

Eric T. Stuen

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EDUCATION

PhD in Economics, University of Colorado at Boulder, Expected May 2008

MA in Economics, University of Colorado at Boulder, 2004

BA in Economics (cum laude), Pacific Lutheran University, 2000

Fields: Economics of R&D and Innovation
Labor Economics
Development Economics

Dissertation: "Three Essays on the Economics of Science and Innovation"

Dissertation Committee: A. Mushfiq Mobarak (co-chair)
Keith Maskus (co-chair)
Terra McKinnish
Wolfgang Keller

RESEARCH

Working Papers

"Academic Knowledge Spillovers Re-Examined: A Look at the Effect of Exogenous Federal Funding" (Job Market Paper)

"Foreign Graduate Students and Knowledge Creation at U.S. Universities: Evidence from Enrollment Fluctuations," (with A. Mushfiq Mobarak and Keith Maskus)

Publications

Maskus, K.E., Mobarak, A.M. and E.T. Stuen "International Graduate Education and Innovation: Evidence and Issues for East Asian Technology Policy", *Asian Economic Papers* V. 6 n. 3

Research in Progress

"A Search-theoretic Model of University-Industry Knowledge Transfer"

"An Assessment of the Efficacy of Federal Research Funding"

Research Grants

Innovation Policy and the Economy Small Grant: \$20,000, funded by the Innovation Policy and Economy Group 2005-06, NBER (with A. Mushfiq Mobarak and Keith Maskus)

TEACHING EXPERIENCE

Instructor, *Introduction to Econometrics*, University of Colorado, Boulder, CO.

- Designed, developed course materials and taught undergraduate course of 30+ students as sole instructor four times - Spring and Fall 2006, Spring and Summer 2007

Teaching Assistant, University of Colorado, Boulder, Fall 2002-Fall 2005.

- Courses include *Statistics for Economics* (two semesters), *Principles of Macroeconomics* (three semesters), *Principles of Microeconomics* (one semester), *Introduction to Economics* (one semester)

Teaching Interests

Development Economics, Labor Economics, Applied Econometrics

Research Experience

University of Colorado, Boulder, CO:

Research Assistant associated with NSF *Science of Science Policy* Award 0738036: "The Causal Impact of Foreign and Domestic Doctoral Students on Knowledge Creation and Innovation in US Universities: Evidence from Enrollment Shocks", K. E. Maskus & A. M. Mobarak co-PI, 2008

Conference Participation

As Presenter:

NSF Science Resources and Statistics Workshop 2007
Western Economic Association International Annual Conference 2007,
Entrepreneurship and Innovation Session
Vanderbilt University Graduate Program in Economic Development 50th
Anniversary Conference, 2006

As Organizer:

ISNIE Annual Conference, 2006: Chaired Panel "Political Economy of Trade Policy"

As Invitee:

NBER *Education Working Group Meeting*, Spring 2007
NBER Summer Institute 2006, *Innovation Policy and the Economy Group*
NBER Summer Institute 2006, *International Trade and Investment Group*

Fellowships and Awards

Ruben Zubrow Endowed Fellowship "For Excellence in Public Policy Research", 2006

Teaching Appointments, University of Colorado, 2002-2007

Cheney Foundation Award (Tacoma, WA) "For Excellence in Economic Studies", 1999

Ernst M. Ankrum Endowed Scholarship in Economics, 1996

PERSONAL

U.S. Citizen, b. 7/17/78

Languages: English (native), Spanish (advanced)

Personal website: see <http://www.colorado.edu/Economics/gradplacement/>

REFERENCES

A. Mushfiq Mobarak

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Dissertation Abstract

Discoveries in basic scientific research at universities are useful in applied research in industry and sometimes lead to commercially valuable innovations. Many empirical studies have documented a positive relationship between academic research and innovation by firms. However, interpreting this relationship as a causal spillover from academia to industry is difficult since a substantial share of academic R&D is funded by industry. Proximity to industry also influences the quality of professorial talent at a university, and location decisions of both industry and academics may be correlated with other unobservables. Given the presence of such difficult identification issues, this paper uses a novel empirical method to re-examine the effect of academic research in particular metropolitan areas on commercial innovation produced in those locations. I exploit the fact that members of certain appropriations sub-committees within the U.S. Congress can influence the process of allocating federal research funds in favor of their constituents, which leads to ‘exogenous’ variation in research funding at particular universities that is plausibly uncorrelated with factors that affect industrial innovation.

I construct a detailed panel of micro-data on patent counts, publication counts, doctorates granted and industry R&D expenditures at the metropolitan area/technology area/year level with which I find evidence that measures of academic scientific knowledge are positively related to industrial patenting. Using a city-year panel dataset of industrial patents and academic publications, I find an elasticity of patents with respect to publications from universities in that metropolitan area of 1.17, but that this elasticity is reduced to 0.95 when relying only on variation in publications attributable to “congressional favors”. This translates into an extra patent produced by industry for every 7 extra academic publications produced by universities located in that city owing to the extra research funds diverted to those universities. An elasticity of patents with respect to citations to academic publications of 0.55 is also reduced in the IV set

up. These results provide evidence of spillovers unrelated to ordinary market transactions between firms and universities. Data on Ph.D. recipients from each university is used to examine another channel through which academia affects industry – the employment of students with frontier- level technical knowledge. My results show that the employment of new doctoral graduates in science and engineering by industry is also positively related to industrial patenting.

The United States has maintained a leadership position in high-tech industries despite recognized deficiencies in its secondary education system. The presence of foreign research talent may account for much of this discrepancy. Chapter two uses panel data on 2300 science and engineering departments at 100 large American universities from 1973 to 1998 to estimate the impact of foreign and domestic graduate students on scientific publishing by department. Student enrollment may depend on unobserved factors related to publishing, such as faculty quality, but also depends on the students' ability to pay and alternative labor-market options. Therefore, macroeconomic and policy conditions of students' home countries which affect fields and universities differentially are used to identify exogenous variation in the enrollment of foreign graduate students and hence their causal impact on publishing. A student-department matching model is sketched, where the decisions to apply and admit are endogenous, in order to identify the source and direction of bias in the OLS estimates and to devise our instrumental variable strategy. The empirical analysis shows that both foreign and domestic graduate students are central inputs into knowledge creation, and that OLS estimates of the foreign student contribution are biased downwards. The impact of an additional foreign doctoral student varies by type of shock. It is also observed that the publishing contribution of foreign students is relatively greater at elite universities and for more recent years.

Chapter three develops a model to examine the behavior of agents involved in knowledge transfer from universities to industry. Labor mobility has been identified as a very important source of knowledge diffusion, and although transfer through patent license agreements has been examined, the role of academic researchers (faculty, PhD students) in the private labor market has not been fully considered. This chapter aims to distinguish spillovers from ordinary market transactions, and to develop a rationale for local knowledge transfer with search behavior by researchers and firms.