

Nihal Mehta

ECONOMICS PHD CANDIDATE · PENN STATE

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Education

Pennsylvania State University

PHD IN ECONOMETRICS AND QUANTITATIVE ECONOMICS

State College, USA

Aug. 2019 - Jun. 2024 (Expected)

Delhi School of Economics

MA IN ECONOMICS

Delhi, India

Aug. 2015 - Jun. 2017

University of Delhi

BA (HONS) IN ECONOMICS

Delhi, India

Aug. 2012 - Jun. 2015

Interests and Skills

Fields of Interest

Microeconometrics, Machine Learning, Industrial Organisation, Causal Inference, Statistical Decision Theory

Computer Skills

Python, Julia, MATLAB, \LaTeX , Coursera certifications on machine learning and neural network implementations

Language Skills

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

Working Papers

State Restricted Minimax Regret Treatment Assignment with Covariates (RA for Patrik Guggenberger)

- Under continuous covariates, existing results propose either the no-data rule or data pooling depending on a threshold condition.
- Goal is to develop the minimax regret optimal treatment assignment rule when the planner knows apriori that the state space is constrained.
- We analyze a simple probit parametric model with maximum likelihood estimation as a starting point from which we can generalize.

Shape Restricted Labor Index Construction in Production Function Estimation

- Goal is to develop methodology for data-driven aggregation of various labor categories into a shape and size restricted labor index.
- Propose a constrained and penalized GMM estimator that implicitly selects tuning parameter. Empirical application in the healthcare industry.
- Extension to allow for high-dimensional categories or labor attributes by adding a clustering first step to the estimation procedure.

Robust Nonparametric Testing of Conditional Independence

- Goal is to test for equality between two conditional probability functions when covariates are high dimensional or continuous.
- Propose partitioning of the covariate space as the tuning parameter in the contingency table approach.
- Monte Carlo simulations show it having superior size control, power, and stability to tuning parameter choice compared to series based testing.

Work in Progress

Strategic Manipulation of Treatment Assignment and Endogenous Measurement Error

- Agents in target population best respond to the planner's choice of the treatment assignment rule, leading to a shift in the covariate distribution.
- The goal is to propose an assignment rule that is robust to this strategic manipulation by modeling it as an endogenous measurement error.

Integration of Battery Storage in the Electricity Grid Market

- Build and estimate a dynamic equilibrium model that integrates battery storage operators with incumbent thermal generators and renewables.
- Study impact on consumer welfare (both direct and via externalities) and producer revenue (particularly renewables).

Professional Experience

PricewaterhouseCoopers (PwC) US Advisory

EXPERIENCED ASSOCIATE (DATA SCIENTIST)

Mumbai, India

Jul. 2017 - Jun. 2019

- System dynamics simulation for impact of climate risk mitigation policies on margins carbon footprint
- Portfolio optimization for power plant dispatch and rainfall forecast model for hydroelectric dam
- Customer segmentation, attrition and churn in the manufacturing industry
- Recommendation engines, topic modelling and sentiment analysis in the customer care sector

Standard Chartered Bank

INTERN

Bengaluru, India

May 2016 - Aug. 2016

- Predictive model of credit card default rate due to macroeconomic factors like unemployment rate, GDP growth, car sales
- Empirical application using Singapore data and stress test scenarios based on the Vasicek model

Research Assistant Positions

State Restricted Minimax Regret Treatment Assignment with Covariates

RESEARCH ASSISTANT FOR PATRIK GUGGENBERGER

Penn State

Aug 2022 - Present

Structural Model of Predatory Behavior in the Telecom Industry

RESEARCH ASSISTANT FOR ANDRES-ARADILLAS LOPEZ

Penn State

Jan. 2022 - May 2022

Teaching Experience

ECON 351: Money and Banking

TEACHING ASSISTANT FOR RUSSELL CHUDEREWICZ

Penn State

Aug 2022 - Present

ECON 306: Introductory Econometrics

TEACHING ASSISTANT FOR DELINA AGNOSTEVA

Penn State

Jan. 2022 - May 2022

ECON 102: Introductory Microeconomics

SUMMER INSTRUCTOR

Penn State

May. 2021 - Aug. 2021

ECON 104: Introductory Macroeconomic Analysis and Policy

TEACHING ASSISTANT FOR WILLIAM GOFFE

Penn State

Aug 2019 - Dec 2021

Honors and Awards

2015-2017 **Merit Scholarship**

Delhi School of Economics

2012-2015 **Rank I**, Dyal Singh College

University of Delhi

References

Keisuke Hirano, PhD

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Andres Aradillas-Lopez, PhD

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Patrik Guggenberger, PhD

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