Content

• Overview of valuation methodologies
• Worked examples
• Key considerations
• Discussion
Overview of valuation methodologies

Valuation approaches - Overview

- **Market Approach**
  - Value estimate based on multiples or prices from market transactions involving the sale of comparable assets

- **Cost Approach**
  - Value estimate = reproduction/replace-ment cost-adjusted for depreciation and obsolescence

- **Income Approach**
  - Value estimate = present value of earnings attributable to the asset or costs avoided as a result of owning the asset
Valuation approaches

- **Market Approach**
  - Direct methods
    - Premium Profit Method
    - Premium Pricing Method
    - Relief-from-Royalty or Royalty Savings Method
  - Indirect or Residual Methods
    - Various custom methods (e.g., Real options, Conjoint etc.)
  - Return of Assets or Residual Earnings Method

- **Cost Approach**

- **Income Approach**

**Market approach**

Difficult to apply to intangibles: sufficient number of transactions of truly comparable assets is rarely available

Market data is also used in income approach valuations:

- comparable profit benchmarks to compute excess earnings; and
- market royalty & licensing rates to compute royalty savings
**Cost approach**

Inappropriate for most intangibles: fails to capture expected returns to the asset

Appropriate for intangibles that do not directly generate cash flows: e.g. software for internal use and workforce

Sometimes appropriate as a second approach to check whether income approach results are reasonable: make or buy decision, assets with a short history, assets that can be reproduced

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**Income approach**

Most common approach for intangibles:

- captures expected future returns to the owner; and
- is able to estimate values for unique assets when market transaction data is not available

Several variations of the Income Approach:

- based on cash flows or earnings generated by the intangible asset or
- based on the costs saved by the intangible asset.
**Income approach**

Income approach - Direct methods

- Premium Profit Method
- Premium Pricing Method
- Relief-from-Royalty or Royalty Savings Method
- Cost Savings Method or Avoided Cost Method

**Market Approach**

- Direct Methods
  - CF or earnings generated by the intangible or expenses saved by the intangible are estimated directly by reference to market benchmarks

**Cost Approach**

- Indirect or Residual Methods
  - Residual Earnings Method
  - Residual earnings left after deducting from after-tax operating earnings the fair returns on all other assets employed (Multi-period Excess Earnings Method – MEEM)

**Income Approach**

- Premium Pricing Method
  - Premium over generic product prices of products or services that do not possess the intangible being valued

- Relief-from-Royalty or Royalty Savings Method
  - after-tax royalties or licence fees saved by owning the intangible; requires market based royalty/licensing data; applied in patent, franchise or brand valuations

- Cost Savings Method or Avoided Cost Method
  - after-tax costs saved by owning the asset; applied to favourable contracts and workforce

*PwC Valuation & Strategy has developed an Advanced Brand Valuation method, which allows the measurement of brand equity in consumers' minds using market research data.*
**Typical methodologies for example intangible assets**

<table>
<thead>
<tr>
<th>Example intangible assets</th>
<th>Typical valuation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand / trademark</td>
<td>Market benchmarks and income based method (e.g. premium profit)</td>
</tr>
<tr>
<td>Customer relationships</td>
<td>Income based method</td>
</tr>
<tr>
<td>Product IP/ technology</td>
<td>Income based method</td>
</tr>
<tr>
<td>Software</td>
<td>Replacement cost</td>
</tr>
</tbody>
</table>

Which cash flows?  
What discount rate?  
Overall cross checks (Return on assets, residual goodwill etc)

Always preferable to apply two or more methodologies to cross check results

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**Relief from royalty / royalties foregone method**

- Key to valuing many types of IPR
- Important to recognize difference between real world licensing deals and a theoretical license used to estimate the fair market value of an outright sale of the asset
- Based upon market data for benchmarks
- Used extensively on an international basis and across industries
- Based upon the likely future royalty stream that could be earned from licensing out
- Generally expressed as a percentage of revenue
- Value = after tax present value of the stream of future royalty savings/potential future royalty payments
- Can provide misleading results unless the “right” royalty rate is chosen
Relief-from-Royalty

**Concept**

Ownership of the asset e.g. trademark

relieves owner from paying royalty rate

The royalty savings are the expected cash flows for the subject intangible asset

**Relief-from-Royalty Method**

**Valuation steps**

1. Determine appropriate royalty rate
2. Multiply with matching valuation base
3. Subtract tax expenses
4. Calculate the present value of royalty savings
5. Compute the tax amortisation benefit (TAB) → if necessary (discussed later)
### Worked example of Relief from Royalty method

#### Relief from royalty method – valuation of trade mark

License to distribute product granted to 2022

<table>
<thead>
<tr>
<th>Variables</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Royalty rate</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discount rate</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax</td>
<td>30%</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Business forecasts for exploitation by hypothetical licensee

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Royalty earned</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
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<tr>
<td>Tax payable</td>
<td>30%</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>After-tax cash flow</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Discount factor</td>
<td>10%</td>
<td>0.95</td>
<td>0.87</td>
<td>0.79</td>
<td>0.72</td>
<td>0.65</td>
<td>0.59</td>
<td>0.54</td>
<td>0.49</td>
</tr>
<tr>
<td>Discounted Cash flow</td>
<td>6.7</td>
<td>6.1</td>
<td>5.5</td>
<td>5.0</td>
<td>4.6</td>
<td>4.1</td>
<td>3.8</td>
<td>3.4</td>
<td>3.1</td>
</tr>
<tr>
<td>NPV</td>
<td>42.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Royalty rate determinants

**The need for both parties to secure a satisfactory return**
- The nature and geographical scope of the licence
- The strength and importance of this intangible asset
- The probable level of continuing sales
- The commercial obligations undertaken
- The relative negotiating strengths of each party

**Georgia Pacific case – 15 factors**

**Some methods for determining an appropriate royalty rate:**
- Market Comparables – analysis of licensing agreements in the marketplace
- Excess Operating Profit – comparison of margins enjoyed by the company exploiting the subject IP to those of companies that do not own similar IP (e.g. contract manufacturers)
- Return on Assets – Subtract market returns on tangible assets from forecast operating profits; the remainder is attributable to all intangible assets and must be apportioned between the different intangibles
- “25% rule of thumb” (?)
**Relief-from-Royalty Method**

**Common pitfalls**

- Find appropriate licensing agreements!
  (e.g. licensing agreements of the company, PwC-Database, www.royaltysource.com)

- Do not apply the royalty rate without considering facts and circumstances – particularly profitability and need for both licensor and licensee to generate adequate returns! Consider IRRs!

- Have a close look at the licensing agreements!
  Are there other additional agreed terms (e.g. upfront payment) or restrictions (e.g. exclusive v non-exclusive license)?

- Consider deal-specific circumstances! Many publicly available licensing agreements involve new products in new markets, rather than developed products in mature markets – ask the question: Would I license out the product/brand for x% ?

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**Valuation of workforce**

- What do you think might be components of the cost to replace an assembled workforce?
**Multi-Period Excess-Earnings Method (“MEEM”)**

**Valuation steps**

1. Derive future cash flows for subject intangible asset
2. Subtract tax
3. Apply contributory asset charges (CAC)
4. Calculate present value of future cash flows
5. Compute the tax amortisation benefit (TAB) → if necessary
MEEM
Valuation steps

1. Derive future cash flows for subject intangible asset (e.g. customer contracts or product IP) – also see relevant case study on dealing with uncertainty

![Graph showing future cash flows for different products]

Question:
Would the subject intangible asset generate the same revenues on a stand-alone basis?

The owner has to lease assets to generate those revenues

Concept of contributory asset charges

MEEM
Valuation steps

3. Apply contributory asset charges (CAC)
**MEEM Valuation steps**

Possible contributory asset charges (CAC):

- Working Capital
- Machinery & Equipment
- Other Intangible Assets
- Assembled Workforce
- Land & Buildings

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**MEEM Approach Example**

<table>
<thead>
<tr>
<th>(in thousand €)</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>1,000.00</td>
<td>800.00</td>
<td>500.00</td>
<td>300.00</td>
</tr>
<tr>
<td>Costs</td>
<td>750.00</td>
<td>600.00</td>
<td>375.00</td>
<td>225.00</td>
</tr>
<tr>
<td>Profit before tax</td>
<td>250.00</td>
<td>200.00</td>
<td>125.00</td>
<td>75.00</td>
</tr>
<tr>
<td>Taxes @ 40%</td>
<td>100.00</td>
<td>80.00</td>
<td>50.00</td>
<td>30.00</td>
</tr>
<tr>
<td>Net income</td>
<td>150.00</td>
<td>120.00</td>
<td>75.00</td>
<td>45.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contributory Asset charges</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land &amp; Building</td>
<td>10.00</td>
<td>8.00</td>
<td>5.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Machinery &amp; Equipment</td>
<td>25.00</td>
<td>20.00</td>
<td>12.50</td>
<td>7.50</td>
</tr>
<tr>
<td>Working capital</td>
<td>15.00</td>
<td>12.00</td>
<td>7.50</td>
<td>4.50</td>
</tr>
<tr>
<td>Workforce</td>
<td>9.50</td>
<td>7.60</td>
<td>4.75</td>
<td>2.85</td>
</tr>
<tr>
<td>Trademarks</td>
<td>20.00</td>
<td>16.00</td>
<td>10.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Total Asset Charges</td>
<td>79.50</td>
<td>63.60</td>
<td>39.75</td>
<td>23.85</td>
</tr>
<tr>
<td>Cash Flow after tax</td>
<td>70.50</td>
<td>56.40</td>
<td>35.25</td>
<td>21.15</td>
</tr>
</tbody>
</table>

| Present value factor                                 | 0.9174  | 0.8417  | 0.7722  | 0.7084  |
| Present value of cash flows                          | 64.85   | 47.47   | 27.22   | 14.98   |

| Value of key intangible                              | 154.35  |         |         |         |
**Required Rate of Return on the Subject Assets**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working capital</td>
<td>Short-term lending rates for market participants</td>
</tr>
<tr>
<td>Fixed assets (for example PP&amp;E)</td>
<td>Financing rate for similar assets for market participants (e.g. terms offered by vendor financing), or rates implied by leases</td>
</tr>
<tr>
<td>Workforce, customer lists, trademarks, and trade names</td>
<td>Weighted average cost of capital (WACC) for young, single-product companies</td>
</tr>
<tr>
<td>Patents</td>
<td>In cases where risk of realising economic value of patent is close to the risk of realising a project, rates would be equivalent to that of the project</td>
</tr>
<tr>
<td>Other intangibles, including base (or core) technology</td>
<td>Rates appropriate to the risk of the subject intangible</td>
</tr>
</tbody>
</table>

* from the perspective of a hypothetical buyer

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**Return on Assets Reconciliation (WACC Table)**

Rates should be consistent with the relative risk of other assets in the analysis and should be higher for riskier assets.

\[
\text{Weighted Return of Assets} = \frac{\text{WACC} \times \text{Enterprise Value}}{1000}
\]

\[
\text{Enterprise Value} = \text{Equity} + \text{Financial Debt}
\]

\[
\begin{align*}
\text{Weighted Return of Assets} & = 16\% \times \frac{200}{1000} + 12\% \times \frac{150}{1000} + 8\% \times \frac{500}{1000} + 5\% \times \frac{150}{1000} \\
& = 16\% \times 0.20 + 12\% \times 0.15 + 8\% \times 0.50 + 5\% \times 0.15 \\
& = 0.032 + 0.018 + 0.040 + 0.0075 \\
& = 0.0975 \\
& = 9.75\%
\end{align*}
\]

\[
\text{WACC} = 10\%
\]

\[
\text{Weighted Return of Assets} \approx \text{WACC}
\]
## WACC Table Review & WACC table analysis

<table>
<thead>
<tr>
<th>Asset</th>
<th>After Tax Discount Rate</th>
<th>Premium Discount</th>
<th>After Tax ROR</th>
<th>Fair Market Value</th>
<th>FMV x Discount Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Capital</td>
<td>12.1%</td>
<td>-6.1%</td>
<td>6.0%</td>
<td>15,000</td>
<td>900</td>
</tr>
<tr>
<td>Fixed Assets</td>
<td>12.1%</td>
<td>-4.1%</td>
<td>8.0%</td>
<td>30,000</td>
<td>2,400</td>
</tr>
<tr>
<td>Non-Compete Agreements</td>
<td>12.1%</td>
<td>-0.1%</td>
<td>12.0%</td>
<td>5,000</td>
<td>600</td>
</tr>
<tr>
<td>Customer Relationships</td>
<td>12.1%</td>
<td>-0.1%</td>
<td>12.0%</td>
<td>14,000</td>
<td>1,680</td>
</tr>
<tr>
<td>Patented Technology</td>
<td>12.1%</td>
<td>4.9%</td>
<td>17.0%</td>
<td>10,000</td>
<td>1,700</td>
</tr>
<tr>
<td>IPR&amp;D</td>
<td>12.1%</td>
<td>5.9%</td>
<td>18.0%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Implied Goodwill</td>
<td>12.1%</td>
<td>6.2%</td>
<td>18.3%</td>
<td>26,000</td>
<td>4,770</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This is Enterprise Value

\[
\frac{12,050}{100,000} = 12.1\%
\]

### Key considerations

1) ROR = Rate of Return
**Key considerations**

Ensure correct definition of assets and who owns them

In valuing the IP, identify/carve-out the cash flows that it generates

Select an appropriate valuation methodology and cross-check against other approaches

Depending on the purpose of the valuation, it may be important to seek expert legal advice, particularly if it relates to a transaction or dispute

Valuation of IP is a subjective area involving a high degree of technical complexity

Where there is a lot at stake, it is advisable to seek expert assistance

In most cases, IP valuations will be challenged and consequently the experience and credibility of the valuer is of paramount importance

**Discussion**
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