

A STUDY OF INNOVATION AND PATENTING IN THE LIFE SCIENCES

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ABSTRACT

This dissertation examines some of the economic issues surrounding patenting by smaller life science firms. In this context patents are viewed as firm assets that have both value separate from the patented innovation itself and costs associated with their acquisition.

The first essay investigates one facet of the cost of patent acquisition, pendency time. Much research in this area concentrates on the influence of patent characteristics on pendency. This essay uses a more comprehensive model that also includes the experience and interests of three stakeholders in the patenting process: applicants, their attorneys, and patent examiners. I find that applicant behavior is a significant factor in longer pendency.

The second essay turns to the subject of patent value, and examines the relationship between academic science and industrial innovation. Knowledge from academic science can be an important input for innovation in the life sciences. Here I develop a novel measure of the quality of the scientific references in granted patents, augmenting previous research mainly concerned with the quantity of scientific references. I find that higher quality science is significantly related to patents of greater technological importance and thus overall value.

The third essay is concerned with how the value of patents changes over the course of a technology life cycle. Previous studies of value and pendency have reached conflicting conclusions based on whether technology position was included. By tracing changes in value and other patent characteristics over a technology cycle, I find that value changes non-linearly over the cycle and relative benefits of longer versus shorter pendency change as well.