TOPIC 11
PRACTICAL EXAMPLES OF APPLICATION OF IP VALUATION METHODS

Guillem Laporta, CFA

Regional Workshop
IP Valuation for Biotechnology and Pharmaceutical Industry
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01 Initial Remarks
Guillem Laporta, CFA

Experience

2018-Currently
Principal, Ysios Capital (Barcelona, Spain)

2013-2018
Associate, Edmond de Rothschild (Paris, France)

2011-2013
Analyst, Caixa Capital Risc (Barcelona, Spain)

Education

Chartered Financial Analyst (CFA)
BSc, MSc, Biotechnology, Universitat Autònoma de Barcelona
BA, MA, Business Administration, Universitat Pompeu Fabra
01 Initial Remarks

“No Hay Duros a Cuatro Pesetas”

In efficient markets, all investments are in the risk/reward line

Time and arbitrage eliminate outlier opportunities

Hence it is very difficult to consistently obtain outsized risk-adjusted returns

Risk-Reward Line

Source: Own Analysis
The price of an asset can be determined by the “utility” it will provide in the future.

If such utility can be measured in cashflows (CF), then a price can be established TODAY.

The translation of future utility to current price needs to account for at least 1) the passing of time, 2) the risk involved in the realization of the CFs.

**ALERT!**
There’s no such thing as an “objective price”. All we can do is calculate a “rational price” based on assumptions, which will always involve a degree of subjectivity.

### Asset Pricing: Discounted CFs Method (dCF)

- **Price Today**
  - ASSET 1: $t=0$
  - CF 1, CF 2, CF n

- **Future Cash Flows plus Future Asset Value**

"Rational" Price Today

Account for passing of time and risk “discount”

Source: Own Analysis
01 Initial Remarks

The Problem of Assets in R&D Stage Is That CFs Are Difficult to Estimate

When CFs are difficult to measure, dCF can still be used, but many more assumptions will need to be made, leading to a worse price estimate.

When can be CFs difficult to measure?

- CFs occur far in the future
- CF amounts are not easily predictable
- Risk cannot be estimated

Then What?

dCF is still a useful method. It is a power tool used in M&A negotiations with pharmas.

Alternative methods based on the same concept: Venture Capital Method

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Asset Pricing: Discounted CFs Method (dCF)

Price Today

<table>
<thead>
<tr>
<th>ASSET 1</th>
<th>CF 1</th>
<th>CF 2</th>
<th>CF n</th>
<th>ASSET 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>t=0</td>
<td></td>
<td></td>
<td></td>
<td>t=n</td>
</tr>
</tbody>
</table>

“Rational” Price Today

Account for passing of time and risk

Future Cash Flows plus Future Asset Value

Source: Own Analysis
02 Practical Example: Chase Pharmaceuticals

Donepezil Is the Standard-of-Care Treatment for Alzheimer’s Disease
02 Practical Example: Chase Pharmaceuticals

High Doses of Donepezil Help Slow Down the Disease, But This Comes with Side Effects
02 Practical Example: Chase Pharmaceuticals

Innovation: Combination of Donepezil with a Peripheral Cholinergic Blocker

- **Donepezil** (already approved)
- **Peripheral cholinergic blocker** (already approved)

![Diagram](image)

- **Cognitive function**
- **Time**
- **No side effects**
- 5 mg
- 10 mg
- 15 mg
## 02 Practical Example: Chase Pharmaceuticals

### SWOT Is a Useful Tool to Assess Risk

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Simple and robust scientific and medical concept</td>
<td>• First time working with the team</td>
</tr>
<tr>
<td>• Abbreviated and less costly regulatory development</td>
<td>• Company’s headquarters not close</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Unmet medical need and huge market opportunity</td>
<td>• Perceived risk of generic challenge at exit</td>
</tr>
<tr>
<td>• Potential for a slowdown in disease progression</td>
<td>• Disappointing clinical results</td>
</tr>
<tr>
<td>• Concept can be extended to other combinations of AChEIs and antidotes</td>
<td>• New CEO may not fit in the company’s atmosphere</td>
</tr>
</tbody>
</table>

Source: Own Analysis Based on Non-confidential Data from Andera Partners
## 02 Practical Example: Chase Pharmaceuticals

### Comparables Help Assess Return Potential

<table>
<thead>
<tr>
<th>Date</th>
<th>Seller/Buyer</th>
<th>Product</th>
<th>Stage</th>
<th>Territory</th>
<th>Upfront (US$Mil)</th>
<th>Milestone (US$Mil)</th>
<th>Total Non-Royalty (US$Mil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Vitae Pharma/Boerghinger</td>
<td>Neuroprotection BACE Inhibitors</td>
<td>Preclinical</td>
<td>Worldwide</td>
<td>42</td>
<td>200</td>
<td>ND</td>
</tr>
<tr>
<td>2008</td>
<td>Myriad/Lundbeck</td>
<td>Flurizan for Neuroprotection</td>
<td>End of Phase III</td>
<td>Worldwide</td>
<td>100</td>
<td>250</td>
<td>ND</td>
</tr>
<tr>
<td>2008</td>
<td>Medivation/Pfizer</td>
<td>Dimebon for Palliation</td>
<td>End of Phase II</td>
<td>Worldwide</td>
<td>225</td>
<td>500</td>
<td>ND</td>
</tr>
<tr>
<td>2009</td>
<td>Elan/J&amp;J</td>
<td>Bapineuzamab for Neuroprotection</td>
<td>End of Phase II</td>
<td>Worldwide</td>
<td>500</td>
<td>500 + 18% stake in J&amp;J</td>
<td>ND</td>
</tr>
<tr>
<td>2010</td>
<td>Alectos/Merck</td>
<td>Neuroprotection</td>
<td>Preclinical</td>
<td>Worldwide</td>
<td>99</td>
<td>190</td>
<td>ND</td>
</tr>
<tr>
<td>2011</td>
<td>Evotec/Roche</td>
<td>Neuroprotection</td>
<td>Preclinical</td>
<td>Worldwide</td>
<td>10</td>
<td>830</td>
<td>ND</td>
</tr>
<tr>
<td>2012</td>
<td>AC Immune/Genentech</td>
<td>Neuroprotection</td>
<td>Preclinical</td>
<td>Worldwide</td>
<td>42</td>
<td></td>
<td>ND</td>
</tr>
<tr>
<td>2012</td>
<td>Adams/Forrest</td>
<td>Palliation</td>
<td>End of Phase II</td>
<td>Worldwide</td>
<td>65</td>
<td>95</td>
<td>ND</td>
</tr>
<tr>
<td>2013</td>
<td>Lundbeck/Otsuka</td>
<td>Palliation</td>
<td>End of Phase II</td>
<td>Worldwide</td>
<td>150</td>
<td>675</td>
<td>ND</td>
</tr>
</tbody>
</table>

Source: Andera Partners

Average = $150 M

Upfront
02 Practical Example: Chase Pharmaceuticals

Description of the Investment Round

Investment Features

- May 2014
- $21 M Series B round
- $10 M ticket
- Use of proceeds: Start and complete Phase 2a and Phase 2b by end of 2017

Reasons for Investment

- Unique low risk / high return opportunity
  - Known compounds with positive Phase 1
  - Blockbuster potential
- Original idea supported by strong IP
- Differentiation through safety and efficacy
- Excellent clinical trial developers
## 02 Practical Example: Chase Pharmaceuticals

**Returns Analysis Based on Potential Upfront Values**

<table>
<thead>
<tr>
<th>Upfront Value</th>
<th>$50 M</th>
<th>$125 M</th>
<th>$150 M</th>
<th>$200 M</th>
<th>$250 M</th>
<th>$300 M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td>1.9x</td>
<td>4.6x</td>
<td>5.6x</td>
<td>7.4x</td>
<td>9.3x</td>
<td>11.1x</td>
</tr>
</tbody>
</table>

**Source:** Own Analysis. The figures above are just an example for explanatory purposes only. They do not correspond to the actual analysis for this investment.
02 Practical Example: Chase Pharmaceuticals

Chase Pharmaceuticals Was Acquired by Allergan in Nov 2016 for up to $1 Billion

Allergan Acquires Chase Pharma in $1 Billion Pact

Written by: BioSpace | news@biospace.com | Dated: Wednesday, November 23rd, 2016

Former Allergan Exec Who Now Helms Chase Pharma Inks $1 Billion Pact With and His New Gang

Allergan struck a deal with Irvine, Calif.-based Chase Pharmaceuticals for $125 million in an upfront payment combined with additional regulatory and sales milestones that could amount to about $1 billion. Allergan’s interest in Chase centers on its lead compound, CPC-201, for the treatment of Alzheimer’s disease. David Nicholson, Allergan’s chief research and development officer, said the addition of CPC-201 “adds a new Phase III ready program for Alzheimer’s disease” to the company’s broad CNS portfolio.

Source: PharmaLive
## 02 Practical Example: Chase Pharmaceuticals

Realized and Potential Returns after Transaction

<table>
<thead>
<tr>
<th>Upfront Value</th>
<th>Realized</th>
<th>Base Case</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>$50 M</td>
<td>1.9x</td>
<td>4.6x</td>
<td>37.0x</td>
</tr>
<tr>
<td>$125 M</td>
<td>4.6x</td>
<td>5.6x</td>
<td></td>
</tr>
<tr>
<td>$150 M</td>
<td>5.6x</td>
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<td>9.3x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1000 M</td>
<td>37.0x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Own Analysis. The figures above are just an example for explanatory purposes only. They do not correspond to the actual analysis for this investment.
03 Conclusions

1. In efficient markets, investment opportunities can be found along the risk/reward line
2. The price of an asset depends on the future cash flows it can generate
3. The problem with assets at R&D stage is that cash flows are difficult to estimate
4. Innovation does not always mean the discovery of new complex molecules. It can be achieved by the combination of existing products
5. SWOT is a useful qualitative tool to understand risks
6. The perceived risk on an opportunity will determine the potential return we will ask for to assume that risk
7. Comparable exit transactions validate the return potential and determine the pre-money valuation