Elird Haxhiu
University of Michigan
haxhiu@umich.edu

Research Statement

Fall 2024

I am an Economist with interests in Applied Econometrics, Labor Economics, and Development. My current work develops new methods in continuous treatment Difference-in-Differences (DD) research designs where researchers do not have access to a control group to conduct inference, a case that is common in practice. I specialize in combining causal inference with economic theory to derive model-based estimating equations that target meaningful estimands under precise identifying assumptions and connects them to underlying structural parameters.

My job market paper ***Continuous Treatment Difference-in-Differences with Unknown Controls: A Data-Driven Approach*** (with Thomas Helgerman) develops new methods for continuous treatment difference-in-differences research designs, focusing on applications where researchers do not have access to a control group unexposed to the policy for causal inference. Our metastudy of published papers in the American Economic Review shows this case is common in practice. We propose a framework to estimate the Average Treatment Effect on the *Effectively* Treated (ATET) estimand, assuming the continuous treatment takes effect only after some cutoff value, the Minimum Effective Dose (MED). We propose a sample splitting estimator of the ATET and MED under non-parametric assumptions: first estimate the cutoff in a hold-out sample, then use it to define and estimate the ATET. The Split Sample estimator is asymptotically conservative for the MED, which implies it is attenuated for the ATET. We test the MED existence assumption by permuting dose values below the estimated cutoff using observations in the second step. Finally, we use the Smoothed Bootstrap estimator of the standard error to properly capture uncertainty over the unknown cutoff. Our simulations show the estimator performs well in finite samples. Engaging with the technical literature on estimation and identification allowed me to refine my ability to map theoretical methods onto applied research questions, both as a motivation for studying better methods, but also as a means of answering new questions in alternative settings.

My interest in continuous treatment difference-in-differences estimation comes from the second chapter of my dissertation ***Emigration Increases Schooling at Home: Evidence from Romania***, where I use existing methods to estimate the effect of emigration on schooling rates at home by non-migrants. I study Romania since 1990, where over 20% of the population (six million people) emigrated. In 2002, Schengen visa requirements were waived creating heterogeneous opportunities to emigrate that I capture with a continuous treatment measure of foreign migrant presence. I estimate brain gains in the form of increased college enrollment and graduation in response to the shock, but find that these effects dissipate over time. One potential explanation, Romania's subsequent European integration and continued rates of emigration by highly educated people, suggests that short-term estimates of brain gains should be interpreted with caution. This project began as my third-year paper in graduate school, and the extensive folder that houses it

Elird Haxhiu
University of Michigan
haxhiu@umich.edu

on my laptop documents the growth of my technical skills in empirical and theoretical research. As the only paper in my dissertation that is solo-authored, I cared deeply about framing it around a meaningful research question with potential to contribute to the migration literature, blending insights and methods from all three of my fields of specialization.

A common theme in my work is the use of theoretical models to derive estimating equations and clarify assumptions that identify meaningful parameters. I developed this philosophy in my third chapter ***COVID-19 & Stay-At-Home Orders: Identifying Event Study Designs with Imperfect Testing*** (with Jaedo Choi, Thomas Helgerman, Nishaad Rao, and Taeuk Seo). Using the Susceptible-Infected-Recovered model from Epidemiology to inform our specifications, we estimate the dynamic effects of Stay-At-Home orders on the transmission of COVID-19 in the United States. Identification in this setting is challenging due to differences between real and reported case data given the imperfect testing environment early in the pandemic, as well as non-random adoption of treatment. The Susceptible-Infected-Recovered (SIR) model from Epidemiology informs our empirical specifications, which we use to estimate a 44% to 54% reduction in the growth rate of cases one month after SAH orders. We conclude by discussing sufficient assumptions to extend the methodology to later phases of the pandemic.

In my future work, I hope to continue contributing to our shared knowledge of Econometric methods as well as the causes and consequences of migration in the fields of Labor and Development. I have found the most joy and success in research while collaborating with others. Two chapters in my dissertation are co-authored with fellow graduate students at the University of Michigan, and my paper on emigration and education received valuable research assistance from students through the Undergraduate Research Opportunities Program (UROP). I am always seeking out new opportunities to collaborate with researchers whose skills complement mine and who share my passion for rigorous, replicable, and meaningful estimation. It has been a pleasure learning about the world while doing research as a graduate student, and it would be my privilege to continue doing so in the next phase of my career.