

Macroeconomics: Principles & Applications

CHAPTER 13

Money, Banks, and the Federal Reserve

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Money

- **Money**
 - An asset widely accepted as a means of payment
- **Means of payment**
 - Anything acceptable as payment for goods and services
- **Money supply**
 - The total amount of money held by the public

Money

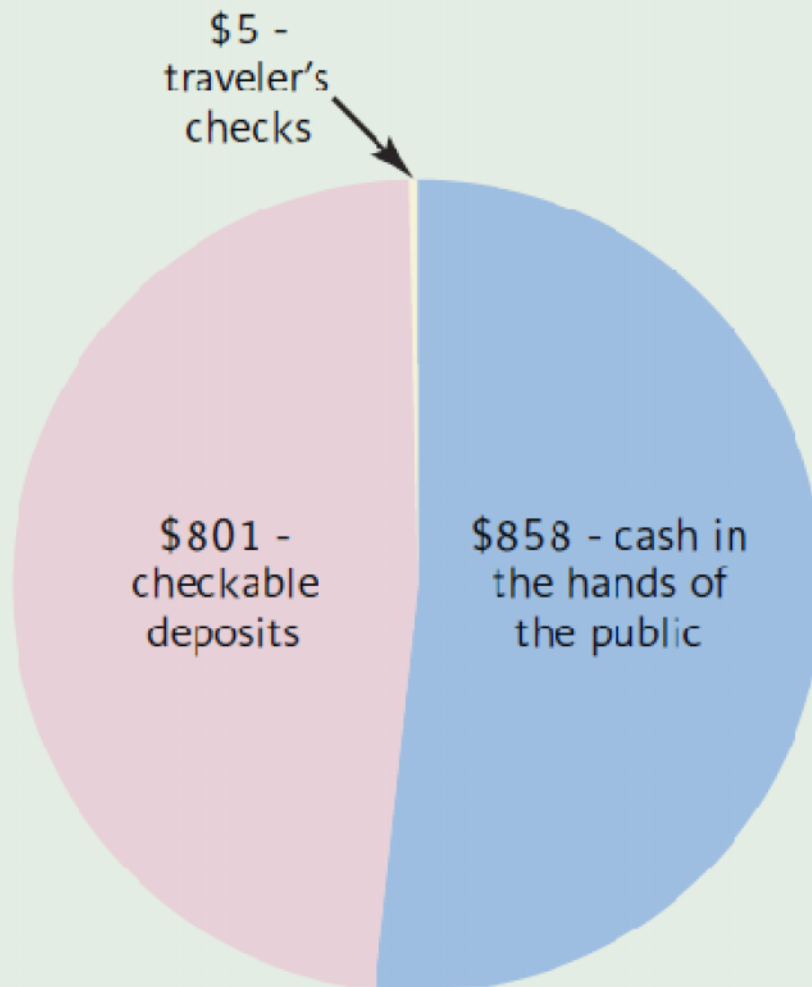
- **Money supply, M1**
 - Cash in the hands of the public
 - Checking account deposits
 - Travelers checks
- **Cash in the hands of the public**
 - Currency and coins held by the nonbank public

Money

- **Checkable deposits**
 - Accounts held by households and business firms at commercial banks
 - Demand deposits
 - Automatic transfers from savings accounts
- **Travelers checks**
 - Specially printed checks that you can buy from banks or other private companies

Figure 1: The U.S. money supply

Forms of Money in the U.S., August 10, 2009 (in \$ billion)



The most basic definition of the U.S. Money supply consists of cash in the hands of the public, checkable deposits, and traveler's checks.

Total Money Supply: \$1,664 billion

Money

- **Money supply, M2**
 - M1
 - Savings deposits
 - Money market deposits
 - Money market funds
 - Certificates of deposit under \$100,000

Money

- **Functions of money**
 - Means of payment
 - Store of value
 - Unit of account
- **Store of value**
 - A form in which wealth can held
- **Unit of account**
 - A common unit for measuring how much something is worth

Brief History of the Dollar

- **Prior to 1790**
 - Each colony had its own currency, the “pound”
 - Different purchasing power
- **1790, soon after the Constitution went into effect**
 - Congress created a new currency, the dollar
 - Merchants and businesses switched immediately to the new dollar
 - The dollar rapidly became the standard unit of account

Brief History of the Dollar

- **Primary means of payment**
 - Until the Civil War
 - Paper currency issued by private banks
- **During the Civil War**
 - Government issued the first federal paper currency, the greenback
 - Until 1879
- **1913, Federal Reserve System**
 - National monetary authority in the United States

Money

- **Federal Reserve System**
 - Monetary authority of the United States
 - Creating & regulating nation's supply of money
- **Commodity money**
 - Precious metals & other valuable commodities
 - Important uses other than means of payment
 - The non-money use is what gave commodity money its ultimate value

Money

- **Paper currency**
 - Initially - a certificate representing a certain amount of gold or silver held by a bank
 - People were willing to accept paper money:
 - Currency could be exchanged for a valuable commodity such as gold or silver
 - The issuer—either a government or a bank—could print new money only when it acquired additional gold or silver
 - Today - paper currency is no longer backed by gold or any other physical commodity

Money

- **Commodity money**
 - Eventually gave way to paper currency
- **Fiat money**
 - Something that serves as a means of payment by government declaration

The Banking System

- **Financial intermediary**
 - A business firm that specializes in brokering between savers and borrowers
- **Depository institutions**
 - Financial intermediaries
 - Accept deposits from the general public
 - Lend the deposits to borrowers

The Banking System

- **Commercial banks**
 - Largest group of depository institutions
 - Obtain funds mainly by accepting checkable deposits, savings deposits, and time deposits
 - Use the funds to make business, mortgage, and consumer loans
- **Balance sheet**
 - Financial statement showing assets, liabilities, and shareholders' equity at a point in time

Table 1: The Balance Sheet of Mid-Size National Bank

Assets		Liabilities and Shareholders' Equity	
Property and buildings	\$ 40 million	Checking Account Deposits	\$ 600 million
Government and Corporate Bonds	\$ 100 million	Other Deposits	\$ 200 million
Loans	\$ 800 million	Bank Borrowing	\$ 75 million
Cash in Vault and ATMs	\$ 10 million		
In Accounts with Federal Reserve	\$ 50 million	Shareholders' Equity	\$ 125 million
Total Assets	\$1,000 million	Total Liabilities and Shareholders' Equity	\$1,000 million

The Banking System

- **Bond**
 - A promise to pay back borrowed funds, issued by a corporation or government agency
- **Loan**
 - An agreement to pay back borrowed funds, signed by a household or non-corporate business
- **Reserves**
 - Vault cash plus balances held at the Fed

The Banking System

- **Required reserves**
 - Minimum amount of reserves a bank must hold
 - Depends on the amount of its deposit liabilities
- **Required reserve ratio**
 - The minimum fraction of checking account balances that banks must hold as reserves

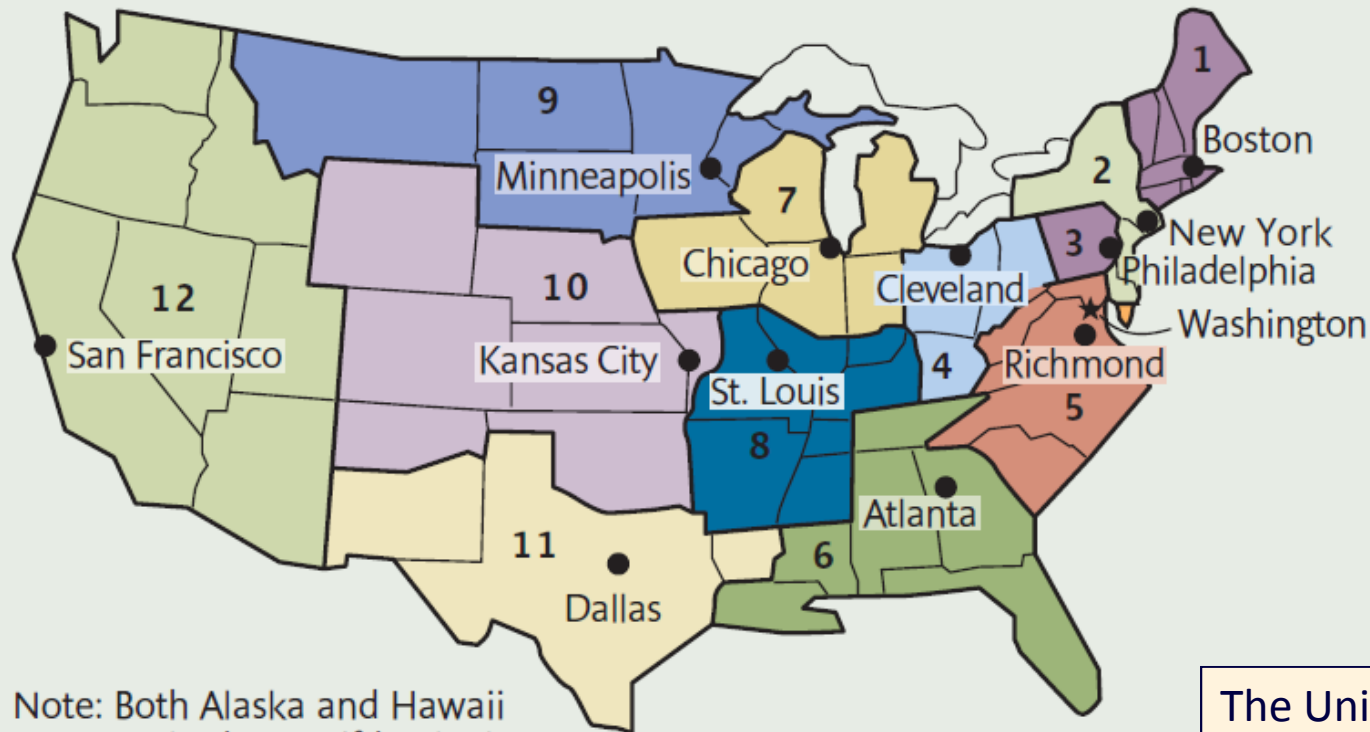
The Banking System

- **Excess reserves**
 - Reserves in excess of required reserves
- **Shareholders' equity**
 - The difference between assets and liabilities
- **A balance sheet always balances**

The Federal Reserve System

- **Central bank**
 - A nation's principal monetary authority responsible for controlling the money supply
- **Federal Reserve System**
 - 12 Federal Reserve districts
 - It is not part of any branch of government
 - Was created by Congress
 - Could be eliminated by Congress if it so desired
 - President and Congress
 - Appoint key officials in the system

Figure 2: The Geography of the Federal Reserve System



Note: Both Alaska and Hawaii are in the Twelfth District

- District boundaries
- - - State boundaries
- Reserve Bank cities
- ★ Board of Governors of the Federal Reserve System

The United States is divided into 12 Federal Reserve districts, each with its own Federal Reserve Bank.

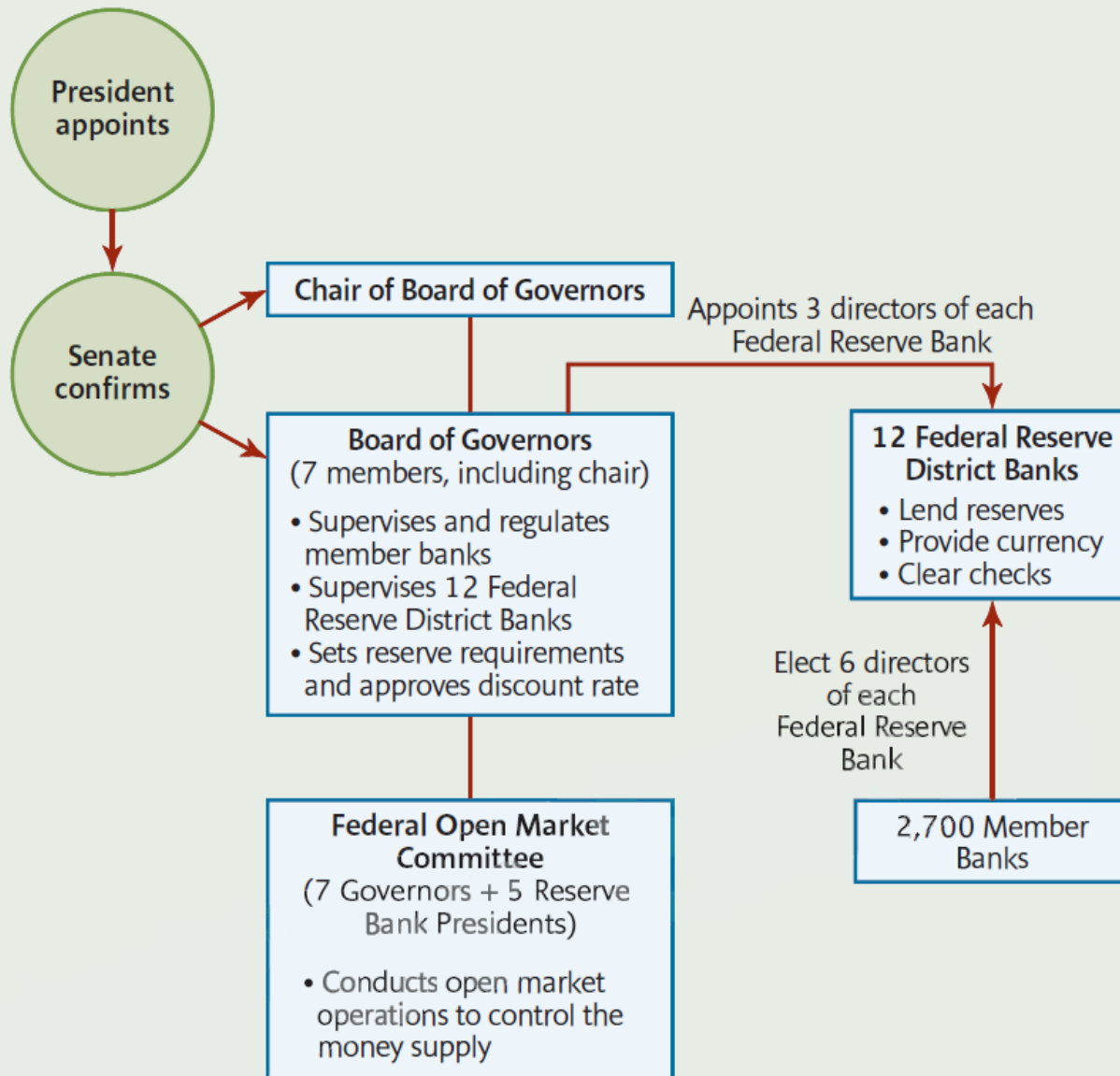
The Federal Reserve System

- **Board of Governors**
 - Seven members
 - Appointed by the president
 - Confirmed by the Senate
 - For a 14-year term
 - Chairman
 - One of the seven governors
 - Appointed by the president
 - Approved by the with Senate
 - 4-year term

The Federal Reserve System

- **12 Federal Reserve Banks**
 - Each - supervised by nine directors
 - Three - appointed by the Board of Governors
 - Six - elected by private commercial banks
 - Each – a president
 - Chosen by the directors

Figure 3: The Structure of the Federal Reserve System



Principal decision-making power at the Fed is vested in the Board of Governors, who are appointed by the president and confirmed by the Senate. Monetary policy is set by the Federal Open Market Committee, which consists of the seven governors plus five of the presidents of Federal Reserve Banks

The Federal Reserve System

- **Federal Open Market Committee (FOMC)**
 - A committee of Federal Reserve officials that establishes U.S. monetary policy
 - All seven governors of the Fed
 - Five of the twelve bank presidents
- **Discount rate**
 - The interest rate the Fed charges on loans to banks

The Federal Reserve System

- The functions of the Fed
 - Supervising and regulating banks
 - Acting as a “bank for banks”
 - Issuing paper currency
 - Check clearing
 - Guiding the macroeconomy
 - Dealing with financial crises

The Fed and the Money Supply

- **Open market operations**
 - Purchases or sales of bonds by the Federal Reserve System
 - The primary way the Fed increases or decreases the money supply
- **Open market purchase**
 - Fed buys government bonds
 - Money supply increases

Table 2: A Check from the Fed Is Deposited at Mid-Size National Bank

Assets		Liabilities and Shareholders' Equity	
Property and buildings	\$ 40 million	Checking Account Deposits	\$ 600 million \$ 605 million
Government and Corporate Bonds	\$ 100 million	Other Deposits	\$ 200 million
Loans	\$ 845 million	Bank Borrowing	\$ 75 million
Cash in vault and ATMs	\$ 10 million		
In Accounts with Federal Reserve	\$ 50 million \$ 55 million	Shareholders' Equity	\$ 125 million
Total Assets	\$1,000 million \$1,005 million	Total Liabilities and Shareholders' Equity	\$1,000 million \$1,005 million

Table 3: Mid-Size Creates New Deposits by Lending Out \$45 million

Assets		Liabilities and Shareholders' Equity	
Property and buildings	\$ 40 million	Checking Account Deposits	\$ 605 million \$ 650 million
Government and Corporate Bonds	\$ 100 million	Other Deposits	\$ 200 million
Loans	\$ 800 million \$ 845 million	Bank Borrowing	\$ 75 million
Cash in vault and ATMs	\$ 10 million		
In Accounts with Federal Reserve	\$ 55 million	Shareholders' Equity	\$ 125 million
Total Assets	\$1,005 million \$1,050 million	Total Liabilities and Shareholders' Equity	\$1,005 million \$1,050 million

Table 4: Effect of an Open Market Purchase on the Banking System

Assets at All Banks		Liabilities and Shareholders' Equity at All Banks	
Property and buildings	\$ 400 million	Checking Account Deposits	\$ 6,000 million \$ 6,050 million
Government and Corporate Bonds	\$ 1,000 million	Other Deposits	\$ 2,000 million
Loans	\$ 8,000 million \$ 8,045 million	Bank Borrowing	\$ 750 million
Cash in vault and ATMs	\$ 100 million		
In Accounts with Federal Reserve	\$ 500 million \$ 505 million	Shareholders' Equity	\$ 1,250 million
Total Assets	\$10,000 million \$10,050 million	Total Liabilities and Shareholders' Equity	\$10,000 million \$10,050 million

The Fed and the Money Supply

- **Money multiplier**
 - The number by which we multiply the injection of reserves to get the total change in the money supply
 - $= 1/RRR$
- **RRR = required reserve ratio**
- **Δ Money Supply**
 - $= \Delta$ Checking Deposits
 - $= [1/RRR] \times \Delta$ Reserves

The Fed and the Money Supply

- **Open market sale**
 - Fed sells government bonds
 - Money supply decreases
- **Provisos about the money multiplier**
 - Changes in the public's cash holdings
 - Increased reserve holdings

The Fed and the Money Supply

- Other Fed actions that change the money supply
 - Changes in the required reserve ratio
 - Lower the required reserve ratio
 - Increase in money supply
 - Changes in the discount rate
 - Lower discount rate
 - Increase the money supply

Banking Panics

- **Bank becomes insolvent**
 - When its total assets are less than its total liabilities
- **Bank failure**
 - When an insolvent bank goes out of business
- **Run on the bank**
 - An attempt by many of a bank's depositors to withdraw their funds

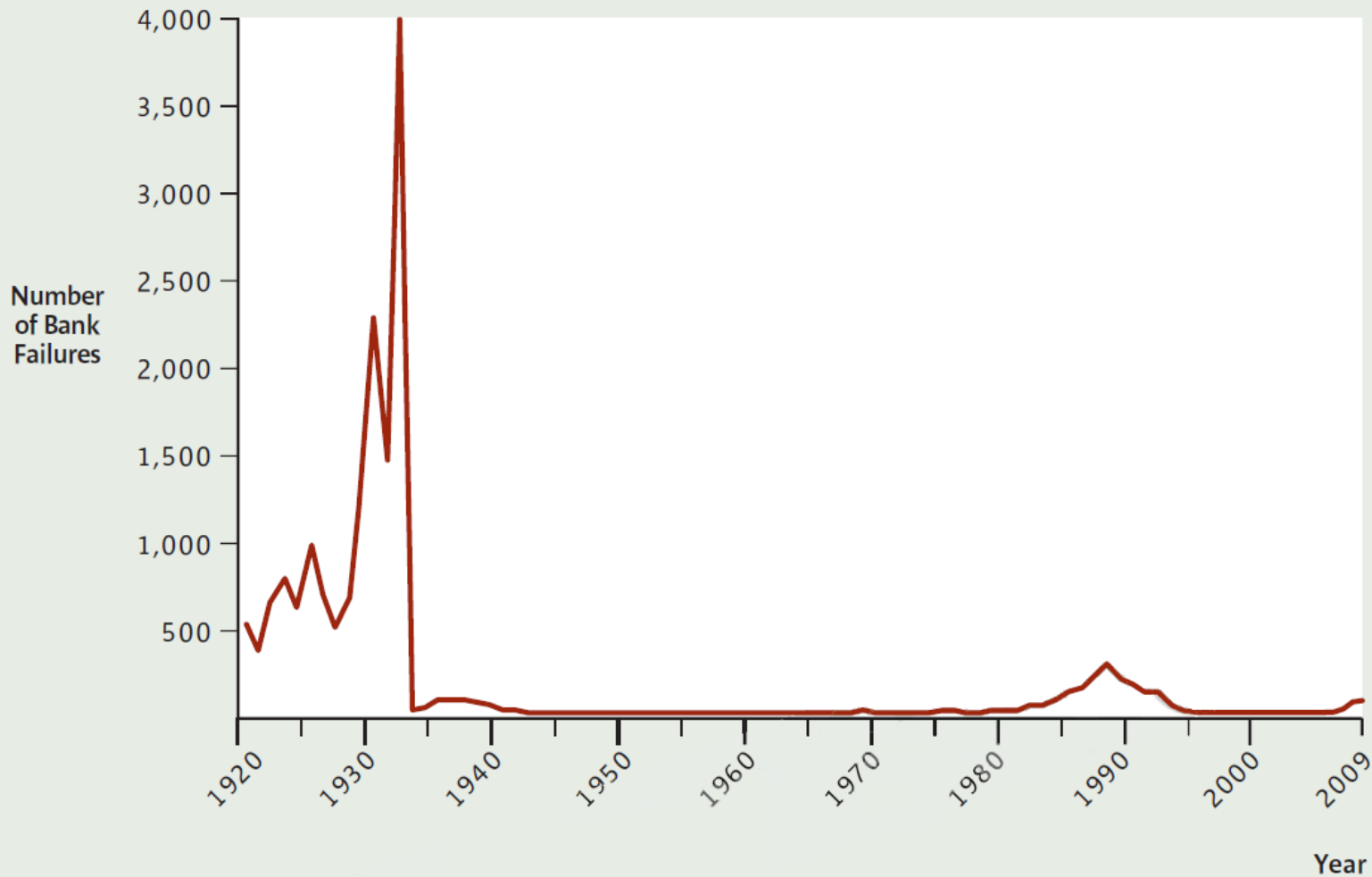
Table 5: Bad Loans Cause Mid-Size Bank to Become Insolvent

Assets		Liabilities and Shareholders' Equity	
Property and buildings	\$ 40 million	Checking Account Deposits	\$ 600 million
Government and Corporate Bonds	\$ 100 million	Other Deposits	\$ 200 million
Loans	\$ 800 million \$ 650 million	Bank Borrowing	\$ 75 million
Cash in vault and ATMs	\$ 10 million		
In Accounts with Federal Reserve	\$ 50 million	Shareholders' Equity	\$ 125 million -\$ 25 million
Total Assets	\$1,000 million \$ 850 million	Total Liabilities and shareholders' equity	\$1,000 million \$ 850 million

Banking Panics

- **Banking panic**
 - A situation in which depositors attempt to withdraw funds from many banks simultaneously
- **Banking panics**
 - Were largely eliminated after 1933
 - Federal reserve
 - Federal deposit insurance corporation

Figure 4: Bank Failures in the United States, 1921–2009



Bank failures continued after the Fed was created in 1913. During the Great Depression, a large number of banks failed. The creation of the Federal Deposit Insurance Corporation in 1933 strengthened faith in the stability of the banking system.

Even during the financial crisis and recession of 2008–2009, bank failures were far fewer than in the 1930s

Banking Panics

- **Bank regulation**
 - Continuous monitoring of their financial condition
 - Legal capital requirements:
 - Banks must hold a significant percentage of their assets as bank capital

The financial crisis of 2008

- **Financial crisis**
 - Major disruption of the financial system
 - Seriously affected lending and other financial services
- **As bank capital declined, banks had three choices:**
 - Acquire more capital by issuing and selling new shares
 - Reduce the risk of their assets
 - Wait and hope

The financial crisis of 2008

- **Banking system**
 - Commercial banks
 - Savings and loan associations (S&Ls)
 - Credit unions
 - Other similar institutions
- **Characteristics:**
 - Short-term liabilities
 - Long-term assets
 - Liabilities include government-insured deposits
 - Closely regulated by government

The financial crisis of 2008

- **A non-bank**
 - Non-bank financial intermediary
 - Financial institution
 - Short-term liabilities
 - Long-term assets

Capital and Leverage at Financial Institutions

- **Simple leverage ratio**
 - For an asset owner
 - = Value of asset / Equity in asset
- **Financial institutions' simple leverage ratio**
 - = Total assets / Shareholder's equity
- **Leverage ratio**
 - Acts as a "rate-of-return" multiplier

Capital and Leverage at Financial Institutions

- The greater the leverage ratio
 - The more interest-earning assets the bank can acquire with each dollar of its capital (shareholders' equity)
 - The greater the return it can earn for its shareholders

Capital and Leverage at Financial Institutions

- **Deleveraging**
 - The process of reducing leverage
 - Reducing the risk to your capital from any further declines in asset prices
- **Lower leverage ratios**
 - Sell off assets rapidly
 - Increasing capital