Chapter 15
Money, Banking, and Central Banking

Introduction

About 20 billion new U.S. coins will be put into circulation this year, and new paper currency will be printed as well.

These new coins and currency represent only a fraction of the increase in the overall money supply.

Learning Objectives

- Define the fundamental functions of money
- Identify key properties that any goods that function as money must possess
- Explain official definitions of the quantity of money in circulation

- Understand why financial intermediaries such as banks exist
- Describe the basic structure of the Federal Reserve System
- Discuss the major functions of the Federal Reserve
The Functions of Money

Liquidity

Monetary Standards, or What Backs Money

Defining Money

Financial Intermediation and Banks

Banking Structures Throughout the World

The Federal Reserve System

Did You Know That...

Money includes not only coins and dollar bills, but also the balance in your checking account?

Anything widely accepted in exchange for items of value is considered to be money?

Money

- Any medium that people generally accept in exchange for goods and services
### The Functions of Money

- **Medium of exchange**
  - Money reduces transaction costs
  - **Means-of-payment uncertainty**

### Medium of Exchange

- Any asset that sellers will accept as payment

### Barter

- The direct exchange of goods and services for other goods and services without the use of money

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### Types of Money

<table>
<thead>
<tr>
<th>Type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>Bear tusk</td>
</tr>
<tr>
<td>Copper</td>
<td>Red woodpecker scalps</td>
</tr>
<tr>
<td>Brass</td>
<td>Feathers</td>
</tr>
<tr>
<td>Wine</td>
<td>Glass</td>
</tr>
<tr>
<td>Corn</td>
<td>Polished beads (wampum)</td>
</tr>
<tr>
<td>Salt</td>
<td>Rum</td>
</tr>
<tr>
<td>Horses</td>
<td>Molasses</td>
</tr>
<tr>
<td>Sheep</td>
<td>Tobacco</td>
</tr>
<tr>
<td>Goats</td>
<td>Agricultural implements</td>
</tr>
<tr>
<td>Tortoise shells</td>
<td>Round stones with centers removed</td>
</tr>
<tr>
<td>Porpoise teeth</td>
<td>Crystal salt bars</td>
</tr>
<tr>
<td>Whale teeth</td>
<td>Snail shells</td>
</tr>
</tbody>
</table>


*Table 15-1*
The Functions of Money

- **Unit of Accounting**
  - A measure by which prices are expressed
  - The common denominator of the price system
  - A standard of value

- **Store of Value**
  - The ability to hold value over time
  - Money allows you to transfer value (wealth) into the future

- **Standard of Deferred Payment**
  - A property of an asset that makes it desirable for use as a means of settling debts maturing in the future
  - An essential property of money

- **Liquidity**
  - The degree to which an asset can be acquired or disposed of without much danger of any intervening loss in nominal value and with small transaction costs
  - Money is the most liquid asset
The Functions of Money

Question
– What is the cost of holding money?

Answer
– The alternative interest yield obtainable by holding some other asset

Monetary Standards, or What Backs Money

Questions
– What backs money?
– Is it gold, silver, or the federal government?

Answer
– Confidence

Transaction Accounts
– Checking accounts in commercial banks and other types of financial institutions, such as credit unions and mutual savings banks
– Any accounts in financial institutions on which you can easily write checks without many restrictions
Monetary Standards, or What Backs Money

- **Fiduciary Monetary System**
  - A system in which currency is issued by the government and its value rests on the public's confidence that it can be exchanged for goods and services

Monetary Standards, or What Backs Money

- **Fiduciary monetary system**
  - Acceptability
    - Where have the $2 bills gone?
  - Predictability of value and confidence
    - The value of money varies inversely with the price level

Example: The Acceptability of Currency by Machines

- New $20 bills issued in October of 2003 were well accepted by vending machines, but not by all automatic payment machines at self-service checkout counters.
- To the extent that some type of cash is inconvenient to use, people will begin to regard it less and less as “money.”

Defining Money

- The transaction approach: M1
  - Currency
  - Checkable (transaction) deposits
  - Traveler’s checks not issued by banks
Defining Money

- **M1**
  - **Currency**
    - Minted coins and paper currency not deposited in financial institutions

Defining Money

- **M1**
  - **Checkable Deposits**
    - Any deposits in a thrift institution or a commercial bank on which a check may be written
  - **Thrift Institution**
    - Financial institutions that receive most of their funds from the savings of the public

Defining Money

- **M1**
  - **Traveler’s Checks**
    - Financial instruments purchased from a bank or a nonbanking organization and signed during purchase that can be used as cash upon a second signature by the purchaser

Composition of the U.S. M1 Money Supply, 2005

![Composition of the U.S. M1 Money Supply, 2005](source: Federal Reserve Bulletin, Economic Indicators, various issues)
Composition of the U.S. M2 Money Supply, 2005

source: Federal Reserve Bulletin, Economic Indicators, various issues

Are credit cards money?
- Defer rather than complete transactions

Are debit cards money?
- Instruction to bank to transfer funds

The liquidity approach: M2
- \[ M2 = M1 + \]
  - savings deposits and small denomination time deposits +
  - overnight repurchase agreements +
  - overnight Eurodollars deposits +
  - retail money market mutual funds +
  - money market deposit accounts

Near Moneys
- Assets that are almost money
- Highly liquid
M2
- **Savings Deposits**
  - Interest-earning funds that can be withdrawn at any time without payment of a penalty

M2
- **Time Deposit**
  - A deposit in a financial institution that requires notice of intent to withdraw or must be left for an agreed period
  - Early withdrawal may result in a penalty
  - Certificates of Deposit

M2
- **Money Market Deposit Accounts (MMDAs)**
  - Accounts issued by banks yielding a market rate of interest with a minimum balance requirement and a limit on transactions

M2
- **Money Market Mutual Funds**
  - Funds of investment companies that obtain funds from the public that are held in common and used to acquire short-maturing credit instruments
Defining the U.S. Money Supply

- **Question**
  - Which definition of money correlates best with economic activity?
- **Answer**
  - M2

Defining Money

- MZM is a monetary aggregate that includes M1 plus savings deposits without set maturity dates.
- MZM (money-at-zero-maturity) includes all money market funds.
- This measure correlates with what people view as spendable deposits.

Financial Intermediation

- **Direct finance**
  - Individuals purchase bonds from a business
- **Indirect finance**
  - Individuals hold money in a bank
  - The bank lends the money to a business

Financial Intermediation

- Financial intermediaries: sources and uses of funds
  - Institutions that transfer funds between ultimate lenders (savers) and ultimate borrowers
Financial Intermediation

- Financial Intermediation
  - The process by which financial institutions accept savings from businesses, households, and government and lend the savings to other businesses, households, and governments

Financial Intermediation

- Question
  - Why might people wish to direct their funds through a bank instead of lending directly to a business?

- Answer
  - Asymmetric information
  - Adverse selection
  - Moral hazard
  - Larger scale and lower management costs

Financial Intermediation

- Asymmetric Information
  - A business may have better knowledge of its own current and future prospects than do potential lenders.

- Adverse Selection
  - The potential for those who wish to borrow funds to use in unworthy projects

Financial Intermediation

- Moral Hazard
  - The possibility that a borrower might engage in behavior that increases risk after borrowing

- Larger scale and lower management costs
  - People can pool funds in an intermediary
  - Average fund management costs and risks are below the levels savers would incur for managing their savings alone
The Process of Financial Intermediation

Financial Intermediation

- Liabilities
  - Amounts owed
  - The sources of funds for financial intermediaries

Assets
- Amounts owned
- The uses of funds by financial intermediaries

Financial Intermediation Across National Boundaries

- Capital Controls
  - Legal restraints that some countries use to restrict international financial intermediation
- International Financial Intermediation
  - Allows international financial diversification
  - World index funds
    - Limit risk and allows average return from a number of nations
  - Allows banks to lend depositor’s funds to businesses in other countries
### Financial Intermediaries and Their Assets and Liabilities

<table>
<thead>
<tr>
<th>Financial Intermediary</th>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial banks</td>
<td>Certificates of deposit, business loans, government securities, home mortgages</td>
<td>Checkable deposits, savings deposits, various other time deposits, money market deposit accounts</td>
</tr>
<tr>
<td>Savings and loan associations and savings banks</td>
<td>Home mortgages, home consumer and business credit</td>
<td>Savings and loan shares, savings and loan deposits, various other time deposits, money market deposit accounts</td>
</tr>
<tr>
<td>Credit unions</td>
<td>Consumer credit, long-term mortgage loans</td>
<td>Credit union shares, credit union deposits</td>
</tr>
<tr>
<td>Insurance companies</td>
<td>Mortgages, annuities, bonds, real estate</td>
<td>Insurance contracts, annuities, pension plans</td>
</tr>
<tr>
<td>Pension and retirement funds</td>
<td>Stocks, bonds, mortgages, long-term deposits</td>
<td>Pension plans</td>
</tr>
<tr>
<td>Money market mutual funds</td>
<td>Short-term credit instruments such as large bank CDs, Treasury bills, and high-grade commercial paper</td>
<td>Funds shares with limited checking privileges</td>
</tr>
</tbody>
</table>

Table 15-2 Source: American Banker, March 31, 2000

### Banking Structures Throughout the World

- The ways that banks around the world differ
  - **Size**
    - U.S. has many smaller banks
    - Europe and Japan have a few large banks
  - **Legal**
    - Universal banking
    - Limits on financial services such as insurance and bank stock ownership
  - **Importance in financial system**
    - Major importance
    - Part of a varied financial system (United States)

### Central banks and their roles

- Perform banking functions for their nations’ government
- Provide financial services for private banks
- Conduct their nations’ monetary policies

![Figure 15-5](source: data from Forest Capie, Charles Goodhart, and Norman Schnadt, “The Development of Central Banking,” in Forest Capie et al., The Future of Central Banking: The Tercentenary Symposium of the Bank of England (Cambridge: Cambridge University Press, 1984).)
International Example: European Union Banking and Cross-Border Payments

- Members of the European Union have merged into a single banking market.
- The design was intended to create international banking as if no borders existed, yet banks still earn fees on most transactions that originate in one country and terminate in another.

The Federal Reserve System

- Organization of the Fed
  - Board of Governors
  - 12 Federal Reserve District Banks
  - Federal Open Market Committee (FOMC)
  - Depository institutions

The Federal Reserve System

- Board of Governors (7)
  - Appointed by the president with Senate confirmation
  - 14-year staggered permanent terms
  - Chair chosen by the President to a four-year permanent term

The Federal Open Market Committee (FOMC)
- Determines monetary policy
- Composed of:
  - The Board of Governors
  - The president of the NY Federal Reserve Bank
  - The president of 4 of the remaining district banks, chosen on a rotating basis

Depository institutions
- 81,500 commercial banks
  - 4,000 member banks
- 1,100 savings and loan associations
- 12,000 credit unions
The Federal Reserve System

- Functions of the Fed
  - Supplies the economy with fiduciary currency
  - Provides a clearing mechanism for checks

How a Check Clears

Figure 15-8

The Federal Reserve System

- Functions of the Fed
  - Holds depository institutions reserves
  - Acts as the government’s fiscal agent
  - Supervises member banks
  - Acts as the “lender of last resort”
  - Regulates the money supply
  - Intervenes in foreign currency markets

E-Commerce Example: Check 21

- The process of clearing checks through the Federal Reserve System has required that resources be devoted to the transportation and sorting of checks.
- As digital imagery now can accomplish the task of check-clearing, these interbank transactions will be settled more quickly.
E-Commerce Example: Check 21

- The “Check 21” Act has encouraged the use of internet technology to process demand deposit account transactions.
- Consequently, the time between your writing of a check and the time that the funds are deducted from your account has shortened.

Issues and Applications: Determining the Demand for Coins

- Among other duties, the Federal Reserve is responsible for distributing U.S. coins and paper currency.
- The Fed buys coins from the U.S. Mint at their face value.
- The demand for coins varies seasonally, rising in the summer and then once again at the end of the calendar year.

Issues and Applications: Determining the Demand for Coins

- The state commemorative quarters have become popular collectors’ items.
- Consequently, the Fed has had to order more quarters from the Mint, in order to maintain the same number available to circulate in transactions.

Summary Discussion of Learning Objectives

- The key functions of money
  - Medium of exchange
  - Unit of accounting
  - Store of Value
  - Standard of deferred payment
- Properties of goods that serve as money
  - Acceptability
  - Predictable value
Summary Discussion of Learning Objectives

- Why financial intermediaries such as banks exist
  - Asymmetric information
  - Adverse selection
  - Moral selection
  - Moral hazard
  - Economies of scale
- Official definitions of the money supply
  - M1
  - M2

Summary Discussion of Learning Objectives

- The basic structure of the Federal Reserve System
  - 12 district banks with 25 branches
  - Governed by Board of Governors
  - Federal Open Market Committee

Summary Discussion of Learning Objectives

- Major functions of the Federal Reserve
  - Supply the economy with currency
  - Check collection and clearing system
  - Holding depository institution’s reserves
  - Fiscal agent for the government supervision of banks
  - Lender of last resort
  - Regulating the money supply
  - Intervening in foreign exchange markets

End of Chapter 15
Money, Banking, and Central Banking