Chapter 11: Monetary System

Instructions: These are the notes for Chapter 11. Make sure you review the material presented here and read the corresponding chapters on the textbook: **Chapter 21 on Mankiw.**

- **Barter.** Exchange of one good or service for another.
  - Was the only method used until Lydians first used money (coins) in 700 B.C.

Barter: Problems

- Barter requires a **double coincidence of wants.**
  - Two people have to want each others goods or services.
- People spend significant time searching for others to trade with.
  - Waste of scarce resources: time!
- Money fixes the double coincidence of wants problem!

The Three Functions of Money

1. **Medium of exchange:** Buyers give money to sellers when they want to purchase goods and services.
   - Solves the barter problems!
2. **Unit of account:** Makes measuring monetary value of goods and services easy.
   - Easy comparisons: $10 vs. $2000.
3. **Store of value:** You can hold onto your money today and spend it tomorrow: does not perish (except for inflation).

Two Types of Money

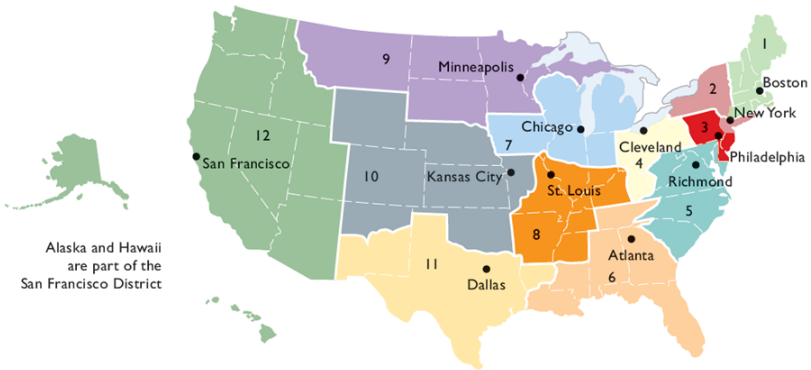
1. **Commodity Money:** Money that takes the form of a commodity with intrinsic value.
   - Intrinsic: has value even not used as money.
   - E.g. gold coins, cigarettes in prisons.
2. **Fiat Money:** Money without intrinsic value, used as money because of government decree.
   - E.g. the U.S. dollar.

Central Bank and Monetary Policy

- **Monetary system** is the mechanism that provides money to a country's economy.
  - Where money comes from: the central bank!
- **Central bank** is an institution that oversees the banking system and regulates the money supply.
  - The Federal Reserve (FED) is the central bank of the U.S.
  - Other examples include Bank of England, European Central Bank..
- FED has two very important jobs
  - Controlling **the money supply (quantity of money)** in the economy: called **monetary policy.**
  - Oversee other banks and act as a "lender of last resort", i.e. provide money to struggling banks.

The Federal Reserve

- The Federal Reserve System consists of:
  - Board of Governors (7 members), located in Washington, DC
  - 12 regional Fed banks, located around the U.S.
  - Federal Open Market Committee (FOMC), includes the Board of Governors and the presidents of some of the regional Fed banks.
  - The FOMC decides the monetary policy.



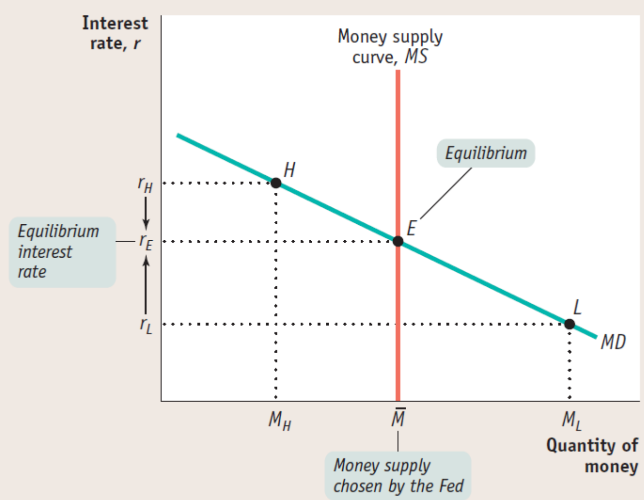
- The Federal Reserve Banks are a blend of private and public control: Quasi-Public Banks
  - Owned by private commercial banks in its district.
  - But the Board of Governors is an independent, quasi-government body
  - Not motivated by profit, does not deal with public
  - Bankers' bank: where banks go to get loans and deposit funds

Monetary Policy: Money Market

Equilibrium in the Money Market

The money supply curve, *MS*, is vertical at the money supply chosen by the Federal Reserve, $\overline{M}$. The money market is in equilibrium at the interest rate r_E: *the quantity of money demanded by the public is equal to* $\overline{M}$, the quantity of money supplied.

At a point such as *L*, the interest rate, r_L, is below r_E and the corresponding quantity of money demanded, M_L, exceeds the money supply, $\overline{M}$. In an attempt to shift their wealth out of nonmoney interest-bearing financial assets and raise their money holdings, investors drive the interest rate up to r_E. At a point such as *H*, the interest rate r_H exceeds r_E and the corresponding quantity of money demanded, M_H, is less than the money supply, $\overline{M}$. In an attempt to shift out of money holdings into nonmoney interest-bearing financial assets, investors drive the interest rate down to r_E.



Monetary Policy

- In general, FED can alter the money supply using its three main monetary policy tools
  1. Changing the required reserve ratio (rrr)
  2. Open market operations
  3. Changing the discount rate

1. **Changing the rrr**

   - **The required reserve ratio (rrr)** is the fraction of deposits that banks must hold as reserves.
   - Banks can loan out more money than the deposits received. How much more: set by the rrr.
   - Example: Bank X receives a \$1,000 deposit, and the rrr is 10%.
     - Bank X can keep \$100 in reserve and loan out the remaining \$900 to others who want to borrow from Bank X.
     - In the economy, there is \$1,900 circulating now: \$1,000 owned by the depositor + \$900 with the borrower.
     - Theoretically, this borrower can go to Bank Y, and deposit the \$900. In this case, Bank Y keeps $\$900 \times 0.1 = \$90$ in reserves, and can loan out \$810 to other borrowers.
     - There is now $\$1,900 + \$810 = \$2,710$ circulating in the economy.
     - The process continues and eventually the amount of money circulating in the economy becomes $\$1,000 \times 1/\text{rrr} = \$10,000$, where $1/\text{rrr}$ is **the money multiplier.**
     - At max: A \$1,000 deposit creates \$10,000. At min: creates no extra money (if the bank does not loan out any portion of the deposit).
   - FED can alter the amount of money circulating in the economy (money supply) by changing the rrr!
     - E.g. increasing the rrr decreases the money multiplier (1/rrr) hence less money circulating.

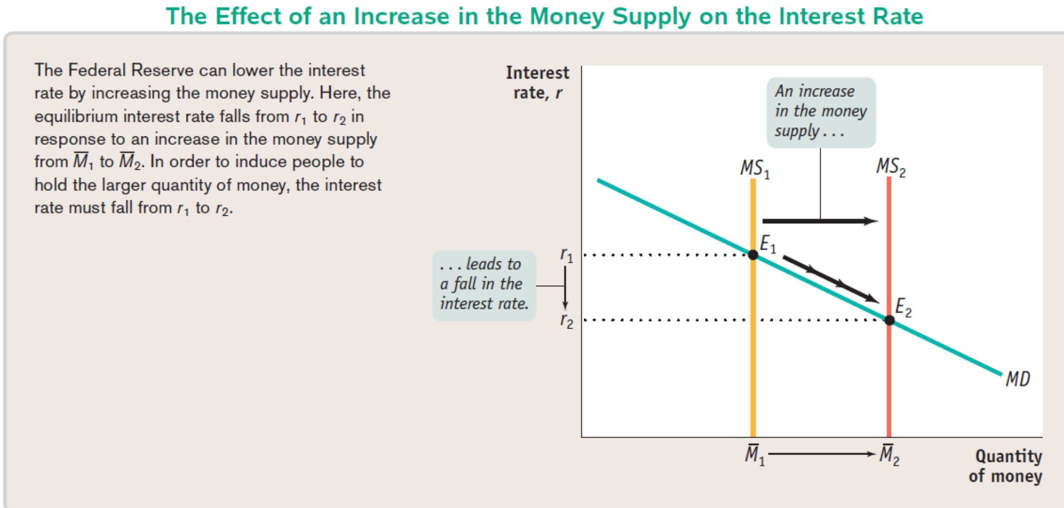
2. **Open Market Operations**

   - **Open market purchase** of treasury securities is a tool that is used by the central bank in which the central bank purchases treasury securities (bonds) from the private banks and pays money these banks for the securities.
     - Treasury securities (bonds) are essentially the government's debt, paying a fixed amount of interest to its holder.
     - Remember FED and the government are two separate entities!

3. **Changing the discount rate**

   - FED lends money to private banks at an interest rate called the **discount rate.**
   - FED can lower the discount rate, which would encourage private banks to borrow more from FED to lend it to other private banks at a higher interest rate, increasing the money circulating in the economy.

Expansionary Monetary Policy



- An increase in the money supply lowers the interest rate, r! At lower interest rates, investment goes up as it becomes cheaper to borrow money, hence GDP goes up!
- Side effect: **inflation!**

Fiscal Policy

- **Fiscal policy** is a tool used by the government in which the government intervenes in the economy by increasing/decreasing the government spending, or taxation.
  - The government: the president and the congress, not FED!

$$Y = C + I + G + NX \tag{1}$$

- Increase in G: increasing spending on goods and services like highways, bridges, schools, national defense, teachers, FBI agents, government employees..
- **Multiplier effect** also comes into play, where the increase in G creates further increases in C.
  - E.g. If the government buys \$20 billion worth of planes from Boeing, Boeing's revenue increases by \$20 billion. This \$20 billion is distributed to Boeing's workers (as wages) and owners (as profits or stock dividends). These people are also consumers and will spend a portion of this extra income, hence C goes up.
- The caveat: the government has to somehow finance its spending!

$$Budget = T - G \tag{2}$$

- Either raise taxes, or borrow more!
- The consequence of raising taxes: crowding-out!

  - **Crowding-out** is the decrease in the private investment and GDP due to the distortionary effects of taxation.

- Borrowing too much causes a budget deficit! This means the government would only be able to borrow at higher interest rates.

Summary

- Money serves three functions: medium of exchange, unit of account, and store of value.
- There are two types of money: commodity money has intrinsic value; fiat money does not.
- The Federal Reserve is the central bank of the U.S. The Fed decides on the monetary policy: open-market operations, rrr, and discount rate.
- An increase in the money supply causes the interest rate to fall, which stimulates investment and increases GDP.
- The government decides on the fiscal policy: increasing or decreasing the government spending/taxes.
  - The multiplier effect tends to amplify the effects of fiscal policy.
  - The crowding-out effect tends to dampen the effects of fiscal policy.