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To the NBER Entrepreneurship Research Bootcamp Coordinator,

I am a fourth year Ph.D student in Technological Innovation, Entrepreneurship and Strategic Manangement Group at MIT Sloan, interested in applying to this year's NBER Entrepreneurship Research Bootcamp. My current academic adviser professor Scott Stern has strongly recommended participating in the bootcamp and I believe that it will be a valuable learning experience for me, given my research interests and dissertation topic.

The main area of my research is in the field of innovation and entrepreneurship, with special focus on the dynamics of geographical spillovers and regional economies. I am working on a dissertation project, which examines the impact of local industrial R&D and investment upon the local academia, and its implications upon the rate and direction of innovation and entrepreneurship in the regional ecosystem.

I firmly believe that my research interests make a good fit in the theme and purpose of this research bootcamp and I sincerely hope to be given a chance to partcipate. Thank you for your consideration.

Sincerely,
Eunhee Sohn
Ph.D Candidate at MIT Sloan

EUNHEE SOHN

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EDUCATION

Massachusetts Institute of Technology
Ph.D Candidate in Management Sep 2009-
Technological Innovation, Entrepreneurship, and Strategic Management Group

Seoul National University, Korea
Master of Science in Strategy & International Business Jun 2009
Bachelor of Business Administration Jun 2007

RESEARCH

Thesis
"The Endogeneity of Academic Science to Local Industry and Institutions" (Committee Chair: Scott Stern)
- Presented at Consortium for Cooperativeness and Competition 2013

Work in Progress
"The Determinants of Entrepreneurial Capacity" (with Fiona Murray and Scott Stern)
"Reputational Spillovers of Fraud Science" (with Kenny Ching and Fiona Murray)
"Are Regions Vulnerable to Collective Lock-in?: Cluster In-breeding and Its Antecedents"

TEACHING & RESEARCH ASSISTANTSHIPS

Executive MBA Competitive Strategy (S. Stern and P. Azoulay)
Regional Entrepreneurial Acceleration Lab (F. Murray and R. Locke)
MIT-Harvard U.S. Economic Development Administration Project: "Mapping Regional innovation Clusters"
Research Assistantship (P. Azoulay; S. Stern)

SCHOLARSHIPS

MIT Sloan Doctoral Fellowship Scholarship
Korea Foundation for Advanced Studies

COURSES TAKEN

(Fall 2009) Organizations and Enviroments; Microeconomic Theory I; Intro to Probability & Statistics; PhD Seminar in Strategy & Innovation
(Spring 2010) Sociology of Strategy; Introduction to Applied Econometrics; Microeconomic Theory I
(Fall 2010) Research Method I; Economics of Ideas, Innovation & Entrepreneurship; Labor Market Analysis; Econometric Methods
(Spring 2011) Topics in Applied Econometrics; Doctoral Readings in Technology, Innovation, Entrepreneurship, and Strategy
(Spring 2012) Causal Inference
(Spring 2013) Doctoral Proseminar

The Endogeneity of Academic Science and Entrepreneurship

Eunhee Sohn
Sloan School of Management
Massachusetts Institute of Technology

1 Current & Future Research

Did Stanford serve as the foundation for Silicon Valley, or did Silicon Valley make Stanford what it is today? The relationship between academia and industry within regional entrepreneurial ecosystems reflects a fundamental chicken-or-egg relationship: the local industrial innovation is influenced by the quality of research produced by universities, while academic research may at the same time be influenced by the local industrial research context. While both lines of causality may operate, systematic empirical research has been heavily biased towards the former. In part, this reflects a bias in the empirical literature that (often implicitly) embraces the linear view of science and technology where academic science unilaterally shapes and supports industry innovation.

Although an increasing number of studies have alluded to the central importance of industry-driven technological change in shaping the nature of scientific advance, this endogenous feedback channel remains invisible in most formal treatments. Only a small empirical literature cleanly identifies the industry-to-academia feedback by addressing issues of selection and endogeneity.

My dissertation proposes to fill this theoretical and empirical gap by focusing on three interrelated research questions:

1) Does technological research and innovation in the regional industry ecosystem transform academic scientists into entrepreneurs? 2) Does industry research also extend the frontier of academic science into an unexplored, novel territory? 3) Which universities and

scientists are the most responsive players in this co-evolutionary feedback loop between academia and industry?

To overcome the endogenous relation between local academic science and local industrial research, I propose a novel difference-in-differences strategy which uses exogenous shocks to regional R&D anchors in the agricultural biotechnology industry. For example, I explore how Monsanto's entry into GMO research, whose technological R&D has been traditionally based in the St. Louis region, has shaped the academic research of Washington University in St. Louis. The key assumption is that Monsanto's choice of R&D location and their decision to enter GMO business had been made independently from the pre-existing strengths of the local academic environment. I have preliminary findings that support the role of local industry R&D in shaping the rate and direction of local academic research in the relevant fields.

2 What I hope to learn from the Bootcamp

Most importantly, I am not simply interested in the *rate* of academic research, but rather in the *direction* of academic change and progress: how university research become more "entrepreneurial" as a response to a local industrial shock. Put specifically, I want to examine in to what extent co-location with industry-initiated technological R&D encourages university scientists to engage in more local firm founding or more novel, applied research. I believe that participating in the NBER entrepreneurship bootcamp will help my research interests in two ways.

First, I hope to learn from the professors in the Bootcamp how to better understand the mechanisms of regional entrepreneurship. The influence of industry upon academic entrepreneurship can occur through many channels: pure knowledge spillovers, direct collaboration/contracting and indirect labor market coordination. In this vein, I want to learn more about entrepreneurship from the perspective of individual incentives (Prof. Thomas Hellman), labor market exchanges (Prof. John C. Haltiwanger) and regional agglomeration (Prof. William Kerr).

Second, I also believe that the Bootcamp can provide strong methodological training in better identification strategies and most recent econometric innovations. One key aim of my research is to overcome the methodological endogeneity and provide a better causal inference of the local industry-to-university effect. Training from this Bootcamp will definitely provide a helpful asset for me in this aspect.