金程教育
GOLDEN FUTURE
可信赖的财经培训专家

CFA一级培训项目

Equity Investments

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Framework of Equity

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Characteristics of a Financial Market

- ***Main Functions*** **of the Financial Market (*Totally three functions*)**
  - ***Fulfill different entities' requirements***
    - ✓ **Save and borrow money, raise equity capital, manage risks, trade assets currently or in the future, and trade based on their estimates of asset values.**
  - ***Determine interest rates***
    - ✓ **Determine the returns (i.e., interest rates) that equate the total supply of savings with the total demand for borrowing.**
  - ***Allocate capital to its most efficient uses***
    - ✓ **The financial system allows the transfer of assets and risks from one entity to another as well as across time.**

Characteristics of a Financial Market

- ***First function*: fulfill different entities' requirements**
  - ***Savings*: stocks, bonds, certificates of deposit, real assets, and other assets are tools for saving.**
    - ✓ ***Individuals* save to gain interest.**
    - ✓ ***Firms* save a portion of their profits for future expenditures.**
  - ***Borrowing:* Borrow money from lenders who require collateral, take an equity position, or investigate the credit risk of the borrower to protect themselves in case of borrower defaults.**
    - ✓ ***Individuals* may borrow in order to buy a house or for other purposes.**
    - ✓ ***Firms* may borrow to meet their finance capital expenditures and for other activities.**
    - ✓ ***Governments* may issue debt to meet their expenditures.**
  - ***Issuing equity:* Another method of raising capital beside borrowing is to issue equity, where the capital providers will share in any *future profits*.**
    - ✓ ***Investment bank* help with issuance.**
    - ✓ ***Analysts* value the equity.**
    - ✓ ***Regulators and accountants* encourage the dissemination of information.**

Characteristics of a Financial Market

- ***First function*: fulfill different entities' requirements**
  - ***Risk management*: Entities face risks from changing interest rates, currency values, commodities values, and defaults on debt, among other things. So they would like to find a way to manage these risks.**
    - ✓ ***Hedgers* enter a financial market with the purpose of reducing the risk of the transaction. Hedging instruments are available from exchanges, investment banks, insurance firms, and other institutions.**
  - ***Exchanging assets*: The financial market also allows entities to exchange assets with other entities.**
    - ✓ **For example: currency exchange**
  - ***Utilizing information*: Investors with correctly analyzed information expect to earn an *additional return* by identifying assets that are currently undervalued or overvalued.**
    - ✓ ***Information-motivated traders*: trade to profit from information that they believe allows them to predict future prices.**

Characteristics of a Financial Market

- **Second function:** Determine interest rates
  - Interest rates are justified according to the *total supply of savings and the total demand of borrowings*.
  - *Equilibrium interest rate*:
    - ✓ when the interest rate at which the entities are willing to borrow is equal to the amount that entities are willing to lend, we say that the supply and demand are *balanced*, and such balanced interest rate is called the equilibrium interest rate.
    - ✓ Equilibrium rates for different types of borrowing and lending will differ due to *differences in risk, liquidity, and maturity*.

Characteristics of a Financial Market

- ***Third function*: Allocate capital to its most efficient uses**
  - **Investors have to weigh the expected risks and returns of different investments to determine their most preferred investments due to limited availability of capital.**
  - **This would result in an allocation to capital to its most valuable uses.**

Characteristics of a Financial Market

- ***Intermediaries of Financial Market (Summary)***
  - **Brokers, Dealers and Exchange**
  - **Securitizers**
  - **Depository Institutions**
  - **Insurance Companies**
  - **Arbitrageurs**
  - **Clearinghouses and Custodians**

Intermediaries of Financial Market

➢ Brokers, Dealers and Exchange

- ***Brokers***: Brokers help their clients buy and sell securities by finding counterparties to trades in a cost efficient manner.
- ***Block brokers***: help with the placement of Large trades. Typically, large trades are difficult to place without moving the market.
- ***Investment banks***: help corporations sell common stock, preferred stock, and debt securities to investors.
- ***Exchanges***: provide a venue whew traders can meet. Exchanges sometimes act as brokers by providing electronic order matching.
- ***Alternative trading systems (ATS):*** serve the same trading function as exchanges but have no regulatory function, are also known as electronic communication networks (ECNs) or multilateral trading facilities (MTFs).
  - ✓ ATS that do not reveal current client orders are known as ***dark pools***. (***used to reduce market impact***)

Intermediaries of Financial Market

➢ Brokers, Dealers and Exchange (Cont.)

- ***Dealers***: trade by buying for or selling ***from their own inventory*** and thus provide liquidity in the market and profit primarily from the differences of buy and sell prices.
  - ✓ Dealers that trade with central banks to affect the money supply are referred to as ***primary dealers***.
  - ✓ ***Broker-dealers***: Some dealers also act as brokers. Broker-dealers have an inherent conflict of interest.
    - ***Brokers***: should seek the best prices for their clients;
    - ***Dealers***: are to profit through prices or spreads.

Intermediaries of Financial Market

➢ Securitizers

- ***Securitizers*** **pool large amounts of securities or other assets together and sell interests in the pool to other investors.**
  - ✓ **By securitizing the assets, the securitizer creates a diversified pool of assets with more predictable cash flows than the individual assets in the pool.**
  - ✓ **This creates liquidity in the assets, because the ownership interests are more easily valued and traded.**
  - ✓ **There are also economies of scale in the management costs of large pools of assets and potential benefits from the manager's selection of assets.**

Intermediaries of Financial Market

➢ Securitizes (Cont.)

- **Assets that are often securitized include *mortgages, car loans, credit card receivables, bank loans, and equipment leases*.**
- **A firm may set up a *special purpose vehicle (SPV)* or *special purpose entity (SPE)* to buy firm assets, which removes them from the firm's balance sheet and may increase their value by removing the risk that financial trouble at the firm will give other investors a claim to the assets' cash flows.**

➢ Depository Institutions

- **Absorb deposits by paying interest on customer deposits**
- **Provide transaction services on one hand, and then make loans with the deposits on the other hand.**

Intermediaries of Financial Market

➢ Insurance Companies

- **Insurance companies collect insurance premiums in return for providing risk reduction to the insured.**
- **Such intermediaries are able to do this by pooling policyholders with *uncorrelated risk of losses*.**
- **Insurance firms also provide a benefit to investors by managing the risks:**
  - ✓ ***Moral hazard*** **occurs because the insured may take *more risks* once they are protected against losses.**
  - ✓ ***Adverse selection*** **occurs when those most likely to experience losses are the predominant buyers of insurance.**
  - ✓ **In *fraud*，the insured purposely cause damage or claim fictitious losses so they can collect on their insurance policies.**

Intermediaries of Financial Market

➢ Arbitrageurs

- **Arbitrageurs are intermediaries who seek to gain *certain return* without bearing any risk.**
- **In markets with good information, pure arbitrage is rare because traders will favor the markets with the best prices.**

➢ Clearinghouses and Custodians

- ***Clearinghouses:* act as buyers when customers want to sell assets and as sellers when customers want to buy assets, and thus limit counterparty risk.**
- ***Custodians*: also improve market integrity by holding client securities and preventing their loss due to fraud or other events that affect the broker or investment manager.**

Well functioned financial market

- **A well functioned financial market:**
  - **allows entities to achieve their purposes.**
- **Characteristics of a well functioned financial Market**
  - ***Complete markets*: Savers receive a return, borrowers can obtain capital. hedgers can manage risks, and traders can acquire needed assets.**
  - ***Operational efficiency*: Trading costs are low.**
  - ***Informational efficiency*: Prices reflect fundamental information quickly.**
  - ***Allocational efficiency*: Capital is allocated to its most productive use.**

Market Regulation

➢ Market Regulation

Problems when there are no regulations	Objectives of market regulations
Fraud and theft: the potential for theft and fraud increases because investment managers *take advantage of unsophisticated investors*.	Protect unsophisticated investors. Require minimum standards of competency to make it easier to perform valuation.
Insider trading: Investors would exit the market and thus reduced liquidity if they believe traders with inside information will exploit them.	Prevent insiders from exploiting other investors.
Costly information: If obtaining information is relatively expensive, markets will not be as informational efficient and investors will not invest as much.	Require common financial reporting requirements.
Defaults**:** Parties might not honor their obligations in markets.	Require minimum levels of capital so that participants will honor long-term commitments**.**

Market Regulation

➢ Market Regulation (Cont.)

- **Regulation can be provided by *governments as well as industry groups*.**
- **When they fail to address the problems mentioned above, financial markets do not function well.**
  - ✓ **Liquidity declines**
  - ✓ **Firms avoid risky projects**
  - ✓ **New ideas go unfunded**
  - ✓ **Economic growth slows**

Classification of assets and markets

➢ Classification of assets (Summary)

- *Financial Assets*
  - ✓ Security
    - Fixed income vs. Equity Securities
    - Public vs. private
  - ✓ Currency
  - ✓ Derivative contracts
    - Financial derivative contracts
    - Physical derivative contracts
- *Real Assets*
  - ✓ Commodity
  - ✓ Real Estate

Classification of assets and markets

➢ Classification of assets-Financial Assets

- **Security (Fixed income vs. Equity Securities)**

✓ ***Fixed income securities*: make sure the borrowed funds can be repaid**

Bonds	Generally *long-term* (with maturity longer than 10 years)
Notes	*Intermediate term* (with maturity between 2 to 10 years)
Bills	*Short term* (with maturity less than 1 year)
Commercial paper	*Short term* issued by firms (with maturity less than 1-2 years)
Certificates of deposit	Issued by *banks*
Repurchase agreements	Borrower sells a high quality asset and has both the right and obligation to repurchase it (at a higher price) in the future. Repurchase agreements can be for terms as short as one day.
Convertible debt	Is debt that an investor can exchange for a specified number of equity shares of the issuing firm

Classification of assets and markets

➢ Classification of assets-Financial Assets-Security

- **Security (Fixed income vs. Equity Securities)**

  ✓ ***Equity securities*: represent ownership in a firm**

Common stock	•Residual claim on a firm's assets. •Dividends are paid only after interest is paid to debt holders and dividends are paid to preferred stockholders. •Debt holders and preferred stockholders have priority over common stockholders in the event of firm liquidation
Preferred stock	•Is an equity security with scheduled dividends that typically do not change over the security's life and must be paid before any dividends on common stock may be paid.
Warrants	•Are similar to options in that they give the holder the right to buy a firm's equity shares (usually common stock) at a fixed exercise price prior to the warrant's expiration.

Classification of assets and markets

➢ Classification of assets-Financial Assets-Security

- **Security (Fixed income vs. Equity Securities)**
  - ✓ ***Pooled investment vehicles*:**
    - **individual securities can be combined in pooled investment vehicles.**
    - **Include mutual funds, depositories, and hedge funds.**
    - **The investor's ownership interests are referred to as *shares, units, depository receipts,* or *limited partnership interests*.**

Classification of assets and markets

➢ Classification of assets-Financial Assets-Security

- **Security (Fixed income vs. Equity Securities)**

✓ ***Pooled investment vehicles*:**

Mutual funds	• are pooled investment vehicles in which investors can purchase shares, either from the fund itself (open-end funds) or in the secondary market (closed-end funds)
Exchange-traded funds (ETFs) & exchange-traded notes (ETNs)	• trade like closed-end funds, but have special provisions allowing conversion into individual portfolio securities, or exchange of portfolio shares for ETF shares, that keep their market prices close to the value of their proportional interest in the overall portfolio.
Asset-backed securities	• represent a claim to a portion of a pool of financial assets such as mortgages, car loans, or credit card debt.
Hedge funds	• organized as limited partnerships(investors → limited partners; fund manager →general partner). • Hedge funds often use leverage. • Hedge fund managers are compensated based on the amount of assets under management as well as on their investment results.

Classification of assets and markets

➢ Classification of assets-Financial Assets-Security

- **Security (Public vs. private)**
  - ✓ ***Public securities*: are traded on exchanges or through securities dealers and are subject to regulatory oversight.**
  - ✓ ***Private securities:* are not traded in public markets which are often illiquid and not subject to regulation.**

Classification of assets and markets

➢ Classification of assets-Financial Assets

- ***Currency*:**
  - ✓ **Are issued by a government's central bank.**
  - ✓ **Some are referred to as reserve currencies, which are those held by governments and central banks worldwide.**

Classification of assets and markets

➢ Classification of assets-Financial Assets

- ***Contract*:**

  ✓ **are agreements between two parties that require some action in the future, such as exchanging an asset for cash.**

Forward contract	Is an agreement to buy or sell an asset in the future at a price specified in the contract at its inception
Futures contracts	Are similar to forward contracts except that they are standardized, and are traded on an exchange so that they are liquid investments.
Swap contracts	A series of forward contracts
Option contracts	Gives its owner the right to buy or sell an asset at a specific exercise price at some specified time in the future.
Insurance contracts	Pays a cash amount if a future event occurs. They are used to hedge against unfavorable, unexpected events.
Credit default swaps	Are a form of insurance that makes a payment if an issuer defaults on its bonds.

Classification of assets and markets

➢ Classification of assets-Real Assets

- ***Commodity***:
  - ✓ **Commodities are goods like precious metals, industrial metals, agricultural products, energy products, and credits for carbon reduction that are traded in spot, forward, and futures markets.**
  - ✓ ***Note: Spot markets are for immediate delivery while forwards, futures, and options markets are for the future delivery of physical and financial assets.***

Classification of assets and markets

➢ Classification of assets-Real Assets (Cont.)

- ***Real Assets*:**
  - ✓ **Examples of real assets are real estate, equipment, and machinery.**
  - ✓ **Characteristics:**
    - **Provide income, tax advantage, diversification benefits**
    - **Entail substantial management costs**
    - **Require substantial due diligence before investing**
  - ✓ **Investor may choose to buy real assets indirectly:**
    - **REIT (real estate investment trust)**
    - **MLP (master limited partnership)**

Classification of assets and markets

- **Positions an investor can take in an asset**
  - **Long Position**
  - **Short Position**
  - **Leveraged Position**

Classification of assets and markets

- ***Long Position***
  - **An investor who owns an asset, or has the right or obligation under a contract to *purchase* an asset, is said to have a long position.**
  - **Benefit form an increase in the price**

Classification of assets and markets

➢ *Short Position*

- **For a short-sale, the procedure is as below:**
  - ✓ **Borrow the stock through your broker and simultaneously sell it in the market.**
  - ✓ **Return the stocks upon your brokers request**
  - ✓ **Maintain the proceeds of short-sales as collateral.**
- **Benefit from a decrease in the price**
- **Unlike a long position, the potential loss of a short sale is unlimited**
- ***Payment-in-lieu*: the received dividends and interests must be paid back to the investor who lent the stock**

Classification of assets and markets

- ***Short Position***
  - ***short rebate rate***
    - ✓ **The short seller must deposit the proceeds of the short sale as collateral**
    - ✓ **The broker earns interest on these funds and may return a portion of this interest to the short seller at a rate referred to as the short rebate rate.**
    - ✓ **If the security is difficult to borrow, short rebate rate may be lower or negative.**

Classification of assets and markets

- ***Leveraged Positions***
  - ***Definition*: An investor is said to be take leveraged positions if he borrowed funds to purchase an asset.**
  - ***Buy on margin*: Investors who use leverage to buy securities by borrowing from their brokers are said to buy on margin and the borrowed funds are referred to as a *margin loan*.**
  - **The interest rate paid on the funds is the *call money rate***
  - **leverage ratio:**
    - ✓ **The leverage ratio of a margin investment is the value of the asset divided by the value of the equity position.**

Classification of assets and markets

- ***Leveraged Positions***
  - **Margin Requirement: the required equity position is called the margin requirement.**
    - ✓ ***Initial Margin:*** **a minimum amount of equity at the time of a new margin purchase**
    - ✓ ***Maintenance Margin*****: is the investor's required equity position in the account.**
    - ✓ ***Margin Call*****: if an investor's margin account balance falls below the maintenance margin, the investor will receive a margin call and will be required to either liquidate the position or bring the account back to its *maintenance (minimum) margin requirement.***

Classification of assets and markets

- ***Leveraged Positions***
  - **Computation of the Price Triggering a Margin Call**
    - ✓ **Margin Call Price for a *Long Position***

$$P_L^{'} = P_0\left(\frac{1-IM}{1-MM}\right)$$

Exercise 1

- **Exercise 1**
  - ✓ **Lauren has a margin account and deposits $50,000. Assuming the prevailing margin requirement is 40 percent, commissions are ignored, and the Gentry Shoe Corporation is selling at $35 per share.**

A. How many shares can Lauren purchase using the maximum allowable margin?

***Solution*: Since the margin is 40 percent and Lauren currently has $50,000 on deposit in her margin account, if Lauren uses the maximum allowable margin, her $50,000 deposit must represent 40% of her total investment. Thus, if $50,000 =0.4x, then x = $125,000. Since the shares are priced at $35 each, Lauren can purchase $125,000 ÷ $35 = 3,571 shares (rounded).**

Exercise 1

B. What is Lauren's profit (loss) if the price of Gentry's stock

I. rises to $45?

II. falls to $25?

Solution：

Total profit = Total return - Total investment

I. If stock rises to $45/share, Lauren's total return is:
3,571 shares X $45 = $160,695.
Total profit $160,695 - $125,000 = $35,695

II. If stock falls to $25/share, Lauren's total return is:
3,571 shares x $25= $89,275.
Total loss $89,275 -$125,000 = -$35,725.

Exercise 1

C. If the maintenance margin is 30 percent, to what price can Gentry Shoe fall before Lauren will receive a margin call?

***Solution*:**

Margin = （Market value - Debit balance）/Market value

where Market value = Price per share*Number of shares

Initial loan value= Total investment - Initial margin= $125,000 - $50,000 = $75,000

Therefore, if maintenance margin is 30 percent:

0.30 =[（3,571* Price）- $75,000]/(3,571 * Price)

0.30 *3,571 *Price= (3,571 / Price) - $75,000.

1,071.3 * Price= (3,571 * Price) - $75,000 -2,499.7* Price= $75,000

Price = $30.00

$$P_L' = P_0\left(\frac{1-IM}{1-MM}\right)$$

Exercise 2

2. Suppose you buy a round lot of Margin Industries stock on 55 percent margin when the stock is selling at $20 a share. The broker charges a 10 percent annual interest rate, and commissions are 3 percent of the total stock value on both the purchase and sale. A year later you receive a $0.50 per share dividend and sell the stock for 27. What is your rate of return on the investment?

***Solution*:**

Profit = Ending value - Beginning value + Dividends - Transaction costs - interest
Beginning value of investment = $20*100 shares $2,000
Your investment = Margin requirement + Commission
=(0.55*$2,000) + (0.03*$2,000)=($1,100 + $60)= $1,160
Ending value of investment = $27*100 shares=$2,700
Dividends = $0.50*100 shares = $50.00
Transaction costs (Commission) = (0.03*$2,000) + (0.03*$2,700) = $60 + $81= $141
Interest0.10*(0.45*$2,000) =$90.00
Therefore: Profit =$2,700 - $2,000+$50 - $141 - $90=$519
The rate of return on your investment of $1,160 is:$519/$1,160 =44.74%

Exercise 3

3. You decide to sell short 100 shares of Charlotte Horse Farms when it is selling at its yearly high of 56. Your broker tells you that your margin requirement is 45 percent and that the commission on the purchase is $155. While you are short the stock, Charlotte pays a $2.50 per share dividend. At the end of one year, you buy 100 shares of Charlotte at 45 to close out your position and are charged a commission of $145. What is your rate of return on the investment?

Solution：

Profit on a short sale = Begin value - Ending value – Dividends - Trans. costs - Interest
Beginning value of investment = $56.00*100 shares=$5,600
(sold under a short sale arrangement)
Your investment = Margin requirement + Commission
= (0.45*$5,600) + $155= $2,520 + $155= $2,675
Ending value of investment = $45.00* 100=$4,500
(Cost of closing out position)
Dividends = $2.50*100 shares $250.00
Transaction costs= $155 + $145 =$300.00
Therefore: Profit $5,600 - $4,500 - $250 - $300= $550.00
The rate of return on your investment of $2,675 is:$550.00/$2,675=20.56%

Classification of assets and markets

Classification of markets

- Primary vs. Secondary markets
- Money vs. Capital markets
- Traditional vs. Alternative markets

Classification of assets and markets

➢ Classification of markets

- **Primary vs. Secondary markets**
  - ✓ ***Primary market*: is the market where newly issued securities are sold. Newly issued securities involve:**
  - ✓ ***IPO (initial public offerings):* first-time issues by firms whose shares are not currently publicly traded.**
  - ✓ ***Seasoned offerings (secondary issues):* new shares issued by firms whose shares are already trading in the marketplace.**

Classification of assets and markets

➢ Classification of markets

- **Money vs. Capital markets**
  - ✓ ***Money markets*: refer to markets for debt securities with maturities of one year or less.**
  - ✓ ***Capital markets*: refer to markets for longer-term debt securities and equity securities that have no specific maturity date.**
- **Traditional vs. Alternative markets**
  - ✓ ***Traditional investment markets:* refer to markets for debt and equity.**
  - ✓ ***Alternative markets*: refer to markets for hedge funds, commodities, real estate, collectibles, gemstones, leases, and equipment.**

Classification of assets and markets

➢ Primary Capital Markets

• Concept and Function of Primary Capital Markets

- ✓ ***The primary markets*: are the place where new issues of bonds/preferred stocks/common stocks are offered.**
- ✓ **New equity issues involve either seasoned issues or initial public offerings (IPO).**
  - **Firms whose shares are already traded in the market place issue new shares via *seasoned issues*.**
  - **Firms whose shares are not currently traded in the market place issue new shares via *IPO*.**

Organization of the securities market

➢ How securities are sold through primary market

- ***Sold Publicly*** **:**
  - ✓ **Underwritten Offering (the most common way)**
  - ✓ **Best Efforts**
  - ✓ **Indications of Interest**
  - ✓ **Book building**
- ***Sold Privately***
  - ✓ **Private placement**
- ***Other transaction methods***
  - ✓ **Shelf registration**
  - ✓ **Dividend Reinvestment Plan**
  - ✓ **Rights Offering**
  - ✓ **Competitive bids**
  - ✓ **Negotiated sales**

Organization of the securities market

- **How securities are sold through primary market- Sold Publicly :**
  - ***Underwritten Offering*** **(the most common way)**
    - ✓ **Investment bank purchases the entire issue at a price that is negotiated between the issuer and bank.**
    - ✓ **Investment bank bears the risk of buying the unsold portion of securities if the target number of shares to be issued does not meet.**
  - ***Best Efforts***
    - ✓ **Unlike underwriting offering, the investment bank doesn't purchase the whole issue.**
    - ✓ **Bank is not obligated to buy the unsold portion if the issue is undersubscribed.**
  - **Indications of Interest**

Organization of the securities market

- **How securities are sold through primary market- Sold Publicly :**
  - **Difference between underwritten offering and best efforts**

Underwritten offering	Best Efforts
Obligated to buy the unsold portion	**Not obligated to buy the unsold portion**
Investment bank would prefer that the price be set low enough to gain more profit	**Investment bank sets the issue price as high as possible to raise the most funds for the issuer**

Organization of the securities market

- **How securities are sold through primary market- Sold Publicly :**
  - Underwritten Offering
  - Best Efforts
  - ***Indications of Interest***
    - ✓ ***Indications of interest*: the investment bank finds investors who agree to buy part of the issue.**
    - ✓ **This process of gathering indications of interest is called *book building*, and the investment bank during this process is called *book builder or book runner*.**
    - ✓ **If securities must be issued quickly, the process is called *accelerated book building*.**

Organization of the securities market

- **How securities are sold through primary market- Sold Privately :**
  - ***Private placement***
    - ✓ **Securities are sold directly to qualified investors, typically *with the assistance of an investment bank*.**
  - ***Shelf registration***
    - ✓ **In a shelf registration a firm makes its public disclosures as in a regular offering, but then issues the registered securities over time when it needs capital and when the markets are favorable.**
  - ***Dividend Reinvestment Plan***
    - ✓ **A dividend reinvestment plan (DRP or DRIP) allows existing shareholders to use their dividends to buy new shares from the firm at a slight discount.**
  - ***Rights Offering***
    - ✓ **In rights offering, existing shareholders are given the right to buy new shares at a discount to the current market price.**

Organization of the securities market

➢ Secondary Capital Markets

- **The secondary market is the place where securities are traded after their initial offerings.**
- **The secondary market supports the primary market by providing:**
  - ✓ ***Liquidity***
    - **Investors who buy stocks in the primary markets want to sell then again to acquire other securities such as risk free bonds and cash.**
  - ✓ ***Price discovery***
    - **New issues of stocks and bonds are based on prices in the secondary markets.**

Organization of the securities market

➢ Secondary Capital Markets

- ***When*** **securities are traded in a secondary market**
  - ✓ ***Call Markets***
    - **Trading for individual stocks occurs *at specific times*.**
    - **All bids and asks are gathered and then a negotiated price is produced to make the demand quantity as close as possible to the supply quantity.**
  - ✓ ***Continuous Markets***
    - **Trades occur at any time when market is open.**
    - **The price is determined either by an auction process or through a dealer bid-ask process. There are differences between dealer markets and an auction market in continuous markets.**

Organization of the securities market

➢ Secondary Capital Markets

- ***How*** **securities are traded in Secondary Markets**
  - ✓ **Order-Driven Market**
  - ✓ **Quote-Driven Market**
  - ✓ **Brokered Markets**

Organization of the securities market

➢ Secondary Capital Markets

- ***How*** **securities are traded in Secondary Markets**
  - ✓ ***Order-Driven Market***
    - **In order-driven market, orders are executed using trading rules, which are necessary because traders are usually anonymous. Exchanges and automated trading systems are examples of order-driven markets.**
  - ✓ **Quote-Driven Market**
  - ✓ **Brokered Markets**

Organization of the securities market

➢ Secondary Capital Markets

- ***How*** **securities are traded in Secondary Markets-** ***Order-Driven Market***
- **Two sets of rules are used in these markets:**
  - ✓ ***Order matching rules:*** **establish an** ***order precedence hierarchy.***
    - ***Price priority*****: trades with the highest bid (buy) and lowest ask (sell) prices are traded first, this is so-called price priority.**
    - ***Secondary precedence rule*****: if orders are at the same prices, the earliest arriving orders are traded first.**
  - ✓ ***Trade pricing rules:*** **are used to determine the price after orders are created using order matching rules.**
    - ***Under the uniform pricing rule*****, all orders trade at the same price, which is the price that results in the highest volume of trading.**
    - ***The discriminatory pricing rule*** **uses the limit price of the order that arrived first as the trade price.**
    - ***The derivative pricing rule*****, orders are batched together and crossed(matched) at fixed points in time during the day at the average of the bid and ask quotes from the exchange where the stock primarily trades.**

Organization of the securities market

➢ Secondary Capital Markets

- ***How*** **securities are traded in Secondary Markets**
  - ✓ **Order-Driven Market**
  - ✓ ***Quote-Driven Market***
    - **Quote-driven market is also referred to as a *dealer market, a price-driven market* or *an over-the-counter market*. Individual dealers provide liquidity for investors by buying and selling the shares of stock for themselves.**
    - **Numerous dealers compete against each other to provide the highest bid prices when investors are selling and the lowest asking price when investors are buying stock.**
  - ✓ **Brokered Markets**

Organization of the securities market

➢ Secondary Capital Markets

- ***How*** **securities are traded in Secondary Markets**
  - ✓ **Order-Driven Market**
  - ✓ **Quote-Driven Market**
  - ✓ ***Brokered Markets***
    - **In brokered markets, brokers trade with the counterparty they find.**
    - **This service is especially valuable when the trader has a security that is unique or illiquid.**

Organization of the securities market

➢ Secondary Capital Markets

- ***How*** **securities are traded in Secondary Markets**
  - ✓ **Comparison between Quote-Driven Market and Order-Driven Market**

Quote-Driven Market	Order-Driven Market
Dealers make a market in the stock, which means that they are willing to buy or sell for their own account at a specified bid-and-ask price.	Enough buyers and sellers are trading to allow the market to be continuous

Organization of the securities market

➢ Market Information

- ***Pre-trade transparent***
  - ✓ **Investors can obtain pre-trade information regarding quotes and orders.**
- ***Post-trade transparent***
  - ✓ **Investors can obtain post-trade information regarding completed trade prices and sizes.**
- ***Buy-side traders*** **value transparency because it allows them to better understand security values and trading costs.**
- ***Dealers*****, on the other hand, prefer opaque markets because this provides them with an informational advantage over traders who trade less frequently in the security.**
- ***Transactions costs*** ***and*** ***bid-ask spreads*** ***are*** ***larger in opaque markets*****.**

Organization of the securities market

- **The most important difference between primary market and secondary market is the function.**
  - **The functioning of primary capital market is *financing*.**
  - **The secondary capital market is providing *liquidity*.**

Instructions of transaction processes

- **Securities dealers provide prices at which they will buy and sell shares.**
  - ***The bid price*: is the price at which a dealer will buy a security;**
  - ***The ask or offer price*: is the price at which a dealer will sell a security.**
  - ***The bid-ask spread*: is the difference between the bid and ask prices.**
  - **The bid and ask are quoted for specific trade sizes (bid size and ask size).**
- **The quotation in the market is the highest dealer bid and lowest dealer ask from among all dealers in a particular 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*.**

Instructions of transaction processes

- **When investors want to buy or sell, they must enter orders that specify the size of the trade and whether to buy or sell.**
  - ***Execution instructions*: that specify how to trade;**
  - ***Validity instructions*: that specify when the order can be filled;**
  - ***Clearing instructions*: that specify how to settle the trade.**

Instructions of transaction processes

➢ Execution Instructions

- **The most common orders**
  - ✓ ***Market orders*: are the orders to buy or sell a security at the best current price, is the most frequent type of order.**
  - ✓ ***Limit orders*: specify the buy or sell order. Limit orders waiting to execute are called *standing limit orders*.**
    - ***Mark the market*: a limit buy order at best bid or a limit sell order at the best.**
    - ***Behind the market*: a buy order with a limit price below the best bid, or a sell order with a limit price above the best ask.**
    - ***Far from the market*: a 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.**

Instructions of transaction processes

➢ Execution Instructions

- **Instructions concern the volume of the trade:**
  - ✓ ***All-or-nothing orders*** **execute only if the whole order can be filled.**
- **Instructions concern the visibility of the trade:**
  - ✓ ***Hidden orders*** **are those for which only the broker or exchange knows the trade size.**
  - ✓ ***Iceberg orders*** **are orders that traders can also specify certain aspects of the trade so that only part of the trade is visible to the market.**

Instructions of transaction processes

- **Validity Instructions:**
  - **Validity instructions specify when an order should be executed.**
    - ✓ ***Day orders*: means the orders expire if unfilled by the end of the trading day.**
    - ✓ ***Immediate or cancel orders*: are cancelled unless they can be filled immediately. They are also known as *fill or kill orders*.**
    - ✓ ***Good-on-close orders*: are only filled at the end of the trading day. If they are market orders, they are referred to as *market-on-close orders*.**
    - ✓ ***Good-on-open orders*: are only filled at the open of the trading day.**

Instructions of transaction processes

- **Validity Instructions:**
  - **Validity instructions specify when an order should be executed.**
    - ✓ ***Stop orders*: are those that are not executed unless the stop price has been met. They are often referred to as stop loss orders because they can be used to prevent losses or to protect profits.**
      - **Stop-sell order: If the investor wants to sell out of the position if the price falls 10% to $45, he can enter a stop-sell order at $45. If the stock trades down to $45 or lower, this triggers a market order to sell.**
      - **Stop-buy: is entered with at stop (trigger) above the current market price. Two primary reasons are: (1) A trader with shot position; (2)an investor who believes a stock is undervalued, but does not wish to own it until there are signs.**
      - **Stop orders *reinforce market momentum*.**

Instructions of transaction processes

➢ Clearing Instructions

- **Clearing instructions tell the trader how to clear and settle a trade..**
- **They are usually standing instructions and not attached to an order.**

Framework of Equity

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Introduction of security market index

➢ Definitions about Market Indexes

- ***A security market index*: is used to represent the *performance* of an asset class, security market, or segment of a market.**
  - ✓ ***Price index*:**
    - **A price index uses *only the prices* of the constituent securities in the return calculation.**
    - **A rate of return that is calculated based on a price index is referred to as a *price return*.**
  - ✓ ***Return index*:**
    - **A return index includes *both prices and income* from the constituent securities.**
    - **A rate of return that is calculated based on a return index is called a *total return*.**

Introduction of security market index

How an index is constructed

- What is the target market the index is intended to measure?
- Which securities from the target market should be included in the index?
- How should the securities be weighted in the index?
- How often should the index be rebalanced?
- When should the selection and weighting of securities be re-examined?

Introduction of security market index

Uses of Security-Market Indexes

- **Reflection of investor confidence.**
- **Benchmark of manager performance.**
- **Measure of market return and risk.**
- **Measure of beta and risk-adjusted return.**
- **Model portfolio for index funds.**

Methods of index construction

- **Weighting schemes for stock indexes:**
  - **Price-Weighted Index**
  - **Equal-Weighted Index**
  - **Market Capitalization-Weighted Index**
  - **A Float-Adjusted Market Capitalization-Weighted Index**
  - **Fundamental weighting**

Methods of index construction

➢ Weighting schemes for stock indexes: *Price-Weighted Index*

- **A price-weighted index is an arithmetic average of current security prices, which means that indexes movements are influenced by the differential prices of the components. The price-weighted index assumes you purchase an equal number of shares (one) of each stock represented in the index.**

$$\text{price-weighted index} = \frac{\text{sum of stock prices}}{\text{number of stocks in index adjusted for splits}}$$

- ✓ **The Dow Jones Industrial Average (DJIA) is the best-known price-weighted series and also the oldest and most popular stock-market indicator series.**
- ✓ **The Nikkei Dow Jones Stock Average is the arithmetic average of the prices of 225 stocks traded in the first section on TSE.**

Methods of index construction

- **Weighting schemes for stock indexes: *Equal-Weighted Index***
  - **The arithmetic average return of the index stocks for a given time period**
  - **Places an equal weight on the returns of all index stock, regardless of their price or market value.**
  - **Two averaging methodologies to the calculation of an un-weighted index:**
    - ✓ ***Arithmetic mean*: X_i is the return on each stock**

$$\text{change in average index value} = \frac{\sum x_i}{n}$$

    - ✓ ***Geometric mean*: $X_i = 1 + HPR_i$**

$$\text{change in average index value} = \sqrt[n]{x_1 x_2 \times\times\times x_n} - 1$$

    - ✓ **The geometric-averaged index value is always *less* than the arithmetic-averaged index value.**

Methods of index construction

- **Weighting schemes for stock indexes: *Equal-Weighted Index***
  - **The major indexes adopting equal-weighted scheme are:**
    - ✓ ***Value-Line (VL) Composite Average*** **→geometrically averaged**
    - ✓ ***Financial Times Ordinary Share Index*** **→geometrically averaged**
    - ✓ **Most academic studies adopt the arithmetically averaged unweighted index values**

Methods of index construction

- **Weighting schemes for stock indexes: *Market Capitalization-Weighted Index***
  - **A market capitalization-weighted index (or value-weighted index) has weights based on the market capitalization of each index stock (current stock price times the number of shares outstanding) as a *proportion of the total market capitalization of all the stocks in the index*.**
  - **Current index value=**

$$\frac{\text{current total market value of index stocks}}{\text{base year total market value of index stocks}} \times \text{base year index value}$$

Methods of index construction

- **Weighting schemes for stock indexes: *A Float-Adjusted Market Capitalization-Weighted Index***
  - **Is constructed like a market capitalization-weighted index.**
  - **The weights are based on the proportionate value of each firm's shares that are available to investors to the total market value of the shares of index stocks that are available to investors.**

Methods of index construction

- **Weighting schemes for stock indexes: *Fundamental weighting***
  - **Uses weights based on firm fundamentals, such as earnings, dividends, or cash flow.**
  - ***Advantage*: it avoids the bias of market capitalization-weighted indexes toward the performance of the shares of overvalued firms and away from the performance of the shares of undervalued firms.**
  - ***Features*: value-tilted, contrarian-style**

Security-Market Indexes - Example

➢ **Example：**

Price-weight Index

Given the information for the three stocks presented in Figure 1, calculate a price-weighted and value-weighted return over a 1-month period. The base value is 100.

Figure 1

As of December 31, 2000				As of January 31, 2001			
	Share Price	Number of Shares	Market Value		Share Price	Number of Shares	Market Value
Stock X	$10	3,000	$30,000	Stock X	$20	3,000	$60,000
Stock Y	$20	1,000	$20,000	Stock Y	$15	1,000	$15,000
Stock Z	$60	500	$30,000	Stock Z	$40	500	$20,000
Total	$90	4,500	$80,000	Total	$75	4,500	$95,000

Security-Market Indexes – Example

➢ **Example:**

Unweighted (equally-weighted) Index

Calculate both the arithmetic and geometric unweighted index values for the three stocks described in Figure 2, assuming an initial index value of 131.

Figure 2

Stock	Initial Price	Current Price	Price Change
A	12.00	15.00	+25%
B	52.00	48.00	-7.7%
C	38.00	45.00	+18.4%

Methods of index construction

➢ Rebalancing and Reconstitution

- ***Rebalancing***:
  - ✓ **is used to adjusting the weights of securities in a portfolio to their target weights since price changes may affect the weights of securities used to calculate the indexes**
  - ✓ **Rebalancing is done on a periodic basis, usually quarterly.**
- ***Reconstitution***:
  - ✓ **Index reconstitution refers to periodically adding and deleting securities that make up an index.**
  - ✓ **Securities are deleted if they no longer meet the index criteria and are replaced by other securities.**

Characteristics of Equity Indexes

Characteristics of Equity Indexes (Summary)

- **Broad market index**
- **Multi-market index**
- **Multi-market index with fundamental weighting**
- **Sector Index**
- **Style index**

Characteristics of Equity Indexes

- ***Broad market index***
  - **Provides a measure of a market's overall performance and usually contains more than 90% of the market's total value.**
- ***Multi-market index***
  - **Typically constructed from the indexes of markets in several countries and is used to measure the equity returns of a geographic region, markets based on their stage of economic development, or the entire world.**
- ***Multi-market index with fundamental weighting***
  - **Uses market capitalization weighting for the country indexes, and uses fundamental factor (e.g., GDP) to weights the country index returns in the global index.**
- **Sector Index**
- **Style index**

Characteristics of Equity Indexes

- Broad market index
- Multi-market index
- Multi-market index with fundamental weighting
- ***Sector Index***
  - **Measures the returns for an industry sectors such as health care, financial, or consumer goods firms.**
- ***Style index***
  - **Measures the returns to market capitalization and value or growth strategies.**

Characteristics of Fixed-Income Indexes

- **Several issues with the construction of fixed income indexes:**
  - ***Large universe of securities:***
    - ✓ **The fixed income security universe is much *broader* than the universe of stocks.**
    - ✓ **are issued not just by firms, but also by governments and government agencies.**
    - ✓ **turnover is *high* in fixed income indexes since bond may mature and be replaced in the index.**
  - ***Dealer markets and infrequent trading:***
    - ✓ **Fixed income securities are primarily traded by dealers, so index providers must depend on dealers for recent prices.**

Characteristics of Alternative Investment Indexes

- **There are three of the most widely held alternative assets:**
  - **Commodities**
  - **Real estate**
  - **Hedge funds**
- **Corresponding Indexes:**
  - **Commodity indexes**
  - **Real estate indexes**
  - **Hedge Fund Indexes**

Characteristics of Alternative Investment Indexes

➢ Alternative Investment Indexes- *Commodity indexes*

- **Commodity indexes represent futures contracts on commodities such as grains, livestock, metals, and energy.**
- **There are several issues relevant to commodity indexes:**
  - ✓ **A variety of weighting schemes.**
  - ✓ **Based on futures contracts**
  - ✓ **Compositions are changed over time,**

Characteristics of Alternative Investment Indexes

➢ Alternative Investment Indexes- *Real estate indexes*

- **Real estate indexes can be constructed using returns based on appraisals of properties, repeat property sales, or the performance of Real Estate Investment Trusts (REITs).**

Characteristics of Alternative Investment Indexes

- **Alternative Investment Indexes- *Hedge Fund Indexes***
  - **Underlying assets are usually nontraditional assets with high leverage.**
  - **Hedge funds are largely unregulated.**
  - **Performance of different indexes are vary substantially.**

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Efficient Capital Market and its Forms

➢ Efficient Capital Market and the Assumptions

- **An informational efficient capital market is where security prices adjust rapidly to the infusion of new information**
- **Current security prices fully reflect all available information.**
- **One method of measuring a market's efficiency is to determine the time it takes for trading activity to cause information to be reflected in security prices**
  - ✓ **If there is a significant lag, informed traders can use the information to potentially generate positive risk-adjusted returns.**
- **Market prices should not be affected by the release of information that is *well anticipated*.**

Efficient Capital Market and its Forms

- **In markets that are highly efficient, investors can typically expect market values to reflect intrinsic values.**
  - **The *market value*: of an asset is its current price.**
  - **The *intrinsic value or fundamental value* of an asset: is the value that a rational investor with full knowledge about the asset's characteristics would willingly pay.**
  - **In markets that are highly efficient, investors can typically expect market values to reflect intrinsic values.**
  - **If markets are not completely efficient, active managers will buy assets for which they think intrinsic values are greater than market values and sell assets for which they think intrinsic values are less than market values.**

Efficient Capital Market and its Forms

➢ Factors affect the degree of market efficiency

- ***Number of market participants***
  - ✓ **The larger the number of investors, analysts, and traders who follow an asset market, the more efficient the market.**
- ***Availability of information***
  - ✓ **The more information is available to investors, the more efficient the market.**
  - ✓ **Access to information should not favor one party over another.**
- ***Impediments to trading***
  - ✓ **Arbitrage refers to buying an asset in one market and simultaneously selling it at a higher price in another market.**
  - ✓ **Impediments to arbitrage (high transactions costs or lack of information) will limit arbitrage activity and allow some price inefficiencies to persist.**
- **Transaction and information costs**

Efficient Capital Market and its Forms

- **Factors affect the degree of market efficiency**
  - Number of market participants
  - Availability of information
  - Impediments to trading
  - ***Transaction and information costs***
    - ✓ **To the extent that the costs of information, analysis, and trading are greater than the potential profit from trading miss-valued securities, market prices will be inefficient.**

Efficient Capital Market and its Forms

- **Three forms of market efficiency:**
  - ***The weak-form EMH*:**
    - ✓ **assumes that current stock prices fully reflect *all security-market information* such as historical sequence of price, rate of return, trading volume data, and other market generated information.**
    - ✓ **An investor cannot achieve positive risk-adjusted returns on average by using technical analysis.**
    - ✓ **Technical analysts assume that market are *weak-form inefficient*.**

Efficient Capital Market and its Forms

- **Three forms of market efficiency:**
  - ***The semi-strong form EMH*: assumes that security prices adjust rapidly to the release of *all public information*, which means current stock prices fully reflect all public information.**
    - ✓ **Besides market information, public information also includes all non-market/fundamental information**
    - ✓ **An investor cannot achieve positive risk-adjusted returns on average by using *fundamental analysis*.**
    - ✓ **Fundamental analysis assume that market are *semi-strong-form inefficient*.**

Efficient Capital Market and its Forms

- **Three forms of market efficiency:**
  - ***The strong-form EMH:*** **assumes that stock prices fully reflect *all information from public and private sources*.**
    - ✓ **all information is cost-free and available to everyone at the same time.**
    - ✓ **No group of investors has monopolistic access to information relevant to the formation of prices, and none should be able to consistently achieve positive abnormal returns.**

Efficient Capital Market and its Forms

➢ **Three forms of market efficiency:**

Types	Assumption	Implication
Weak-Form EMH	Market info.	Technical Analysis ✗
Semi Strong-Form EMH	Public info.	Technical Analysis ✗ Fundamental Analysis ✗
Strong-Form EMH	All info.	Technical Analysis ✗ Fundamental Analysis ✗ Nobody can win the market

100% Contribution Breeds Professionalism

Efficient Capital Market and its Forms

➢ Three forms of market efficiency:

- ***Abnormal profit*** **(or** ***risk-adjusted returns*****) calculations are often used to** ***test market efficiency*****. To calculate abnormal profits, the expected return for a trading strategy is calculated given its risk, using a model of expected returns such as the CAPM or a multifactor model. If returns are,** ***on average*****,** ***greater than equilibrium expected returns*****, we can reject the hypothesis of efficient prices with respect to the information on which the strategy is based.**

Tests, Implications and Conclusions of EMH

➢ Market Anomalies

- ***Definition*: something deviates and helps to disprove the EMH**
- **Most evidence suggests anomalies are not violations of market efficiency but are due to the methodologies used in anomaly research, such as data mining or failing to adjust adequately for risk.**

Tests, Implications and Conclusions of EMH

➢ Market Anomalies-Anomalies in *Time-series data*

- ***Calendar anomalies***
  - ✓ **The January effect or turn-of-the-year effect is the finding that during the first five days of January, stock returns, especially for small firms, are significantly higher than they are the rest of the year.**
- ***Momentum anomalies***
  - ✓ **The overreaction effect refers to the finding that firms with poor stock returns over the previous three or five years (losers) have better subsequent returns than firms that had high stock returns over the prior period.**

Tests, Implications and Conclusions of EMH

- **Anomalies in *cross-sectional data***
  - ***Size effect*: This test indicates that stocks of small-sized firms tend to outperform stocks of large-sized firms**
  - ***Value effect*: refers to the finding that value stocks [those with lower price-to-earnings *(P/E)*, lower market-to-book (M/B), and higher dividend yields] have outperformed growth stocks (those with higher P/E, higher *M/B*, and lower dividend yields)**
- **Other identified anomalies**
  - ***Closed-end investment funds*: The shares of closed-end investment funds trade at prices that sometimes deviate from the net asset value (NAV) of the fund shares, often trading at large discounts to NAV.**

Tests, Implications and Conclusions of EMH

- Market Anomalies-Anomalies in time-series data
- Anomalies in cross-sectional data
- Other identified anomalies
  - ***Earnings announcements*: The anomaly is that the adjustment process does not occur entirely on the announcement day.**
  - ***Initial public offerings*: the long-term performance of IPO shares as a group is below average.**
  - ***Economic fundamentals*: Research has found that stock returns are related to known economic fundamentals such as dividend yields, stock volatility, and interest rates. However, we would expect stock returns to be related to economic fundamentals in efficient markets.**

Behavioral Finance

- **Behavioral finance:**
  - **concerns about to what extent the psychological characteristics affect investments either by individuals or groups.**
- **Behavioral biases that have been identified include**
  - ***Loss aversion:*** **refers to the tendency for investors to be more risk averse when faced with potential losses and less risk averse when faced with potential gains.**
  - ***Overconfidence bias*****: explains that investors or analysts are overconfident in their earning forecasts which result in the overestimation of growth, good news.**
- **Rational vs. Irrational**
  - **Efficient market hypothesis that *only market is rational***
  - **Behavioral finance is used to explain some of the market anomalies as irrational decisions.**

Behavioral Finance

- **Behavioral biases that have been identified include**
  - ***Representativeness*: Investors assume good companies or good markets are good investments.**
  - ***Gambler's fallacy*: Recent results affect investor estimates of future probabilities.**
  - ***Mental accounting*: Investors classify different investments into separate mental accounts instead of viewing them as a total portfolio.**
  - ***Conservatism*: Investors react slowly to changes.**
  - ***Disposition effect:* Investors are willing to realize gains but unwilling to realize losses.**
  - ***Narrow framing*: Investors view events in isolation.**
  - ***Herding behavior*: trading that occurs in clusters and is not necessarily driven by information.**

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Characteristics of equity securities

➢ Equity Securities

- **Equity securities are an important asset because they offer return and risk characteristics that are different from those of fixed income securities.**
- ***Method of determining the market's valuation of global equity*: examine the capitalization of global equity markets as a proportion of world GDP.**
- **As a proportion of the world equity market, the U.S. equity market appears *overvalued* relative to U.S. GDP.**

Characteristics of equity securities

➢ Classification of Equity Securities

- ***Common Shares*:**
  - ✓ **are the most common form of equity and represent an ownership interest. Common shareholders have a *residual claim* (after the claims of debt holders and preferred stockholders) on firm assets if the firm is liquidated and govern the corporation through *voting rights*.**
    - **In a statutory voting system, each share held is assigned one vote in the election of each member of the board of directors.**
    - **Under cumulative voting, shareholders can allocate their votes to one or more candidates as they choose.**

Characteristics of equity securities

➢ Classification of Equity Securities

- ***Callable common shares***
  - ✓ **Callable common shares give the firm the right to repurchase the stock at a pre-specified call price. Investors receive a fixed amount when the firm calls the stock.**
- ***Putable common shares***
  - ✓ **Putable common shares give the shareholder the right to sell the shares back to the firm at a specific price. A put option on the shares benefits the shareholder because it effectively places a floor under the share value.**

Callable common share	***Advantage to firm***
Putable common share	***Advantage to shareholder***

Characteristics of equity securities

➢ Classification of Equity Securities

- ***Preference shares***
  - ✓ **Preference shares (or preferred stock) have features of both common stock and debt.**
    - ***Features of common stock*: do not mature**
    - ***Features of debt*: fixed dividend payment, but dividends are not contractual obligation.**
    - **Preferred shares have *less risk* than common shares because the dividend is stable and they have priority over common stock in receiving dividends and in the event of liquidation of the firm.**
- ***Cumulative preference shares***
  - ✓ **are usually promised fixed dividends and any dividends that are not paid must be made up before common shareholders can receive dividends.**

Preference shares	**Dividends are not contractual obligation.**
Cumulative preference shares	**Promised fixed dividends**

Characteristics of equity securities

- **Classification of Equity Securities**
  - ***Convertible preference shares***
    - ✓ **Convertible preference shares can be exchanged for common stock at a conversion ratio determined when the shares are originally issued.**
    - ✓ **It has the following *advantages*:**
      - **The preferred dividend is *higher* than a common dividend.**
      - **If the firm is profitable, the investor can share in the profits by converting their shares into common stock.**
      - **Turns more valuable when the common stock price increases.**

Characteristics of equity securities

- **A firm may have different classes of common stock**
  - **One class may have *greater voting power* and *seniority if the firm's assets* are liquidated.**
  - **Information on the ownership and voting rights of different classes of equity shares can be found in the company's filings with securities regulators, such as the Securities and Exchange Commission in the United States.**

Private Equity Securities

- **Private equity**
  - **is usually issued to institutional investors via private placements.**
- **Private equity has the following characteristics:**
  - ***Less liquidity*** **because no public market for the shares exists.**
  - **Share price is *negotiated between the firm and its investors*, not determined in a market.**
  - **More *limited firm financial disclosure* because there is no government or exchange requirement to do so.**
  - ***Lower reporting costs*** **because of less onerous reporting requirements.**
  - ***Potentially weaker corporate governance*** **because of reduced reporting requirements and less public scrutiny.**
  - **Greater ability to *focus on long-term prospects* because there is no public pressure for short-term results.**
  - **Potentially *greater return for investors* once the firm goes public.**

Private Equity Securities

- **The three main types of private equity investments are:**
  - ***Venture capital*: refers to the capital provided to firms early in their life cycles to fund their development and growth.**
  - ***Leveraged buyout (LBO),* investors buy all of a firm's equity using debt financing (leverage).**
  - ***Private investment in public equity (PIPE),* a public firm that needs capital quickly sells private equity to investors.**

Non-domestic Equity Securities

- **Direct investing**
  - Direct investing in the securities of foreign companies simply refers to buying a foreign firm's securities in foreign markets.
- **Depository receipts**
  - Depository receipts (DRs) represent ownership in a foreign firm and are traded in the markets of other countries in local market currencies.
- **Global registered shares**
  - Global registered shares (GRS) are traded in different currencies on stock exchanges around the world.
- **Basket of listed depository receipts**
  - A basket of listed depository receipts (BLDR) is an exchange-traded fund (ETF) that is a collection of DRs.

Non-domestic Equity Securities

➢ Depository receipts

- **Depository receipts (DRs) represent ownership in a foreign firm and are traded in the markets of other countries in local market currencies. A bank deposits shares of the foreign firm and then issues receipts representing ownership of a specific number of the foreign shares.**
  - ✓ ***Sponsored DR*: If the firm is involved with the issue, the depository receipt is a sponsored DR.**
  - ✓ ***Unsponsored DR*: If the firm is not involved with the issue, the depository receipt is a unsponsored DR.**
  - ✓ ***Global depository receipts (GDRs)* are issued outside the U.S. and the issuer's home country. Most GDRs are traded on the London and Luxembourg exchanges.**
  - ✓ ***American depository receipts (ADRs)* are denominated in U.S. dollars and trade in the United States.**

Risk and Return Characteristics of Equity Securities

- **Equity returns:**
  - Consist of dividends
    - ✓ *Gains* from dividends and the reinvestment of dividends have been an important part equity investors' long-term returns.
  - capital gains or losses from changes in share prices
  - foreign exchange gains or losses.
- **Equity risk:**
  - is most commonly measured as the standard deviation of returns.
  - Preferred stock is *less risky* than common stock
    - ✓ preferred stock pays a known, fixed dividend
    - ✓ preferred stockholders receive their distributions before common shareholders
    - ✓ have a claim in liquidation priority over the claims of common stock.

Risk and Return Characteristics of Equity Securities

➢ Equity risk (Cont.):

- **Cumulative preferred shares have *less risk* than non-cumulative preferred shares**
  - ✓ **Cumulative preferred shares retain the right to receive any missed dividends before any common stock dividends can be paid.**
- **Putable shares are *less risky for investor* (for both common and preferred shares)**
  - ✓ **if the market price drops, the investor can put the shares back to the firm at a fixed price**
- **and callable shares are *more risky for investor* (for both common and preferred shares)**
  - ✓ **if the market price rises, the firm can call the shares, limiting the upside potential of the shares.**

Risk and Return Characteristics of Equity Securities

➢ Role of Equity Securities

- **Equity securities provide funds to the firm**
  - ✓ **to buy productive assets**
  - ✓ **to buy other companies**
  - ✓ **to offer to employees as compensation.**
- **Equity securities provide liquidity that may be important when the firm must raise additional funds.**

Market Value and Book Value

- **The book value of equity:**
  - **Is the value of the firm's assets on the balance sheet minus its liabilities.**
- **The market value of equity:**
  - **Is the total value of a firm's outstanding equity shares based on market prices and reflects the expectations of investors about the firm's future performance.**
- **Return on Equity**
  - **A key ratio used to determine management efficiency is the accounting return on equity, usually referred to simply as the return on equity (ROE).**

$$ROE_t = \frac{NI_t}{average\ BV} = \frac{NI_t}{(BV_t + BV_{t-1})/2}$$

Investors' Required Return and the Cost of Equity

- **Cost of equity:**
  - **The expected equilibrium total return (including dividends) on its shares in the market.**
    - ✓ **At any point in time, a decrease in share price will increase the expected return on the shares and an increase in share price will decrease expected returns, other things equal.**
    - ✓ **A firm's cost of equity can be interpreted as the minimum rate of return required by investors (in the aggregate) to compensate them for the risk of the firm's equity shares.**

Framework of Equity

- **Study Session 13 — Market Organization, Indices and Efficiency**
  - **R46 Market Organization and Structure**
  - **R47 Security Market Indices**
  - **R48 Market Efficiency**
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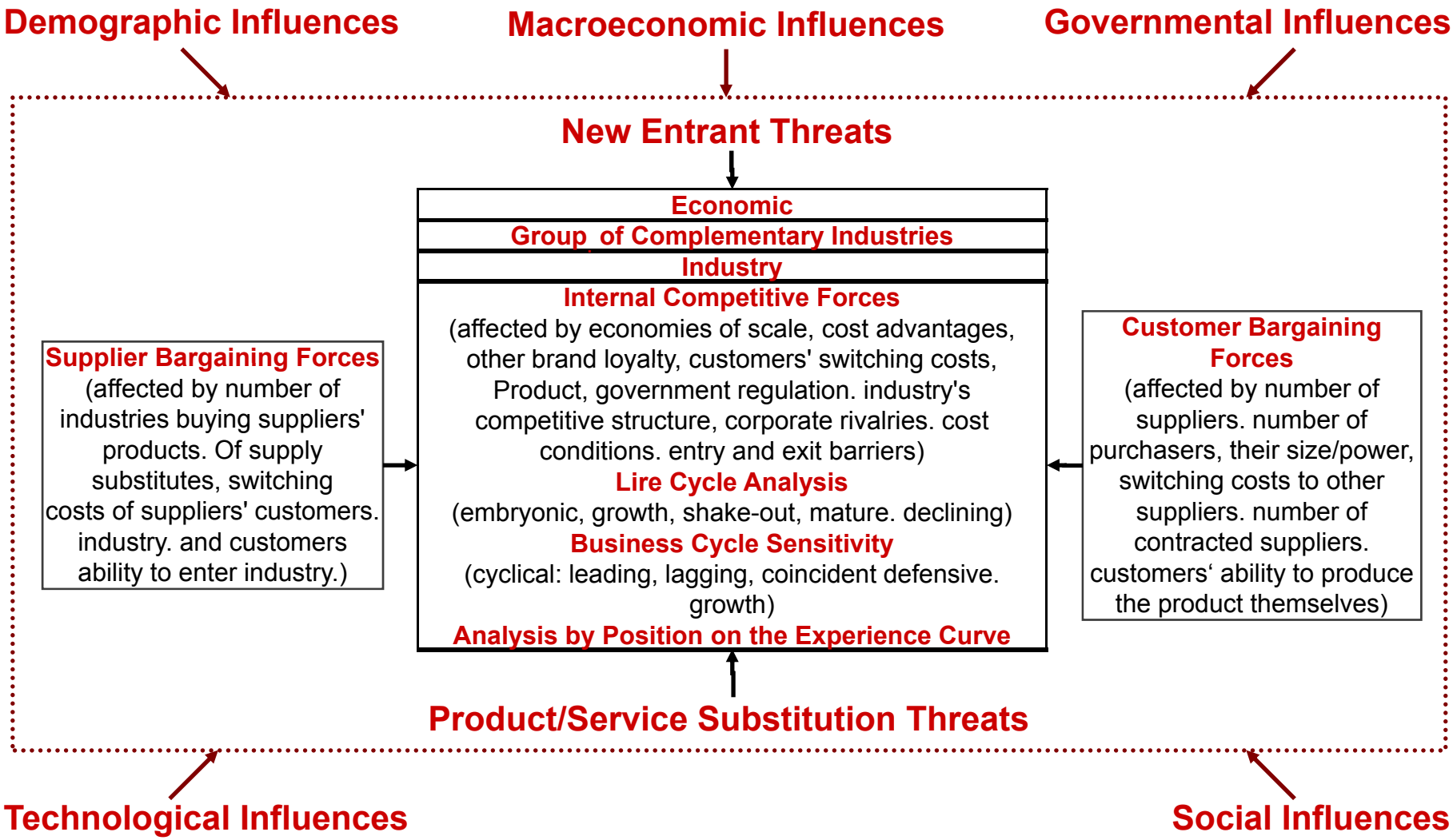
  - **R49 Overview of Equity Securities**
  - **R50 Introduction to Industry and company Analysis**
  - **R51 Equity Valuation: Concept and Basic Tool**

Three-Step Valuation Process

- **Top-down process**
  - **General Economic Influence;**
  - **Industry Influences;**
  - **Company Analysis.**
- **Economic and industry environment will have a major influence on the success of a firm and the realized rate of return on its stock.**

Three-Step Valuation Process

➢ Framework for industry analysis



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General Economic Influence

➢ Structural Economic Changes

- ***Macroeconomic factors***
  - ✓ **Can be cyclical or structural (longer-term) trends, most notably economic output as measured by GDP or some other measure, such as interest rates, inflation and education level.**
- ***Technology***
  - ✓ **Change an industry dramatically through the introduction of new or improved products.**
- ***Demographics***
  - ✓ **The demographics includes not only the population growth and the age distributions, but also the geographical distribution of people, the changing ethnic mix in a society, and changes in income distribution.**
- ***Governments***
  - ✓ **today's social trend may be tomorrow's law, regulation, or tax**
- ***Social influence***
  - ✓ **How people work, play, spend their money, and conduct their lives.**

Industry Influences

➢ Industry Classification System (*Need to be remembered*)

- **Classification by the products and services they offer**
  - ✓ **Basic materials and processing firms**
  - ✓ **Consumer discretionary firms**
  - ✓ **Consumer staples firms**
  - ✓ **Energy firms**
  - ✓ **Financial services firms**
  - ✓ **Health care**
  - ✓ **Industrial and producer durables firms**
  - ✓ **Technology firms**
  - ✓ **Telecommunications firms**

Classify a company, given a description of its activities and the classification system.

Industry Influences

➢ Industry Classification System (Cont.)

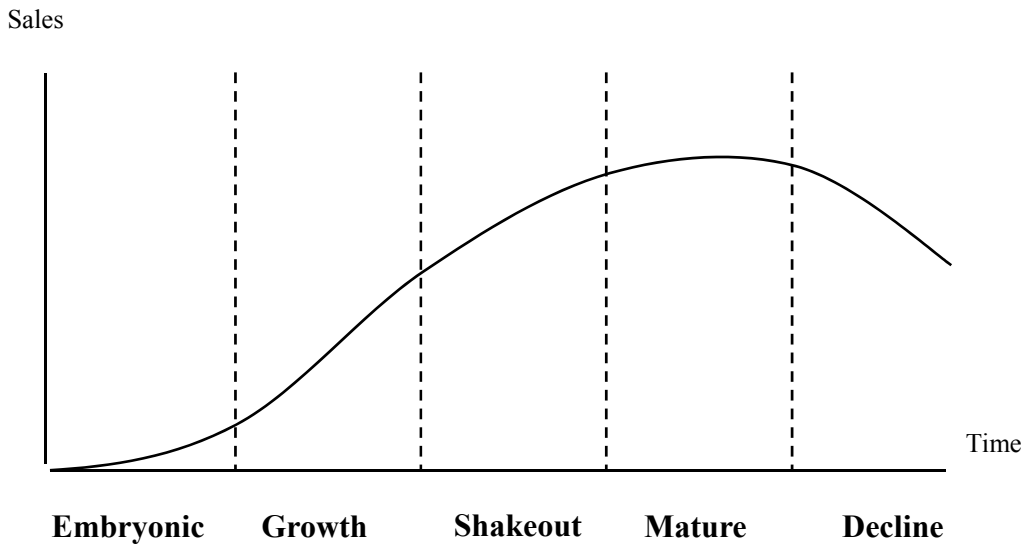
- **Classification by their sensitivity to business cycles**
  - ✓ ***Industry Life Cycle***
    - **Embryonic stage**
    - **Growth stage**
    - **Shakeout stage**
    - **Mature stage**
    - **Decline stage**

Industry Influences

➢ Industry Classification System (Cont.)

- **Classification by their sensitivity to business cycles**
  - ✓ ***Industry Life Cycle***

Industry Life Cycle Model



Industry Influences

➢ Industry Classification System (Cont.)

- **Classification by their sensitivity to business cycles**
  - ✓ ***Industry Life Cycle***
    - ***Embryonic stage*: the industry has just started**
      - ***Slow growth:* customers are unfamiliar with the product.**
      - ***High prices:* the volume necessary for economies of scale has not been reached.**
      - ***Large investment required.* to develop the product.**
      - ***High risk of failure:* most embryonic firms fail.**

Industry Influences

➢ Industry Classification System (Cont.)

- **Classification by their sensitivity to business cycles**
  - ✓ ***Industry Life Cycle***
    - ■ ***Growth stage*** **(industry growth is rapid)**
      - ***Rapid growth:*** **new consumers discover the product.**
      - ***Limited competitive pressures:*** **The threat of new firms coming into the market peaks during the growth phase, but rapid growth allows firms to grow without competing on price.**
      - ***Falling prices:*** **economies of scale are reached and distribution channels increase.**
      - ***Increasing profitability:*** **due to economies of scale.**

Industry Influences

➢ Industry Classification System (Cont.)

- **Classification by their sensitivity to business cycles**
  - ✓ ***Industry Life Cycle***
    - ***Shakeout stage*** **: industry growth and profitability are slowing due to strong competition.**
      - **G*rowth has slowed:* demand reaches saturation level with few new customers to be found.**
      - ***Intense competition:*** **industry growth has slowed, so firm growth must come at the expense of competitors.**
      - ***Increasing industry overcapacity:*** **firm investment exceeds increases in demand.**
      - ***Declining profitability:*** **due to overcapacity.**
      - ***Increased cost cutting:*** **firms restructure to survive and attempt to build brand loyalty.**
      - ***Increased failures:*** **weaker firms liquidate or are acquired.**

Industry Influences

➢ Industry Classification System (Cont.)

- **Classification by their sensitivity to business cycles**
  - ✓ ***Industry Life Cycle***
    - ***Mature stage*: there is little industry growth and firms begin to consolidate**
      - ***Slow growth:* market is saturated and demand is only for replacement.**
      - ***Consolidation:* market evolves to an oligopoly,**
      - ***High barriers to entry:* surviving firms have brand loyalty and low cost structures.**
      - ***Stable pricing:* firms try to avoid price wars, although periodic price wars may occur during recessions.**
      - ***Superior firms gain market share:* the firms with better products may grow faster than the industry average.**

Industry Influences

➢ Industry Classification System (Cont.)

- **Classification by their sensitivity to business cycles**
  - ✓ ***Industry Life Cycle***
    - ■ ***Decline stage*****: industry growth is negative.**
      - ***Negative growth:*** **due to development of substitute products, societal changes, or global competition.**
      - ***Declining prices:*** **competition is intense and there are price wars due to overcapacity.**
      - ***Consolidation:*** **failing firms exit or merge.**

Industry Influences

➢ Factors That Affect the Sensitivity of Business Cycle

- ***Cyclical firm*: highly dependent on the stage of the business cycle.**
  - ✓ ***High earnings volatility***
  - ✓ ***high operating leverage***
  - ✓ ***Includes: basic materials and processing, consumer discretionary, energy, financial services, industrial and producer durables, and technology.***
- ***Non-cyclical firm*: *demand is relatively stable* over the business cycle.**
  - ✓ ***Examples include: Health care, utilities, telecommunications, and consumer staples.***
  - ✓ ***Defensive industries:* least affected by the stage of the business cycle and include utilities, consumer staples (such as food producers), and basic services (such as drug stores).**
  - ✓ ***Growth industries:* demand so strong they are largely unaffected by the stage of the business cycle.**

Industry Influences

➢ Industry Classification System (Cont.)

- **Classification by statistical methods.**
  - ✓ **Statistical methods such as cluster analysis can also be used.**
  - ✓ **This method groups firms that historically have had highly correlated returns.**
  - ✓ **This method has several *limitations***
    - **Historical correlations may not be the same as future correlations.**
    - **The groupings of firms may differ over time and across countries.**
    - **The grouping of firms is sometimes non-intuitive.**
    - **The method is susceptible to a central issue in statistics, i.e., firms can be grouped by a relationship that occurs by chance or not grouped together when they should be.**

Industry Influences

➢ Industry Classification System (Cont.)

- **Government Classifications**
  - International Standard Industrial Classification of All Economic Activities (ISIC)
  - Statistical Classification of Economic Activities in the European Community
  - Australian and New Zealand Standard Industrial Classification
  - North American Industry Classification System (NAICS)

✓ Most governments do *not identify individual firms* in a group.

✓ Government systems are updated *less frequently*.

✓ Governments *do not distinguish* between small and large firms, for-profit and not-for-profit organizations, or private and public firms.

Industry Influences

➢ Peer Group

- ***A peer group*** **is a set of similar companies an analyst will use for valuation comparisons.**
- **The following are steps an analyst would use to form a peer group:**
  - ✓ **Determine which firms are in the same industry using commercial classification.**
  - ✓ **Identify key competitors through firms' annual reports, their competitors' annual reports, and the industry trade publications.**
  - ✓ **Confirm that comparable firms have similar sources of sales and earnings, have similar sources of demand, and are in similar geographic markets.**
  - ✓ **Adjust financial statements of non-financial companies for any financing subsidiary data they include.**

Industry Influences

➢ Competitive Advantage

- **Analysis framework developed by Michael Porter delineates five forces that determine industry competition:**
  - ✓ ***Rivalry among existing competitors*. Rivalry increases when many firms of relatively equal size compete within an industry.**
  - ✓ ***Threat of new entrants*. Industries that have significant barriers to entry will find it easier to maintain premium pricing.**
  - ✓ ***Threat of substitute products*. Substitute products limit the profit potential of an industry.**
  - ✓ ***Bargaining power of buyers*. Buyers' ability to bargain for lower prices or higher quality influences industry profitability.**
  - ✓ ***Bargaining power of suppliers*. Suppliers' ability to raise prices or limit supply influences industry profitability.**

Industry Influences

➢ Elements considered in an industry analysis

- Evaluate the *relationships* between macroeconomic variables and industry trends.
- Estimate *industry variables* using different approaches and scenarios.
- Find industries that are *miss-valued* as a result of consensus forecasts.
- Determine the *relative valuation* of different industries.
- Compare the valuations of industries across time to determine the *volatility* of their performance over the long run and during different phases of the business cycle.
- Analyze *industry prospects* based on strategic groups, which are groups of firms that are distinct from the rest of the industry due to the delivery or complexity of their products or barriers to entry.

Industry Influences

➢ Elements considered in an industry analysis (Cont.)

- **Classify industries by *life-cycle stage*, whether it is embryonic, growth, shakeout, mature, or declining.**
- **Position the industry on the *experience curve*, which shows the cost per unit relative to output. The curve declines because of increases in productivity and economies of scale, especially in industries with high fixed costs.**
- **Consider the *forces that affect industries*, which include demographic, macroeconomic, governmental, social, and technological influences.**
- **Examine the forces that determine *competition within an industry*.**

Company Analysis

- **A company analysis should include the following elements**
  - ***Firm overview*, including information on operations, governance, and strengths and weaknesses.**
  - ***Industry* characteristics.**
  - ***Product* demand.**
  - **A Product *costs*.**
  - **Pricing *environment*.**
  - **a *Financial ratios*, with comparisons to other firms and over time.**
  - **Projected *financial statements* and firm valuation.**

Company Analysis

➢ Three generic competitive strategies

- ***Cost leadership***: **With the same product, the firm seeks to a lower cost.**
- ***Differentiation***: **With the same cost, the firm seeks to provide product benefits that other firms do no provide.**
- ***Focus***: **The firm targets a niche with either a cost or a differentiation focus.**

Framework of Equity

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Evaluate a security

➢ Intrinsic value vs. Market price

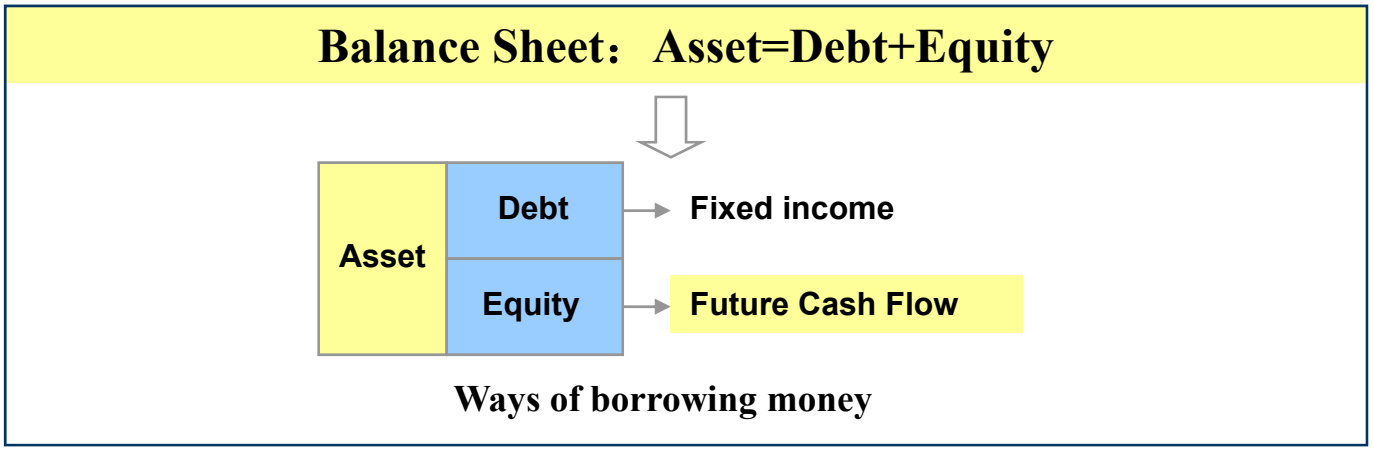
- **Analysts use valuation models to estimate the intrinsic values of stocks and compare them to the stocks' market prices to determine whether individual stocks are overvalued, undervalued, or fairly valued.**
- **Market price is assumed to move toward intrinsic value.**
- **Things to consider when deciding whether to invest based on estimated intrinsic value:**
  - ✓ **Percentage difference between market prices and estimated values**
  - ✓ **Confidence of the appropriateness of the valuation model**
  - ✓ **Confidence of the inputs used in the valuation model**
  - ✓ **Reasons why stock is mispriced**
  - ✓ **Assume that market price will actually move toward estimated intrinsic value and that it will do so to a significant extent within the investment time horizon**

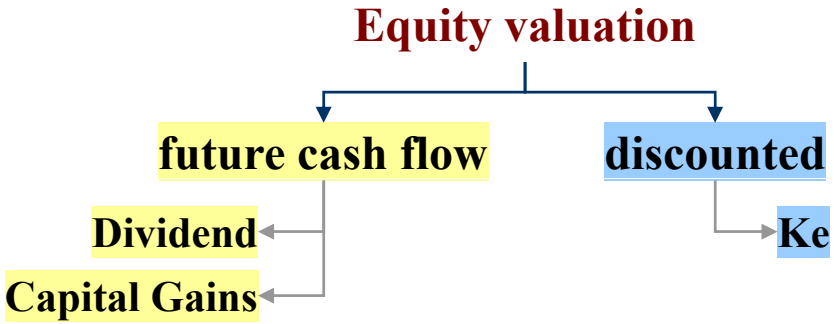
Evaluate a security

- **major categories of equity valuation models**
  - ***Discounted cash flow models*** **(or present value models)**
    - ✓ ***dividend discount models***
    - ✓ ***free cash flow to equity models***
  - ***Multiplier models*** **(market multiple models)**
    - ✓ **the ratio of stock price to fundamentals**
    - ✓ **the ratio of enterprise value to fundamentals**
  - ***Asset-based models***

Discounted cash flow models

➢ **Equity valuation key principle: discounted future cash flow**





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Discounted cash flow models

➢ Valuing Preferred Stock

- **The preferred stock holders are promised to receive a stated dividend for an infinite period.**
- **Preferred stock is perpetuity since it has no maturity.**
- **Valuation model of a preferred stock:**

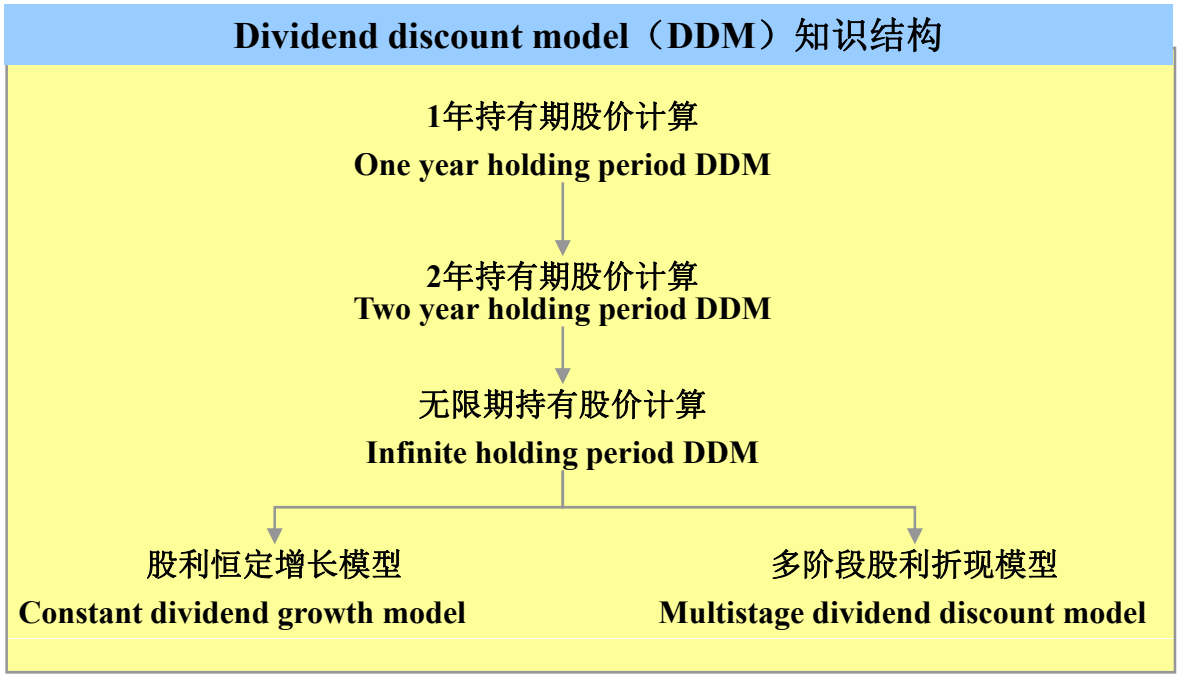
$$V_p = \frac{D_p}{(1+k_p)} + \frac{D_p}{(1+k_p)^2} + \cdots + \frac{D_p}{(1+k_p)^N} = \frac{D_p}{k_p}$$

Discounted cash flow models

- **Target：Gordon Growth dividend discount model (GGM) or Dividend Discount Model（DDM）：**

$$p_0 = \frac{D_0(1+g_c)}{k_e - g_c} = \frac{D_1}{k_e - g_c}$$

- 知识结构总结

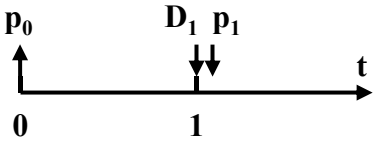


Discounted cash flow models

➢ Valuing Common Stock –*Dividend discount Model (DDM)*

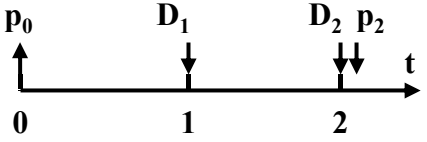
- ***One-Year Holding Period***

$$V_j = \frac{D_1}{(1+k)} + \frac{P_{j1}}{(1+k)}$$



- ***Two-Year Holding Period***

$$V_j = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \frac{P_{j2}}{(1+k)^2}$$



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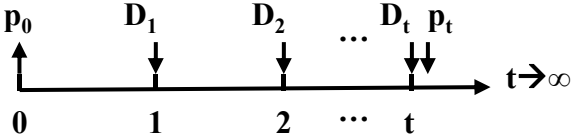
Discounted cash flow models

➢ Valuing Common Stock –*Dividend discount Model (DDM)*

- ***Multiple-Stage Dividend Growth Models***

$$V_0 = \frac{D_1}{(1+k_e)} + \frac{D_2}{(1+k_e)^2} + \cdots + \frac{D_n}{(1+k_e)^n} + \frac{P_n}{(1+k_e)^n}$$

$$P_n = \frac{D_{n+1}}{k_e - g_c}$$



- ***The General DDM***

$$V_j = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \cdots + \frac{D_\infty}{(1+k)^\infty} = \sum_{t=1}^{n} \frac{D_t}{(1+k)^t}$$

Discounted cash flow models

- **Valuing Common Stock –*Dividend discount Model (DDM)***
  - ***Gordon growth model*** **(Constant growth model)**
    - ✓ **assumption for the infinite period DDM**
      - **Dividends grow at a constant rate**
      - **The constant growth rate will continue for an infinite period.**
      - **The required rate of return *k* is greater than the infinite growth rate *g*...if it is not, the model gives meaningless results.**

$$V_0 = \frac{D_0(1+g_c)}{(1+k_e)} + \frac{D_0(1+g_c)^2}{(1+k_e)^2} + \cdots + \frac{D_0(1+g_c)^\infty}{(1+k_e)^\infty}$$

$$V_0 = \frac{D_0(1+g_c)}{k_e - g_c} = \frac{D_1}{k_e - g_c}$$

Discounted cash flow models

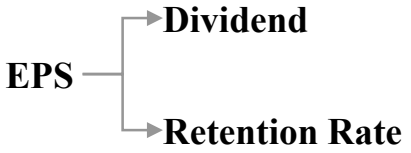
- **Valuing Common Stock –*Dividend discount Model (DDM)***
  - ***Gordon growth model*** **(Constant growth model)**
    - ✓ **Limitations**
      - **Very sensitive to estimates of r and g**
      - **Difficult with non-dividend stocks**
      - **Difficult with unpredictable growth patterns (use multi-stage model)**
    - ✓ **Important Conclusion**
      - **The wider is the difference between k and e, the smaller the value of the stocks.**
      - **Small changes in the difference between k and g will cause large changes in the stocks' value**

Discounted cash flow models

➢ Other variable parameters:

- D_0
- g_c
- k_e

➢ **Distribution of EPS**



$$p_0 = \frac{D_0(1+g_c)}{k_e - g_c}$$

$$D_0 = (1-RR)\times EPS$$

$$g_c = ROE \times RR$$

$$k_e = RFR + \beta(R_{mkt} - RFR)$$

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Discounted cash flow models

➢ Valuing Common Stock –*Dividend discount Model (DDM)*

- ***The required rate of return (capital asset pricing model(CAPM))***

$$k = RFR_{nominal} + \beta(R_M - RFR_{nominal})$$

- ***Another way to estimate required rate of return***

$$k = \text{current bond yield} + \text{equity risk premium}$$

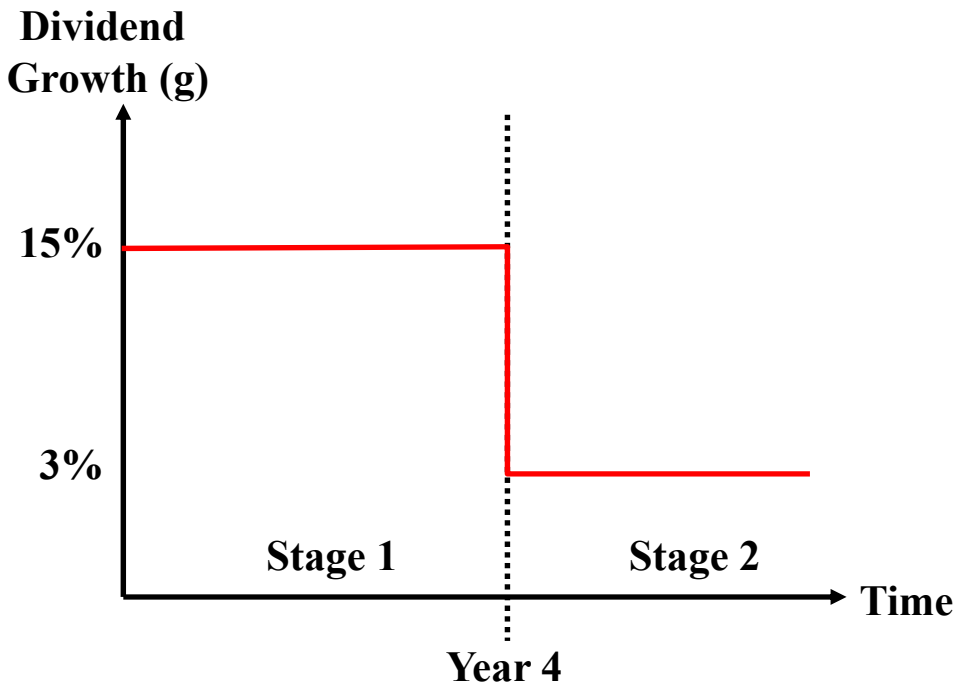
- ***Growth rate in Dividends***
  - ✓ **Use the historical growth in dividends for the firm.**
  - ✓ **Use the median industry dividend growth rate.**
  - ✓ **Estimate the sustainable growth rate.**

g=sustainable growth rate = b * ROE

b = retention ratio = 1 – dividend payout rate

Discounted cash flow models

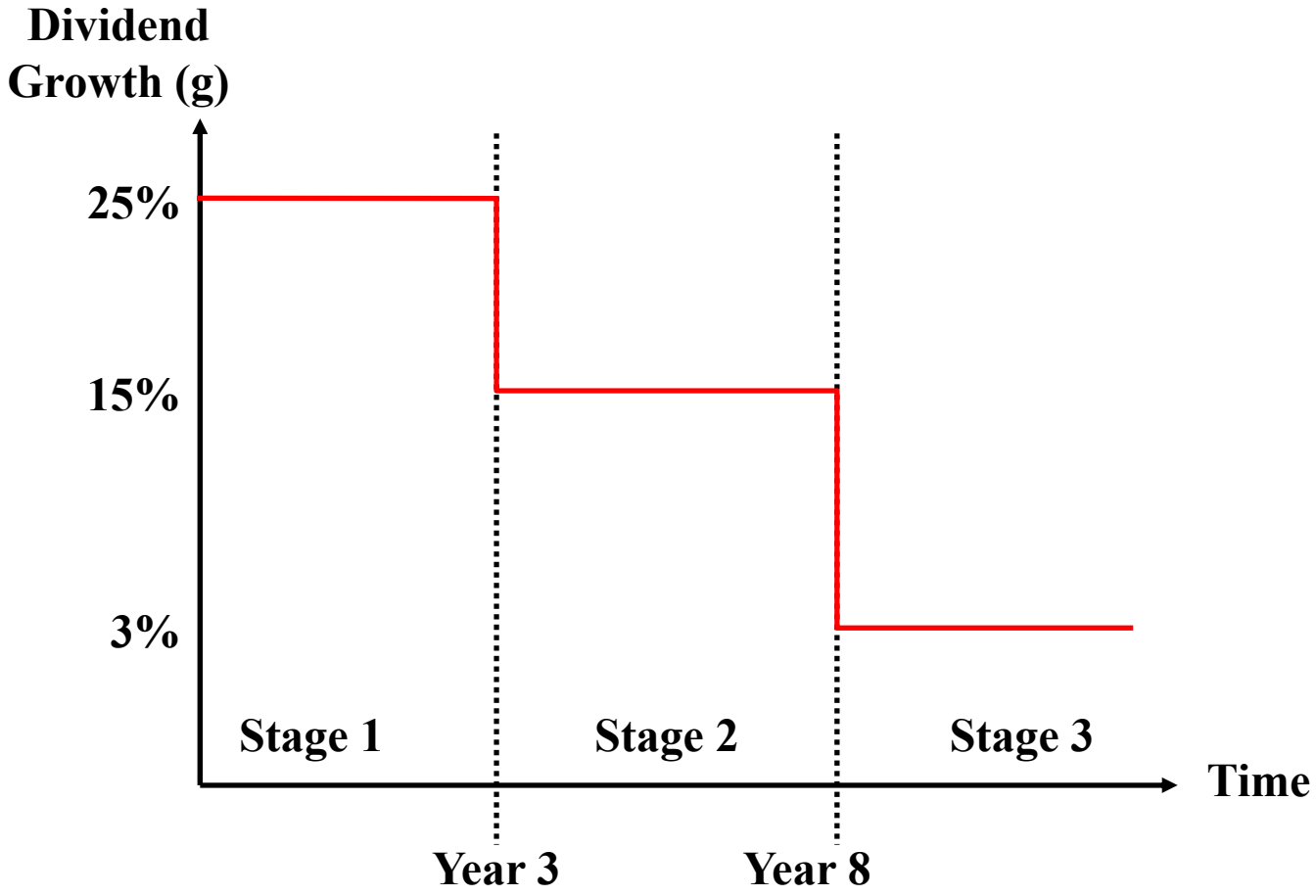
- **Valuing Common Stock –*Dividend discount Model (DDM)***
  - ***Two-stage DDM***
    - ✓ **the growth rate starts at a high level for a relatively short period of time, then reverts to a long-run perpetual level**



Discounted cash flow models

➢ Valuing Common Stock –*Dividend discount Model (DDM)*

- ***Three-stage DDM***



Exercise

Gentry Can Company (CCC) latest annual dividend of $1.25 a share was paid yesterday and maintained its historic 7 percent annual rate of growth. You plan to purchase the stock today because you believe that the dividend growth rate will increase to 8 percent for the next three years and the selling price of the stock will be $40 per share at the end of that time.

A. How much should you be willing to pay for the GCC stock if you require a 12 percent return?

Solution:

Projected dividends next 3 years:

Year 1 ($1.25*1.08) =$1.35

Year 2 ($1.35*1.08)= $1.46

Year 3 ($1.46*1.08) = $1.58

Required rate of return 12%

Growth rate of dividends 8%

The present value of the stock is:

$$V=1.35/1.12+ 1.46 /1.12^2+1.58/1.12^3+40/1.12^3 =1.21 + 1.16 + 1.12 + 28.47 = \$31.96$$

Exercise

An analyst is evaluating the Lambertus Company, a mature company that recently paid a dividend of $3.00 per share. The company is expected to grow at a rate of 5 percent per year for the foreseeable future. The required rate of return on Lambertus equity is 9 percent. If the risk-free rate of return is 3 percent, the current value of a share is closest to:

A. $52.50.

B. $75.00.

C. $78.75.

Solution：

C is correct. The value of the Lambertus equity can be calculated as follows:

VJ= D1 /(k—g)

where: = the value of the stock

D1=expected dividend = D0 *(1+g)

g = the constant growth rate of dividends

k = the required rate of return on the stock

therefore: V=3.00*(1.05)/（0.09—0.05）= $78.75

Discounted cash flow models

➢ Valuing Common Stock –*Free Cash Flow to Equity*

- **Free cash flow to equity (FCFE) is often used in discounted cash flow models instead of dividends because it represents the potential amount of cash that could be paid out to common shareholders.**

FCFE= net income + depreciation-increase in working capital-fixed capital investment (FC_{Inv})-debt principal repayments + new debt issues

- **Or**

FCFE = cash flow from operations - FCInv + net borrowing

$$V_0 = \sum_{t=1}^{\infty} \frac{FCFE_t}{(1+k_e)^t}$$

Price Multiple Approach

➢ Rationale for using price multiples

- **In a price multiple approach, an analyst compares a stock's price multiple to a benchmark value based on an index, industry group of firms, or a peer group of firms within an industry.**
- **Price multiples are widely used because:**
  - ✓ **Easily calculated**
  - ✓ **Can be used in time series**
  - ✓ **Cross session comparable**
- **Disadvantage of price multiple:**
  - ✓ **Reflect only past**

Price Multiple Approach

- **Two main ways to apply these price multiples**
  - ***Price multiples based on comparables*:**
    - ✓ **compare a price multiple for a firm to those of other firms based on market prices .**
  - ***Price multiples based on fundamentals*:**
    - ✓ **what a multiple should be based on some valuation model and therefore are not dependent on the current market prices of other companies to establish value.**

Price Multiple Approach

- **Price multiples based on comparables**
  - **Price to Earnings (P/E)**
  - **Price to Sales (P/S)**
  - **Price to Book Value (P/BV)**
  - **Price to Cash Flow (P/CF)**
  - **Enterprise Value to EBITDA (EV/EBITDA)**

Example: Price multiples based on comparables

An analyst made the following statement: "One reason for using either price-to-earnings ratios or price-to-cash-flow ratios, differences among companies with respect to quality of earnings are a major concern." Is the analyst's statement correct with respect to:

	price-to-earnings ratios?	price-to-cash-flow ratios?
A.	**No**	**No**
B.	**No**	**Yes**
C.	**Yes**	**No**

Solution: B is correct. Most quality of earnings differences between companies (use of aggressive versus conservative accounting methods) are likely to be a problem when using P/E ratios but not when using P/CF ratios.

Price Multiple Approach

➢ Multiples based on fundamentals

- **The Earnings Multiplier Model Derived from DDM**
  - ✓ **According to infinite period DDM**

$$P_0 = \frac{D_1}{k\text{-}g}$$

  - ✓ ***Justified P/E*: Assume we divide both sides of the equation by E_1 (expected 12-month earnings), the equation changes to:**
    - ■ ***Leading P/E*: Based on expected earnings next period**

$$\frac{P_0}{E_1} = \frac{D_1/E_1}{k\text{-}g} = \frac{1-b}{k-g}$$

    - ■ ***Trailing P/E*: Based on actual earnings for the previous period**

$$\frac{P_0}{E_0} = \frac{D_0/E_0}{k\text{-}g}(1+g) = \frac{(1-b)(1+g)}{k-g}$$

Price Multiple Approach

➢ Multiples based on Comparables

- **Valuation based on price multiple comparables involves using a price multiple to evaluate whether an asset is valued properly relative to a *benchmark*.**
- ***Law of one price:* two identical assets should sell at the same price**
- ***Comparable***
  - ✓ **multiples may not be comparable across firms if the firms are different sizes, are in different industries, or with grow at different rates.**
- ***Disadvantages of using price multiples***
  - ✓ **may appear overvalued by the comparable method but undervalued by the fundamental method**
  - ✓ **different accounting methods can result in price multiples that are not comparable across firms**
  - ✓ **price multiples for cyclical firms may be greatly affected by economic conditions at a given point in time**

Price Multiple Approach

- **Enterprise value (*cost to acquire the firm*)**
  - Enterprise value (EV) is total company value, not equity.
  - EV = market value of common stock + market value of preferred equity + market value of debt– cash and short-term investments
- **Advantage**
  - Useful for comparing firms with different degrees of financial leverage
  - EBITDA is useful for valuing capital-intensive business EB
  - EBITDA is usually positive even when EPS is not.
- **Disadvantages**
  - Market value of debt is often not available.
    - ✓ Market value of similar debt can be used
    - ✓ Book value of debt can be used

Example: Calculating EV/EBITDA multiples

Daniel, Inc., is a manufacturer of small refrigerators and other appliances. The following figures are from Daniel's most recent financial statements except for the market value of long-term debt, which has been estimated from financial market data.

Stock price	**$30.00**
Shares outstanding	**300,000**
Market value of long-term debt	**$800,000**
Book value of long-term debt	**$1,100,000**
Book value of total debt	**$2,600,000**
Cash and marketable securities	**$300,000**
EBITDA	**$1,200,000**

- **Calculate the EV/EBITDA multiple.**

Example: Calculating EV/EBITDA multiples

Answer:

- **First, we must estimate the market value of the firm's short-term debt and liabilities. To do so, subtract the book value of long-term debt from the book value of total debt: $2,600,000 - $1,100,000 = $1,500,000. This is the book value of the firm's short-term debt. We can assume the market value of these short-term items is close to their book value. (As we will see in the Study Session on fixed income valuation, the market values of debt instruments approach their face values as they get close to maturity.)**
- **Add the market value of long-term debt to get the market value of total debt:**

$800,000 + $1,500,000 = $2,300,000.

- **The market value of equity is the stock price multiplied by the number of shares:**

$30 x 300,000 = $9,000,000.

- **The enterprise value of the firm is the sum of debt and equity minus cash:**

$2,300,000 + $9,000,000 - $300,000 = $11,000,000.

EV/EBITDA = $11,000,000 I $1,200,000 = 9.2.

- **If the competitor or industry average EV/EBITDA is above 9.2, Daniel is relatively undervalued. If the competitor or industry average EV/EBITDA is below 9.2, Daniel is relatively overvalued.**

Asset-based valuation

- **Equity value is the *market or fair* value of assets minus the *market or fair* value of liabilities.**
- **Applying asset-based models is especially problematic for a firm that has a *large amount of intangible assets*, on or off the balance sheet.**
- **Asset-based model valuations are most reliable when the firm has:**
  - **primarily tangible short-term assets**
  - **assets with ready market values**
  - **The firm will cease to operate and is being liquidated.**
- **Asset-based models are often used to *value private companies***

Example: Using an asset-based model for a public firm

Williams Optical is a publicly traded firm. An analyst estimates that the market value of net fixed assets is 120% of book value. Liability and short-term asset market values are assumed to equal their book values. The firm has 2,000 shares outstanding.

Using the selected financial results in the table, calculate the value of the firm's net assets on a per-share basis.

Cash	**$10,000**	**Accounts payable**	**$5,000**
Accounts receivable	**$20,000**	**Notes payable**	**$30,000**
Inventories	**$50,000**	**Term loans**	**$45,000**
Net fixed assets	**$120,000**	**Common stockholder equity**	**$120,000**
Total assets	**$200,000**	**Total assets**	**$200,000**

Example: Using an asset-based model for a public firm

Answer:

Estimate the market value of assets, adjusting the fixed assets for the analyst's estimates of their market values:

$$\$10,000 + \$20,000 + \$50,000 + \$120,000(1.20) = \$224,000$$

Determine the market value of liabilities:

$$\$5,000 + 30,000 + \$45,000 = \$80,000$$

Calculate the adjusted equity value:

$$\$224,000 - \$80,000 = \$144,000$$

Calculate the adjusted equity value per share:

$$\$144,000 / 2,000 = \$72$$

Comparison of the three valuation methods

	Advantage	Disadvantage
Discounted cash flow models	• They are based on the fundamental concept of discounted present value and are well grounded in finance theory. • They are widely accepted in the analyst community.	• Their inputs must be estimated. • Value estimates are very sensitive to input values.

Comparison of the three valuation methods

	Advantage	Disadvantage
Price multiples Methods	• Evidence that some price multiples are useful for predicting stock returns. • Price multiples are widely used by analysts. • Price multiples are readily available. • They can be used in time series and cross-sectional comparisons. • EV/EBITDA multiples are useful when comparing firm values independent of capital structure or when earnings are negative and the P/E ratio cannot be used.	• Lagging price multiples reflect the past. • Price multiples may not be comparable across firms if the firms have different size, products, and growth. • Price multiples for cyclical firms may be greatly affected by economic conditions at a given point in time. • A stock may appear overvalued by the comparable method but undervalued by a fundamental method, or vice versa. • Different accounting methods can result in price multiples that are not comparable across firms, especially internationally. • A negative denominator in a price multiple results in a meaningless ratio. The P/E ratio is especially susceptible to this problem.

Comparison of the three valuation methods

	Advantage	Disadvantage
price multiple valuations based on fundamentals	• They are based on theoretically sound valuation models. • They correspond to widely accepted value metrics.	• Price multiples based on fundamentals will be very sensitive to the inputs (especially the k-g denominator).

Comparison of the three valuation methods

	Advantage	Disadvantage
Asset-based models	• They can provide floor values. • They are most reliable when the firm has primarily tangible short-term assets, assets with ready market values, or when the firm is being liquidated. • They are increasingly useful for valuing public firms that report fair values.	• Market values are often difficult to obtain. • Market values are usually different than book values. • They are inaccurate when a firm has a high proportion of intangible assets or future cash flows not reflected in asset values. • Assets can be difficult to value during periods of hyperinflation.

It’s not the end but just the beginning.

You cannot improve your past, but you can improve your future.

Once time is wasted, life is wasted.

你不能改变你的过去，但可以改变未来。

浪费时间就是浪费生命。

金程教育
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CFA一级培训项目

Alternative Investments

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CFA一级课程框架

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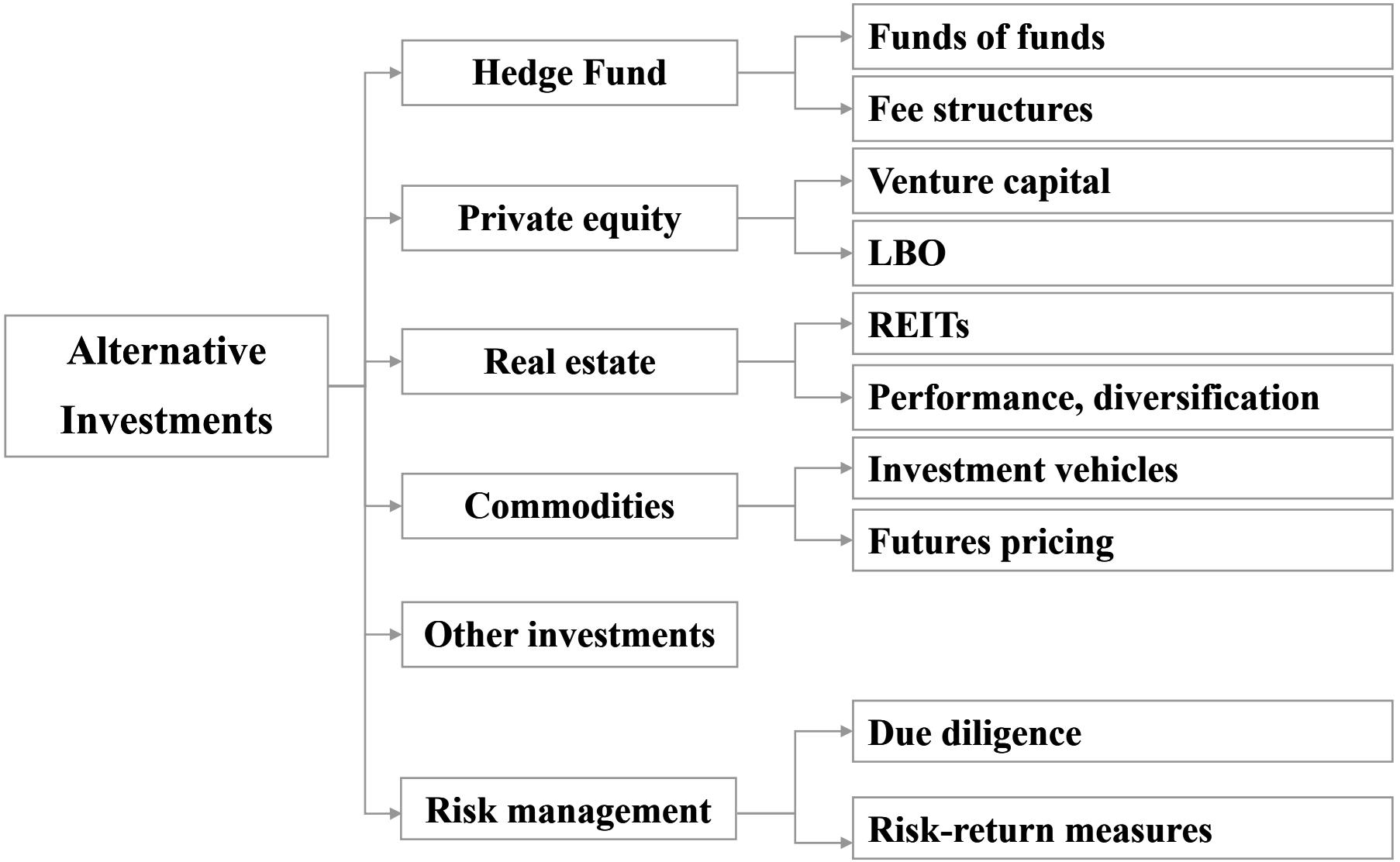
Study Session 15-16	**Fixed Income Analysis**	**12**
Study Session 17	**Derivative Investments**	**5**
Study Session 18	**Alternative Investments**	**3**
	Total:	**100**

Framework of alternative investments

- **R63 Alternative Investments**
- Characteristics of alternative investments
- Categories of alternative investments and return strategies
- GP, LP
- Hedge funds/fund of funds, fee structures, hedge fund strategies, due diligence
- Private equity, LBO, venture capital, exit strategies
- Real estate investment categories, valuation and risks
- Investing in Commodities
- Pricing of commodity futures contract
- Other alternative investments
- Risk management overview

Framework of alternative investments



100% Contribution Breeds Professionalism

R63. Alternative Investments- Categories

- **Hedge funds**
  - Manage portfolios of securities and derivative positions using a variety of strategies. Long and short positions, highly leveraged, absolute return.
- **Private equity funds**
  - Invest in start-up companies that are not publicly traded, or in public companies with the intent to take them private.
- **Real estate**
  - Outright ownership or through real estate equity/debt investments. E.g. MBS, REITs, etc.
- **Commodities**
  - In physical commodity products, either through owning cash instruments, utilizing derivatives, or investing in businesses engaged in the production of commodities.
- **Other**
  - Tangible (Fine wine, art, stamp, coin, etc.) and intangible (patents)

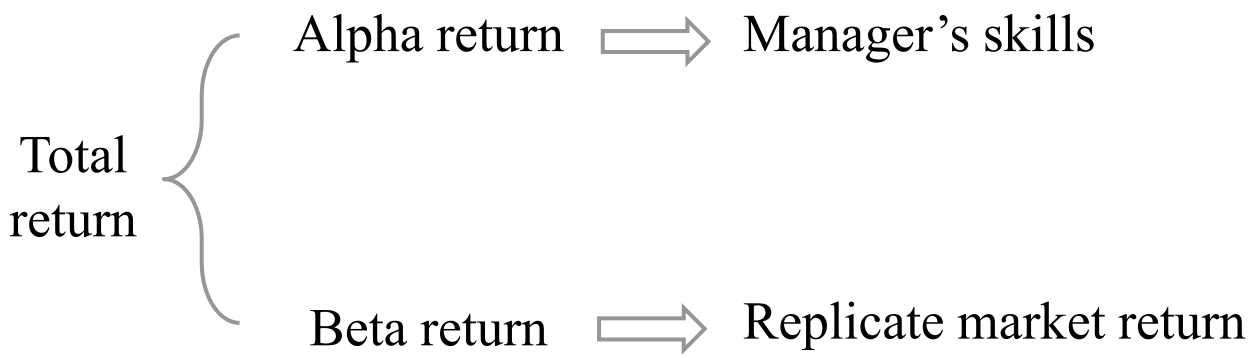
R63. Alternative Investments- return strategies

➢ Passive management

- Assume markets are efficient, focus on beta drivers of return.

➢ Active management

- Assume that inefficiencies exist, earn positive return after adjusting for beta risk, which is defined as alpha return.
- The expected alpha return is zero for passive managers.



R63. Alternative Investments- return strategies

➢ Basic alpha-seeking strategies:

- Absolute return:
  - ✓ Seek to generate returns that are independent of market returns.
  - ✓ Betas are close to zero, no market index to beat.
  - ✓ Relative performance objectives and absolute return target.
- Market segmentation:
  - ✓ When capital cannot migrate effortlessly from lower expected return to higher ones, due to investment constraints.
- Concentrated portfolios:
  - ✓ Concentrating assets rather than diversifying, in order to exchange diversification for higher returns if these concentrated positions outperform the market.

R63. Alternative Investments- portfolio context

- **A key motivation for alternative investment is diversifying potential.**
- **Historically, the correlation between alternative and traditional investments is low.**
  - Improve the risk/return profile, when combining alternative investment with traditional investment.
  - However, in identifying the appropriate allocation to alternative investments, an investment manager is likely to consider more than mean return and average standard deviation of returns.
    - ✓ historical downside frequencies and worst return in a month for potential portfolio combinations may be included in the analysis
  - Higher return and less than perfect correlation with traditional investments results in portfolio risk (standard deviation) being less than a weighting of the standard deviations.
    - ✓ This explains why institutional investors such as pension funds may allocate a portion of their portfolios to alternative investments.

R63. Alternative Investments- Investment structures

- **Most common structure: Partnership**
  - **Limited partner (LP): LP is the investors who understand and able to assume the risks in the investment.**
    - ✓ LP owns a fractional interest based on their investment and as agreed to by the partners.
    - ✓ LP's fractional interest is called his/her share of the partnership.
    - ✓ The partnerships are located in tax-efficient locations.
  - **General partner (GP): GP runs the fund**
- **Typical fee structures**
  - Management fee: based on assets under management
  - Incentive fee: based on realized profits.
    - ✓ High water marks

R63. Hedge funds

➢ Characteristics of hedge funds

- Aggressively managed investment portfolios across asset classes. Use of leverages, take long and short positions, and/or uses derivatives.
- Aimed at higher returns, either in absolute or relative sense.
- Private investment partnership open to a limited number of investors willing and able to make a large initial investment.
- Hedge fund indices may not reflect actual performance
  - ✓ Survivorship bias
  - ✓ Backfill bias
- Less restricted than traditional investments
- Often impose restrictions on redemptions.
  - ✓ Lockup period
  - ✓ Notice period

R63. Funds of funds

- **Funds of funds:**
  - ***Funds of funds are funds that hold a portfolio of hedge funds.***
    - ✓ FOFs enable small investors to have returns in hedge funds.
    - ✓ FOFs have some expertise in conducting due diligence on hedge funds
    - ✓ Negotiate better redemption terms for investors.
    - ✓ FOFs invest in numerous hedge funds, diversifying across fund strategies, investment regions, and management styles.

R63. Hedge fund strategies

- **Event-driven strategies**
- **Relative value strategies**
- **Macro strategies**
- **Equity hedge strategies**

R63. Hedge fund strategies - Event-driven strategies

- **Event-driven strategies**
  - Seek to profit from short-term events that will affect individual companies.
  - Considered “bottom up” strategy.
  - Include long/short positions in common and preferred stocks, as well as debt securities and options.
- **Subdivisions**
  - **Merger arbitrage:** long the stock of the company being acquired, and short the stock of the acquiring company.
  - **Distressed/restructuring:** focus on the securities of companies either in bankruptcy or perceived to be near to bankruptcy.
  - **Activist shareholder:** purchase sufficient equity to influence a company's policies or direction.
  - **Special situations**: focus on companies that are currently engaged in restructuring activities other than merger/acquisitions and bankruptcy.

R63. Hedge fund strategies - Relative value strategies

- **Relative value strategies**
  - Seek to profit from a pricing discrepancy between related securities.
- **Examples of relative value strategies**
  - **Fixed income convertible arbitrage:** market neutral (zero beta) strategies that seek to exploit a perceived mispricing between a convertible bond and its component parts.
  - **Fixed Income Asset Backed:** take advantage of mispricing across different asset backed securities.
  - **Fixed Income General:** focus on the relative value within the fixed income markets.
  - **Volatility:** use options to go long or short market volatility
  - **Multi-Strategy:** looks for investment opportunities wherever they might exist.

R63. Hedge fund strategies – Macro strategies

- **Macro strategies**
  - "top down" approach to identify economic trends
  - Use long/short positions to potentially profit from a view on overall market direction as influenced by major economic trends or events.
  - Trade opportunistically in the fixed income, equity, currency, and commodity markets.

R63. Hedge fund strategies – Equity hedge strategies

- **Equity hedge strategies**
  - focused on public equity markets
  - use a "bottom up" approach
- **Examples of equity hedge strategies**
  - **Market Neutral:** Maintain a net position that is neutral with respect to market risk. The intent is to profit from individual securities movements while hedging against market risk.
  - **Fundamental Growth:** fundamental analysis to identify companies expected to exhibit high growth and capital appreciation.
  - **Quantitative Directional:** technical analysis to identify companies that are under- and overvalued.
  - **Short Bias:** varies its net short exposure based upon market expectations, going fully short in declining markets.
  - **Sector Specific:** exploit expertise in a particular sector.

R63. Hedge Fund Fees

- **Management fee**
  - Based on capital under management.
    - ✓ Attractive to portfolio managers because the management fee alone will generate significant revenue if assets under management are large.
  - Earned irrespective of returns.
- **Incentive fee**
  - Based on profits net of (or before) management fee
  - Only earned if the return exceeds a hurdle rate
  - High water mark → highest value reported
    - ✓ The hedge fund must recover past losses and return to previous high water mark before any additional incentive fee is earned.
    - ✓ Protect clients from paying twice for the same performance.
  - "2 and 20" means 2% management fee and 20% incentive fee for hedge funds.
    - ✓ FOFs may charge extra 1% management fee and 10% incentive fee.
- **Negotiable terms**
  - Fees, notice and lockup periods are negotiable with potential investors.
    - ✓ longer investment periods, lower fees.

R63. Hedge Fund Fees

Example 1

UC is a hedge fund with $250 million of initial capital. It charges a 2% management fee based on assets under management at year end, and a 20% incentive fee based on returns in excess of an 8% hurdle rate. In its first year, UC appreciates 16%. Assume management fees are calculated using end-of-period valuation. The investor's net return assuming the performance fee is calculated net of the management fee is closest to:

A. 11.58%

B. 12.54%.

C. 12.80%

R63. Hedge Fund Fees

Solution to 1

B is correct. The net investor return is 12.54%, calculated as:

- End of year capital = $250 million * 1.16 = $290 million
- Management fee = $290 million * 2% = $5.8 million
- Hurdle amount = 8% of $250 million = $20 million;
- Incentive fee = ($290 - $250 - $20 - $5.8) million * 20% = $2.84 million
- Total fees to UC = ($5.8 + $2.84) million = $8.64 million
- Investor net return: ($290 - $250 - $8.64) / $250 = 12.54%

R63. Hedge Fund Fees

➢ **Example 2**

Capricorn Fund of Funds invests GBP 100 million in each of Alpha Hedge Fund and ABC Hedge Fund. Capricorn FOF has a "1 and 10" fee structure. Management fees and incentive fees are calculated independently at the end of each year. After one year, net of their respective management and incentive fees, the investment in Alpha is valued at GBP80 million and the investment in ABC is valued at GBP140 million. The annual return to an investor in Capricorn, net of fees assessed at the fund of funds level, is closest to:

A. 7.9%.

B. 8.0%.

C. 8.1%.

Solution to 2

A is correct because the net investor return is 7.9%, calculated as:

First, note that "1 and 10" refers to a 1% management fee, and a 10% incentive fee

- End of year capital = GBP140 million + GBP80 million = GBP220 million
- Management fee = GBP220 million * 1% = GBP2.2 million
- Incentive fee = (GBP220 - GBP200) million * 10% = GBP2 million
- Total fees to Capricorn = (GBP2.2 + GBP2) million = GBP4.2 million
- Investor net return: (GBP220 - GBP200 - GBP4.2) / GBP200 = 7.9%

R63. Fee structure comparisons – hedge funds and FOFs

- **Return to an investor in a fund is different from the return to the fund.**
  - Fee structure of funds of funds will further dilute returns to the investor, but this disadvantage is balanced with several attractive features.
    - ✓ FOFs may provide a diversified portfolio of hedge funds,
    - ✓ may provide access to hedge funds that may otherwise be closed to direct investments
    - ✓ may offer expertise in and conduct due diligence in selecting the individual hedge funds.
    - ✓ may also have negotiated redemption terms that are more favorable, e.g. a shorter lockup period or notice period

R63. Hedge funds – other considerations

- **Using leverage to seek higher returns but may magnify losses**
  - Investors are required to put up some collateral
    - ✓ Helps to protect against default.
    - ✓ Buying on margin
      - The margin requirement depends on the riskiness of the investment and the creditworthiness of the hedge fund.
- **Redemptions also magnify losses for hedge funds**
    - ✓ Redemption occurs when a hedge fund is performing poorly.
      - When drawdown (reduction in NAV) occurs, investors may require liquidation of their positions and incur transaction costs. Thus further magnify the losses.
    - ✓ Ways to prevent redemptions
      - Redemption fees
      - Notice periods
      - Lockup periods
      - Investing in FOFs

R63. Hedge fund valuation issues

- **When using market prices for valuation**
  - ***Common practice*: use average quote, (bid + ask)/2**
  - ***Conservative approach* : use bid prices for longs and ask prices for shorts.**
- **Illiquid underlying positions**
  - ***No reliable market values*: use statistical models to compute estimated values.**
    - ✓ Models should be independently tested, benchmarked, and calibrated to industry accepted standards to ensure consistency.
    - ✓ In-house valuations to prevent conflicts of interests affecting estimates.
  - ***Liquidity discounts*: reflect fair value.**
    - ✓ Two NAVs
      - Trading NAV: incorporates liquidity accounts, based on the size of the position held relative to the total amount outstanding in the issue and its trading volume
      - Reporting NAV: based on quoted market prices.

R63. Due diligence

➢ **Funds of funds have the expertise, but that comes at a cost.**

- Investors should still conduct due diligence when choosing an FOFs.
- Key factors to consider
  - ✓investment strategy
  - ✓investment process
  - ✓competitive advantage,
  - ✓track record,
  - ✓size and longevity,
  - ✓management style,
  - ✓key-person risk,
  - ✓reputation,
  - ✓investor relations,
  - ✓plans for growth,
  - ✓systems risk management.

R63. Private Equity

- **Private equity (PE):** investing in privately owned companies or in public companies with the intent to take them private.
  - **Leveraged buyouts (LBOs):** acquire companies with a significant percentage of the purchase price financed through debt.
    - ✓Assets of the target company as the collateral for the debt
    - ✓The debt becomes part of the capital structure of the target company
  - **Venture capital:** invest in private companies with high growth potential**.**
  - **Development capital:** minority equity investment in mature firms that are looking for expanding or restructuring opportunities.
  - **Distressed investing:** buying the debt of mature companies in financial difficulties.

R63. Private Equity Structure and Fees

- **PE firms are structured like hedge funds**
  - PE funds are structured as partnerships where the PE firm is the GP, and investors are LPs.
- **Fee structures are also like hedge funds**
  - **Management fees:** 1~3% of committed capital.
    - ✓**Distinction from hedge funds**: Management fee is based on committed capital, **not** invested capital.
  - **Incentive fees:** GP does not earn an incentive fee until the LPs have received initial investment back.
  - **Policies that protect LPs**
    - ✓Escrow account for a portion of incentive fees
    - ✓Clawback provision: return any incentive fees until LPs received initial investment back and their profits.

R63. Private Equity Strategies – LBOs

➢ LBO with debt financing

- If debt financing is unavailable or costly, less likely to occur.

➢ Typical LBO capital structure

- Equity, leveraged loans, high yield bonds
  - ✓ Mezzanine financing is an alternative to bonds.
  - ✓ Mezzanine financing refers to debt or preferred shares with warrants or conversion options. It pays a higher coupon rate than bank loans and bonds.
- Leveraged loans carry covenants to protect the investors
  - ✓ Require the company to maintain specified financial ratios within limits, submit information, or operate within certain parameters.
  - ✓ Restrict the company from further borrowing, or impose limits on paying dividends or making operating decisions.
- Financed through high yield bonds
  - ✓ Key difference: leveraged loans are senior secured debt, while bonds are unsecured in bankruptcy.

R63. Private Equity Strategies – LBOs

➢ Characteristics of Attractive Target Companies for LBOs

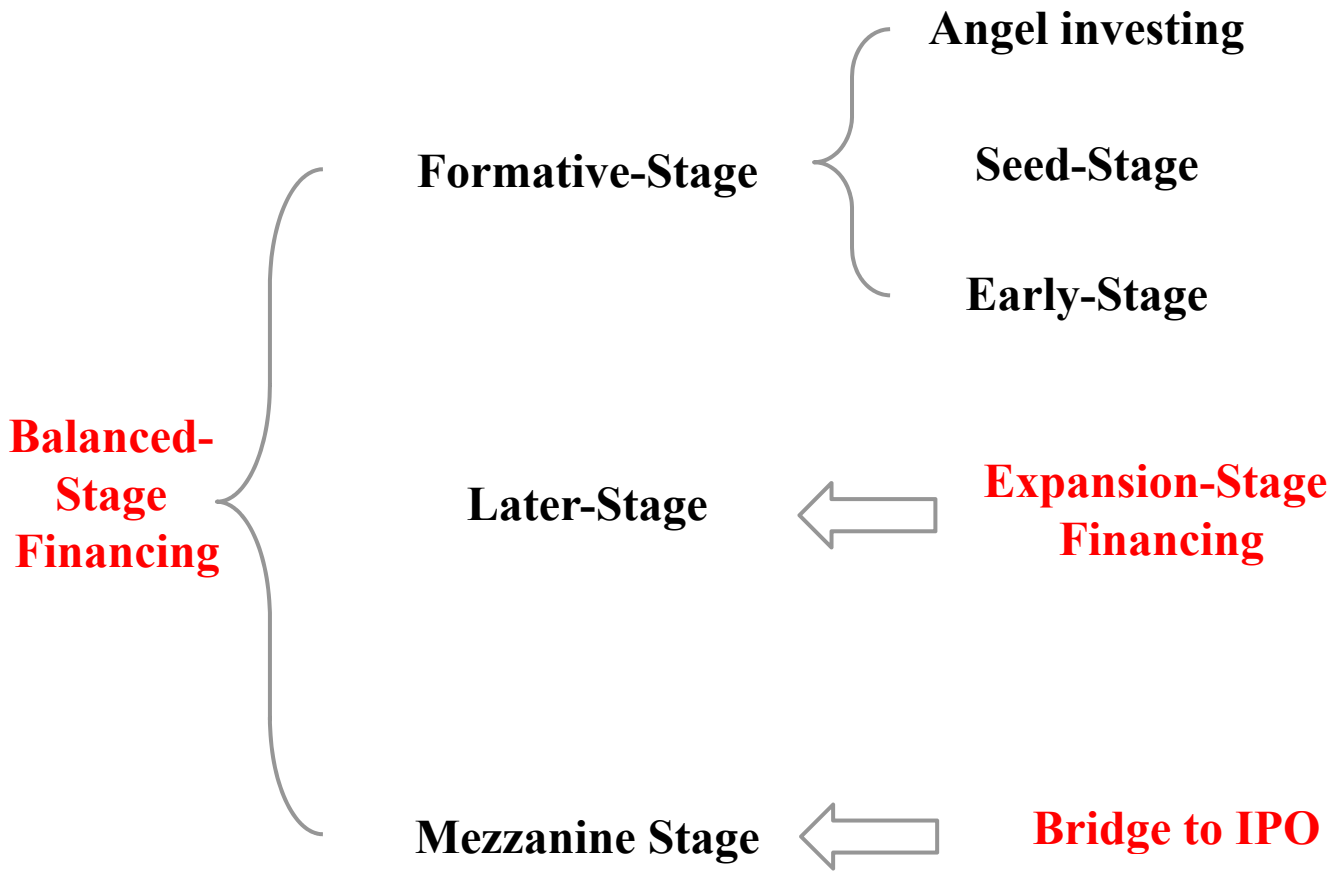
- ***Undervalued/depressed stock price***
  - ✓ The intrinsic value of the company is perceived higher than market price. Private equity firms are willing to pay a premium to the market price to secure shareholder approval
- ***Willing management***
  - ✓ Existing management is looking for a deal.
- ***Inefficient companies***
- ***Strong and sustainable cash flow***
  - ✓ Cash flow is necessary to make interest payments on the increased debt load.
- ***Low leverage***
  - ✓ Easier for PE firms to utilize debt
- ***Assets***
  - ✓ Physical assets can be used as security, and secured debt is cheaper than unsecured debt.

R63. Private Equity Strategies – Venture capital

➢ The stage of venture capital investing

- ***Formative stage*:**
  - ✓ ***Angel investing*:** At the idea stage, funds are used to transform the idea into a business plan and to assess market potential. Often provided by individuals.
  - ✓ ***Seed stage*:** support product development and/or marketing efforts. The first stage at which VC funds invest.
  - ✓ ***Early stage*:** help companies move toward operation but before commercial production and sales have occurred.
- ***Later stage*:** after commercial production and sales have begun but before any IPO. Funds may be used for expansion.
- ***Mezzanine stage*:** prepare to go public. Represent the bridge between the expanding company and the IPO.

R63. Private Equity Strategies – Venture capital



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R63. Private Equity – Exit strategies

➢ **Common exit strategies:**

- ***Trade Sale***: sale of a company to a strategic buyer
  - ✓ **Advantages**: (a) immediate cash exit; (b) potential for high valuation; (c) fast and simple execution; (d) lower transaction costs than an IPO; (e) lower levels of disclosure and higher confidentiality
  - ✓ **Disadvantages**: (a) possible opposition by management; (b) lower attractiveness.to employees of the portfolio company; (c) limited number of potential buyers; (d) a possible lower price than in an IPO
- ***IPO***
  - ✓ **Advantages**: (a) potential for the highest price; (b) management approval; (c) publicity for the private equity firm; (d) ability to retain future upside potential
  - ✓ **Disadvantages**: (a) high transaction costs; (b) long lead times; (c) risk of stock market volatility; (d) high disclosure requirements; (e) potential lock-up period; (f) IPO is usually only appropriate for larger companies with attractive growth profiles.

R63. Private Equity – Exit strategies

➢ Common exit strategies (con't):

- ***Recapitalization***
  - ✓ Not a true exit strategy, but allows investors to extract money from the company.
  - ✓ Very popular when interest rates are low
  - ✓ Often a prelude to a later exit
- ***Secondary Sale:*** sale to another private equity firm or other group of investors
- ***Write-off/Liquidation:*** When a transaction has not gone well, liquidate the investment to move on to other projects.

R63. Private Equity – Diversification Benefits, Performance, and Risk

➢ Diversification Benefits

- Add diversity to a portfolio comprised of publicly traded stocks and bonds because they may have less than perfect correlation with those investments.

➢ Performance

- Potential biases
  - ✓ As with hedge funds, private equity return indices rely on self-reporting and are subject to survivorship, backfill, and other biases.→ overestimate returns

➢ Risk

- Lack of liquidity
  - ✓ In the absence of a liquidity event, PE firms may not regularly mark to market their investments.→ underestimate volatility and correlations with other investments

➢ Three approaches to value a company

- ***Market or comparable*: value a company or its equity using multiples**
  - ✓ EBITDA multiple
- ***DCF approach***
  - ✓ FCFF and WACC → company value
  - ✓ FCFE and K_e → company's equity value
  - ✓ Simple approach: income or cash flow divided by a capitalization rate
- ***Asset-based***
  - ✓ arrives at the value of the company to the equity holders
  - ✓ assumes that the company value = Asset – liabilities
  - ✓ Can be valued by using fair values or liquidation values
    - ■ Fair values assume an orderly transaction
    - ■ Liquidation values assume a distressed transaction

R63. Private Equity – Investment considerations

Current and anticipated economic conditions

- Interest rate and capital availability expectations
- Refinancing risk

Long term investments

- Requires a long-term commitment on the part of an LP
  - ✓ Illiquidity aversion: liquidity risk premium

Due diligence

- GP's experience and knowledge – financial and operating
- valuation methodology
- alignment of the GP's incentives with the interests of the LPs
- the plan to draw on committed capital
- planned exit strategies

R63. Real Estate

➢ Key reasons for investing in real estate

- Competitive long-term total returns driven by income generation and capital appreciation.
- Fixed rents may lessen cash flow impact from economic shocks.
- Diversification benefits may be provided by less than perfect correlation with other asset classes
- Potential to provide an inflation hedge if rents can be adjusted quickly for inflation.

R63. Real Estate

➢ Forms of real estate investment

	Debt	Equity
Private	• Mortgages • Construction lending	• Direct ownership, through sole ownership, joint ventures, real estate limited partnerships, or commingled funds
Public	• MBS • CMO	• Shares in real estate corporations • Shares of REITs

R63. Real Estate

➢ Investment categories

- ***Residential property***
- ***Commercial real estate***
  - ✓ Appropriate direct investment (equity and debt) for institutional funds or high-net-worth individuals with long time horizons and limited liquidity needs.
- ***REIT Investing***
  - ✓ Risk and return characteristics depend on the type of investment
    - ■ Mortgage REITs
    - ■ Equity REITs
- ***MBS***
  - ✓ MBS structure is based on the securitization model of buying a pool of assets and assigning the income and principal returns into individual security tranches.
  - ✓ MBS may be issued privately or publicly.
- ***Timberland and Farmland***

R63. Real Estate – Performance and diversification benefits

➢ Performance measurements

- Appraisal index
  - ✓ use estimates of value (appraisals) as inputs to the indices
  - ✓ rely on comparable sales and cash flow analysis techniques
  - ✓ understate volatility
- Repeat sales (transaction-based) index
  - ✓ use changes in prices of properties to construct the indices
  - ✓ sample selection bias
- REIT index
  - ✓ use the prices of publicly traded shares of REITs to construct the indices
  - ✓ More frequently traded, more reliable is the index

➢ Diversification benefits

- Real estate and equity returns: high correlation
- Real estate and bond returns: low correlation

R63. Real Estate Valuation

➢ Common techniques for appraising real estate property

- ***Comparable sales approach***
  - ✓ determine an approximate value based on recent sales of similar properties.
  - ✓ condition, age, location, and size
- ***Income approach***
  - ✓ **Direct capitalization**
    - NOI → property level CFO; cap rate
    - strength of tenants, the level of landlord involvement, the extent of repairs and improvements, the vacancy rate, management and operating costs, expected inflation of costs and rent.
  - ✓ **DCF approach**
- ***Cost approach***
  - ✓ evaluate the replacement cost of the property

R63. Real Estate Valuation

➢ REIT valuation

- ***Income based approach***
  - ✓ Similar to the direct capitalization approach
  - ✓ Funds from operation (FFO) and adjusted funds from operation (AFFO)
  - ✓ Cap rate
- ***Asset based approach***
  - ✓ REIT's NAV = MKT value of assets – MKT value of liabilities
  - ✓ REIT shares trade at prices that differ from its NAV per share. (premiums or discounts)

R63. Real Estate Investment Risks

Real Estate Investment Risks

- Property values are subject to variability based on national and global economic conditions, local real estate conditions, and interest rate levels.
  - ✓ Other risks include fund management ability, and changes in government regulations.
- Property development is subject to regulatory issues, construction delays, and cost overruns.
- Acquisitions and developments may be financed with lines of credit rather than long-term debt financing.
- Leverage increases the risk to equity investors and also debt investors.

R63. Introduction to Commodities

- **Most investors invest in commodities using commodity derivatives:**
  - ***Futures and forward contracts***
    - ✓ Futures contracts are exchange-traded products (ETPs)
      - No physical delivery
    - ✓ Forward contracts trade OTC
      - Physical delivery can be expected
  - ***Options contracts***
    - ✓ Options can be ETPs or OTC traded
  - ***Swaps contracts***
- **Commodity indices**
  - use the price of futures contracts on the commodities, rather than the prices of the commodities themselves.
  - performance of an index can be quite different from the performance of the underlying commodities.
  - vary in the constituents and the weighting methods used

R63. Other Commodity Investment Vehicles

➢ Alternative means of achieving commodity exposure:

- ***ETF***
  - ✓ suitable for those who can only buy equity or seek the simplicity of trading.
  - ✓ may use leverage
- ***Common stock of companies exposed to a particular commodity***
  - ✓ E.g. Sinopec
- ***Managed futures funds***
  - ✓ Similar to hedge funds in structure
- ***Individual managed accounts***
  - ✓ managed by professional managers on behalf of high net worth individuals or institutional investors
- ***Funds in specific commodity sectors***

R63. Commodity performance and diversification benefits

Potential for returns

- Investors may invest in commodities if they believe prices will increase in the short or intermediate terms.
- If commodity prices determine inflation index levels, then over time, on average, commodities should yield a zero real return.
- Commodity futures contracts may offer liquidity or other premiums, creating the opportunity for a real return different from zero.

Portfolio diversification

- Commodities exhibited a low correlation with traditional assets.

Inflation protection

- Commodities, especially energy and food, impact the cost of living for consumers.

R63. Pricing of Commodity Futures Contracts

➢ The price of a futures contract

futures price» spot price(1+r) + storage costs - convenience yield

- ✓ r is the period's short term risk free interest rate.

- The storage and interest costs: "the cost of carry" or "the carry"
- The buyer of a futures contract does not have immediate access to the commodity but will receive it in the future→ loss of convenience yield

R63. Commodities and its derivatives

➢ Motivations for

- ***Investing in commodities***
  - ✓ **While a passive investor seeks to diversification benefits through a collateralized futures fund**
- ***Investing in commodities derivatives***
  - ✓ **While an active investor seeks to profit from anticipating moves in commodity prices and is more likely to use futures**
- ***Investing in commodity-linked securities*: commodity-linked equity, commodity-linked bonds**
  - ✓ **While investors want to exposure to commodity price moves for either hedging or speculation**

R63. Collateralized commodity futures

➢ The sources of return on a collateralized commodity futures position

- **A collateralized commodity futures position involves investing in the futures along with an investment in Treasury securities (such as T-bills) equal to the value of the futures contract**
- **Will have returns:**
  - ✓ **from commodity futures price changes**
  - ✓ **from the interest income of the Treasury position**

R63. Collateralized commodity futures

Example: Commodity futures returns

A passive manager purchases a position worth $50 million in underlying value of a futures contract. The manager also buys $50million worth of 10-year U.S. Treasury notes at par that pay an interest rate of 5%. Compute the gain in the value of the position if, at the end of one year, the futures contract position is worth $51 million and the price of the 10-year notes is unchanged.

(Solution: 51-50+50*5%)

R63. Collateralized commodity futures

Example:

The main motivation for a passive investor to participate in the commodities market is that it provides:

A. for speculative profits.
B. a hedge against inflation risk.
C. participation in the real economy.

(The correct answer is C.)

A major benefit of investing in commodity-linked securities rather than holding commodities is that:

A. commodity-linked securities may provide current income.
B. counterparty risk is lower with commodity-linked securities.
C. there is higher liquidity in the commodity-linked securities market.

(The correct answer is A.)

R63. Commodities

- **The role of commodities for investing in production and consumption**
  - Investing in commodities gives an investor exposure to an economy's production and consumption growth.
    - ✓ E.g. when the economy experiences growth, the demand for commodities increases, and price increases are likely.
    - ✓ During recessions, commodity prices are likely to fall with decreased demand.
- **Overall, swings in commodity prices are likely to be larger than changes in finished goods prices.**

R63. Commodities

- **Relationship between spot prices and expected future prices**
  - ***Contango***
    - ✓ **Futures price > Spot price**
  - ***Backwardation***
    - ✓ **Futures price < Spot price**
- **Futures markets that are dominated by long hedgers (users of the commodity who buy futures to protect against price increases) tend to be in contango.**
- **Futures markets that are dominated by short hedgers (producers of the commodity who short futures to protect against price decreases) tend to be in backwardation.**

R63. Commodities

➢ Sources of return and risk

- Price return on a long-only investment in commodities derivatives can be positive or negative, depending on the direction of change in the spot price.
- Collateral yield: an additional return that the investor deposits cash as collateral for the futures contract purchased with the exchange.
- Roll yield: since commodity derivative contract expire, a speculator or hedger who wants to maintain a position must close out the expiring derivative position and re-establish a new position.
  - ✓ **"Rolling over" the position leads to gains (backwardation) or losses (contango) are termed the roll yield.**

R63. Commodities

- **Example:**
- **A commodities market tends to be in backwardation if:**
  - A. **it is dominated by end users of the commodity.**
  - B. **the spot prices is greater than futures prices.**
  - C. **futures prices are greater than the spot price.**

  (The correct answer is B.)
- **The source of return on a long-only commodity investment that represents the change in the spot price over the life of the forward or futures contract used is the:**
  - A. **Roll yield**
  - B. **Price return**
  - C. **Collateral yield**

  (The correct answer is B.)

➢ Commodity index strategies: *active strategies*

- ***High turnover***
  - ✓ The constituent weights change
  - ✓ A rolling methodology is implied by the index and largely determines the roll frequency of the portfolio
  - ✓ The cash collateral position is continually reinvested as short-term cash equivalents mature and are replaced

R63. Other Alternative Investments

➢ Collectibles:

- Definition: Tangible assets such as antiques and fine art, fine wine, rare stamps and coins, jewelry and watches, and sports memorabilia.
- do not provide current income, but can potentially provide long-term capital appreciation, diversify a portfolio, and be a source of enjoyment
- can fluctuate dramatically in value, highly illiquid

R63. Alternative Investments

Traditional vs. alternative investments

- Traditional: long-only investments in stocks, bonds, and cash, etc.
- Alternative: other investment vehicles which fall outside the scope of traditional investments, extensive use of leverage.

Characteristics of alternative investments

- Illiquidity of underlying investments
- Narrow manage specialization
- Low correlation with traditional investments
- Low level of regulation and less transparency
- Limited and potentially problematic historical risk and return data
- Unique legal and tax considerations

Not always true!

e.g. high correlation in financial crisis

R63. Alternative Investments

➢ Returns for alternative investments

- Empirically, the mean returns to hedge funds, real estate, private equity, and venture capital exceeded the mean returns to global stocks and bonds.
- May be due to active exploitation of less efficiently priced assets, illiquidity premiums, and/or account leverage. May also be the result of tax advantage.

➢ Risks for alternative investments

- The average standard deviation is higher than traditional investments
  - ✓ But hedge funds have lower average standard deviation and higher mean return, this may be due to hedge fund indices' reporting biases.

➢ **Example:**

Compared with traditional investments, alternative investments are most likely to be characterized by high:

A. leverage

B. liquidity

C. regulation

·**(Solution: A)**

R63. Risk management overview

➢ Investment and risk management

- ***Risks vary across alternative investments***
  - ✓ Risks in private markets differ from publicly traded markets
- ***Historical returns and standard deviation***
  - ✓ May not represent true returns and risks. Even if they represent true risk-return profile, past performance is not necessarily representative of future performance.
  - ✓ Performance is highly correlated with business cycle.
- ***Difference in risk-return profile***
  - ✓ Institutional investors diversify across managers, but not practical for small investors
- ***Illiquid investments***
  - ✓ possibility of 100 percent loss of equity, should be diversified
- ***Fee structures***
  - ✓ Managers may seek to profit from management fees without seeking superior performance
  - ✓ Performance fees may encourage hedge fund managers who experience a large loss to liquidate their funds instead of working them back to par.

R63. Risk management overview

➢ Investment and risk management

- ***Limited transparency***
  - ✓ Honesty of the company's staff should be considered.
  - ✓ difficult for the investor to effectively conduct adequate due diligence
- ***Investment committee of partners***
  - ✓ The committee votes on the rationale, analysis, and suitability of every investment and requires a majority in favour.
  - ✓ May also oversee and vote on exit strategies of investments.
- ***Independent valuation of illiquid underlying assets***
  - ✓ Performed on a regular basis.
- ***Hedge fund risk monitored by a chief risk officer***
  - ✓ Should be separated from the investment process
  - ✓ counterparty risk and leverage risk

R63. Risk – Return measures

- **Is Sharpe ratio appropriate for alternative investments?**
  - ***Illiquid nature of the assets***
    - ✓ Return may not be reliable→ overstated
    - ✓ Standard deviation may not be reliable→ understated
- **Normal distribution?**
  - ***Alternative investment return: leptokurtic, negatively skewed***
    - ✓ Non-normal distribution→ cannot use standard deviation for risk measure
    - ✓ VaR, Sortino ratio would be appropriate
    - ✓ Assuming normal distribution→ underestimate downside risk
- **Tail events**
  - ***Stress testing/scenario analysis***

It’s not the end but just the beginning.

A true friend is the one who holds your hand and touches your heart.

一个真正的朋友会握着你的手，触动你的心。