NBER Innovation Research Boot Camp Application

Applicant: Hongyuan Xia, PhD student, Department of Economics, Cornell University

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Reference: Chris Forman, Peter and Stephanie Nolan Professor, SC Johnson College of Business, Cornell University

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Cornell University

January 30, 2023

Hongyuan Xia

Contact Information

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Education

Cornell University — Sep 2020 - (*Scheduled*) Jun 2026
Ph.D., Economics — *Ithaca, NY, U.S.A.*

Peking University — Sep 2016 - Jul 2020
B.A., Economics — *Beijing, China*

Massachusetts Institute of Technology — Feb 2019 - Jul 2019
Undergraduate Visiting Student — *Cambridge, MA, U.S.A.*

Research Interest

Topics: Innovation, Entrepreneurship, AI, Science of Science

Methodology: Empirical study, Econometrics, Natural Language Processing

Working Papers

Gender Identity, Peer Effects, and Research Focus: Evidence from PhD Dissertations (w/ *Paul. Dai*)

Abstract: Using a universe record of PhD dissertations in the US, we find a substantial amount of missing female PhDs and female-focused research from 1985 to 2015. Our decomposition exercise quantifies the driving forces of this phenomenon. Besides, we find a close connection between PhDs' gender identity and their research focus: females are more likely to do female-focused research (FFR), while males are less likely. We further causally identify the peer effects of producing female-focused research: a higher female ratio in the PhD cohort encourages females but discourages male PhDs from doing FFR, which is in favor of a competition effect in addition to knowledge diffusion in FFR production. These effects last for at least 5 years after graduation. Further investigation indicates the homophily and coauthor network explain the differential effects on female and male PhDs.

Work in Progress

Dancing with Stars: Superstar Firms' Role Model Effect on AI Adoption (w/ *Chris Forman*)

Attention to Exploration: The Effect of Technology Clusters on Scientific Knowledge Production (w/ *Matt Marx*)

Scheduled Presentation

Cornell Innovation, Entrepreneurship, and Technology (IET) Workshop

Cornell The Work in Progress Seminar (TWIPS)

Teaching Experience

TA for Prof. Michael Waldman in MBA Microeconomics — Spring 2023

TA for Prof. Chen Qiu in PhD Econometrics — Fall 2021 & 2022

	TA for Prof. Doug Mckee in Intermediate Microeconomics	Fall 2021 & 2022

Awards and Grants

Cornell Center for Social Sciences Research Grant	Cornell University, 2022
The Howard and Abby Milstein Graduate TA Award	Cornell University, 2022
Sage Fellowship	Cornell University, 2021 & 2022
Outstanding Graduates	Peking University, 2020

Research Experience

RA for Prof. Dave Donaldson at MIT	Apr 2019 - Jul 2020
RA for Prof. Frank Schilbach at MIT	Apr 2019 - Jul 2020
RA for Prof. Jie Bai at Harvard	Apr 2019 - Aug 2019
RA for Prof. Xiaoyan Lei at PKU	Apr 2018 - Apr 2019

Languages

Native in Mandarin, Fluent in English

Computer Skills

STATA, LaTeX, MATLAB, R, Python, ArcGIS

References

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Matt Marx
Bruce F. Failing, Sr. Chair Professor
SC Johnson College of Business
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Course List

Economics Courses:

Microeconomic Theory I, II, III;
Macroeconomics I, II;
Econometrics I, II;
Empirical Strategies I, II;
Industrial Organization & Regulation;
Economics of Networks;
Advances in Labor Economics;
Economics of Ideas, Science and Innovation (Online).

Computer Science Courses:

Introduction to Machine Learning;
Natural Language Processing;
Causal Inference & Machine Learning;
Theory Causal Inference & Decision-Making.

Management Courses:

PhD Seminar in Strategy (Organization Theory).

Research Statement

I am an applied economist who studies innovation. My research focuses on the sourcing, production, and diffusion of knowledge, which I examine in various contexts including cities, universities, startups, and superstar firms. I have tackled these questions by using novel large-scale data, natural language processing, and empirical techniques. Below I describe my current research and how my studies can benefit from the opportunity that the innovation boot camp provides.

In my recent working paper, "*Gender Identity, Peer Effects, and Research Focus: Evidence from PhD Dissertations*" (joint with *Paul Dai*), I investigate the causal relationship between a diverse academic environment and innovation, more precisely, the production of female-focused research. A large body of literature highlights that the gender gap represents the misallocation of talents and reshapes the landscape of our knowledge. However, little attention has been paid to the consequences of the academic environment caused by the gender gap. To verify the causal effect of academic environment on research direction, I exploit the quasi-random nature of year-to-year variation in PhD cohort gender composition and implement large sample analysis using publication and thesis information of nearly one million PhD recipients in the US. I find that PhDs with more female peers are more likely to do female-focused research within at least 5 years after graduation. My results reveal that building a diverse and inclusive academic environment can encourage females to do more female-focused research and help to close the knowledge gap related to the female.

My two ongoing projects study the interplay between superstar firms, startups, and universities. Superstar firms, unique in their capabilities to scale up innovations, have become increasingly important in the US economy. Despite their power in shaping the labor markets, little is known about how superstar firms affect knowledge production and diffusion. In the joint project with *Prof. Matt Marx*, I am asking whether the entry of superstar firms affects the direction of local university researchers' academic research and inspires more applied, instead of basic, research. Firms rely on discoveries from academia to create new products, new investment opportunities, and millions of jobs. Co-location is expected to provide them with a window on university research, yet it may undercut the learning opportunities available to superstar firms as university researchers may shift their search for innovations toward domains that superstar firms are already familiar with. Moreover, I work with *Prof. Chris Forman* on how superstar firms act as startups' role models and foster knowledge diffusion and the adoption of frontier technology, such as AI.

NBER Innovation Research Boot Camp is an excellent place for me to develop new ideas and build a network. First, the boot camp grants me exposure to leading scholars and frontier research in innovation, and it's all grist to the mill when it comes to refining my ideas. Second, as a first-generation college and doctoral student, I benefit tremendously from my peers' support and insights. The boot camp brings together young scholars around the globe, and their acumen should have invaluable spillover effects on me.

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Cornell SC Johnson College of Business
College of Agriculture & Life Sciences

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Dear Selection Committee:

This letter is to enthusiastically recommend Hongyuan Xia as a participant in the NBER Innovation Boot Camp.

Hongyuan is a third year PhD student in Cornell's Economics PhD program. He is currently working with myself and Matt Marx as his advisors. Hongyuan is an outstanding student who would benefit greatly from the boot camp. His second year paper investigates the impact that the gender composition of a PhD student's cohort has on the likelihood that the student will engage in female-focused research. The focus of the study is on the impact of peer effects; while the identification issues here are significant, Hongyuan does a careful job of discussing and investigating them. He also investigates different mechanisms through which peer effects might occur, such as research team composition. While there remains some work to do (as is appropriate since it was his second year paper), it is a thoughtful piece of work addressing an important research topic.

Currently he is working on two new projects, one supervised primarily by myself and another one under the supervision of Matt. The project that I am most familiar with will investigate whether adoption and use of artificial intelligence (AI) by superstar firms will have causal effects on the adoption of AI by related firms who are likely to draw upon the superstar firm's research (as measured by patent citations). This project is currently in the conceptualization stage, though Hongyuan has made progress and I am optimistic about the paper's prospects.

As you can see, Hongyuan's research fits within the scope of the Innovation Boot Camp and he would benefit from it significantly. Hongyuan is also a thoughtful student and a hard worker, and his presence would benefit other attendees.

In short, I believe he would be a worthy participation in the Boot Camp and I could not recommend him more highly.

Sincerely,



Chris Forman
Peter and Stephanie Nolan Professor
Dyson School of Applied Economics and Management
Cornell University