THE EFFECTS OF MARKET AND TECHNOLOGICAL UNCERTAINTY ON UNIVERSITY SPINOUT FORMATION: A REAL OPTION APPROACH TO TECHNOLOGY COMMERCIALIZATION (SUMMARY)

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SUMMARY

THE EFFECTS OF MARKET AND TECHNOLOGICAL UNCERTAINTY ON UNIVERSITY SPINOUT FORMATION: A REAL OPTION APPROACH TO TECHNOLOGY COMMERCIALIZATION

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Principal topic

The nature of technologies that are exploited through spinout formation are mostly early and uncertain technologies that evolve in highly uncertain markets. The question why these technology and market conditions are favourable for spinout creation has been recognized by research scholars but was not put under a theoretical framework or tested empirically.

The current study explores under which uncertainty conditions that are predominantly to be found in early stage technologies, spinout nativity is more favourable. We view the problem from the theoretical lenses of real-options theory.

Research on real options has encouraged the experimentation and the proactive exploration of uncertainty and has contributed to our understanding of entry decisions under uncertainty. We extend the concepts of real option theory to technology commercialization decisions by taking the perspective that uncertainty influences the value of the technology option. In particular, we examine the effects of exogenous (market) as well as endogenous (technological) uncertainty on spinout activity.

Method

Our study includes data on all spinouts created in the period from 1990 to 2004 by the top German Research Institution (Max Planck). It is therefore the first study to use non-US data to directly analyse technology commercialization in form of spinout and licensing activity. The information where, when and in what form patents are licensed or spun out was directly obtained from the university technology transfer offices.

Since we are looking at the occurrence of events like the occurrence of a spinout or the licensing of a patent and our dataset contains censored and time dependent covariates, we will use Cox regression time dependent analysis to account for these stipulations. This gives us the possibility to predict the likelihood of new firm formation per patent-year on the basis of several time dependent covariates that are used in our study.

Implications

The central implication of this study is straightforward. It tries to show that the tendency for an invention to be exploited through firm formation varies with the uncertainty conditions in which it is found. It will further provide direct empirical evidence for this phenomenon by putting it under a theoretical framework. The results will also have important implications to entrepreneurial scholarly research by providing empirical evidence that firm formation rates are influenced by factors other than research and development intensity, firm size, capital availability, technological regimes, and concentration.

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