<table>
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<th>Concepts</th>
<th>Description</th>
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<tr>
<td>Free cash flow to firm (FCFF) / Free cash flow to equity (FCFE)</td>
<td>FCFF Value of firm FCFE Equity value (= Firm value - MV of debt)</td>
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<tr>
<td>Ownership perspective of FCF</td>
<td>FCFF formula FCFE formula</td>
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<tr>
<td>Approaches to forecast future FCFF / FCFE</td>
<td>ownership perspective : acquirer who can change firm’s dividend policy, or minority shareholders that is in-play</td>
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<td>Impact of dividend, share repurchases, share issues and change in leverage on FCFF / FCFE</td>
<td>from NI from CFO from EBIT from EBITDA</td>
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<td>Use of Net income and EBITDA as proxies for FCF</td>
<td>FCFF = NI + NCC + i × (1-t) - FCInv - WCInv FCFE = FCFF - i × (1-t) + Net borrowing</td>
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| Sensitivity analysis in FCFF and FCFE valuations | Sensitivity analysis : how sensitive the values are to changes in each year of forecast. 2 sources of errors likely to:
- Estimating future growth in FCFF and FCFE depend very much on future profitability (which depends on sales growth, change in profit margin, position in the life cycle, competitive strategy and overall profitability of the industry)
- The chosen base years for FCFF / FCFE growth forecast |
| Approaches for calculating terminal value | 1. Single stage model 2. Multiple approach (P/E ratio) |

### FCFF formula
1. From NI: \[ FCFF = NI + NCC + i \times (1-t) - FCInv - WCInv \]
2. From CFO: \[ FCFF = (NI + NCC - WCInv) + i \times (1-t) - FCInv \]
3. From EBIT: \[ FCFF = EBIT \times (1-t) + NCC - FCInv - WCInv \]
4. From EBITDA: \[ FCFF = EBITDA \times (1-t) - Depreciation \times t - FCInv - WCInv \]

### FCFE formula
\[ FCFE = FCFF - i \times (1-t) + Net\ borrowing \]
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 FCF
- NI is a poor proxy for FCFF, because NI includes NCC, and ignore CF that appear on balance sheet (FCInv and WCInv)
- EBITDA is a poor proxy for FCFF, because EBITDA ignore CF that do not appear on balance sheet (FCInv and WCInv).
### Concepts

#### Private company factors

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

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<td>- <strong>Liquidity</strong>: Fewer potential owners, less liquid than public firm (\rightarrow) liquidity discount</td>
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<td>- <strong>Restriction on marketability</strong>: Often have agreements that prevent selling (\rightarrow) reducing marketability</td>
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<tr>
<td>- <strong>Concentration of control</strong>: Control is focused in few shareholders (\rightarrow) higher benefits for owners/managers at the expense of minority shareholders</td>
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### 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 US state statutes and legal precedent in jurisdiction of the litigation

4. **Market value** : frequently used for appraisals of real estate and other assets, characterised by:
   - Willing seller and buyer
   - Arm’s length transaction
   - An asset that has been marketed
   - Well-informed and arm’s length seller

5. **Investment**:
   - **Investment value**: value to a particular buyer, may vary for different investors, depending on:
     - Individual equity owners: estates and gift tax issues
     - 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 multiplies, 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 subjected 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 \(\rightarrow\) Expenses might be inflated \(\rightarrow\) adjustment
- Excessively high owner compensation \(\rightarrow\) inflate expenses \(\rightarrow\) adjustment
- Firm performs poorly \(\rightarrow\) below market compensation \(\rightarrow\) overstate earnings \(\rightarrow\) adjustment
- Use of company-owned assets \(\rightarrow\) inflate expenses \(\rightarrow\) 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 \(\rightarrow\) understate 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
   \[
   \text{Value of firm} = \frac{FCF_f}{r - g} \\
   \text{Value of equity} = \frac{FCFE_f}{r - g}
   \]

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