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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

Econometrics Junior Conference, Notre Dame 2024  
 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:* This paper examines the phenomenon of dilation, as defined by Seidenfeld and Wasserman (1993), which represents an extreme form of non-informativeness when information is ambiguous. We show that a dilation can manifest concretely when binary classifiers, such as diagnostic tests, are used to update information. Dilation may occur when classifier performance measures are partially identified – and therefore, ambiguous – due to the imperfect reference classifiers. We derive conditions under which dilation occurs and develop inference procedures for statistical inference based on methods for subvector inference in moment inequality models. Our approach is applied to diagnostic procedures for COVID-19 detection, using CT chest scans evaluated by both radiologists and AI algorithms. We cannot reject the hypothesis that the radiologists’ assessments exhibit dilation, thus showcasing a potential concrete real-world instance of a dilation. We additionally illustrate the broader applicability of our methodology by rejecting the hypothesis that data-mining techniques for predicting the riskiness of credit card applications are non-informative in this sense.

**“Using Baseline Data to Guide Experimental Design”**

*Abstract:* Randomized controlled trials (RCTs) are costly. Designs with optimal treatment assignment probabilities – the Neyman allocation – may provide more powerful inference for a fixed sample size. Work implementing such designs usually relies on pilot data which are rarely available in practice. However, availability of baseline outcome and treatment data is common. I pose the experimental design as a decision problem and show how baseline data may be used to inform it. This yields the minimax and minimax regret optimal assignment probabilities that result in asymptotic variances that are minimax and minimax regret optimal under a large class of assignment mechanisms, including stratified block randomization. I illustrate the utility of the findings using empirically calibrated simulations.

**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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