March 31, 2014

Dear NBER Entrepreneurship Research Boot Camp Committee Members:

I am writing to submit my application for the NBER Entrepreneurship Research Boot Camp 2014. As the accompanying materials indicate, I have the necessary motivation, skills, and experience to maximize the opportunities provided by this workshop.

I am interested in public economics and environmental economics, with an emphasis on innovation and information disclosure policies. My preparation for this topic includes academic and research experience at the University of California, Berkeley (B.S. Business Administration), the London School of Economics (MSc Economics), and Harvard University, where I am currently a first year PhD student in the Public Policy Program.

In my past research, I have explored the links between public economics, environmental economics, innovation, and regulation. My experience as a research assistant for the London School of Economics Growth Commission – a team of economists and policy makers, co-chaired by LSE Professor John Van Reenen—was greatly influential in demonstrating the complementarities between the energy and financial sector, as well as the potential for public policy to stimulate long-term investment in energy infrastructure and firm innovation. Through comparing outcomes in the US and the UK, I also became interested in understanding how variations in national objectives influence the linkages between public and private finance, the environment, regulation, and innovation.

Since attending Harvard, under the guidance of my advisor, Professor Rohini Pande (who is also my recommendation letter writer), I have continued to pursue my interests through regularly attending environmental economic seminars and taking coursework in microeconomic theory and econometric methods. I am currently taking MIT Professors Scott Stern and Pierre Azoulay's course on the economics of innovation and entrepreneurship, which has introduced me to the economic foundations of innovation and the diffusion of technology. As the 2014 recipient of the Vicki Norberg-Bohm Fellowship, I plan to spend the summer 2014 exploring the relationship between national objectives, intellectual property, and environmental innovation among clean energy firms in China, the United Kingdom, and the United States.

The NBER Entrepreneurship Research Boot Camp would strengthen my knowledge regarding the microeconomic and institutional foundations of entrepreneurship. In particular, it would expose me to the literature on financing innovation, which is instrumental for addressing my interest in innovation and information disclosure policies. Furthermore, the camp would provide an opportunity to interact with other scholars interested in the intersection of public economics, environmental economics, innovation, and regulation.

I believe these experiences have prepared me to make a valuable contribution as a participant in the NBER Entrepreneurship Research Boot Camp 2014. I can be reached at jkao@fas.harvard.edu or 510 858 6961. Thank you for your consideration and I look forward to hearing from you.

Sincerely,

Jennifer Kao

# JENNIFER LILY KAO

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Cambridge, MA 02138
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## Education

**HARVARD UNIVERSITY**, **John F. Kennedy School of Government** Cambridge, MA
**PhD in Public Policy, May 2018 (Expected)**
Interests: environmental economics, public economics, and innovation policy

**LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE** London
**Masters of Science in Economics, June 2012**
Master's Thesis: Capital Markets and Environmental Disclosure in Emerging Economies: Evidence from Firm-Level Environmental Performance Rankings

**UNIVERSITY OF CALIFORNIA, BERKELEY** Berkeley, CA
**Post-Graduate Courses in Mathematics and Statistics, June 2010 – August 2011**

**UNIVERSITY OF CALIFORNIA, BERKELEY, Haas School of Business** Berkeley, CA
**High Honors in Bachelor of Science in Business Administration, May 2010**

## Honors

Vicki Norberg-Bohm Fellowship, 2014-2015
Harvard Environmental Economics Program Pre-Doctoral Fellow, 2013-Present
Harvard Kennedy School Graduate Fellowship, 2013-2015
Walter A. Haas School Dean's Honor List, 2008-2010
Phi Beta Kappa Society, 2010

## Experience

**LONDON SCHOOL OF ECONOMICS GROWTH COMMISSION** London
2012- 2013 **Public Policy and Economics Research Assistant**

- Provided analytical support to cross-functional team of economists and policy makers for policy report on long-term economic growth strategies for the UK.
- Identified key challenges in UK infrastructure (transport and energy) and SME financing policies.
- Developed policy recommendations through reviewing relevant literature and interviewing academics, business leaders, and policy makers.
- Summarized findings in background reports and prepared commissioner talking points for technical and non-technical audiences.

**LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE** London
2012 **Economics Research Assistant**

- Evaluated impact of labor regulatory policy on Indian interstate labor migration.
- Compiled, cleaned, and analyzed Indian labor migration data from Indian National Sample Surveys and generated database of state-level migration and demographic data for Indian states.

**UC ENERGY INSTITUTE AND HAAS SCHOOL OF BUSINESS** Berkeley, CA
2010-2011 **Economics Research Assistant**

- Investigated international projections of carbon emissions and household energy use.
- Advised professor on economic assumptions underlying greenhouse gas emission projections.
- Analyzed role of energy prices on non-durable household expenditure decisions and presented information in charts, tables, and graphs.

**UNIVERSITY OF CALIFORNIA, BERKELEY** Berkeley, CA
2009-2011 **Department of Agriculture and Resource Economics Research Assistant**

- Coded, consolidated, and cleaned Los Angeles County Department of Health Services inspection data on over 47,000 restaurants with GIS software, STATA, and Google Maps.
- Conducted literature reviews and composed memos summarizing research on nutrition labeling effects.

- Supported analysis of pharmaceutical drug price effects: compiled in-store data for drug database and evaluated potential factors leading to increased over-the-counter drug usage.

**Publications** "Infrastructure and Growth," (with Novella Bottini and Miguel Coelho), in *Investing for Prosperity,* edited by T. Besley and J. Van Reenen, LSE Academic Publishing 2013.

"A Blueprint for an Infrastructure Bank," (with Novella Bottini and Miguel Coelho), in *Investing for Prosperity*.

"Private Investment and Innovation," (with Miguel Coelho and Isabelle Roland), in *Investing for Prosperity*.

**Language skills** English (fluent); Mandarin Chinese (basic); French (basic)

**Skills** Proficient in Matlab, Microsoft Office, and STATA

**Completed and Current PhD Courses**

Completed:
(Harvard) Economics 2020a: Microeconomic Theory I
(Harvard) Economics 2030: Psychology and Economics
(Harvard) Economics 2110: Introductory Probability and Statistics for Economists
(Harvard) API-901: Doctoral Research Seminar

Current:
(Harvard) Economics 2020b: Microeconomic Theory II
(Harvard) Economics 2120: Introduction to Applied Econometrics
(MIT) 15.357: Economics of Ideas, Innovation, and Entrepreneurship

**Essay on current and future research interests**

My primary research interests lie in public economics and environmental economics, with a focus on innovation and information disclosure policies.

In particular, I would like to address two areas:

1) What is the role and relevance of intellectual property institutions (defined here as the enforcement, use, and regulation of intellectual property) in linking national objectives to actual environmental innovations?
2) To what extent does information disclosure distort the actions and expectations of environmental innovators?

I am a recipient of the 2014-2015 Harvard Kennedy School Vicki Norberg-Bohm Fellowship. With the resources provided by the fellowship, I plan to investigate my first line of inquiry. In particular, I plan to investigate the role and relevance of intellectual property institutions in linking national objectives to energy innovations through examining the unique experiences of clean energy firms in China, the United Kingdom, and the United States.

Policy makers have increasingly looked to new technologies and innovation as a means to address environmental challenges. Among different countries, variations in national objectives and outcomes in energy innovation indicate that there is reason to examine the link between the two. For example, China has centered its energy technology policy of securing energy security, sustainability, and economic competitiveness on investing in applied research, development, and demonstration (RD&D) activities in state-owned enterprises (SOEs). SOEs are characterized by inefficiency and may lead to difficulties attracting the top-quality human capital (Anadon, 2012). These policies combined with poorly implemented intellectual property laws may foster innovation that is incremental, rather than breakthrough and process, rather than product (The Economist, 2012).

Intellectual property institutions are particularly important for clean energy firms due to three primary reasons: green technologies are characterized by a diversity of complementary technologies and industries (e.g., computers and semiconductors); such innovations are often cumulative; and the very nature of production of innovative, environmentally beneficial goods

leads to appropriability failures (Pernick and Wilder, 2007). Additionally, firms typically face high capital costs relative to incumbent technologies with existing complementary assets, often making external funding sources difficult to obtain (Lane, 2011). The ability of a clean energy firm to leverage its intellectual capital rests on the nature of the prevailing intellectual property institutions.

The findings of this research will contribute to an active discussion regarding the impact of national objectives on environmental entrepreneurship in China, the UK, and the US. The results will also inform policy makers regarding the role and relevance of intellectual property institutions for supporting technological and environmental innovation.

In the context of my experiences and interests, I am certain that the NBER Entrepreneurship Research Boot Camp 2014 is the ideal environment to continue to expand my interests in the microeconomic and institutional foundations of entrepreneurship and innovation. This workshop would provide am opportunity to substantially develop my second line of interests in the relationship between information disclosure and innovation. Furthermore, this opportunity would ground me in the literature on financing innovation, which is instrumental for exploring my interests in innovation and information disclosure policies among environmental firms. I am particularly interested in speaking with Professors Thomas Hellmann, Josh Lerner, and Antoinette Schoar about the role and relevance of regulatory restrictions, angel networks, and public financing on the outcomes of entrepreneurial environmental ventures. The opportunity to participate in the NBER Entrepreneurship Research Boot Camp 2014, whose faculty has an unrivalled breadth and depth of expertise in innovation and entrepreneurial finance, would be a privilege.

Bibliography:

Anadon, Laura Diaz., 2012. Missions-oriented RD&D institutions in energy between 2000 and 2010: A comparative analysis of China, the United Kingdom, and the United States. Research Policy 41, 1742-1756.

The Economist, 2012. From brawn to brain. (downloaded on February 27, 2014 from http://www.economist.com/node/21549938).

Lane, E., 2011. Clean tech intellectual property. Oxford University Press, New York, New York.

Pernick, R., Wilder, C., 2007. The clean tech revolution: the next big growth and investment opportunity. HarperBusiness, New York, New York.

HARVARD UNIVERSITY
JOHN F. KENNEDY SCHOOL OF GOVERNMENT

**Rohini Pande**
Mohammed Kamal Professor of Public Policy

March 26, 2014

Dear Mr. Maranjian:

I am pleased to write to you on behalf of Jennifer Kao, who is applying for acceptance into the NBER Entrepreneurship Research Boot Camp 2014.

I am Jennifer's PhD course advisor. Since the commencement of her doctoral studies in August 2013, I have met with her several times to discuss the economic courses and fields that would support her interests in public economics and environmental economics, with a focus on innovation and information disclosure policies, while providing the level of rigor necessary for a well-trained applied economist.

Jennifer has done well in the economics track of Harvard's Public Policy PhD Program. The program includes preparation in microeconomic theory, as well as substantial statistical and econometrics training, which primarily take place within Harvard's Economics Department.

Her interests in the role of innovation and information disclosure policies within the realm of public economics and environmental economics is an area of growing interest and is well-suited to someone of Jennifer's talents and industry. In addition to being an active member of the environmental economics community (Jennifer is the 2014 recipient of the Vicki Norberg-Bohm Fellowship – an award given to support exploratory research in environmental issues, a Harvard Environmental Economics Pre-doctoral Fellow, and a regular participant of environmental economics seminars and lunches), Jennifer has actively pursued opportunities to study the economics of innovation and entrepreneurship.

For example, she is currently taking in Scott Stern and Pierre Azoulay's MIT seminar on the economics of ideas, innovation, and entrepreneurship. For this course, Jennifer plans to write a paper proposal examining role and relevance of intellectual property institutions and information disclosure policies in linking national objectives to environmental innovations among clean technology firms in the United States, the United Kingdom, and China. Using the resources provided by the Vicki Norberg-Bohm Fellowship, Jennifer plans to pursue the ideas introduced in the proposal to begin dissertation work that will, in the long run, make an impact on learning in the areas of public economics, environmental economics, and innovation and information disclosure policy.

Furthermore, she has had substantial exposure to the "practical" aspects of environmental economics and innovation policy. For example, her work as a research assistant at the London School of Economics Growth Commission (co-chaired by John Van Reenen) provided excellent exposure to the challenges surrounding long-term investment in energy infrastructure and financing innovation among small and medium-sized enterprises.

Given her academic and research experience, as well as openness and eagerness for new intellectual experiences, I am sure that Jennifer will make the optimum use of resources provided by the NBER Entrepreneurship Research Boot Camp.

I hope you will consider her application strongly. Please contact me with any questions or concerns at (617) 384-5267 or Rohini_Pande@harvard.edu.

Sincerely,



Rohini Pande
Mohamed Kamal Professor of Public Policy
Harvard Kennedy School
79 JFK Street
Cambridge, MA 02138