ABSTRACT. We draw on qualitative data derived from field work on two university campuses to develop an explanation for widely disparate rates of new invention disclosure. We argue that faculty decisions to disclose are shaped by their perceptions of the benefits of patent protection. These incentives to disclose are magnified or minimized by the perceived costs of interacting with technology transfer offices and licensing professionals. Finally, faculty considerations of the costs and benefits of disclosure are colored by institutional environments that are supportive or oppositional to the simultaneous pursuit of academic and commercial endeavors.

JEL Classification: L33, M13, M14, O31, O32, and O34

1. Introduction

The last two decades have witnessed a sea-change in relationships between universities, industry, and the federal government. Beginning in the early 1980s, key federal policy changes enabled small businesses, public and nonprofit organizations, including universities, to hold title to intellectual property (IP) developed during the pursuit of federally sponsored research and development (R&D). Since then, research universities have developed increasingly close ties to the world of commerce. Through licensing and other forms of technology transfer, strategic alliances, and spin-off firms, universities have become a driving force in the development of high technology industries (Saxenian, 1994; Rosengrant and Lampe, 1992; Powell, 1998) and regional economic development (Feldman and Florida, 1994).

Against this backdrop of broad change, institutional prestige for research universities is increasingly defined in terms of both academic and commercial science (Owen-Smith, forthcoming; Powell and Owen-Smith, 1998). Nevertheless, both the process and the success rate for transferring high quality basic science into commercial development varies greatly across U.S. research universities. At some institutions, high profile basic science moves into the commercial realm with few missteps and delays, resulting in healthy revenue streams, close and productive relationships with industry, and broad intellectual property portfolios. In contrast, other campuses with strong basic research programs have floundered in their efforts to commercialize scientific discoveries.

We argue that these differential outcomes are steeped in distinctive institutional contexts that shape the transfer of knowledge from public sources to private firms. On most university campuses, technology transfer offices (TTOs) mediate the interface between university and industry, through procedures and work practices designed to enact university IP and technology transfer policies. In university environments a crucial first step for technology transfer is to convince faculty to disclose their potentially valuable innovations to TTOs.

Most TTOs lack the resources and competencies necessary to search a wide range of laboratories and research groups for commercially viable technologies. Thus, institutional success at patenting depends in part on faculty perceptions of the benefits of patenting, the quality of the TTO, and the institution as a collective enterprise. Faculty
decisions to disclose, then, are shaped by the mixture of individual incentives, local organizational procedures, and institutional milieus. The meanings academic researchers attach to IP and their perceptions of the local patent process color decisions to disclose potentially valuable innovations within the context of a university’s history, environment, capacity, and reputation. We draw on 68 semi-structured interviews on two campuses to begin unraveling the effects of distinctive institutional environments on university technology transfer success, focusing empirically on faculty accounts of their decisions to patent.

We begin by introducing the two university cases, pausing briefly to discuss the logic supporting their selection, sampling, and interview methods. We then focus on the institutions’ distinct capacities for conducting science and engineering research. This comparison highlights the differential rates of commercial success on the two campuses and examines several possible explanations for the divergence. We suggest that, regardless of important organizational and capacity differences, institutional environments that catalyze or inhibit academic patenting play a large role in explaining the varied outcomes. We then turn to a discussion of faculty perceptions of the positive outcomes of patenting, demonstrating that on both campuses accounts vary significantly by research area. While the perceived benefits of patenting are very similar at both campuses, disclosure rates vary widely at the two schools. Faculty decisions to pursue patents on new technologies are based on perceived benefits of IP protection, but those perceptions appear to be shaped by (a) concerns about the local patenting process and TTO, (b) conceptions of the larger institutional environment in which academic patenting occurs, and (c) perceptions of the potential pecuniary returns to patenting which are themselves forged by institutional histories and environments.

2. Introducing the cases, EPU & BSU

Elite Private University (EPU) and Big State University (BSU) represent two extremes in the pursuit of patents and patent revenue. EPU combines first rank academic science with a highly successful technology transfer and licensing operation. In contrast, BSU has been less able to transform its high quality basic science portfolio, which excels in the areas of optics, atmospheric science, and cancer research, into commercial success. Table I presents a detailed comparison of EPU and BSU in terms of institutional characteristics, technology transfer infrastructure, R&D capacity, scientific reputation, and commercial success.1

Note first the wide disparities between EPU and BSU on all measures of technology transfer activity. EPU faculty disclosed nearly 3 times more than BSU faculty in 1998, and filed more than 8 times the new patent applications. In terms of success, EPU inventors were issued five times the number of patents issued to BSU inventors and EPU received a whopping 128 times more (gross) royalty income. The picture is clearly one of widely disparate commercial outcomes. The first step in empirically examining the sources of these disparities is to explain the gap in faculty propensity to disclose new technologies.

Table I also indicates that EPU and BSU differ in terms of technology transfer capacity. EPU’s Technology Licensing Office (TLO) is nearly 20 years older and more than nine times larger than BSU’s Technology Transfer Office (TTO). The institutions also differ on measures of academic prestige. EPU ranks higher than BSU on three measures of scientific reputation: National Research Council faculty quality ranking (maximum = 5), a standardized measure of publication impact, and the percentage of faculty holding prestigious (and peer reviewed) NIH or NSF grants.

But despite the wide gulf between the institutions on these measures of reputation, technology transfer capacity and accomplishment, the campuses are rather similar in terms of aggregate research capacity. EPU and BSU are within one standard deviation2 in terms of number of active researchers, total R&D expenditures, and publication volume. Put differently, relative to Research One universities, these two schools have very similar numbers of science and engineering researchers,3 spend approximately the same amount of money on R&D, and publish a similar number of science and engineering journal articles. While the institutions differ on several di-