

An alternative: Valuation using price multiples (widely used as it is simple to execute)

1. Select a measure of performance or value (earnings, sales, cash flows, book equity, book assets)
2. Estimate price multiples for comparable firms (benchmark/competitors) using the measure of performance or value
3. Apply the comparable firm multiple to the performance or value measure of the firm being analysed

Precautions: potential problems

- Selecting comparable firms: maybe difficult to identify even within the same industry.
Solution: industry averages may be used instead as differences canceled out, a fair representation of P/E ratio
- Firms with poor performance: negative price multiples are meaningless
Solution: adjustments for transitory shocks (i.e., write-off and special item) and use operating earnings
- Adjustment for leverage: issues arise from lack of consistency between numerator and denominator
Solution: using i.e., price to sales ratio, price to operating earning ratio (performance before servicing debt)

Basic Steps of Fundamental Valuations

Valuation involves three basic steps:

1. Forecasting future values of some financial attributes i.e., fundamentals
 - distributable or free cash flows
 - accounting earnings
 - balance sheet book values
2. Determining the risk or uncertainty associated with the attribute's forecasted future value i.e., discount rate
3. Determining the discounted/present value of the expected future values of the value-relevant attribute
 - the discount rate reflects the risk or uncertainty inherent in the value attribute

Common Fundamental Valuation Models

1. Discounted dividends: value of equity = PV of forecasted future dividends
2. Discounted abnormal earnings (residual income):
value of equity = sum of equity book value and PV of forecasted abnormal earnings
3. Discounted cash flow: value of equity = PV of multiple year forecasts of free cash flows to equity claim holders

Discounted Dividend Model (DDM)

Equity Value = PV of future dividends (including any liquidating dividend) (re: cost of equity capital)

$$Equity_Value = \frac{DIV_1}{(1+r_e)} + \frac{DIV_2}{(1+r_e)^2} + \frac{DIV_3}{(1+r_e)^3} + \dots$$

Assuming constant dividend growth rate (gd) indefinitely:

$$Equity_Value = \frac{DIV_1}{(r_e - g_d)}$$

Advantages:

- Easy concept: dividends are what shareholders get, so forecast them
- Predictability: dividends are usually fairly stable in the short run so dividends are easy to forecast (in the short run)

Disadvantages:

- Relevance: dividends payout is not related to value i.e., start-ups
- Forecast horizons: typically requires forecasts for long periods.
- TV for shorter periods hard to be reliably calculated: proportion of dividend-paying companies declined over time
- Firm that never pays out dividends: firm's strategy and policy, investment opportunities, retains dividends for growth

Discounted Abnormal Earnings (AE) Valuation

Assuming 'clean surplus accounting', non-owner sources that is all equity effects other than capital transactions flow through the income statement, that is no dirty surplus, OCI = 0.

$$DIV_1 = NI_1 + BVE_0 - BVE_1$$

- DIV_1 = Expected dividends (**both** cash dividends and share issues/repurchases)
- NI_1 = Expected net income available to shareholders
- BVE_0 = Book value of equity at the **beginning** of the year
- BVE_1 = Expected book value of equity for **existing** shareholders at the **end** of the year

Lecture 3: $\Delta \text{Equity} = \text{Equity}_1 - \text{Equity}_0 = \text{Net Income}_1 - \text{Dividends}_1$

Substitute above into the DDM and equity value is re-written as follows:

Equity value = (opening) book value of equity (BS) + PV of expected future abnormal earnings (IS)

Abnormal Earnings (AE) (aka. residual income or Olson model) = net income adjusted for (minus) a capital charge (that is cost of equity capital * opening book value of equity)

Firm value = Net worth of the firm + Calculated estimate of firm's goodwill

$$\text{Equity_value} = BVE_0 + \frac{NI_1 - r_e \times BVE_0}{(1 + r_e)} + \frac{NI_2 - r_e \times BVE_1}{(1 + r_e)^2} + \dots$$

a better predictor of value than the traditional multiple-based approaches

Deviation of a firm's market value from its book value (i.e., goodwill) depends on the ability to generate AE.

Expensing R&D increases this gap as it negatively affects the BV of equity.

$$\text{Equity_value} = BVE_0 + \frac{NI_1 - r_e \times BVE_0}{(1 + r_e)} + \frac{NI_2 - r_e \times BVE_1}{(1 + r_e)^2} + \frac{NI_3 - r_e \times BVE_2}{(1 + r_e)^3} + TV$$

3-year horizon
AE model

$$TV = \frac{(1 + g) * (NI_3 - r_e \times BVE_2)}{(r_e - g)} \div (1 + r_e)^3$$

- We have to project what happens to **Abnormal Earnings (AE)** after year 3 → assume an **infinite** yearly growth rate in AE. e.g., $g=0\%$ (constant), or $g=4\%$ (inflation), or $g=-30\%$ (return to "normal" profitability over time)
- **Steps:**
 1. Project AE in year 4 (i.e., multiply AE year 3 by $1+g$)
 2. Discount back to year 3 with $(r-g)$ to get TV at year 3
 3. Discount back TV at year 3 to TV at year 0

AE model: Valuing Assets (as opposed to Equity) (see appendix)

$$\text{Asset_Value} = BVA_0 + \frac{NOPAT_1 - WACC \times BVA_0}{(1 + WACC)} + \frac{NOPAT_2 - WACC \times BVA_1}{(1 + WACC)^2} + \frac{NOPAT_3 - WACC \times BVA_2}{(1 + WACC)^3} + \dots$$

- BVA = book value of the firm's net (**operating**) assets
- NOPAT = net **operating** profit after tax
- WACC = weighted average cost of debt and equity capital

Asset_Value (market value of assets) deducts Debt_Value (market value of net debt) equals Equity_Value

TABLE 5.3 Definitions of accounting items used in ratio analysis

Item	Definition
Net interest expense after tax	$(\text{Interest expense} - \text{Interest income}) \times (1 - \text{Tax rate})^a$
Net operating profit after taxes (NOPAT)	Net profit + Net interest expense after tax
Operating working capital	$(\text{Current assets} - \text{Cash and marketable securities}) - (\text{Current liabilities} - \text{Current debt and current portion of non-current debt})$
Net non-current assets	Total non-current assets - Non-interest-bearing non-current liabilities
Net debt	Total interest-bearing non-current liabilities + Current debt and current portion of non-current debt - Cash and marketable securities
Net assets	Operating working capital + Net non-current assets
Net capital	Net debt + Shareholders' equity

➤ Net assets **= Net capital**
(OWC + NLTA) **= Net debt + Shareholders' Equity**

The Discounted Cash Flow (DCF) Model

Dividends = operating cash flow - capital outlays (BVA reduces 20 = +20) + net cash flow from debt owners
 = Free cash flows to equity holders
 = $NI - \Delta BVA + \Delta BVD$ (Net income - Change in book value of net assets + change in book value of net debt)

$$\text{Equity_value} = \frac{\overbrace{NI_1 - \Delta BVA_1 + \Delta BVD_1}^{\text{FCF}_1}}{(1+r_e)} + \frac{\overbrace{NI_2 - \Delta BVA_2 + \Delta BVD_2}^{\text{FCF}_2}}{(1+r_e)^2} + \dots$$

NI = Net Income
 ΔBVA = Change in book value of net assets
 ΔBVND = Change in book value of net debt
 FCF = Free Cash Flow to equity

AE valuation and accounting methods

An (accrual) accounting method change should not affect AE valuation. i.e., a shift of earning of 10m from year 1 to year 2 (earning management) p.30

Analysts: recognise lower than justifiable estimate and makes accurate forecasts of future defaults and accounts receivable write-off p.32

Impact of the higher current abnormal earnings and the lower future abnormal earnings offset exactly. This leaves no impact of the current allowance underestimation for accounts receivable on estimated firm value. p.34

Analysts must recognise the impact of different accounting methods on value estimates

- Valuations are based on earning and book values
- Accounting choices affect earnings and book values
- Luckily, double-entry bookkeeping is by nature self-correcting

Other Issues in Value Estimation: Accounting Distortions

Accounting choices, though self-correcting, affect both earnings and book value

Note: business strategy and accounting analyses are still important steps to precede abnormal earnings valuation.

Lecture 7 Objective of Financial Reports (with a focus on stewardship/contracting)

Objective of Financial Accounting

Financial Accounting is an information reporting system designed to relieve information asymmetry in economies or society and in turn to facilitate an efficient allocation of scarce resources.

Demand for Accounting Information

Two distinct types of information asymmetry (adverse selection and moral hazard IA) give rise to two distinct objectives (Valuation and Stewardship objectives) of Financial reporting

Two distinct sources of demand for accounting information:

1. For valuation to address adverse selection problems and ensure capital market efficiency
2. For stewardship to address efficient contracting (moral hazard problem) and operation of managerial labour market

Information Asymmetry (IA)

- IA occurs when one party to a transaction is at an informational disadvantage to the other (has an information advantage over the other party).

Adverse Selection (Valuation)

- A type of information asymmetry where a party to a potential transaction has an informational advantage over other parties (i.e., car seller)
- Between investors and management (most likely corporate managers have advantage information about what the underlying true value of the company is) and between shareholders themselves (in the share market, some shareholders may have information advantage than the counter parties)

Moral Hazard (Stewardship/Efficient Contracting)

- A type of information asymmetry whereby a party to a transaction which has occurred, can observe their actions in fulfilment of the transaction but the other cannot (to act in their own self-interest)
- Management (CEO) potentially involves in moral hazard problem since they can undertake actions that are in their best interest at the detriment of shareholders (i.e., employ a mechanic)

A Typical Business Situation

- Managers know more about the current condition and future prospects of the firm than outside investors
- Investors face adverse selection as managers may behave opportunistically, may delay or selectively release information thereby reducing the ability of investors to make good investment decisions
- Demand external financial reports that provide information to facilitate the valuation of the firm
- Moral hazard occurs due to separation of ownership and control as it is effectively impossible for shareholders and creditors to observe directly the extent and quality of managers' effort
- Demand information to hold corporate managers accountable, stewardship/efficient contracting objective, corporate managers to act in the corporate and shareholders interests rather than their own self-interest

Role of Financial Reporting (role of information in a market economy) (Summary Above)

- To reduce adverse selection and thus improve efficiency of capital markets (the valuation objective)
- Facilitate the efficient allocation of scarce resources in two distinct parts:
 1. The lower adverse selection, the lower the associated information risk and in turn the more capital you are willing to invest in the share market, the more capital we can raise as a society.
(less developed countries not pulling the capital in corporate entities to produce goods and services due to substantial adverse selection or IA problem, i.e. lack of high quality auditors, accounting standards)
 2. Lower adverse selection will improve the efficiency of cross section allocation of capital. More information either quantity or quality gives rise to a more efficient capital market as the more and better information, the more precisely and timely recognition of the failing firms. Thus, the capital market will allocate capital away from low performing companies to high performing companies.
- To reduce moral hazard problem and thus improve operation of managerial labour markets and efficiency of contracts (the stewardship objective). The more and better information provided to managers gives rise to improved decision making by managers in the labour markets. Thus, more efficient allocation of capital within firms.

The Fundamental Problem of FA Measurement

- The best measure of net income to control adverse selection (valuation) is not the same as the best measure to motivate manager performance (stewardship/efficient contract)
- Implies the interests of investors and manager conflict
- Standard setting viewed as the means of mediating this conflicting interests

Valuation Objective of Financial Reporting (a.k.a. Decision Usefulness View)

- Basic characteristics (attribute) of the information demands for valuation objective: need information to forecast future cash flows
- Ideal accounting for valuation: the PV (value-in-use) of future cash flows of all the firms assets and liabilities (in the balance sheet)
- Future cash flows expected to accrue from the assets discounted back by the time value of money and the risk associated with the cash flows (classic finance)
- Relevant vs. Reliable? (relevance emphasised where reliability downgraded to an enhancing characteristic)
- Conditions for ideal accounting using PV: need to know with perfect certainty future cash flows and discount rate

Stewardship/Contracting Objective of Financial Reporting (a.k.a. efficient contracting view)

- Basic characteristics (attribute) of information demand for efficient contracting objective: need information that facilitates efficient contracting
- The nature of the firm at basics, a firm is a collection (nexus) of contracts. To maximise the value of the firm, it is needed to minimise contracting costs (in particular moral hazard costs) and in turn to monitor the performance of the counter party.

Key Contract (Principal-Agent) Relationships in a Firm

- Shareholder and Manager
- Shareholder and Debt-holder

Manager-Shareholder Contracts

- Separation of ownership and control
- CEO's actions cannot be observed on a day-to-day basis — potential moral hazard problem — CEO may not always act in shareholders' best interest
- Partial or non-ownership of firm by managers provides incentives for managers to act contrary to shareholders' interests because they do not bear the full cost of dysfunctional behaviour

Moral Hazard Costs of Equity Holders (that can arise due to separation of ownership and control)

- Dividend Retention
 - Classical Finance: wherever a firm has cash and there is no investment opportunity that can generate positive return on equity, the firm should distribute the cash to shareholders as dividends. Then this would in turn maximise the wealth of shareholders so that they can invest in other firms or projects.
 - CEO may retain dividend and act in their own interests due to two reasons
 - Empire building: if the cash is retained and dividend is not distributed, the firm is larger than what it would be. For self-interest, CEO would prefer to be corporate manager for a larger rather than a small firm. As generally larger firm has higher executive compensation and in the managerial labour market, CEO has a greater reputation of being the manager of a large firm.
 - Excess consumption of perquisites: retained cash can be invested into projects in CEO's best interests though they may not have positive NPV.
- Risk Aversion (firm's beta): shareholders hold diversified portfolio only care about systematic risk (the firm's beta) but not the firm's specific risk. The fundamental determinate of risk and expected return from positive NPV projects, from shareholders' perspective is the firm's beta. Hence, shareholders would invest in any project with an IRR greater than required rate of return (re) which is determined by the firm's beta. However, CEO may act in self interests and reject such a project due to its volatility. CEO may look at his individual portfolio which consists of mainly human capital (labour) which is highly correlated to firm's success. Especially when CEO's compensation is based on the firm specific volatility. Hence, CEO is risk averse in relation to firm specific risk not like shareholders.

- Horizon problem: NPV takes account expected future cash flow into perpetuity. Upfront costs, first 2-3 years negative cash flows. CEO may concern about labour market reputation and compensation in the immediate short-term, those projects with upfront costs may be rejected even with long-run positive return.

Shareholder (the firm) - Debt holder Contracts

- Assumption that interests of managers and shareholders are aligned
- The debt holder is the principal and the manager acting on behalf of shareholders is the agent
- To minimise the moral hazard costs of debt so more capital can be raised in society for providing goods and services

Moral Hazard Costs of Debt Holders

- As after the bank has lent the money, the actions taken by the counter party in fulfilment of the transaction cannot be observed. Debt contracts provide managers with incentives for:
- Excessive dividend payments: CEO may distribute all cash received from lender to shareholders. Simultaneously, shareholders and the firm are separate legal entities which in turn gives rise to limited liabilities. Debt holder bears the risk of losing all the money.
- Asset substitution: safe assets are substituted for risky assets. Lenders prefer to lend to firms with safe tangible assets. Shareholders may benefit from the potential upside of investment in risky assets. However, lenders do not share the benefit but bears the costs of potential downside risk.
- Claim dilution: after the firm has received the first loan, it gets loans from other lenders and gives these loans greater priority over firm's assets than the original loan. The first lender's claim is diluted.
- Under-investment (not too concerned): the firm chooses to invest in a positive NPV project, if profitable, firm gets excess cash to repay debts and nothing left for shareholders; if fails, firm requires to meet the obligation of debt first. The only beneficiary is the lender not the shareholders.

Reduction of Moral Hazard Costs

- If reduce moral hazard costs by writing contracts using financial reporting numbers, those reported accounting earnings numbers may need to possess certain information attributes and they are the basis of assessment of the success or failure of the contracts written by managers. (the Role of Accounting)
- Shareholders contract with managers to link managers' pay to reported firm performance (pay-for-performance link)
 - Benefits lower moral hazard costs, less inclined to retain dividends etc
- Debt holders contract with firm to incorporate a covenant into a borrowing contract (debt covenants: if certain financial reporting ratios fall below the level, the firm will incur a penalty rate of interest)
 - Benefits lower moral hazard costs, lower interest rates

What is Efficient Contracting Theory?

- Efficient contracting focuses on the role of financial accounting information in moderating information asymmetry between contracting parties. An efficient contract generates trust between parties with conflicting interests (i.e., mgmt.&s/h, firm&lender) at lowest cost to the firm.

What is Conservative Accounting?

- Conservatism: a higher standard of verification required for recognition of assets and unrealised gains as opposed to the recognition of liabilities and unrealised losses.
- Unconditional conservatism: Non-recognition of assets with uncertain payoffs
 - Internally generated intangible assets not recognised due to conservatism; however, this is biased in the existing financial reports
- Conditional conservatism: Recognition of unrealised losses but non-recognition of unrealised gain for recorded assets
 - Provisions, revaluations, consolidations
 - Impairment test (AASB136) the recovery amount is lower than the CA of the asset, it should be written down; if RA is higher than CA, no journal entry
 - Lower of cost or net realisable value of inventory — net realisable losses recorded but net realisable gains not recorded

Sources of Contracting Demand for Financial Accounting Information

- Lenders face asymmetry payoff functions and in turn demand early warning of financial distress
 - Lenders derive no incremental benefits if the firm is doing well; however, may incur losses if the firm is doing poorly. Thus, they concern about losses but not gains
- Managers assumed rational and will act in their own interest, which may conflict with shareholders' interests
 - Shareholders demand information to encourage responsible manager effort and prevent or limit the managers' engagement in opportunistic actions

Accounting Policies for Efficient Contracting

- Reliability (as opposed to relevance)
 - Lenders and shareholders demand reliable information to help protect against opportunistic manager policies and discretions that hide losses and record unrealised gains so as to artificially maintain covenant ratio and manipulate earnings upwards.
- Conservatism
 - **Lenders** demand conservative information due to asymmetry payoff function (concern about losses): to help predict financial distress and limit dividend payment, increase lenders' protection by not recognising unrealised gains and early warning of unrealised losses so that firm's reported profit decreases. Create a systematic understatement of net asset value, provide lenders with a lower bound of NA for protection. Also, impairment tests lower debt covenant ratios, providing additional security for lenders. Tighter covenant constraints reduce the likelihood of moral hazard costs of debt (i.e., excessive dividend payment). As a result of this increased protection and trust, lenders accept lower interest rates.
 - Increase efficiency of **managerial compensation contracts** to meet shareholders' demand for reporting on stewardship objective. Acting as a constraint on managerial opportunism by not allowing gains to be recognised until realised, thus limiting discretion and earnings manipulation to enhance reputation and compensation.
 - Timely recognition of losses even if unrealised, managers will take corrective actions for any operating policies that have led to impairment. If they do not, alert the Board to take timely steps to correct management's lack of action. This increases lenders' trust. In case of covenant violations, lenders can enforce foreclosure, dividend restriction, and preventing additional firm borrowing.

Efficient Contracting

- For efficient contracting, financial reporting should be reliable and conservative and may be flexible
- These policies often conflict with current value accounting which sacrifices reliability for relevance
- **Contracting Costs** including moral hazard costs (i.e. residual loss) and costs from monitoring contract performance and costs of possible renegotiation or contract violation should unanticipated events arise during the contract term
- Primary direct costs (salary). For efficient contracting, contracts with the lowest contracting costs, need to minimise indirect costs (moral hazard costs)

Accounting Policies for Efficient Contracting

- Efficient contracting demands for reliable and conservative information conflicts with Conceptual Framework
 - Framework more future-oriented (i.e. relevant) information fair value accounting
 - Reliability downgraded to an enhancing characteristic
 - Framework more oriented to information needs of investors than stewardship
 - Framework does state that investors need information about manager stewardship but ignores problems that best information for investor decision making and stewardship evaluation may not be the same

Contract Rigidity (Why flexibility in accounting choices gives rise to efficient contracting)

- Many contracts depend on accounting variables
 - Debt contracts contain accounting-based covenants
 - Manager compensation contracts depend on net income
- Both types of contracts tend to be long term
 - Accounting standards change during contract term, affect NI (thus pay-for-performance link) and debt covenants
 - Probability of debt covenant violation may increase
 - The amount and or riskiness of manager compensation may be affected
- Since contracts based on accounting numbers are rigid and fixed, unlikely that contracts can be renegotiated to allow for changes in GAAP.

Contract Rigidity: Implications

- Changes in accounting standards can have real cash flow effects and result in technical breach of a contract and in turn unforeseen costs to the firm
- If the manager has no flexibility of accounting policy choice, the manager may react by reducing R&D, deferring asset replacement, both of which may impose long run costs on the firm. The manager may also reduce acceptance of risky projects with positive NPV, since less risk means lower expected value, imposed costs on diversified investors.
- How to address:
 - An efficient solution is to allow manager some flexibility in accounting policy choice, contract efficiency may increase since manager may be able to minimise costs of debt covenants violation and adverse manager reaction due to reduced and riskier compensation contracts by managing accruals and changing accounting policies
 - However, contract theory also predicts that firm managers may exploit their flexibility in accounting policy choices to act opportunistically. Thus, they can use accounting policy choice to manage reported earnings upwards and delay public knowledge of bad news. Therefore, managers can maximise their compensation and reputation, and minimise the probability of technical violation of debt covenants for self-interest.
- Hence, for both opportunistic view and efficient contracting view, managers will prefer to have some flexibility of accounting policy choices.

Accounting Policy Choices to Lower the Probability of Technical Violation

- Increase equity by increasing current reported (comprehensive) earnings (by managing accruals) or increasing assets.
 - Minimize provisions for doubtful accounts receivable and for warranties.
 - Lengthen estimates of useful lives of capital assets, and/or, if currently using accelerated amortization, perhaps switch to straight line.
 - If property, plant, and equipment has increased in value, use the revaluation option of IAS 16 to record the asset at fair value. (Note: This may increase equity volatility, since such revaluations must be kept up to date)
 - Sell surplus capital assets, such as land, used machinery and vehicles, subsidiary companies etc., to trigger a gain on disposal.
- Reclassify long-term liabilities as equity
 - Argue that future income tax liabilities be excluded from debt for purposes of the debt/equity ratio calculation.
 - Minority interest: included in equity under IFRS

Defer advertising and R&D costs to balance sheet, to extent allowed by GAAP. For example, IFRS 3 allows capitalization of development costs.

Distinguishing Efficiency and Opportunism in Contracting

- A basic question in contract theory: are managers' accounting policy choices driven by
 - Opportunistic view
 - Managers choose accounting policies to maximise their own expected utility at expense of investors
 - Efficient contracting view
 - Managers choose accounting policies to attain efficient contracting (i.e., good corporate governance)
- Some research consistent with contracting efficiency
 - Dichev & Skinner (2002)
 - Debt covenants, those firms with a technical breach of debt covenant (not necessarily change in current risk), did appear they made accounting policy choices afterwards and as a result didn't end up incur the penalty costs.
 - Wittenberg-Moerman (2008)
 - Conditional conservatism (accounting policy choices) and information asymmetry (measured by bid-ask spread) negatively associated — more conservative accounting policies, lower level of information asymmetry
 - No association for unrealised gains, lower contracting costs, efficient contracting