

# FINANCIAL INSTITUTIONS AND MARKETS THEORY NOTES

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ISCEB X STUDIST



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## Chapter 1: Why study financial markets and institutions?

**Financial markets:** Financial markets refer to platforms where financial assets, such as stocks, bonds, and derivatives, are bought and sold.

- Financial markets are crucial in our economy:
  1. Channeling funds from savers to investors, promoting economic efficiency
  2. Market activity affects: personal wealth, business firms, and economy

**Debt Markets:** Segments of the financial market that allow governments, corporations, and individuals to borrow.

Some borrowers issue a **security**, called a **bond**, offering **interest** and principal over time.

- **Security:** Financial instrument which is a claim on the issuer's future income or asset
- **Bond:** Debt security that promises to make payments periodically for a specified amount of time
- **Interest:** Cost of borrowing

**The Stock Market:** The market where stocks are traded.

- **Stocks:** Shares that represent ownership in a company. Initially sold on the primary market to raise money. Then traded amongst investors in the secondary market.

**The Foreign Exchange Market:** The market where international currencies are traded, and exchange rates are set.

SEO: Secondary Equity Offering

## Chapter 2: Overview of the financial market

What is the function of financial markets?

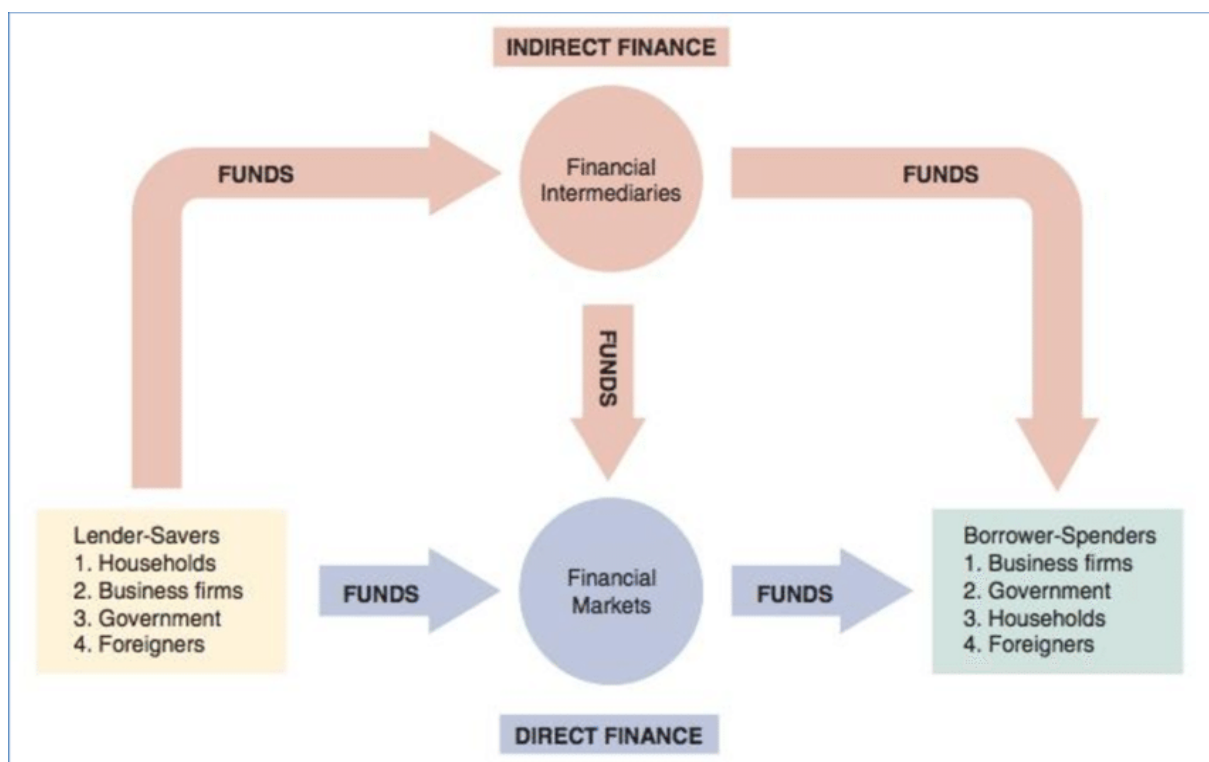
Financial Markets channel funds from person or businesses without investment opportunities, to others with investment opportunities.

This process allows for producing an efficient allocation of capital. Financial markets also improve the well-being of consumers, allowing them to time their purchases better.

What are the segments of Financial Markets?

- 1) Direct Finance  
Borrowers borrow directly from lenders in the financial markets by selling financial instruments which are claims on borrower's future income or assets.
- 2) Indirect Finance  
Borrowers borrow indirectly from lenders via **financial intermediaries** by issuing financial instruments which are claims on the borrower's future income or assets.

**Financial intermediaries:** Institutions or entities that act as middlemen between savers and borrows in the financial system.



Structure of Financial Markets?

- Debt Market

The debt market is divided into two categories,

- Short term (Maturity < 1 year) debt
- Long-term debt

- Equity Market

Equity of firms are sold on the equity markets, which pays investors dividends and represent ownership claim in a firm.

- Primary market

New securities issues are sold to initial buyers. Typically involved an investment bank who underwrites the offerings.

- Secondary market

Securities that have previously been issued are bought and sold. (e.g., NYSE)  
It involves **brokers** and **dealers**.

**Brokers:** Brokers help clients buy and sell securities while overseeing their accounts.

**Dealers:** Dealers are individuals or firms that buy and sell securities for their own accounts and own good.

The secondary market serves two important functions:

- Provides liquidity for firms.
- Establishes a price for the securities, which could be useful for company valuation.

Furthermore, secondary markets can be categorized as follows:

1. Exchanges: Dealers at central location buy and sell.
2. Over-the-counter markets: Dealers at different location buy and sell.
3. Money market: Short-term (Maturity < 1 year) plus forex.
4. Capital Market: Long- Term (Maturity > 1 year) plus equities.

Internationalization of Financial Markets?

The Internationalization of Financial Markets is crucial to avoid that one country dominates the world stage.

- International Bond Market and Eurobonds

1. Foreign bonds: denominated in foreign currency and targeted at foreign market
2. Eurobonds: denominated in one currency but sold in a different market

3. Domestic bonds: denominated in local currency and targeted at the local market

- Eurocurrency Market: Foreign currency deposited outside of the home country. Note that such transactions are not possible with every currency.
- World Stock Market

**Foreign Stock Market Indexes:**

- Bel20: 20 most important Belgian companies listed in Euronext Brussels
- Dow Jones Industrial Average (DJIA): 30 largest US companies
- S&P 500: 500 largest companies trading in the US
- NASDAQ Composite: all stocks trading on Nasdaq stock market
- FTSE100: 100 largest UK companies trading in London
- DAX: 30 largest German companies trading in Frankfurt
- CAC40: 40 largest French companies trading in Paris
- Hang Seng: largest companies trading in Hong Kong
- Strait Times: 30 largest companies trading in Singapore

**The decline of US Capital Markets:**

The US has lost its dominance in many industries. This is due to:

- New technologies
- 9-11 making regulation tighter
- Big risk of lawsuit
- High costs

**Financial Intermediation:**

It is a primary way of transferring funds from lenders to borrowers. The intermediary acts as a middleman and obtains funds from savers and makes loans/investments with borrowers. Banks are considered the most important financial intermediaries.

Financial Intermediaries are needed to:

**1. Reduce Transaction costs:**

Financial intermediaries make profits by reducing transaction costs. This can be done by developing an expertise and taking advantage of economies of scale.

Low transaction costs provide customers with **liquidity services**, that make it easier for them to conduct transactions.

- ➔ Banks create checking accounts that enable depositors to easily pay their bills
- ➔ Depositors can earn an interest on these accounts

**2. Risk sharing:**

Low transaction costs help reduce the risk exposure. Intermediaries create and sell assets with lower risk to one party in order to buy assets with greater risk from another party. We call this process **asset transformation**.

Financial Intermediaries are also a mean to help customers diversify their assets holding. They are allowed to buy, pool and sell assets to a diversified pool of individuals due to lower transaction costs.

### 3. **Asymmetric information:**

The latter occurs when one party lacks crucial information about another, thereby interfering with the decision-making process.

We differentiate between 3 types:

#### A. **Adverse selection**

Happens before the transaction occurs. People most likely to produce an adverse outcome are the ones who are most likely to seek a loan.

#### B. **Moral Hazard**

Happens after the transaction occurs. Risk that the borrower has incentives to engage in immoral activities and won't repay the loan.

#### C. **Conflict of Interest**

**Economies of Scope:** FIs lower production costs of information by using the information for a diverse range of services

Economies of scope may lead to conflict of interest. This is the case when one area hides or conceals information from another area. Conflicts of interests create inefficiencies.

Types of Financial Intermediaries

1. Finance companies: raise funds by selling **commercial paper and issue bonds and stocks** to lend to consumers to buy durable goods/for small operations
2. Mutual Funds: raise funds by selling **shares to single investors** and use them to purchase large diversified portfolios of stocks and bonds
3. Money Market Mutual Funds: raise funds by selling **checkable deposit-like shares and** use them to purchase liquid and safe short-term money market instruments
4. Investment Banks: advise companies on securities, mergers and acquisitions, act as dealers. Note that Investment banks can not offer savings accounts, nor provide loans.

### **Regulatory Agencies**

Prevent things from going wrong. They:

- Increase Information to investors
- Ensure soundness of the market

Some of the most important Agencies are:

1. **Securities and Exchange Commission (SEC):** requires companies to disclose information about sales, assets..., restricts insider trading  
Information disclosure is a tool to increase efficiency and reduce asymmetric information
2. **Federal Deposit Insurance Corporation:** provides insurance of up to 250.000\$ for each depositor, imposes restrictions
3. **Federal Reserve System:** examines the books of commercial banks, sets reserve requirements

**Financial Panic:** a situation where depositors start doubting the overall health of financial intermediaries and thereby start pulling out their funds. It leads to large losses and causes damage to the economy.

The government implemented different types of regulations to protect the public and the economy.

1. Restrictions on the entry: regulations on who is allowed to set up an intermediary. People must obtain a charter from the government, this only if they are upstanding citizen and have a large amount of initial funds.
2. Disclosure: principles on bookkeeping, period inspection, disclose info to the public
3. Restrictions on Assets and Activities: restriction from engaging in risky activities f.eg. Banks can't buy shares of other companies, except in case of mergers
4. Deposit Insurance: as a form of protection against the failure of a financial intermediary
5. Limits on Competition
6. Restrictions on Interest Rates: instituted after the Great Depression due to the belief that unrestricted interest rates encouraged banking failure

Regulations intend to improve control over the **money supply**.

**Reserve requirements:** make it obligatory for all depository institutions to keep a fraction of their deposits in an account with the Federal Reserve System



### Chapter 3: What do Interest Rates mean and what is their role in Valuation?

**Interest rates** are among the most closely watched variables in the economy.

The most accurate measure of interest rates is a concept known as **yield to maturity**.

**Cash flows:** streams of cash payments to the holder

Debt instruments are evaluated against each other based on the amount and the timing of each cash flow.

**Present value analysis:** evaluation, where the amount and timing of a cash flow leads to its yield to maturity.

It is based on the principle that a dollar of cash flow paid to you one year from now is less valuable to you than a dollar paid to you today, due to the fact that you could invest and earn an interest on it, as long as the latter are positive.

**Loan Principal:** amount of funds provided by the lender to the borrower

**Maturity Date:** date of repayment of the loan

**Loan Term:** from initiation to maturity date

**Interest payment:** cash amount that the borrower must pay the lender for the use of the loan principal

**Simple Interest Rate:** interest payment divided by the loan principal; it is the percentage of the principal that must be paid as interest to the lender

In Europe: expressed annually

In the US: expressed semi-annually

The **Yield to maturity (YTM)** is the interest rate that equates today's value with the present value of all future payments.

During the life of a bond it will be traded several times.

**Key-insights Price-YTM**

1. When a bond is at par, the yield equals the coupon rate
2. Price and yield are always negatively related: if the interest rate increases, the price decreases
3. The Yield is greater than the coupon rate when the bond price is below par value

Note that yields on some kind of bonds can be negative, meaning that investors are willing to pay more than what they would receive in the future.

A more accurate measure for the cost of borrowing is indicated by the **real interest rate**. It reflects the actual cost of borrowing as it indicates the interest rate adjusted for expected changes in price level. When the latter are low there are greater incentives to borrow and less to lend.

It is calculated as:

### **Interest rate (nominal rate) – Inflation**

We make the distinction between:

1. Ex ante real rate of interest: adjusted to the expected level of inflation
2. Ex post real rate of interest: based on observed level of inflation

Relationship between Rates and Returns: Key-Insights

1. If the **return = the yield**, the **maturity = the holding period**
2. If the maturity is **longer** than the holding period, the interest rates increase and the price decreases, meaning that the investor incurs a capital loss
3. The **longer** the maturity, the **greater** the price change associated with the interest rate change
4. The longer the maturity, the more the return changes with the change in interest rate
5. Bonds with a high initial rate can still have a **negative return** if the interest rate rises

Prices and returns are **more volatile for long-term bonds**, due to the higher interest-rate risk.

Note that there is no interest-rate risk for any bond whose maturity equals the holding period.

**Reinvestment risk:** a scenario occurring if you have a series of short bonds over a long holding period, because the interest rate at which you reinvest is uncertain.

As an investor you gain from interest rates going up, and you lose from interest rates going down.

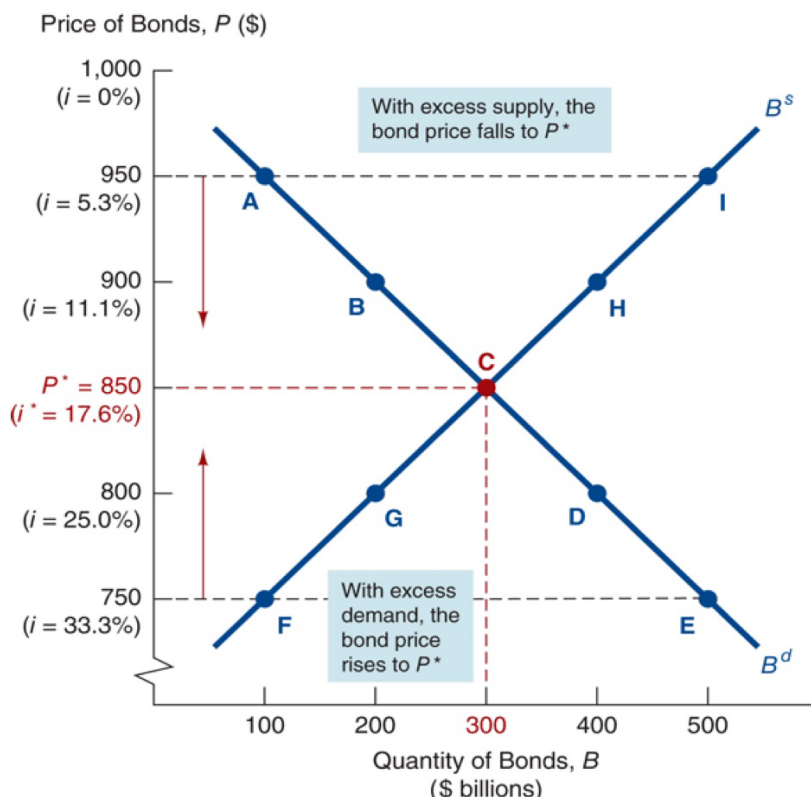
## Chapter 4: Why do interest rates change

**Asset:** a piece of property that is a store of value

When considering how to deal with an asset, following factors must be taken into consideration:

1. **Wealth:** total resources owned by the individual: **as wealth increases, demand increases**
2. **Expected return:** return expected over the next period on one asset: **as expected return increases, demand increases**
3. **Risk:** degree of uncertainty associated with the return: **if risk increases, demand falls**  
**Standard deviation:** Differences to the average
4. **Liquidity:** ease and speed with which an asset can be turned into cash: **as liquidity increases, demand increases**

Supply and demand for Bonds:



- ➔ More people will offer bonds if expected return is lower
- ➔ More investor will supply bonds if the expected return is lower

We call the point where Supply and Demand curve intersect the **equilibrium**. In a healthy economy the equilibrium happens millions of times a day.

In this point: **Bonds demanded = Bonds supplied**

**Supply** is defined as companies and governments issuing bonds in order to borrow money.

**Market equilibrium:** occurs when the amount that people are willing to buy (demand) equals the amount that people are willing to sell (supply) at a given price.

However, markets do not always reach an equilibrium. We can have 2 possible situations:

1. **Excess supply:** if amount that people are willing to sell is greater than what people are willing to buy at a given price  
-> **supply > demand**
2. **Excess demand:** if the amount that people are willing to buy is greater than what people are willing to sell at a given price  
-> **supply < demand**

Changes in Equilibrium:

Factors that shift the demand curve (shift to the right for increase, shift to the left for decrease):

1. **Wealth:** demand rises in business cycle expansion, falls in recession
2. **Expected returns:**

-> if interest rates are expected to rise in the future, the demand for long-term bonds decreases

-> if interest rates are expected to fall in the future, the demand for long-term bonds increases

3. **Risk:** if risk increases, the demand for a bond falls

Note however, that if the risk of an alternative asset increases, the demand increases

4. **Liquidity:**

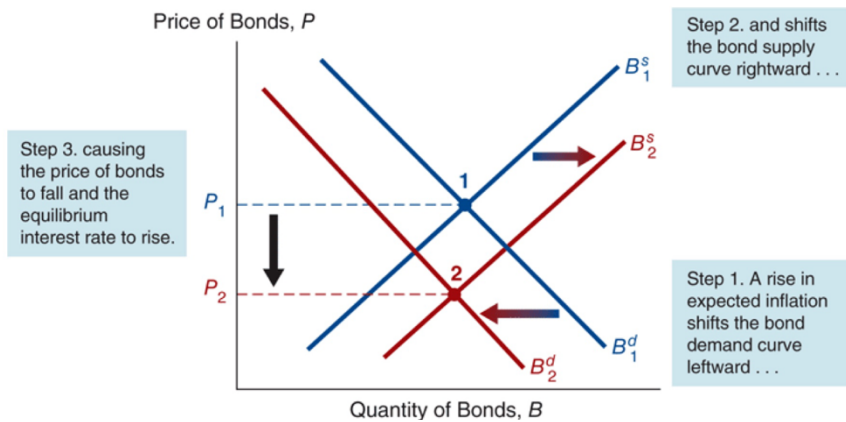
-> an increased liquidity of the bond market leads to an increased demand for bonds

-> an increased liquidity of the stock market leads to an increased demand for stocks

...

Factors that shift the supply curve:

1. **Expected profitability of investment opportunities:** supply increases in a business cycle expansion, falls in recession as there are fewer expected business opportunities
2. **Expected Inflation:** increase in expected inflation increases the supply of bonds
3. **Government activities:** higher deficits increase the supply of bonds

**Case studies:****1. The Fisher effect**

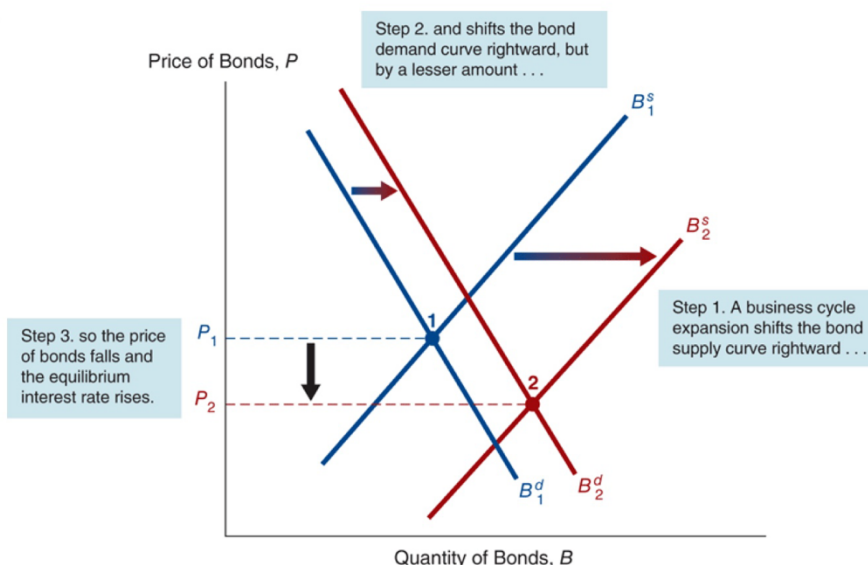
The Fisher effect explains that a **high expected inflation** rate leads to **high interest rates and a price decrease**.

This is due to the fact, that a rise in expected inflation leads to a decrease in expected return of bonds relative to other assets, thereby leading to a decrease in demand for bonds.

In addition the real cost of borrowing declines due to the rise of expected inflation, causing an increase in supply of bonds. Combined, the 2 lead to a fall in the equilibrium price of bonds.

As price and interest rates are negatively related, the interest rate increases as a consequence of the price decrease.

**2. Business Cycle Expansion:** a situation in which the amount of goods and services for the country is increasing => **national income is increasing**



As national income increases, demand for bonds also increases due to the fact that companies need more money in order to keep up with the increasing demand for goods and services.

In a Business cycle expansion **interest rates rise** as a consequence of the **increase in demand, and the price falls**.

3. **Low Japanese Interest Rates:** in 1998 Japanese Interest rates on Treasury bills turned negative: How?

The country suffered from **deflation**, causing the demand of bonds to increase. In addition, real rates increased, which led to the real cost of borrowing being higher and the supply of bonds to fall.

After a long period of wealth, the bubble burst. There was a recession leading to a decrease in interest rates. Both curves shifted to the left, whereas the net effect finally led to an **increase in bond prices**.

Many firms hire economists or consultants to forecast interest rates. Methods used are:

- **Supply and demand for bonds:** use Flow of Funds accounts and personal judgement
- **Econometric Models:** use past financial relationships and assume that they will hold in the future

Economists and consultants make forecasts over:

1. Make decisions about assets to hold:
  - If interest rates are expected to **decrease: buy long bonds**
  - If interest rates are expected to **increase: buy short bonds**
2. Make decisions about how to borrow:
  - If interest rates are expected to **decrease: borrow short**
  - If interest rates are expected to **increase: borrow long**

Predictions made by financial economists are also useful to help forecast the strength of the economy, profitability of investments, and expected inflation.

## Chapter 5: How do risk and term structure affect interest rates

Price differences on bonds are a consequence of the **risk structure** of the interest rates.

**Spread/Margin:** difference between 2 bonds at a given point in time; measured in **basis points**

Features of interest-rate behavior of bonds:

1. Rates on different bond categories change from one year to the next.
2. Spreads on different bond categories change from one year to the next.

In general, three risk factors are taken into consideration:

1. **Default risk:** situation occurring when the issuer of the bond is unable/unwilling to make interest payments when promised

In many cases, default is considered to be the step before bankruptcy. It often leads to a cross-over effect meaning that it also affects all other bonds, checking accounts etc.

US-Treasury Bonds are generally considered to have no default risk, and are therefore called “**default-free bonds**”. The reason behind it, is that the government can simply print new money, increase taxes etc. to pay off its obligations.

History although has shown that these bonds are not truly default-free.

The spread between interest rates on bonds with and without default risk is called **risk premium**. It is a measure indicating how much additional interest people must earn in order to be willing to hold that risky bond.

Note that a bond with default risk will always have a positive risk premium.

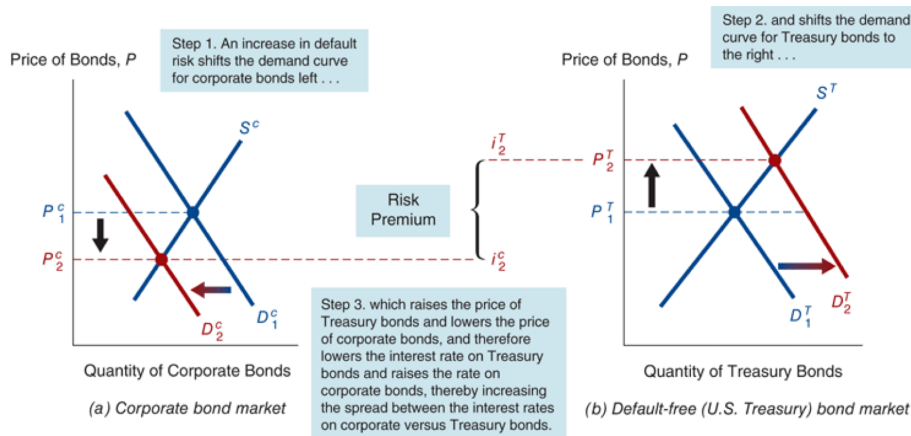
Increase in Default risk on Corporate Bonds:

1. Increase in risk shifts demand curve for Corporate Bonds to the left.
2. The demand curve for Treasury Bonds shifts to the right, due to an increase in demand, considering that the default risk on government bonds is low/zero.
3. As a consequence:

->the price of Treasury Bonds increases -> interest rates decrease

->the price of Corporate Bonds decreases -> interest rates increase

**The spread between the interest rates on corporate versus Treasury Bonds grows.**



Investors aim at knowing as much as possible about the default probability of a bond. This can be done through credit-rating agencies. The most important agencies in this field are: **Moody's, Fitch and S&P.**

### CASE STUDY: The global Financial Crisis and the Baa-Treasury Spread

The Financial crisis of 2007, which started with the collapse of the subprime mortgage market shows that credit-rating agencies can be wrong. The latter gave very good ratings to bonds of companies, which ended up not being able to repay their debts.

Questions on the quality of Baa bonds started to arise, the demand fell, whereas the demand for Treasury securities increased. **As a consequence the spread Baa-Treasury increased from 185 to 545 basis points.**

2. **Liquidity:** a liquid asset is one that can be quickly, easily and cheaply converted into cash; the more liquid an asset, the higher the demand

#### Example: Corporate bonds becoming less liquid

1. As liquidity for Corporate bonds decreases, the demand shifts to the left. As a consequence price decreases and interest rates increase.
2. At the same time the Treasury Market becomes more liquid, and the demand shifts to the right. As a consequence the price increases and the interest rates decrease.
3. Again the spread Corporate-Treasury grows.

**NOTE: The risk premium reflects not only the default risk but also lower liquidity.**

That is why it is often referred to as **risk and liquidity premium.**

3. **Income tax considerations:**

**NOTE:** Municipal bonds have a **lower rate than Treasuries**, as municipalities can default. The possibility of Munis going into default is perfectly illustrated by the **Orange County** (California) example in the early 1990s.



In addition Munis are **less liquid** than Treasuries.

However, municipal bonds are **exempted from federal income taxes**, a factor having the same effect on the demand for municipal bonds as an increase in their expected return.

Treasury bonds on the other hand are exempted from state and local income taxes, whereas corporate bonds are fully taxable.

The tax advantage of municipal bonds over Treasury Bonds is **higher, the bigger the tax**.

1. Tax-free status shifts demand for municipal bonds to the right.
2. At the same time the demand for Treasury bonds shifts to the left.
3. Municipal bonds end up with a higher price and lower interest rate than on Treasury Bonds.

#### **CASE STUDY: Bush tax cut and Obama repeal on bond interest rates**

The 2001 tax cut under Bush reduced the advantage of municipal debt over T-securities. since interest rates on T-securities were taxed at a lower rate.

The Bush tax cuts were finally repealed under President Obama. The advantage of municipal debt increased again, since T-securities were taxed at a higher rate.

Besides the risk factor, another influence on interest rates is **maturity**.

**Yield curve:** a curve representing rates at different maturities, used to analyze the behavior of interest rates

Various theories have been developed in order to analyze the term structure of a bond. A good theory must explain why:

1. **Interest rates for different maturities move together.**
2. **Yield curves tend to have a steep upward slope when short rates are low and a downward slope when short rates are high.**
3. **Yield curves are typically upward sloping.**

Theories:

1. **Expectations Theory:** explains 1 and 2, but not 3

It is assumed that bonds of different maturities are **perfect substitutes**. The expected return on bonds of different maturities is therefore assumed to be equal.

If the theory is correct the expected wealth is the same at the start for two random chosen strategies. Of course in reality the rates may unexpectedly change and the wealth differ.

General formula used: **the interest rate on a long term-bond equals the average of short rates expected to occur over life of the long-term bond**

The theory illustrates, that if short rates are **expected to rise** in future, the average of future short rates is above today's short rate, therefore the yield curve is **upward sloping**.

On the other hand, if the rates are **expected to fall** the curve will be **downward sloping**, or **flat** if the rates are expected to **stay the same**. (explanation for fact 1)

Furthermore, it shows that when the short rates are low they are expected to rise and the long rate will therefore be above today's short rate: **the curve will have a steep upward slope**.

On the other hand, when the short rates are high they are expected to fall in the future, and the long rate will be below the current short rate: **the curve will have downward slope**.

(explanation for fact 2)

## 2. **Market Segmentation Theory**: explain 3, but not 1 and 2

It is assumed that bonds of different maturities **are not substitutes at all**. The markets are seen as segmented, and interest rates at each maturity are determined **separately**.

The theory explains that people typically **prefer short holding periods**. The demand for short-term bonds is therefore higher, due to the higher prices and lower interest rates.

(explanation for fact 3)

**It can not explain fact 1 and 2 as it assumes that various rates are determined independently.**

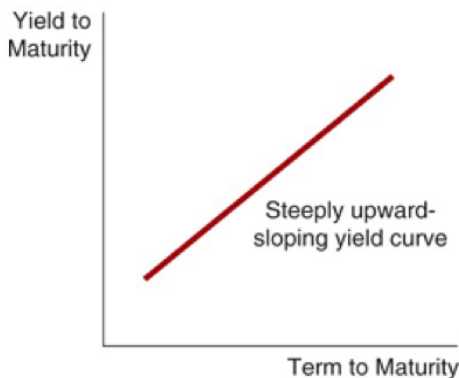
## 3. **Liquidity Premium Theory**: combines features of both Expectations and Market Segmentation theory

It is assumed that bonds of different maturities are **substitutes, but not perfect substitutes**.

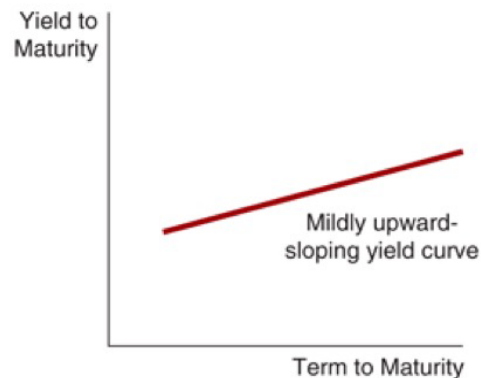
The theory explains again that people prefer short-term rather than long-term bonds. This therefore implies that investors must be paid a positive liquidity premium, to hold long term bonds. The liquidity premium creates again an upward sloping yield curve (explanation for fact 3).

It explains fact 1 and 2 with the same reasoning as the Pure Expectations theory.

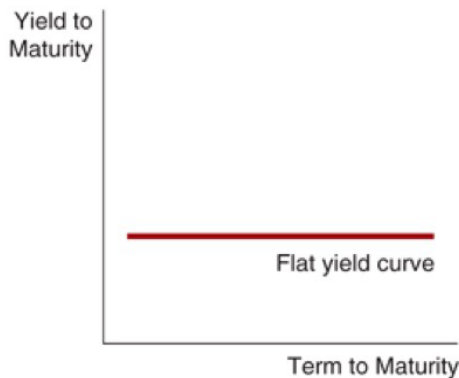
### Market predictions of future short rates:



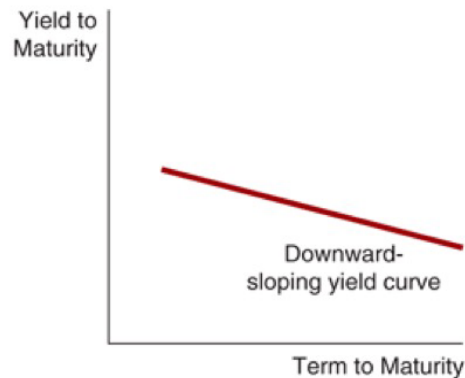
(a) Future short-term interest rates expected to rise



(b) Future short-term interest rates expected to stay the same



(c) Future short-term interest rates expected to fall moderately



(d) Future short-term interest rates expected to fall sharply

Initial research did not find much useful information in the yield curve for predicting interest rates.

Nowadays it is considered a useful tool to analyze short-and long-term rates, but does not provide much information about medium-term rates.

Besides providing information about future interest rates, the yield curve should help forecast inflation and real output production:

➔ Rising rates are associated with economic booms

➔ Falling rates are associated with recessions

**Junk bonds:** Bonds with a rating below BBB; come with a high default risk rate.

## Chapter 6: Are financial markets efficient

Expectations are crucial in our financial system.

To better understand expectations we analyze the **efficient market hypothesis**. It is a framework to understand what information is useful and what is not.

**Rate of return:** sum of capital gains plus any cash payments

**The EMH sees expectations as an optimal forecast when using all available information.**  
It predicts that:

$$R^* = R^{OF}$$

**The hypothesis predicts that all available information are reflected in today's share price in and efficient market.**

Furthermore it assumes that the market is **always right**.

The idea behind the EMH is that when an unexploited profit opportunity on a security arises, investors rush to buy until the price rises to the point that the returns are **normal again**.  
In an efficient market however, **all unexploited profit opportunities will be eliminated**.

NOTE: It is crucial to acknowledge that not every investor needs to be aware of the situation. A few suffice to eliminate the unexploited profit opportunities. By doing so, they make a profit themselves.

NOTE: The EMH holds even if there **are uninformed, irrational** participants in the market.

### Favorable evidence for the EMH:

1. **Investment analysts and mutual funds do not beat the market:** approximately 90% of mutual funds underperform. Beating the market would only be possible through insider trading, which is illegal.  
Mini-Case: Raj Rajaratnam: investor who ended up in jail due to insider trading
2. **Stock prices reflect publicly available information: anticipated announcements do not affect the price:** previously announced information does not bring about changes as it is already reflected in the price.
3. **Stock prices and exchange rates close to random walk are unpredictable:** if stock prices were fully predictable price changes would be near zero and this has never been the case.
4. **Technical analysis does not outperform the market:** although there are a few very good technical analysts, the EMH states that it is useless to set up rules trying to predict the behavior of stocks.

**Unfavorable evidence for the EMH:**

1. **Small-firm effect:** small firms tend to have higher share prices than bigger firms; this is considered an anomaly as it should be harder to find buyers and seller for small firms due to a higher risk exposure etc.
2. **January effect:** tendency of stock prices to have an abnormal positive return in January due to taxation; investors sell shares in December in order to take capital losses on tax return and reduce the tax liability and buy the stocks again when the new year starts

**Window-dressing:** make your portfolio look better than what it is

3. **Market overreaction:** consequence of emotional investing; stock prices may overreact to news announcements
4. **Excessive volatility:** volatility = fluctuations in the stock prices
5. **Mean reversion:** stocks with low returns today tend to have higher returns in the future and vice versa
6. **New info is not always immediately incorporated into stock prices**

Implications for investing:

- ➔ Be aware of how valuable reports are
- ➔ Be skeptical of hot tips
- ➔ Remember that the market sometimes is slow to react, meaning that stock prices do not rise immediately
- ➔ Do not overestimate your own/someone else's judgement: the EMH is only a prescription
- ➔ Do not try to outguess the market by constantly buying and selling: especially as a small investor you incur very high commission costs.

A possible strategy is the **"buy and hold" strategy**, meaning that it is advised to buy stocks and hold them for longer periods of time. In average this leads to the same returns, but to higher net profits, considering that the brokerage commissions are reduced.

John Bogle is an investor who followed this strategy and became very successful.

It is also advised, especially for small investors to buy into **trackers or mutual funds**.

Back to the EMH, it states that:

1. **Expectations are rational**
2. **Prices are always correct**
3. **Prices reflect the market**

Three implications result from these statements:

- ➔ One investment is as good as any other: **stock picking is useless**
- ➔ Prices reflect **all information**
- ➔ **The cost of capital can be determined from security prices**

**Bubble:** situation in which the price of an asset differs from its fundamental market value

Behavioral finance: try to find a human behavior on financial markets

## Chapter 7: Why do Financial Institutions exist

A vibrant economy requires a good financial system that moves funds from savers to borrowers.

### Facts of Financial Structure:

1. **Stocks are not the most important source of external financing** for businesses.
2. **Issuing marketable debt and equity securities is not the primary way** in which businesses finance their operations.
3. **Indirect finance**, which involves the activities of financial intermediaries, is many times more important than direct finance.
4. **Financial intermediaries**, are the most important source of external funds used to finance businesses.
5. The financial system is among the **most heavily regulated sectors of economy**.
6. Only **large, well-established corporations** have easy access to securities markets to finance their activities.
7. **Collateral** is a prevalent feature of debt contracts for both households and businesses.
8. **Debt contracts** are typically extremely complicated legal documents.

### Transaction costs:

Transaction costs can **hinder the flow of funds** to people with productive investment opportunities.

Financial intermediaries make profits by taking advantage of economies of scale and thereby reducing transaction costs.

### Agency theory:

Analysis of how asymmetric information problems affect behavior.

Lemons: bad used cars

### The Lemons Problem: How adverse selection influences financial structure

1. If we can't distinguish between good and bad securities, we are willing to pay only average of good and bad securities' value
2. Result: Good securities are undervalued and firms won't issue them, bad securities

are overvalued so too many issue leading to an inefficient market.

Possible solutions to problems of Adverse selection can be a **private production and sale of information or government intervention (annual audits f.eg).**

### The Enron Case:

Enron used to be a very successful firm engaged in energy trading. In 2001 however, the firm entered into severe financial difficulties, but did not report the latter. Its auditor Arthur Andersen even plead guilty to obstruction of justice charges. The Enron Case was one of the biggest scandals of the past decades.

**Collateral:** the most famous form of collateral is mortgage. It's a scenario where the borrower gives an object as a kind of "security" to the lender, meaning that he does not own it directly anymore. In case the borrower is not able to repay the loan, the lender can sell the object.

### Moral hazard in equity contracts: The Principal-Agent problem

The principal-agent problem is a conflict in **priorities between a person or group and the representative authorized to act on their behalf.**

An example of the Principal-Agent problem is the conflict between Principal (owner/shareholder) and CEO.

It can result in:

1. **Separation of ownership from control**
2. **Managers acting in own interest**

The Principal-Agent problem can be solved by:

1. **Production on Information**
2. **Government regulation to increase informaiton**
3. **Financial intermediation**
4. **Debt contracts**

### Moral hazard in debt contracts:

NOTE that debt will always be subject to moral hazard, as it creates the incentive to take on very risky projects.



Moral hazard in debt contracts can be solved by:

1. **Net worth and collateral**
2. **Monitoring, Enforcement of restrictive Covenants**
  - ➔ Covenants are f.eg. Discourage undesirable behavior, encourage desirable behavior, keep collateral valuable, provide information..
3. **Financial intermediation**

### Financial repression:

Financial repression includes **government regulations, laws etc. that prevent financial intermediaries to work at full capacity**. It is proven to lead to **low growth**.

Reasons causing financial repression are:

1. Poor legal systems
2. Weak accounting standards
3. Government directs credit
4. Financial institutions which have been nationalized
5. Inadequate government regulation

Note that financial repression can lead to a **financial crisis**. A financial crisis is a major disruption in financial markets. It results in the inability to channel funds from savers to productive investment opportunities.

**China can be seen as a Counter-example for this.** The country has a booming economy, whereas the financial developments are in its early stages. This is due to the fact, that people's savings are very high. To continue its growth, China needs to start allocating capital more efficiently or it will end up in a crisis

### Mini-Case: Should we kill all the lawyers

Legal work in financial relationships is mostly about contract enforcement. It is used to establish and maintain important property rights, without which investment opportunities would be limited.

### Conflict of interest:

It is a type of moral hazard that occurs when a person or institution has multiple interests, and serving one interest is detrimental to the other.

In financial institutions we generally consider 3 types of conflicts:

1. **Underwriting and research in Investment Banking:**

Investment Banks can research companies and underwrite securities for sale.

**Research should be unbiased and accurate.** Considering that Underwriters have it easier if research is positive, if a company acts as both it may lead to a conflict of interest between the interests of the firm and the public.

It may lead to **spinning**: underpriced equity is allocated to executives who will promise future business to the investment bank

2. **Auditing and Consulting in Accounting firms:**

Auditors: check the books of a firm and assess their quality and accuracy: the goal is an unbiased opinion of the firm's financial health

Consultants: for a fee, help firms with managerial, strategic and operational decisions

Again, if a firm acts as both, the opinions are clearly not objective, especially when the consulting fees are high and it leads to a conflict of interest.

3. **Credit assessment and Consulting in Rating Agencies:**

Rating agencies: assign credit rating to a security issuance of a firm. The ratings are used to assess the riskiness of a security.

Consultants: for a fee, help firms with managerial, strategic and operational decisions

Again, if a firm acts as both it leads to a conflict of interest, especially if the consulting fees are high.

### Remedies against Conflict of interest:

1. **Sarbanes-Oxley Act of 2002**

- ➔ Establishment of oversight board supervising accounting firms
- ➔ Increased SEC's budget
- ➔ Limited consulting relationships auditors-firms
- ➔ Enhanced criminal charges for obstruction
- ➔ Higher quality of financial statements and boards

## 2. Global Legal Settlement of 2002

- ➔ Severe link between research and underwriting in Investment banks
- ➔ Spinning is banned
- ➔ Additional requirements on independence of research reports

## Chapter 8: Financial Crisis

**Financial crises are major disruptions in financial markets characterized by a sharp decline in asset prices and firm failures.**

The basis for understanding of a financial crisis is the study of moral hazard and adverse selection.

Although there are many regulations trying to eliminate both, they are still present.

Sequence of events in a financial crises:

1. **Initiation of Financial Crisis:** Deterioration in Financial Institutions' Balance Sheets, Asset-Price decline, Increase in uncertainty
2. **Banking Crisis:** Economic activity declines, Banking Crisis, Adverse Selection and Moral Hazard problems worsen and lending contracts, economic activity declines
3. **Debt Deflation:** unanticipated decline in price level, adverse selection and moral hazard problems worsen and lending contracts, economic activity declines

A financial crisis can begin in several ways:

- ➔ **Credit boom and bust:** due to mismanagement of financial liberalization or innovation. The government safety nets weaken incentives for risk management, depositor ignore risk-taking and eventually losses accrue. Deleveraging starts.
- ➔ **Asset-price boom and bust:** a pricing bubble starts, where asset values exceed their fundamental value. When the bubble bursts and prices fall, net worth falls as well. Moral hazard increases, deleveraging starts.
- ➔ **Increase in uncertainty:** caused by f.eg. a stock market crash, the failure of a major financial institution

**Deleveraging:** financial institutions cut back in lending

As a consequence of deleveraging, **no one is left to evaluate firms**. The financial system loses its primary institutions to address adverse selection and moral hazard. Furthermore loans become scarce.

Financial institutions start deteriorating balance sheets and are caused into **insolvency**. If severe enough, this can lead to a bank panic and bank run.

The institutions must sell assets quickly, as cash balances fall, further deteriorating their balance sheets.

**This can lead to a sharp decline in prices and debt deflation.**

**Debt deflation:** asset prices fall, but debt levels do not adjust, thereby increasing debt burdens

## CASES:

### 1. The Great Depression

Starting from 1928/29 stock prices doubled in the US until the stock market collapsed by the end of 1929. A normal recession turned into a disaster, when severe droughts in the Midwest led to a sharp decline in agricultural production. In the following years many banks went out of business. Firms with productive uses were unable to get financing, credit spreads and unemployment increased.

Bank panics in the US spread to the rest of the world, decreasing the demand for foreign goods. Results were a rising discontent which led to the rise of fascism and WWII.

### 2. The Global Financial Crisis of 2007-2009

- **Financial innovation in mortgage markets:**

->less-than-credit worthy borrowers found the ability to purchase homes through subprime lending

**Subprime lending:** mortgage likely to get into trouble

- **Agency problems in mortgage markets:**

->banks didn't care if customers got into trouble: Mortgage originators did not hold the actual mortgage, but sold the note in the secondary market.

- **The role of asymmetric information in the credit rating process:**

->agencies didn't wanna lose clients

->debt design was not addressable for rating system, which resulted in meaningless ratings which investors relied on

**CDO: Collateralized Debt Obligations:** bad lending taken out of BS of the bank and sold to an SPV

In a CDO securities/tranches are created based on default priorities, whereas the highest rated tranches suffer defaults last.

The tranches are divided into:

1. Super senior: highest ranked
2. Senior
3. Mezzanine
4. Equity

Note that in real life it is often difficult to determine what a cash flow is worth.

**SPV (special purpose vehicle):** created to buy assets, create securities from those assets and sell those to investors -> company with special purpose; a kind of financial intermediary between investors and financial intermediary.

Many suffered during the financial crisis of 2007-2009. We specifically consider:

1. **US residential housing:** the underwriting standard fell, people were buying houses they could not afford. The lending standards allowed for nearly 100% financing, so owners had little to lose by defaulting when the housing bubble burst.

**Note: some experts argue that the low interest rates from 2003 to 2006 further fueled the housing bubble**

2. **FIs balance sheet:** banks and other FI saw the value of their assets fall and the deleveraging process began. Banks started selling their assets and restrict the credit. A further fall in the stock market and rise in credit spread weakened the BS, finally causing a contraction.

3. **Shadow banking system:**

**Shadow bank:** company with often a hedge or money market fund that provides loans

4. **Global financial markets**

5. **Failure of major financial firms**

Sep 2007: **Northern Rock:** a bank relying on other FIs for funding, which was therefore left without funding

Mar 2008: **Bear Sterns:** failed and was sold to JP Morgan

Sep 2008: **Freddie Mac and Fannie May:** both were semi US-government organizations which were listed on the NYSE

Sep 2008: **Lehman Brothers:** filed for bankruptcy. This event took all the confidence in the Markets away.

Sep 2008: **Merrill Lynch:** sold to Bank of America

Sep 2008: **AIG:** liquidity crisis

The Financial Crisis of 2007 caused the worst economic contraction since WW2. It peaked in 2008. **Eventually in March 2009, a bull market started, having the credit spreads fall and stock prices rising again.**

### 3. The European Sovereign Debt Crisis: The Eurocrisis

Up until 2007, all countries that had adopted the euro found **their interest rates converging to very low levels.**

At the same time, many countries were hit very hard, due to:

- ➔ **Lower tax revenue from economic contraction**
- ➔ **High outlays for FI bailouts**
- ➔ **Fear of default causing rates to surge**

**Greece** was the first domino to fall. It was heavily affected by **fraud in previous governments.** As soon as the real numbers were published, the interest rates and the debt started rising due to fear of default. The country needed to be **saved by the IMF, the EU, and the ECB.** Yet unemployment rates climbed and the country was left with huge bailouts to deal with.

Other countries, such as Ireland, Portugal, Spain, and Italy followed putting doubts on the survival of the EURO project.

## Chapter 9: Central Banks

The actions of a Central Bank affect:

- ➔ Interest rates
- ➔ The amount of credit
- ➔ And the money supply

All these actions directly impact the financial markets, but also the aggregate output and inflation.

**Federal Reserve:** Central Bank of the US

**Federal Open Market Committee (FOMC):** meets and takes decisions about Open Market operations, sets interest rates, tightens monetary policies or eases them

Ease or tighten?

Depends on:

- ➔ **The Economy:** period of growth or recession?
- ➔ **Inflation:** too high or too low

Central banker: **Hawk or dove:**

**A (monetary) hawk:** someone who advocates keeping inflation low as the top priority in monetary policy

**A (monetary) dove:** someone who pays more attention to other aspects of the economy, such as low unemployment

Central banks mainly deal with 3 research documents:

1. **Green book:** detailed national forecast for the next 3 years
2. **Blue book:** projections of the monetary aggregates with three alternative scenarios for monetary policy decisions
3. **Beige book:** state of the economy in each of the Fed districts. It is distributed publicly.



**Paul Volcker:** important Fed chair, who was able to fight inflation of almost 15%

**Volcker rule:** proposes to restrict speculation and prop positions in Central Banks.  
According to Volcker greed is often a cause for bubble, which may lead to crisis.

**Prop position:** workers in bank who can invest the money of Central Banks on the financial markets

Often a question on the independence of central banks arise. If a bank is independent or not depends on each country, although research has proven that independent central banks lead to lower inflation.

The European Central Bank:

- ➔ Based in Frankfurt, considering that Germany is one of the largest European economies.
- ➔ It was set up after the introduction of the digital Euro in 1999
- ➔ It is independent

## Chapter 10: Monetary Policy

Goals of Central Banks:

1. **Price stability**
2. **Currency stability**
3. **Interest rate stabilit**
4. **Output stability**
5. **Economic growth**
6. **Low unemployment**
7. **Stability of the financial markets**
8. **Confidence**
9. **Lender of last resort**

**What does the balance sheet of Central banks look like?**

ASSETS: government securities, discount loans

LIABILITIES: currency in circulation

**Repo: Repurchase agreement:**

A repurchase agreement is an open market operation. It includes Central Banks creating opportunities for banks to borrow money. By means of a Repo a commercial bank can borrow money from Central banks on a regular basis.

**Quantitative easing:**

Quantitative easing on the other hand is a nonconventional monetary policy tool. Central Banks “create” money not by using Repos but by buying a lot of government bonds from the financial markets.

Central banks should also prevent all bubbles that can be foreseen. This can sometimes be costly, or ineffective.

## Chapter 11: The Stock Market

Stocks:

1. **Represent ownership in a firm**
2. **Earn a return**

Note that a return on stocks is earned in two ways:

- As the price of the stock rises over time
- When dividends are paid to the stockholder (not done by every company)

**Dividends:** part of the profit of a company

3. **Stockholders have claim on all assets**
4. **Holders of stocks have the right to vote for directors and on certain issues**
5. Two types:
  - **Common stock:** with right to vote and to receive dividends
  - **Preferred stock:** no right to vote, but receive a fixed dividend

How stocks are sold:

Stocks are traded on **organized exchanges**. Such as:

- New York Stock Exchange
- Euronext
- Nikkei
- LSE
- DAX

The word organized is used to imply a specific trading location. In recent times computer systems (ECNs) have replaced this idea.

**Electronic communication networks (ECNs):**

allow brokers and traders to deal without the need of a middleman, thereby providing **transparency, cost reduction, faster execution, and after-hours trading**.

Listing requirements generally exclude small firms due to **tough regulations and high costs**.

On the other hand, stocks can also be traded in **Over-the-counter markets**. The best example for such a market is **NASDAQ**.

In such markets, dealers stand **ready to make a market**, meaning that multiple dealers set bids and ask prices.

Thinly-traded-securities, are generally traded on such platforms.

### Exchange Traded Funds (ETF):

Recent innovation to help keep **transaction costs down while offering diversification**.

ETFs represent a basket of securities or an index, whereas the exact content of the basket is known. They are traded on a major exchange, with very low management fees.

Stocks are valued by determining the cash flow and discounting them to the present.

4 different methods can be used to facilitate the process:

1. **One-period valuation model:** expected dividend and price over the next year
2. **Generalized dividend valuation model:** most general model, but the infinite sum may not converge
3. **Gordon growth model:** similar to the One-period valuation model but we assume that the dividend grows at a constant rate,  $g$
4. **Price Earnings Valuation model:** analysis of how much the market is willing to pay for 1 dollar of earnings from the firms

All these models provide very useful information, but they encounter problems:

- **With estimating growth**
- **With estimating risk**
- **With forecasting dividends**

In general, prices are set in **competitive markets**.

The price is set by the buyer who is willing to pay the most, as he is considered the one who can make the best use of an asset.

### Case: The 2007-2009 Financial Crisis and the stock market:

The financial crisis of 2007-2009 was the start of one of the worst bear markets. It lowered the growth factor,  $g$  in the Gordon Growth model, thereby driving down stock prices. Furthermore, the high uncertainty further weakened the prices.

**Case: 9/11 and Enron**

Again, both events had a negative impact on the stock prices.

**Stock market Indexes:**

The latter are often used to **monitor the behavior of a group of stocks**.

The most famous indexes include the Dow Jones Industrial average, the S&P 500 and the Nasdaq composite.

**Buying Foreign Stocks**

Buying foreign stocks is useful from a **diversification** point of view.

**American depository receipts (ADR):**

ADRs allow foreign firms to trade on US exchanges, facilitating their purchases. US banks buy foreign shares and issue receipts against these in US markets.

**Regulation:**

The SEC (security and exchange commission) plays a primary role in regulating the financial markets. **The primary mission is to protect investors and maintain the integrity of security markets.**

Divisions of the SEC:

1. **Division of Corporate finance:** responsible for collecting, reviewing and making available all of the documents
2. **Division of Market regulation:** establishes and maintains rules for efficient markets
3. **Division of investment management:** oversees and regulates the investment management industry
4. **Division of enforcement:** investigates violations of the rules and regulations established by other divisions

## Chapter 12: Bonds

### Capital Market:

Maturity greater than one year, typically used for long-term financing or investments

### Participants:

Purchaser: You and Me

Issuers: federal and local governments: debt issuer

Corporations: equity and debt issuers

### Trading:

1. Primary market for initial sale
2. Secondary market:
  - Over-the-counter (bonds)
  - Organized exchanges (stocks)

### Types:

Bonds are securities that represent debt owed by the issuer to the investor, and typically have specified payments on specific dates.

1. **Treasury Notes:** the US Treasury issues notes and bonds to finance its operations
  - **Treasury Bill:** less than 1 year
  - **Treasury Note:** 1 to 10 years
  - **Treasury Bond:** 10 to 30 years

Treasury Bonds have no default risk, since the Treasury can print money to payoff the debt. Furthermore, they have very low interest rates which are often referred to as “**risk-free rates**”.

**Treasury Inflation-Indexed Securities:** principal amount is tied to the current rate of inflation to protect investor purchasing power

**Treasury STRIPS:** coupon and principal payments are “stripped” from a T-bond and sold as individual zero-coupon bonds

### Agency debt:

Bonds issued by government-sponsored entities, such as Ginny May or Fannie May. This entities suffered a hard draw-back durin the crisis of 2007-2009.

2. **Municipal Bonds:** issued by local, county, and state governments and used to finance public interest projects

**Tax-free municipal interest rate = taxable interest rate \* (1-Marginal tax rate)**

Two types:

- General obligation bonds: f.eg. Build a bridge
- Revenue bonds: linked to a specific project

**Municipal bonds are not default-free.**

3. **Corporate Bonds:** typically with a face value of 1000 dollars, pay interest semi-annually in the US and annually in Europe

Corporate bonds can not be redeemed anytime the issuer wishes, unless a specific clause exists (call option).

The degree of risk varies with each bond. As a consequence also the required interest rate varies.

**Restrictive Covenants:**

Restrictive covenants describe things that a company may or may not do. They are used to mitigate conflicts with shareholder interests and may limit dividends. Usually they include a **cross-default clause**.

**Conversion:**

The process of converting bonds into shares.

Note that not all debt can be converted into equity.

**Secured bonds:** mortgage bonds, equipment trust certificates  
Some kind of guarantee is given to bondholders.

**Unsecured bonds:** debentures, subordinated debentures, variable-rate bonds (no fixed interest rate)

**Junk bonds:** debt that is rated below BBB, issued by companies likely to go bankrupt

**Financial guarantees for bonds:**

Some debt issuers purchase financial guarantees to lower the risk of their debt. The guarantee provides for timely payment of interest and principal and are often backed up by large insurance companies.

**Credit Default Swap:** insurance that you get your money back in case of default of the issuer

**Bond Yield calculations:**

Cash flows are identified and discounted to the present.

**Coupon interest rate:**

The stated annual interest rate on the bond; usually fixed for the life of a bond

**Current yield:**

The coupon interest payment divided by the current market price of the bond

**Face amount:**

The maturity value of the bond.

**Indenture:**

The contract that accompanies a bond and specifies the terms of the loan agreement

**Market rate:**

The interest rate currently in effect in the market for securities of like risk and maturity

**Maturity:**

The number of years or periods until the bond matures and the holder is paid for the face amount

**Par value:**

The same as face amount

**Yield to maturity:**

The yield an investor will earn if the bond is purchased at the current market price and held until maturity

**Investing:**

- Bonds are typically less risky than equity, even though they still include a price risk and interest rate risk