A REAL OPTION APPROACH TO VALUING PHARMACEUTICAL INVESTMENTS AND FIRMS
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OBJECTIVE: This paper presents a model based on real-option analysis for evaluation of R&D in the pharmaceutical sector, both for start-up ventures as well as for big conglomerates. The analysis will be illustrated by means of a case study and shows the valuable contribution of real-option analysis compared to conventional DCF-analysis.

METHODS: The key understanding is that R&D projects can be seen as growth options. The growth-option framework looks at pharmaceutical investment projects as a sequence of options, which differs from a conventional DCF-analysis by incorporating the possibility of stopping the project when a subsequent phase is not valuable (abandon the option), and of continuing the project (exercise the option) when it is valuable. Traditional valuation techniques such as DCF-analysis fail to fairly evaluate innovative companies because most of the value of R&D projects is embedded in unexercised real options whose future value is uncertain at this moment. If one considers a company as a portfolio of real options, one can value the projects or the company based on an option model.

RESULTS: The case study illustrates that real-option analysis typically results in a higher project value than conventional DCF-analysis would reveal. Real-option analysis better reflects the fundamental value of the project or of the company, which cannot be captured by DCF-analysis.

CONCLUSION: This paper presents a new methodology for evaluating pharmaceutical R&D based on real-option models. As such, the real-option framework is better in explaining the recent stock price behavior of biotech and pharmaceutical firms.