

# Essays on information asymmetry, disclosures and the financing of R&D

The case of the biotechnology industry

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Avhandlingen baseras på följande delarbeten:

1. Hans Jeppsson  
The value-relevance of accounting and non-accounting information in the European biotechnology industry
2. Hans Jeppsson, Mattias Hamberg  
Market timing and equity financing decisions
3. Hans Jeppsson  
Information asymmetry, R&D disclosures and the choice of equity-selling mechanisms
4. Hans Jeppsson  
Acquisitions, alliances and post-acquisition R&D performance



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**Essays on information asymmetry,  
disclosures and the financing of R&D**  
The case of the biotechnology industry

Investments in research and development (R&D) are an important driver of innovation, productivity and economic growth. Despite the importance of R&D investments to society, it is commonly known that R&D activities are difficult to finance in a competitive marketplace. Corporate investments in intangible assets, such as R&D, create information asymmetry problems between corporate insiders and outsiders. Several additional factors contribute to information asymmetry: the relative uniqueness of R&D to the developing firm, the lack of organized markets for trading R&D assets and the scarcity of R&D information in corporate reports. As a result, Hall and Lerner (2009) suggest that the marketplace for financing R&D looks like the “lemons” market (Akerlof, 1970).

This thesis studies asymmetric information in the context of two major corporate events in the biotechnology industry: corporate financing of R&D and corporate takeovers. The two essays on corporate financing of R&D examine how biotech firm managers access capital markets to raise external financing to finance capital-intensive R&D investments and how they choose between alternative equity flotation methods. The essay on corporate takeovers investigates the role of asymmetric information in corporate takeovers between acquiring and target firms and the subsequent performance of R&D.

The results of this thesis indicate that corporate managers issue equity to a larger extent following the disclosure of R&D information, i.e. when the degree of asymmetric information is low, and when the stock is temporarily mispriced. Biotech stocks generate positive abnormal returns in the period prior to the equity issue announcement and negative abnormal returns in the period thereafter. The results also indicate that the degree of asymmetric information plays a role in the choice of equity-selling mechanisms. Biotechnology firms issue equity publicly rather than privately following disclosures of R&D information. Finally, the empirical results show that R&D projects that are co-developed prior to the acquisition are no more likely to advance to subsequent stages of development than are R&D projects that are not preceded by alliances, which raises questions regarding the ability of R&D alliances to serve as a mechanism to mitigate information asymmetry problems.

**Keywords:** biotechnology, R&D, information asymmetry, disclosures, value-relevance, equity market timing, mispricing, adverse selection, monitoring, seasoned equity offerings, rights offerings, private placements, M&A, alliance

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