IP Assets valuation, a case study

Biotech SU – Corporate Officer
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Qualitative Valuation and Quantitative Valuation of the Inventive Contribution of the Executive Director of a Biotech Company: an IFRS Compliant Valuation Process

A Webinar organised by LESI IPV Committe
with the support of LES France
January 29 2020
Inventive contribution of the corporate officer for each patent family
- Analysis based on inventors declaration

Inventive contribution of the corporate officer for each program
- Average of the inventive contributions of the corporate officer
  - Weighted according to the strategic content of each patent family
    - Only strategic families are examined
  - Undetermined weight
    - Non strategic and defensive families
Programm A

- With weight: 15%
- Without weight: 22%

Hypothesis/Programm A: 17%

Programm B

- With weight: 20%
- Without weight: 27%

Hypothesis/Programm B: 25%
Sources for assumptions definition

- World population in Europe and US
  - UN
  - Smoothed annual growth rate

- Prevalence
  - Scientific journals of 2014 et 2018
  - Remove the results out of the geographical area

- Prescription rates
  - Statistics from CSA / Europe Assistance
Financial Value Hypothesis

- Hypothesis as per the Annual report of BIOTECH

  - Business model
    - Licensing agreement
    - No production

  - Earnings models
    - Royalties between 6% & 10%

  - Patent horizon

  - Market shares definition, as per the company’s strategy

  - Drug prices: pharmacist margin deducted from market price

<table>
<thead>
<tr>
<th>Package</th>
<th>Start MA</th>
<th>End MA</th>
<th>Operations begin</th>
<th>Operations end</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease 1</td>
<td>2022</td>
<td>2023</td>
<td>2023</td>
<td>mid 2038</td>
</tr>
<tr>
<td>Disease 2</td>
<td>2023</td>
<td>2024</td>
<td>2024</td>
<td>mid 2038</td>
</tr>
<tr>
<td>Disease 3</td>
<td>2021</td>
<td>2021</td>
<td>2021</td>
<td>mid 2038</td>
</tr>
</tbody>
</table>

MA : Market access approval by the sovereign authority

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IFRS compatible approaches to DCF calculation

- **First approach**: risks are captured in the discount rate
  - Discount rate comprises a premium
- **Second approach**: risks are allocated to revenues
  - Discount rate is that of the equity (in the absence of financial debt)

- **Range of potential values**
- **Compliance with IFRS, the BIOTECH financial reporting standard**

### Financial Value Methodology

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment</td>
<td>-450,00 €</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash Flows</td>
<td></td>
<td>200,00 €</td>
<td>200,00 €</td>
<td>200,00 €</td>
</tr>
<tr>
<td>Discounted 20%</td>
<td></td>
<td>166,67 €</td>
<td>138,89 €</td>
<td>115,74 €</td>
</tr>
<tr>
<td>NPV</td>
<td>-28,70 €</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NPV = -29
Financial Valuation Results

NPV – Discount rate adjusted expected return by venture capitalists per the stage development

<table>
<thead>
<tr>
<th>STAGE</th>
<th>VC target return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early stage</td>
<td>25% - 70%</td>
</tr>
<tr>
<td>First stage</td>
<td>40 – 60 %</td>
</tr>
<tr>
<td>Later stage</td>
<td>35 – 50 %</td>
</tr>
<tr>
<td>Bridge / IPO stage</td>
<td>25 – 35 %</td>
</tr>
</tbody>
</table>

NPV – Cash Flows adjusted by probability of success

- Discount rate estimation/ CAPM:
  - Weekly data
  - History = Quotation time : 3 years
  - Geometric profitability
  - S&P MIDCAP 400
  - Market premium 5,65%
  - Risk free rate : 1,23%

<table>
<thead>
<tr>
<th>STAGE</th>
<th>Milestone</th>
<th>Probability of success</th>
<th>Stage 2</th>
<th>Stage 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D to preclinical</td>
<td>End of preclinical study</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preclinical to stage I</td>
<td>End stage I</td>
<td>45%</td>
<td>45%</td>
<td></td>
</tr>
<tr>
<td>Stage I to stage II</td>
<td>End stage II</td>
<td>63%</td>
<td>63%</td>
<td>28%</td>
</tr>
<tr>
<td>Stage II to stage III</td>
<td>End stage III</td>
<td>31%</td>
<td>20%</td>
<td>9%</td>
</tr>
<tr>
<td>Stage III FDA</td>
<td>FDA</td>
<td>58%</td>
<td>11%</td>
<td>5%</td>
</tr>
<tr>
<td>FDA to launch</td>
<td>Launch</td>
<td>85%</td>
<td>10%</td>
<td>4%</td>
</tr>
<tr>
<td>R&amp;D to launch</td>
<td>Launch</td>
<td>1,27%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NPV – Discount rate adjusted expected return by venture capitalists per the stage development

- **Discount rate: 25 % (Damodaran)**

<table>
<thead>
<tr>
<th>VALUATED PROGRAMS &amp; COMBINATIONS</th>
<th>Horizon</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diseases1 &amp; 2</td>
<td>20 y</td>
<td>96 739 K €</td>
</tr>
<tr>
<td>Disease3 (orphan)</td>
<td>20 y</td>
<td>64 687 K €</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>20 y</td>
<td><strong>161 606 K €</strong></td>
</tr>
</tbody>
</table>

- **Compensation valuation**

  - Disease 1 contribution 0,85 %  326 K€
  - Disease 2 contribution 0,15 %  88 K€
  - Disease 3 Contribution 1,7%    1 103 K€

  - Patents ownership value  1 516 K€

NPV – Cash Flows adjusted by probability of success

- **Discount rate : 4,39 %**

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<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diseases1 &amp; 2</td>
<td>20 y</td>
<td>77 425 K €</td>
</tr>
<tr>
<td>Disease3 (orphan)</td>
<td>20 y</td>
<td>12 459 K €</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>20 y</td>
<td><strong>89 884 K €</strong></td>
</tr>
</tbody>
</table>

- **Compensation valuation**

  - Disease 1 contribution 0,85%  230 K€
  - Disease 2 contribution 0,15%  76 K€
  - Disease 3 Contribution 1,7%   212 K€

  - Patents ownership value  518 K€

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Financial Value
Results – Monte Carlo Simulation

NPV – Discount rate adjusted expected return by venture capitalists per the stage development

NPV – Cash Flows adjusted by probability of success

NPV Products 1 & 2
DR = 25 %

Median = 94,978
SD = 126,400

60,000
29/01/20
160,000

NPV products 1 & 2
DR = 4,39 %

Median = 76,544
SD = 88647

60,000
100,000

60,000
SD = 72,026
Median = 94,978

60,000
100,000
SD = 64,821
Thanks

Qs ?