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Entrepreneurship based on university patents: new challenges for German universities

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Abstract:
Universities play an important role in today's knowledge society. They are traditionally considered as a principal source of technological innovation and technological change. Recent economic literature focuses attention to spillovers from university research (Romer 1986; Dasgupta and David 1987; Jaffe 1989), which is fundamental to economic activity increasing the productivity of private sector (Barker 1985; Adams 1990; Rosenberg and Nelson 1994). In latest years, these spillover effects have been channeled throughout the commercialization of university-generated knowledge. Within this context, patents are shifting in the midpoint of public policy discussion regarding the role of universities in a future innovation system, not at least because of the benefits of knowledge spillovers from university patenting (Jaffe 1989; Acs, Audretsch, and Feldman 1992, 1994).
The paper analyzes the importance of patents as a mechanism for transferring technological knowledge to the private sector by founding of start-up companies. Initially, it explains the recent legal and institutional changes in Germany concerning university inventions. Herein, particular attention has attracted the recent renewal of the Federal Act governing employee inventions ("Gesetz über Arbeitnehmererfindungen"). Even if the basic strategies – awarding property rights on inventions arising from on-campus research to universities rather than to

the faculty inventor – are internationally converging, there are some small but significant differences in the German approach. While the U.S. model is focused on setting a policy framework that allows universities to experiment best practice (Goldfarb and Henrekson 2003), German "top-down" institutional setting, in turn, defines quite strictly entitlement of university patents and commercialization income distribution. The paper examines the however imperfect empirical data from German Patent Exploitation Agencies ("Patentverwertungsagenturen") and compares them with the respective data set of the Association of University Technology Managers, indicating a huge difference in terms of numbers on German and US university patents and their use for founding start-up companies. Up to now, the response to the legal and institutional changes is rather modest, because comparing with other developed countries Germany entered quite lately and labouredly into a new university innovation policy.

Furthermore, the paper discusses several economic and legal dilemmas regarding entrepreneurship based on patents emanating from university research and explores possible solutions. This includes the question whether patents from public funded research should be placed at exclusive disposal of start-up companies. The paper reveals that these exclusion effects are mitigated by the "non commercial use" clause in European patent law. Further, it deals with the conflict between traditional publication and new exploitation strategies throughout entrepreneurship on patents that may be solved reintroducing a "grace period". Finally, the special problem of German university inventor's share of royalties is emphasized since it may obstacle new firm formation (Di Gregorio and Shane 2003). The paper suggests that inventor's share should not refer to gross license income and be defined not on federal but on university level according to the quality of invention and its commercialization expectation. Moreover, university inventors should be more actively involved in decisions regarding patent exploitation strategies.

Last section provides concluding remarks and observations, which by virtue of the highly exploratory character of this paper only can be suggestive. After all, the results are relevant to enlarge the growing literature on the economic impact on university patenting (Adams 1990; Henderson, Jaffe and Trajtenberg 1998; Mowery, Nelson, Sampat and Ziedonis 2001, 2002; Thursby and Kemp 2002; Link, Scott, Siegel 2003; Thursby and Thursby 2003; Shane 2004), but seen from a German perspective.

Keywords: Entrepreneurship, Inventions, Patents, Technology Transfer, Universities, Royalties

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