Monetary Policy Tools

ECO 301: Money and Banking

Goals and Learning Outcomes

- Goals
  - Describe the goals for monetary policy
  - Describe traditional and new methods the Fed uses for changing the monetary base and interest rates.
  - Describe monetary policy initiatives during 2008-2009 financial crisis.
  - Describe how monetary policy reacts to macroeconomic shocks.
- Learning Outcomes
  - LO7: Explain the structure of the Federal Reserve System and the mechanisms in which it controls the money supply.
  - LO8: Explain possible causes for recent financial crises, describe potential consequences for the macroeconomy, and prescribe potential monetary policies to counteract or prevent financial crises.

Reading and Exercises

- Goals of monetary policy: Chapter 15, pp. 503-510
- Monetary policy tools: Chapter 15, pp. 511-520
- Modern policy tools: Chapter 15, pp. 521-531
- **Canvas quiz on financial and monetary markets due Wed 11:59 PM**. Quizzes are multiple-choice, 15 questions, unlimited attempts allowed, only best score counts
- **Homework/Exercise due Fri 11:59 PM**. We will work together in class on Thursday

Price Stability

- Fed targets low, steady level of inflation. Currently, explicit target of 2% average.
- Higher inflation is problematic:
  - Price growth is not constant, not symmetric all goods and services, nor symmetric across all geographic areas
  - Inflation statistics are not real-time instantaneous, estimated and reported with a month lag
  - Difficult to understand value at given prices; difficult to interpret market prices, values for goods, services, capital, and financial assets
- Deflation distributes *real* income away from borrowers toward lenders, worsening wealth inequality
- Monetary policy affects the **demand side** of the economy through interest rates

High Employment

- **Frictional unemployment:** Small, short-lived unemployment caused by normal delays in job search, job candidate search
- **Structural unemployment:** Caused by permanent changes in demand for certain types of labor, usually due to changes in technology or international trade patterns
  - Little *monetary policy* can do. Cannot target specific industries.
- **Cyclical unemployment:** Widespread unemployment caused by business cycle contractions.
  - *Monetary policy* can address this. Changing interest rates can have widespread impact on demand for goods and services.
- Monetary policy affects **demand side** of the economy through interest rates:
  - Interest rate influence on consumption and investment demand

Economic Growth Goals

- Engage in policies that lead to maximum employment in long-run (decades-long outlook)
- Focus on stability in financial markets
- Monetary policy affects long-run flow of funds from savers to businesses with productive opportunities
- Focus on **supply side**:
  - Stability for long-term business planning
  - Stability to facilitate businesses getting access to loanable funds

Stability of Financial Markets

Consequences of Financial Market Instability

- Banks and individuals are hesitant to make loans, buy bonds, take risks on potentially productive endeavors
- Borrowing cost is higher, risk premiums are higher
- Businesses make less investment in capital, less investment in design and development of new goods and services
- Investment in capital is a significant driver of long-run economic growth

Stability of Financial Markets

Interest Rate Stability

- Fed gradually adjusts interest rates to achieve its objectives
- Interest rates and bond prices are inversely related. Interest rate stability → Bond price stability in secondary markets
- Bond price stability leads to more liquidity, greater demand for bonds, greater ability for business to get loanable funds
- Bond price stability leads to greater investment in long-term capital projects

Exchange Rate Stability

- Important for long-term contracts with international suppliers
- Exchange rate stability → revenue stability for exporting firms

Traditional Monetary Policy Tools

- Open market operations of federal government bonds on secondary financial markets
  - Open market sales reduce monetary base and money supply
  - Open market purchases increase monetary base and money supply
- Discount lending (Fed lends to banks at the discount rate)
  - Provides liquidity to banks when they need it
  - Lending funds has the effect of increasing the money supply
- Reserve requirements: Percentage of deposits banks required to keep on reserve
  - Higher reserve requirement → decreases money multiplier → decreases money supply
  - Since March 2020, Fed has no minimum reserve requirement

Open Market Operations

- Conducted at the Open Market Trading Desk at the New York Fed
- **TRAPS: Trading Room Automated Preprocessing System:** Electronic System for conducting open market operations
- Trade with large private security firms. There are 25 financial institutions as of Feb 2025. Current group: https://www.newyorkfed.org/markets/primarydealers
- **Dynamic open market operations:** conducted when there is a change in monetary policy by the Federal Open Market Committee (usually a big change)
- **Defensive open market operations:** conducted daily *to maintain* existing FOMC policy, used to counteract any changes in money supply resulting from private activities (eg: more excess reserves)

Discount Window Lending

- Available to all depository institutions
- **Primary credit discount loans**
  - Loans to healthy banks with adequate capital and supervisory ratings
  - Very short term: Usually overnight, possibly as much as several weeks, loans to meet depositors needs
- **Secondary credit discount loans**
  - Loans to banks not eligible for primary credit discount loans
  - Usually banks with medium-to-long-term liquidity problems
  - Fed monitors use of funds carefully, higher interest rate than primary credit rate

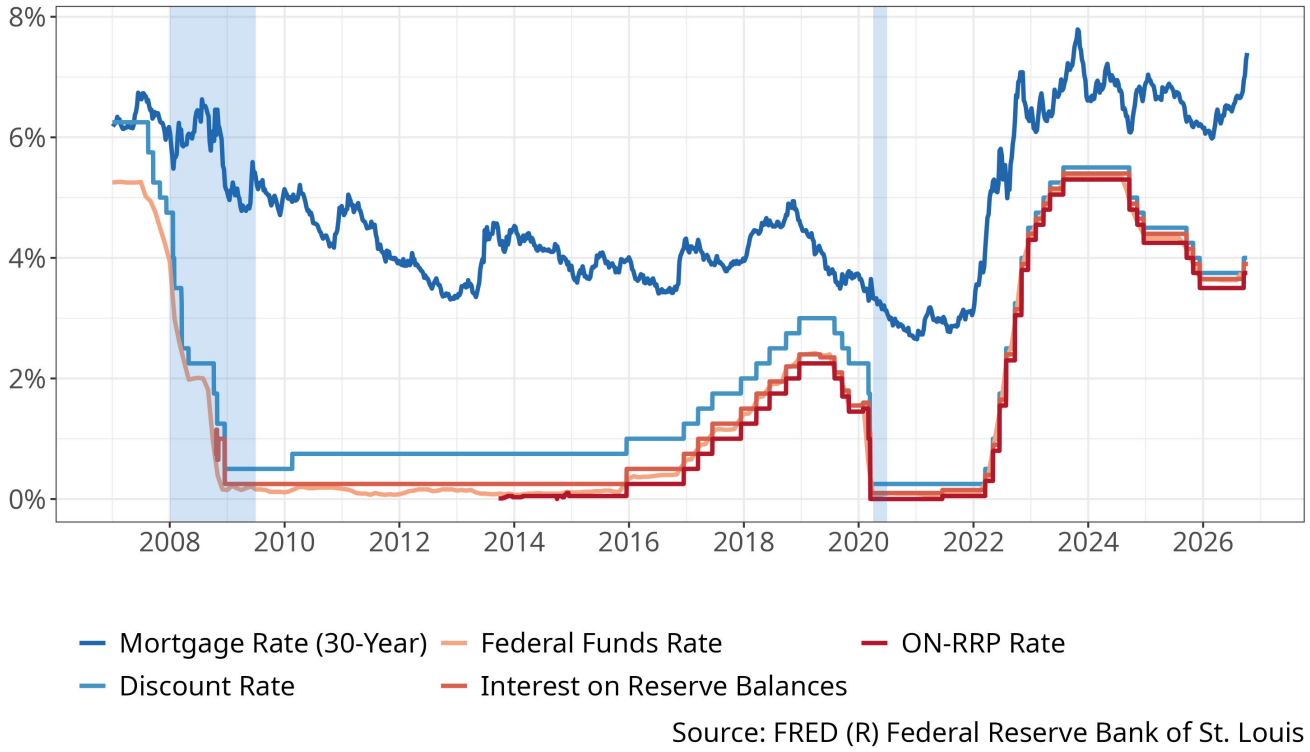
Interest Rate on Reserves Balances

- Since October 2008, Fed pays interest on excess reserves (all reserves after March 2020)
- Raising the interest rate on reserves can raise market interest rates, as banks should demand higher rates for loans
- Raising the interest rate on reserves is contractionary monetary policy (reduces economic activity)

Overnight Reverse Repurchase Agreements

- **Repurchase Agreement:** A short-term loan backed by collateral.
  - It's like borrowing money from a pawn shop, except you pawn treasury bills
  - Financial firm that is borrowing sells security to the Fed
  - With an agreement that it can buy back the security, usually the next day, with an interest payment
- **Reverse Repurchase Agreements:** Fed borrows (pawns) government securities
  - The Fed can influence market interest rates by changing the interest rate it will pay on these repurchase agreements
  - **ON-RRP rate:** Interest rate on overnight reverse repurchase agreements.
  - Sets a floor on short-term rates, targeting non-bank financial institutions that do not have reserves earning interest on reserve balances rate (eg. money market funds, government-sponsored enterprises like Fannie Mae and Freddie Mac)

Monetary Policy Interest Rates



Zero Lower Bound

- In 2008, the Federal Reserve Rate hit the zero lower bound (ZLB)
- Zero lower bound (ZLB): Additional increases in money supply will not lead to lower equilibrium interest rates (fed funds rate *very near zero*)
- Other rates still above zero: Longer-term government rates, consumer interest rates, corporate bond rates, sub-prime rates
- The Fed *could have* pushed federal funds rate *below zero* by charging interest on reserves, rather than pay interest. *They did not.*

Quantitative Easing

- **Quantitative easing:** Expansion of money supply when the federal funds rate is at ZLB.
- Initial round: Dec 2008-Oct 2014
- Open market purchases of mortgage-backed securities (MBS) and long-term treasury bonds
- Intended to 1) increase liquidity and 2) decrease long-term interest rates
- **QE2:** i.e. second-round of quantitative easing, Nov 2010-June 2011, focus on long-term securities
- **QE3:** Sept 2012-Oct 2014 - Primarily open market purchases of MBS
- **Covid QE:** Started in March 2020, ended Sept 2022.

Scholar Spotlight: Stefania D'Amico

The Federal Reserve's Large-scale Asset Purchase Programmes: Rationale and Effects
(with William English, David López-Salido, Edward Nelson) *Economic Journal*, 2012.

Large-Scale Asset Purchases

- Much quantitative easing involved purchases of long-term assets
- While at ZLB for short-term rates, long-term rates fell by up to 50 basis points with each round
- Equivalent to the typical impact of 200 basis points drop in short-term rates

About the Scholar



Dr. Stefania D'Amico
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Forward Guidance

- Following a meeting by the FOMC, public statements about how it will conduct monetary policy in the future
- Reduce uncertainty regarding changes in interest rates. Future decisions should be expected
- Future decisions can be expected and planned for. Forward guidance statements can have immediate effects, before the actual future decisions are made
- Used to maintain low stable inflation expectations while stimulating economy with increases in money supply
- Fed discontinued forward guidance communication under Kevin Warsh in June 2026

Average Inflation Targeting

- Since 2012, Fed has been *explicit* that the target rate for inflation is 2%.
- In 2020, the Fed changed its target to an average target.
- Over an unspecified period, the Fed will target an *average inflation rate* of 2%.
- It was lower in March 2020-Feb 2021, so higher than 2% would be expected in 2021.
- Rose from 1.7% in Feb 2021 to 8.9% in June 2022
- Ended Average Inflation Targeting in August 2025

Discount Lending During Crisis

Primary Dealer Credit Facility (Mar 2008-Feb 2010)

- Primary dealers could borrow overnight using MBS as collateral.

Term Securities Lending Facility (Mar 2008-Feb 2010)

- Fed would loan up to $200 bn in Treasury securities to primary dealers in exchange for MBSs

Discount Lending During Crisis

Commercial Paper Lending Facility (Mar 2008-Feb 2010)

- **Commercial paper:** Short-term unsecured corporate bond
- Fed purchased commercial paper from non-financial corporations

Term Asset-Backed Securities Loan Facility (TALF) (Mar 2008-Feb 2010)

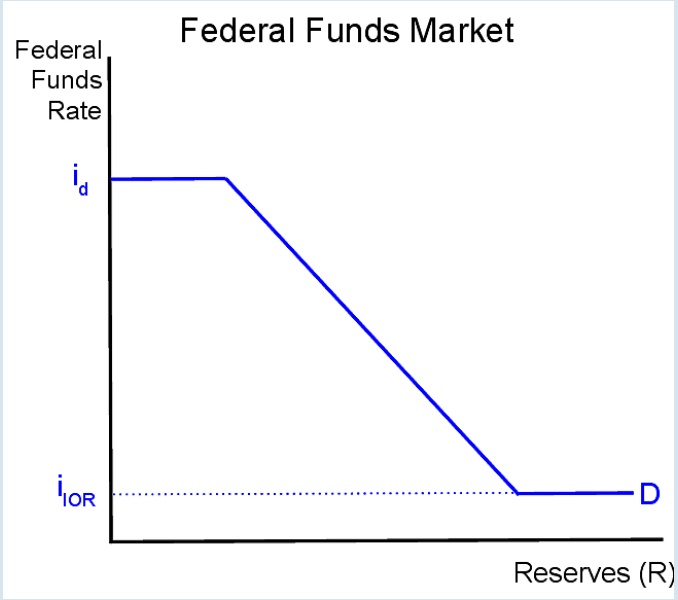
- 3-5 year loans to help investors purchase asset-backed securities (ABS), securitized debt instruments based on consumer and business loans
- These assets behind the financial system crash in 2008
- Fed supported investors that would purchase these

Demand for Federal Funds

Demand for Federal Funds

- As federal funds rate decreases, banks are more willing to hold reserves
- Federal funds rate moves with lending rates. Decrease in lending rates decreases opportunity cost of holding reserves.
- IOR: Interest on reserves rate
- i_d: Discount rate
- Federal funds rate should not go below IOR or above i_d

Demand for Federal Funds

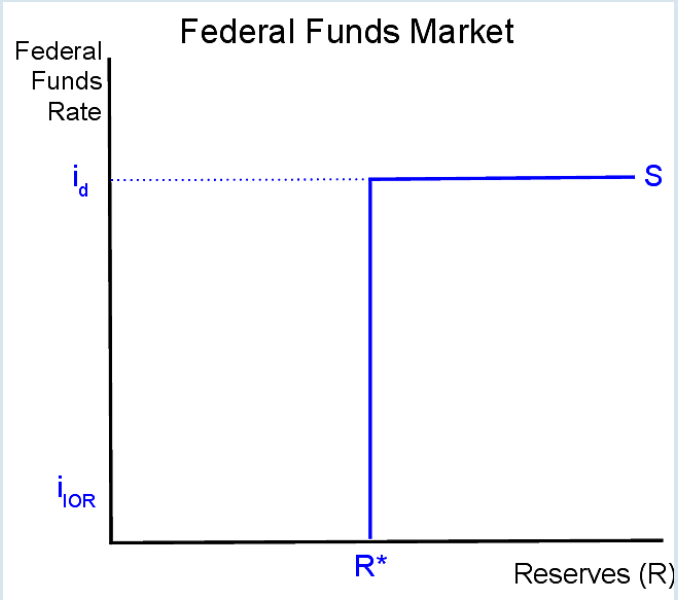


Supply for Federal Funds

Supply Behavior

- Federal Reserve decides quantity of reserves supplied, R^*
- Can use open market operations to target R^*
- If federal funds rate exceeds discount rate, total reserves just depends on demand for discount loans.

Supply for Federal Funds

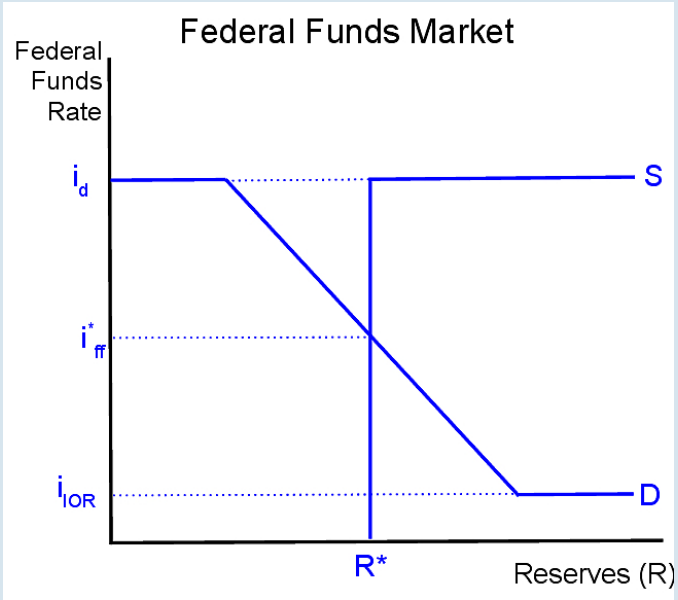


Equilibrium in Federal Funds Market

Equilibrium Behavior

- Federal funds rate determined where demand for reserves equals supply of reserves
- Fed typically targets i_{ff} rather than R^*. Uses *defensive open market operations* to maintain a given i_{ff}

Equilibrium Outcome

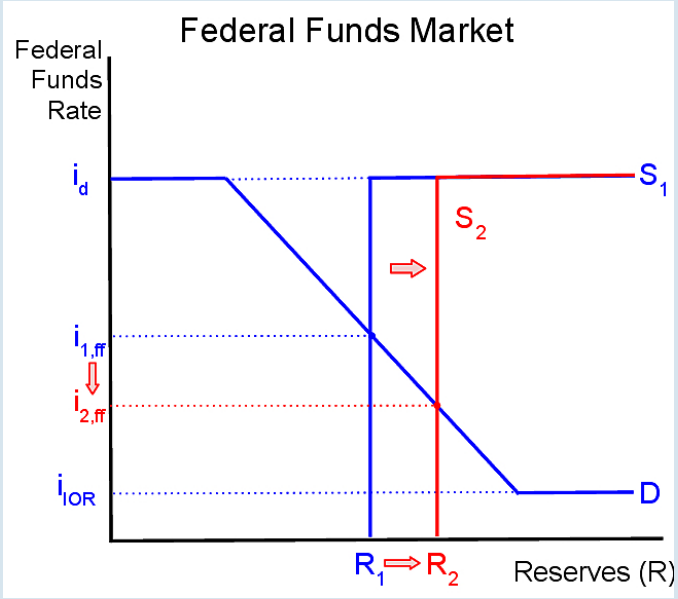


Open Market Purchase of Bonds

Open Market Purchase

- Open market purchase leads to an increase in supply of reserves
- Supply of reserves shifts to the right
- i_{IOR} and i_d stay the same
- Decrease in equilibrium federal funds rate
- *Expansionary monetary policy*

Federal Funds Market

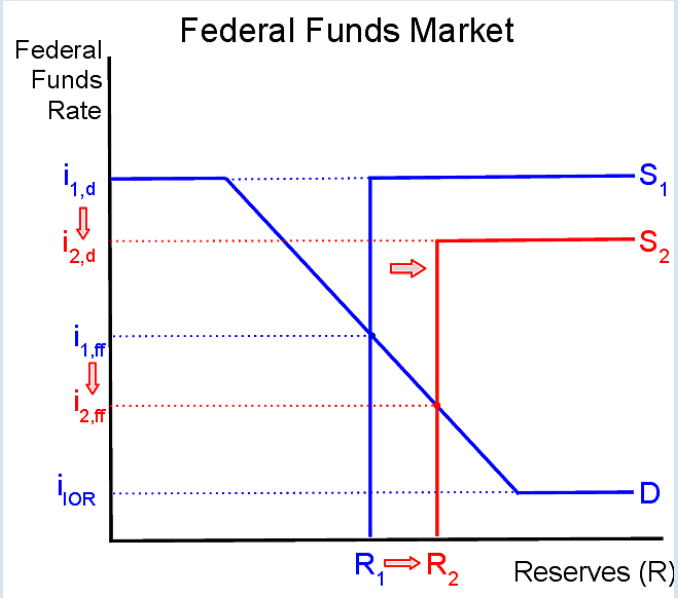


Open Market Purchase & Decreased Discount Rate

Open Market Purchase

- Open market purchases are usually accompanied with a decrease in the discount rate
- Supply of reserves shifts to the right *and*
- Decrease in equilibrium federal funds rate
- i_{IOR} stays the same
- Discount rate change has no independent effect on federal funds rate
- *Expansionary monetary policy*

Federal Funds Market

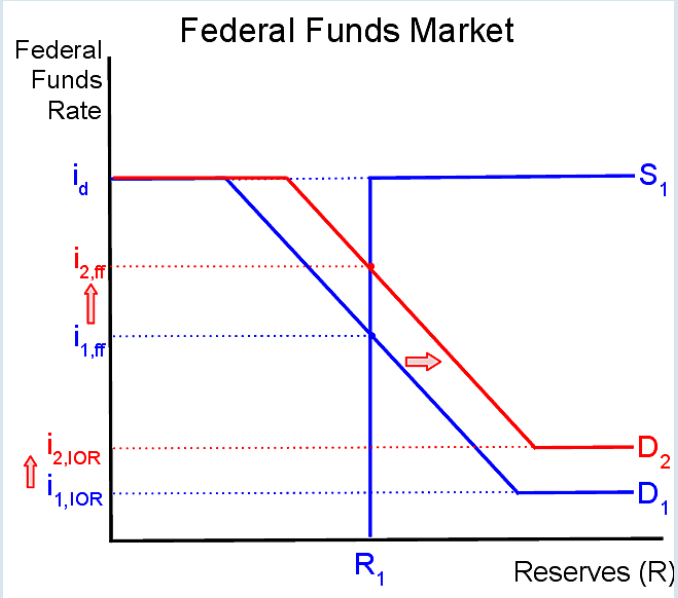


Increase in Interest on Reserves Rate

Increase in IOR

- Increase in IOR decreases the opportunity cost of holding reserves
- Demand for reserves shifts to the right
- i_{IOR} increases, i_d stays the same
- Equilibrium federal funds rate increases
- *Contractionary monetary policy*

Federal Funds Market



Additional Problems

Describe and illustrate the impact on the federal funds market for the following scenarios.

1. Suppose financial markets become more stable and lenders become more confident.
2. Suppose the Fed conducts an open market sale of bonds.

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