of Governors and the 12 Federal Reserve Banks undergo several levels of audit by the Government Accountability Office and outside independent auditors.

Source: Scott Wolla (2020) Independence, Accountability, and the FED. Page One Economics. FRBSL.

Monetary Policy Transparency: A Timeline

- 1975 The Federal Reserve presents testimony twice each year to Congress on the conduct of monetary policy.
- 1979 The FOMC releases the first semiannual economic projections.
- 1983 The Federal Reserve publishes the first "Beige Book," which summarizes economic conditions in each Federal Reserve District.
- 1994 The FOMC begins to release a statement disclosing changes in the federal funds rate target.
- 2000 The FOMC begins releasing a statement after every meeting and starts to include an assessment of the balance of risks to achieving its objectives.
- 2002 The results of the FOMC roll-call vote are added to the post-meeting statement.
- 2004 The FOMC speeds up the release of its minutes: Now there is only a three-week lag, instead of waiting until after the next regularly scheduled meeting, which meant a lag of about six weeks.
- 2007 The FOMC decides to release its economic projections four times a year.

Source: A Day in the Life of FOMC (2021)

Outline

Monetary Policy Tools

Once the FOMC determines the stance of policy appropriate to achieve its dual mandate objectives, it must then make sure this stance is effectively implemented. The Federal Reserve Board and FOMC have many policy implementation tools at their disposal to ensure that the policy stance is being transmitted to banking system and financial markets. In normal times, the key tools are administered interest rates and open market purchases and sales of securities.

1. Interest on reserve balances
2. Open market operations
3. Discount window lending
4. Reserve requirements
5. Nontraditional tools

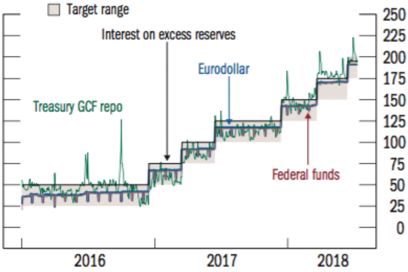
Source: The Fed Explained - What the Central Bank Does. CH3. 2021
`https://www.federalreserve.gov/monetarypolicy/policytools.htm`

Interest on Reserve Balances (IORB)

- Depository institutions hold funds in reserve accounts at their regional Federal Reserve Banks. Beginning in October 2008, the Federal Reserve began paying interest on required and excess reserve balances. Between October 2008 and March 2020 the interest rates on required and excess reserves were set to the same rate.
- Because reserve requirements no longer served as an important tool for implementing monetary policy, beginning in March 2020, required reserves were set to zero and all reserve balances began earning the interest rate on excess reserves.
- As of July 29, 2021, the Federal Reserve eliminated references to an interest on required reserves rate and to an interest on excess reserves rate and replaced them with a single interest rate on reserve balances (IORB) rate.
- By raising or lowering the IORB rate, the Federal Reserve sets a floor on the rates at which banks are willing to lend excess cash in their reserve balance accounts at the Federal Reserve to private counterparties. The IORB rate thus affects the federal funds rate and other short-term market interest rates.

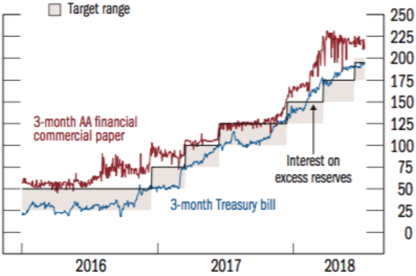
Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Interest on Reserve Balances



Note: The upper bound of the target range is also the interest on excess reserves rate until June 13, 2018, after which the upper bound is 5 basis points higher. GCF is General Collateral Finance.

Source: For Treasury GCF repo, DTCC Solutions LLC, and affiliate of The Depository Trust & Clearing Corporation; for federal funds, Federal Reserve Bank of New York; for Eurodollar, Bloomberg; for interest on reserves and target range, Federal Reserve Board.



Note: The upper bound of the target range is also the interest on excess reserves rate until June 13, 2018, after which the upper bound is 5 basis points higher.

Source: For U.S. Treasury bill, Department of the Treasury; for AA financial commercial paper, interest on reserves, and target range, Federal Reserve Board.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

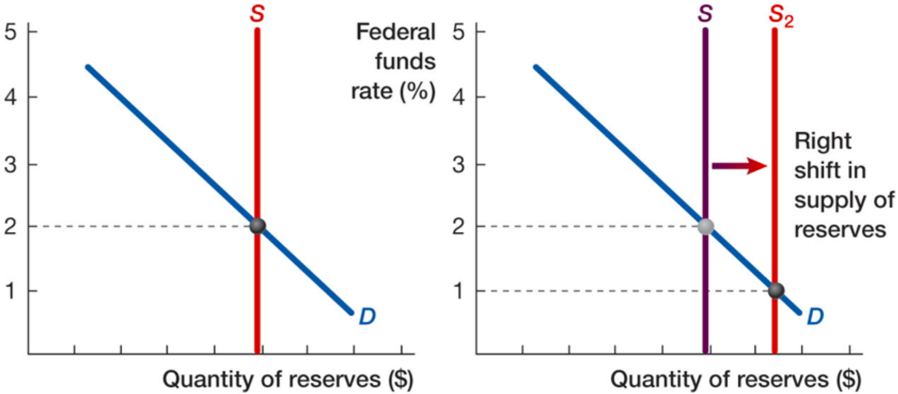
Open Market Operations (OMO)

In conducting an open market operation, the trading desk at the Federal Reserve Bank of New York permanently or temporarily buys or sells securities issued or guaranteed by the U.S. Treasury or government agencies. When the securities are bought or sold, reserves in the banking system are increased or decreased.

1. A temporary purchase operation (a repurchase agreement or "repo") is a transaction in which the Desk purchases a security from an eligible counterparty with an agreement to sell back that same security at a specified price at a specific time in the future.
2. An overnight reverse repurchase agreement is an open market operation where the FOMC stands ready to sell securities to the designated counterparties. The FOMC sets an overnight reverse repurchase agreement offering rate (ON RRP rate), which is the maximum interest rate the Federal Reserve is willing to pay in an ON RRP operation.
3. Purchases and sales of securities. Before the 2007-09 financial crisis, the Federal Reserve frequently used permanent and temporary purchases and sales of securities to affect the supply of reserves and hence conditions in the federal funds market to maintain the federal funds rate at the target set by the FOMC.

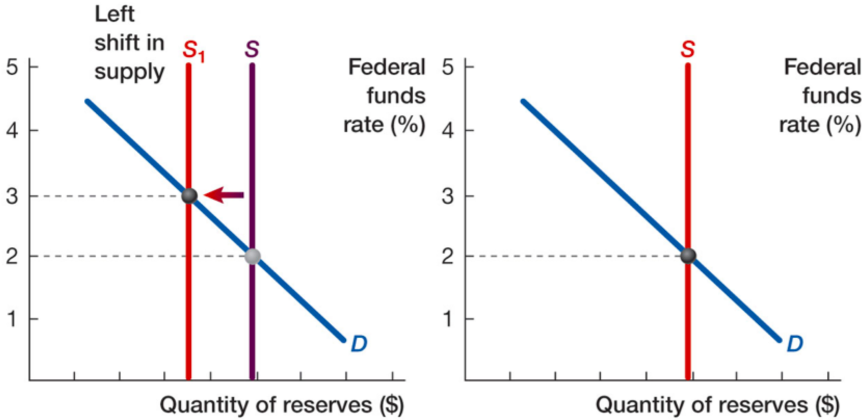
Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Monetary Policy: Open Market Purchase



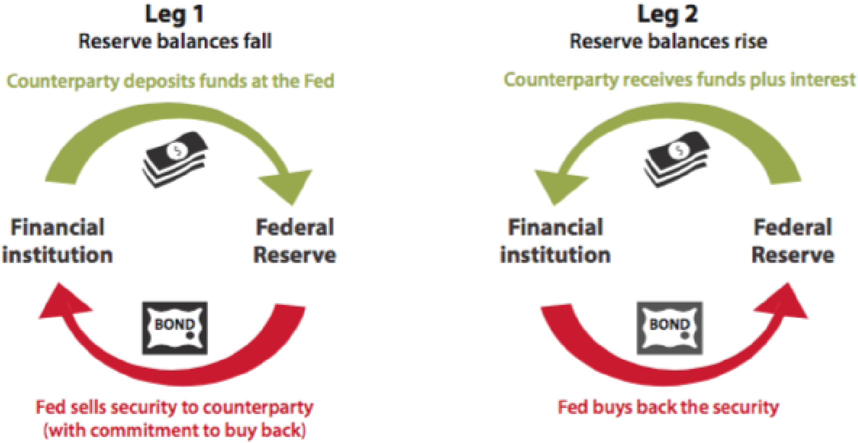
The graph shows the impact of open market purchase. The quantity of bank reserves increases, and the reserves supply curve shifts to the right. As a result, the federal funds rate decreases. Source: Acemoglu, Laibso, and List (2022) CH11, Macroeconomics, 3e, Pearson

Monetary Policy: Open Market Sale



The graph shows the impact of open market sale. The quantity of bank reserves falls, and the reserves supply curve shifts to the left. As a result, the federal funds rate rises.
Source: Acemoglu, Laibso, and List (2022) CH11, Macroeconomics, 3e, Pearson

Overnight Reverse Repo Transaction



When using the Fed's ON RRR facility, the counterparty interact with the Fed in two steps. First, in leg one, the counterparty deposit funds at the Fed today. Second, in leg two, the counterparty gets its cash back with a bit of interest tomorrow (because it is an overnight RRR). Source: Ihrig and Wolla (2020) The Fed's New Monetary Policy Tools.

Discount Window Lending

- The discount window helps to relieve liquidity strains for individual depository institutions and for the banking system as a whole by providing a source of funding in times of need. All extensions of discount window credit by the Federal Reserve must be secured to the satisfaction of the lending Reserve Bank.
- Borrowers pledge collateral to secure loans from the discount window lending and the rate charged on discount loans is generally somewhat above the prevailing level of market interest rates. By providing ready access to liquidity at a fixed rate, the discount window lending helps to damp upward pressures on the federal funds rate and other short-term bank funding rates.
- Depository institutions have, since 2003, had access to three types of discount window credit: primary credit, secondary credit, and seasonal credit.
- Primary credit is available to depository institutions in generally sound financial condition with few administrative requirements, at an interest rate that is 50 basis points above the FOMC's target rate for federal funds.
- Secondary credit may be provided to depository institutions that do not qualify for primary credit, subject to review by the lending Reserve Bank, at an interest rate that is 50 basis points above the rate on primary credit.
- Seasonal credit provides short-term funds to smaller depository institutions that experience regular seasonal swings in loans and deposits. The interest rate on seasonal credit is a floating rate based on market funding rates.

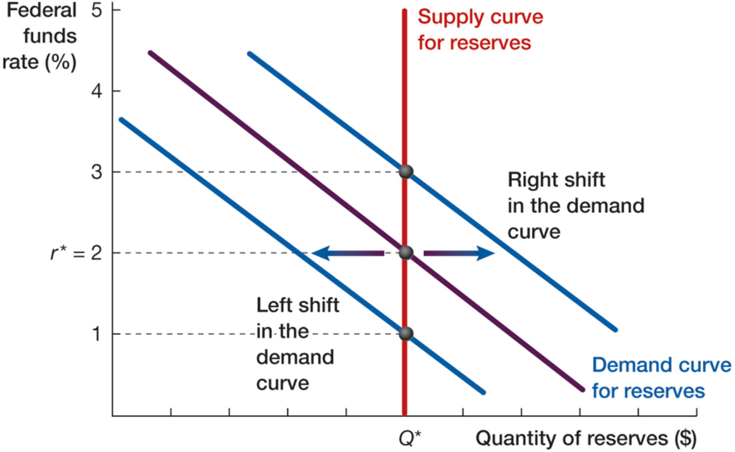
Source: The Fed Explained - What the Central Bank Does. CH3. 2021
https://www.federalreserve.gov/monetarypolicy/bsd-monetary-policy-tools-201808.htm

Reserve Requirements

- Traditionally, total bank reserves are composed of two types: (1) Required reserves are funds that a depository institution must hold in reserve against specified deposits as vault cash or deposits with Federal Reserve Banks. (2) Excess reserves are funds that a depository institution holds in its account at a Federal Reserve Bank in excess of its required reserves balance.
- Banks held reserves to meet the Fed's regulatory reserve requirements and to ensure they had adequate funds to meet the banking demands of their customers. Because reserves earned no interest, banks tended to hold just a bit more than what was needed to meet their reserve requirements.
- When banks needed extra reserves to meet their demands, they would borrow reserves in the federal funds market. Or, if banks had excess reserves, they could lend them in the federal funds market. In terms of market participation, banks that lent money acted as suppliers of reserves in the federal funds market, and banks that borrowed money acted as demanders of reserves in the federal funds market.
- Before the 2007-2009 global financial crisis, reserve requirements were a key factor in the implementation of monetary policy. Today, with a much larger level of reserves in the banking system, reserve requirements are not a key factor influencing reserve demand for many banks. Partly reflecting this fact, the Board of Governors announced in March 2020 that it was reducing reserve requirements to zero so that this tool is no longer active.

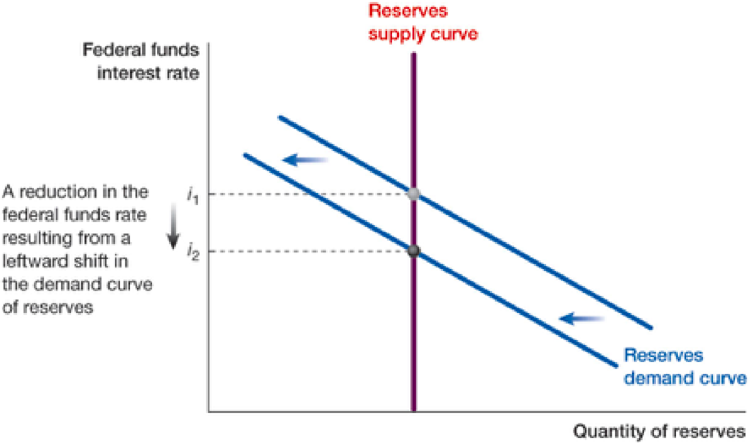
The Fed Explained (2021) CH3, What the Central Bank Does.
Ihrig and Wolla (2020) The Fed's New Monetary Policy Tools.

Demand for Reserves in the Federal Funds Market



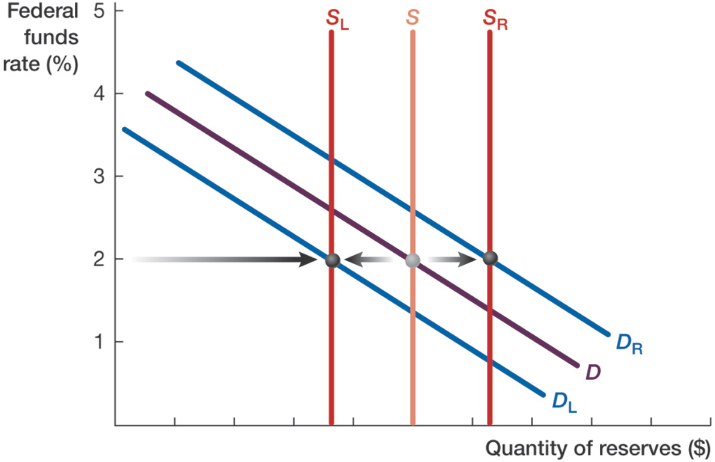
The graph shows the variation of demand for bank reserves. The reserves demand curve shifts, causing the federal funds rate to change.
Source: Acemoglu, Laibso, and List (2022) CH11, Macroeconomics, 3e, Pearson.

Monetary Policy: Lower Reserve Requirement



The graph shows the impact of the Fed lowering banks' required reserves. The reserves demand curve shifts to the left, causing the federal funds rate to drop.
Source: Acemoglu, Laibso, and List (2022) CH13, Macroeconomics, 3e, Pearson.

Monetary Policy: Federal Funds Rate Targeting



In response to shifts in the demand for reserves, the Fed can adjust the level of supply of reserves to hold the federal funds rate constant.
Source: Acemoglu, Laibso, and List (2022) CH11, Macroeconomics, 3e, Pearson.

Gauging Monetary Policy through the Fed's Balance Sheet

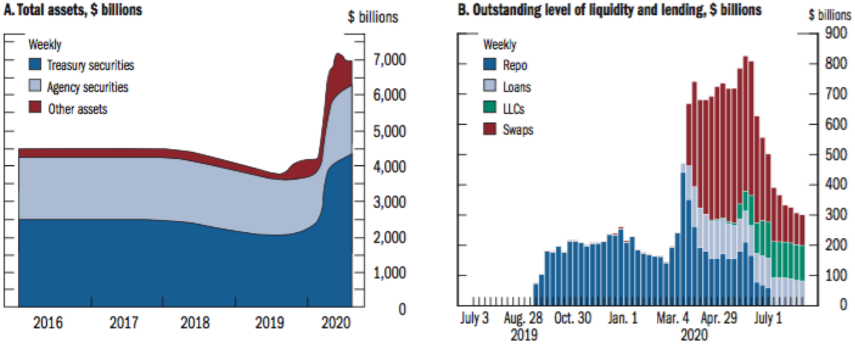
- The Fed's balance sheet, published weekly, contains a great deal of information about the scale and scope of its operations. For decades, market participants have closely studied the evolution of the Fed's balance sheet to understand important details about the implementation of monetary policy.
- Assets: securities holdings represented the vast majority of assets.
- Liabilities: deposits of depository institutions (reserve balances), currency in circulation, and the Treasury's Account each represented a substantial share.

Table A. Simplified view of the Federal Reserve balance sheet, as of June 24, 2020
The Federal Reserve publishes data weekly regarding its balance sheet.

Assets (billions of dollars)		Liabilities (billions of dollars)	
Treasury securities held outright	4,197	Deposits of depository institutions	2,938
Agency debt and mortgage-backed securities holdings	1,946	Federal Reserve notes in circulation	1,915
		U.S. Treasury, General Account	1,587
Other assets	939	Capital and other liabilities	642
Total	7,082	Total	7,082

Note: The H.4.1 statistical release, "Factors Affecting Reserve Balances," is published every Thursday at https://www.federalreserve.gov/releases/h41/.

Response to the COVID-19 Shock



A detailed discussion of the movement in the individual line items on the Federal Reserve's balance sheet during the first few months of the COVID-19 pandemic are found in the August 2020 *Report on the Federal Reserve's Balance Sheet*, https://www.federalreserve.gov/publications/files/balance_sheet_developments_report_202008.pdf.pdf.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

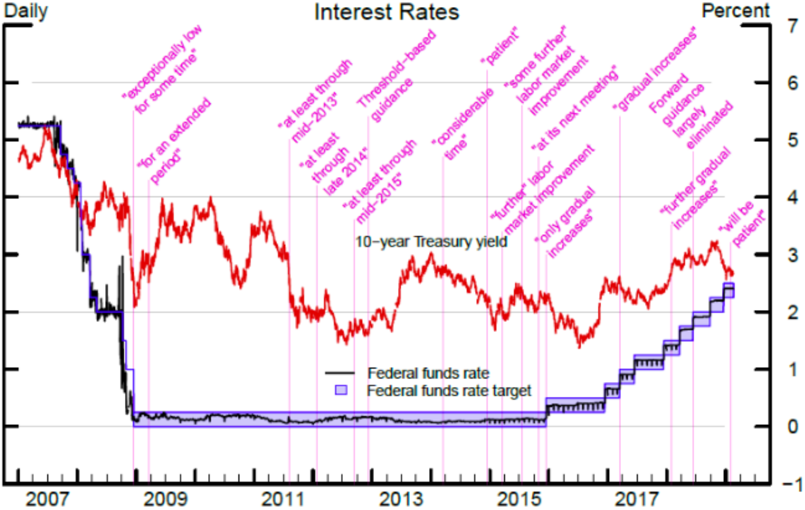
Monetary Policy Forward Guidance

Starting in 1994, the Federal Reserve released a statement to the public when the FOMC made a change in the stance of monetary policy. A few years thereafter, the Committee began to release a statement after every meeting.

- At times, the FOMC statement provides "forward guidance"–that is, information about the Committee's intentions for the federal funds rate in the future. The statement may also contain information about policy actions that may affect the size and composition of the Federal Reserve's balance sheet.
- Forward guidance and balance sheet policies were important tools used in the aftermath of both the 2007-09 financial crisis and the 2020 COVID-19 shock, when short-term interest rates were near zero.
- The FOMC's use of forward guidance influenced expectations about the future course of monetary policy. Because households and businesses can use this information in making decisions about spending and investment, forward guidance about future monetary policy can influence financial and economic conditions today.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021
Timelines of Policy Actions and Communications: Forward Guidance about the Federal Funds Rate (w)

Federal Funds Rate Forward Guidance, 2007-2019



Source: FRB - Review of Monetary Policy Strategy, Tools, and Communications (w)

Monetary Policy Implementation Environment

Before the 2007-09 financial crisis, the FOMC operated in a regime with limited reserves in the banking system; today it implements policy in a regime with ample reserves. The regimes not only differ by the level of reserves in the banking system, but also by the key tools used to control short-term interest rates.

- Limited-Reserves Environment. Prior to the 2007-09 financial crisis, the Federal Reserve supplied a limited, or scarce, amount of reserves to the banking system–just enough to satisfy banks' limited demand for reserves at the FOMC's target FFR. On a daily basis, the Federal Reserve would purchase or sell securities through open market operations to inject or remove reserves from the banking system to keep the FFR near the FOMC's target. It was through these daily adjustments in the amount of reserves that the FFR and other short-term interest rates, as well as broader financial conditions, were influenced so as to affect household and business decisions.
- Ample-Reserves Environment. Today and going forward, the Federal Reserve is implementing policy with a much more plentiful amount of reserves. In this regime, even large fluctuations in the supply of reserves do not translate into movements in the FFR or other short-term interest rates. By paying interest on reserve balances and offering ON RRPs, the Federal Reserve provides safe, liquid investments for banks and nonbank financial institutions that are ON RRP counterparties. These two rates set a floor on the rate that banks and other lenders are willing to accept in lending out and, hence, help anchor short-term interest rates.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

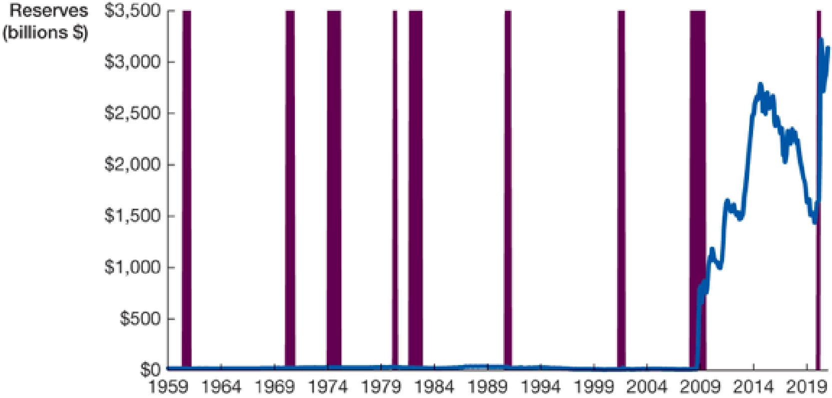
Evolution of Reserves in the Banking System

In the decade before the 2007-09 financial crisis, the supply of reserves was limited and monitored daily. The level was determined to maintain the FFR at the target level set by the FOMC. Throughout this period, reserve balances averaged less than $20 billion.

1. 2007-17. During the financial crisis and subsequent recession, when the federal funds rate was near the zero lower bound, the FOMC conducted a series of large-scale asset purchase programs to help stimulate the economy and keep inflation close to the Committee's objective, which increased reserves substantially; reserve balances peaked at $2.7 trillion or 15 percent as a ratio of nominal GDP in late 2014.
2. 2017-19. Once the economy recovered sufficiently and the federal funds target range was away from zero, the FOMC redeemed maturing and prepaying securities up to a predetermined, monthly limit. These redemptions, in combination with growth in nonreserve liabilities on the Federal Reserve's balance sheet–such as currency–reduced reserves substantially between October 2017 and August 2019. In October 2019, the FOMC announced its intentions to maintain over time ample reserve balances at or above the level that prevailed in early September 2019, which was about $1.5 trillion or 7 percent of nominal GDP.
3. 2020. Then in 2020, faced with the coronavirus pandemic, the FOMC turned to large-scale asset purchases to help stabilize key financial markets. The Federal Reserve also established emergency lending in several important areas. These actions again boosted the level of reserves in the banking system. As of the end of June 2020, reserves stood at $2.9 trillion or about 15 percent of nominal GDP.

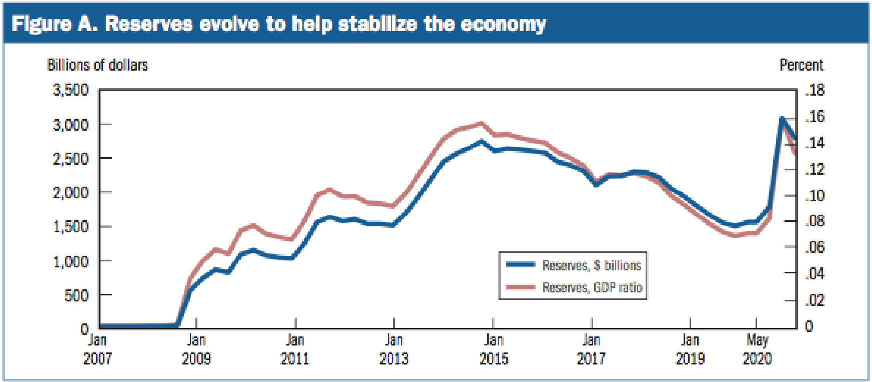
Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Total Reserves on Deposits at the Fed, 1959-2020



Source: Acemoglu, Laibso, and List (2022) CH13, Macroeconomics, 3e, Pearson.

Evolution of Reserves in the Banking System after 2007



The Federal Reserve controls the quantity of reserves in the banking system. Over the past few decades, the level of reserve balances has moved substantially, reflecting the various ways the Federal Open Market Committee (FOMC) has conducted and implemented monetary policy.

Source: The Fed Explained - What the Central Bank Does. CH3. 2021

Table 1
Limited-Reserves Framework

Tool	Definition	In practice
Reserve requirements	Funds that banks must hold in cash, either in their vaults or on deposit at a Federal Reserve Bank.	Reserve requirements were an important tool driving demand for bank reserves.
Open market operations	The buying and selling of government securities by the Federal Reserve.	Open market operations were the principal tool of monetary policy. Purchases (sales) increased (decreased) the supply of reserves, which shifted the supply of reserves left (right), thereby influencing where supply intersected demand, and lowered (raised) the FFR (see Figure 2). Open market operations were used daily to fine-tune the market-determined FFR to the FOMC's FFR target.
Discount rate	The interest rate charged by the Federal Reserve to banks for loans obtained through the Fed's discount window.	The discount rate is an administered rate set by the Fed. It is the interest rate charged to banks on their loans from the Fed's discount window, which was in place primarily for emergency lending. The rate was set above the FFR target to help cap the interest rates banks paid in the federal funds market; that is, banks could borrow from the Fed at this rate instead of having to pay a higher rate. In practice, because borrowing from the Fed tends to be perceived as a stigma, banks tended not to borrow at the discount window. The spread between the discount rate and the FFR target tended to be held constant because the Fed would typically adjust the discount rate at the same time the FOMC adjusted the FFR target.

Source: Ihrig and Wolla (2020) The Fed's New Monetary Policy Tools.

Table 3
Ample-Reserves Framework

Tool	Definition	In practice
IORB	Interest paid on reserve balances that banks hold in their accounts at a Federal Reserve Bank.	The IORB rate is an administered rate set by the Fed. Banks are unlikely to lend their reserves in the federal funds market for less than they get paid by the Fed. As such, IORB is an effective tool for guiding the FFR. In fact, interest on reserves is the principal tool for moving the FFR within the target range.
ON RRP	An overnight transaction in which the Federal Reserve sells a security to an eligible counterparty and simultaneously agrees to buy the security back the next day.	The ON RRP rate is an administered rate set by the Fed. More types of financial institutions can participate in the ON RRP facility than can earn IORB. Because these institutions are unlikely to lend funds for lower than the ON RRP rate, and institutions can arbitrage the difference between short-term rates, the FFR is unlikely to fall below the ON RRP rate. As such, the ON RRP rate is a supplementary tool that acts like a floor for the FFR. NOTE: The ON RRP facility is a form of open market operations.
Open market operations	The buying and selling of government securities by the Federal Reserve.	While daily purchases and sales are no longer used to adjust the supply of reserves and influence the FFR, open market operations are an important tool for ensuring that reserves remain ample.
Discount rate	The interest rate charged by the Federal Reserve to banks for loans obtained through the Fed's discount window.	The discount rate is an administered rate set by the Fed. It is set above the FFR target range with the intention of it serving as a ceiling for FFR transactions because banks are unlikely to borrow at a higher rate than they can borrow from the Fed at the discount window. The perceived stigma of borrowing from the Fed, however, generally dampens the rate's effectiveness as a ceiling. The spread between the discount rate and the FFR target tends to be constant: The Fed typically adjusts the discount rate at the same time the FOMC moves the FFR target range.
Reserve requirements	Funds that banks must hold in cash, either in their vaults or on deposit at a Federal Reserve Bank.	With reserves ample, and many banks holding excess reserves, reserve requirements remain a stated tool but are not a factor in policy implementation. In fact, as of March 26, 2020, reserve requirements have been set to zero.

Source: Ihrig and Wolla (2020) The Fed's New Monetary Policy Tools.

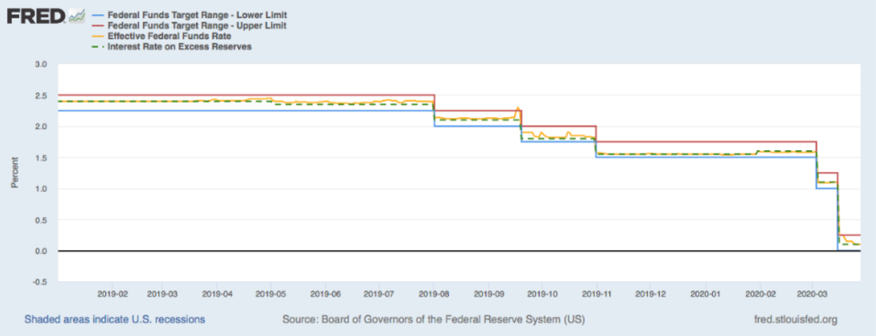
Monetary Policy Framework Comparison

Table 4
Comparing the Limited-Reserves Framework with the Ample-Reserves Framework

	Limited-reserves framework	Ample-reserves framework
Graphing: Where supply intersects money demand	Supply intersects demand on the steep, downward-sloping part of the demand curve.	Supply intersects demand on the flat part of the demand curve.
Graphing: Changes in policy	The FFR is determined by the intersection of supply and demand. The Fed affects the FFR by using open market operations to shift the supply curve left or right.	The FFR is determined by the intersection of supply and demand. The Fed affects the FFR by raising or lowering the IORB rate and the ON RRP rate to shift the flat portion of the demand curve up or down.
Key tools	Open market operations with reserve requirements in place.	The IORB rate supplemented by the ON RPP rate.
Supporting tool(s)	Discount rate.	Open market operations and the discount rate.
Key tools and actions to implement expansionary monetary policy	The FOMC lowers the FFR target. The Fed purchases U.S. government securities using open market operations to increase the supply of reserves.	The FOMC lowers the FFR target range. The Fed lowers its administered rates (in particular the IORB rate supplemented by the ON RRP rate).
Key tools and actions to implement contractionary monetary policy	The FOMC raises the FFR target. The Fed sells U.S. Treasury securities using open market operations to decrease the supply of reserves.	The FOMC increases the FFR target range. The Fed raises its administered rates (in particular the IORB rate supplemented by the ON RRP rate).

Source: Ihrig and Wolla (2020) The Fed's New Monetary Policy Tools.

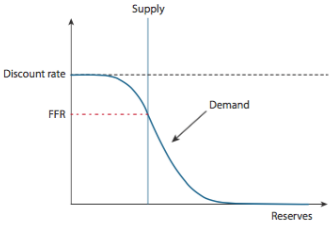
New Framework: Target EFFR and IOER



To steer the effective federal funds rate, keeping it above its lower-limit target rate and below its upper-limit target rate, the Federal Reserve began paying interest on excess reserves (IOER) in October 2008. The Federal Reserve now uses the IOER rate as its principal tool for guiding the federal funds rate within the target range. The graph shows that the effective federal funds rate has stayed within the target range–except for one single day, September 17, 2019.

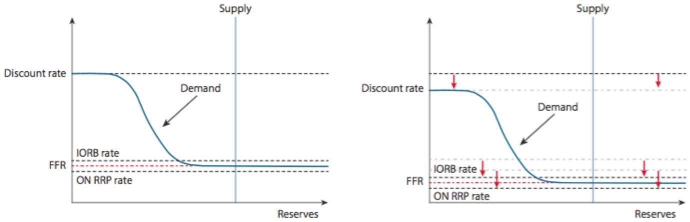
Source: Diego Mendez-Carbajo (2020) Temporary Open Market Operations and Large-Scale Asset Purchases.

Expansionary Policy with Limited Reserves



In the limited-reserves framework, when the Federal Reserve used open market operations to increase the level of reserves in the banking system, the vertical supply curve would shift to the right, and the new intersection of the supply and demand curves would result in a lower FFR. The Fed also tended to lower the discount rate to keep the spread between the discount rate and the FFR target constant.

Expansionary Policy with Ample Reserves



In an ample-reserves framework, when the Federal Reserve lowers its administered rates, the end points of the demand curve shift down. The vertical supply curve is unchanged. The demand curve intersects the supply curve at a lower FFR rate. In general, the Fed tends to lower all the administered rates by the same amount, keeping the spread between the rates constant.

Texbook References

N. G. Mankiw (2021) Principles of Economics, 9e, Cengage

Olivier Blanchard (2021) Macroeconomics, 8e, Pearson

R. Miller (2021) Economics Today Macro View, 20e, Pearson

Acemoglu, Laibso, and List (2022) Macroeconomics, 3e, Pearson

Bade and Parkin (2021) Foundations of Macroeconomics, 9e, Pearson

Abel, Bernanke, and Croushore (2020) Macroeconomics, 10e, Pearson

Goolsbee, Levitt, and Syverson (2020) Microeconomics, 3e, Worth

Baumol, Blinder, and Solow (2020) Economics: Principles and Policy, 14e, Cengage

F. Mishkin (2022) The Economics of Money, Banking, and Financial Markets, 13e, Pearson.

Web References

Central Bank and Federal Reserve History

Michael Bordo (2007) A Brief History of Central Banks. Economic Commentary. Federal Reserve Bank of Cleveland. (w)

FRB: Federal Reserve History (w)

History of Central Banking: From 1791 to the 21st Century.

Federal Reserve Education: History of the Federal Reserve (w)

A History of Central Banking in the United States (w)

A Timeline of Federal Reserve Monetary Policy (w)

Overview: The History of the Federal Reserve (w)

Federal Reserve System: The First 100 Years (w)

Web References

Federal Reserve Board `https://www.federalreserve.gov`

The Fed Explained (2021) What the Central Bank Does (w)

Federal Open Market Committee FOMC Meetings (w)

FRB: Monetary Policy Report (w)

FRB: Financial Stability Report (w)

FRB: Monetary Policy Strategy, Tools, and Communications (w)

FRB: Quarterly Report on Federal Reserve Balance Sheet Developments. August 2020 (w)

Web References

Econlib Encyclopedia and Articles

Richard H. Timberlake - Federal Reserve System (w)
James Tobin - Monetary Policy (w)
Anna J. Schwartz - Money Supply (w)
Lawrence H. White - Competing Money Supplies (w)
George G. Kaufman - Bank Runs (w)
George G. Kaufman - Deposit Insurance (w)
Bert Ely - Savings and Loan Crisis (w)
Bert Ely - Financial Regulation (w)

Pedro Schwartz - The Paradox of Money (w)
William Brough - The Natural Law of Money (w)
Philip Maymin - Why Financial Regulation is Doomed to Fail (w)

Vera Smith - The Rationale of Central Banking and the Free Banking Alternative (w)

Web References

Federal Reserve Bank of St. Louis - Page One Economics (w)
`https://research.stlouisfed.org/publications/page1-econ/`

Jane Ihrig and Scott A. Wolla (2022) How Does the Fed Use Its Monetary Policy Tools to Influence the Economy? (w)
Jane Ihrig, Gretchen C. Weinbach, and Scott Wolla (2021) Teaching the Linkage Between Banks and the Fed: R.I.P. Money Multiplier (w)
Jane Ihrig, Ekaterina Peneva, and Scott Wolla (2021) Inflation Expectations, the Phillips Curve, and the Fed's Dual Mandate (w)
Scott Wolla (2021) Minding the Output Gap: What Is Potential GDP and Why Does It Matter? (w)
Jane Ihrig, Gretchen Weinbach, and Scott Wolla (2020) COVID-19's Effects on the Economy and the Fed's Response (w)
Jane Ihrig and Scott Wolla (2020) The Fed's New Monetary Policy Tools (w)
Diego Mendez-Carbajo (2020) Temporary Open Market Operations and Large-Scale Asset Purchases (w)
Scott Wolla (2020) Independence, Accountability, and the FED (w)
Scott Wolla (2019) A New Frontier: Monetary Policy with Ample Reserves (w)