Filip Obradović

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Northwestern Economics

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Fields

Econometrics, Applied Econometrics

Education

Ph.D., Economics, Northwestern University — 2025 (anticipated)
Committee: Charles Manski (Co-chair), Ivan Canay (Co-chair), Federico Bugni

M.A., Economics, Northwestern University — 2020

M.Sc., Quantitative Finance, University of Belgrade — 2019

M.Sc., Econometrics, University of Belgrade — 2018

B.Sc., Economics (with honors), University of Belgrade — 2015

Fellowships & Awards

Robert Eisner Memorial Fellowship — 2022–2023

Distinguished Teaching Assistant Award — 2021

Unicredit Crivelli Fellowship — 2019–2021

Northwestern Graduate Fellowship — 2019–2020

Best Student in Economics, University of Belgrade — 2014, 2015, 2016

Foundation for Young Talents "Dositeja" Scholarship — 2014–2015

Serbian Academy of Arts and Sciences Scholarship — 2013–2014

Ministry of Education of R. of Serbia Scholarship — 2012–2015

Teaching Experience

Course Instructor, Northwestern University — 2022
Econometrics Review for Incoming Ph.D. Students

Teaching Assistant, Northwestern University — 2020–2022
ECON 480-1 Graduate Econometrics
MMSS 311-2 Mathematical Methods in the Social Sciences
MATH 385 Probability and Statistics

Teaching Assistant, LSE & University of Belgrade — 2018
EC2020 Elements of Econometrics

Teaching Assistant, University of Belgrade — 2015–2018
Time Series Analysis
Econometrics
Introduction to Econometrics

Research Experience

Research Assistant, Prof. Charles Manski, Northwestern University — 2021–present

Research Assistant, Deutsche GIZ — 2017–2019

Presentations

Annual Health Econometrics Workshop, Emory University — 2022

Econometrics Seminar, Northwestern University — 2021

Refereeing

JBES, JPE: Micro

Job Market Paper

"Long-Term Treatment Effect Identification via Data Combination"

Abstract: Coming soon.

Publications

"Measuring Diagnostic Test Performance Using Imperfect Reference Tests: A Partial Identification Approach"

Journal of Econometrics, Volume 244, Issue 1

Abstract: Diagnostic tests are almost never perfect. Studies quantifying their performance use knowledge of the true health status, measured with a reference diagnostic test. Researchers commonly assume that the reference test is perfect, which is often not the case in practice. When the assumption fails, conventional studies identify "apparent" performance or performance with respect to the reference, but not true performance. This paper provides the smallest possible bounds on the measures of true performance - sensitivity (true positive rate) and specificity (true negative rate), or equivalently false positive and negative rates, in standard settings. Implied bounds on policy-relevant parameters are derived: 1) Prevalence in screened populations; 2) Predictive values. Methods for inference based on moment inequalities are used to construct uniformly consistent confidence sets in level over a relevant family of data distributions. Emergency Use Authorization (EUA) and independent study data for the BinaxNOW COVID-19 antigen test demonstrate that the bounds can be very informative. Analysis reveals that the estimated false negative rates for symptomatic and asymptomatic patients are up to 3.17 and 4.59 times higher than the frequently cited "apparent" false negative rate. Further applicability of the results in the context of imperfect proxies such as survey responses and imputed protected classes is indicated.

Other Papers

"Identification and Inference on Treatment Effects under Covariate-Adaptive Randomization and Imperfect Compliance" with **Federico Bugni**, **Mengsi Gao**, and **Amilcar Velez**.

Abstract: Randomized controlled trials (RCTs) frequently utilize covariate-adaptive randomization (CAR) (e.g., stratified block randomization) and commonly suffer from imperfect compliance. This paper studies the identification and inference for the average treatment effect (ATE) and the average treatment effect on the treated (ATT) in such RCTs with a binary treatment. We first develop characterizations of the identified sets for both estimands. Since data are generally not i.i.d. under CAR, these characterizations do not follow from existing results. We then provide consistent estimators of the identified sets and asymptotically valid confidence intervals for the parameters. Our asymptotic analysis leads to concrete practical recommendations regarding how to estimate the treatment assignment probabilities that enter in estimated bounds. In the case of the ATE, using sample analog assignment frequencies is more efficient than using the true assignment probabilities. On the contrary, using the true assignment probabilities is preferable for the ATT.

"On the Power Properties of Inference for Parameters with Interval Identified Sets" with **Federico Bugni**, **Mengsi Gao**, and **Amilcar Velez**.

Abstract: This paper studies a specific inference problem for a partially-identified parameter of interest with an interval identified set. We consider the favorable situation in which a researcher has two possible estimators to construct the confidence interval proposed in Imbens and Manski (2004) and Stoye (2009), and one is more efficient than the other. While the literature shows that both estimators deliver asymptotically exact confidence intervals for the parameter of interest, their inference in terms of statistical power is not compared. One would expect that using the more efficient estimator would result in more powerful inference. We formally prove this result.

"Binary Classifiers as Dilations" with **Gabriel Ziegler**.

Abstract: Binary classifiers are commonly imperfect. Their performance measures are usually determined by comparing them to reference classifiers, which may themselves be imperfect. This makes performance measures partially identified. This paper examines the phenomenon of dilation, as defined by Seidenfeld and Wasserman (1992), in this setting. Dilation is an extreme form of non-informativeness when information is ambiguous. We show that dilation can be induced by binary classifiers, such as diagnostic tests, and derive conditions under which dilation occurs. We develop inference procedures for existence of dilation relying on methods for subvector inference in moment inequality models. We apply our results to diagnostic procedures for COVID-19 detection, using CT chest scans evaluated by both radiologists and AI algorithms. We find that, under conventional significance levels, we cannot reject that the radiologists' assessments exhibit dilation, thus showcasing a concrete real-world instance of a dilation. Additionally, we illustrate the wider applicability of our methodology by rejecting the hypothesis that data-mining techniques for credit card fraud detection are non-informative in this sense.

"Guiding Experimental Design Using Baseline Data"

Medical Research

"Comparing the Cost of Cirrhosis to Other Common Chronic Diseases: A Longitudinal Study in A Large National Insurance Database" with NUTORC (First Author)

Resubmitted to *Hepatology*

Languages

English (fluent), Serbian/Croatian/Bosnian (native), Swedish (intermediate), German (basic)

References

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