**The Federal Reserve System**

Federal Reserve = Fed = Central Bank (for U.S.)

Created in 1913 as an independent agency

Created by Congress

Compromise in that Board of Gov. is Federally appointed and Regional Banks are owned privately.

# Major Functions of Fed

1. Set and administer monetary policy – control money supply and interest rates
2. Act as a lender of last resort to banks through discount window
3. Assist in the payments and collections systems

Fed plays a major role in the check clearing process and electronic wire transfer of funds

1. Regulate commercial banks

Along with FDIC, Comptroller of the Currency, and state bank authorities

# Fed Structure and Organization

Three Major Players:

1. Twelve Federal Reserve District Banks
2. Board of Governors
3. Federal Open Market Committee

District Banks:

Each of the 12 has one main Fed. Reserve Bank and branches in other cities

We are in District 6 with bank in Atlanta and branch in N.O.

New York, Chicago and San Francisco hold over half of total assets

New York holds over 30% of assets

Each Fed Bank is owned by the private commercial banks in the district who are members of the Fed. Res. System. They buy stock and get a 6% annual dividend on that stock.

Each Fed. Res. Bank has 9 directors – 6 elected by member banks (3 bankers and 3 bus. People) in that district and 3 appointed by the Board of Governors (not allowed to be officers, employees, or stockholders of banks). The directors appoint the district president subject to approval of Bd. Of Gov.

Responsibilities of the 12 Banks:

 Clear checks

 Issue new currency

 Withdraw damaged currency from circulation

 Make discount loans to banks in their region

 Examine state member banks

 Collect data on local business conditions

 Research topics related to the conduct of monetary policy

All National Banks (chartered by Comptroller of the Currency) are required to be members of Fed. Res. System. Those chartered by the states have the choice to join or not. Member and non-member banks have the same reserve requirements though.

Board of Governors:

Seven members appointed by President with approval of Congress

Each member is appointed for 14 years

One Governor’s term expires every Jan. 31 of even numbered years

Governors must come from different districts

Chairman is chosen from among the seven members and serves a 4 yr. Term

What the Board does:

 Sets reserve requirements for the banks

 Controls the discount rate by approving or disapproving of the rates established

 by the Fed. Res. Banks

 Sets margin requirements – The fraction of the price of securities that must be

 paid for with cash rather than borrowed (controls leverage)

 Approves Bank mergers

 Specifies permissible activities of bank holding companies

 Supervises activities of foreign banks in U.S.

FOMC:

Includes all 7 Governors

President of Fed. Reserve bank of New York

Presidents of 4 other Fed. Reserve banks on a rotating basis

Sets monetary policy

Meets 8 times/yr. (scheduled)

Makes decisions regarding purchases and sales of securities – this is the Fed’s primary tool for influencing the money supply. These purchases and sales are carried out by the trading desk of the Fed. Res. Bank of New York.

The Fed is independent because it is not directly subject to controls by either Congress or the President.

The Fed is financially independent because it earns more money from its operations (interest on securities it owns) than it needs to cover its expenses.

# Why the Money Supply is Important

Interest rates are the price of money

If supply ↑ ⇒ price ↓ and vice versa.

# How the Fed Influences the Supply of Money

1. Reserve Requirements
2. Discount Rate (Primary Credit Rate)
3. Open Market Operations

Reserves:

Cash on hand and on deposit at the Fed by commercial banks.

No interest was earned by the banks on this money prior to 2008

Required Reserves = the level the Fed requires banks to hold

 Based as a % of deposits

 Progressive scale based on time and demand deposits

Excess Reserves = any reserves a bank has above the required level

Total Reserves = Required Reserves + Excess Reserves

A higher required reserve ratio means less money the bank has to lend, and a decrease in the money supply (much more on this later).

Discount Rate = the interest rate charged by the Fed to banks that wish to borrow reserves from the Fed’s discount window.

Banks generally don’t borrow from the Fed unless necessary because the discount rate is higher than the fed funds rate.

Open Market Operations:

The primary instrument for controlling the money supply.

Fed buys and sells (in open market), Gov. Securities (primarily T-bills) for its own account.

Since 2008, Fed has purchased non-Gov. Securities as well – specifically mortgage-backed securities

If Fed wants to increase money supply, it must increase reserves, so banks can lend more.

To increase reserves, Fed buys Gov. Securities from dealers.

When Fed buys Gov. Securities, it writes a check on itself – it credits money in the reserves of the dealer’s bank. That increases reserves.

To decrease reserves, Fed sells Gov. Securities to dealers.

When Fed sells Gov. Securities, it removes money from reserves of the dealer’s bank. That decreases reserves.

Most often, the Fed conducts repurchase agreements (Repos) or reverse repos.

Repo: Fed buys Gov. Secur. At a discount from someone who agrees to repurchase them at a specified date. This injects reserves into the system *temporarily* for a needed temporary increase in the money supply.

# How Money is Created through the System of Reserves

Example: Fed wants to increase the money supply, so it buys $100 of T-bills from

Bank A. Required Reserve ratio is 10%.

Before Fed Buys T-bills

 Bank A

# Assets\_\_\_\_ L & E\_\_\_\_

T-bills 100 Equity 100

After Fed Buys T-bills

 Bank A

# Assets\_\_\_\_ L & E\_\_\_\_ Note that Bank A now has $100 of excess reserves

Reserves 100 Equity 100

After Bank A makes a loan

 Bank A

# Assets\_\_\_\_ L & E\_\_\_\_ Bank A loans out all its excess reserves this creates

Reserves 100 Equity 100 both an asset and a liability

Loan 100 Deposit 100

 Bank A

# Assets\_\_\_\_ L & E\_\_\_\_ The person Bank A loaned the money to withdraws

Loan 100 Equity 100 it for the purpose of depositing it in Bank B

 Bank A will make more on the loan than on the T-bills

After the $100 are Deposited

 Bank B

# Assets\_\_\_\_ L & E\_\_\_\_ The person who received the $100 loan from

Reserves 100 Deposits 100 Bank A, deposits the money in Bank B, which

 previously had no assets, liab, or equity.

 Bank B now has $90 of excess reserves.

After Bank B makes a $90 Loan

 Bank B

# Assets\_\_\_\_ L & E\_\_\_\_ Bank B loans out all its excess reserves. This

Reserves 100 Deposits 190 creates both an asset and a liability.

Loans 90

After the withdrawal from Bank B

 Bank B

# Assets\_\_\_\_ L & E\_\_\_\_

Reserves 10 Deposits 100 The person who received the $90 loan from

Loans 90 Bank B, withdraws the money for the purpose

 of depositing it in Bank C

After the deposit into Bank C

 Bank C

# Assets\_\_\_\_ L & E\_\_\_\_

Reserves 90 Deposits 90 Bank C has $81 in excess reserves that it can

 loan out.

 Bank C

# Assets\_\_\_\_ L & E\_\_\_\_

Reserves 90 Deposits 171 Bank C loans out $81, creating an asset and a liab.

Loans 81

 Bank C

# Assets\_\_\_\_ L & E\_\_\_\_

Reserves 9 Deposits 90 The person who received the $81 loan from

Loans 81 Bank C withdraws the money for the purpose

 of depositing it in Bank D

 Bank D

# Assets\_\_\_\_ L & E\_\_\_\_

Reserves 81 Deposits 81 Bank D has $72.90 in excess reserves that it can

 loan out.

 Bank D

# Assets\_\_\_\_ L & E\_\_\_\_

Reserves 81 Deposits 153.90 Bank D loans out $72.90, creating an asset

Loans 72.90 and a liability

 Bank D

# Assets\_\_\_\_ L & E\_\_\_\_

Reserves 8.10 Deposits 81 The person who received the $72.90 loan from

Loans 72.90 Bank D withdraws the money for the purpose

 Of depositing it in Bank E

Deposits Created:

100 + 90 + 81 + 72.90 + … = $1,000.00

Δ TDD = ΔR/Req.

Here, ΔR = 100 and Req = 10%, so ΔTDD = 1,000

Basic Money Multiplier = 1/Required Reserve Ratio = 1/.1 = 10

This means if the Fed buys $1 in T-bills, the money supply increases by $10

Note though that if banks are willing to hold excess reserves and/or money is taken in cash, the Money Supply won’t increase by the full amount predicted by the money multiplier.

Interest rates influence the bank’s willingness to hold excess reserves, and the public’s willingness to hold cash. At high interest rates, the lost interest for both is greater.

The price of holding cash is high with high interest rates.

Thus, as interest rates increase, the money multiplier increases (and approaches the equation above) and vice versa.

The Fed not only deals with the money supply and interest rates, but also exchange rates. By buying and selling foreign currency, the Fed can influence exchange rates.

# Goals of the Fed

1. Price Stability
2. Maximum Employment
3. Economic Growth
4. Stable interest rates
5. Stable exchange rates

Unfortunately, these goals can conflict at times, and an attempt to influence one will usually influence others as well.

Increasing the rate of growth of the money supply tends to:

Decrease real interest rates

Increase economic growth

Decrease unemployment

Increase inflation

Decrease the value of the dollar relative to other currencies which makes imports cost more

Decreasing the rate of growth of the money supply does the opposite

# Calculating Reserve Requirements

Obviously it’s important for banks to know what their reserve requirements are – It’s not as simple as 10% of deposits though.

Requirements are 3% of a base amount of checkable deposits and 10% of all checkable deposits above that amount. The base amount is adjusted each year.

Computation Period – Period over which the required reserves are calculated

 2 wks long – begins on a Tues. and ends on a Mon.

 Average daily balance of checkable deposits is calculated over the computation

 period

Maintenance Period – Period over which the reserves must be held.

 2 wks long – begins on Thurs. and ends on Wed.

 Average daily level of reserves is calculated over the maintenance period.

To meet reserve requirements, the average daily level of reserves during the maintenance period must be > required ratio on average daily balance of checkable deposits over the computation period.

Average Daily Checkable Balance = $100.36 million

Base Amount = $51.9 million

Required Daily Reserves = 3% x 51.9 million = 1.56 million

 + 10% x (100.36 mill – 51.9 mill) = 4.85 million

 6.41 million

You know this at the end of week 2 for the computation period – end of day on Monday.

You also know your total daily reserves to date is 78.64 million

To get an average of 6.41 mill over the 14 days, you need total daily reserves of:

6.41 x 14 = 89.74 million

Thus you need:

89.74 – 78.64 = 11.10 million over the last 2 days = an average of 5.55/day

Note that this is less than you have been averaging, so you can get by with less reserves and loan some out to other banks or invest in the money market to get some interest on this money.

If you needed to increase reserves over these last 2 days, you must borrow reserves.

**List of Primary Dealers**

* [Bank of Nova Scotia, New York Agency](https://en.wikipedia.org/wiki/Scotiabank)
* [BMO Capital Markets Corp.](https://en.wikipedia.org/wiki/Bank_of_Montreal)
* [BNP Paribas Securities Corp.](https://en.wikipedia.org/wiki/BNP_Paribas)
* [Barclays Capital Inc.](https://en.wikipedia.org/wiki/Barclays)
* [Cantor Fitzgerald & Co.](https://en.wikipedia.org/wiki/Cantor_Fitzgerald)
* [Citigroup Global Markets Inc.](https://en.wikipedia.org/wiki/Citigroup)
* [Credit Suisse Securities (USA) LLC](https://en.wikipedia.org/wiki/Cr%C3%A9dit_suisse)
* [Daiwa Capital Markets America Inc.](https://en.wikipedia.org/wiki/Daiwa_Securities_Group)
* [Deutsche Bank Securities Inc.](https://en.wikipedia.org/wiki/Deutsche_Bank)
* [Goldman, Sachs & Co.](https://en.wikipedia.org/wiki/Goldman_Sachs)
* [HSBC Securities (USA) Inc.](https://en.wikipedia.org/wiki/HSBC)
* [Jefferies LLC](https://en.wikipedia.org/wiki/Jefferies_Group)
* [J.P. Morgan Securities LLC](https://en.wikipedia.org/wiki/JP_Morgan)
* [Merrill Lynch, Pierce, Fenner & Smith Incorporated](https://en.wikipedia.org/wiki/Merrill_Lynch)
* [Mizuho Securities USA Inc.](https://en.wikipedia.org/wiki/Mizuho_Financial_Group)
* [Morgan Stanley & Co. LLC](https://en.wikipedia.org/wiki/Morgan_Stanley)
* [Nomura Securities International, Inc.](https://en.wikipedia.org/wiki/Nomura)
* [RBC Capital Markets, LLC](https://en.wikipedia.org/wiki/Royal_Bank_of_Canada)
* [RBS Securities Inc.](https://en.wikipedia.org/wiki/Royal_Bank_of_Scotland_Group)
* [SG Americas Securities, LLC](https://en.wikipedia.org/wiki/Societe_Generale)
* [TD Securities (USA) LLC](https://en.wikipedia.org/wiki/Toronto-Dominion)
* [UBS Securities LLC.](https://en.wikipedia.org/wiki/UBS)
* [Wells Fargo Securities LLC.](https://en.wikipedia.org/wiki/Wells_Fargo)