Barriers Inhibiting Industry from Partnering with Universities: Evidence from the Advanced Technology Program

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ABSTRACT. This paper describes a small, unique set of project data that was assembled as part of a larger study on universities as research partners. Herein, we summarize, to the extent possible, our interpretation of what the project data reveal about barriers, intellectual property (IP) concerns in particular, inhibiting industry from partnering with universities.

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1. Introduction

There is a long and well-documented history of industry/university research relationships. In Europe, such relationships can be traced at least to the mid- to late-1800s and in the United States to at least the industrial revolution. Hounshell (1996) and Rosenberg and Nelson (1994) provide excellent historical overviews of the evolution of these associations. In recent decades, the nature of such relationships has become more formal through the formation of explicit research joint ventures and partnerships.

It is generally accepted, at least in the United States, that research partnerships are a critical strategic response to global competition. The Council on Competitiveness (1996) in its recent policy statement, Endless Frontiers, Limited Resources: U.S. R&D Policy for Competitiveness, took the position that (1996, pp. 3–4), “R&D partnerships hold the key to meeting the challenge of transition that our nation now faces” and industry will increasingly rely on universities to ensure the success of the research being undertaken. Relatedly, Mowery (1998, p. 646), commenting on structural changes in the U.S. innovation system, noted that a major element of structural change is “increased reliance by U.S. firms on sources of R&D outside their organizational boundaries, through such mechanisms as … collaboration with U.S. universities . . . .”

In the United States, the number of new, formal research joint ventures (RJVs) formed under the National Cooperative Research Act (NCRA) of 1984 and its amendment the National Cooperative Research and Production Act (NCRPA) of 1993 has been cyclical, reaching a peak in 1995, falling for three years, and just now beginning to increase again (Brod and Link, forthcoming). However, the percentage of RJVs involving at least one university as a research partner has generally increased since 1985, as illustrated in Figure 1.2,3

The trend showing an increase in RJVs with university partners is not surprising given the claim by the Council on Competitiveness that university presence helps to ensure the partner-
ship’s research success. Rosenberg and Nelson (1994, p. 340) make a similar claim, “What university research most often does today is to stimulate and enhance the power of R&D done in industry.” Hall, Link, and Scott (2000, p. 19) conclude from their project-based study of universities as research partners that universities create research awareness among the research partners of the joint venture:

Universities are included (e.g., invited by industry) in those research projects that involve what we have called “new” science. As such, it is the collective perception of the other research participant(s) that the university could provide a research insight that is more anticipatory of future research problems that might be encountered and could thus take on the role of an ombudsman to anticipate and translate to all concerned the complex nature of the research being undertaken. Thus, one finds universities purposively involved in projects that are characterized as problematic with regard to the use of basic knowledge.

Given the research productivity-enhancing effects of such partnerships, the trend in Figure 1 may well continue and perhaps even intensify. However, there is another issue implicit in Figure 1, and that issue serves to motivate this paper. Whereas universities are research partners in about 15 percent of all RJVs – at least all RJVs that are registered under the NCRA and NCRPA and made public in the Federal Register – the vast majority of research partnerships do not involve a university. Was university research participation in these projects simply not warranted because of the nature of the research? Or, was a research relationship with a university sought, but institutional barriers inhibited or even prevented the research partnership from coming about?4

In Section 2 we describe a small, unique set of project data that was assembled as part of a larger study on universities as research partners in projects funded by the Advanced Technology Program (Hall, Link, and Scott, 2000). In Section 3, we summarize, to the extent possible, our interpretation of what the project data reveal about barriers, intellectual property (IP) concerns in particular, inhibiting industry from partnering with universities. Finally, in Section 4 we offer some policy observations in light of our findings.

2. The advanced technology program and the program’s project data

The Omnibus Trade and Competitiveness Act of 1988 (P.L. 100–418) not only changed the name of the National Bureau of Standards to the National Institute of Standards and Technology (NIST) and broadened its scope of responsibility, but also it facilitated the ability of Congress to enact a so-called direct competitiveness program, the Advanced Technology Program (ATP). The American Technology Preeminence Act of 1991 (P.L. 102–245) later clarified the mission of the ATP.

The stated goals of the ATP are to assist U.S. business in creating and applying the generic technology and research results necessary to:

1. commercialize significant new scientific discoveries and technologies rapidly; and
2. refine manufacturing technologies.

The ATP was also designed to enhance the competitiveness of industry. The enabling legislation is explicit about that objective:

The ATP . . . will assist U.S. businesses to improve their competitive position and promote U.S. economic growth by accelerating the development of a variety of pre-competitive generic technologies by means of grants and cooperative agreements.

Towards this goal, ATP was mandated to enhance competitiveness by underwriting selected research projects. Thus by design, the ATP represents a program for direct funding of private-sector research through public-sector financial resources.5 The first ATP awards were made in April 1991.

For this study, 38 projects funded by the ATP between 1993 and 1996 were considered.6 This group of projects was randomly selected from the