Catherine Ishitani
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February 5, 2025

National Bureau of Economic Research
1050 Massachusetts Avenue
Cambridge, MA 02138

Dear Professors Kevin Bryan, Ina Ganguli, and Kyle Myers:

I am writing to apply to the 2025 Innovation Research Boot Camp. I am completing my Ph.D. in Applied Economics at the Wharton School, University of Pennsylvania, and will begin a tenure-track position in Economics this fall. My research is in Applied Microeconomics with special interests in Health Economics and Industrial Organization.

My research program studies market failures among healthcare providers and producers and the optimal regulation of these industries, with a particular focus on quality and innovation. I believe that my work on innovation and market failures in the pharmaceutical industry would strongly complement the broad goals and instructional content of the boot camp, especially the lectures by Professors Myers and Williams.

My research marries rich institutional data—such as administrative claims and novel drug datasets assembled using machine learning tools—with quasi-experimental and theory-driven empirical methods. On the supply side, one strand of my work focuses on how market power affects drug innovation incentives and outcomes. This work in progress (co-authored with Alex Olssen and Mert Demirer) studies R&D synergies, which are a leading justification for pharmaceutical mergers but have strikingly little evidence to support their existence. We use quasi-experimental and structural methods to quantify the extent of economies of scope in drug development, and then simulate the effects of counterfactual mergers on innovation outcomes. Our hope is that this research may inform future antitrust enforcement and policy-maker decisions about the allocation of funding resources in innovative industries.

In the future, my main career goal is to conduct research that informs policy-makers' market design choices to deliver more efficient care. With this boot camp, I hope to build on my research in pharmaceutical innovation, broaden my expertise in the economics of innovation across different industries, and develop new collaborations with other junior economists in this field.

Thank you very much for your consideration. I have also enclosed my (1) C.V., (2) course list, (3) essay, and (4) and a reference from my advisor, Alex Olssen, with this letter.

Sincerely,

Catherine Ishitani



# Catherine Ishitani


**Contact information**

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Philadelphia, PA 19104

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**Education**

**University of Pennsylvania, The Wharton School** 2019-2025*
Ph.D. in Applied Economics: Healthcare

**University of Southern California** 2017-2019
Schaeffer Center for Health Policy & Economics
Pre-doctoral Training in Health Economics

**Princeton University** 2010-2014
A.B. in Economics

**Research fields**

Health Economics, Industrial Organization

**Job market paper**

**In Defense of the Middleman: Quality Failures in the Generic Drug Market**


*Abstract:* I study how intermediary buyers discipline quality in the market for generic prescription drugs. Consumers are uniquely uninformed about generic quality, which is conventionally assumed to be interchangeable. As in many settings where consumers lack product information, they implicitly rely on intermediaries, such as wholesalers and retailers, to select high-quality goods for them. While intermediaries can alleviate adverse selection, they may also face incentives to choose inefficiently low-quality goods. Using novel data on the universe of FDA manufacturing quality disclosure actions, I first provide evidence that quality failures are pervasive, even in the U.S. market. Over half of manufacturers fail inspections during my study period, and 12% of drugs are recalled, due to their injury and mortality risks. Next, I show that the disclosure of these failures reduces intermediary purchases of low-quality drugs by 60%, with effects persisting for up to ten years. To isolate the role of intermediaries, I develop a scoring auction model of generic procurement and an estimation technique that takes into account the fact that only winning prices are observed. I find that intermediaries prefer reliable suppliers and are willing to pay a 2% premium for each 10% reduction in the probability of future recalls. This, in turn, encourages manufacturers to compete on quality rather than just price. Intermediaries ultimately enhance the effects of quality disclosure and increase the share of high-quality drugs by 27%.


**Other papers**

**The Corporatization of Independent Hospitals**
with Elena Andreyeva, Atul Gupta, Gosia Sylwestrzak and Benjamin Ukert
*Journal of Political Economy Microeconomics* 2, no. 3 (2024): 602-663.
Cited in: *U.S. HHS Consolidation in Health Care Markets RFI Response (2025)*.
Media coverage: *NBER Digest*, *Modern Healthcare*, *Leonard Davis Institute Policy Brief*, *Elevance Health Policy Brief*, *Knowledge at Wharton*.


*Abstract:* Little is known about how system ownership affects hospital operations, though they control 80% of hospital beds. We combine multiple data sources, including novel price data from a large commercial insurer, to study over 100 independent hospitals that enter system ownership. The targets obtain differentially higher prices, relative to a matched comparison group, but far greater cost reductions, primarily through reducing labor and financing costs. In contrast, we do not detect operating-cost reductions at system-owned hospitals acquired by other systems, suggesting that these savings are mostly realized on the initial transition to system ownership.

**New Evidence on the Compensation of Chief Executive Officers at Nonprofit U.S. Hospitals** with Seema Choksy, Karen Mulligan and John Romley
*Medical Care Research and Review* 77, no. 5 (2020) 498-506.

**What Do Nonprofit Hospitals Reward? An Examination of CEO Compensation in Nonprofit Hospitals** with Seema Choksy, Karen Mulligan and John Romley
*PloS One* 17, no. 3 (2022): e0264712.

**Hospital System Participation and Hospital Spending; A Perspective on Hospital Organizations, 2015 versus 2005;** and **Understanding Health Care Spending in the United States** with Seema Choksy, Karen Mulligan and John Romley
*USC Schaeffer Center White Papers* (2019).

## Works in progress

**Economies of Scope in Drug Development** with Alex Olssen and Mert Demirer

*Brief abstract:* Research & development investment (R&D) is an important driver of innovation in the pharmaceutical industry. How do pharmaceutical R&D portfolios affect innovation success rates? We first provide descriptive evidence on the existence and extent of economies of scope in pharmaceutical development. Little evidence of these synergies exists, though they are critical for the optimal allocation of resources across R&D projects. We then estimate a structural model of manufacturers' development decisions to study the effects of counterfactual mergers in the presence of economies of scope.

**Pharmacy Purchasing Alliances in the Generic Drug Market** with Yihao Yuan

*Brief abstract:* In the past decade, retail pharmacies have formed purchasing alliances to procure generic drugs from manufacturers. We investigate the impact of these alliances on consumer welfare. Using data on alliance formation, procurement prices and drug applications, we find that these alliances lower generic procurement prices, but also significantly increase the exit of generic manufacturers. To quantify the impact of purchasing alliances, we will build a structural model of consumer demand, wholesale price negotiations and manufacturer entry.

## Fellowships & awards

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| Leonard Davis Institute Pilot Grant (Award: $5,000) | 2024 |
| Baker Retailing Center Research Grant (with Yihao Yuan, Award: $3,850) | 2024 |
| Mack Institute Research Fellowship (Award: $8,000) | 2023 |
| Leonard Davis Institute Associate Fellow | 2020- |
| Mayo Clinic Summer Research Fellow | 2007-2009 |

## Teaching & mentoring experience

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|---|---|
| Penn Center for Excellence in Teaching, Learning and Innovation<br>*Certified Teaching Trainee* | 2024-2025* |
| Universal Healthcare in Romania and Sweden<br>*MBA & Executive MBA Teaching Assistant to Guy David* | 2024 |
| Management & Economics of the Pharmaceutical & Biotech Industries<br>*Undergraduate & MBA Teaching Assistant to Abby Alpert* | 2024 |
| Penn Summer Undergraduates Minority Research Program<br>*Undergraduate Assistant Instructor for Atul Gupta and Alex Olssen* | 2020, 2022-24 |
| Introduction to Diversity in Doctoral Education & Scholarship Program<br>*Undergraduate Mentor* | 2024 |
| Wharton Honors Thesis<br>*Undergraduate Assistant Instructor for Mark Pauly* | 2022-2023 |

## Research experience

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|---|---|
| Research assistant to Alex Olssen, University of Pennsylvania | 2021- |
| Research assistant to Atul Gupta, University of Pennsylvania | 2020-2024 |
| Research assistant to Matt Grennan, University of Pennsylvania | 2020 |
| Research assistant to Ashley Swanson, University of Pennsylvania | 2020 |
| Research assistant to John Romley, University of Southern California | 2017-2019 |

## Industry experience

Deutsche Bank Securities, New York — 2013, 2014-2017
*Healthcare Investment Banking Associate*

Community Health Advocates, New York — 2017
*Health Insurance Appeals Volunteer*

## Skills & other

Languages: English (native), Latin (advanced), French (basic); STATA, Python, Matlab
Citizenship: USA

## References


**Guy David**
Alan B. Miller Professor &
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**Alex Olssen**
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**Expected*

*Updated January 25, 2025*

Catherine Ishitani—Ph.D. Course List

The Wharton School, University of Pennsylvania

Microeconomic Theory

Financial Management of Healthcare Institutions

Seminar in Organizational Behavior and Theory in Healthcare

Advanced Statistical Inference I

Game Theory & Applications

Corporate Finance and Financial Institutions

Proseminar in Health Economics Models and Methods

Advanced Statistical Inference I

Topics in Applied Microeconomics

Empirical Industrial Organization

Econometrics III: Advanced Econometric Techniques and Applications

Topics in Econometrics: Nonparametric & Machine Learning Methods for Structural Estimation Problems

Proseminar in Health Econometrics

Industrial Organization of Healthcare

Economic Healthcare and Policy

Topics in Industrial Organization

# NBER Innovation Research Boot Camp

Catherine Ishitani—February 2025

I use methods from the fields of applied microeconomics and industrial organization to study healthcare markets. My work centers on market failures among healthcare *providers* and *producers*, marrying rich institutional data with theory-driven empirical methods. By studying these markets—which are responsible for the majority of healthcare innovation and costs—I aim to inform policy-makers' market design choices to deliver more efficient care.

The two streams of my work are related to competition and imperfect information. These projects are motivated by the following questions: (1) How does market power affect non-price outcomes, such as innovation and quality? (2) And, what mechanisms can sustain quality when it is unobserved? To answer these, I rely on natural experiments and structural models, merging the strengths of causal inference and theory-driven simulations to capture the complex features of healthcare markets.

**1. Non-price effects of market power.** In co-authored work in progress (with Alex Olssen and Mert Demirer), we focus on the pharmaceutical market's role as one of the most innovative and acquisitive industries in the U.S. R&D synergies are a leading justification for pharmaceutical mergers, but very little evidence supports their existence. In **"Economies of Scope in Drug Development,"** we study how firms' drug development portfolios affect their innovation success rates. To quantify economies of scope, we first use an instrumental variables design that traces how exogenous demand shocks spread on the supply side, based on drugs' chemical distances from each other. We then estimate a structural model of firms' innovation investments, using their dynamic development decisions to recover R&D costs. Finally, we simulate counterfactual mergers in the presence of economies of scope in order to understand how consolidation affects R&D productivity. This research aims to inform antitrust enforcement and the optimal allocation of funding resources in innovative industries.

My other work in this stream considers how system ownership affects hospital quality and productivity (**"The Corporatization of Independent Hospitals"** in *Journal of Political Economy Microeconomics*, co-authored with Elena Andreyeva, Atul Gupta, Gosia Sylwestrzak and Benjamin Ukert). Ongoing work (**"Buying Alliances in the Generic Drug Market,"** with Yihao Yuan) studies how the consolidation of powerful buying alliances affects pharmaceutical product entry and supply chain reliability. We use an event-study framework and a dynamic structural auction model to generate new empirical facts about these alliances, aiming to provide complementary evidence to the FTC's ongoing investigation in this area.

**2. Mechanisms to improve unobserved quality.** My second stream of research studies market failures from asymmetric information about quality. In my job market paper (**"In Defense of the Middleman: Quality Failures in the Generic Pharmaceutical Market"**), I study how pharmacies and wholesalers discipline generic drug quality. Using data on the universe of FDA quality disclosure actions, as well as a new model of generic procurement through scoring auctions, I show that pharmacies substantially improve equilibrium quality and enhance the effects of disclosure policies. Other ongoing work (**"Quality Regulation in the Generic Pharmaceutical Market"**) studies how FDA regulation and pharmacy auction design could optimally trade-off between quality and shortages, using a dynamic model of manufacturer quality investment and exploiting variation in FDA regulatory standards.

In the future, my main career goal is to conduct research that informs policy-makers' market design choices to deliver more efficient care. With this boot camp, I hope to develop new research ideas in healthcare innovation—for example, focusing on the optimal design of incentives or advanced market commitments—and to receive feedback on my ongoing innovation research. The boot camp would also provide an invaluable opportunity to broaden my expertise in the literature and methods used to study the economics of innovation across different industries. Most importantly, I hope it will provide the chance to build future collaborations with other junior economists in this space.

To whom it may concern,

I ***unequivocally recommend*** Catherine Ishitani in the strongest possible terms to the NBER Innovation Research Boot Camp 2025. I am Catherine's main PhD advisor. She has written the best job market paper that I have seen at the Wharton Health Care Management department in the four years that I have been here. Her job market paper tackles an important question: how much do wholesalers' non-price preferences affect the pharmaceutical products that end up on shelves and what are the consequences of wholesalers caring about factors other than price in their procurement decisions? Catherine provides documentary evidence that wholesalers penalize drug manufacturers who have had recent recalls (from letters to shareholders). She then develops a novel methodology to estimate scoring auction when researchers only have data on winning prices (instead of all prices submitted to auctions). Her job market paper is impressive. She is interested in pharmaceutical innovation and supply chain issues. I hope that she will grow into a great researcher, and I think this boot camp will add value to her skill set (and that she will add value to the boot camp). She is also a super nice person!

Best,

Alexander L. Olssen
Assistant Professor
The Wharton School
Health Care Management Department