**CFA 5 Equity Investments**

**5.1 Market Organisation and Structure**

**a) Markets assets and intermediaries**

**Financial system functions**

3 functions of financial system

1. Save/borrow money, raise money, trade assets, manage risks
2. Determine returns (equilibrium interest rates) that equate total supply of savings with total demand of borrowing
3. Allocate capital efficiently

Allows assets transfer across entities and across time

Requirements for good financial markets

* Liquid, low transaction costs, readily available information, regulation to enforce contracts

Savings: Individuals and firms save and expect a return for the risk of use of their money

* Vehicles: Stocks, bonds, CDs, real assets, etc

Borrowing: Finance expenditures

Issuing equity: Capital providers will share in future profits

Risk management: Hedging interest changes, currency, commodities

**Asset types**

Financial assets: Debt/equity securities, derivatives, currencies

* Public securities are traded on exchanges or through dealers and are regulated
* Private securities are illiquid and not regulated

Real assets: Real estate, equipment, commodities

Derivative contracts: Have value derived from the values of other assets

* Financial derivatives (based on financial contracts)
* Physical derivatives (based on physical assets e.g., gold, oil)

Spot markets: Markets for immediate delivery

* Contracts for future delivery include forwards, futures, and options

Primary market: For new securities

Secondary market: For subsequent sales

Money markets: For debt securities with <1 year maturity

Capital markets: For longer term debt securities and equity securities

Traditional investment markets: For debt and equity

Alternative markets: Hedge funds, commodities, real estate, collectibles, PPE

* Often hard to value and illiquid so sell at discount

**Debt Securities**

Issue: Initial sale of a security to the public

Fixed income securities: Debt securities

* Commercial paper: Short term <1 year
* Bonds: Long term >5-10 years
* Notes: Intermediate term (in the middle)

Govs issue bills

Banks issue Certificates of Deposit (CDs)

Repo agreements: Borrower sells a high quality asset and must repurchase it in the future at a higher price

Convertible debt: Can be exchanged for a specified number of equity shares

**Equity securities**

Common stock: Residual claim on a firm’s assets

* Paid only after debtholders and preferred stockholders are paid

Preferred stock: Scheduled dividends that do not change

* Paid before common stock dividends

Warrants: Give the right to buy shares at a fixed price by a certain date

**Pooled investment vehicles**

Mutual funds: Pooled investment vehicles

* Open end funds: Investors can buy shares from the fund itself
* Closed end funds: Investors buy shares from the secondary market

Exchange traded funds/notes (aka depositaries)

* Similar to closed end funds, but allow conversion into individual securities or the opposite

Asset-based securities

* Claim to a portion of a pool of financial assets (e.g., mortgages, car loans)
* Tranches: Different level of claims with different levels of risk

Hedge funds

* Limited partnerships with investors as limited partners, and fund manager as general partner

**Contacts**

Forward contacts: Agreement to buy or sell an asset in the future at a specified price

* Not traded

Futures contracts: Similar to forward contracts, but are standardised and can be traded

Swap contract: 2 parties make payments that are equivalent to one asset being traded for another

* Interest rate swap: Floating rate payments are exchanged for fixed rate payments over multiple settlement dates
* Currency swap: A loan in one currency for a loan of another currency for a period of time
* Equity swap: Exchange return on equity index for interest payment on debt

Option contract

* Call: Right to buy
* Put: Right to sell

Insurance contract

* Pays cash amount if a future event occurs

Credit default swaps

* Form of insurance that makes a payment if an issuer defaults on its bonds
* Can hedge default risk or for speculation

Futures and forwards allow participation in commodity markets without having to deliver or store physical commodities

**Real assets**

Properties of real assets

* Have management costs, require due diligence, and are illiquid

Can invest in real assets through ownership of a vehicle

* Real estate investment fund (REIT) or Master limited partnership (MLP)
* More liquid this way

**Financial intermediaries**

Financial intermediaries: Facilitate exchange between buyers and sellers

Includes: Brokers, exchanges, dealers, securitizers, depository institutions, insurance companies, arbitrageurs, clearinghouses

**Brokers, dealers, and exchanges**

Brokers: Help clients buy and sell securities by finding counterparties

Block brokers: Help placement of large trades, without moving the market

Investment banks:

* Help corporations sell common stock, preferred stock, and debt securities
* Give advice about M&A, and raising capital

Exchanges: Venue where traders can meet

* Can provide electronic order matching
* Can regulate their members

Alternative trading systems (ATS): Serve exchange function, but have no regulatory function

* AKA Electronic communication networks (ECNs) or Multilateral trading facility (MTFs)
* Dark pools are ATS that do not reveal current client orders

Dealers: Buy or sell from their own inventory

* Provide liquidity in the market through their spread

Broker-dealers: Have conflict of interest, so there are limits

Primary dealers: Trade with CBs on gov securities to affect the money supply

**Securitizers**

Securitizers: Pool securities and assets and then sell interests in the pool

* Returns of the pool, net of fees are given to investors

Usually mortgages, car loans, credit card receivables, bank loans, equipment leases

Primary benefit: Decrease funding costs for the assets in the pool

* Can set up a SPV to buy the assets, which removes them from the firm’s balance sheet
* May increase their value by reducing the risk other investors can claim on the asset’s cash flows if the firm faces financial trouble

**Depositary institutions**

Depositary institutions include: Banks, credit unions, savings and loans

* Pay interest on deposits and provide transaction services
* Make loans with the funds

Includes payday lenders and factoring companies

Securities brokers: Provide loans to investors who purchase securities on the margin

* Prime brokers: Margin lending to hedge funds

Equity owners of these intermediaries absorb any loan losses before depositors

**Insurance companies**

Collect insurance premiums for providing risk reduction to the insured

* Provides protection to a diversified pool whose risks of loss aren’t correlated

Moral hazard: Those with insurance take more risks

Adverse selection: Those who are likely to have losses are the main buyers of insurance

**Arbitrageurs**

Arbitrage: Buying an asset in one market and reselling it in another at a higher price

* Provides liquidity

Most common is to exploit pricing differences for similar instruments

**Clearinghouses and custodians**

Clearinghouses: Are intermediaries between buyers and sellers

* Provide escrow services (transferring cash and assets)
* Guarantees of contract completion
* Assurance that margin traders have adequate capital
* Limits on the aggregate net order quantity (buy orders minus sell orders)

Clearinghouses limit counterparty risk

Custodians: Hold client securities and prevent loss from fraud

**b) Positions**

Hedgers: Use short positions in one asset to hedge existing risk from a long position in another asset that has strongly correlated returns

Hedgers usually do in the futures market what they must do in the future

* E.g., Someone selling wheat in the future can hedge by selling wheat futures

Options: Person who buys the option is long, person who sells the option is short

Swaps: Each party is long one asset and short the other

* The party that benefits from an increase in the quoted price is called long

Currency contract: Each party is long one asset and short the other

**Short sales and positions**

Short sale process:

1. Simultaneously borrow and sell securities through a broker
2. Must return securities at the request of the lender or when the short sale is closed
3. Must keep a portion of the proceeds of the short sale on deposit

Short seller must pay all dividends and interest that the lender would have received

* Called Payments-in-lieu

Short seller must deposit all proceeds of the short sale as collateral to guarantee the eventual repurchase of the security

* Short rebate rate: Broker earns interest on deposited funds and returns some to the short seller (usually 0.1% less than overnight interest rates),

Lender earns the difference between the interest earned and short rebate rate

**c) Leveraged positions**

Leveraged position: Borrowing funds to purchase an asset

* Magnifies the gains and losses

Buying on the margin: Using leverage to buy securities by borrowing from brokers

* Margin loan: the borrowed funds

Call money rate: Interest rate paid on the funds

* Usually higher than gov bill rate

Initial margin requirement: At the time of a margin purchase, investors need to provide a min amount of equity

**Calculating leverage positions**

Leverage ratio of a margin investment:

Total initial equity investment:

Investor net return:

Maintenance margin requirement: Min equity percentage that must be maintained to ensure the loan is covered by the value of the asset

* Usually 25% of current position value

Margin call: Request to bring the equity percentage back to the maintenance margin percentage when it falls below

* Must deposit more funds, or the broker must sell the position

Margin call price:

Works for short leverage positions too

**d) Order execution**

Bid price: Price a dealer will buy

Ask (offer) price: Price a dealer will sell

Securities: The price the buyer gets is the one that is worse for you

Currencies: The bid/ask price is the one that gives you less of the currency you are acquiring

Traders who post bid and asks are market makers

* Those who trade are market takers

Orders must include:

* Execution instructions: How to trade
* Validity instructions: When the order can be filled
* Clearing instructions: How to settle the trade

**Execution instructions**

Specify when an order should be executed

Market order: Execute the trade immediately

* Disadvantage: May get a bad price if trading volume is low relative to order size

Limit order: Execute at a min price for sell orders, and a max price for buy orders

* Disadvantage: May not be filled
* Standing limit orders: Limit orders waiting to be executed

Make the market: Orders at the bid/ask

Behind the market: Orders slightly away from the bid/ask

Far from the market: Orders considerably away from the bid/ask

All-or-nothing orders: Execute only if the whole trade can be filled

Hidden orders: Only the broker or exchange knows the trade size

Traders can specify display size – how much of the trade is visible to the market

* AKA Iceberg orders

**Validity instructions**

Day orders: Will expire if unfilled at the end of the trading day

* Most orders are these

Good-til-cancelled: Last until they are filled

Immediate-or-cancel (Fill-or-kill): Cancelled unless they can be filled immediately

Good-on-close: Only filled at the end of the trading day

* Market-on-close: If it is a market order

Good-on-open: Only filled at the start of the trading day

Stop loss orders: Not executed unless the stop price has been met

* Can prevent losses
* Can have stop buys as well (buy if it goes above X price)
* Reinforce market momentum – execution prices are often unfavourable

**Clearing instructions**

Specify to the trader how to clear and settle the trade

* Retail trades: Cleared and settled by broker
* Institutional trades: Settled by a custodian and/or another broker

Broker must confirm if a security can be borrowed in a short, and delivered in a long

**e) Market types**

Primary capital markets: Sale of new securities (e.g., Seasoned/secondary offerings, IPOs)

Secondary financial markets: Trade after issuance

**Primary markets: Public offerings**

Issuance almost always done with an investment bank

Bookbuilding: IB (bookrunner) finds investors who want to be part of the issue

* They are Indications of interest – not actual orders

Underwritten offering: IB agrees to purchase the entire issue

* If it is undersubscribed, the IB must buy the unsold portion

Best efforts: IB agrees to distribute shares on their best effort

* If it is undersubscribed, the IB is not obligated to buy the unsold portion

IBs have a conflict of interest in an underwritten offer

* Want to set price high to raise the most funds for the agent
* Want the price low so the whole issue sells and the price doesn’t trade lower

**Primary market: Private placements and other transactions**

Private placement: Securities are sold directly to qualified investors

* Don’t require as much info disclosure as public
* Issuance costs lower
* Offer price is lower as securities can’t be resold in public markets

Shelf registration: Firm makes regular disclosures like a regular offering, but issues the registered securities over time

* Issue when it needs capital and when markets are favourable

Dividend reinvestment plan: Allows existing shareholders to use their dividends to buy new shares at a discount

Rights offering: Existing shareholders given the right to buy new shares at a discount to market price

* Dilutes their shares unless they exercise the rights
* Rights can be traded separately

**Secondary market**

Importance: Provide liquidity and price/value information

* Better Secondary market 🡪 Easier for firms to raise money in Primary market

Call markets: Stock is only traded at specific times

* Liquid during sessions, illiquid between sessions
* All trades, bids, asks are declared, and one negotiated price is set to clear the market

Continuous market: Trades occur anytime the market is open

3 types of markets:

* Quote driven, Order driven, Brokered markets

**Quote driven markets**

Traders transact with dealers who post bid and ask prices

* Dealers keep an inventory of securities

AKA Dealer markets, price-driven markets, OTC markets

Most securities other than stocks trade here

**Order driven markets**

Executed using trading rules

* Order matching rules and Trade pricing rules

Order matching rules: Establishes order precedence hierarchy

* Price priority: Trades at the highest bid and lowest ask have highest priority
* If the same price, non-hidden orders and early ones have priority

Trade pricing rules: Determine the price

* Uniform pricing rule: All orders trade at the same price
* Discriminatory pricing rule: Limit price of the order that arrived first is the trade price

Electronic crossing network:

* Orders are batched together and crossed (matched) at fixed points in time
* Uses the average of the bid and ask quotes of the exchange where the stock trades
* Called Derivative pricing rule – derived from the main market, not the orders in the crossing network

**Brokered markets**

Brokers find counterparty to execute a trade

Useful when the security is unique or illiquid

* E.g., Large blocks, real estate, artwork

**Market information**

Pre-trade transparent: If investors can obtain pre-trade information about quotes and orders

Post-trade transparent: If investors can obtain post-trade information about completed trades

Buy side: Prefers transparency

Dealers: Prefers opaque markets as it gives them an advantage over traders

**Financial system**

Complete markets have:

* Investors can save at fair rates of return
* Creditworthy borrowers can obtain funds
* Hedgers can manage their risks
* Traders can get the assets they need

Operationally efficient: Complete markets and Low trading costs

Informationally efficient: If security prices reflect all info about fundamental value

Benefits of well-functioning financial system:

* Savers can fund entrepreneurs
* Company risks can be shared
* Transactions can occur among strangers

Allocationally efficient: Capital is allocated to its most productive use

**Market regulation objectives**

Market regulation prevents

* Fraud and theft – agents can take advantage of unsophisticated investors
* Insider trading
* Costly information
* Defaults

Market regulation should

* Protect unsophisticated investors
* Require min standards of competency
* Prevent insiders exploiting
* Require common financial reporting requirements
* Require min levels of capital

**5.2 Security Market Indexes**

**a) Index weighted methods**

Security market index: Created as portfolio of individual securities

* Has a numerical value calculated from market prices of the constituent securities

Price index: Only uses prices of the constituent securities in the return calculation

* Gives price return

Return index: Uses prices and income from constituent securities

* Gives total return

Price weighted: Average of the prices

* Need to adjust the divisor for stock splits and adding/removing securities from index
* Disadvantage: Weighted towards high priced stocks
* Disadvantage: Weight of stock is affected by stock splits, repurchases, stock dividends
* Examples: Dow Jones, Nikkei 225

Equal weighted index: Average return of the index stocks

* Matched by the returns of a portfolio that has equal dollar amounts invested in each stock
* Portfolio would need to be rebalanced periodically as prices change – creates transaction costs
* Disadvantage: Weights on small caps are greater than their proportion of overall market value

Market cap weighted (aka value weighted): Weight each stock by market cap

* Matched by a portfolio where the value of each position is the same proportion to the total portfolio as the proportion of the security mcap to the total mcap

Float-adj market cap weighted: Can use market float/free float instead of market cap to adjust for shares that are available to investors

* Market float: Excludes shares held by controlling stockholders, corps, and govs
* Free float: Also excludes shares not available to foreign buyers
* Potential disadvantage: Overvalued stocks have greatest weights, undervalued have lowest weights
* Example: S&P500

Fundamental weighted: Weights based on firm fundamentals (e.g., earnings, dividends, cash flow)

* Unaffected by share prices
* Has a value tilt – overweighting firms with high value based metrics

**b) Uses and types of indexes**

**Rebalancing and reconstitution**

Rebalancing: Adjusting weights to target weights after price changes have affected the weights

* Done periodically
* Issue for equal weighted indexes

Reconstitution: Periodically adding and deleting securities that make up an index

* Deleted if they no longer meet index criteria

When a security is added to an index, its price rises as PMs buy it

Deleted security prices fall

**Uses of indexes**

Reflection of market sentiment: Show market return and reflect investor confidence

Benchmark of manager performance: Can evaluate the performance of an active manager

* Index securities should consist of securities the manager would actually choose from

Measure of market risk and return: Estimates of expected return and SD are based on historical returns of the index

Measure of beta and risk-adjusted return: Index returns are used as a proxy for returns on market portfolio

* Estimates beta and beta risk

Model portfolio for index funds: Index funds replicate performance of market index

**Types of equity indexes**

Broad market index: Measure of overall market performance, contains >90% of market value

Multi market index: Constructed from indexes of markets in several countries

* Shows returns in a geo region (e.g., LatAm indexes)

Multi market index with fundamental weighting: Weights country index returns in the global index by a fundamental factor (e.g., GDP)

Sector index: Measures returns for an industry sector

Style index: Measures returns to market cap and value/growth strategy

* E.g., Small cap value fund

**Types of fixed income indexes**

Large universe of securities: Fixed income universe much broader than equity universe

Bonds mature and must be replaced – turnover higher than equities

Dealer markets and infrequent trading

* Index providers may have to estimate the value of securities

**Alternative investment indexes**

Commodity indexes: Represent futures contracts on commodities

* Weightings vary a lot – e.g., global production values, fixed weights determined by PM
* Based on futures contracts, not spot – reflects risk free rate, changes in futures prices, and roll yield, not the same as investing in the actual commodity
* Contracts mature over time and need to be replaced

Real estate indexes

* Can be constructed using property appraisals, property sales, or REITs
* REITs: Closed ended mutual funds that invest in properties or mortgages
* REITs are liquid, unlike property

Hedge fund indexes: Weight hedge fund returns

* Not required to report their performance to indexes
* Often only the good ones report – upward bias in index returns

**5.3 Market Efficiency**

Informationally efficient capital market: Prices quickly and rationally reflect all available info

* Passive investment outperforms active investment due to transaction fees and management costs
* Active investment can have positive risk-adj returns if market prices are inefficient

Time it takes for trading activity to reflect new info shows efficiency

Market value: Price

Intrinsic/fundamental value: Value a rational investor with full info would pay (estimated)

* Similar in efficient markets

Factors affecting market efficiency

* No. of participants 🡪 More participants means more efficient
* Availability of information 🡪 Emerging markets and OTC less efficient, access to info shouldn’t favour one party over another
* Impediments to arbitrage 🡪 E.g., high transaction costs, lack of info
* Transaction and info costs 🡪 If costs > profits, market is inefficient

**Different forms of efficiency - EMH**

Weak form: Current prices fully reflect all currently available market data

* Includes all public past security info
* Technical analysis gets no positive risk adjusted returns on average

Semi strong form: Current prices fully reflect all publicly available information

* Includes all public past security info and public nonmarket info
* Fundamental analysis gets no positive risk adjusted returns on average

Strong form: Current prices fully reflect all publicly and privately available information

* Includes all public past security info, public nonmarket info, and insider info
* Noone can achieve abnormal positive returns

**Abnormal profit**

Abnormal profit (aka risk-adj returns)

* Calculate expected return of a strategy (using CAPM) and see if greater than equilibrium expected returns

Technical analysis: Aims for abnormal profit using trading data

* Generally doesn’t work, but can work in EM

Fundamental analysis: Uses public info

Event study: Examines abnormal returns before and after the release of new info

* Semi strong: Can’t earn abnormal profits from these events

Developed markets are generally semi strong

* Fundamental analysis makes it semi strong

**Market anomalies**

Market anomaly: Something that would make us reject EMH

Data mining: Can look at historical data and do hypothesis tests

**Time series anomalies**

Calendar anomalies: Arise at periodic points in time

* Violates weak form EMH

Jan (turn-of-the-year) effect: First 5 days in January has higher stock returns than rest of year

* Tax-loss selling: Sell losing positions in December and realise losses for tax, and then repurchase in Jan
* Window dressing: Sell risky stocks to remove from year end statements, and repurchase in Jan

Overreaction and momentum activities

* Overreaction: Firms with poor returns over last few years have better returns than firms with high returns over last few years
* Momentum: Short term returns followed by continued high returns

**Cross sectional anomalies**

Size effect: Small caps outperform large caps

* Couldn’t be confirmed by later studies

Value effect: Value stocks outperform growth stocks

* Violates semi strong EMH

**Other anomalies**

Closed end investment funds: Shares sometimes deviate from NAV (net asset value)

* Can be due to management fees, capital gains taxes, illiquidity

Earnings announcements: Earnings surprise adjustments may not fully occur on announcement day

IPOs: Market price usually increases after IPO but declines long term

* Investors may have overreacted from optimism

Economic fundamentals: Returns related to economic fundamentals (e.g., div yields)

**Implications of anomalies**

Criticism of anomalies

* Most evidence says anomalies are due to methodological error or not reflecting returns to risk
* Underreaction is balanced by overreaction
* Many are too small to profit from

Strategies based purely on anomalies are unprofitable

**Behavioural finance**

Behavioural finance: Looks at investor decision making – have bias, base decisions off others, don’t evaluate risk properly

Irrationality can partially explain anomalies

* Loss aversion, overconfidence, herding

Information cascade: When investors mimic actions of others

* The uninformed follow the informed

Doesn’t refute market efficiency if investors can’t consistent earn abnormal returns

**5.4 Overview of Equity Securities**

**a) Types of equity securities**

Common shares

* Represent ownership, have voting rights (can vote by proxy)
* Have a residual claim if firm is liquidated – after debtholders and preferred stockholders
* Can have different classes with different rights

Statutory voting: Each share is one vote for board of directors seat

* If there are 3 seats and you have 100 shares, you have max 100 votes per seat

Cumulative voting: Can allocate votes to one or more candidates

* If there are 3 seats and you have 100 shares, you have max 300 votes for one seat, but can’t vote for other seats anymore
* Purpose: Gives minority shareholders proportional representation

Preference stock

* Shares don’t mature
* Receive fixed periodic payments and have no voting rights
* Can be callable (issuer has right to buy it back) or putable (holder has right to sell it back)

Cumulative preference shares

* Promised fixed dividends, which accumulate if not paid
* Must be paid before common shareholders
* There are also non-cumulative preference shares – don’t accumulate

Participating preference shares

* Receive extra dividends if profits exceed a predetermined level
* May have higher than par value claim in liquidation

Non-participating preference shares

* No extra dividends, and par value claim in liquidation

Convertible preference shares

* Can be exchanged for common stock at a pre-determined ratio
* Preferred dividend higher than common dividend
* Less risky than common shares, and can benefit from upside
* Often used to finance risky firms

**Public and private securities**

Private equity: Issued to institutional investors through private placements

* 3 types: VC, LBO, PIPE
* Less liquid
* Share price is not determined by market
* Less financial disclosure, lower reporting costs, potentially weaker governance
* Easier to focus on long term

VC: Financing during early stages

LBO: Buy all of firms equity using debt financing

* MBO (management buyout): If buyers are current management

PIPE (private investment in public equity): Public firm sells private equity to raise capital quickly (usually at discount)

**b) Foreign equities and equity risk**

Integrated markets: When capital can flow freely across borders

* Markets becoming more integrated over time
* Equities can do better 🡪 Increased publicity and liquidity

Direct investing: Buying a foreign firm’s securities in foreign markets

* Obstacles: Different currency, potentially illiquid, different reporting requirements

Depositary receipts: Represent ownership in a foreign firm and trades in other markets in local currencies

* A bank deposits the shares, and issues receipts of ownership
* The bank is custodian, and manages all financial events (e.g., dividends, stock splits)

Sponsored DR: Firm is involved in the issue

* Investors get voting rights

Unsponsored DR: Firm isn’t involved in the issue

* Depository bank keeps voting rights

Global depository receipts: Issued outside the US and outside the issuer’s home country

* Usually denominated in dollars

American depositary receipts (ADR): Issued in the US and denominated in USD

* ADR is based on American Depository Share (ADS) which trades on the domestic market

4 types of ADRs:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Level 1 | Level 2 | Level 3 | Level 4 |
| Trading location | OTC | NYSE, Nasdaq, AMEX | NYSE, Nasdaq, AMEX | Private |
| SEC registration | Yes | Yes | Yes | No |
| Ability to raise capital in the US | No | No | Yes | Yes |
| Listing expenses | Low | High | High | Low |

Global registered shares (GRS): Traded in different currencies on exchanges around the world

Basket of listed depository receipts (BLDR): ETF that is a collection of DRs

**Risk and returns from different equity securities**

Returns are from: Dividends, capital gains, forex if foreign

Risk of equities: Measured in SDs of returns

* Preferred stock less risky than common stock 🡪 Has lower average return
* Cumulative preferred less risky than non-cumulative preferred
* Putable shares more risky than callable shares

**Market value vs book value of equity**

Book value of equity: Assets minus liabilities

* Increases when net income and retained earnings increase
* Reflects firm’s past performance
* Management tries to maximise this

Market value of equity: Value of outstanding equity shares based on market prices

* Share price X No. of shares outstanding
* Reflects expectations of future performance
* May be different from book value

**Return on equity**

Return on equity:

is book value of equity

Or is calculated with only the beginning book value:

Average is useful when it is the norm or BV is volatile

Generally higher ROE is better

* May not be good if book value is rapidly decreasing
* E.g., If the firm issued debt to buy up equity to reduce book value

Price to book ratio: Market value of equity divided by book value of equity

* Higher if investors are more optimistic about future growth
* Value stocks: Low price to book
* Growth stocks: High price to book

**Cost of equity**

Cost of equity: Expected equilibrium total return (inc dividends) on its shares on the market

* Estimated using CAPM or DDM
* Decrease in share price increases expected return on shares

Good investment if expected returns > minimum return for bearing the risk

Cost of equity is the minimum return expected by investors for bearing the risk of the shares

**5.5 Company analysis: Past and Present**

**Research reports**

Research reports: Include analysts valuation and investment recommendation

* Initiation report (detailed) followed by subsequent reports to update recommendation (less detailed)

Company business model is used to determine expectations

4 types of information sources

1. Info from company (e.g., earnings reports, presentations, IR)
2. Public 3rd party info (e.g., analyst reports, news, social media)
3. Proprietary 3rd party info (e.g., analyst reports, Bloomberg)
4. Proprietary primary research, done by analyst (e.g., surveys, studies)

**Revenue and pricing power**

Revenue drivers

* Bottom up analysis: Price/vol, business segments, geography
* Top down analysis: Macro, market share, market size

Similar products markets: Low pricing power, all are price takers

* Exception: Low cost producer can gain abnormal profits, but not in long run
* Commoditization: No product differentiation, no barriers to entry, no loyalty, etc

Monopoly, oligopoly, monopolistic competition – more pricing power here

* Can do value based pricing, and price discrimination

Margins show pricing power

Market size can be debated – can include identical, similar, and substitute products

**Operating costs**

Operating costs: Costs incurred from generating current period revenue

3 classifications of operating costs

* Relationship with output – fixed or variable
* Nature – WIP, utilities, promotion
* Function – selling, advertising, travel, income tax

**Operating costs – relationship with output**

is quantity

is price

is variable cost

is fixed cost

is the contribution margin

Operating leverage comes from fixed costs

* More fixed costs, means operating profits increase faster when volume is increased

Degree of operating leverage:

**Operating costs – Nature or function**

Functional classification is usually the norm for accounting

* E.g., COGS, SGA

COGS is similar to variable cost – gross margin and contribution margin are often similar

Many items in SGA are fixed – e.g., rent, promotion, salaries

Level of output drives operating costs

* This includes fixed costs in the long term

Economies of scale – from fixed costs, and more bargaining power with suppliers

Economies of scope – multiple divisions may share costs, e.g. HR

**Capital investments and structure**

Can use degree of financial leverage to assess capital structure risks:

DFL increases when a company adds fixed interest expense by borrowing

* Operating income becomes a smaller proportion of net income

ROA – reflects unlevered returns

ROE – reflects levered returns

**5.6 Industry and Competitive Analysis**

Industry and competitive analysis is a macro approach

* Determine base rate of industry profitability and companies’ relative positions

Company profitability depends on:

* In the long run depends on the industry
* Within an industry, depends on business model, size, strategy

5 steps of industry analysis

1. Define the industry
2. Research the industry – size, growth, profitability, share trends
3. Analyse industry structure – 5 forces
4. Look at external influences – PESTLE
5. Evaluate competitive strategies of each company

**1) Define the industry**

Industry: Can group companies by the products they offer

* Sector: A similar group of industries

Commercial industry classifications include GICS, ICB, TRBC

Process of classification for all

1. Firm with 1 business line is classified in that business line
2. For multiple business lines, look at line which is >60% of revenue
3. If nothing is >60%, then look at >50%
4. If nothing is >50%, use judgement

Potential limitations of classifications

* Inappropriate groupings – may be too wide/narrow
* The company may have separate divisions – e.g., Amazon
* Geography – some companies can’t offer global products e.g., health, insurance
* Grouping changes - disrupt continuity of statistics, loses comparability

Other ways of grouping

* Geography – e.g., country, DM, EM
* Business cycle sensitivity – e.g., defensives vs cyclicals
* Financial measures – e.g., market cap, profitability, growth rates
* ESG

**2) Research the industry**

Industry size – annual sales of product, not all companies in industry

Industry growth

* Growth – new tech, independent of general economy
* Mature – little growth, competition matters, general economy matters
* Cyclicality affects growth

Industry profitability - Based on ROIC

* Difficult to estimate for private companies

Market share - Industry concentration can be measured with HHI

* Low HHI means competitive industry

**3) Industry structure**

5 forces – stronger forces reduce economic profits

* Rivalry amongst existing competitors
* Threat of new entrants
* Threat of substitutes
* Bargaining power of buyers
* Bargaining power of suppliers

Factors influencing competition

* Barriers to entry
* Fragmentation of market 🡪 Creates competition
* Unused capacity in industry 🡪 Creates price competition
* Customer loyalty
* Price elasticity
* Industry maturity 🡪 Mature means slower growth

**4) External influences**

PESTLE – Political, Social, Technological, Legal, Environmental

* Different levels of importance in different industries

Political influences

* Energy: Govs low and stable prices, climate regulations, OPEC
* Health care: Govs are biggest spender
* Defence: Govs are the only buyers

Economic influences

* Cyclical and structural trends
* Interest, credit availability, inflation

Social influences

* E.g., social media, increased pressure for sustainability and ethics

Technological influences

* Sustaining innovation: Improvements in a product over time
* Disruptive innovation: Creates a new market, usually from new entrants

Legal influences

* Changes in laws and regulations (e.g., tobacco, cannabis)

**5) Competitive strategy**

3 types of generic competitive strategy (Porter):

Cost leadership

* Seeks the lowest costs of production 🡪 Lowest prices, high volumes
* Focus on operational efficiency

Differentiation strategy

* Products distinct in type, quality, or delivery
* Cost of differentiation must be less than the price premium
* Needs strong marketing and product

Focus strategy

* Targeting a niche market
* Need to deeply understand their audience

**5.7 Forecasting**

**Forecast objects**

4 forecast objects

1) Financial statement lines with clear drivers

* Drivers have explanatory value and improve accuracy
* E.g., retail sales is stores X sales per store

2) Financial statement items without clear drivers

* Forecast directly – use guidance and historicals

3) Summary measures (e.g., EPS, FCF)

* Combines several line items together – speeds up forecasting, but less transparent

4) Ad hoc items – e.g., contingent liabilities, potential gains/losses

Complex models not necessarily more accurate than simple ones

**Forecast approaches**

4 approaches – usually combined

1) Based on historical results

* Weakness: Future may not be the same
* Usually for noncyclical and nonmaterial items

2) Historical industry base rate convergence

* Makes sense for established, stable, public industries
* Hard for new and rapidly changing industries, cyclicals, dominant companies (their historicals are essentially the industry)

3) Management guidance

* Usually give as range
* Contains significant management assumptions – not as useful for cyclicals, more useful for expenses in their control
* May purposefully guide lower to beat estimates
* Useful if they have historically provided reasonable estimates

4) Analyst discretionary forecast

* From surveys, models, probability distributions
* Useful when other approaches fall short – e.g., cyclicals

**Forecast horizon**

Cyclicals – need to at least include midpoint of business cycle

Company changes – need to include horizon where benefits of change can be felt

**Revenue forecast approaches**

Top down approaches

* Starts with macro variable (e.g., GDP growth, industry growth)
* Can use GDP growth for volume, inflation for prices
* Can forecast market growth, and calculate growth using share

Bottom up approaches

* ASP and volumes
* Product line or segment revenues
* Capacity based measures – forecast for each location
* Return/yield measures – forecast balance sheet and the return the company will earn from them

**Recurring and non-recurring items**

Non-recurring items should be analysed on a standalone basis

* Do not represent ongoing revenues

If the company regularly uses non-recurring, they might actually be recurring

**COGS and gross margins**

COGS are typically estimated as a percentage of future revenue

Changes in market share can signal changes in gross margin

* If it is losing share due to cheaper substitutes, then there will be gross margin pressure
* If it is gaining share with innovative products, it will increase gross margins

Price and volume of inputs can improve COGS forecasts

Firms may hedge future input costs – makes gross margins stable

**SG&A expenses**

SG&A are less sensitive to changes in sales volume – most are fixed costs

* Selling and distribution may be more variable

Can be modelled with fixed growth rate which includes expected inflation

**Working capital**

Accounts receivable

* Can be forecast using

Inventory

* Can be forecast using

Accounts payable

* Can be forecast using

**Capital investments and structure**

Two types of capex: Maintenance and growth

Historical depreciation is used to forecast capital spending for maintenance

* Should include inflation too

Growth capex requires analysis of revenue growth strategies

D&A expense can be forecasted using the net book value of PPE and intangibles

Capital structure is forecasted using leverage ratios and planned capex

* Management may provide targets

**Scenario analysis**

Should do scenario analysis with multiple alternative assumptions to see sensitivity

* Not just a single assumption
  1. **Equity Valuation**

Valuation models estimate intrinsic values of stocks

See if stocks are over/undervalued 🡪 Can earn abnormal profits if market price moves towards intrinsic value over time

Factors influencing whether to take a position

* The larger the gap, the more likely
* The more confidence about the model, the more likely
* The more confidence about the inputs in the model, the more likely
* Market prices should reflect intrinsic value generally
* Must believe the market price will move toward the intrinsic value (catalysts)
* More analysts covering stock means current price is more likely to be accurate

**a) Equity valuation models**

Discounted cash flow models (PV):

* Dividend discount model: PV of cash distributed to shareholders
* FCFE models: PV of cash available to shareholders after capex and working capital

Multiplier models - P/E or EV/EBITDA

Asset based: Value of common stock is asset value minus liabilities and preferred stock

* Adjust assets and liabilities to fair value for market value of equity

**Dividends, splits, and repurchases**

Cash dividends: Payments to shareholders in cash

* Regular dividends: Consistent schedule
* Special dividends: One offs from favourable circumstances

Stock dividends: Existing shareholders given additional stock

* Expressed as a %
* Total shareholder equity remains the same – now more shares, with each worth less

Stock splits: Divide existing shares into multiple shares

* Expressed as a ratio (e.g., 3-for-1 means each existing share is split into 3)
* No change in wealth – share price drops

Reverse stock splits: Opposite of stock splits

Share repurchase: Company buys outstanding shares of its own stock

* Same effect as cash dividends
* Maybe be more beneficial than dividends for tax reasons

**Dividend payment chronology**

1) Declaration date

* Board of directors approves and specifies the dividend, and the other dates are specified

2) Ex-dividend date

* First day where a share purchases will not receive the next dividend
* 1-2 days before holder-of-record date
* Share price will decrease by dividend amount

3) Holder-of-record date

* Day where all share owners are entitled to receive a dividend payment

4) Payment date

* Day payment is made

**b) Dividend discount model**

DDM: Intrinsic value of a stock is the PV of its dividends

is the required rate of return for equity

One year holding: The PV of the dividend and the terminal value (price of stock at year end)

Can hold for more than one year

If holding period is infinite, there is no explicit terminal value for the stock

* In practice we calculate terminal value after a time in the future where we expect dividend growth rate to be constant

For preferred stock, the dividend is the same every period and has indefinite maturity, so the equation simplifies to:

**FCFE models**

FCFE: Reflects firm’s capacity to pay out dividends

Can be simplified to:

FCInv is Fixed capital investment

Is discounted in the same way dividends are:

**Estimating required return for equity**

CAPM estimated the required rate of return:

is systematic risk

is expected market return

Can vary as people have different inputs

If the firm has publicly traded debt, can calculate ROE by adding a risk premium to the current bond yield

* Can use gov bond if there is no publicly traded debt

**Gordan growth model**

Gordan growth model assumes the annual growth rate of dividends is constant

Assumptions of GGM

* otherwise it doesn’t work
* and are both constant

GGM is used when forever, infinite, indefinite is used

Can also be used to show value of stock when the dividend growth rate is 0

**Estimating dividend growth rate**

3 ways to estimate dividend growth rate

1. Historical growth rate for the firm
2. Average industry growth rate
3. Estimate sustainable growth rate

Sustainable growth rate: Rate where equity, earnings, and dividends can grow indefinitely, assuming ROE and payout ratio are constant, and no new equity issued

is the retention rate

Some firms don’t currently pay a dividend – need to estimate the first dividend payment

* Remember to discount it to the present (e.g., if the firm only starts paying the dividend in year 4)

**Multistage dividend growth models**

A dividend growth rate higher than required rate of return can exist in the short run, but cannot be sustained in the long run

* High growth rates attract competition 🡪 Reduces growth rate

Multistage dividend discount model can short temporary high growth

Where is the terminal stock value:

**When to use GGM**

GGM best for stable, mature, non-cyclical firms that pay dividends

Need to use multistage model for rapidly growing or unstable dividends

* Can use 3 stage model: Growth, transition, maturity

FCFE model more appropriate for firms that don’t pay dividends

**c) Relative valuation measures**

Price multiple: Compared to benchmark value based on peer group

* Most use projected values which gives forward/leading ratio
* Using historical values gives the trailing ratio

Price multiples from comparables: Comparing with other firms

Price multiples from fundamentals: Based off valuation model (aka justified P/E)

P/E: Stock price divided by EPS

P/S: Stock price divided by sales per share

P/B: Stock price divided by book value of equity per share

P/CF: Stock price divided by cash flow per share

**Multiples from fundamentals**

To get P/E from fundamentals, do:

Dividend displacement of earnings: A higher payout ratio will increase P/E, but a lower growth rate (from sustainable growth rate) will decrease P/E

**Multiples from comps**

Benchmarks can include historical averages or industry averages

* Law of one price guides comps – similar assets should have similar multiples

Disadvantages of multiples:

* Fundamentals and comps may tell a different story
* Different accounting methods can mean multiples can’t be compared
* Multiples for cyclicals can be volatile

**Enterprise values**

EV is the cost to acquire the entire firm:

Useful for comparing firms with significant differences in capital structure

EBITDA is used as it is always positive, whereas net income might not be

Weakness of enterprise value

* Market value of debt is often not available – can use values of similar bonds or BV
* Market value of short term debt is very similar to book value

**Asset based valuation models**

Market values for assets are hard to get – start with BV on balance sheet, then adjust

Not very useful if there’s lot of intangibles, on or off balance sheet

Asset based models can be good for floor values when there are lots of intangibles

Most reliable where there are lots of short term assets

Often used for private companies

**Advantages of each valuation type**

DCF:

* Advantages: Uses PV, accepted by analyst community
* Disadvantages: Inputs need estimation, very sensitive to inputs

Multiples from comps:

* Advantages: Widely used, easily available, time series and cross sectional
* Disadvantages: Lagging multiples reflect past, may not be comparable, cyclicals may not be accurate, can contradict DCF, different accounting methods, negative denominator makes it useless

Multiples from fundamentals:

* Advantages: Widely accepted, based on models
* Disadvantages: Very sensitive to inputs

Asset based:

* Advantages: Floor values, useful if lots of short term assets, useful if fair value is reported
* Disadvantages: Difficult to get fair value, not the same as BV, not good for intangibles, hyperinflation can make it weird