**Market Organization and Structure**

**LOS a**

**Main functions of financial system**

- To allow entities to save and borrow money, raise capital, manage risks and trade assets
- To determine the returns where total supply of savings equals total demand for borrowing
- To allocate capital to its most efficient uses

**LOS b**

**Classification of assets**

- **Financial assets**
  - Securities
  - Derivatives
  - Currencies
- **Real assets**
  - Real estate
  - Equipment
  - Commodities
  - Others

- Equity securities - Represent ownership in a company
- Debt securities (Fixed income securities) - Promise to repay borrowed funds
- Publicly traded securities - Traded on exchanges or through securities dealers
- Private securities - Securities that are not traded publically. Often illiquid
- Derivatives - Value is derived from the value of underlying asset
- Financial derivatives - Underlying assets are equities, equity indexes, debt, debt indexes or other financial assets
- Physical derivatives - Underlying assets are physical assets such as gold, oil and wheat

**Classification of markets**

- **Based on trading of security**
  - Primary market
  - Secondary market
- **Based on maturity**
  - Money market
  - Capital market

- Market for newly issued securities
- Subsequent sales of securities occur in this market
- Market for debt securities with maturities ≤ 1 year
- Markets for longer-term debt and equity securities that have no specific maturity date

Markets for immediate delivery are referred to as **spot markets**
LOS c  Describe the major types of assets that trade in organized markets

1. Securities
   - Fixed income securities
   - Equity securities
   - Securities
     - Fixed income securities
       - Short term
         - Maturity of less than one or two years
           - Bonds
       - Intermediate term
         - Maturity is in the middle of short-term and long-term
           - Notes
       - Long term
         - Maturity longer than five to ten years
           - Bonds
   - Equity securities
     - Common stock
       - Variable dividend
         - Last preference in case of liquidity and dividend payment
     - Preferred stock
       - Fixed dividend
         - 2nd preference in case of liquidity and dividend payment
     - Warrants
       - Similar to options
         - Give the holder the right to buy firm’s equity shares at a fixed price prior to the warrant’s expiration

Commercial paper (firms), Bills (govt.), Certificates of deposit (banks) are all short term securities

2. Currencies
   - Issued by a government’s central bank
   - Reserve currencies - Currencies held by governments and central banks worldwide.
     - Primarily includes Dollar and Euro
   - Issued by a government’s central bank
   - Reserve currencies - Currencies held by governments and central banks worldwide.
     - Primarily includes Dollar and Euro
Contracts

- Forward contract: Agreement to buy or sell an asset in the future at a price specified in the contract at its inception. Eg. Agreement to buy 200 lbs of wheat 60 days from now for $800.
- Futures contracts: Similar to forward contracts except that they are standardized and exchange traded.
- Option contracts: Long Call - Right to buy, Short Call - Obligation to sell, Long Put - Right to sell, Short Put - Obligation to buy.
- Swap contracts: Agreements to exchange a series of payments on periodic settlement dates. Currency swap - Loan in one currency for the loan of another currency. Equity swap - Exchange of return on an equity index for interest payment on debt.
- Insurance contracts: Used to hedge against unfavorable, unexpected events. Eg. Life insurance, P&C insurance etc. Credit default swaps (CDS) are a form of insurance that makes a payment if an issuer defaults on its bonds.

Commodities

- They trade in spot, forward and futures market.
- Include precious metals, industrial metals, agricultural products, energy products, and credits for carbon reduction.

Real assets

- Real assets include real estate, equipment, machinery etc.
- Buying real assets directly often provides income, tax advantages, and diversification benefits.
- There is substantial management cost involved.
- Rather than buying real assets directly, an investor can make investment in REIT or master limited partnership (MLP) or buy the stock of firms that have large ownership of real assets.

Types of financial intermediaries and their services

- Brokers, exchanges and alternative trading systems connect buyers and sellers of the same security at the same location and time.
- Dealers match buyers and sellers of the same security at different points in time.
- Arbitrageurs connect buyers and sellers of the same security at the same time but in different venues.
- Securitizers and depository institutions package assets into a diversified pool and sell interests in it.
- Insurance companies manage the risk inherent in providing insurance.
- Clearinghouses reduce counterparty risk and promote market integrity.
**Positions an investor can take in an asset**

**Long position** - Represents current or future ownership. Long benefits when the asset value increases.

**Short position** - Represents an agreement to sell or deliver an asset or results from borrowing an asset and selling it (short sale). Short benefits when the asset value decreases.

**Leveraged position** - When an investor buys a security by borrowing from a broker, the investor is said to buy on margin and has a leveraged position.

**Leverage ratio, rate of return on a margin transaction and margin call price**

*Eg.* \( S_0 = 100 \quad S_1 = 120 \) Initial margin (IM) = 40% Maintenance margin (MM) = 20%

\[
\text{Leverage ratio} = \frac{1}{\text{IM}} \quad \text{Or} \quad \frac{\text{Opening price}}{\text{Equity}} = \frac{1}{0.4} \quad \text{Or} \quad \frac{100}{40} = 2.5
\]

\[
\text{Rate of return on a margin transaction} = \frac{S_1 - S_0}{\text{Equity}} = \frac{120 - 100}{40} = \frac{20}{40} = 50\%
\]

\[
\text{Margin call price} = S_0 \left(\frac{1 - \text{IM}}{1 - \text{MM}}\right) = 100 \left(\frac{1 - 0.4}{1 - 0.2}\right) = 75
\]

**Execution, validity, and clearing instructions**

**Bid price** - Price at which dealer buys a security

**Ask price** - Price at which dealer sells a security

Traders who post bids and offers are said to make a market.

Those who trade with them at posted prices are said to take the market.

1. **Execution instructions**

**Market order** - + It instructs the broker to execute the trade immediately at the best possible price
  + Appropriate when the trader wants to execute quickly
  + Disadvantage - Orders may execute at unfavorable prices

**Limit order** - + Used to avoid price execution uncertainty
  + Disadvantage - Order might not be filled

<table>
<thead>
<tr>
<th>Best bid</th>
<th>Best ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buy order with limit price below best bid is said to be behind the market</td>
<td>Limit sell below best bid is said to be marketable or aggressively priced</td>
</tr>
<tr>
<td>Making a new market (Inside the market)</td>
<td>Limit buy above best ask is said to be marketable or aggressively priced</td>
</tr>
<tr>
<td>Make the market (At best bid)</td>
<td>Make the market (At best ask)</td>
</tr>
<tr>
<td>Sell order with limit price above best ask is said to be behind the market</td>
<td>Limit orders waiting to execute are called standing limit orders</td>
</tr>
</tbody>
</table>

Limit buy order with a price considerably lower than the best bid, or a limit sell order with a price significantly higher than the best ask, is said to be far from the market.
+ **All-or-nothing orders** - Execute only if the whole order can be filled
+ **Hidden orders** - Only the broker or exchange knows the trade size
+ **Iceberg orders** - Some of the trade is visible to the market, but the rest is not

### 2. Validity instructions

+ Specify when an order should be executed
+ **Day orders** - They expire if unfilled by the end of the trading day
+ **Good-till-cancelled** - They last until they are filled
+ **Immediate-or-cancel (Fill-or-kill)** - They are cancelled unless they can be filled immediately
+ **Good-on-close** - They are only filled at the end of the trading day. If they are market orders, they are referred to as market-on-close orders
+ **Stop loss sell order** - Stop (trigger) below the current market price
+ **Stop loss buy order** - Stop (trigger) above the current market price

### 3. Clearing instructions

+ Tell the trader how to clear and settle a trade
  + **Retail trades** - settled by the broker
  + **Institutional trades** - settled by a custodian or another broker

---

**LOS i**

**Primary and secondary markets**

<table>
<thead>
<tr>
<th>Primary markets</th>
<th>Secondary markets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sale of newly issued securities</strong></td>
<td><strong>Securities trade after their initial issuance</strong></td>
</tr>
<tr>
<td><strong>Seasoned offerings (secondary issues)</strong></td>
<td></td>
</tr>
<tr>
<td>Shares issued by firms whose shares are currently trading in the market</td>
<td></td>
</tr>
<tr>
<td><strong>Initial public offerings (IPOs)</strong></td>
<td>Shares issued by firms whose shares are not currently publicly traded</td>
</tr>
</tbody>
</table>
Book building - Process of gathering indications of interest

Indications of interest - Investors who agree to buy part of the issue

Underwritten offering - Investment bank agrees to purchase the entire issue at a price that is negotiated between the issuer and bank. It must buy the unsold portion of the issue

Best efforts offering - Investment bank makes 'best efforts' to sell the issue but is not obliged to buy the unsold portion

IPOs are typically underpriced because investment banks have a conflict of interest with the issuer

As issuer’s agents, investment banks should set high price to raise the most funds for the issuer but as underwriters, they prefer to set the price low to sell the whole issue

Oversubscribed IPO is referred to as a hot issue

Private placement- Securities are sold directly to qualified investors (substantial wealth and investment knowledge)

Shelf registration- Firm makes its public disclosures as in a regular offering but then issues the registered securities over time when it needs capital

Dividend reinvestment plan (DRIP/DRP) - Allows existing shareholders to use their dividends to buy new shares from the firm at a discount

Rights offering- Existing shareholders are given the right to buy new shares at a discount. Because of rights offering shareholders’ ownership is diluted unless they exercise their rights

Importance of secondary market

→ They provide liquidity
→ They provide price/value information
→ Better the secondary market, easier it is for firms to raise capital in the primary market

LOS j

Quote-driven, order-driven and brokered markets

Call markets
Securities are only traded at specific times
They are liquid when in session but illiquid between sessions
Used in smaller markets but is also used to set opening prices on major exchanges

Continuous markets
Securities are traded at any time when the market is open
Price is set by either auction or by dealer bid-ask quotes

Quote driven
Traders transact with dealers who post bid and ask prices
Dealers maintain inventory of securities
aka dealer markets, price-driven markets or OTC markets
Most securities other than stocks trade in these markets

Order driven
Orders are executed using trading rules
Order matching rules and trade pricing rules
Eg. Exchanges and automated trading systems

Brokered
Brokers find the counterparty to execute a trade
Useful when the trader has unique or illiquid security. Eg. artwork, large blocks of stock etc.
Dealers do not carry inventory of these assets
Pre-trade transparent market - Investors obtain pre-trade information regarding quotes & orders

Post-trade transparent market - Investors obtain post-trade information regarding completed trade prices and sizes

Dealers prefer opaque markets. Transactions costs and bid-ask spreads are larger in opaque markets

** характеристики грамотно функционирующей финансовой системы **

<table>
<thead>
<tr>
<th>Основные характеристики финансовой системы</th>
<th>Описание</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete markets</td>
<td>Сберегатели получают доход, заемщики могут получить капитал, дельта может управлять рисками, и трейдеры могут получить необходимые активы</td>
</tr>
<tr>
<td>Operational efficiency</td>
<td>Торговые расходы низки</td>
</tr>
<tr>
<td>Informational efficiency</td>
<td>Цены отражают основную информацию быстро</td>
</tr>
<tr>
<td>Allocational efficiency</td>
<td>В информационнально эффективных рынках капитал направляется в наиболее продуктивное использование</td>
</tr>
</tbody>
</table>

** цели регулирования рынков **

- Защитить неопытных инвесторов
- Установить минимальные стандарты компетентности
- Помочь инвесторам оценивать производительность
- Предотвратить инсайдеров от использования других инвесторов
- Поощрить стандарты финансовой отчетности, чтобы информация была менее дорогой
- Требовать минимальных уровней капитала, чтобы участникам рынка было легче выполнять свои обязательства и быть более осторожными перед своими рисками
Security Market Indices

**LOS a**

What is a security market index?

- Used to represent the performance of an asset class, security market, or segment of a market
- An index is a hypothetical portfolio

**LOS b**

Price return and total return of an index

<table>
<thead>
<tr>
<th>Price return</th>
<th>Total return</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price index</strong> - Uses only the prices of the constituent securities</td>
<td><strong>Return index</strong> - Uses both prices and income of the constituent securities</td>
</tr>
<tr>
<td>Rate of return that is based on a price index is referred to as price return</td>
<td>Rate of return that is based on a return index is referred to as price return</td>
</tr>
</tbody>
</table>

**LOS c**

Choices and issues in index construction and management

- The target market the index will measure
- Securities to be include from the target market
- Appropriate weighting method
- How frequently to rebalance the index to its target weights
- How frequently to re-examine the selection and weighting of securities

**LOS d & e**

Different weighting methods used in index construction

- **Price weighted**
  - Average Price
  - % Change

- **Equal weighted**
  - % Change
  - Average Price

- **Market capitalization weighted**
  - Market capital
  - % Change

- **Fundamental weighted**
  - Uses weights based on firm fundamentals such as earnings, dividends or cash flow
  - Can be based on a single measure or combination of measures

These index returns can be both price return or total return
### Constituent securities

<table>
<thead>
<tr>
<th>Constituent securities</th>
<th>( P_0 )</th>
<th>( P_1 )</th>
<th>DPS</th>
<th>Quantity</th>
<th>% ( \Delta P )</th>
<th>% ( \Delta P ) with DPS</th>
<th>Market capital (_0)</th>
<th>Market capital (_1)</th>
<th>Dividend</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100</td>
<td>140</td>
<td>5</td>
<td>10,000</td>
<td>40%</td>
<td>45%</td>
<td>1,000,000</td>
<td>1,400,000</td>
<td>50,000</td>
</tr>
<tr>
<td>B</td>
<td>120</td>
<td>80</td>
<td>6</td>
<td>20,000</td>
<td>(33.33%)</td>
<td>(28.33%)</td>
<td>2,400,000</td>
<td>1,600,000</td>
<td>120,000</td>
</tr>
<tr>
<td>C</td>
<td>140</td>
<td>154</td>
<td>0</td>
<td>5,000</td>
<td>10%</td>
<td>10%</td>
<td>700,000</td>
<td>770,000</td>
<td>0</td>
</tr>
<tr>
<td>D</td>
<td>160</td>
<td>176</td>
<td>0</td>
<td>15,000</td>
<td>10%</td>
<td>10%</td>
<td>2,400,000</td>
<td>2,640,000</td>
<td>0</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>130</td>
<td>137.5</td>
<td>2.75</td>
<td></td>
<td>6.667%</td>
<td>9.1675%</td>
<td>6,500,000</td>
<td>6,410,000</td>
<td>170,000</td>
</tr>
</tbody>
</table>

#### Price weighted

1. Price return - \( \frac{137.5}{130} - 1 = 5.77\% \)
2. Total return - \( \frac{137.5 + 2.75}{130} - 1 = 7.88\% \)

#### Equal weighted

1. Price return - \( \frac{6.667\%}{6,500,000} - 1 = 1.38\% \)
2. Total return - \( \frac{9.1675\%}{6,410,000} - 1 = 1.23\% \)

#### Market capital. weighted

1. Price return - \( \frac{6,410,000}{6,500,000} - 1 = (1.38\%) \)
2. Total return - \( \frac{6,410,000 + 170,000}{6,500,000} - 1 = 1.23\% \)

+ In price-weighted index, denominator must be adjusted for stock splits
+ Equal weighted portfolio requires most frequent rebalancing (adjusting periodically)
+ Market capitalization-weighted index is also known as value-weighted index
+ It can be adjusted for a security’s market float (excluding shares held by controlling shareholders) or free float (Market float – shares not available for foreign buyers)

### LOS f

**Rebalancing and reconstitution of an index**

**Rebalancing**

Adjusting weights of securities in portfolio to their target weights after weights are changed due to changes in price

Usually done quarterly

**Reconstitution**

Adding or deleting securities that are included in an index

The price of security added to an index increases and the price of security deleted from an index decreases

### LOS g

**Uses of security market indices**

+ Reflection of market sentiment
+ Benchmark of manager performance
  + Measure of market return
+ Measure of beta and excess return
+ Model portfolio for index funds
Types of equity indices

Broad market index
- Usually contains more than 90% of the market’s total value

Multi-market index
- It is used to measure the equity returns of a geographic location
  - Contains the indexes of several countries

Multi-market index with fundamental weighting
- Uses market capitalization weighting for securities within a country’s market but weight the countries within the global index by a fundamental factor

Sector index
- Measures returns for a sector (Eg. pharmaceuticals)

Style index
- Measures value or growth strategies
  - Higher constituent turnover than broad market indexes

Types of fixed-income indices

- Fixed income indexes can be classified by issuer, collateral, coupon, maturity, default risk and inflation protection

- Fixed income security universe is much broader than the equity universe

- Since fixed income securities mature, they must be replaced in fixed income indexes. As a result, fixed income indexes have a high turnover

- Fixed income securities are primarily traded by dealers, so index providers have to depend on dealers for recent prices

Indices representing alternative investments

- Commodity indexes
  - Based on commodity futures not spot prices

- Real estate indexes
  - Can be based on appraisals of properties, repeat property sales or the performance of REITs

- Hedge fund indexes
  - Equally weighted indexes
  - Exhibit upward bias

Types of security market indices

- Geographic location - Eg. regional or global indexes
- Sector/industry - Eg. indexes of pharmaceuticals producers
- Level of economic development - Eg. emerging market indexes
- Fundamental factors - Eg. indexes of value stocks or growth stocks
Market Efficiency

**LOS a**

**Market efficiency and related concepts**

<table>
<thead>
<tr>
<th>Informationally efficient capital market</th>
<th>All information available about a security is reflected fully, quickly, and rationally in its current price</th>
</tr>
</thead>
</table>

In a perfectly efficient market, investors should use passive investment strategy (investing in indexes) because active investment strategies will underperform due to transactions costs and management fees.

Market’s efficiency can be determined by the time taken by information to reflect in the price of the security.

Market prices are not affected by the release of information that is well anticipated. Only new information that is unexpected causes changes in prices.

**LOS b**

<table>
<thead>
<tr>
<th>Market value</th>
<th>Intrinsic value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current price of the asset</td>
<td>Value that a rational investor would willingly pay</td>
</tr>
<tr>
<td>Can be known with certainty</td>
<td>Can’t be known with certainty</td>
</tr>
<tr>
<td></td>
<td>Changes constantly as new information becomes available</td>
</tr>
</tbody>
</table>

**LOS c**

**Factors that affect market efficiency**

- **Market participants**: More the market participants, more efficient the market
- **Availability of information**: More information available to investors, more efficient the market
- **Impediments to arbitrage**: Limit arbitrage activity and allow some price inefficiencies to persist
- **Short selling**: Improves market efficiency. Restrictions on short selling reduce market efficiency
- **Transaction and information costs**: If information cost > potential profit, market prices will be inefficient

**LOS d & e**

- **Weak-form market**: Efficient markets hypothesis (EMH) states that security prices fully reflect all past price and volume information. Technical analysis does not result in abnormal profits.
- **Semi-strong form market**: EMH states that security prices fully reflect all publicly available information. Fundamental analysis does not result in abnormal profits.
- **Strong-form market**: EMH states that security prices fully reflect all public and private information. Active management does not result in abnormal profits.
Market anomalies

Market anomaly - Something that deviates from the efficient market hypothesis

Anomalies

Time-series data

- Calendar anomalies
- Overreaction anomalies
- Momentum anomalies

Cross-sectional data

- Size effect
- Value effect

January effect or turn-of-the-year effect

For first five days of January, stock returns for small firms are significantly higher than they are for the rest of the year.

Reasons - tax-loss selling and window dressing

Firms with poor stock returns over previous 3 to 5 years have better subsequent return

Violate weak form of market efficiency because profitable strategy is based only on market data

High short-term returns are followed by continued high returns

Violate weak form of market efficiency because profitable strategy is based only on market data

Small-cap stocks outperform large-cap stocks

Violates semi-strong form of market efficiency because information is publicly available

Value stocks outperform growth stocks

Violates semi-strong form of market efficiency because information is publicly available

Other anomalies

- Closed-end investment funds trading at large discount to NAV
- Slow adjustments to earnings surprises
- IPOs are typically underpriced, but long-term performance of IPO shares as a group is below average suggesting investors overreact (too optimistic about a firm’s prospects on the offer day)
- According to research, stock returns are related to known economic fundamentals such as dividend yields, but relationship between them is not consistent over all time periods

Behavioral finance

Examines the actual decision-making processes of investors

Investors exhibit biases in their decision making, base decisions on the actions of others and not evaluate risk in the way traditional models assume they do

Investor behaviors:

- Loss aversion (dislikes risk)
- Investor overconfidence (overestimate their abilities to analyze security)
- Herding (mimicking investment actions of other investors)
# Overview of Equity Securities

**LOS a**

**Characteristics of types of equity securities**

1. **Common shares**
   - Most common form of equity
   - Capital appreciation
   - Variable dividend (no obligation to pay)
   - Dividend is a function of profitability
   - Last preference in case of liquidity and dividend payment

### Voting system

<table>
<thead>
<tr>
<th>Statutory voting</th>
<th>Cumulative voting</th>
<th>Callable</th>
<th>Putable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each share held is assigned one vote in the election of each member of the BODs</td>
<td>Shareholders can cast all their votes to one single board candidate or divide them among others</td>
<td>Firm has right to repurchase the stock at a pre-specified price</td>
<td>Shareholder has right to sell the stock back to the firm at a pre-specified price</td>
</tr>
</tbody>
</table>

2. **Preference shares**
   - Features of both common stock and debt
   - Usually do not mature
   - Can have call or put features just like common stock or debt
   - Do not have voting rights
   - Fixed dividend (no obligation to pay)
   - Dividend is a function of profitability
   - 2nd preference in case of liquidity and dividend payment

### Based on accumulation of dividend

<table>
<thead>
<tr>
<th>Cumulative</th>
<th>Non-cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dividends that are not paid in past must be paid</td>
<td>Dividends do not accumulate over time</td>
</tr>
</tbody>
</table>

### Based on receipt of extra dividend

<table>
<thead>
<tr>
<th>Participating</th>
<th>Non-participating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receive extra dividends if firm profits exceed a pre specified level</td>
<td>Do not receive extra dividends if firm profits exceed a pre specified level</td>
</tr>
</tbody>
</table>

### Based on conversion

<table>
<thead>
<tr>
<th>Convertible</th>
<th>Non-convertible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be converted to common stock</td>
<td>Can not be converted to common stock</td>
</tr>
</tbody>
</table>
Ownership characteristics among different equity classes

- Some companies’ equity shares are divided into different classes, such as Class A and Class B shares.
- Different classes of common equity may have different voting rights and priority in liquidation. They may also be treated with different dividends, stock splits etc.
- Such information can be found in the company’s filings with securities regulators.

Private equity compared to public equity

- Usually issued to institutional investors.
- Less liquidity.
- Direct negotiation between the firm and its investors.
- Limited financial disclosure.
- Lower reporting costs.
- Potentially weaker corporate governance.
- Greater ability to focus on long-term prospects.
- Potentially greater return.
- Main types - VCs, LBOs, MBOs, PIPE.

Methods for investing in foreign equity securities

Integrated markets - Capital flows freely across borders.

Obstacles to direct foreign investment - Investment and return are denominated in foreign currency.

- Foreign stock exchange may be illiquid.
- Reporting requirements may be less strict.
- Investors must be familiar with the regulations.

 Depository receipts (DRs)

- Represent ownership in a foreign firm.
- Traded in the markets of other countries in local market currencies.
- Bank deposits shares of the foreign firm and then issues receipts representing ownership of foreign shares.
- If the firm is involved with the issue, it is a sponsored DR or it is an unsponsored DR.
- Investor has voting rights.

Bank has voting rights.

- Global depository receipts (GDRs) - Issued outside US and outside the issuer’s home country.
- American depository receipts (ADRs) - Denominated in USD and are traded on U.S. exchanges.
- Global registered shares (GRS) - Trade in different currencies on stock exchanges around the world.
- Basket of listed depository receipts (BLDR) - Is an ETF that is a collection of DRs.
Risk and return characteristics of equity securities

Returns consist of dividends, capital gains/losses from changes in share prices, and foreign exchange gains or losses if any.

Common measure of risk for equity securities is standard deviation.

- Putable shares - Least risky
- Callable shares - Most risky
- Cumulative preferred shares - Less risky
- Non-cumulative preferred shares - More risky

Role of equity securities in the financing of a company’s assets

- Used for the purchase of long-term assets, equipment and research and development
- Used to buy other companies
- Used to offer to employees as compensation
- Publicly traded equity securities provides liquidity

Market value

- Share price \( \times \) No. of shares
- Reflects investors’ expectations about timing, amount and risk of firm’s future cash flows

Book value

- Assets - Liabilities
- Reflects firm’s financial decisions and operating results since its inception
- Increases when firm has positive net income

Return on equity

Net income

- Equity
- Usually higher the better
- Measures whether management is generating a return on common equity

Cost of equity

- Minimum rate of return that investors require
- Usually estimated using DDM or CAPM

Investors’ required return

- Estimated expected market return
- Estimated return > Minimum return = Invest
- Reflected in the market price of firm’s share
Introduction to Industry And Company Analysis

LOS a
Uses of industry analysis

- Provides a framework for understanding the firm
- Can provide information about the firm’s potential growth, competition, risks, appropriate debt levels and credit risk

LOS b
Ways to group companies and industry classification systems

Commercial Classifications:
- Global Industry Classification Standard (GICS) - S&P and MSCI Barra
- Russell Global Sectors (RGS)
- Industry Classification Benchmark (ICB) - Dow Jones and FTSE

Government Classifications:
- International Standard Industrial Classification (ISIC) - United Nations
- Australian and New Zealand Standard Industrial Classification - Australia and NZ
- North American Industry Classification System (NAICS) - US, Canada & Mexico

Firms can be grouped into industries according to their products and services, business cycle sensitivity or through statistical methods such as cluster analysis.

Sector - Group of similar industries

LOS c

Cyclical firms
- Earnings are highly dependent on business cycle
- Have high operating leverage
- Their products are often expensive, non-necessities whose purchase can be delayed until the economy improves

Non-cyclical firms
- Earnings are less dependent on business cycle
- Can be further separated into defensive (stable) or growth industries
- Defensive - least affected by business cycle
- Growth - Demand is strong. Largely unaffected by business cycle
Peer group

Elements needed to be covered in thorough industry analysis

- Evaluate the relationships between macroeconomic variables and industry trends
- Estimate industry variables using different approaches and scenarios
- Check estimates against those from other analysts
- Compare the valuation for different industries
- Compare the valuation for industries across time to determine risk and rotation strategies
- Analyze industry prospects based on strategic groups
- Classify industries by their life-cycle stage
- Position the industry on the experience curve
- Consider demographic, macroeconomic, governmental, social and technological influences
- Examine the forces that determine industry competition

Rivalry among existing competitors
Threat of entry
Threat of substitutes
Power of buyers
Power of suppliers

Barriers to entry
High industry concentration does not guarantee pricing power
Industries with greater product differentiation will have greater pricing power
market fragmentation results in strong competition and low return on capital

Industry concentration

Industry capacity
Capacity can be physical or non-physical
Undercapacity - Demand > Supply
Overcapacity - Demand < Supply
Capacity is fixed in short run and variable in long run
Non-physical capacity can be reallocated more quickly than physical capacity

Market share stability
Highly variable shares indicate a highly competitive industry in which firms have little pricing power
Switching costs - Costs that customers face when changing from one firm’s products to another
High switching costs - market share stability and pricing power
**Industry life cycle**

- **Embryonic stage**
  - Slow growth - Customers are unfamiliar with the product
  - High prices - Volume required for economies of scale is not yet reached
  - Large investment - To develop the product
  - High risk - Most embryonic firms fail

- **Growth stage**
  - Rapid growth - New consumers discover the product
  - Little competition - Threat of new entrants but firms still grow without competing on price
  - Falling prices - Economies of scale are reached and distribution channels increase
  - Increasing profitability - Due to economies of scale

- **Shakeout stage**
  - Slowing growth - Demand reaches saturation level with new customers
  - Intense competition - Industry growth gets slowed. So firm growth comes at the expense of competitors
  - Industry overcapacity - Supply > demand
  - Declining profitability - Due to overcapacity
  - Cost cutting - Firms restructure to survive and try to build brand loyalty

- **Mature stage**
  - Slow growth - Saturation of market. Demand is only for replacement
  - Consolidation - Market evolves to an oligopoly
  - High barriers to entry - Firms have brand loyalty and low cost structures
  - Superior firms gain market share - Firms with better products may grow faster than industry average
  - Stable pricing - Firms try to avoid price wars

- ** Decline stage**
  - Negative growth - Due to substitutes, societal changes or global competition
  - Declining prices - Intense competition and price wars due to overcapacity
  - Consolidation - Failing firms exit or merge
  - Increased failures - Weaker firms liquidate or are acquired
LOS i  Elements of industry strategic analysis

- Major firms
- Barriers to entry and success
- Industry concentration
- Influence of industry capacity on pricing
- Industry stability
- Life cycle
- Competition
- Demographic influences
- Government influence
- Social influence
- Technological influence
- Business cycle sensitivity

LOS j  External influences on industry growth, profitability and risk

Macroeconomic  |  Technological  |  Demographic  |  Governmental  |  Social

Macroeconomic
- Can be cyclical or structural
- Include long-term trends in factors such as GDP growth, interest rates and inflation
  
  *Eg. Computer hardware*

Technological
- Technology can dramatically change an industry through the introduction of new or improved products.
  
  *Eg. Aging of the overall population can mean significant growth for the health care industry*

Demographic
- Includes size and age distribution of the population
- Eg. Ban on tobacco production

Governmental
- Includes tax rates, regulations, empowerment of self-regulatory organizations, and government purchases of goods and services
- Eg. When women started getting jobs, the restaurant industry benefitted because there was less cooking at home

Social
- Relate to how people work, play, spend their money and conduct their lives

LOS k  Elements that should be covered in a thorough company analysis

**Competitive strategy** - How firms respond to opportunities and threats

- Cost leadership - Low cost, low price, superior return
  - Used to protect market share (defensive) or to gain market share (offensive)

- Product differentiation - Firm’s products/services are distinctive in terms of type, quality or delivery

**Company analysis** involves analyzing firm’s financial condition, products and services, and competitive strategy. It includes following elements

- Firm overview
- Industry characteristics
- Product demand
- Product costs
- Pricing environment
- Financial ratios
- Projected financial statements and firm valuation
**LOS a**  
Determine whether stocks are overvalued, undervalued, or fairly valued

- Fairly valued - Market price = Intrinsic value
- Undervalued - Market price < Intrinsic value
- Overvalued - Market price > Intrinsic value

For security valuation to be profitable, the security must be mispriced now and price must converge to intrinsic value over time

More investors after a security, more likely it is to be fairly valued

---

**LOS b**  
Major categories of equity valuation models

- **Discounted cash flow model**  
  (Present value model)

- **Multiplier model**  
  (Market multiple models)

- **Asset-based model**

  Two types

  - Ratio of stock price to fundamentals (earnings, sales, BV, CF etc.) Eg. P/E ratio
  - Ratio of Enterprise Value (EV) to EBITDA or sales

---

**LOS c**  
Describe DDM & FCFE

1. **DDM**

   One-year holding period DDM = \[ \frac{D_1}{(1 + K_e)} + \frac{P_1}{(1 + K_e)^2} \]

   Two-year holding period DDM = \[ \frac{D_1}{(1 + K_e)} + \frac{D_2}{(1 + K_e)^2} + \frac{P_2}{(1 + K_e)^3} \]

**Eg.**  
\( P_1 = 15 \)  \( P_2 = 21 \)  \( D_0 = 1.5 \)  
Expected dividend growth = 5%  
Required rate of return = 13.5%

One-year holding period DDM = \[ \frac{1.5 \times (1 + 0.05)}{(1 + 0.135)^1} \frac{15}{(1 + 0.135)^1} = \frac{1.575}{(1.135)} = 1.39 \]

+ \[ \frac{P_1}{(1 + K_e)^2} = \frac{15}{(1 + 0.135)^1} = \frac{15}{(1.135)} = 13.215 \]

\[ 14.605 \]

Two-year holding period DDM = \[ \frac{1.5 \times (1 + 0.05)}{(1 + 0.135)^1} \frac{1.575}{(1.135)} = 1.39 \]

+ \[ \frac{D_2}{(1 + K_e)} = \frac{1.5 \times (1 + 0.05)^2}{(1 + 0.135)^2} = \frac{1.65}{(1.288)} = 1.28 \]

+ \[ \frac{P_2}{(1 + K_e)^3} = \frac{21}{(1 + 0.135)^1} = \frac{21}{(1.288)} = 16.3 \]

\[ 18.97 \]
Free Cash Flow to Equity

Free Cash Flow to Firm (FCFF) = \( \text{Net income} + \text{Non cash charges\( (\text{depreciation}) \) + Interest } \times (1 - \text{tax rate}) +/− \text{Working capital investment} +/− \text{Fixed capital investment} \)

\[
\text{FCFE} = \text{FCFF} - \text{Interest} \times (1 - \text{tax rate}) +/− \text{Net borrowing}
\]

\[
\text{PV of } \text{FCFE} = \frac{\text{FCFE}}{(1 + K_e)^t}
\]

**LOS d**

Intrinsic value of non-callable, non-convertible preferred stock

Value (Infinite maturity) = \( \frac{\text{Dividend}}{K_p} \)

Value (Finite maturity) = \( \frac{\text{Dividend}}{K_p} + \frac{\text{Face value}}{K_p} \)

**LOS e**

Gordon growth model

\[
V_o = \frac{D_1}{K_e - g}
\]

Assumptions of GGM (DDM)

- ROE is constant
- Dividend payout ratio is constant
- Therefore growth ‘g’ will remain constant \((g = \text{ROE} \times \text{Retention ratio})\)
- To keep ROE constant capital structure should be constant
- \(K_e > g\)

**Dividend displacement effect**

\[
\begin{align*}
g \uparrow &= V_o \uparrow \\
K_e \uparrow &= V_o \downarrow \\
D \uparrow &= V_o \uparrow \\
\text{If } D \uparrow \text{ then retention ratio} \downarrow, g \downarrow, V_o \downarrow
\end{align*}
\]

**Eg.** Expected dividend growth (For 4 years) = 20% Expected dividend growth (after 4 years) = 5%

\begin{align*}
D_0 &= 2 \quad K_e = 13\% \\
\text{Calculate the value of stock}
\end{align*}

\[
D_0 = \text{Given} = 2
\]

\[
D_1 = 2 \times (1+0.2)^1 = 2.4
\]

\[
D_2 = 2 \times (1+0.2)^2 = 2.88
\]

\[
D_3 = 2 \times (1+0.2)^3 = 3.456
\]

\[
D_4 = 2 \times (1+0.2)^4 = 4.1472
\]

\[
P_3 = \frac{D_1}{K_e - g} = \frac{4.1472}{0.13 - 0.05} = 51.84
\]

Value of stock = \( \frac{2.4}{1.13} + \frac{2.88}{1.13^2} + \frac{3.456}{1.13^3} + \frac{51.84}{1.13^3} = 38.57 \)

**LOS f** Appropriateness of constant growth and multistage dividend discount model

- **Constant growth model** - Firms that pay dividends that grow at a constant rate (stable/mature firms or noncyclical firms)
- **2-stage DDM** - Firm with high current growth that will drop to a stable rate in the future (firm experiencing temporary high growth phase)
- **3-stage DDM** - Young firm that is still in its high growth phase
Valuation based on multiples

Price-Earning multiple (P/E)

Based on MPS
- Leading: $\frac{P_o}{E_1}$
- Trailing: $\frac{P_o}{E_0}$

Based on fundamentals
- Leading: $\frac{V_o}{E_1}$
- Trailing: $\frac{V_o}{E_0}$

$$\frac{V_o}{E_1} = \frac{D_o}{(K_e - g)} \frac{1}{E_1}$$

$$\frac{V_o}{E_0} = \frac{D_o (1 + g)}{K_e - g} \frac{1}{E_0}$$

$P/E$ - MPS/EPS  $P/S$ - MPS/Sales per share  $P/B$ - MPS/BVPS  $P/CF$ - MPS/CF per share

Enterprise value

Measures total company value

$EV = MV \text{ of equity} + MV \text{ of debt} + MV \text{ of preferred stock} - \text{Cash} - \text{Short term investments}$

Appropriate when firms have significant differences in capital structure

EBITDA is most frequently used denominator for EV multiples (EV/EBITDA)

Asset-based valuation models

Equity value = MV of Assets – MV of Liabilities

Appropriate for a firm whose assets are largely tangible and have fair values that can be established easily

Advantages and disadvantages of each category of valuation model

**DCF (PV) model**
- Advantages: Easy to calculate, widely used, readily available, useful for predicting stock returns, can be used in time series and cross-sectional comparisons
- Disadvantages: Sensitive to inputs, negative denominator results in a meaningless ratio (P/E), may not be comparable across firms, especially internationally

**Multiplier model**
- Advantages: Can provide floor values, useful for valuing public firms that report fair values (MV)
- Disadvantages: Mvs are difficult to obtain, inaccurate when firm has a large amount of intangible assets or future CFs not reflected in asset value, difficult to value during hyperinflation

**Asset-based models**