Money, Banking, and the Financial Sector

Chapter 13

Introduction

- Real goods and services are exchanged in the real sector of the economy.
- For every real transaction, there is a financial transaction that mirrors it.
- The financial sector plays a central role in organizing and coordinating the economy.

Introduction

- ***Financial sector*** – the market for the creation and exchange of financial assets such as money, stocks, and bonds.

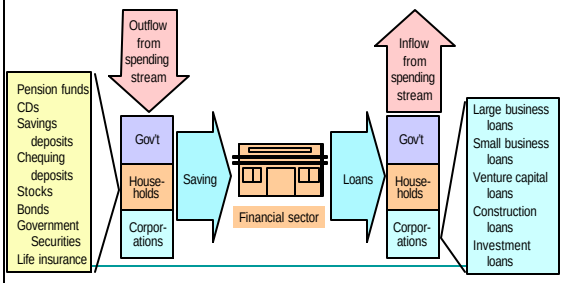
Why Is the Financial Sector Important?

- Savings are channeled into the financial sector when individuals buy financial assets such as stocks or bonds and back into the spending stream as investment.

Why Is the Financial Sector Important?

- ***Financial assets*** – assets such as stocks or bonds, whose benefit to the owner depend on the issuer of the asset meeting certain obligations.
- ***Financial liabilities*** – obligations by the issuer of financial assets.

The Financial Sector as a Conduit for Savings



Role of Interest Rates

- While price is the mechanism that balances supply and demand in the real sector, interest rates do the same in the financial sector.
- The ***interest rate*** is the price paid for the use of a financial asset.

Role of Interest Rates

- ***Bonds*** are promises to pay a certain amount plus interest in the future.
- The price of a bond is determined by the market interest rate.

Role of Interest Rates

- The price of bonds varies inversely with the interest rate.
  - As the market interest rates go up, the price of the bond goes down.
  - As the market interest rates go down, the price of the bond goes up.

Role of Interest Rates

- When interest rates rise, the value of the flow of payments from fixed-interest-rate bonds goes down because more can be earned on new bonds that pay the new, higher interest.

Savings That Escape the Circular Flow

- Some economists believe that the interest rate does not balance the demand and supply of savings.

Savings That Escape the Circular Flow

- Saving held in the form of bonds and loans work their way back into the circular flow.
- Saving held in the form of money escapes the circular flow causing macroeconomic problems.

Definition of Money

- ***Money*** is a highly liquid financial asset.
- To be ***liquid*** means to be easily changeable into another asset or good.
  - Social customs and standard practices are central to the liquidity of money.

Definition of Money

- Money is generally accepted in exchange for other goods.
- Money is used as a reference in valuing other goods.
- Money can be stored as wealth.

Canadian Central Bank: Bank of Canada

- ***Bank of Canada*** – The Canadian central bank whose liabilities (bank notes) serve as cash in Canada.

Bank of Canada

- A ***bank*** is a financial institution whose primary function is holding money for, and lending money to, individuals and firms.
- Individuals' deposits in savings and chequing accounts serve the same function as does currency and are also considered money.

Alternative Measures of Money

- A number of different financial assets serve some functions of money and thus have a claim to being called money.
- Since it is difficult to define money unambiguously, economists have defined different measures of money.
- They are called M1, M2 and M3, M1+, M2+ and M2++.

Alternative Measures of Money: M1

- ***M1*** consists of currency in circulation and chequing account balances at chartered banks.
- Chequing account deposits are included in all definitions of money.

Alternative Measures of Money: M2

- ***M2*** is made up of M1 plus personal savings deposits, and non personal notice deposits (that can be withdrawn only after prior notice) held at chartered banks.
- Time deposits are also called certificates of deposit (CDs), or term deposits.

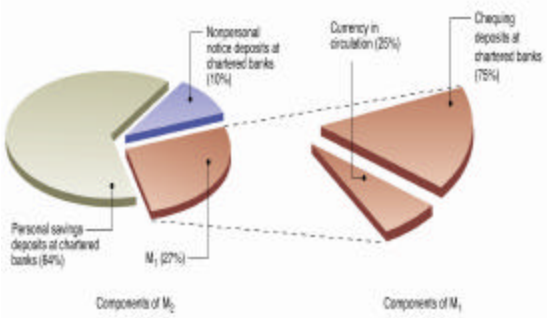
Alternative Measures of Money: M2

- All M2 components are highly liquid and play an important role in providing reserves and lending capacity for commercial banks.
- The money in savings accounts is counted as money because it is readily available.

Alternative Measures of Money: M2

- Economic research has shown that the M2 most closely correlates with the price level and economic activity.

Components of M1 and M2



Beyond M2: "The Pluses"

- Numerous financial assets also have some attributes of money. That is why they are included in some measures of money.
- There are measures for M3, M1+, M2+ and beyond.

Beyond M2: "The Pluses"

- The broadest measure is M2++.
  - It includes almost all assets that can be turned into cash on short notice.
- Broader concepts of asset liquidity have gained greater appeal than the measures of money, because money measures have been rapidly changing.

Beyond M2: "The Pluses"

- M1, M2 and M3 measures only include deposits held at chartered banks.
- Measures containing a "+" also include deposits at other financial institutions, such as ***near banks*** – financial intermediaries which offer services similar to banks but are not chartered banks.

Distinguishing Between Money and Credit

- Credit card balances cannot be money since they are assets of a bank.
- In a sense, they are the opposite of money.

Distinguishing Between Money and Credit

- Credit cards are prearranged loans.
- Credit cards affect the amount of money people hold.
  - Generally, credit card holders carry less cash.

Banks and the Creation of Money

- Banks are both borrowers and lenders.
  - Banks take in deposits and use the money they borrow to make loans to others.
  - Banks make a profit by charging a higher interest on the money they lend out than they pay for the money they borrow.

Banks and the Creation of Money

- Banks can be analyzed from the perspective of asset management and liability management.

Banks and the Creation of Money

- ***Asset management*** is how a bank handles its loans and other assets.
- ***Liability management*** how a bank attracts deposits and how it pays for them.

How Banks Create Money

- Banks create money because a bank's liabilities are defined as money.
- When a bank incurs liabilities it creates money.

How Banks Create Money

- When a bank places the proceeds of a loan it makes to you in your chequing account, it is creating money.

Bank Balance Sheet

- ***Assets*** – what the bank owns
  - Its building, equipment, securities portfolios, loans
- ***Liabilities*** – what the bank owes
  - Customer deposits
- ***Net Worth*** – the bank's assets minus its liabilities.

Bank Balance Sheet

- A bank keeps ***Reserves*** on hand in order to meet daily withdrawals by customers
  - Cash
  - Deposits with the Bank of Canada
- The amount of reserves depends on profit maximization and prudence.

Bank Balance Sheet

- ***Excess Reserves*** are cash reserves over and above the level of reserves banks wish to hold.
- They are not needed, so the bank lends these out.

Bank Balance Sheet

- A $100 deposit into a chequing account does not create any new money, but it does change the composition of the money supply.
  - Currency in circulation (M1) falls by $100
  - Chequing account balances (M1) rises by $100

Bank Balance Sheet

- A bank keeps a small fraction of deposits on hand, and lends out the rest.
- The ***reserve ratio*** is the ratio of reserves to deposits a bank keeps as a reserve against cash withdrawals.

Bank Balance Sheet and Money Creation

- If the bank's reserve ratio is 5%, it will hold $5 of your $100 deposit, and lend out $95.
- That $95 loan is deposited into a ***secondary deposit*** – a deposit a bank creates when it makes a loan.

Money Creation

- How much can a bank lend out?
- Answer: a lot more than $95.

Money Creation

- The ***deposit multiplier*** tells you by how much a new primary deposit can expand total deposits.

Deposit multiplier = 1 / *r*

  - *r* is the reserve ratio

Money Creation

- The *increase* in money stock is determined by:

Change in money stock =
[1/r X Primary Deposit] – Primary Deposit

Money Creation

- To find the *total* amount of deposits that will eventually be created, multiply the original deposited amount by 1/*r*, where *r* is the reserve ratio.

Money Creation

- The ***simple money multiplier*** is the measure of the amount of money ultimately created per dollar deposited in the banking system.
- It equals 1/*r* when people hold no currency.

Money Creation

- This money creation process assumes there is no currency drain.
- ***Currency drain*** occurs when individuals do not deposit the entire amount into the bank, but keep some of the loan as cash.

Money Creation: Example

- If the original deposit is $100 and the reserve ratio is 10 percent, then:

$$\frac{1}{r} = \frac{1}{10} = 10$$

10 X $100 = $1,000

Money Creation: Example

- This means that $900 of new money was created ($1,000 - $100).

Money Multiplier

- The higher the reserve ratio, the smaller the money multiplier, and the less money will be created.

Real-World Money Multiplier

- The approximate real-world money multiplier in the economy is:

$$\frac{1}{r + c}$$

r = percentage of deposits banks hold in reserve

c = ratio of money people hold in cash to the money they hold as deposits

Real-World Money Multiplier

- If banks keep 10 percent in reserve and the ratio of individuals' cash holdings to their deposits is 25 percent, the real-world money multiplier is:

$$\frac{1}{0.1+0.25} = \frac{1}{0.35} = 2.9$$

Faith Backs Our Money Supply

- Promises to pay underlie any financial system.
- All that backs the modern money supply are promises by borrowers to repay their loans and government guarantees that banks' liabilities to depositors will be met.

Regulation of Banks and the Financial Sector

- The banking system's ability to create money presents potential problems.

Financial Panics

- The financial history of the world is filled with stories of financial upheavals and monetary problems.
- In the 1800s, banks were allowed to issue their own notes, which often became worthless.

Anatomy of a Financial Panic

- Financial systems are based on trust that expectations will be fulfilled.
- Banks borrow short and lend long.
- If people lose faith in banks, the banks cannot keep their promises.

Anatomy of a Financial Panic

- Banks fail when their depositors lose faith.
- If all the people decided to ask for their money all at once, there would not be enough to satisfy everyone.

Government Policy to Prevent Panic

- To prevent panics, government guarantees the obligations of many financial institutions.
- The ***Canada Deposit Insurance Corporation (CDIC)*** was created in 1967 to guarantee limited amounts of deposits at chartered banks and trust and mortgage loan companies.

Government Policy to Prevent Panic

- Financial institutions pay a small premium for each dollar of deposit to the government-organized insurance company.
- That company puts the premium into a fund used to bail out banks experiencing a run on deposits.

Government Policy to Prevent Panic

- These guarantees have two effects:
  - They prevent the unwarranted fear that causes financial crises.
  - They prevent warranted fears.

Benefits and Problems of Guarantees

- A lack of deposit guarantees act as an effective restraint or discipline on bank lending policies.
- When deposits are guaranteed, some banks may make risky loans knowing that the guarantee is good.

Costly Failures of the 1980s and 1990s

- Since its inception, the CDIC has been called on to provide assistance to depositors in more than 20 failed financial institutions.
- In the late 70s and early 80s, a number of new institutions in Alberta and British Columbia faced difficult times when oil prices fell and economy went into recession.

Costly Failures of the 1980s and 1990s

- In the 1990s the CDIC settled the claims of over a million depositors, most due to the collapse of Central Guaranty Trust Company.
- This put the CDIC in a difficult financial position, because the rates they had been charging for insurance were not enough to cover the losses.

Money, Banking and the Financial Sector

End of Chapter 13

A Closer Look at Financial Institutions and Financial Markets; Valuing Stocks and Bonds

Chapter 13 Appendix A and B

Financial Assets and Financial Liabilities

- ***Stocks*** – a financial asset that conveys ownership rights in a corporation.
- ***Bond*** – a promise to pay a certain amount of money plus interest in the future.

Financial Institutions

- A ***financial institution*** is a business whose primary activity is buying, selling, or holding financial assets.
- A ***depository institution*** is a financial institution whose primary financial liability is deposits in chequing or savings accounts.

Financial Institutions

- Financial institution channel savings from savers to borrowers.
  - ***Savers*** – individuals who give other people money now in return for promises to pay it back with interest later.
  - ***Borrowers*** – investors or consumers who get the money now in return for their promise to pay it and the interest later.

Financial Institutions

- A ***contractual intermediary*** is a financial institution that holds and stores individuals' financial assets.

Types of Financial Institutions

- Depository institutions.
- Contractual intermediaries.
- Investment intermediaries.

Depository Institutions

- Chartered banks, trust and mortgage loan companies, caisses populaire, and credit unions.
- The primary liabilities of depository institutions are chequing accounts.
- They hold about 38 percent of all financial assets in Canada.

Contractual Intermediaries

- Pension funds, life insurance, and fire and casualty insurance companies.
- These institutions promise to pay an individual a certain amount of money in the future.

Investment Intermediaries

- Mutual funds, finance companies, and investment dealers.
- These institutions promise allow small savers to pool their funds to purchase a variety of financial assets.

Investment Intermediaries

- A mutual fund allow small savers to diversify their savings.
- ***Diversification*** – spreading the risks by holding many different types of financial assets.

Investment Intermediaries

- A finance company borrows from savers by selling bonds and commercial paper.
- ***Commercial paper*** – a short-term promissory note that a certain amount of money plus interest will be paid back on demand.

Investment Intermediaries

- Investment dealers help companies to sell their stocks and bonds.
- Brokerage houses create a secondary market in financial assets.
- ***Secondary financial market*** – a market in which previously issued financial assets can be bought and sold.

Financial Markets

- A ***financial market*** is a market where financial assets and financial liabilities are bought and sold.

Primary and Secondary Financial Markets

- A ***primary financial market*** is a market in which newly issued financial assets are sold.
- Sellers include venture capital firms and investment banks.

Primary and Secondary Financial Markets

- ***Venture capital firms*** sell part ownerships in new companies.
- ***Investment banks*** sell new stock and bonds for existing companies.

Primary and Secondary Financial Markets

- A secondary financial market transfers existing financial assets from one saver to another.
- This transfer does not represent any new saving – it is saving for one person and dissaving for another.

Primary and Secondary Financial Markets

- Secondary financial markets encourage people to own financial assets by providing liquidity.
- ***Liquidity*** – the ability to turn an asset into cash quickly.

Money Markets and Capital Markets

- Financial markets can be divided into money markets and capital markets.
  - ***Money markets*** – where financial assets having a maturity of less than one year are bought and sold.
  - ***Capital markets*** – where financial assets having a maturity of more than one year are bought and sold.

Money Markets and Capital Markets

- ***Maturity*** refers to the date the issuer must pay back the money that was borrowed plus any remaining interest, as agreed when the asset was issued.

Types of Financial Assets

- Financial assets are generally divided into money market assets and capital market assets.

Money Market Assets

- Money market assets mature in less than one year.
- Because they offer more liquidity, they pay lower interest rates than longer-term capital assets.

Commercial Paper

- ***Disintermediation*** – the process of lending directly and going through a financial intermediary.

Valuing Stocks and Bonds

- A financial asset's worth comes from the stream of income it pays in the future.
- An average share of stock in a company in a mature industry sells for about 15 to 20 times its normal profits.
- Bond prices rise as market interest rates fall.

Valuing Stocks and Bonds

- ***Present value*** – a method of translating a flow of future income or savings into its current worth.
- All future dollars must be discounted by the interest rate in the economy.
- Discounting is required because a dollar in the future is worth less than a dollar today.

Present Value Formula

- The present value (PV) of future income formula is:

$$PV = \frac{A_1}{(1+i)} + \frac{A_2}{(1+i)^2} + \cdots + \frac{A_n}{(1+i)^n}$$

A_n= the amount of money received in n periods in the future.

i = the interest rate in the economy (assumed constant)

Present Value Formula

- The further into the future you go, the lower the present value.
- The higher the interest rate, the lower the present value.

Rules of Thumb for Determining Present Value

- There are a few rules of thumb and simplified formulas which don't need a present value table or a calculator.
  - The infinite annuity rule.
  - The Rule of 72.

Annuity Rule

- ***Annuity rule*** – the present value of any annuity is the annual income yield divided by the interest rate.

$$PV = X/i$$

X = *annual income* i = *interest rate*

Rule of 72

- ***Rule of 72*** – the number of years it takes for a certain amount to double in value equals 72 divided by the rate of interest.

Importance of Present Value

- Many business decisions require present value calculations.
- Income flows in the future are compared to present costs or to other future money flows.

Importance of Present Value

- Why the average stock sells for about 15 times normal profit:
- If a share of stock is expected to earn $1 per share per year and the interest rate is 6.5 percent, then its present value is:

$$PV = \frac{\$1}{0.065} \cong \$15$$

Importance of Present Value

- Why bond prices and interest rates are inversely related:
  - If the interest rate rises to 10 percent, then the value of bond earning a fixed amount will go down.

$$PV = \frac{\$1}{0.10} = \$10$$

A Closer Look at Financial Institutions and Financial Markets; Valuing Stocks and Bonds

End of Chapter 13 Appendix A and B