ECON 202 - MACROECONOMIC PRINCIPLES

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Chapter 13 - Money and the Banking System

Money and the Banking System - Topics

1. What is money?
2. Identify the components of money in the U.S. economy
3. Explain the process of multiple expansion and contraction of deposits
4. Describe the structure of the Federal Reserve
5. Discuss examples of how the Federal Reserve acts during financial crises

What is Money?

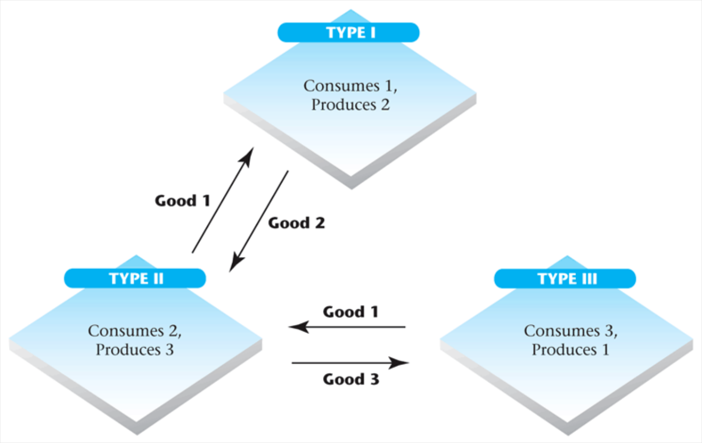
Three properties of money

1. Medium of exchange
2. Unit of account
3. Store of value (as long as inflation is low)

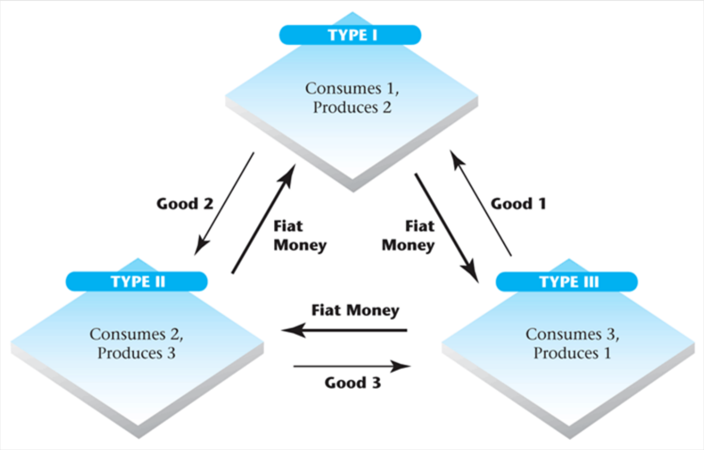
Three Properties of Money

- Medium of exchange:
- Unit of account:
  - Example 1: In a world **withou**t money you want to buy a pair of shoes
    - Vendor one quotes you a price of: 1/200th of a cow for a pair of shoes
    - Vendor two quotes you a price of: 2 chickens for an identical pair of shoes
    - From which vendor should you buy?
  - Example 2: In a world **with** money you want to buy a pair of shoes
    - Vendor one quotes you a price of: \$80 for a pair of shoes
    - Vendor two quotes you a price of: \$90 for an identical pair of shoes
    - From which vendor should you buy now?
- Store of value:

Commodity Money in the Absence-of-Double-Coincidence Economy



Fiat Money in the Absence-of-Double-Coincidence Economy



Different Types of Monetary Systems

- Commodity money
- Gold standard
- Fiat money

Yap Stone

Paying the Bill with a Yap Stone

What is Money

Measuring Money in the U.S. Economy: M1

TABLE 13.1 Components of M1, February 2015	
Currency held by the public	$1,272 billion
Demand deposits	1210 billion
Other checkable deposits	503 billion
Traveler's checks	3 billion
Total of M1	2,988 billion

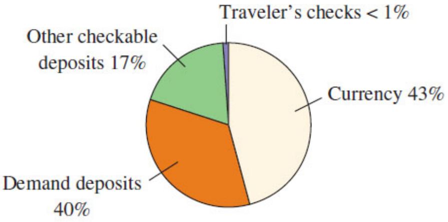
SOURCE: Board of Governors of the Federal Reserve.

M1 is the sum of

1. currency in the hands of the public,
2. demand deposits (checking accounts),
3. other checkable deposits, and
4. traveler's checks

- In 2015 $\rightarrow$M1 $=$ 3,102 billion $\rightarrow$ 16% of GDP

Measuring Money in the U.S. Economy: M1 (cont.)



▲ **FIGURE 13.1** Components of M1 for the United States

MyEconLab Real-time data

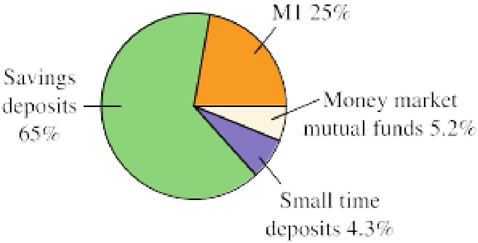
Currency is the largest component of M1, the most basic measure of money. Demand and other checkable deposits are the next largest components.

SOURCE: Board of Governors of the Federal Reserve.

M2

M2 = M1 +

1. savings accounts
2. retail money market mutual fund balances
3. small denomination time deposits
4. overnight repurchase agreements (REPO) below $100,000.



▲ FIGURE 13.2 Components of M2 in the United States

M2 (cont.)

- In 2015 $\rightarrow M2 = 12,472$ billion $\rightarrow$68% of GDP

M3

$M3 = M2 +$

1. time deposits and repurchase agreements over \$100,000
2. money market deposits owned by firms
3. Eurodollars (\$ held abroad$\rightarrow$started with dollars in Europe because of Marshall Plan)

Credit Cards

- Credit cards are not part of money supply

Balance Sheet for a Commercial Bank

Assets	Liabilities
\$ 200 Reserves	\$2,000 Deposits
\$2,000 Loans	\$ 200 Owners' equity
Total: \$2,200	Total: \$2,200

Reserves

- Banks are required by law to hold a certain amount of assets as reserves
- They cannot lend these funds out
- Banks hold reserves in cash in their vaults or as deposits with the Federal Reserve
- **Reserves do not earn interest**

Money Creation

First Bank of Hollywood

Assets	Liabilities
\$100 Reserves	\$1,000 Deposit
\$900 Loans	

Second Bank of Burbank

Assets	Liabilities
\$ 90 Reserves	\$900 Deposit
\$810 Loans	

Third Bank of Venice

Assets	Liabilities
\$ 81 Reserves	\$810 Deposit
\$729 Loans	

Fourth Bank of Pasadena…
Fifth Bank of Compton… and so on

The Money Multiplier

- The original \$1,000 cash deposit has created checking account balances equal to:
- \$1,000 + \$900 + \$810 + \$729 + \$656.10 +.... = \$10,000

The general formula for deposit creation is:

$$\text{increase in checking account balance} = \frac{1}{\text{reserve ratio}} \times \text{initial deposit}$$

- The increase in the money supply, M1, resulting from the increase in the \$1,000 deposit equals \$10,000 - \$1,000 = \$9,000
- This term in the formula is called the **money multiplie**r

Derivation of the Money Multiplier

- Say the reserve requirement is: 10 and the initial money is \$1000
- \$1000+\$900+\$810+\$729+...
  - $=\$1000\times(1+0.9+0.81+0.729+\ldots)$
  - $=\$1000\times(0.9^0+0.9^1+0.9^2+0.9^3+\ldots)$
  - $=\$1000\times\frac{1}{(1-0.9)}$
  - $=\$1000\times\frac{1}{0.1)}$
  - $=\$1000\times 10$
  - $=\$10,000$
- Money multiplier $=10$

Multiplier Revisited

- rr is reserve ratio
- cash$\times[(1 + (1 - rr) + (1 - rr)^2 + (1 - rr)^3 + \ldots]$
- $=$cash$\times\frac{1}{(1-(1-rr))}$
- $=$cash$\times\frac{1}{rr}$
- Multiplier $=1/$reserve ratio

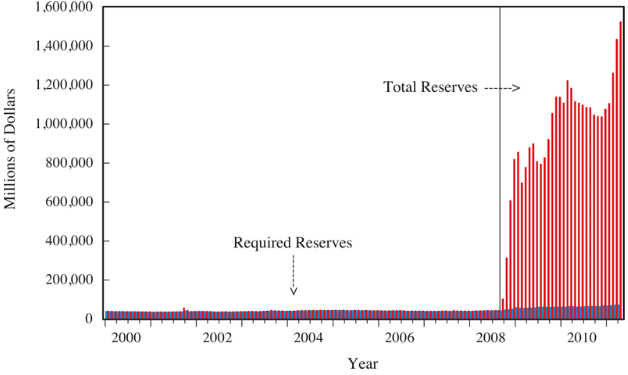
Federal Reserve and Open Market Operations

Federal Reserve and Open Market Operations

- Central Bank
- Open market purchases (of bonds)
  - increase money
- Open market sales (of bonds)
  - decrease money

Additional Tools of the Fed

- Change reserve requirements (the % banks have to hold as reserves)
- Change the discount rate (interest rate)



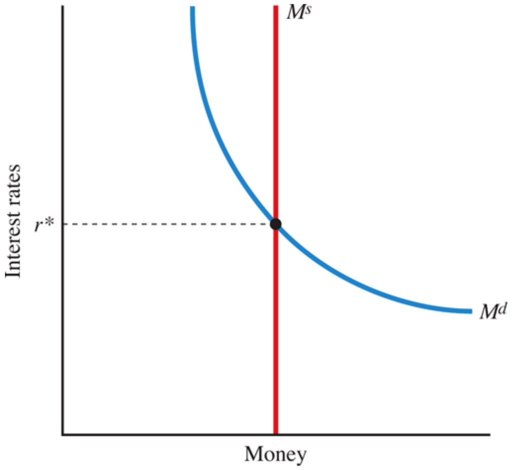
Discount Rate and Federal Funds Rate

- **Discount rate** $\rightarrow$ bank borrows from FED at this rate
- **Federal Funds Rate** $\rightarrow$ bank borrows from another bank at this rate
- In practice the two rates are very similar, in order to avoid large swings in borrowed reserves

Discount Rate and Federal Funds Rate

- The Fed typically announces a target for the Federal Funds Rate $\rightarrow$ then uses open market transactions to keep rate at these targets $\rightarrow$by shifting M^s appropriately

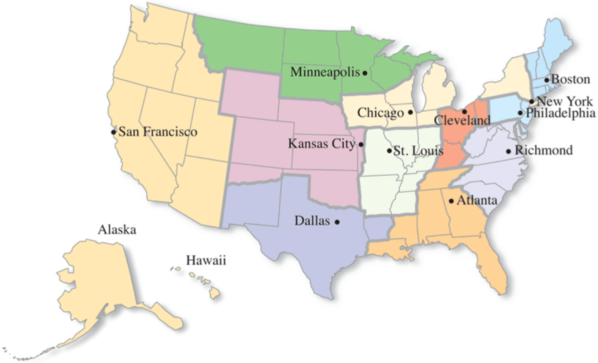
Discount Rate and Federal Funds Rate (cont.)



Structure of the Fed

- The Federal Reserve System was created in 1913 following a series of financial panics in the United States
- Congress created the Federal Reserve to be a central bank, serving as a banker's bank
- One of the Fed's primary jobs was to serve as a lender of last resort—lending funds to banks that suffered from panic runs
- Split into 3 sub-parts
  1. Federal Reserve Banks (12 districts)
  2. Board of Governors
  3. Federal Open Market Committee

Structure of the Fed (cont.)



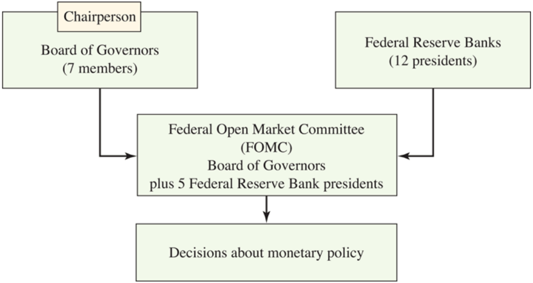
1. The 12 Federal Banks
    - Provide advice on monetary policy
    - Take part in decision-making on monetary policy
    - Provide a liaison between the Fed and the banks in their districts

Structure of the Fed (cont.)

2. Board of Governors of the Federal Reserve
   - The seven-person governing body of the Federal Reserve System in Washington, D.C.
   - Appointed for 14 years by the President and confirmed by the Senate
   - Chairperson of the Board serve a four-year term
   - And everybody is carefully watching Janet Yellen

3. Federal Open Market Committee (FOMC)
   - The group that decides on monetary policy:
   - 12-person board
     - 7 members of the board of Governors
     - 1 president of Fed New York
     - 4 rotating members of the other regional Feds
   - Chairperson of the Board of Gov. is also chairperson of the FOMC
   - The chairperson has to report to congress on a regular basis

Structure of the Fed (cont.)



Policies and Power

- The Fed is independent of the Treasury Dept.
- The Fed has to do what the Congress tells it
- However, in practice the Fed acts “independently” and reports to the congress afterwards
- Should the Fed be independent?