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Field

Econometrics

Education

PhD, Economics, Northwestern University, 2026 (anticipated)
Dissertation: Essays in Econometrics
Committee: Ivan Canay (Chair), Eric Auerbach, Federico Bugni, Charles F. Manski
MA Economics, Northwestern University, 2021
Diploma Magistrale, Economics, Scuola Superiore Sant'Anna 2020
MSc, Economics, University of Pisa and Scuola Superiore Sant'Anna 2019
BSc, Bank, Finance and Financial Markets, University of Pisa 2017

Fellowships & Awards

Dissertation University Fellowship, Northwestern University, 2025-2026
Bonaldo Stringher Scholarship, Bank of Italy, 2020-2022
Honors Scholarship, Sant'Anna School of Advanced Studies, 2014-2019

Teaching Experience

Northwestern University: 480-1 Econometrics (Graduate)
University of Pisa: Advanced Econometrics (Master), Intro to Macroeconomics (Undergraduate)

Research Experience

Research Assistant, Charles F. Manski, Northwestern University, 2022-2025
Research Intern, Bank of Italy, 2021
Research Assistant, RFF-CMCC European Institute on Economics and the Environment, 2019-2020
Research Intern, Italian National Statistics Institute (ISTAT) 2019

Job Market Paper

"Identification, Estimation, and Inference in Two-Sided Interaction Models"

This paper studies a class of models for two-sided interactions, where outcomes depend on latent characteristics of two distinct agent types. Models in this class have two core elements: the matching network, which records which agent pairs interact, and the interaction function, which maps latent characteristics of these agents to outcomes and determines the role of complementarities. I introduce the Tukey model, which captures complementarities with a single interaction parameter, along with two extensions that allow richer complementarity patterns. First, I establish an identification trade-off between the flexibility of the interaction function and the density of the matching network: the Tukey model is identified under mild conditions, whereas the more flexible extensions require dense networks that are rarely observed in applications. Second, I propose a cycle-based estimator for the Tukey interaction parameter and show that it is consistent and asymptotically normal even when the network is sparse. Third, I use its asymptotic distribution to construct a formal test of no complementarities. Finally, an empirical illustration shows that the Tukey model recovers economically meaningful complementarities.

Econometrics Working Papers

"Partially Identified Rankings from Pairwise Interactions", with Danil Fedchenko
This paper considers the problem of ranking objects based on their latent merits using data from pairwise interactions. We allow for incomplete observation of these interactions and study what can be inferred about rankings in such settings. First, we show that identification of the ranking depends on a trade-off between the tournament graph and the interaction function: in parametric models, such as the Bradley-Terry-Luce, rankings are point identified even with sparse graphs, whereas nonparametric models require dense graphs. Second, moving beyond point identification, we characterize the identified set in the nonparametric model under any tournament structure and represent it through moment inequalities. Finally, we propose a likelihood-based statistic to test whether a ranking belongs to the identified set. We study two testing procedures: one is finite-sample valid but computationally intensive; the other is easy to implement and valid asymptotically. We illustrate our results using Brazilian employer-employee data to study how workers rank firms when moving across jobs.

Econometrics Work in Progress

"Manipulation Testing in Boundary Discontinuity Designs", with Federico Bugni and Daniel Restrepo
We propose a new manipulation test for a Boundary Discontinuity Design, i.e., an RDD with a d-dimensional running variable. Our approach avoids multivariate density estimation and builds on the intuition that, without manipulation, treated and control units should occur with equal frequency near almost all boundary points. We establish the asymptotic validity of our test under suitable conditions. We assess the finite-sample performance of the test through Monte Carlo simulations and illustrate its usefulness in three empirical applications.

Econometrics Publications

"Regret Analysis in Threshold Policy Design", Journal of Econometrics, 2025
Threshold policies are decision rules that assign treatments based on whether an observable characteristic exceeds a certain threshold. They are widespread across multiple domains, including welfare programs, taxation, and clinical medicine. This paper examines the problem of designing threshold policies using experimental data, when the goal is to maximize the population welfare. First, I characterize the regret - a measure of policy optimality - of the Empirical Welfare Maximizer (EWM) policy, popular in the literature. Next, I introduce the Smoothed Welfare Maximizer (SWM) policy, which improves the EWM's regret convergence rate under an additional smoothness condition. The two policies are compared by studying how differently their regrets depend on the population distribution, and investigating their finite sample performances through Monte Carlo simulations. In many contexts, the SWM policy guarantees larger welfare than the EWM. An empirical illustration demonstrates how the treatment recommendations of the two policies may differ in practice.

"Manipulation Test for Multidimensional RDD", Journal of Applied Econometrics, 2025
The causal inference model proposed by Lee (2008) for the regression discontinuity design (RDD) relies on assumptions that imply the continuity of the density of the assignment (running) variable. The test for this implication is commonly referred to as the manipulation test and is regularly reported in applied research to strengthen the design's validity. The multidimensional RDD (MRDD) extends the RDD to contexts where treatment assignment depends on several running variables. This paper introduces a manipulation test for the MRDD. First, it develops a theoretical model for causal inference with the MRDD, which is used to derive a testable implication on the conditional marginal densities of the running variables. Then, it constructs the test for the implication based on a quadratic form of a vector of statistics separately computed for each marginal density. Finally, the proposed test is compared with alternative procedures commonly employed in applied research.

Other Working Papers

"Assessing the Estimands and Estimates of Hospitalization Rates in Health Economics and Clinical Medicine", with Aditya Jain, Gil Peled, Filip Obradovic, Yeshaya Nussbaum, Michael Gmeiner, Daniela Ladner, Charles F. Manski
Even though data on hospital admissions are widely used in health research, hospitalization-related quantities measured using these data are not always clearly conceptualized. Consequently, estimators of these quantities can have unclear rationales and undesirable properties. We evaluate three rate estimators for measuring hospitalization-related quantities that are of interest in health economics and

clinical medicine subspecialities. Using the Grossman human capital model, we motivate the importance of measuring healthy time. We show that an upper bound on healthy time can be calculated using lengths of hospital stay without assumptions about health status outside the hospital. We find that an admission rate conventionally used in clinical research is a patient follow-up time weighted average that lacks a clear basis for the weights. We evaluate the Centers for Medicare and Medicaid Services (CMS) use of risk-standardized readmission rates to penalize hospitals under the Hospital Readmissions Reduction Program (HRRP) and find that it may inadvertently conflict with disease-specific care aimed at reducing mortality risk. We show that risk-standardized rates can be sensitive to patient case mix, potentially leading to hospital rankings that do not reflect hospital quality. We also summarize debates regarding the effectiveness of risk-standardized readmission rates in reducing readmissions.

"Hospitalization Rates in a Longitudinal US Cohort of Insured Patients with Cirrhosis", with Praneet Polineni, Bima J. Hasjim, Michael Gmeiner, Eleena Koep, Alexandra Harris, Filip Obradovic, Jonathan Jung, Alexander A. Huang, Zachary C. Dietch, Andres Duarte-Rojo, Vinayak S. Rohan, Laura Kulik, Julianna M. Doll, Therese Banea, Gwenn E. McNatt, Mitchell Paukner, Lihui Zhao, Daniel Borja, Lisa B. VanWagner, Charles F. Manski, Daniela P. Ladner

Other Publications

"Raided by the Storm: How Three Decades of Thunderstorms Shaped U.S. Incomes and Wages ", with Matteo Coronese, Francesco Lamperti, Francesca Chiaromonte, Andrea Roventini. Journal of Environmental Economics and Management, 2025
Climate change and weather events are increasingly affecting the macroeconomic performance of countries and regions. However, their effects on income inequality are less understood. We estimate the dynamic impact of thunderstorms on income and wages and reveal a robust asymmetric effect. We leverage a comprehensive dataset covering more than 200,000 events affecting contiguous U.S. counties across three decades. Storms have caused the highest number of billion-dollar disaster events since the eighties, but they have the lowest average event cost. They are short-lived, locally confined, relatively frequent, difficult-to-predict, and hazardous albeit not fully destructive events. While such features are convenient for the identification of impacts, previous studies mostly focused on more extreme events. We document a robust negative association between storm activity, income and wages growth. While income tends to recover in the long run, wages exhibit a significantly more stubborn decline, suggesting persistent and adverse impacts on (functional) income inequality. A one standard deviation increase in wind exposure generates a loss of 0.15% (0.21%) in wages after three (nine) years; incomes fall by a larger extent initially (0.19% after three years) while fully recovering in the longer run. In addition to their notable asymmetry, such estimates are non-negligible, especially given the downward rigidity of U.S. wages. Our analyses also highlight a lack of effective adaptation and stronger negative impacts in economically disadvantaged regions. Finally, we find evidence for a sizable shock-absorbing role of federal assistance.

"Comparing the cost of cirrhosis to other common chronic diseases: A longitudinal study in a large national insurance database", with Filip Obradovic, Dominic J. Vitello, Bima J. Hasjim, Joy Obayemi, Praneet Polineni, Michael Gmeiner, Eleena Koep, Aditya Jain, Andres Duarte-Rojo, Vinayak S. Rohan, Laura Kulik, Julianna M. Doll, Therese Banea, Gwen E. McNatt, Lihui Zhao, Lisa B. VanWagner, Charles F. Manski, Daniela P. Ladner. Hepatology, 2025.

Languages

English (fluent), Italian (native)

References

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