

A Dynamic Stochastic Analysis of International Patent Application and Renewal Processes

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This paper develops a dynamic stochastic model to examine the joint patent application and renewal behavior under an international patent protection regime. This framework makes it possible to utilize both the cross-sectional (multi-country filing) and the time-series (patent renewal) dimensions of available international patent data to evaluate the private value of patent protection, and allows one to distinguish more aspects of patent value.

The private value of European patents in the pharmaceutical and the electronics industries in the 1980's are examined, and the estimation results indicate substantial differences in the patent application and renewal patterns in these two industries. Pharmaceutical patents on average are endowed with higher initial values, and the patent holders seek for protection in more countries than the electronic patent holders. However, pharmaceutical patents depreciate faster than electronics patents, and consequently have lower renewal rates and shorter patent lives.