

The Monetary System

Economics
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In this chapter, look for the answers to these questions:

- What assets are considered "money"? What are the functions of money? The types of money?
- What is the Federal Reserve?
- What role do banks play in the monetary system? How do banks "create money"?
- How does the Federal Reserve control the money supply?



What Money Is and Why It's Important

- Without money, trade would require barter, the exchange of one good or service for another.
- Every transaction would require a
 ______ the
 unlikely occurrence that two people each have a
 good the other wants.
- Most people would have to spend time searching for others to trade with – a huge waste of resources.
- This searching is unnecessary with ______, the set of assets that people regularly use to buy g&s from other people.

What is Money?

- Money is any commodity or token that is generally acceptable as a means of payment.
- A ______is a method of settling a debt.
 - Money has three other functions:
 - Medium of exchange: an item buyers give to sellers when they want to purchase g&s
 - Unit of account: the yardstick people use to post prices and record debts
 - Store of value: an item people can use to transfer purchasing power from the present to the future



The 2 Kinds of Money

takes the form of a commodity with intrinsic value

Examples: gold coins,

cigarettes in POW camps





money without intrinsic value, used as money because of govt decree

Example: the U.S. dollar

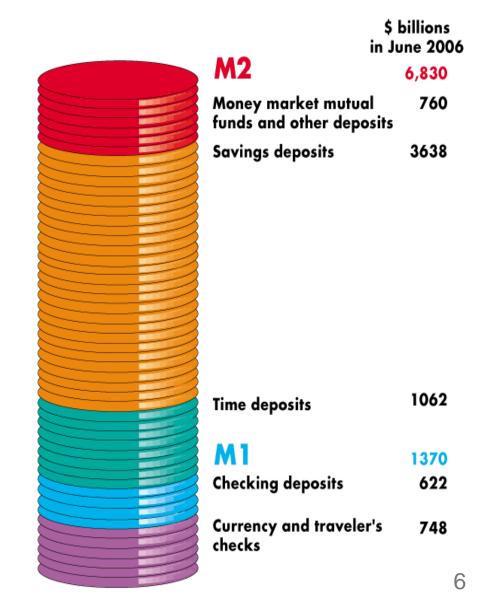
The Money Supply

- The money supply (or money stock): the quantity of money available in the economy
 - Currency: the paper bills and coins in the hands of the (non-bank) public
 - Demand deposits: balances in bank accounts that depositors can access on demand by writing a check
- Official Measures of Money
 - => consists of currency and traveler's checks and checking deposits owned by individuals and businesses.
 - => consists of M1 plus time deposits, saving deposits, money market mutual funds, and other deposits.

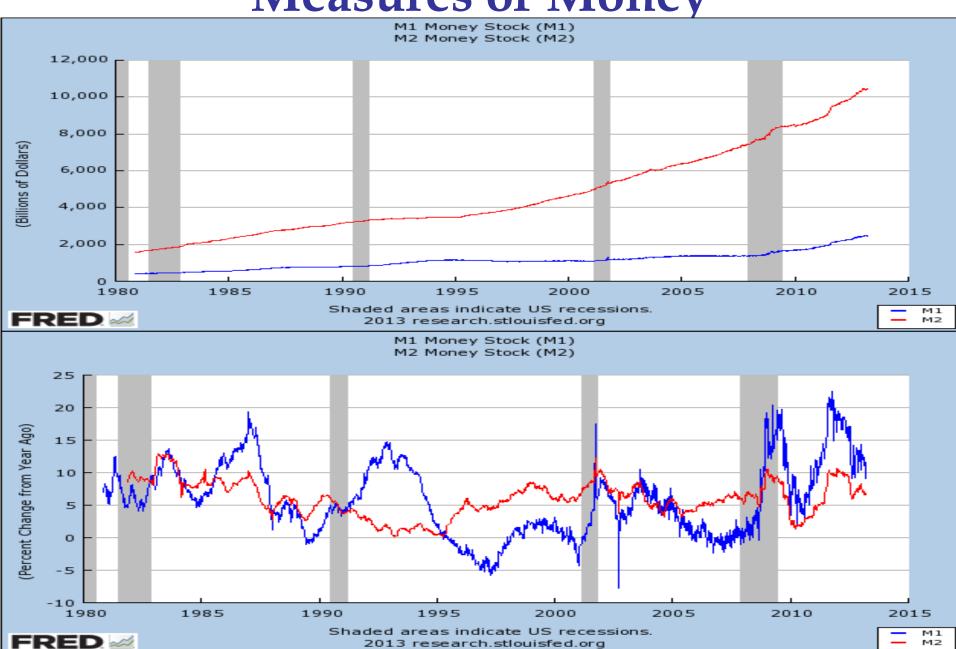
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What is Money?

- Figure 9.1 illustrates the composition of M1 and M2 in June 2006 and shows the relative magnitudes of their components.
- As of April 9, 2013:
- M1 = \$2,457 b
- M2 = \$10,450 b



Measures of Money

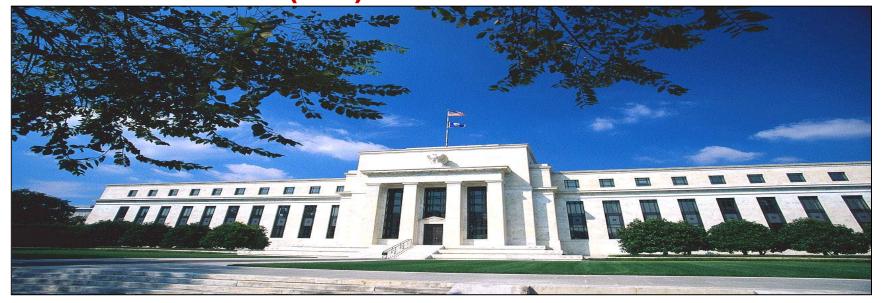


Really?

- Are M1 and M2 Really Money?
 - All the items in M1 are means of payment.
 - Some saving deposits in M2 are not means of payments—they are called liquid assets.
- is the property of being instantly convertible into a means of payment with little loss of value. How easily is an asset converted to cash?
 - Deposits are money, but checks are not—a check is an instruction to a bank to transfer money.
 - Credit cards are not money. A credit card enables the holder to obtain a loan quickly, but the loan must be repaid with money.

Central Banks & Monetary Policy

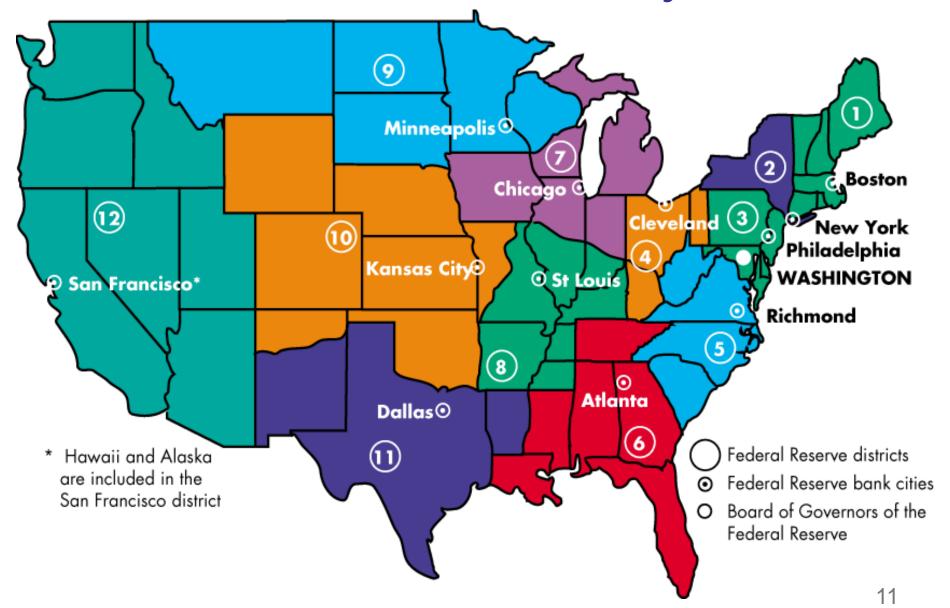
- Central bank: an institution that oversees the banking system and regulates the money supply
- Monetary policy: the setting of the money supply by policymakers in the central bank
- Federal Reserve (Fed): the central bank of the U.S.



The Federal Reserve System

- The Fed's goals are:
 - Stable prices/keep inflation in check
 - Maintain full employment
- In pursuit of its goals, the Fed targets the
 —the interest rate
 that banks charge each other on overnight loans of reserves.
 - The federal funds rate is currently ______

The Federal Reserve System

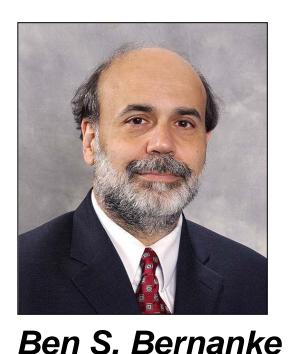




The Structure of the Fed

The Federal Reserve System consists of:

- Board of Governors (7 members), located in Washington, DC
- 12 regional Fed banks, located around the U.S.
- Federal Open Market Committee (FOMC), includes the Bd of Govs and presidents of some of the regional Fed banks The FOMC decides monetary policy.



Chair of FOMC, Feb 2006 – present

The Fed's Balance Sheet

- On the Fed's balance sheet, the largest and most important asset is ______.
- The most important liabilities are Federal Reserve notes in circulation and banks' deposits.
- The sum of Federal Reserve notes, coins, and banks' deposits at the Fed is the monetary base

Here is a <u>link</u> to the Fed's balance sheet.

Depository Institutions

- A depository institution is a firm that takes deposits from households and firms and makes loans to other households and firms.
- The institutions in the banking system divide into
 - Commercial banks (around 8,000 CB) ex. Wells Fargo
 - Thrift institutions (Savings Institutions) ex. ING Bank
 - Money market mutual funds, ex. Fidelity Investments

Depository Institutions

- The Economic Functions of Banks
 - Depository institutions make a profit from the spread between the interest rate they pay on their deposits and the interest rate they charge on their loans.
 - Lend at 5% on mortgages and borrow at 0-.25%, difference is profit of close to 4.75% per dollar
- This spread exists because depository institutions
 - Create liquidity
 - Minimize the cost of obtaining funds
 - Minimize the cost of monitoring borrowers
 - Pool risk

Depository Institutions

Reserves and Loans

- To achieve security for its depositors, a bank divides its funds into two parts: reserves and loans.
- A bank's *reserves* (R) are the cash in its vault and its deposit at the Federal Reserve.
- •A bank keeps only a small percentage of deposits (D) as reserves (required reserves) and lends the rest (excess reserves).



Bank Reserves

- In a ______reserve banking system, banks keep a fraction of deposits as reserves and use the rest to make loans.
- The Fed establishes reserve requirements, regulations on the minimum amount of reserves that banks must hold against deposits.
- Banks may hold more than this minimum amount if they choose.
- The ______
 - = fraction of deposits that banks hold as reserves
- THE MOTOR TENER AS a percentage of total deposits



Commercial Bank T-account

- T-account: a simplified accounting statement that shows a bank's assets & liabilities.
- Example:

| FIRST NATIONAL BANK | | | | |
|---------------------|----|----|-------------|-------|
| Assets | | | Liabilities | |
| Reserves | \$ | 10 | Deposits | \$100 |
| Loans | \$ | 90 | | |

- Banks' liabilities include deposits, assets include loans & reserves.
- In this example, notice that R/D = 10/100 = 10%.

How Banks Create Money

- Creating Deposits by Making Loans
 - Banks create deposits when they make loans and the new deposits created are new money.
 - The quantity of deposits that banks can create is limited by three factors:
 - The monetary base
 - Desired reserves
 - Desired currency holding

Fed's Impact on Money Creation

- The Process Starts with the Monetary Base
 - The _____is the sum of Federal Reserve notes, coins, and banks' deposits at the Fed.
 - B = C+R
 - The size of the monetary base limits the total quantity of money that the banking system can create because
 - Banks have desired reserves (required reserves)
 - Households and firms have desired currency holdings
 - And both these desired holdings of monetary base depend on the quantity of money.

Banks' Impact on Money Creation

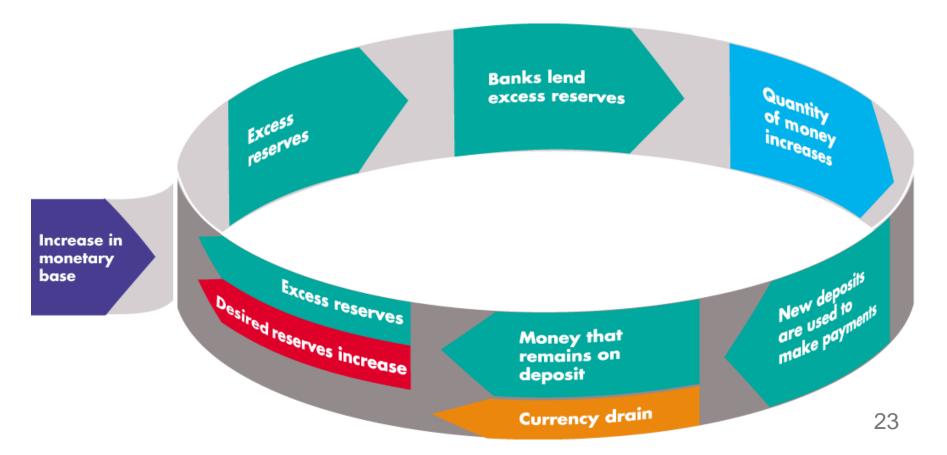
- The Base Impacts Depository Institutions
- Total Reserves = Req. Res + Excess Reserves
 - Required/Desired Reserves
 - A bank's actual reserves consists of notes and coins in its vault and its deposit at the Fed.
 - The fraction of a bank's total deposits held as reserves is the reserve ratio (R/D).
 - The desired reserve ratio is the ratio of reserves to deposits that a bank wants to hold. This ratio exceeds the required reserve ratio by the amount that the bank determines to be prudent for its daily business.
 - equal actual reserves minus desired reserves.

The Public's Impact on Money Creation

- Desired Currency Holding
 - We hold money in the form of currency and bank deposits.
 - People hold some fraction of their money as currency.
 - So when the total quantity of money increases, so does the quantity of currency that people want to hold.
- Because desired currency holding increases when deposits increase, currency leaves the banks when they make loans and increase deposits.
 - This leakage of currency is called the *currency* drain.
 - The ratio of currency to deposits is called the

How Banks Create Money

Figure 9.4 illustrates how the banking system creates money by making loans.





Banks' role in the money supply

- To understand the role of banks, we will consider three scenarios:
 - 1. No banks
 - 2. 100-percent reserve banking (banks hold all deposits as reserves)
 - 3. Fractional-reserve banking (banks hold a fraction of deposits as reserves, use the rest to make loans)
- In each scenario, we assume C = \$1000.

SCENARIO 1: No banks

With no banks,

SCENARIO 2: 100-percent reserve banking

- Initially C = \$1000, D = \$0, M = \$1,000.
- Now suppose households deposit the \$1,000 at "Firstbank."

| FIRSTBANK'S | | | | |
|------------------|------------------|--|--|--|
| balance sheet | | | | |
| Assets | Liabilities | | | |
| reserves \$1,000 | deposits \$1,000 | | | |
| | | | | |
| | | | | |

After the deposit:

$$C = \$0,$$

 $D = \$1,000,$
 $M = \$1,000$

LESSON:

 100%-reserve
 banking has no
 impact on size of
 money supply.

SCENARIO 3: Fractional-reserve banking

- Suppose banks hold 20% of deposits in reserve, making loans with the rest. rr=.2
- Firstbank will make \$800 in loans because there is \$800 in excess reserves over required reserves.

| FIRSTBANK'S | | | | |
|----------------|------------------|--|--|--|
| balance sheet | | | | |
| Assets | Liabilities | | | |
| reserves \$200 | deposits \$1,000 | | | |
| loans \$800 | | | | |

LESSON: in a fractional-reserve banking system, banks create money.

The money supply now equals \$1,800:

- Depositor has \$1,000 in demand deposits.
- Borrower holds \$800 in currency.



SCENARIO 3: Fractional-reserve banking

- Suppose the borrower deposits the \$800 in Secondbank.
- Initially, Secondbank's balance sheet is:

| SECONDBANK'S | | | | |
|---------------|-------|----------------|--|--|
| balance sheet | | | | |
| Assets | | Liabilities | | |
| reserves | \$160 | deposits \$800 | | |
| loans | \$640 | | | |
| | | | | |

Secondbank will loan 80% of this deposit.



SCENARIO 3: Fractional-reserve banking

- If this \$640 is eventually deposited in Thirdbank,
- then Thirdbank will keep 20% of it in reserve, and loan the excess reserves out:

| THIRDBANK'S | | | | |
|---------------|-------|----------------|--|--|
| balance sheet | | | | |
| Assets | | Liabilities | | |
| reserves | \$128 | deposits \$640 | | |
| loans | \$512 | | | |
| | | | | |

Finding the total amount of money:

```
Original deposit = $1000
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- + Firstbank lending = \$800
- + Secondbank lending = \$ 640
- + Thirdbank lending = \$512
- + other lending...

Total money supply = $(1/(R/D)) \times $1,000$ where R/D = ratio of reserves to deposits

In our example, rr = 0.2, so M = \$5,000

(1/(R/D)) is the Money Multiplier in this simple case with no cash

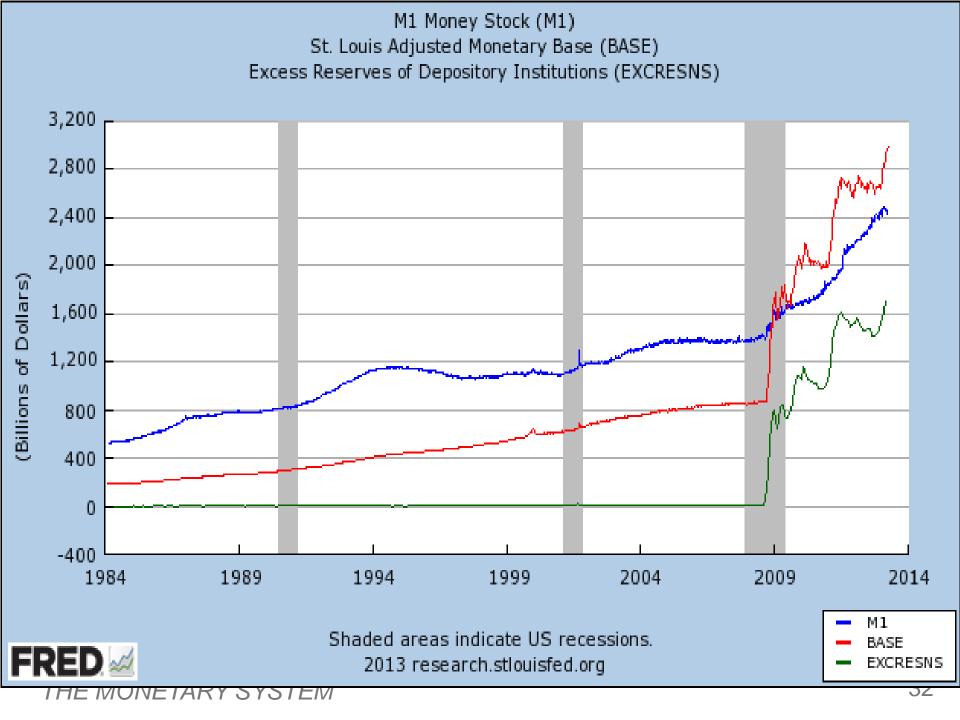
If R/D=.2, then (1/.2)=5; or if R/D=.1, then (1/.1)=10

The Money Multiplier

- Money multiplier: the amount of money the banking system generates with each dollar of reserves
- The money multiplier equals _____
- In our example,

```
R/D = 10\%
money multiplier = 1/(R/D) = 10
$100 of reserves creates $1000 of money
```

So, M=B X 1/(R/D) without cash



The Fed's 3 Tools of Monetary Control

- 1. Open-Market Operations (OMOs): the purchase and sale of U.S. government bonds by the Fed.
- bonds, paying with new dollars.
 - ...which are deposited in banks, increasing reserves
 - ...which banks use to make loans, causing the money supply to expand.
- bonds, taking dollars out of circulation, and the process works in reverse.
- OMOs are easy to conduct, and are the Fed's monetary policy tool of choice.



The Fed's 3 Tools of Monetary Control

- 2. Reserve Requirements (RR): affect how much money banks can create by making loans.
- To increase money supply, Fed reduces RR. Banks make more loans from each dollar of reserves, which increases money multiplier and money supply.
- To reduce money supply, Fed raises RR, and the process works in reverse.
- Fed rarely uses reserve requirements to control money supply: Frequent changes would disrupt banking.



The Fed's 3 Tools of Monetary Control

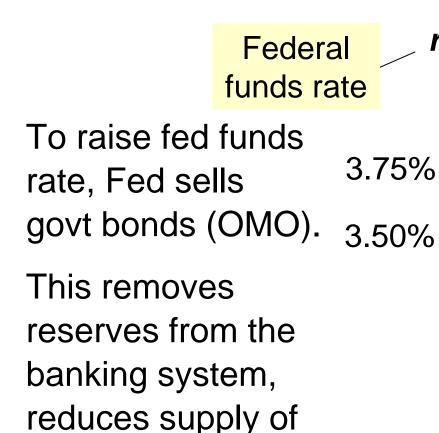
- 3. The Discount Rate: the interest rate on loans the Fed makes to banks
 - When banks are running low on reserves, they may borrow reserves from the Fed.
 - To increase money supply,
 Fed can lower discount rate, which encourages banks to borrow more reserves from Fed.
 - Banks can then make more loans, which increases the money supply.
 - To reduce money supply, Fed can raise discount rate.
 - The Fed uses discount lending to provide extra liquidity when financial institutions are in trouble, e.g. after the Oct. 1987 stock market crash.
 - If no crisis, Fed rarely uses discount lending Fed is a "lender of last resort."
 - This rate is usually 1% higher than the fed funds rate.

The Federal Funds Rate

- On any given day, banks with insufficient reserves can borrow from banks with excess reserves.
- The interest rate on these loans is the federal funds rate.
- The FOMC uses OMOs to target the fed funds rate.
- Many interest rates are highly correlated, so changes in the fed funds rate cause changes in other rates and have a big impact in the economy.

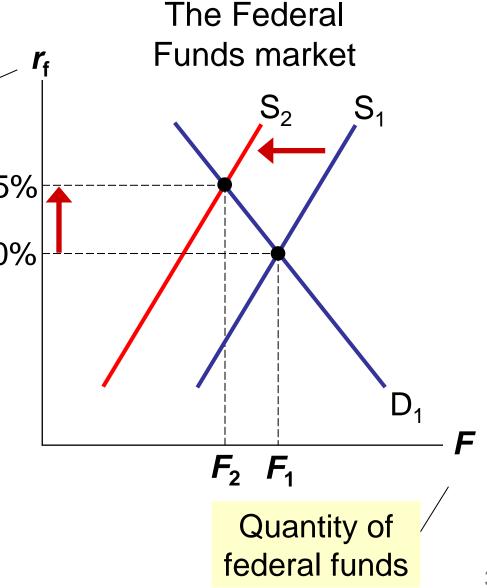


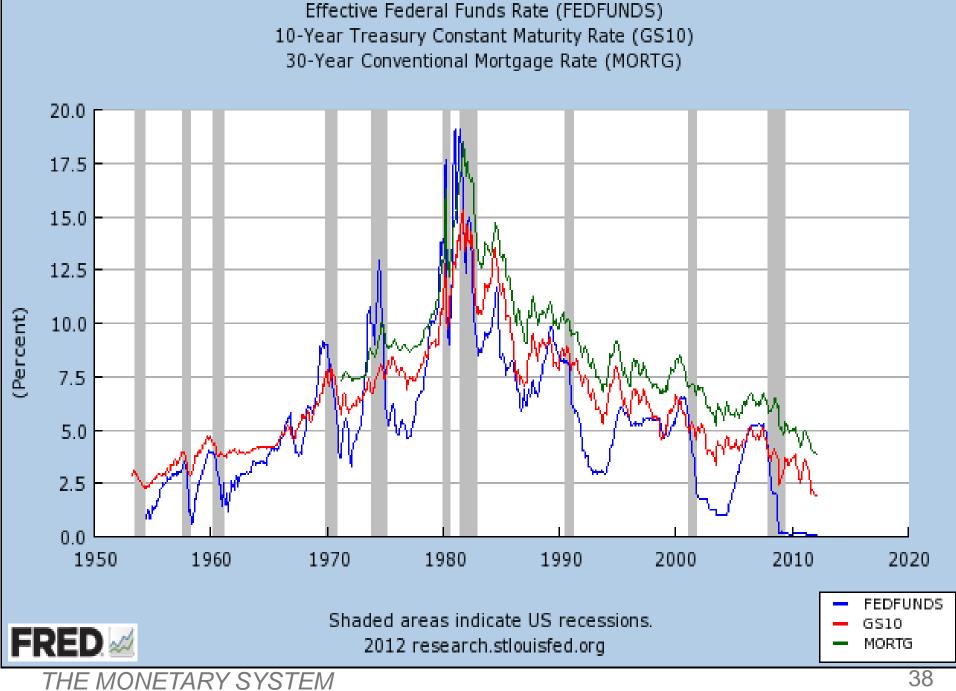
Monetary Policy and the Fed Funds Rate



causes $r_{\rm f}$ to rise.

federal funds,





Bank Runs and the Money Supply

- A run on banks: It's A Wonderful Life (video) When people suspect their banks are in trouble, they may "run" to the bank to withdraw their funds, holding more currency and less deposits.
- Under fractional-reserve banking, banks don't have enough reserves to pay off ALL depositors, hence banks may have to close.
- Also, banks may make fewer loans and hold more reserves to satisfy depositors.
- These events increase R, reverse the process of money creation, cause money supply to fall.