# Monetary Policy Tools

Economics 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 taken during the 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

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# 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. Changing money supply and interest rates cannot target demand for 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

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# 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

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# 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

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## 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

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# 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 that banks are required to keep on reserves
  - Higher reserve requirement $\rightarrow$ decreases money multiplier $\rightarrow$ decreases money supply
  - Since March 2020, Fed has no minimum reserve requirement

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# 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)

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# 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
  - Discount rate *usually higher* than federal funds rate
  - Convenient backup for overnight loans to meet depositors needs
  - What does a bank pay in interest? Overnight loan of $1 million, Federal funds rate: 4.33%, Discount rate 4.5%.
- **Secondary credit discount loans**
  - Loans to banks not eligible for primary credit discount loans
  - Usually banks with medium-to-long-term liquidity problems
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  - Interest rate is higher than the discount window primary credit rate.

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    - Very short term: Usually overnight, possibly as much as several weeks
    - Discount rate *usually higher* than federal funds rate
    - Convenient backup for overnight loans to meet depositors needs
    - What does a bank pay in interest? Overnight loan of $1 million, Federal funds rate: 4.33%, Discount rate 4.5%.
- **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
    - Interest rate is higher than the discount window 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
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# Overnight Reverse Repurchase Agreements



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  - 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
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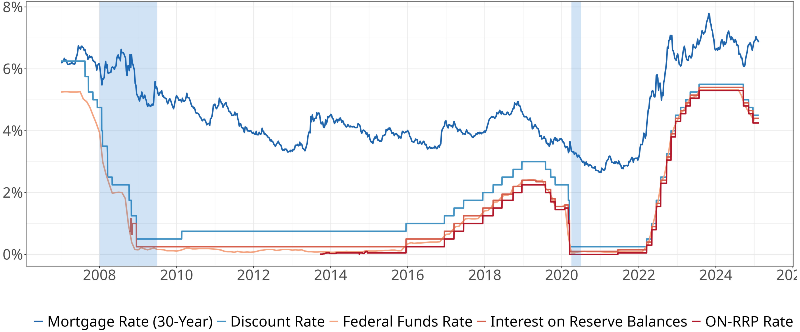
# Monetary Policy Interest Rates






Source: FRED (R) Federal Reserve Bank of St. Louis

# 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
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- Intended to 1) increase liquidity and 2) decrease long-term interest rates
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# 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*, October 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

**Dr. Stefania D'Amico**
Senior Economic Advisor
Federal Reserve Bank of Chicago

# 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.
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- 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%.
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# Discount Lending During Crisis



## Primary Dealer Credit Facility

- Primary dealers could borrow overnight using MBS as collateral.
- March 2008-Feb 2010

## Term Securities Lending Facility

- Fed would loan up to $200 bn in Treasury securities to primary dealers in exchange for MBSs
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## Commercial Paper Lending Facility

- **Commercial paper:** Short-term unsecured corporate bond
- Fed purchased commercial paper from non-financial corporations
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## Term Asset-Backed Securities Loan Facility (TALF)

- 3-5 year loans to help investors purchase asset-backed securities (ABS), securitized debt instruments based on consumer and business loans
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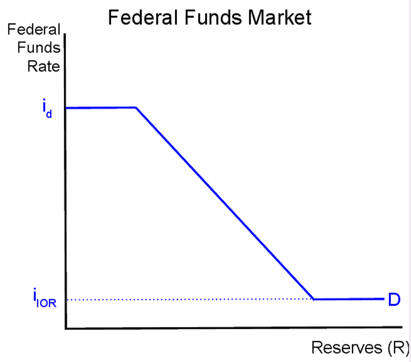
# Demand for Federal Funds



## 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



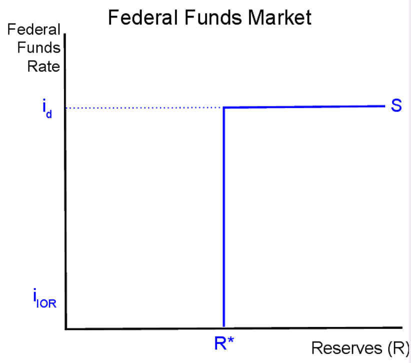
# Supply for Federal Funds



## 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



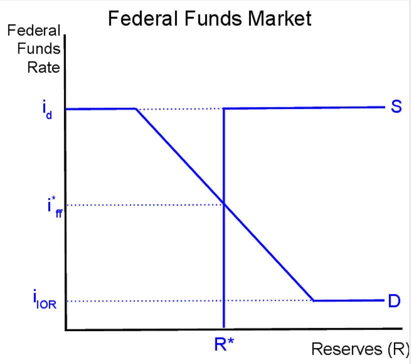
# Equilibrium in Federal Funds Market



## 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*

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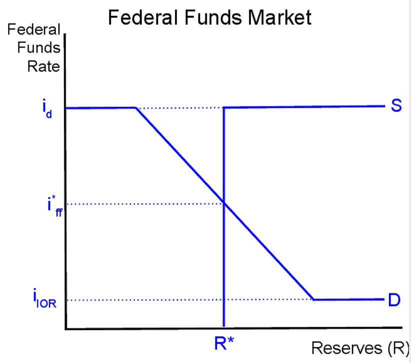

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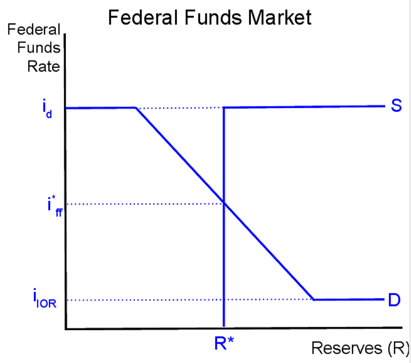

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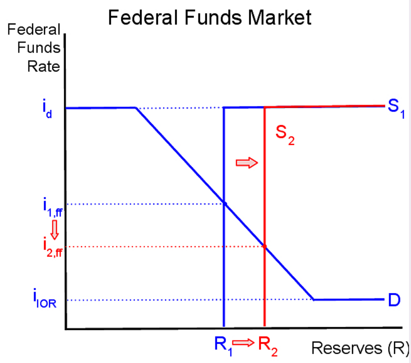

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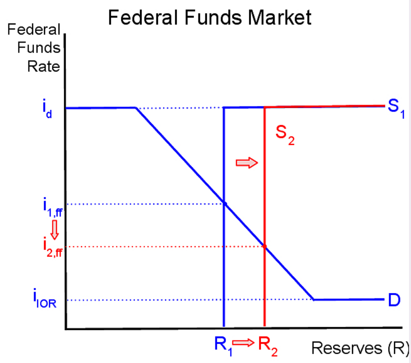

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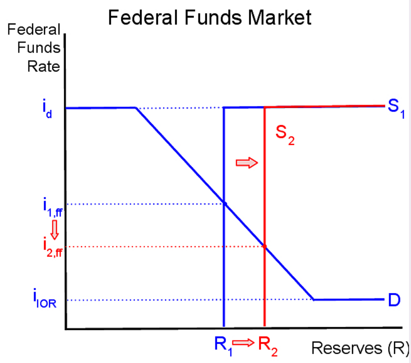

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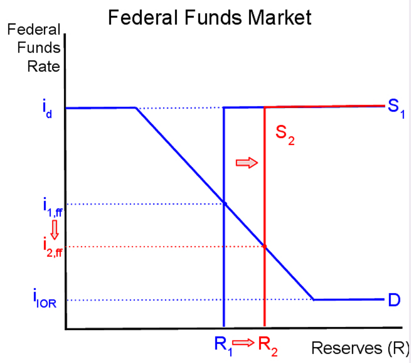

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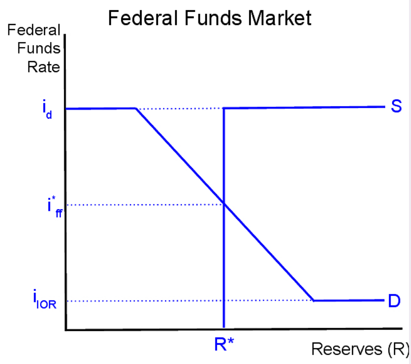

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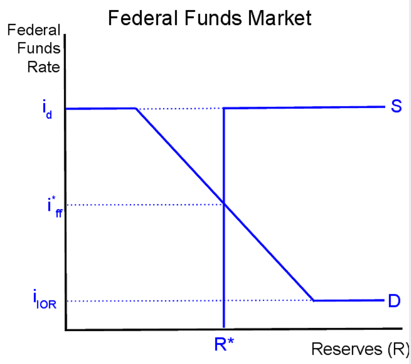

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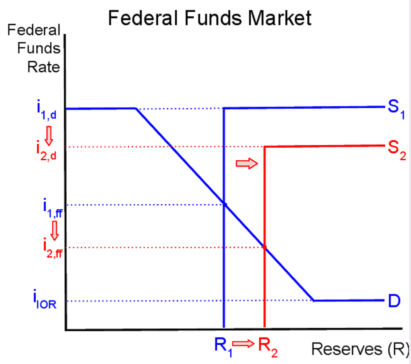

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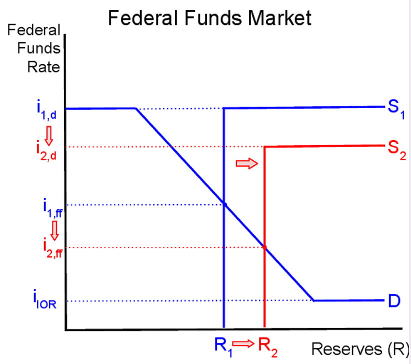

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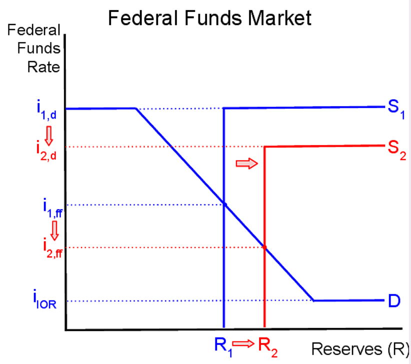

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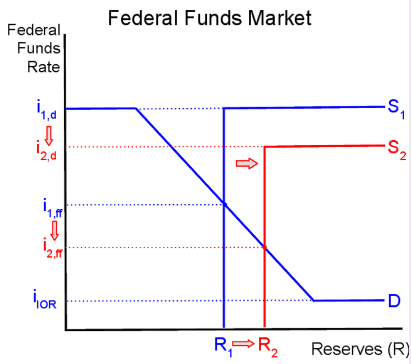

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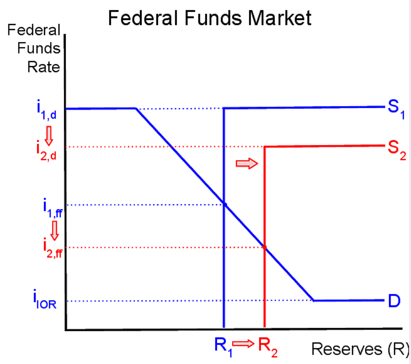

# Increase in Interest on Reserves Rate



## Increase in IOR

- Increase in IOR decreases the opportunity cost of holding reserves
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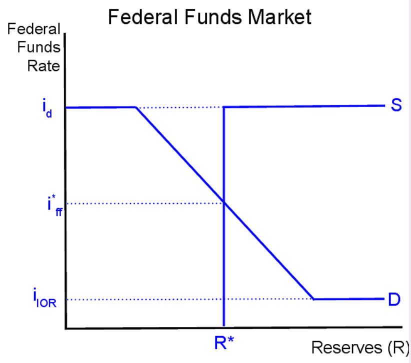

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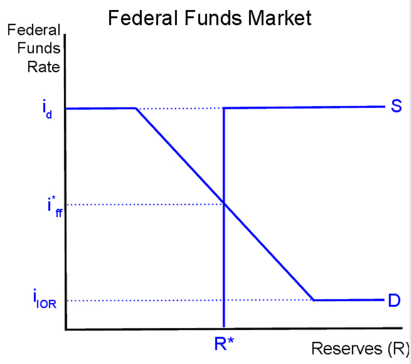

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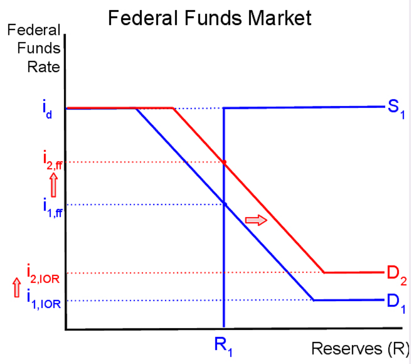
- $i_{IOR}$ increases, $i_d$ stays the same
- Equilibrium federal funds rate increases
- *Contractionary monetary policy*

## Federal Funds Market



# Increase in Interest on Reserves Rate



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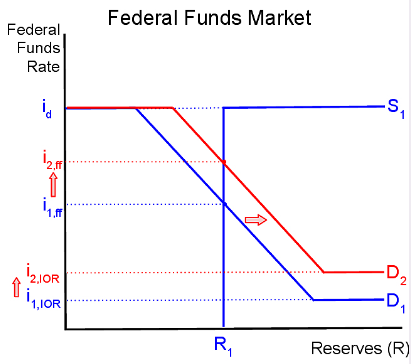

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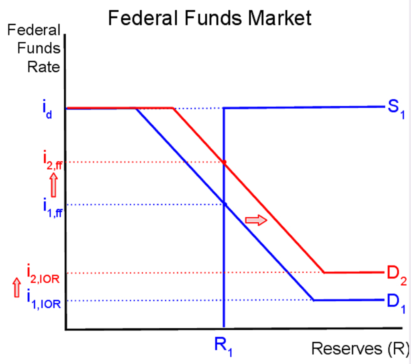

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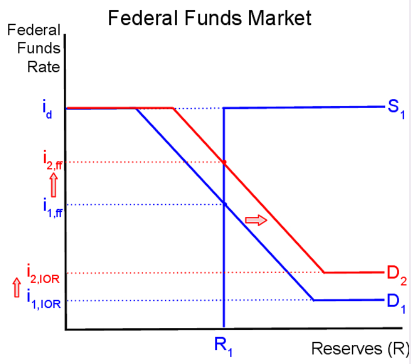

# Additional Problems



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.

# 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