Ryan Lee

Northwestern
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Field

Econometrics

Education

Ph.D., Economics, Northwestern University — 2020 (Anticipated)
Dissertation: "Three Essays in Econometrics"
Committee: Ivan Canay (Chair), Joel Horowitz, Eric Auerbach

M.A., Economics, Northwestern University — 2015

B.S., Mathematics & Economics, University of Minnesota–Twin Cities — 2014
Summa Cum Laude & with Distinction

Fellowships & Awards

Distinguished Teaching Assistant Award — 2019
Dissertation Year Fellowship — 2019
NSF Graduate Research Fellowship Program–Honorable Mention — 2014

Teaching Experience

Teaching Assistant, Northwestern University

Econometrics, Frank Limbrock	Winter 2018, Winter 2019
Transportation Economics, Ian Savage	Fall 2018
Econometrics, Vivek Bhattacharya	Spring 2018
Applied Econometrics, Joel Horowitz	Winter 2016, Winter 2017

Job Market Paper

"Identification and Estimation of Treatment Effects with Instrumental Variables under Data Combination"

In this paper I characterize sharp bounds on treatment effects under data combination with instrumental variables. Data combination in this paper refers to having multiple samples drawn from the same population in which observations cannot be linked across samples. I allow for subsets of the outcome, treatment, instrument and covariates to be observed across these samples. The parameters I can bound include the average treatment effect and certain policy relevant treatment effects. The sharp identified upper and lower bounds for the parameter of interest can be expressed as the optimal cost in a linear programming problem where the coefficients are probabilities identified from the samples, under certain conditions. These conditions include standard instrumental variables assumptions allowing for heterogeneous effects, finite range of random variables, and a condition regulating which combinations of variables can be observed across samples. This identification strategy forms the basis for estimation, although estimation is not as simple as replacing the identified coefficients with sample estimates. The application to algorithmic bail reform in Philadelphia suggests that, if a freely available algorithm were used to determine pretrial release, the incarceration rate would decrease. The results of this application are dependent on the choice of shape restrictions one is willing to make.

Working Paper

"Tuning Parameter Selection in the Synthetic Control Method"

In this paper I show an asymptotically optimal choice of a weighting matrix used in the synthetic control method. The synthetic control method takes a weighted average of outcomes for untreated

units to estimate the outcome under no treatment for a treated unit. This can then be used to estimate a treatment effect for the treated unit. The weights are chosen such that the weighted average of the outcomes in the pretreatment time periods and of covariates approximates that of the treated unit. In practice, these weights are chosen to minimize a distance which depends on a weighting matrix. I show asymptotic optimality of a leave-one-out cross-validation procedure to choose this weighting matrix. This amounts to performing the synthetic control method, in turn, as if each of the untreated units were instead treated and assessing the prediction on the untreated units for a given weighting matrix. This is not straightforward because there is dependence across these synthetic control estimates.

Language

English (native)

References

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