Chapter 10 - *The Monetary System*

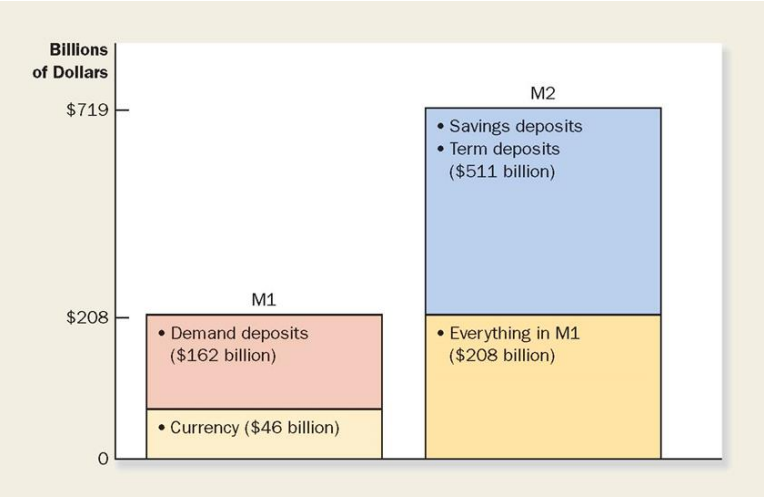
- *What Money Is and Its Importance*
  - Without money, trade would require **barter**
    - The exchange of one good for the service of another
  - Every transaction would require a **double coincidence of wants**
    - The unlikely occurrence that two people each have a good that the other wants
  - Most people would have to spend time searching for others to trade with - huge waste of resources
  - This searching is unnecessary with **money**
    - The set of assets that people use to buy goods and services from other people

- *The 3 Functions of Money*
  - **Medium of exchange**
    - An item buyers give to sellers when they want to purchase goods and services
  - **Unit of account**
    - The yardstick people use to post prices and records debt
  - **Store of value**
    - An item people can use to transfer purchasing power from the present to the future

- *2 Kinds of Money*
  - **Commodity Money**
    - Takes the form of commodity with intrinsic value
  - **Fiat Money**
    - Is money without intrinsic value
    - Used as money because of government decree

- *Money in the Canadian Economy*
  - **Money Supply**
    - The quantity of money available in the economy
  - What assets should be considered part of the money supply?
    - **Currency**
      - The paper bills and coins in the hands of the public
    - **Demand Deposits**
      - Balances in bank accounts that depositors can access on demand by writing a cheque or using a credit card

- *Two Measures of Money Stock for the Canadian Economy*



- *Bank of Canada*
  - **Central Bank**
    - An institution designed to regulate the money supply in the economy
  - **The Bank of Canada**
    - The Central Bank of Canada
    - Four primary functions of the Bank of Canada
      - Issue currency
      - Act as banker to commercial banks
      - Act as banker to Canadian government
      - Control the money supply
  - **Controlling the money supply**
    - The quantity of money available in the economy
  - **Monetary policy**
    - Decisions by policymakers concerning the money supply

- *Commercial Banks and the Money Supply*
  - Commercial banks include credit unions, trust companies
  - Commercial banks can influence the quantity of demand deposits in the economy and the money supply

- *Bank Reserves*
  - In a **fractional reserve banking system**, banks keep a fraction of deposits as **reserves**, and use the rest to make loans
  - Banks may hold more than its minimum amount if they choose
  - The **reserve ratio**, **R**
    = fraction of deposits that the bank holds as reserves
    = total reserves as a percentage of total deposits

- *Bank T-Account*
  - T-account
    - A simplified accounting statement that shows a bank's assets and liabilities

FIRST NATIONAL BANK

Assets		Liabilities	
Reserves	$ 10	Deposits	$100
Loans	$ 90		

  - Banks' liabilities include deposits, assets include loans and reserves
  - In this example, notice

$$R = \frac{\$10}{\$100} = 10\%$$

- *Banks and the Money Supply*
  - Suppose $100 is in circulation
  - To determine banks' impact on money supply we consider 3 different cases
    - No banking system
    - 100% reserve banking system: banks hold 100% of deposits as reserves, make no loans
    - Fractional reserve banking system

- *Case 1: No Banking System*
  - Public holds the $100 as currency
  - Money Supply = $100

- *Case 2: 100% Reserve Banking System*
  - Public deposits the $100 at the First National Bank (**FNB**)
  - FNB holds 100% of the deposits as reserves

FIRST NATIONAL BANK

Assets		Liabilities	
Reserves	$100	Deposits	$100
Loans	$ 0		

  - Money Supply

$$\begin{aligned}\text{Money Supply} &= \text{Currency} + \text{Deposits} \\ &= \$0 + \$100 \\ &= \$100\end{aligned}$$

  - In a 100% reserve banking system, banks do not affect seize of the money supply

- *Case 3: Fractional Reserve Banking System*
  1. Suppose **R = 10%**, FNB loans all but 10% of the deposit

FIRST NATIONAL BANK

Assets			Liabilities	
Reserves	$	10	Deposits	$100
Loans	$	90		

- Money Supply

$$\begin{aligned}\text{Money Supply} &= \text{Currency} + \text{Deposits} \\ &= \$90 + \$100 \\ &= \$190\end{aligned}$$

Depositors have $100 in deposits and borrowers have $90 in currency

- When Banks make loans, they create money
  - The borrowers get
    - $90 in currency (*an asset counted in money supply*)
    - $90 in new debt (*a liability*)

- **A fractional banking reserve system creates money, but not wealth**

2. Suppose borrower deposits $90 at a Second National Bank (**SNB**)
   - **Initially SNB's T-Account looks like this:**

SECOND NATIONAL BANK

Assets			Liabilities	
Reserves	$	9	Deposits	$ 90
Loans	$	81		

- If **R = 10%** for SNB, it will loan all but 10% of the deposit

3. The borrower deposits the $81 at the Third National Bank (**TNB**)
   - **Initially TNB's T-Account looks like this:**

THIRD NATIONAL BANK

Assets		Liabilities	
Reserves	$ 8.10	Deposits	$ 81
Loans	$72.90		

- If **R = 10%** for TNB, it will loan all but 10% of the deposit

4. The process continues, and money is created with each new loan.

Original deposit	=	$ 100.00
FNB lending	=	$ 90.00
SNB lending	=	$ 81.00
TNB lending	=	$ 72.90
⋮		⋮
Total money supply	=	$1000.00

- In this example, $100 of reserves generates $1000 of money

- *The Money Multiplier*
  - Money Multiplier
    - The amount of money the banking system generates with each dollar of reserves

$$\text{Money Multiplier} = \frac{1}{R}$$

    - In the example, R = 10%, therefore 1/R = 10
    - So $100 of reserves creates $1000 in money

- *Bank of Canada's Tools of Monetary Control*
  - The Bank of Canada has 2 tools in its monetary box
    - Open market operations
    - Changing the overnight rate

- *Open Market Operations*
  - The Bank of Canada conducts **open-market operations** when it buys government bonds from or sells government bonds to the public
    - Buying bonds causes the money supply to increase
    - Selling bonds causes the money supply to decrease

- *Foreign Exchange Market Operation*s
  - The Bank of Canada conducts **foreign exchange market operations** when it buys or sells foreign currencies
    - The money supply increases when the Bank of Canada buys foreign currency with Canadian currency
    - The money supply decreases when the Bank of Canada sells foreign currency
  - If the Bank of Canada wants to sell foreign currency to support the Canadian exchange rate, but does not want the money supply to fall, it uses the Canadian currency obtained in the exchange to buy government bonds
  - This process is offsetting a foreign exchange market operation with an open-market operation is called **sterilization**

- *Changing the Overnight Rate*
  - The **bank rate** is the rate of interest central banks charge commercial banks for loans
  - The **overnight rate** is the rate of interest on very short-term loans between commercial banks
  - The Bank of Canada can alter the money supply by changing the bank rate, which in turn causes an equal change in the overnight rate
    - An increase in the overnight rate reduces the quantity of reserves in the banking system, and therefore reduces the money supply
    - A decrease in the overnight rate increases the money supply

- *Problems in Controlling the Money Supply*
  - The Bank of Canada's control of the money supply is not precise
  - The Bank of Canada must wrestle with two problems that arise due to fractional-reserve banking
  - The Bank of Canada does not control the amount of money that
    - Households choose to hold as deposits in banks.
    - Commercial bankers choose to lend.