Nihal Mehta

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Citizenship: India

Education

Ph.D. Economics, The Pennsylvania State University, 2019-2025 (expected)

> Committee: Keisuke Hirano (co-chair), Andres Aradillas-Lopez (co-chair), Patrik Guggenberger

M.A. Economics, Delhi School of Economics, 2015-2017

B.A. (Honors) Economics, University of Delhi, 2012-2015

Research Interests

Applied Econometrics, Health Economics, Industrial Organization, Machine Learning

Working Papers

"Estimating Production Functions with Latent Team Structures: An Analysis of Nursing Homes"

(Job Market Paper)

Abstract: Firms produce using a large number of inputs. Pragmatic concerns drive practitioners to lump them into broad categories when specifying and estimating production functions. We develop an econometric specification of the production function with a disaggregated vector of endogenously chosen labor inputs and propose a novel penalized and shape constrained GMM estimator for it. We base this on personnel economics and organizational design theories of matching task bundles with teams of worker types. We apply this to study the impact of a targeted minimum staffing mandate in the US nursing home industry. Firms would adjust staffing depending on how different worker types substitute for each other in revenue generation. We find that the distribution of post-policy long-term care quality first-order stochastically dominates the pre-policy distribution. However, for short-stay patients, the policy reduces disparities, improves quality in the bottom decile, lowers the mean and worsens quality among the top decile.

"Minimax Regret Treatment Rules with Finite Samples when a Quantile is the Object of Interest"

(with Patrik Guggenberger and Nikita Pavlov)

Abstract: Consider a policymaker who is informed about the population by a finite sample. Based on that sample, she has to decide whether or not to apply a certain treatment to the population. We work out finite sample minimax regret treatment rules under various sampling schemes when outcomes are restricted onto the unit interval. In contrast to Stoye (2009) where the focus is on maximization of expected utility, the focus here is instead on a particular quantile of the outcome distribution. We find that when the sample consists of a fixed number of untreated and treated units, any treatment rule is minimax regret optimal. The same is true under random treatment assignment in the sample with any assignment probability and in the case of testing an innovation when the known quantile of the untreated population equals $1/2$. However if that quantile exceeds $1/2$ then never treating is the unique optimal rule and if it is smaller than $1/2$ then always treating is optimal. We also consider the case with a covariate.

"Robust Nonparametric Testing of Conditional Independence"

Abstract: Testing for equality between two conditional probability functions can show up in a wide variety of economic settings. When covariates are high dimensional or continuous, we propose discretization of the covariate space as the tuning parameter in the contingency table approach to testing. Through Monte Carlo simulations, we observe that it has superior size control and power against alternatives while being robust to choice of the tuning parameter compared to testing based on series estimation. We show that testing for racial bias in judicial decisions reduces to a test of equality of conditional recidivism probabilities across races under certain assumptions. We apply this framework to parole decisions in the state of Georgia and find evidence of racial bias.

Employment

Graduate Research Assistant Appointment

Keisuke Hirano, Summer 2023 - Present

Patrik Guggenberger, Summer 2022

Andres Aradillas-Lopez, Summer 2020

Experienced Associate, PricewaterhouseCoopers (PwC) US Advisory, Mumbai, July 2017 - June 2019

Analytics Intern, Standard Chartered Bank, Bengaluru, Summer 2016

Teaching

Instructor of Record, The Pennsylvania State University

Introductory Microeconomics, Summer 2021

Graduate Teaching Assistant, The Pennsylvania State University

Introductory Econometrics, Honors (undergraduate), Spring 2023
Money and Banking (undergraduate), Fall 2022
Introductory Econometrics (undergraduate), Spring 2022
Introductory Macroeconomic Analysis and Policy (undergraduate), Fall 2020, Spring 2021, Fall 2021

Honors and Awards

Graduate Economics Scholarship, Penn State, 2019-2025

Merit Scholarship, Delhi School of Economics, 2015 - 2017

First Rank in College Economics Department, University of Delhi, 2012 - 2015

Skills and Languages

Computer Skills: Julia, Python, R, Matlab, Stata, LaTeX, Git, job scheduling (Slurm), parallel processing

Languages: English (fluent), Hindi (native), Punjabi (basic)

References

Keisuke Hirano,	Andres Aradillas-Lopez,	Patrik Guggenberger,
Professor of Economics,	Professor of Economics,	Professor of Economics,
Penn State University,	Penn State University,	Penn State University,
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