Money and Banking

Appendix to Introduction AND Overview of the Financial System

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Aggregate Output and Income

- GDP, is the market value of all **final goods** and **services** produced in a country during the course of year.
- Can the following cases count into GDP?
  - Purchases of goods that have been produced in the past
  - Sugar in a Candy bar
- Aggregate income, the total income of factors of production (land, labor, and capital) from producing goods and services in the economy during the course of the year, is best thought of as being equal to aggregate output.
- Example 1, if the economy has an aggregate output of \$10 trillion, total income payments in the economy (aggregate income) are also \$10 trillion

$$aggregate\ output = aggregate\ income \tag{1}$$

Real Versus Nominal Magnitudes

- Nominal GDP: when the total value of final goods and services is calculated using current prices
- Nominal indicates that values are measured using current prices.
- Real GDP: GDP measured with constant prices is referred to as real GDP.
- Example 2: suppose that you have a nominal income of \$30,000 in 2019 and that your nominal income was \$15,000 in 2009. If all prices doubled between 2009 and 2019, are you better off?
- The answer is no: Although your income has doubled , your \$30,000 buys you only the same amount of goods because prices have also doubled. The \$30,000 of nominal income in 2019 turns out to be only \$15,000 of real income. Because your real income is actually the same for the two years, you are no better or worse off in 2019 than you were in 2009.

Aggregate Price Level

- GDP deflator, which is defined as nominal GDP divided by real GDP

$$GDP\ \ Deflator = \frac{Nominal\ \ GDP}{Real\ \ GDP} \tag{2}$$

- Example 3: if 2019 nominal GDP is $10 trillion but 2019 real GDP is 2009 prices is $9 trillion, what is the GDP deflator?
- Another popular measure of the aggregate price level is the PCE deflator, is defined as nominal personal consumption expenditures (PCE) divided by real PCE.

$$PCE\ \ Deflator = \frac{Nominal\ \ PCE}{Real\ \ PCE} \tag{3}$$

- CPI: consumer price index. The CPI is measured by pricing a "basket" of goods and services bought by a typical urban household.

Growth Rates and the Inflation Rate

- Growth rate is defined as the percentage change in a variable

$$
\begin{aligned}
Gorwth\ rate\ of\ x &= \frac{x_t - x_{t-1}}{x_{t-1}} \times 100 && (4) \\
& t \text{ indicates today} && (5) \\
& t-1 \text{ indicates yesterday} && (6)
\end{aligned}
$$

- Example 4: if real GDP grew from \$9 trillion in 2019 to \$9.5 trillion in 2020, then the GDP growth rate for 2020 would be 5.6%

$$
GDP\ g\mathrm{row}\ th\ rate = \frac{9.5 - 9}{9} \times 100 = 5.6\% \qquad (7)
$$

Growth Rates and the Inflation Rate

- Inflation rate is defined as the growth rate of aggregate price level
- Example 5: if the GDP deflator rose from 111 in 2019 to 113 in 2020, the inflation rate using the GDP inflator would be 1.8%

$$\inf \mathit{lation\ rate} = \frac{113 - 111}{111} \times 100 = 1.8\% \tag{8}$$

Function of Financial Markets

- Financial Markets perform the essential economic function of channeling funds from agents that have saved surplus funds by spending **less than their income** to those that have a shortage of funds because they wish to spend **more than their income**. (*Flows of Funds*)
- Flows of funds through the financial system

(Fig1)

Function of Financial Markets

- Why is channeling of funds from savers to spenders so important to the economy? The answer is without financial markets. It is hard to transfer funds from a person who has no investment opportunities to one who has them. Financial markets are thus essential to promoting economic efficiency.
- Securities are assets for the person who buys them but liabilities for the individual or firm that sells them

- A firm or an individual can obtain funds in a financial market in two ways.

  1. Debt Instrument (most common)
- A firm or an individual can obtain funds in a financial market in two ways. The most common method is through the issuance of a **debt instrument**, such as a bond or a mortgage
- The **maturity** of a debt instrument is the number of years until that instrument's expiration date.
- A debt instrument is short-term if its maturity term is less than a year and long term if its maturity term is ten years or longer. And in between one and ten years are said to be intermediate-term.

  2. Equities
- One common method is stock, which are claims to share in the net income (income after expenses and taxes) and assets of a business.

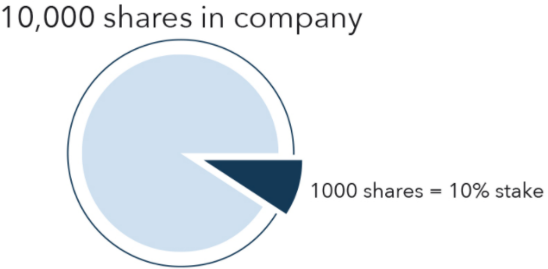
Structure of Financial Markets

Debt and Equity Markets

2. Equities

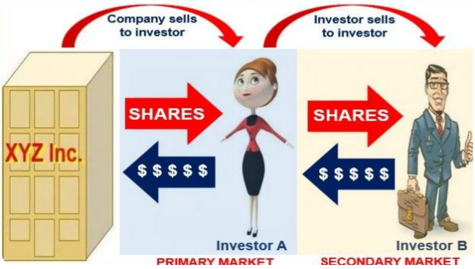
- A stake is often used to describe the amount of stock an investor owns

The weight of a shareholder's vote and the number of dividends they receive will depend on the number of shares issued by a company and what portion of this they own. For example, if a company has 10,000 shares in circulation, and an individual was holding 1000 shares, they could be said to have a 10% stake in the company.



Picture1: Stake Share in a Firm

- A **primary market** is a financial market in which new issues of a security, such as a bond or a stock.
- A **secondary market** is a financial market in which securities that have been previously issued can be resold.
- An important financial institution that assists in the initial sale of securities in the primary market is the **investment bank**.



Picture2: Primary vs Secondary

- Secondary markets can be organized in two ways.

1. **Exchanges**

- Buyers and sellers of securities (or their agents or brokers) meet in one central location to conduct trades.
- Organized Exchanges: NYSE, CBOT, Nasdaq

2. **OTC**

- Dealers at different locations who have an inventory of securities stand ready to buy and sell securities "over the counter" to anyone who comes to them and is willing to accept their prices.
- Over-the-counter (OTC) stocks are also known as unlisted stocks. Typically offered by small companies, they are traded through market makers, rather than through stock exchanges like the NYSE or Nasdaq.

- Another way of distinguishing between markets is on the basis of the maturity of the securities traded in each market.

  1. **Money Market**

- Is a financial market in which only short-term debt instruments (generally those with original maturity terms of less than one year) are traded.

  2. **Capital Market**

- Is the market in which long-term debt equity instruments are traded.

- **U.S. Treasury Bills** are the most liquid of all money market instruments because they are the most actively traded. They are also the .... money market instrument because there is a low probability of default.
- **Negotiable Bank Certificates of Deposit**. A CD is a debt instrument sold by a bank to depositors that pays annual interest of a given amount and at maturity pays back the original purchase price.
- **Commercial Paper**. A short term debt instrument issued by large banks and well-known corporations.
- **Repurchase Agreements**. Are effectively short-term loans (usually with a maturity term of less than two weeks) for which Treasury bills serve as collateral, an asset that the lender receives if the borrower does not pay back the loan.
- **Federal (Fed) Funds**. These instruments are typically overnight loans between banks of their deposits at the Federal Reserve. The federal funds designation is somewhat confusing because these loans

Capital market instruments are debt and equity instruments with maturities of greater than one year. They have far wider price fluctuations than money market instruments and are considered to be fairly *risky* investments.

- **Stocks**. Stocks are equity claims on the net income and assets of a corporation.
- **Mortgages and Mortgage-Backed Securities.**
    - **Mortgages** are loans to households or firms to purchase land, housing, or other real structures, in which the structure or land itself serves as collateral for the loans.

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  - **MBS** is a group of mortgage loans that are bundled together and then sold to investors.

- MBS vs. Mortgages

(Fig2)

- **Corporate Bonds**. The typical corporate bond sends the holder an interest payment twice a year and pays off the face value when the bond matures.
- **U.S. Government Securities**. Long-term debt instruments are issued by the U.S. Treasury to finance the deficits of the federal government.
- **U.S. Government Agency Securities**. Long-term bonds are issued by various government agencies to finance the such items as mortgages, farm loans, or power generating equipment.
- **State and Local Government Bonds** (Municipal Bonds). Long-term debt instruments issued by state and local governments to finance expenditures on schools, and other large program.
- **Consumer and Bank Commercial Loans**. These loans to consumers and businesses are made principally by banks but, in the case of consumer loans, also by finance companies.

Function of Financial Intermediaries: indirect finance

The ultimate result of indirect finance is that funds have been transferred from the public (*lender-savers*) to the General Motors (*borrower-spender*) with the help of the financial intermediary (*the bank*)

1. Transaction Costs.
2. Risk sharing.
3. Asymmetric information: Adverse Selection and Moral Hazard.
4. Economies of Scope and Conflicts of interest.

Function of Financial Intermediaries: indirect finance

Transaction Costs

- Financial intermediaries can substantially reduce transaction costs because they have developed expertise in lowering them and because their large size allows them to take advantage of economies of scale.
- A financial intermediary's low transaction costs mean that it can provide funds indirectly to people with productive investment opportunities.

Function of Financial Intermediaries: indirect finance

Risk Sharing

- Helping individuals to diversify and thereby lower the amount of risk to which they are exposed.
- Low transaction costs allow financial intermediaries to share risk at low cost, enabling them to earn a profit on the spread between the returns they earn on risky assets and the payment they make on the assets they have sold. The process of risk sharing is also sometimes referred to as asset transformation.

- **Adverse selection** is the problem created by asymmetric information before the transaction occurs. Adverse selection in financial markets occurs when the potential borrowers who are the most likely to produce an undesirable (adverse) outcome - the bad credit risks - are the ones who most actively seek out a loan and are thus most likely to be selected.
- **Moral hazard** is the problem created by asymmetric information after the transaction occurs. Moral hazard in financial markets is the risk (hazard) that the borrower might engage in activities that are undesirable (immoral) from the lender's point of view, because they make it less likely that the loan will be paid back.

Function of Financial Intermediaries: indirect finance

Summary of Adverse Selection and Moral Hazard

(Fig3)

Function of Financial Intermediaries: indirect finance

Economies of Scope and Conflicts of interest

- Another reason why financial intermediaries play such an important part in the economy is that by providing multiple financial services to their customers, such as offering them bank loans or selling their bonds for them, they can also achieve **economies of scope**.
- Although economies of scope may substantially benefit financial institutions, they also create potential costs in terms of **conflicts of interest**. It arises when a person or institution has multiple objectives(interests).

Function of Financial Intermediaries: indirect finance

Economies of Scope

- The economies of scope concept is defined as the process of reducing the cost of resources and skills for an individual business enterprise by spreading the use of these resources and skills over two or more enterprises

(Fig4)

Types of Financial Intermediaries

Financial intermediaries fall into three categories:

1. depository institutions (banks)
2. contractual savings institutions
3. investment intermediaries

Types of Financial Intermediaries
Depository Institutions (banks)

Table1: Banks

Type of Intermediary	**Sources of Funds**
Commercial Banks	Deposits
Savings and loan associations (S&Ls)	Deposits
Mutual Savings Banks	Deposits
Credit Unions	Deposits

Type of Intermediary	**Uses of Funds**
Commercial Banks	Business loans, mortgages...
Savings and loan associations (S&Ls)	Mortgages
Mutual Savings Banks	Mortgages
Credit Unions	Consumerloans

Types of Financial Intermediaries

Contractual Savings Institutions

Table2: Contractual Savings Institutions

Type of Intermediary	**Sources of Funds**
Life Insurance Companies	Premium from policies
Fire and Casualty Insurance Companies	Premium from policies
Pension Funds	Employer and employee contributi

Type of Intermediary	**Uses of Funds**
Life Insurance Companies	Corporate bonds and mortgages
Fire and Casualty Insurance Companies	Municipal bonds, corporate bonds
Government Retirement Funds	Corporate bonds and stock

Table3: Investment Intermediaries

Type of Intermediary	**Sources of Funds**
Finance Companies	Commercial paper, stocks, bonds
Mutual Funds	Shares
Money Market Mutual Funds	Shares
Hedge Funds	Partnership participation

Type of Intermediary	**Uses of Funds**
Finance Companies	Consumer and business loans
Mutual Funds	Stocks, bonds
Money Market Mutual Funds	Money market instruments
Hedge Funds	Stocks, bonds, loans, foreign currencies.

Summary (in class)