### Concepts

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### Free cash flow valuation

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<td>FCFF</td>
<td>FCFF = NI + NCC + i × (1-t) - FCInv - WCInv</td>
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<td>FCFF = (NI + NCC - WCInv) + i × (1-t) - FCInv = CFO + i × (1-t) - FCInv</td>
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<td>FCFF = EBIT × (1-t) + NCC - FCInv - WCInv</td>
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<td>FCFF = EBITDA × (1-t) - Depreciation × t - FCInv - WCInv</td>
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<td>FCFE</td>
<td>FCFE = FCFF - i × (1-t) + Net borrowing</td>
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|         | In which :  
|         | Net borrowing = Total proceed of LT and ST debt - Total payment of LT and ST debt |
| Approaches to forecast future FCFF / FCFE | 1. Approach 1: Calculate historical FCFF, and applied growth rate  
|         | 2. Approach 2: Forecast underlying components of FCFF and calculate FCFF of each year separately (assume that firm maintain target debt-to-asset ratio) |
| Impact of dividend, share repurchases, share issues and change in leverage on FCFF / FCFE | - Dividend, share repurchases and share issues: no effect on FCFF and FCFE  
|         | - Change in leverage: minor impact on FCFE; No impact on FCFF |
| Use of Net income and EBITDA as proxies for FCFF | - NI is a poor proxy for FCFF, because NI includes NCC; and ignore CF that do not appear on PL (FCInv and WCInv)  
|         | - EBITDA is a poor proxy for FCFF, because EBITDA ignore CF that do not appear on PL (FCInv and WCInv) |
| Sensitivity analysis in FCFF and FCFE valuations | Sensitivity analysis: how sensitivity of valuation results to changes in each input variables; the importance of various forecasting errors  
|         | 2 sources of errors:  
|         | - Estimating future growth in FCFF and FCFE  
|         | - Estimating future terminal value (which depends on sales growth, change in profit margin, position in the life cycle, competitive strategy and overall profitability of the industry) |
| Approaches for calculating terminal value | 1. Single stage model  
|         | 2. Multiple approach (P/E ratio) |
## Concepts

### Private company factors
1. **Company-specific factors**
   - Lifecycle: Less mature than public firms (sometimes mature / bankruptcy near liquidation)
   - Size:
     - Less capital, fewer assets, fewer employees than public firms → riskier → value using higher risk premium and required return
     - Lack of access to public equity markets → constrains growth
   - Quality and depth of management: may not attract quality management → reduce depth of management, slow growth and higher risk
   - Management / Shareholder overlap: management has substantial ownership position → less control by external shareholders; firm may be able to take longer-term perspective
   - Quality of financial and other information: less available information than public firm → higher uncertainty, higher risk, lower value
   - Tax: More concern with tax than public firms, due to the impact on owners/managers

2. **Stock-specific factors**
   - Liquidity: Fewer potential owners, less liquid than public firm → liquidity discount
   - Restriction on marketability: Often have agreements that prevent selling → reducing marketability
   - Concentration of control: Control is focused in few shareholders → higher benefits for owners/managers at the expense of minority shareholders

### Uses of private business valuation
1. **Transaction-related valuations**: when selling / financing a firm
   - Venture capital financing
   - IPO: Performed by investment banks, using similar public firms as benchmark
   - Sales in acquisition: to sell private firm at development / mature stage. Valuation is performed by both buyer and seller
   - Bankruptcy proceedings: to determine whether the firm should be liquidated or reorganised
   - Performance-based managerial compensation

2. **Compliance-related valuations**: performed for legal / regulatory reasons, focus on FR and tax issues
   - Financial reporting: often related to goodwill impairment tests
   - Tax purpose:
     - Firm level: transfer pricing, property taxes, corporate restructuring
     - Individual equity owners: estates and gift tax issues

3. **Litigation-related valuations**: Required for shareholder suit, damage claims, lost profit claims, divorce settlements

### Different definitions of value
1. **Fair market value (use for tax purpose in US)**:
   - Hypothetical willing and able seller sells to willing and able buyer
   - Arm’s length transaction, in a free market
   - Well-informed buyer and seller

2. **Fair value for FR**: current price paid to purchase an asset / transfer a liability
   - Arm’s length transaction
   - Well-informed buyer and seller

3. **Fair value for litigation**: similar to fair value, but the definition depends on the specific law used in the jurisdiction where the litigation occurs:
   - Willing seller and buyer
   - Arm’s length transaction
   - An asset that has been marketed
   - Well-informed buyer and seller

4. **Market value**: frequently used for appraisals of real estate and other assets. It is characterised by:
   - Wider range of potential buyers and sellers
   - Use of market multiples, based on recent transactions of comparable assets
   - More market competition

5. **Investment value**: value to a particular buyer, may vary for different investors, depending on:
   - Use of specific knowledge of the firm
   - Different perceived risk
   - Appropriate discount rates
   - Individual financing costs
   - Perceived synergies with existing buyer’s assets

6. **Intrinsic value**

### Approaches for private company valuation
1. **Income approach**: firm value = PV of expected future income. Most appropriate for firm in high growth phase.
2. **Market approach**: price multiples, based on recent transactions of comparable assets. Most appropriate for mature firm
3. **Asset- based approach**: firm value = MV of assets - MV of liabilities. Most appropriate for early-life firm, when future CF is subject to so much uncertainty

### Normalised income

- **Estimate normalised income**:
  - Exclude non-recurring items / unusual items
  - Firm does business with its owners / other businesses of its owners → Expenses might be inflated → adjustment
  - Excessively high owner compensation → inflate expenses → adjustment
  - Firm performs poorly → below market compensation → overstate earnings → adjustment
  - Use of company-owned assets → inflate expenses → adjustment
  - Real estates owned by firm are treated separately from firm operations, due to:
    - Real estates may have different risk characteristics
    - Real estates may have different growth prospects
    - Depreciation expense of real estates is based on historical costs → understated current cost

### Strategic / Financial transactions

- **Strategic transactions**: valuation of firm is based in part of the perceived synergies with acquirer’s other assets
- **Financial transactions**: assume no synergies

#### FCF method
1. **Capitalised CF method**: single-stage FCF model
   \[
   \text{Value of firm} = \frac{FCF_0}{r - g} \\
   \text{Value of equity} = \frac{FCF_0}{r - g}
   \]

2. **Excess Earnings method**:
   - Excess earnings = Firm earnings - Required return on WC - Required return on FA
   - Firm value = Sum PV of excess earnings + WC + FA