# To complete

-How to make CF statement

-Important financial ratios

-Consolidation

-ACCA

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# I\_ General knowledge

## Common-size financial statement

Income statement: % Revenue

Balance sheet: % Total assets

## Types of analyst adjustments to reported financials

* Adjustment to investment (HTM, HFI, AFS) 🡪 Net income, OCI
* Adjustment to inventory (Inventory costing method)
* Adjustment to PPE (capex, depreciation method)
* Adjustment to goodwill
* Off-BS financing: A number of business activities give rise to obligations that, although they are economically liabilities of a company, are not required to be reported on a company’s BS

## Market organization & strucuture

### 3.1. General knowledge

* Practicioners can classify markets by whether the markets trade instruments for immediate delivery or for future delivery. Markets that trade contracts that call for delivery in the future 🡪 forward/future markets. Those that trade for immediately delivery 🡪 spot markets. Options market trade contracts for deliver in the future, but delivery takes place only if the holders of the options choose to exercise them
* When issuers sell securities to investors 🡪 trade in primary market🡪 funds flow to issuer
* When investors sell securities to others 🡪 trade in secondary market 🡪 funds flow between traders
* Money market: Trade debts instruments maturing in 1 year or less (negotiable certificates of deposit, government bills, commercial papers, repo
* Capital market: Trade instrument of longer duration (bonds, equities)
* Traditional investment markets: All publicly trade debts & equities & shares in pooled investment vehicles that hold publicly traded debts/equitites
* Alternative investment markets: Hedge funds, private equity (include venture capital), commodities, real estate securities, real estate properties, securitized debts, operating leases, collectibles… 🡪 hard to trade & hard to value 🡪 different between types of funds
* Reserve currencies: currencies that national central banks and other monetary authorities hold in significant quantities 🡪 primary reserve currencies & secondary reserve currencies
* Currencies trade in FX markets. In spot currency transactions, 1 currency is immediately or almost immediately exchanged for another. Rate of exchange 🡪 spot FX rate
* Contracts: agreement among traders to do something in the future. Include forward, futures, swap, option, insurance contracts

### Forward markets

* Forward contract: An agreement to trade the underlying asset in the future at a price agreed upon today 🡪 used to reduced risk (hedgers).
* Risk:

(+) Counterparty risk: Risk that the other party to a contract will fail to honor the terms of the contract

(+) Liquidity risk:

### Future markets

Future contract: Standardized forward contract for which a clearinghouse guarantees the performance of all traders. Require initial margin, the clearing settle the margin accounts on a daily basis. Margin dropped below maintenance margin 🡪 must replenish accounts. Variation margin payments 🡪 ensure that the liabilities associated with futures contracts do not grow large

Benefits:

(+) No counter-party risk

(+) Can close position by arranging offsetting trade

### Swap contracts

* Swap contract: An agreement to exchange payments of periodic cash flows that depend on future asset prices/ interest rate

### Option contracts

* Option contract: Allow the holder of the option boy buy or sell an underlying instrument at a specified price at or before a specified date in the future
* Call option: Option to buy
* Put option: Option to sell
* Specified price: Strike price
* European-style contract: Can exercise only when they mature
* American-style contract: Can exercise earlier

### Other contracts

* Insurance contracts: Pay their beneficiaries a cash benefit if some event occurs
* Credit default swap (CDS): Insurance contracts that promise payment of principal in the event that a company defaults on its bonds

### Commodities

### Real assets

Characteristics:

(+) Heterogenity

(+) Illiquidity

(+) Substantial cost of managing

## Financial intermediaries

### 4.1. Brokers, exchanges and alternative trading systems

#### 4.1.1. Brokers

\* Brokers: Agents who fill orders for clients. Search for traders who are willing to take the other side of the clients’ orders

\* Block brokers: Provide brokerage service to large traders

\* Investment banks: Provide advices to corporate clients and help them arrange transactions (IPO, seasoned securities offerings), M&A

\* Exchange: Provide places where traders can meet to arrange their trades

#### 4.1.2. Dealers

\* Dealers: Fill their clients’ orders by trading with them 🡪 Provide liquidity (the ability to buy or sell with low transaction costs when you want to trade)

\* Most dealers also broke orders, and many brokers deal to their customers 🡪 broker-dealers 🡪 conflict of interest

### 4.2. Securitizers

Bank & investment companies create new financial products when they buy & repackage securities or other assets

* The process of buying assets, placing them in a pool, and then selling securities that represent ownership of the pool 🡪 securitzation
* MBS: Debt securities with specified cliams on the cash flows of a portfolio of mortgages
* Mortgage-backed securities (MBS): Advantages: Default losses & early repayment are much more predictable for a diversified portfolio of mortgages than they are for individual mortgages.
* They are also attractive to investors who cannot efficiently service mortgages but wish to invest in mortgages. By securitizing mortgage pools, the mortgage banks allow investors who are not large enough to buy hundreds of mortgages to obtain the benefits of diversification and economies of scale in loan servicing
* Securitization 🡪 improve liquidity in the market because it allows investor in the pass-through securities to buy mortgages indirectly that they otherwise would not buy 🡪 easier to value and sell
* When financial intermediaries securitize assets, they often create several classes of securities, called tranches, that have different rights to the cash flows from the asset pool. The tranches are structured so that some produce more predictable cash flows than do others. The senior tranches have first rights to the cash flow from the asset pool. Overall risk of a given asset pool cannot be changed 🡪 the more junior tranches bear a disproportionate share of the risk of the pool
* Investment companies alos create pass-through securities based on investment pools

### 4.3. Depository institutions and other financial corporations

* Depository institutions: Include commercial banks, savings and loan banks, credit unions, and similar institutions that raise funds from depositories and other investors and lend it to borrowers. The banks give their depositors interest and transaction services (check writing, check cashig), in exchange for using their money. They may also raise funds by selling bonds or equity interest in the banks
* Transfer funds from depositors and investors to borrowers

### 4.4. Insurance companies

* Insurance companies help people and companies offet risks that concern them 🡪 create insurance contracts (policies) that provide a payment in the event that some losses occur. The insured buy these contracts to hedge against potential losses
* Credit default swap (CDS) are also insurance contracts, but historically they have not been subject to the same reserve requireement that most government apply to more tranditional insurance contractss. They may be sold by insurance companies or by other financial entities (investment banks or hedge funds)
* Insurance contract transfer risk from those whoy buy the contracts to those who sell them. Insurance companies also often transfer risks that they do not wish to bear by buying reinsurance policies from reinsurers

🡪 transfer risk from buyer to seller

Problems for insurance companies:

* (+) Fraud
* (+) Moral hazard: If insured 🡪 more careless
* (+) Adverse selection: Those at most risk 🡪 buyer insurance 🡪 insured loss greater than average

### 4.5. Arbitrageurs

* Arbitrageurs trade when they can identify opportunities to buy and sell identical or essentially similar instrument at different prices in different market. They profit when they can buy in one market for less than they sell in another market 🡪 provide liquidity to traders
* Dealer: connect buyers & sellers who arrive in the same market at different times whereas the arbitrageur connect buyers and sellers who arrive at the same time in different markets
* Buying risk in one form and selling it another form 🡪 involve a process called replication. Arbitrageurs use various trading strategies to replicate the returns to securities & contract. If they can substantially replicate those returns, they can use the replication trading strategy to offset the risk of buying & selling the actual securities and contracts. The combined effect of their trading is to transform risk from one form to another 🡪 this process allow them to create/eliminate contracts in response to the excess demand for, and suplly of, contracts

### 4.6. Settlement and custodial services

* Financial intermediaries that help customers settle their trades and ensure that the resulting position are not stolen/ pledged more than oce as collaterals
* Clearinghouse: Arrange for final settlement of trades. In future markets, they guarantee contract performance. In other markets, they may act only as escrow agents, transfer money from the buyer to the seller while transferring securities from the seller to the buyer
* The members of a clearinghouse are the only traders for whom the clearinghouse will settle trades. To ensure that their members ettle the trades that they present to the clearinghouse 🡪 members must have adequate capital and post-performance bonds (margins). Clearinghouse also limit the aggregate net (buy minus sell) quantities that their members can settle

## Private placements and other primary markety transactions

* Private placements: Corporations sell securities directly to a small group of qualified investors, usually with the assistance of an investment bank. Qualified investors have sufficient knowledge & experience to the recognize the rirks that they assume, and sufficient wealth to assume those risks responsibly
* Liquid markets: Trader can buy/sell with low transaction cost and small price concessions when they want to trade

## Gordon growth model

* Assume dividend growth indefinitely at constant rate
* Value noncallable fixed-rate perpetual preferred stock

Sustainable growth rate = (1 – Dividend payout ratio) \*ROE

## Cost of capital

* Cost of capital: Risk-adjusted discount rate
* WACC calculation:
* Kd: Approximate by taking the average cost of the firm’s existing debt (but often confuse past cost with future anticipated Kd) 🡪 use the yield of similar-risk, newly issued corporate securities
* Kd = Current year nent interest paid/ average net debt
* Estimate Ke: Gordon growth model
* CAPM approach:

Ke = Rf + β \* [E(Rm)- Rf]

## Value, purposes, and limitations of ratio analysis

### 8.1. Value & purposes

(+) microeconomic relationships within a company that help analysts project earnings and free cash flow

(+) a company’s financial flexibility, or ability to obtain the cash required to grow and meet its obligations, even if unexpected circumstances develop;

(+) management’s ability; changes in the company and/or industry over time; and comparability with peer companies or the relevant industry(ies).

### Limitations

* The heterogeneity or homogeneity of a company’s operating activities. Companies may have divisions operating in many different industries. This can make it difficult to find comparable industry ratios to use for comparison purposes.
* The need to determine whether the results of the ratio analysis are consistent. One set of ratios may indicate a problem, whereas another set may indicate that the potential problem is only short term in nature.
* The need to use judgment. A key issue is whether a ratio for a company is within a reasonable range. Although financial ratios are used to help assess the growth potential and risk of a company, they cannot be used alone to directly value a company or its securities, or to determine its creditworthiness. The entire operation of the company must be examined, and the external economic and industry setting in which it is operating must be considered when interpreting financial ratios.
* The use of alternative accounting methods. Companies frequently have latitude when choosing certain accounting methods. Ratios taken from financial statements that employ different accounting choices may not be comparable unless adjustments are made. Some important accounting considerations include the following:
* FIFO (first in, first out), LIFO (last in, first out), or average cost inventory valuation methods (IFRS does not allow LIFO);
* Cost or equity methods of accounting for unconsolidated affiliates; ● Straight line or accelerated methods of depreciation; and
* Capital or operating lease treatment

## Common size analysis

### 9.1. Common-size analysis of the balance sheet

A vertical common-size balance sheet, prepared by dividing each item on the balance sheet by the same period’s total assets and expressing the results as percentages, high- lights the composition of the balance sheet

### Common-size analysis of the income statement

A vertical common-size income statement divides each income statement item by revenue, or sometimes by total assets (especially in the case of financial institutions).

### Cross-sectional analysis

As noted previously, ratios and common-size statements derive part of their meaning through comparison to some benchmark. Cross-sectional analysis (sometimes called “relative analysis”) compares a specific metric for one company with the same metric for another company or group of companies, allowing comparisons even though the companies might be of significantly different sizes and/or operate in different curren- cies.

### Trend analysis

When looking at financial statements and ratios, trends in the data, whether they are improving or deteriorating, are as important as the current absolute or relative levels. Trend analysis provides important information regarding historical performance and growth and, given a sufficiently long history of accurate seasonal information, can be of great assistance as a planning and forecasting tool for management and analysts

## Ratios interpretation and context

* Company goals and strategy. Actual ratios can be compared with company objectives to determine whether objectives are being attained and whether the results are consistent with the company’s strategy
* Industry norms (cross-sectional analysis). A company can be compared with others in its industry by relating its financial ratios to industry norms or to a subset of the companies in an industry. When industry norms are used to make judgments, care must be taken because:
* Many ratios are industry specific, and not all ratios are important to all industries.
* Companies may have several different lines of business. This will cause aggregate financial ratios to be distorted. It is better to examine industry- specific ratios by lines of business.
* Differences in accounting methods used by companies can distort financial ratios.
* Differences in corporate strategies can affect certain financial ratios.
* Economic conditions. For cyclical companies, financial ratios tend to improve when the economy is strong and weaken during recessions. Therefore, financial ratios should be examined in light of the current phase of the business cycle.

## DuPont analysis: The decomposition of ROE

### 11.1. 2-component Dupont

= ROA \* Leverage

### 3-component Dupont

=Net profit margin \* Total asset turnover \* Leverage

### 5-component Dupont

= Tax burden \* Interest burden \* EBIT margin \* Total asset turnover \* Leverage

## Pro forma income statement (projected)

|  |  |
| --- | --- |
|  | Revenue |
| - | COGS |
| = | Gross profit |
| - | SGA expenses |
| = | Pro forma EBITDA |
| - | Depreciation & amortization |
| = | Pro forma EBIT |
| - | Pro forma taxes on EBIT |
|  | Operating income after taxes |
| + | Depreciation & amortisation |
| - | Capex |
| - | Increase in NWC |
| = | FCFF |

## Use of discount & premium

### 13.1. Control premium (made only to the equity portion)

* Adjusted control premium = control premium on equity \* (1 – Debt ratio)
* Adjusted multiple = Raw multiple of public company \* (1 + control premium \* (1-debt ratio))

### Use of discount & premium

* Discount for lack of control (DLOC) = 1 – 1/(1+control premium)

# II. Earnings per share

## Basic EPS

## Diluted EPS

# III. Inventory

## Convert LIFO inventory to FIFO inventory

LIFO liquidation: When QSale > QPurchase 🡪 liquidate inventory from prior period

LIFO reserve = FIFO inventory – LIFO inventory

Adjustment:

|  |  |  |
| --- | --- | --- |
| LIFO Inventory | Adjustment | FIFO inventory |
| Inventory | + reserve | (2 year: Average reserve) |
| COGS | -ΔReserve |  |
| Equity | + Reserve \* (1-t) | 2 year: Δreserve \* t |
| Cash | * Reserve \* t |  |

# IV\_ Long-lived assets

## Fixed assets

Gross investment: Original cost of the asset before deducting AD

Net investment = original cost (gross investment) – AD

## Finance vs. operating leases

|  |  |
| --- | --- |
| Finance leases | Operating leases |
| Purchase asset, directly financed by the seller | Use of asset for a period of time |
| Higher CFO | Higher profit in early years |
|  | Higher solvency |

# V. Cash flow statement

## 1. Indicators of CF quality

* Positive OCF
* OCF derived from sustainable sources
* OCF adequate to cover Capex, dividends & debt repayment
* OCF with relatively low volatility

## Cash flows shenanigans

Certain accounting shenanigans can either artificially boost reported operating cash flows or present unsustainable CFs

|  |  |  |
| --- | --- | --- |
| Type | Definition | Note |
| Stretching out payables | Slow down the rate of payments to vendor   * Boost the reported growth in CFO * Vendors may push 🡪 unsustainable | Monitor by:   * Days sales in payables (DSP)   (AP/COGS)\*365 |
| Financing of payables | When a company use 3rd party Financial institution to pay the vendor in the current period, with the company then paying back the bank in a subsequent period 🡪 change the timing of CF |  |
| Securitizations of receivables | Occur when companies package their receivables (most often those that have a longer term & higher credit quality) 🡪 then transfer them to a financial institution or variable interest entity (VIE). If the VIE is bankrupcy-remote (the creditors cannot attach the assets of the VIE if the VIE sponsor files for bankruptcy) 🡪 the receivables have effectively been sold & the proceeds received should be reflected in CO   * Unsustainable boost to CFO (as there is limit to how much a company can securitize) * Company can record gains when selling receivables (BV not include all the future intest income that is to be earned, yet buyers still have to pay for that interest) |  |
| Tax benefits from stock options | ??? | ??? |
| Stock buybacks to offset dilutions | The tax benefits of option exercises is a source of CFO, benefiting those companies whose option exercise grow  Cash expended by a company for the buyback of corporate stock, however, is considered a financing activity on the CFO   * As option exercise growt, so does the boost to operating cash flows for the tax benefit, but the outflows for stock buybacks to offset dilution of earnings are recorded in CFF |  |
| Other means | * Increase the use of capital lease transactions as a way to acquire fixed assets obfuscates FCF (capex may be understated on a year-over-year basis) * The accounting for outstanding checks & financing receivables |  |

# VI. Integration of FS analysis techniques

# VII. Translation of FS in foreign currencies

Underlying concept: Entire investment in a foreign entity is exposed to translation gain/loss 🡪 all asset/liabilities must be revalued at each BS date

## Translation method

### Current rate method

All Asset & Liabilities – translated @ current FX rate

Equity 🡪 translated @ historical FX rate

Revenue & expenses 🡪 translated @ transaction date FX rate

### Temporal method

All Asset & Liabilities – Historical cost 🡪 translated @ historical FX rate

Current cost 🡪 translated @ current FX rate

More specific:

Monetary A/L 🡪 use current FX rate

Non-monetary A/L measured @ historical cost 🡪 Use historical FX rate

Non-monetary A/L measured @ current value 🡪 Use FX rate @ the date current value was determined

Equity 🡪 use historical FX rate

Revenue & expenses (other than expenses related to non-monetary assets) 🡪 use FX rate @ transaction date

Expenses related to non-monetary assets (COGS, depreciation, amortisation) 🡪 FX rate used to translate these assets

### Both methods

Retained earnings 🡪

Beg balance (b/f)

+ NI (@method used)

* Div (@historical rate)

RE

Common equity 🡪 historical rate

Translation adjustment: Current rate method: Accumulated as a separate component of equity

Temporal method: Included as G/L in NI

# VIII. Industry & company analysis

## Forecast specifics FSLI

### Revenue

Forecast revenue:

* Top-down approach: Overall economy 🡪 sector/industry/market for specific products 🡪 revenue projection
* Bottom-up approach: Individual company 🡪 forecast of individual products/ segments
* Hybrid approach: Combine 2 approach

For top-down approach:

1. Grow relative to GDP growth
2. Market growth & market share approach

* Model revenue

For bottom-up approach:

1. Time-series
2. Return on capital
3. Capacity-based measure

### Operating costs (opex)

Both fixed & variable portion

Economies of scale

### COGS

### Financing costs

Gross interest expenses = Gross debt \* interest rate

Interest income = Cash & ST debt securities \* yield on average cash balances

Net interset expenses = Gross interset expenses – Interest income = Net debt \* Net interest rate

## The 5 competitive forces that shape strategy

* Industry attractiveness: Is the industry attractive in terms of long-term profit potential
* Competitive advantage: How does the firm create value for buters, relative to other players in the industry

### Rivalry among existing competitors

The intensity of rivalry is greatest if:

* Competitors are numerous/roughly equal in size & power
* Industry growth is slow
* Exit barriers are high
* Rivalry are highly committed to the biz & have an aspriation for leadership, especially if they have goals that go beyond economic performance
* Firms cannot read others’ signals well (lack of familiarity, diverse approach to compete, differeing goals)

Price competition is most likely to occur if:

* Product/service nearly identical; few switching cost for buyer
* High FC, low marginal cost
* Capacity must be expanded in large increments to be efficient
* The product is perishable

### Bargaining power of buyers

A customer group has negotiating power if:

* There are few buyers, or each one purchases in volume that are large relative to the size of a single vendor

(high FC & low marginal cost 🡪 amplify the pressure on reivals to keep capacity filled through discounting)

* The industry’s product are standardized/undifferentiated
* Buyer face few switching cost in changing vendor
* Buyer can threat to integrate backward if vendors are too profitable

A buyer group is price-sensitive if:

* The product represent a significant fraction of its cost structure/procurement budget
* The buyer group earn a low profit/under pressure to trim purchasing cost
* The quality of buyers’ products is little affected by the industry’s product. If quality is import 🡪 less price sensitive
* The industry’s product has little effect on the buyers’ other cost
* If buyer perceived value significant 🡪 not sensitive about price

### Bargaining power of suppliers

* It is more conentrated than the industry it sells to
* The supplier group does not depend heavily on the industry for its revenue
* Industry participants face switching cost in changing suppliers
* Suppliers offer product that are differentiated
* There is no substitute for what the supplier group provides
* The supplier group can credibly threaten to integrate forward into the industry

### Threat of substitute products/ services

The threat of substitute is high if:

* If offer an attractive price-performance trade-off to the industry’s products
* The buyer’s cost of switching to the substitute is low

### Threat of new entrants

7 major sources:

1\_ Supply-side economies of scale: Economies of scale -> threat of new entry

2\_ Demand-side benefits of scale: Buyers trust larger companies 🡪 limit the willingness of customers to buy from a newcomer

3\_ Customer switching cost: ex: Switching SAP’s ERP

4\_ Capital requirement: High capital requirement 🡪 discourage entry

5\_ Incumbency advantages of size: brands/ experience…

6\_ Unequal access to distribution channels

7\_ Restricitve government policies

Expected retaliation

### The common factors that affect the 5 forcces (fleeting factors)

* Industry growth rate (g ↑ 🡪 rivalry ↓ but π is not assured)
* Innovation & technology
* Government policies
* Complementary products/ services

## Your strategy needs a strategy

### Assessment of industry

2 critical factors:

* Predictability: How far into the future & how accurately can you confidently forecast demand, corporate performance, competitive dynamics, & market expectations
* Malleability: To what extent can you & your competitors influence those factors

|  |  |
| --- | --- |
| Shaping (more malleable; less predictable) | Visionary (more malleable; more predictable) |
| * When: Best in unpredictable environment that you have the power to change 🡪 Short-term, flexible plan * Influence business environment by: Define new market, technology; build network of customers; suppliers; partners; marketing; partnership; lobbying * Ex: Software | * When: For predictable environment that you have the power to change * Build-it and they will come approach * Influence, alter environment; stick to long-term goals & strategy; commit adequate resources * High-risk; can be disruptive * Ex: Automobiles |
| Adaptive (less malleable; less predictable) | Classical (less malleable; more predictable) |
| * When: More flexible & experimental; work far better in immutable environment that are unpredictable * Must have process that capture signals of change; reduce info loss & time lags * Short-term; flexible plans; goals = maximize flexibility * Willing to change long-term plans * Ex: Fashion | * When: Industry where environment is predictable but hard to change 🡪 achieve most favorable market condition * Industry analysis & long-term forecast; identify unique abilities/resources * Goals = optimize efficiency * Ex: Tobacco; househould products; oil |

Note:

* Adaptive & classical: Take competitive environment as a given & aim to carve out the best place they can within it
* Shaping & visionary: Consider the environment not as given but as something that can be molded to advantage
* 5th style: Survival: Company is in crisis 🡪 survival is threaten 🡪 should:

- Cut expenes

- Shore up capital

- Restructure

# IX. Financial markets

## Money market

Debt instrument maturing ≤ 1 year

## Capital market

## Primary securities market

\* When issuers first sell securities to investors 🡪 trade in primary markets (IPO or seasoned security offering

\* Underwritten offering: the investment bank gurantees the sale of the issue at an offering prices that it negotiate with the issuer. If the issue is undersubsribed 🡪 the bank will buy whatever securities it cannot sell at the offering price. The underswriter usually also promise to make a market in the security for about a month to ensure that the secondary market will be liquid and to provide price support, if necessary.

\* Best effort offering: The investment bank act only as broker. If the offering is undersubsribed, the issuer will not sell as much as it hoped to sell

\* Investment bank: Conflict of interest with respect to the offering price in underwritten offering. As agents for the issuers 🡪 IB supposed to select the offering price that will raise the most money. But as underwriters, they have strong incentives to choose a low price. If the price is low, the bank can allocate valuable shares to benefits their clients and therby indirectly benefit the banks. If the price is too high, the underwriters will have to buy overvalued shares in the offering & the fllowing months ( they they have to support the price in secondary market 🡪 also indirectly cost the banks) 🡪 These considerations tend to lower intial offering price so that prices in the secondary market often rise immediately following an IPO

# X. Securitiziation

Mortgages/Loans/debts 🡪 Pool (managed separately by SPE) 🡪 Mortgage pass-through securities (MBS) 🡪 Payment of principal & interest 🡪 Investor

* Tranches: Different rights to CF
* Investor: Have the same net CF & associated risks as pool of mortgages
* Securitzation: Buy asset 🡪 place them in a pool 🡪 sell securities that represent ownership of the pool
* Advs:

(+) Default loss 🡪 more predictable

(+) Prepayments 🡪 more predictable

(+) Diversification & economies of scale, improved liquidity

# XI. Valuations

## General knowledge

### Present value model (discounted CF model)

* Free CF: CF over capex (FCFF). For a gooing concern, some CFO is not “free” but rather needs to be committed to reinvestment & new investment in assets
* FCFF: CF available for debt & equity capital supplier after all opex (including income taxes) have been paid & necessary investment in wokring capital & fixed capital have been made

FCFF = NI + NCC + int\* (1-T) – FCInv – WCInv

NCC : Non-cash charges (depreciation & amortisation)

FCInv : Capex

WCInv : Working capital investment

OR: FCFF = CFO + Int \* (1-T) –FCInv

* FCFE: CF available for common stockholders after all opex expenses & borrowing cost have been paid & necessary investment in working capital & fixed capital have been made 🡪 what a company can afford to pay in dividend

FCFE = CFO – FCInv + Net borrowing = FCFF – Int \* (1-T) + Net borrowing

* Can apply to dividend discount model or CF model

### Multiplier model

* Based chiefly on share prices multiple/Enterprise value multiples

### Asset-based valuation models

* Intrinsic value = estimated asset values – Estimated liabilities & preferred shares

Value of biz = ∑Value of assets

### Approaches to valuation

|  |  |
| --- | --- |
| Approach 1 | Future divs can be foreacsted by assigning the future streams of div into several growth pattern  Most common patterns:   * Constant growth forever (Gordon growth model) * 2 distinct stages of growth (2-stage growth models & H-model) * 3 distinct stages of growth (3-stage growth model) |
| Approach 2 | A finite number of dividends can be forecasted individually up to a terminal point (3-10 year into the future)  Then, forecast remaining dividends from the terminal point forward, by assigning those dividend to a stylized growth pattern  OR:  Share price at terminal point |

### Dividend payout ratios

Div payout ratio = DPS/EPS

### Terminal value of stock

Determined by GGM or market multiple approach (P/E; EPS)

### Implied growth rate

If stock is correctly priced 🡪 g = ke – D1/P0

## Present value model

### Dividend discount model

Pn: Terminal stock value (dividend paid @ year end)

### Comparisions of valuation methods

|  |  |
| --- | --- |
| Method | Most suitable when: |
| DDM | * The company is dividend-paying (the analyst has dividend record to analyze) * The dividend policy is related to profitability (understandable & consistent relationship) * The investor take a non-control perspective |
| FCF | * The company is not dividend-paying * The company is dividend-paying but dividends significantly exceed/ fall short of FCFE * The FCF align with profitabilit within forecast horizon * The investor take a control perspective |
| Residual income | * The company is not paying dividend, as an alternative to FCF model * The company expect negative FCF |

### DDM: Single holding period

### DDM: Multiple holding period

### Present value of growth opportunities

Value of stock = The value of the company without earnings reinvestment + PVGO

* PVGO = value of growth = ∑ expected value today of opportunities to profitably reinvest future earnings

→ PVGO = price with growth – price if g =0

E1: Next year earnings

* P/E = price with g =0 + component of P/E related to growth opportunities

### Esitmate a required return using Gordon growth model

Required rate of return (r) =

### Multistage dividend discount model

#### 2-stage dividend discount model

General 2-stage model:

* Abnormal growth 🡪 abrupt transition to mature growth

Vn: Estimate of Pn

GST: Short-term extra-ordinary rate

GLT: Long-term extra-ordinary rate

Dt = D0 \* (1 + GST)t

After time n 🡪 mature rate

* Dn+1 = Dn \* (1+GLT) = D0 \* (1 + GST)n \* (1+ GLT)

=

#### H-model

* Growth begin at high rate 🡪 decline linearly throughut super normal growth period, until reach a normal rate at the end

(H = Abnormal growth period /2 )

OR:



#### The financial determinants of growth rate

Dividend growth rate (g) (sustainable) = Retention rate(b) \* ROE

* b = 1- Dividend payout ratio

= Retention rate \* Profit margin \* Asset turnover \* Financial leverage

* PRAT model

## Free cash flow valuations

### Intrinsic value of security

Intrinsic value of security = ∑PV(Expected future CFs)

If the company capital structure is relatively stable 🡪 FCFE is preferred

FCFF when:

* Levered company with negative FCFE
* Levered company with changing capital structure

### Formulas

#### General formulas

Equity value = Firm value – Market value of debt

#### Constant growth FCFF valuation models

Assumption: FCFFt = FCFFt -1 \* (1 + g)

g: constant growth rate

#### Constant growth FCFE valuation models

FCFEt = FCFEt-1 \* (1+g)

#### Finding FCFF & FCFE from EBIT or EBITDA

Notes:

* *NCC = Non-cash decrease – Non-cash increase*
* *Working capital: Exclude cash & Short-term debts*
* *FCInv = Capex – Proceeds from sales of FA*
* *Capex = Ending gross PPE – Beginning gross PPE = Ending net PPE – Beginning net PPE + depreciation*

FCFF = EBIT \* (1-T) + Depreciation – FCInv – WCInv (assume NCC = Depreciation)

FCFF = EBITDA \* (1 –T) + Depreciation \* T – FCInv – WCInv

### Uses of FCFE & FCFF

|  |  |
| --- | --- |
| Increase/(decrease) in cash balances | |
| + | Interest exepenses \* (1-T) (1) |
| + | Repayment of principal in excess of new borrowing (2) |
| + | Cash dividends (3) |
| + | Share repurchases in excess of share issuance (4) |

#### Uses of FCFF

Uses of FCFF ( must equal sources of FCFF) =

Note: (1)+(2): Net payment to debtors

(3) +(4): payment to shareholders

#### 2.3.2. Uses of FCFE (must equal sources of FCFE)

|  |  |
| --- | --- |
| Increase/(decrease) in cash balances | |
| + | Cash dividends (3) |
| + | Share repurchases in excess of share issuance (4) |

Uses of FCFE =

### 2-stage FCF models

Firm value = Equity value + Debt value

### Asset β

* Use β of comparable companies 🡪 estimate asset β (which reflect only business risk)
* Use it for the company
* Steps: Select comparables 🡪 estimate β for the comparables 🡪 unlever the β (asset β) 🡪 lever the β 🡪 Company risk

To\_add 1.1.1

## Market-based valuations

### Price & Enterprise value multiples in valuation

* Method of comparables: Compared with similar assets of other companies
* Method based on forecasted fundamentals: The price multiple of an asset should be related to its future CF

### Price multiples

#### P/E

##### Trailing P/E (trailing 12 month EPS)

1. Forward P/E

Calculate trailing P/E:

Must consider the following:

1. Potential dilution of EPS
2. Transitory, non- recurring components of earnings that are company-specific; component of earnings affect by cyclicality (biz or industry)
3. Differences in accounting methods

##### Forward P/E

* Justified forward P/E
* Justified trailing P/E

g: dividend growth rate

b: retention rate = 1- payout ratio

1-b: Dividend payout ratio

* If the subject stock has higher than average (median) expected earnings growth 🡪 higher P/E than the benchmakr P/E is justifified
* If the subject stock has higher than average (median) risks 🡪 lower P/E than the benchmakr P/E is justifified

#### P/B

Book value = Equity – preferred stock

* Book value/ # of shares = BVPS

Justified P/B:

#### P/S

#### P/CF

#### P/D

### Enterprises value multiples (apply to both debts & equity holders)

#### EV/EBITDA

* More appropriate for comparing companies with different financial leverage
* More appropriate for capital intensive business (add back depr & amort)

|  |  |  |
| --- | --- | --- |
| EV | = | MV(common equity) |
|  | + | MV(preferred stock) |
|  | + | MV(debt) |
|  | - | Cash & investments (ST investments) |

#### Determine BVPS

Common shareholders’ equity = shareholder’s equity – Value of equity claims that are senior to common stock

BVPS = Common shareholders’ equity / Number of common stock shares outstanding

## Residual income model

Earning for a period in excess of required rate of return on beginning-of-period investment

* Value added in excess of opportunity cost
* Stock value = BVPS + PV(expected future RI)

## Private company valuation

### 6.1. Private company vs. public companies

#### 6.1.1. Private companies

* Sole proprietorship
* Privately held corporations
* Previously public companies that have been taken private

#### 6.1.2. Company-specific factors

|  |  |
| --- | --- |
| Stage of life cycle | Typicall less mature |
| Size | Typicall less capital (less access to equity market but less regulatory burden) |
| Quality & depth of management | Less: Overlap shareholders & management |
| Private firms | Management/shareholder overlap 🡪 long-term investors |
| Public firm | Short-term investors |
| Quality of financial & other info | Less |
| Taxes | More concerns because of impact on owners |

#### 6.1.3. Stock-specific factors (negative effect on stock price)

* Liquidity: ↓ liquidity 🡪 ↓ price
* Restrictions on marketability: Prevent sales of stock 🡪 related parties trading
* Concentratio nof control 🡪 ↑ perquisites to owners/managers

### Valuations

#### Income approach

* Discounted CF approach (PV analysis)
* An absolute approach
* Single esitmate of economic benefits, growing perpetuity

##### 6.2.1.1. Methods

###### 6.2.1.1.1. Free CF method

* Methods: Dividend; Free CF
* 2-stage model: First-stage: 5 years; Terminal valule is calculated using constant growth model or price multiple

###### 6.2.1.1.2. Capitalized CF method (capitalized income; capitalization of earnings)

* One-stage constant growth model

###### 6.2.1.1.3. Excess earnings method (residual income)

* Firm value = working capital + Fixed asset + Value of intangibles asset
* Value of intangible asset = Excess earnings \* (1+g)/(r-g)
* Excess earnings = Net income – Earnings required on working capital & fixed asset

#### Market approach

* Price multiples based on current sales of comparable asset (recent)
* Relative approach 🡪 appropriate for mature firm
* Large pool of choice & info

##### 6.2.2.1. Methods

###### 6.2.2.1.1. GPCM (Guideline public company method)

* Formula: Based on observed multiples from other public companies viewed as comparable 🡪 adjusted to reflect relative risk & growth prospect
* MVIC (MV of invested capital) = MV(Debt) + MV(Equity)
* MVICsubject = (MVIC/EBIT)of­ public company \* (1 - %Discount for risk) \* (1 + %control premium) \* EBITsubject
* EBITDA can be used instead of EBIT
* Estimate control premium:

1. Transaction types: Strategic 🡪 add control premium (synergy)

Financial 🡪 not add control premium (no synergy)

1. Industry conditions: If there is a flurry in industry acquisitions 🡪 do not add premium (as MVIC/EBIT of comparable companies already reflect control premium)
2. Type of consideration (payment method): Stock payment 🡪 temporary high value 🡪 not add control premium
3. Reasonableness: Should investigate if result premium is different from historical pricing

###### 6.2.2.1.2. GTM (Guideline transactions method)

* Price multiples of acquisisionts of public/private companies
* MVICsubject = (MVIC/EBIT)of­ an acquisition of entire public or private comapny \* (1 - %Discount for risk) \* EBITsubject
* If strategic acquisition 🡪 add control premium
* If financial acquisition 🡪 control discount
* Historical transactions:

1. If historical transaction is non-strategic
2. Contingent consideration 🡪 should scrutinize
3. Type of consideration 🡪 should use the same method (payment method)
4. Availability of data 🡪 limited relevant & accurate data (stock vs cash)
5. Date of data 🡪 if long ago 🡪 not relevant (macro & industry have changed)

###### 6.2.2.1.2. PTM (Prior transaction method)

* Formula: From past transaction
* Appropriate for valuing non-controlling (minority interest)
* MVICsubject = (MVIC/EBIT)of­ suitable company in a previous transaction
* Previous transaction must be:

1. Recent
2. Arms’ length
3. Same motivation

#### Asset-based approach

* Absolute approach
* Value of equity = Fair value of assets – Fair value of liabilities
* Have lowest valuatio result because assets combination have higher value than separate parts (synergies among assets; future growth)
* Difficult to find data, especially:

1. At asset level (data at firm level is easier to find)
2. Data about intangible asset & specialized assets

* Appropriate for:

1. Firms with minimal profits, little hope for better prospect
2. Finance firms or banks whose values are based on market price and factors
3. Investment companies whose asset values are based on market or income approach
4. Small or early stage companies with few intangible assets
5. Natural resources firm

#### Selection of approach

Depend on:

* Operations
* Lifecycle stage:

1. Early: Asset-based (when CF is uncertain)
2. High growth: Income approach
3. Mature: Market

* Firm size: Price multiples not for small firms

### Estimations of normalized earnings & CF

#### Normalized earnings

* Normalized earnings: Firm earnings if the firm was acquired, & exclude non-recurring items
* Adjustment for firm-specific characteristics:

1. Exclude non-recurring & unusual items 🡪 faciliate comparision
2. Adjust discretionary/tax-motivated expenses:

- Owner compensation

- Personal expenses

- Use of company asset

- Real estate: Owners’ home as office

- Depreciation & inventory

- Leverage: Should use D=0 and drop interest expenses from operating income

* Perspective:

1. Strategic: Valuation based on perceived synergies (increase revenue & decrease cost)
2. Non-strategic (financial): Buy companies in a dissimilar industry

#### Cash flows

* CF estimates are based on management estiamtes 🡪 cause of biases
* FCFF more appropriate than FCFE because WACC less sensitive to capital structure
* Depend on definition of value & controlling vs. non-controlling interest
* Modelling scenarios with probabilities:

1. Weighted average CF 🡪 discount
2. Weighted average values

### Elements of discount rates

* Size premium:

1. Small private firms 🡪 increase r by size premium
2. If use small public firms in financial distress 🡪 r will be biased upward

* Availability and cost of debt: WACC is high because:

1. Less access to debt financing 🡪 higher weight for equity 🡪 greater operating risk
2. Cost of debt 🡪 higher

* Acquirer vs. Target: if WACC of acquirer is used 🡪 value of target is overestimated
* Projection risk:

1. Info availability is less
2. Manager inexperienced in forecasting

* Lifecycle stage:

1. Early stage 🡪 difficult
2. Unusually high unsystematic risk 🡪 cannot use CAPM
3. Can use ranges of discount rates specified for different stages (still difficult to classify the stage the firm is in)

### Estimate ke

* CAPM:

Caution: Beta is estimated from public firm 🡪 not appropriate for firms with little chance of going public or being acquired by a public firm

* Expanded CAPM:

= CAPM + premiums for size + premium for unsystematic risk (company-specific risk)

* Build-up method: (when it is not possible to find comparable public firms for β estimation 🡪 assume β =1)

= Market return + premium for size + premium for industry + premium for unsystematic risk

= (Rm – Rf) + Rf

### Use of discount & premiums

* Discount for lack of control
* Discount for lack of marketability: 3 methods to estimate

1. Price of publicly traded shares – Price of restricted shares
2. Price of post IPO shares – Price of pre IPO shares (caution: This difference include effect of lower risk as well)
3. Price of put / by price of share:

* Use ATM put
* Time of put = time to IPO
* Sigma of publicly traded stock or option (implied)
* Total discount = 1 – (1- Discount for lack of control) \* (1 – Discount for lack of marketability)
* Key person discount

# XII. Trading

## Positions

1. A position in an asset: The quantity of the instrument that an entity owns or owes
2. Portfolio: Consist of a set of positions
3. Long position: Own asset & contracts 🡪 benefit from appreciation in the prices of the assets/ contract owned
4. Short position: Have sold assets that do not own, or when write & sell contracts 🡪 benefits from a decrease in the prices of the assets/ contracts sold. Short sellers profit by selling @ high prices & repurchasing @ lower prices
5. Contract have long side & short sides. The long side of a forward/ futures contract is the side that will take physical delivery/ cash equivalents. The short side: liable for the delivery. The long side of a futures contract increases in value when the value of the underlying asset increases in value
6. For option contract: The long side of an option contract is the side that hold the right to exercise the option. The short side is the side that must satisfy the obligation 🡪 long side holds the option & short side write the option
7. For put option contract: The holder is long the put contract & has an indirect short position in the underlying instrument 🡪 long exposure to the option contract & short exposure to the underlying instrument
8. For swap contract: The side that benefits from an increase in the quoted price 🡪 long side

## Leverage positions

* Money traders borrow from brokers 🡪 margin loan 🡪 buy on margin
* Call money rate: The interest rate that the buyer pay for their margin loan
* Traders’ equity: The portion of the security price that the buyer must supply
* Initial margin requirement: Minimum fraction of the purchase price that must be traders’ equity
* Maintenance margin requirement: Usually 25% of the curernt value of the position
* Margin call: When the value of the equity falls below the mainenance margin requirements 🡪 request for additional equity

## Orders

Buyers & sellers communicate with the brokers , exchange & dealers that arrange their trade by issuing orders

* All orders specifiy what instrument to trade, how much to trade, whether to buy or sell. Most orders also have other instructions attached to them. These additional instruction may include excecution instruction, validity instruction, & clearing instruction
* Excecution instruction: How to fill the order
* Validity instruction: Indiciate when the order may be filled
* Clearing instruction: How to arrange the final settlement of trade
* Bid price: price buyers willing to buy
* Ask price: price sellers willing to sell
* Best bid: The highest bid in the market
* Best ask: The lowest ask in the market
* Market bid-ask spread: Best ask – best bid

### Execution instruction

* Market order: Instruct the broker/ exchange to obtain the best price immediately availalble when filling the order

(+) Drawbacks: Can be expensive

* Limit order: obtain the best price immediately availalble when filling the order, but in no event aceept a price higher than a specified limit price when buying or accept a price lower than a specified limit price when selling 🡪 if better prices are available than the limit price, brokers & exchange should obtain those prices

(+) Drawbacks: May not exceute

(+) Market limit order:

* Behind the market: Buy order below the best bid; sell order above the best ask
* All-or-nothing (AON order): Can only trade if their entire sizes can be traded
* Hidden orders: Exposed to only the brokers/exchange that receive them. These agencies cannot disclose hidden orders to other traders until they can fill them

### Validity instruction

* Indicate when an order may be filled (ex. Day order)
* Stop order: An order in which a trader has specified a stop price condition (stop loss orders)
* Stop sell order: Supsend the exceution of the order until a trade occur at or below the stop price
* Stop buy order: become valid only after a price rises aboe the specified stop price

To import: Limit order book

### Clearing instructions

* Tell brokers & exchange how to arrang efinal settlement of trade.
* These instructions indicate what entity is responsible for clearing & settling the trade

## Execution mechanism

### Quote-drive market

* Customers trade with dealers (customers trade at prices quoted by dealers)

### Order-drive market

* An order matching system run by an exchange, a broker, or an alternative trading systms uses rules to arrange trades based on the orders that trader submit

### Brokered market

* Brokers arrange trades between customers

# XIII. Returns concept

## HPR

Return from investing in an asset over a specified period of time

## Expected α

Expected α = Rrequired + (V0 – P0)/P0 = required return + return from convergence of price

Realized α = Actual HPR – Contemporaneous required return

Expected .alpha = Expected return – Required return

## IRR

Discount rate the equate PV(future CFs) to asset’s prices

## Equity risk premium

Required return on equity = Current expected Rf + Equity risk premium 🡪 equity risk premium = E(Rm)- Rf

2 methods:

* Historical estimate: Historical average differences between equity market return & government debt return 🡪 geometric & arithmetic mean
* Forward looking estimate: Estimate the premium directly based on current info & expectations 🡪 ex ante estimates

1. Gordon growth model

GGM equity risk premium estimate= Expected div yield + Consensus LT growth rate – current LT gov bond yield

1. Macroeconomic model estimates

Equity risk premium = Div yield + [1+Expected inflation] \* [1+Greal EPS]\*[1+GP/E] – 1- Rf

1. Survey estimates

## Required return on equity

Required return on share i = Current expected Rf + βi \* Equity risk premium

= Current expected Rf + equity risk premium + other risk premia/discounts

For private business valution:

Ke = Rf + Equity risk premium + Size premium + Specific-company premium

### CAPM

ke = Rf + β \* equity risk premium

beta: Common choice: 5 years of monthly data 🡪 60 observations

Adjusted β = 2/3 \* unadjusted β + 1/3 \* 1.0

### Multifactor model

* Fama-French model
* Pastor-Stambaugh model
* Macroeconomics & statistical multifactor model

### 5.3. Build-up method

Ke = rf + equity risk premium ± premium/discounts

### Bond yield plus risk premium

For company with publicly traded debts

Ke = YTM on long-term debt + Risk premium

## Country risk premium

Ke = Rf + β \* [E(Rm)-Rf + CRP]

CRP = Sovereign yield spread \* (Annualized σ of equity index (local market) / Annual σ of local bond market in terms of developed countries)

Sovereign yield spread = Rlocal – Rdeveloped market

CRP = (YTMVN Gov bond in USD – YTMUS-gov-bond-in-USD )\* (σVNI/ σVN-gov-bond-in-usd)

## WACC

WACC = kd \* wd\*(1-t) + ke \* we + kps \*wps

# XIV. Quantitatives

## Average of group of price multiples

* Simple harmonic mean:
* Weighted harmonic mean:

# XV. Analyst adjustments to reported financials

When comparing companies that use different accounting methods or estimate key accounting inputs in different ways, analysts frequently adjust a company’s financials.

## A framework for analyst adjustments

In this discussion of potential analyst adjustments to a company’s financial statements, we use a framework focused on the balance sheet. Because the financial statements are interrelated, however, adjustments to items reported on one statement may also be reflected in adjustments to items on another financial statement. For example, an analyst adjustment to inventory on the balance sheet affects cost of goods sold on the income statement (and thus also affects net income and, subsequently, the retained earnings account on the balance sheet).

Regardless of the particular order in which an analyst considers the items that may require adjustment for comparability, the following aspects are appropriate:

■ Importance (materiality). Is an adjustment to this item likely to affect the conclusions? In other words, does it matter? For example, in an industry where companies require minimal inventory, does it matter that two companies use different inventory accounting methods?

■ Body of standards. Is there a difference in the body of standards being used (U.S. GAAP versus IFRS)? If so, in which areas is the difference likely to affect a comparison?

■ Methods. Is there a difference in accounting methods used by the companies being compared?

■ Estimates. Is there a difference in important estimates used by the companies being compared?

### 1.1. Analyst adjustments related to investments

Accounting for investments in the debt and equity securities of other companies (other than investments accounted for under the equity method and investments in consolidated subsidiaries) depends on management’s intention (i.e., whether to actively trade the securities, make them available for sale, or in the case of debt securities, hold them to maturity). When securities are classified as “financial assets measured at fair value through profit or loss” (similar to “trading” securities in U.S. GAAP), unrealized gains and losses are reported in the income statement. When securities are classified as “financial assets measured at fair value through other comprehensive income” (similar to “available-for-sale” securities in U.S. GAAP), unrealized gains and losses are not reported in the income statement and, instead, are recognized in equity. If two otherwise comparable companies have significant differences in the classification of investments, analyst adjustments may be useful to facilitate comparison.

### Analyst adjustments related to inventory

With inventory, adjustments may be required for different accounting methods. As described in previous readings, a company’s decision about inventory method will affect the value of inventory shown on the balance sheet as well as the value of inventory that is sold (cost of goods sold). If a company not reporting under IFRS14 uses LIFO (last-in, first-out) and another uses FIFO (first-in, first-out), comparability of the financial results of the two companies will suffer. Companies that use the LIFO method, must also, however, disclose the value of their inventory under the FIFO method. To recast inventory values for a company using LIFO reporting on a FIFO basis, the analyst adds the ending balance of the LIFO reserve to the ending value of inventory under LIFO accounting. To adjust cost of goods sold to a FIFO basis, the analyst subtracts the change in the LIFO reserve from the reported cost of goods sold under LIFO accounting. Example 10 illustrates the use of a disclosure of the value of inventory under the FIFO method to make a more consistent comparison of the current ratios of two companies reporting in different methods.

### Analyst adjustments related to PPE

Management generally has considerable discretion in determination of deprecia- tion expense. Depreciation expense affects the values of reported net income and reported net fixed assets. Analysts often consider management’s choices related to depreciation as a qualitative factor in evaluating the quality of a company’s financial reporting, and in some cases, analysts may adjust reported depreciation expense for a specific analytical purpose.

The amount of depreciation expense depends on both the accounting method and the estimates used in the calculations. Companies can use the straight-line method, an accelerated method, or a usage method to depreciate fixed assets (other than land). The straight-line method reports an equal amount of depreciation expense each period, and the expense is computed as the depreciable cost divided by the estimated useful life of the asset (when acquired, an asset’s depreciable cost is calculated as its total cost minus its estimated salvage value). Accelerated methods depreciate the asset more quickly; they apportion a greater amount of the depreciable cost to depreciation expense in the earlier periods. Usage-based methods depreciate an asset in proportion to its usage. In addition to selecting a depreciation method, companies must estimate an asset’s salvage value and useful life to compute depreciation.

Disclosures required for depreciation often do not facilitate specific adjustments, so comparisons of companies concerning their decisions in depreciating assets are often qualitative and general. The accounts that are associated with depreciation include the balance sheet accounts for gross property, plant, and equipment (PPE) and accumu- lated depreciation; the income statement amount for depreciation expense; and the statement of cash flows disclosure of capital expenditure (capex) and asset disposals. The relationships among these items can reveal various pieces of information. Note, however, that PPE typically includes a mix of assets with different depreciable lives and salvage values, so the items in the following list reflect general relationships in the total pool of assets.

■ Accumulated depreciation divided by gross PPE, from the balance sheet, suggests how much of the useful life of the company’s overall asset base has passed.

■ Accumulated depreciation divided by depreciation expense suggests how many years’ worth of depreciation expense have already been recognized (i.e., the average age of the asset base).

■ Net PPE (net of accumulated depreciation) divided by depreciation expense is an approximate indicator of how many years of useful life remain for the company’s overall asset base.

■ Gross PPE divided by depreciation expense suggests the average life of the assets at installation.

■ Capex divided by the sum of gross PPE plus capex can suggest what percentage of the asset base is being renewed through new capital investment.

■ Capex in relation to asset disposal provides information on growth of the asset base.

### 1.4. Analyst adjustment related to Goodwill

One of the conceptual difficulties with goodwill arises in comparative financial state- ment analysis. Consider, for example, two hypothetical U.S. companies, one of which has grown by making an acquisition and the other of which has grown internally. Assume that the economic value of the two companies is identical: Each has an identically valu- able branded product, well-trained workforce, and proprietary technology. The company that has grown by acquisition will have recorded the transaction to acquire the target company and its underlying net assets on the basis of the total consideration paid for the acquisition. The company that has grown internally will have done so by incurring expenditures for advertising, staff training, and research, all of which are expensed as incurred under U.S. GAAP. Given the immediate expensing, the value of the internally generated assets is not capitalized onto the balance sheet and is thus not directly reflected on the company’s balance sheet (revenues, income, and cash flows should reflect the benefits derived from the investment in the intangible assets). Ratios based on asset values and/or income, including profitability ratios (such as ROA) and market value to book value (MV/BV) will generally differ for the two companies because of differ- ences in the accounting values of assets and income related to acquired intangibles and goodwill, although, by assumption, the economic value of the companies is identical.

### Analyst adjustments related to off-balance sheet financing

A number of business activities give rise to obligations that, although they are eco- nomically liabilities of a company, are not required to be reported on a company’s balance sheet. Including such off-balance-sheet obligations in a company’s liabilities can affect ratios and conclusions based on such ratios. In this section, we describe adjustments to financial statements related to one type of off-balance-sheet obligation, the operating lease. (Note that revised leasing standards proposed in 2011 eliminate the existing operating lease distinction; if implemented, these standards are likely to change or even eliminate adjustments required for operating leases.)

The rights of a lessee (the party that is leasing some asset) may be similar to the rights of an owner, but if the terms of the lease can be structured so it can be accounted for as an operating lease, the lease is treated like a rental contract and neither the leased asset nor the associated liability is reported on the balance sheet.16 The lessee simply records the periodic lease payment as a rental expense in its income statement. In contrast, when a company actually owns an asset, the asset is shown on the balance sheet, together with any corresponding liability, such as financing for the asset. Similarly, if a lease is accounted for as a capital lease—essentially equivalent to ownership—the leased asset and associated liability appear on the lessee’s balance sheet.

What is of concern to analysts is when a lease conveys to the lessee most of the benefits and risks of ownership but the lease is accounted for as an operating lease— giving rise to off-balance-sheet financing. International accounting standard setters have stated that the entities should not avoid balance sheet recording of leases through artificial leasing structures

Because companies are required to disclose in their financial statements the amount and timing of lease payments, an analyst can use this information to answer the question: How would a company’s financial position look if operating lease obliga- tions were included in its total liabilities?

# XVI. Market indices

## Uses of market indices

Indices were initially created to give a sense of how a particular security market performed on a given day

* Gauges of market sentiment:
* The original purpose of stock market indices
* Indicators of the collective opinion of market participants 🡪 reflect investor attitudes & behavior
* Proxies for measuring & modelling returns, systematic risk, & risk-adjusted performance
* Used to measure β
* Measure of risk-adjusted return/investment performance: .alpha, (the difference between return of the actively managed portfolio & the return of the passive portfolio). α can be the result of manager skill (or lack thereof), transaction costs, & fees
* Proxies for asset classes in asset allocation models
* Indices exhibit the risk & return profiles of select groups of securities 🡪 play a critical role as proxies for asset classes in asset allocation models
* Provide the historical data used to model the risks & returns of different asset classes
* Benchmarkes for actively managed portfolios
* The index selected as benchmark should reflect the investment strategy used by the manager
* Model portfolios for investment products
* Serve as the basis for the development of new investment products. 🡪 Index funds & ETF

## Fixed income indices

### Challgenges in index construction

* The number of fixed-income securities is many times larger than the number of equity securities
* To represent a specific FI market or segment, indices may include thousands of different securities
* Overtime, FI securities mature, & issuers offfer new securities to meet their financing needs, leading to turnover in FI indices
* FI markets are pre-dominantly dealer market 🡪 firms (dealers) are assigned to specific securities & are responsible for creating liquid markets for those securities by purchasing & selling them from their inventory
* Index providers must contact dealers to obtain current prices on constituent securities to update the index, or they must estimate the prices of constituent securities using the prices of traded FI securities with similar characteristics
* Large number of securities & lack of liquidity in some securities 🡪 more costly & difficult to replicate FI indices & duplicate their performance