



Valuating the Company

Patrick Frei and Benoît Leleux

1. Introduction

Valuing early-stage, high-growth companies has always been an exercise fraught with immense difficulties due to the high uncertainty levels inherent in those situations. Nowhere is this problem more acute than in the case of life-science start-ups, especially in biotechnology, where much of the value contained in the early stages of a pharmaceutical project is in the promise of developing a blockbuster drug (Kellogg and Charnes 1999), however remote and low-probability that result might be. In these limited circumstances, valuation extends from the science of applying financial models to the complex art of integrating 1) a thorough company assessment – understanding the company’s soft factors and determinants of future development, 2) an extensive risk analysis – evaluating the probabilities of success at each stage of development based on the assessment of the company, and 3) the insights from different financial valuation models.

2. Why is knowing value important?

Life-science companies, because they deal with the philosophically-charged aspects of life and health, have sometimes been construed as being above mere economic considerations of value. The actual returns realized by many pharmaceutical companies in the last 30 years encouraged some to believe that any company providing some form of solution to well-being would be rewarded handsomely for its contribution to mankind. But this concern for value goes way beyond the estimate of what a business may be worth at a point in time: it has developed into a new attitude to business. What started as a quest for better performance measures in the early 60’s generated a whole new field of endeavour referred to as “*value-based management*” (VBM). A company’s main goal is to create long-term value for its shareholders. Unfortunately, simplicity stops with these three words, and the conversion of concepts and theories into practices is much less transparent. VBM takes valuation to a higher concept level, distancing itself from the rather futile exercise of putting an exact number on what a great opportunity may be worth today to the more constructive exercise of identifying and tracking the key drivers of value in the company, in order to improve operational decisions and, ultimately, performance. To implement VBM, management has first to re-engineer its actions in terms of a value-cre-

ation mindset and then to identify key value drivers to establish a value-driven organization. Management can then influence these critical factors to reach its ultimate value-creation objective. To get there, the whole organization has to be refocused on that single-minded goal of creating shareholder value, with managers and workers being evaluated on that single, all-encompassing basis.

Beyond the identification and management of the key value drivers, and more potent yet, is the measurement of the *development of the value created*. If incentive schemes for managers can be engineered that capture the value produced, then the likelihood that these objectives are reached can be significantly increased – analogously to “what you measure is what you get”. Thus, the development of employee stock ownership plans (ESOP) and various other value-based bonus programs require the company to conduct a valuation of the company on a regular basis if it is not publicly traded.

The value of a company lies mainly in its ability to generate economic profits in the future. As such, all valuation exercise is based on “visioning” the future of that company, rather than simply measuring the present situation. Value is grounded in the future, which means assumptions have to be made as to what that future may look like and what important strategic decisions will need to be made and when. These include taking views on the state of the market, the principle elements of science and technology and the ability of the management to deliver on the plan. An intrinsic part of the visioning process is thus the *ability to question the fundamental hypotheses* and the company’s ability to deliver on the promises.

Life-science start-ups compound the difficulties listed above by their requirement for high initial capital investments. While the full development process can easily be broken down into stages, with matching financial rounds, even the earliest stage tends to be lumpy and expensive. The company will have to provide proof of concept in the form of lengthy and expensive pre-clinical and clinical trials and establish an organization. Revenues can usually only be expected in the distant future. In other words, to use a casino analogy, this is a game with high stakes and expensive chips. The capital is provided mostly by venture capital firms, private and corporate investors in the form of equity; the high risk associated with such companies makes the use of debt as a source of financing marginal¹⁾. This indirectly provides another rationale for conducting a valuation of such companies: such equity investors require this guidance to determine their *participation in the equity of the company*.

3. What is value anyway?

Before getting down to a proper valuation process and framework, it is critical to define what value is and the major conceptual approaches to doing valuations.

First of all, it is vital to understand the circumstances under which value is to be estimated, i.e. who are the parties involved and what do they plan to do with the company.

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Upon closer examination, you discover that the machine is actually made of 24 carat pure gold and weights exactly 1 ounce. Gold is currently trading in the market at 400 USD an ounce. How much would you pay for the box now? On the one hand, you could melt the machine today and get 400 USD for the gold. This is known as the *liquidation value* of the machine. On the other hand, the present value of its future cash flow (FCF) would still be 1,000 USD. In this case, the machine is worth more for its stream of cash flow (in continued use) than for its assets. Accordingly, its value is again 1,000 USD, despite the fact that it is made of 100% pure gold.

Let us now re-evaluate the situation by assuming that there is actually a 50% chance each year that the machine will break down while producing the 100 USD bill, and that such breakdown will be terminal, i.e., since these machines have long been outlawed, repairmen are non-existent, so the machine will be scrapped for gold. With a 50% probability you receive a value of 100 USD each year, and with another 50% probability, the machine breaks down and you can sell it for 400 USD. Clearly, the value you are willing to pay for it is somewhere between 400 USD (if it breaks down producing its first bill) and 1,000 USD (if it never breaks down).

Finally, let us visualize a situation in which there is no known market price for gold, but a number of rather similar 100 USD printing machines have traded in the recent past at between 9 and 14 times their estimated annual output, depending in part on their specific engineering and what they were made of. This would put the value of this machine in the 900 – 1,400 USD range, and probably closer to the higher end given the fact that it is made of 24-carat gold. This approach is known as a *comparables method*, or a *multiples method*.

These analogies stress a few critical points about valuation. First of all, a company can have different values depending on the intended purpose (liquidation or continued use) but also depending on the valuation approach used (comparable method, cash-flow method). Second, comparable methods are only as good as the ability to identify true comparables. Finally, the value of a company depends heavily on the risk/probability of the future cash flow. To assess the risk and potential, involved parties such as investors and management need to understand the company's fundamentals. Investors and independent evaluators normally conduct an assessment or due diligence for this purpose. In the following section, a framework is presented for the assessment of a company's risk and future cash-flow potential which is used for the cash-flow based valuation approach.

4. A valuation framework

Assessing the future potential of a start-up company is definitely not an easy task, with more features of an art than a science. However, difficulties are no excuses for sloppiness but rather incentives to perform a thorough, structured valuation exercise.

The basis for such an assessment is the expected future development of the company. The management team usually develops a business plan which encloses such information. A reasonable and well written business plan is therefore a starting point for the valuation process. The assessment of the company will be the basis for the risk analysis, which then flows into the different valuation models.