



THE VALUATION EXPERTS

How to value your start-up

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Overview



- **Introduction to Valuation**
- **Valuation of start-up companies**
- **Valuation of a therapeutic Product**
- **Q & A**

Venture Valuation



Mission

Independent assessment and valuation of technology driven companies / products in growth industries

Company and Deals Database - Biotechgate.com

- Experts Finance / Biotech-Pharma
- Not a venture capitalist
- International experience
- Track record of over 300 valued companies
- Clients such as Novartis, GSK, Fraunhofer Gesellschaft, European Investment Bank; VCs; Arpida/Evolva

Valuation of what?



1. Valuation of a product

⇒ Licensing deal

⇒ Strategic development decision



2. Valuation of a company

⇒ Investment / Financing round

⇒ Merger / Acquisition

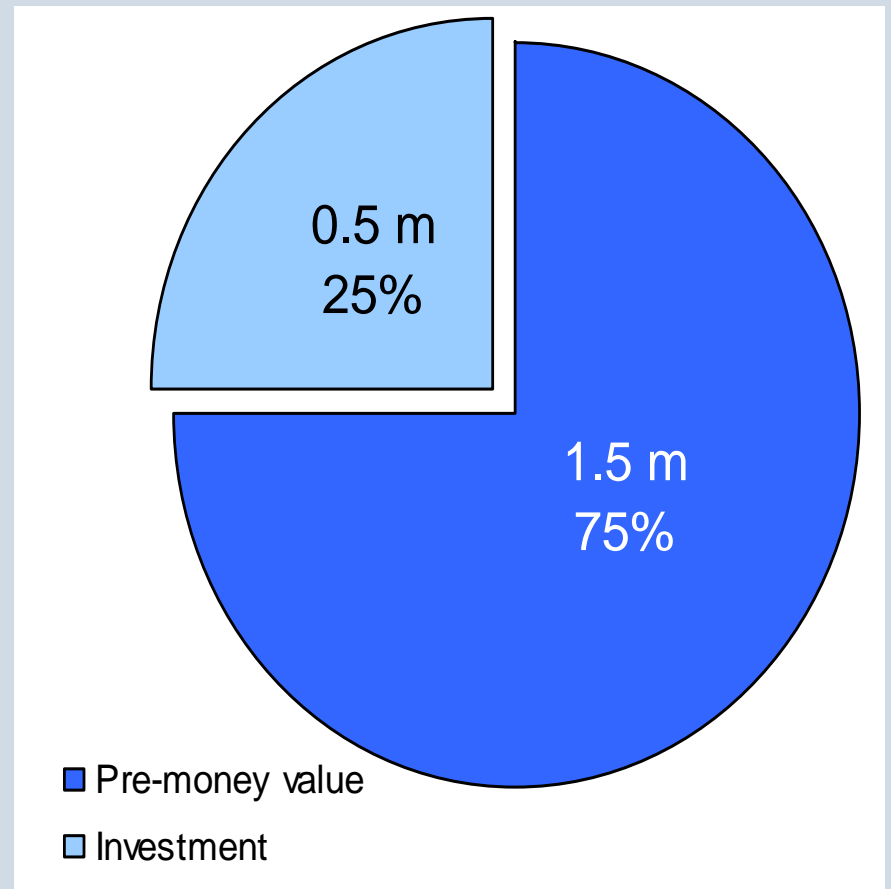
⇒ Measure success of company development



Why Valuation



- Value before investment (pre - money value): USD 1,5 m
- Investment: USD 0,5 m
- Value after investment (post-money value): USD 2,0 m
- Share Investor:
 $0,5 \text{ m} / 2 \text{ m} = 25\%$



Why Valuation



- Out-licensing of a phase II product
- Deal terms:

up-front	USD 1 m
milestones	USD 20 m
royalties	7%
- rNPV of product ?
- rNPV of deal ?

- ⇒ rNPV of product: USD 30 m
- ⇒ rNPV of deal: USD 10 m
- ⇒ Split Biotech / Pharma: 33% / 66%

rNPV: risk adjusted net present value

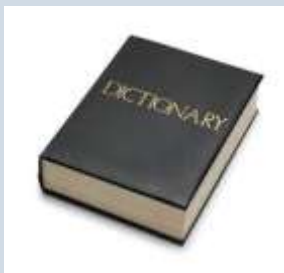
When do a Valuation?



- Think ahead
- Be prepared for negotiations
- Know the fundamentals
- What assumptions have been used
- Out-licensing or financing round?

=> On going exercise

Definitions



- **Value:** implies the inherent worth of a specific thing
- **Price:** depending on the market (supply / demand); whatever somebody is prepared to pay

“Price is what you pay. Value is what you get.”

By Warren Buffett

Rational on Valuation



Why assessment and valuation of high growth companies?

- Industry lacks transparency
- Valuation is key issue in development
- Very difficult (high uncertainties)
- High potential for investors
- Long investment cycle
- Traditional valuation methods unsuited
- Complex technology and IP situations

Trends in Valuation



- Pharma companies have gap in pipeline
- Biotech industry is becoming more mature
- Market for available phase II products is dried up
- Pharma want to be involved from pre-clinical stage
- New demand: Generics, Asia
- New deal and collaboration forms: options

=> Increasing demand for projects

Mind-set of Investors



- Take high risk, but expect high returns
 - Pressure from investors
 - Compete in capital market
- => Different investors for different projects (less VCs more alternative sources)

	Probability of failure	Return
Government Bond	0%	3%
Bonds	5%	5%
Blue Chip Company	10%	9%
Internet company (Nasdaq)	50%	20%
Biotechnology Company	80%	50%

Mind-set of Pharma



- Fuel pipeline
- Portfolio approach
- Sales force for specific therapeutic areas
- Compete with Investors
- Collaboration vs. acquisition

Assessment



1. Understand the fundamentals
 2. Assumptions drive the valuation
- => Assessment/assumptions are key

Assessment:

1. Management



2. Market



3. Technology



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High growth Companies



- Often no revenues / earnings
- Value = potential of the future and associated risk
- Influence factors:
 - Management
 - Market
 - Science and Technology
 - Stage of company

Valuation Approaches



1. Operations-based methods:

⇒ *business plan, fundamentals*

2. Market-based methods:

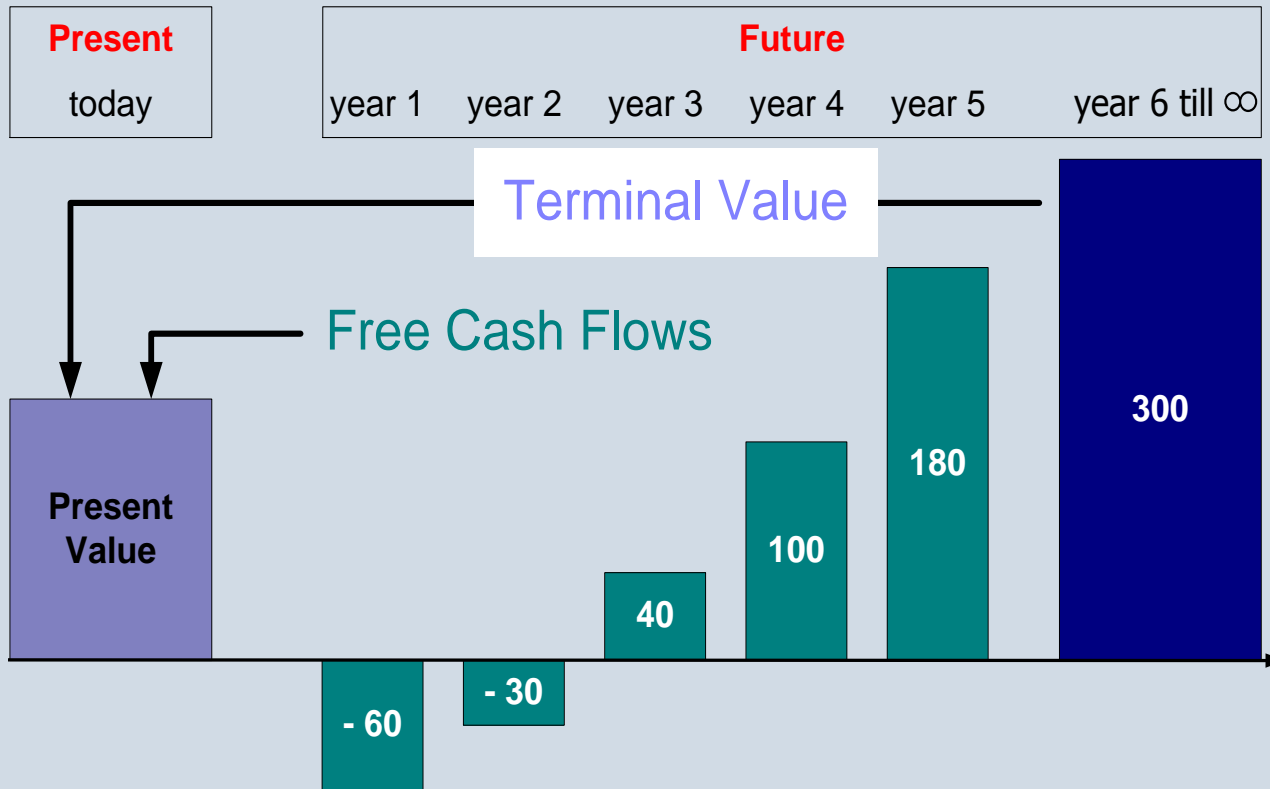
⇒ *price, trends, comparison difficulties*

- Discounted Cash Flows (DCF)
 - rNPV
 - Real Options
 - Venture Capital method
 - Market Comparables
 - Comparable Transactions
- } Operations methods
- ⇒ Mixed method
- } Market methods

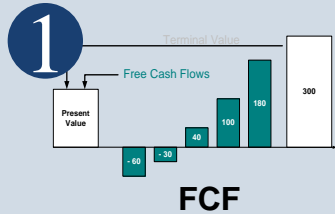
⇒ there is no “the right method”

⇒ combination of different methods

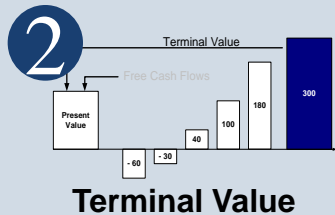
Basic DCF



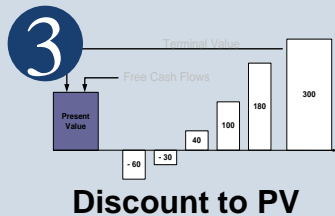
Discounted Cash Flow



Determine Free Cash Flows for year 1 to 5 or 3/10



↓
Calculate Terminal Value



↓
Discount with Discount Rate



↓
Sum of Free Cash Flows

Comparable Methods



Company Value:
USD 10 m
50 employees

Ratio



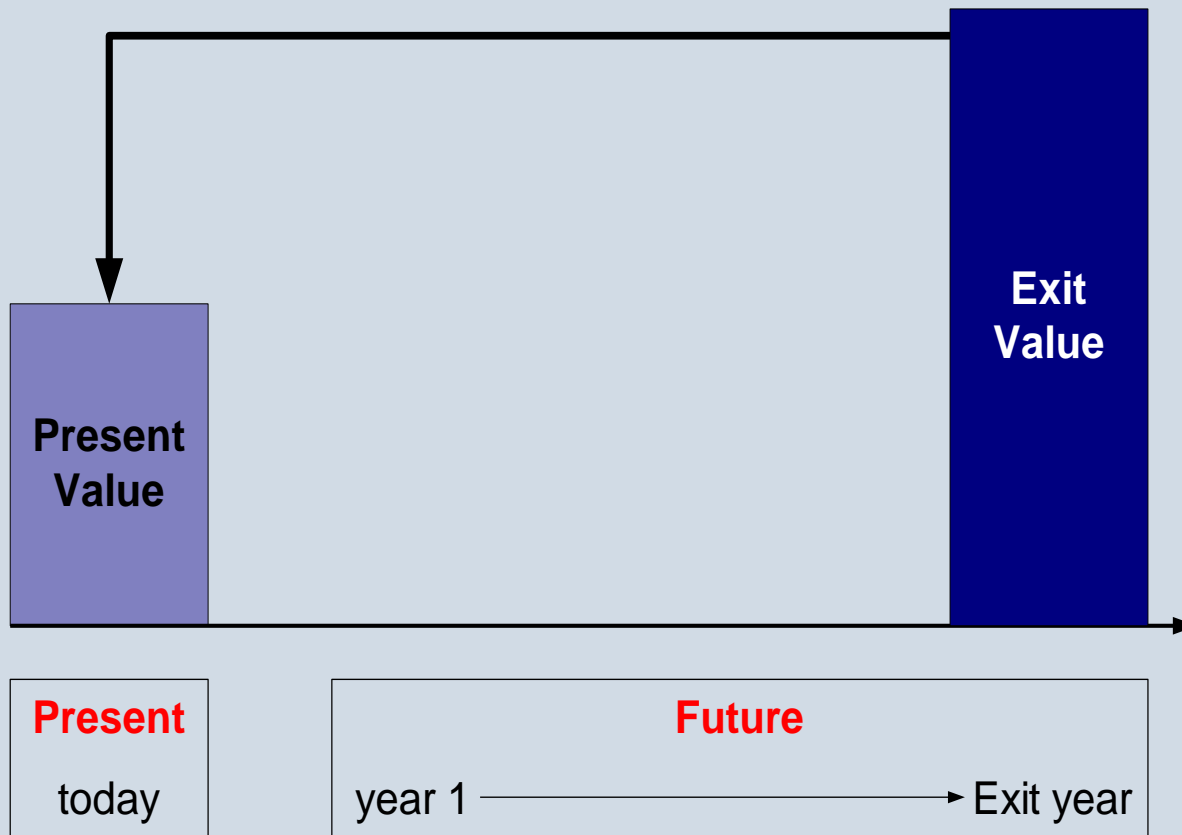
- Revenues
- Earnings
- EBITDA
- Employees
- R&D
- Company specific factors



10 employees
⇒ Company Value:
USD 2 m*

* $(10/50) \times 10 \text{ m} = 2 \text{ m}$

Venture Capital method



Example Glycart



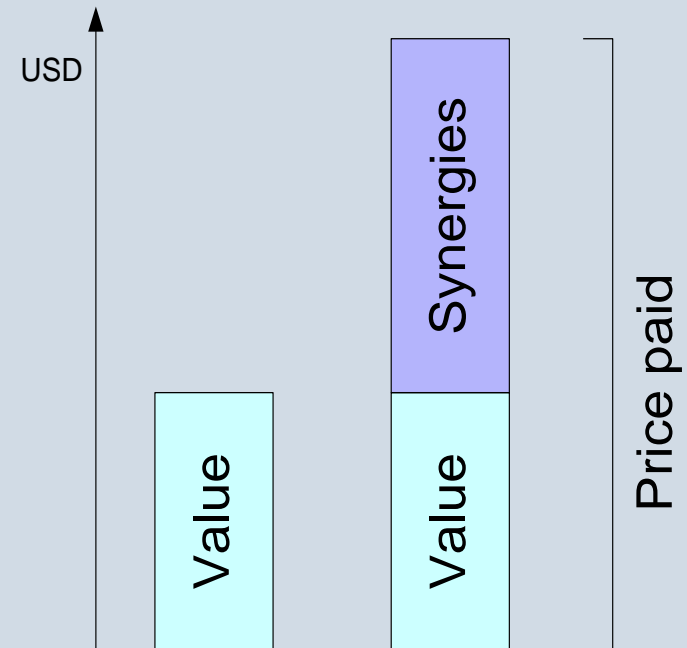
Valuation:

⇒ Pre-clinical compounds USD 180 m?

⇒ Technology Platform?

⇒ Keeping control?

⇒ Value enhancement for own products?



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Product Valuation



Valuation of a product

- Licensing deal
- Strategic development decision
- Expenses included are only those relevant to the product
- Product not industry comparables required
- Management risks not taken into account



Introduction



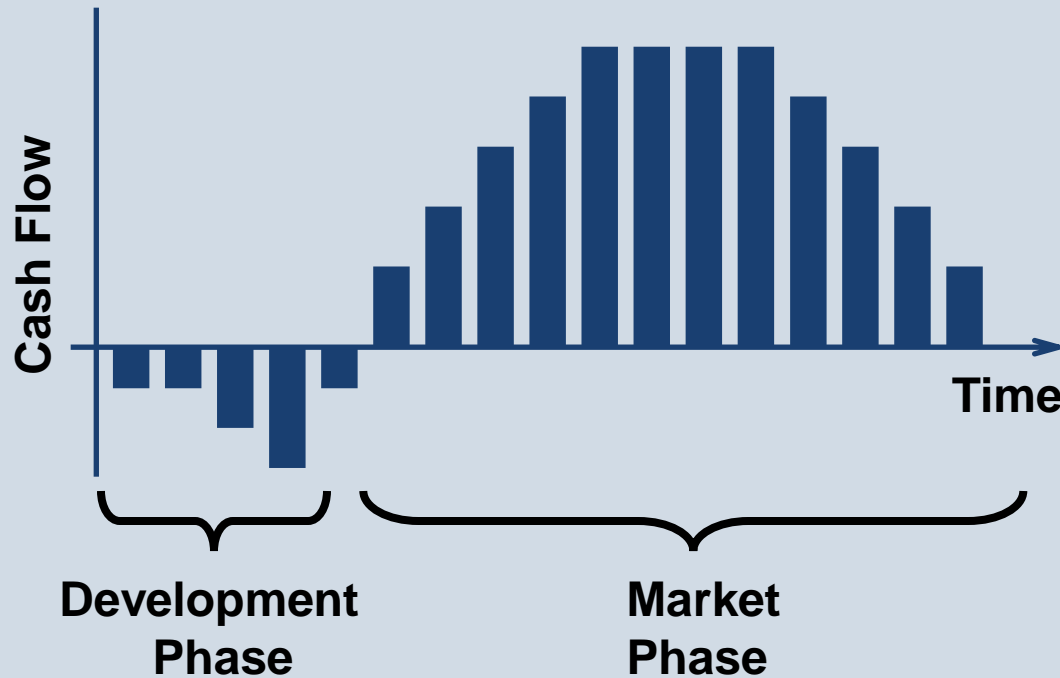
Input

- Development cost and timelines
- Production / Marketing cost
- Market / expected sales
- Success rate based on historical data

Output

- Expected annual discounted cash flows

Valuation components



- Determine timelines and cash flows in each phase
- Develop solid assumptions for all key variables

Risk-adjusted NPV



Risk adjusted Net Present Value

- Also called eNPV
- Method of choice for Big Pharma

Benefits:

- Helps understand accurate value and maximises deal options
 - Adjusts value for **Development Risk** and **Discount rate**
- ⇒ Risk is split in two components
- 1) Product Risk (attrition rate)
 - 2) General Risk (discount rate)

$$\sum_{i=1}^T \rho_i \sum_{h=1}^T \frac{DCF_{ih}}{(1+r_d)^i} + \rho_T \sum_{j=1}^5 q_j \sum_{i=1}^T \frac{CCF_{ji}}{(1+r_c)^i}$$

Five Step Process



Determine Cash Flows in **Development** Phase



Determine Cash Flows in **Market** Phase



Discount with **Discount rate**



Adjust for **Risk** (success rates)



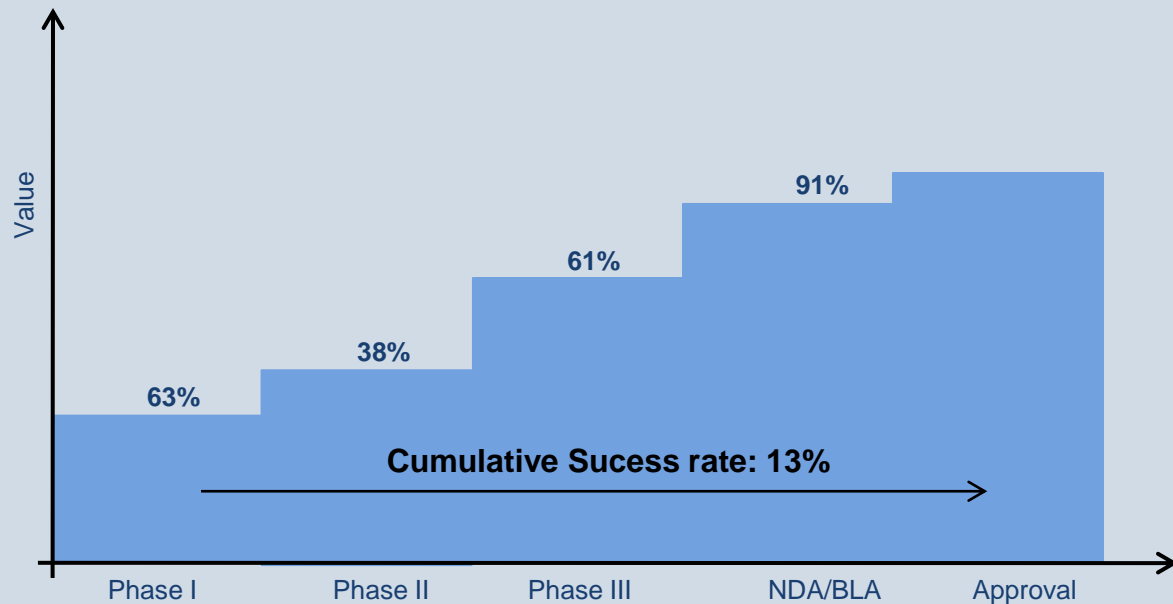
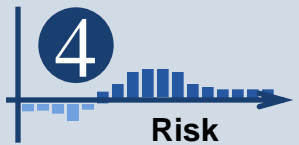
Sum cash flows

Success rates

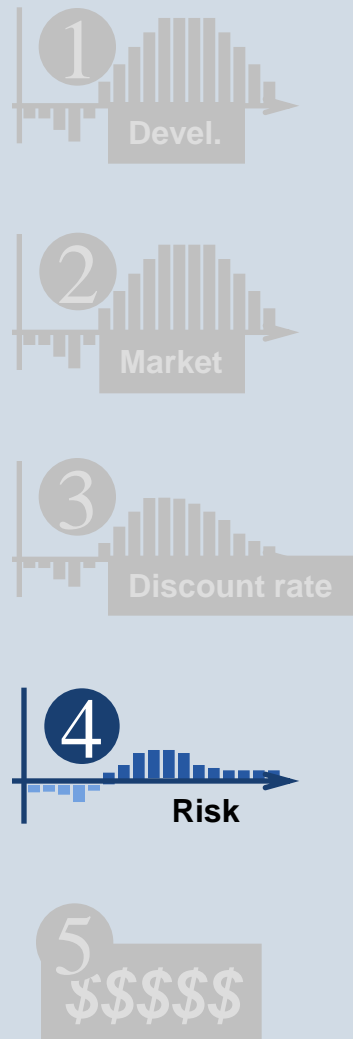


The relation between Risk and Value

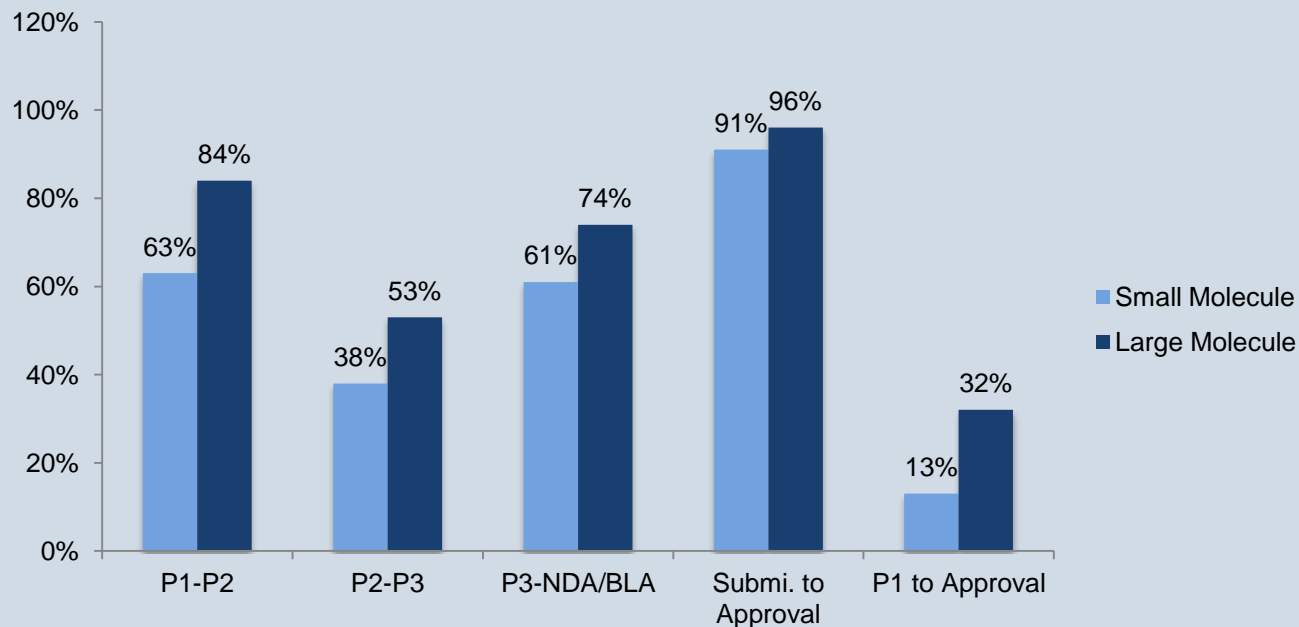
- Completion of a phase → Direct value increase



Success rates

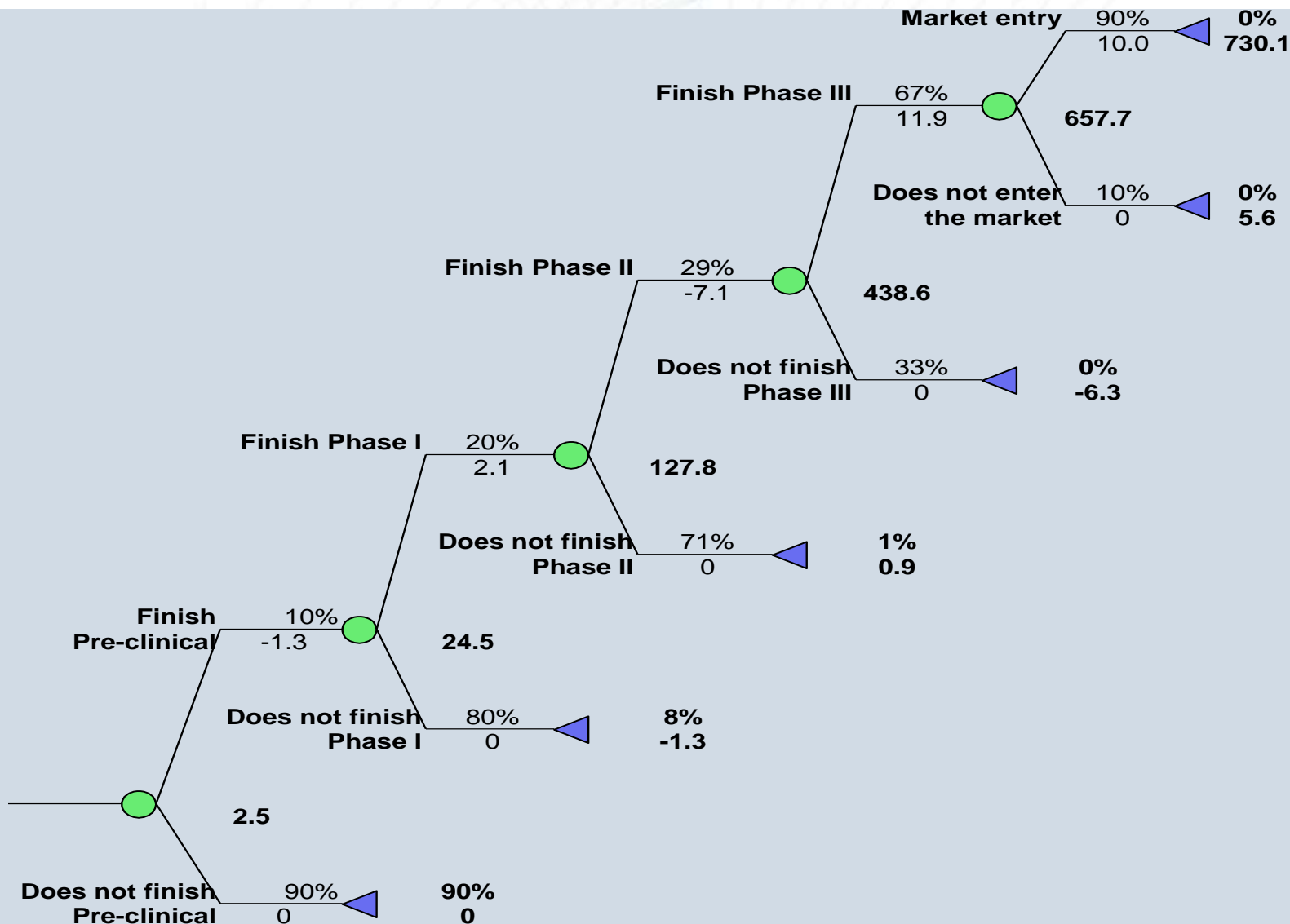


Product development success rates: Small Molecules vs Large Molecules

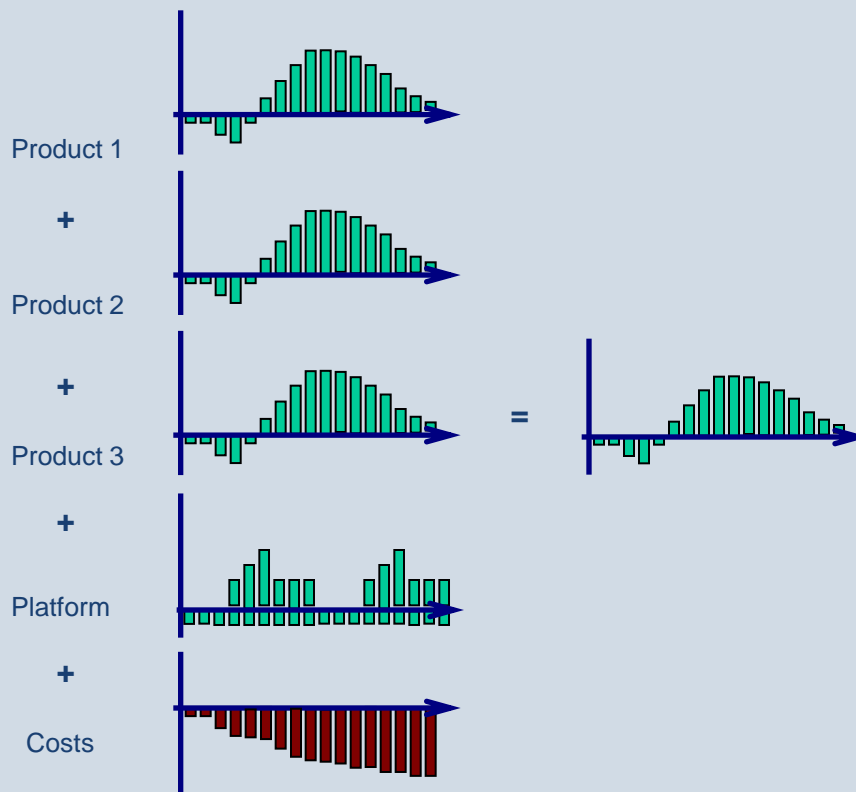


Source: Dimasi, *et al.* Clinical Pharmacology & Therapeutics 87, 272-277, March 2010

Risk-adjusted NPV



Company Valuation



Early stage company

Sum-of parts valuation

Total value of project

Deal terms



- Front/ back-loading a deal can heavily influence deal structure
- Deal terms dependent on needs of both parties

In USD m	Payment of	rNPV* (or up-front)
Up-front	1 m	1 m
Finish Pre-clinical	1 m	0.44 m
Finish Phase I	1 m	70'000
Finish Phase II	1 m	17'000
Finish Phase III	1 m	8'000
Approval / Enter market	1 m	5'000
Royalties	1%	0.70 m

* Time value of money and Risk adjusted

Timing of payments (II)



- Two very different deal structures can look identical

Cash Flow



- Pharma
- Biotech

- Non-discounted, non-risk adjusted

1

rNPV



- Pharma
- Biotech

- 25 million upfront
- 300 million milestones
- 5% royalties

2

rNPV



- Pharma
- Biotech

- 5 million upfront
- 50 million milestones
- 12% royalties

Conclusion



- Valuation is key in the development of a start-up
- Valuation is not easy
- Value \neq Price
- Its all about the assumptions
- Deal \neq Deal
- Be prepared



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Thank you for listening!

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