Chapter 11

- The Banking System and the Money Supply
The Monetary System

- Federal Reserve System
  - Quasi-independent agency that operates alongside the government

- Unit of value
  - Common unit for measuring how much something is worth
  - The way we think and record transactions

- Means of payment
  - Anything acceptable as payment for goods and services
  - How payment is made
A Brief History of the Dollar

- Dollar
  - Centerpiece of monetary system
- 1790 – dollar became the standard unit of value
- 1913 - Federal Reserve System
  - National monetary authority
  - Creates and regulates the nation’s supply of money
A Brief History of the Dollar

- Commodity money
  - Precious metals and valuable commodities

- Paper currency
  - Initially backed by gold or silver

- Fiat money
  - Something that serves as a means of payment by government declaration

- Money
  - Asset
    - The right to borrow is not an asset
  - Widely accepted as a means of payment
    - Ex: Cash, travelers’ checks, personal checks
Measuring the Money Supply

- **Money supply**
  - Total amount of money held by the public
  - Different measures

- **Liquid asset**
  - Can be converted to cash quickly, at little cost

- **Illiquid asset**
  - Can be converted to cash after a delay, or at considerable cost

- Consider Figure 1
Monetary Assets and Their Liquidity

Figure 1  Monetary Assets and Their Liquidity (June 26, 2006)
M1 and M2

- M1 - standard measure of the money stock
  - Cash in the hands of the public
  - Demand deposits
  - Other checkable deposits
  - Travelers checks

- When government officials speak about “money supply” they usually mean M1
M1 and M2

- M2
  - M1
  - Savings-type accounts
  - Retail money market mutual funds (MMMF)
  - Small-denomination time deposits (CDs)

- Assumption
  - Money supply = Cash in the hands of the public + Demand deposits
  - Liquid assets that the Federal Reserve System can control
The Banking System

- Financial intermediaries
  - Business firms that specialize in brokering between savers and borrowers
  - Increase efficiency of economy
  - Profit: Charge higher interest on the funds they lend than the rate they pay to depositors

- Commercial bank: largest group of depository institutions
  - Accept checkable deposits, savings deposits… etc. to supply business, mortgage, consumer loans.
  - Private corporation
  - Owned by its stockholders
  - Provides services to the public
    - Checking accounts
A Bank’s Balance Sheet

- Financial statement
  - Assets – what the bank owns
  - Liabilities - what the bank owes
  - Net worth
- Net worth = Total assets - Total liabilities
- Bond
  - Promise to pay back borrowed funds
  - Issued by a corporation/government agency
A Bank’s Balance Sheet

- A balance sheet always balances
- Assets = Liabilities + Net Worth
- Loan
  - Agreement to pay back borrowed funds
  - Signed by a household or noncorporate business
- Banks - required by law to hold reserves
- Reserves
  - Cash in the vault plus accounts with the Fed.
A Bank’s Balance Sheet

- **Required reserves**
  - Minimum amount of reserves a bank must hold
  - Depend on the amount of deposit liabilities

- **Required reserve ratio (RRR)**
  - The minimum fraction of checking account balances that banks must hold as required reserves.
The Federal Reserve System

- Central bank
  - A nation’s principal monetary authority
  - Responsible for controlling the money supply
- 12 Federal Reserve district banks
- Not a part of any branch of government
  - Created by Congress
- The president and Congress - appoint key officials in the system
The Structure of the Fed

**Figure 2** The Structure of the Federal Reserve System

- **President appoints**
  - **Chair of Board of Governors**
    - **Board of Governors** (7 members, including chair)
      - Supervises and regulates member banks
      - Supervises 12 Federal Reserve District Banks
      - Sets reserve requirements and approves discount rate
    - **Federal Open Market Committee** (7 Governors + 5 Reserve Bank Presidents)
      - Conducts open market operations to control the money supply
    - **12 Federal Reserve District Banks**
      - Lend reserves
      - Provide currency
      - Clear checks
- **Senate confirms**
  - **Appoints 3 directors of each Federal Reserve Bank**
  - **Eject 6 directors of each Federal Reserve Bank**
- **2,700 Member Banks**
The Functions of the Fed

- Supervising and Regulating Banks
  - Fed sets and enforces reserve requirements

- Acting as a “Bank for Banks”
  - Commercial banks
    - Hold reserves with the Fed
    - Borrow from the Fed—at discount rate

- Issuing Paper Currency
- Check Clearing
- Controlling the Money Supply
The Fed and the Money Supply

- Open market operations (OMO)
  - Purchases or sales of bonds by the Fed
    - from/to bond dealers, banks, other financial institutions
  - Changes the money supply

- Assumptions
  - Households and businesses – no changes in cash holdings
  - Banks - no excess reserves

- Excess reserves
  - Reserves in excess of required reserves
The Fed and the Money Supply

- Open market purchase
  - The Fed buys government bonds
  - Increase the money supply
  - Injection of reserves
- Demand deposit multiplier = 1/RRR
- Change in demand deposits

\[ \Delta DD \left( \frac{1}{RRR} \right) \times \Delta \text{Reserves} \]

\[ \Delta DD = \Delta \text{Money supply} = \left( \frac{1}{RRR} \right) \times \Delta \text{Reserves} \]
Table 2  Cumulative Increases in Demand Deposits

<table>
<thead>
<tr>
<th>Round</th>
<th>Additional Demand Deposits Created by Each Bank</th>
<th>Additional Demand Deposits Created by All Banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>First National Bank</td>
<td>$1,000</td>
<td>$1,000</td>
</tr>
<tr>
<td>Second United</td>
<td>$ 900</td>
<td>$1,900</td>
</tr>
<tr>
<td>Third State</td>
<td>$ 810</td>
<td>$2,710</td>
</tr>
<tr>
<td>Bank 4</td>
<td>$ 729</td>
<td>$3,439</td>
</tr>
<tr>
<td>Bank 5</td>
<td>$ 656</td>
<td>$4,095</td>
</tr>
<tr>
<td>Bank 6</td>
<td>$ 590</td>
<td>$4,685</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank 10</td>
<td>$ 387</td>
<td>$6,511</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank 20</td>
<td>$ 135</td>
<td>$8,784</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank 50</td>
<td>very close to zero</td>
<td>very close to $10,000</td>
</tr>
</tbody>
</table>
The Fed’s Influence on the Banking System as a whole

- Injection of reserves
  - When all reserves injected are required reserves
  - Demand deposit multiplier stops working
  - Money supply stops increasing
- Look at the balance sheet of the entire banking system
The Fed and the Money Supply

- Open market sale
  - The Fed sells government bonds
    - needless to worry that Fed will run out of bonds to sell
  - Decrease the money supply
  - Withdrawal of reserves (negative change in reserves)

\[ \Delta DD = \left( \frac{1}{RRR} \right) \times \Delta Reserves \]
# The Fed and the Money Supply

## Changes in Balance Sheet for the Entire Banking System

<table>
<thead>
<tr>
<th>Changes in Assets</th>
<th>Changes in Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-$1,000) in reserves</td>
<td>(-$10,000) in demand deposits</td>
</tr>
<tr>
<td>(-$9,000) in loans</td>
<td></td>
</tr>
</tbody>
</table>
Demand Deposit Multiplier: Important Provisos

- Problems with assumptions
  - Households and businesses – no changes in cash holdings
    - As $M^S$ increases, public want to hold part of the increase as demand deposits
    - Smaller increase in demand deposits
  - Banks - no excess reserves
    - Banks often want to hold excess reserves
      - Interest rates
      - Recessions
Other Tools: Controlling the Money Supply

- Changes in the required reserve ratio
  - Fed lowered RRR
    - Increase money supply
  - Fed raised RRR
    - Decrease money supply
  - Rarely used
  - Could create problems for the banking industry

- Changes in the discount rate
  - Rate the Fed charges banks when it lends them reserves
  - Fed lowered the discount rate
    - Increase money supply
  - Fed raised the discount rate
    - Decrease money supply
  - Seldom used