Lea Bottmer

CONTACT INFORMATION

Stanford Department of Economics
579 Jane Stanford Way
Stanford, CA 94305

Email: lbottmer@stanford.edu
Website: sites.google.com/stanford.edu/lbottmer

EDUCATION

Stanford University 2019-2026 (expected)
Ph.D. Economics
Fields: *Econometrics, Causal Inference*

Maastricht University 2018-2019
M.Sc. Econometrics and Operations Research (*summa cum laude*)

Maastricht University 2015-2018
B.Sc. Econometrics and Operations Research (*summa cum laude*)

New York University, Exchange semester 2017

REFERENCES

Guido Imbens
Department of Economics, Stanford University
imbens@stanford.edu

Jann Spiess
Graduate School of Business, Stanford University
jspiess@stanford.edu

Scott McKeon
Department of Economics, Stanford University
smckeon@stanford.edu

SELECTED RESEARCH IN PROGRESS

Synthetic Control with Disaggregated Data (*Job Market Paper*)

Abstract: The synthetic control estimator is widely used to evaluate aggregate-level policies, but researchers increasingly face settings with rich, disaggregated data (e.g., county-level outcomes within states). Existing approaches incorporate disaggregated data by estimating separate synthetic controls for each disaggregated treated unit, enlarging the donor pool with disaggregated control units, or both. While such strategies can improve fit, they also amplify noise, and there is little guidance on how to navigate these trade-offs and the choice of aggregation. This paper develops a general framework for synthetic control with disaggregated data that nests the classical synthetic control estimator and other existing approaches. Within this framework, I propose a multi-level SC (mlSC) estimator that formalizes the choice of aggregation levels as a data-driven regularization problem. The estimator regularizes flexibly toward the classical synthetic control solution while exploiting variation contained in the disaggregated data. In simulations calibrated to four empirical settings, mlSC consistently outperforms or matches existing approaches. Two applications—Minnesota's e-cigarette tax and minimum wage effects on teen employment—illustrate its practical value.

From Policy Evaluation to Generalization: A Framework Using Synthetic Control

Abstract: Many real-world policy decisions depend not only on understanding the effects of past interventions but also on predicting how existing policies would perform in new settings. While the policy evaluation literature has grown rapidly over the past three decades — both methodologically and empirically —relatively little work takes the forward-looking perspective. This paper aims to provide insights into this one part of this open question: *What would happen if we implemented the same policy for a different unit?*. In this paper, I propose an SC-based approach that re-imagines the synthetic control (SC) estimator as a tool for treatment effect prediction rather than retrospective evaluation. The approach relies on leveraging disaggregated data of the treated unit and yields two estimators of interest: (1) using estimated treatment effects, *double SC estimator*, or (2) using outcomes of the treated unit directly. I argue that the double SC estimator, which focuses on treatment effects, is the more intuitive approach. The double SC estimator uses two sets of weights, one for the treated disaggregated unit and one for the larger donor pool.

Unbiased Covariate Adjustments (with Jann Spiess, Daniel Watt and Jason Weitze)

Abstract: Recent work has demonstrated the value of flexibly incorporating covariates when analyzing experiments with many experimental units It is less clear how or even if we should incorporate covariate information in settings with few experimental units like clustered experiments For this case we propose a Leave One or Two Cluster Out LOCO estimator that leverages the cluster-level randomization to guarantee an unbiased estimate while simultaneously incorporating individual-level information in a flexible way to reduce variance While clustered experiments tend to have few experimental units e.g. villages we often observe outcome data and covariates for a much larger number of individuals e.g. people living in those villages In practice researchers often choose between leveraging this more granular data in individual-level linear regressions that control for covariates and a simple difference in means that ignores the covariates While the former reduces variance it comes at the expense of the latter's unbiasedness guarantee Our proposed estimator aims to combine the best of both strategies.

Peer-Reviewed Publications

A Design-Based Perspective on Synthetic Control Methods (with Guido Imbens, Jann Spiess and Merrill Warnick), Journal of Business & Economic Statistics, 42.2 (2024): 762-773.

Sparse regression for large data sets with outliers (with Christophe Croux and Ines Wilms), European Journal of Operational Research 297.2 (2022): 782-794.

Teaching Experience

Stanford University

Teaching Assistant for Scott McKeon, Applied Econometrics	2025
Teaching Assistant for Jann Spiess and Luigi Bocola, Intermediate Econometrics II *(Outstanding TA Award)*	2025
Course Designer for Guido Imbens and Mary Wootters, Causality, Decision Making & Data Science	2024, 2025
Lead Teaching Assistant for Guido Imbens and Mary Wootters, Causality, Decision Making & Data Science	2024
Teaching Assistant for Guido Imbens, Intermediate Econometrics III *(Outstanding TA Award 2023 & 2024)*	2023,2024

Preparing Future Teaching Professors Fellowship

Guest lecturer, Principles of Microeconomics, *West Valley College*	2025

Teaching Publications

An Undergraduate Course in Causality (with Guido Imbens, Jason Weitze and Mary Wootters), Harvard Data Science Review, *forthcoming*

Awards & Fellowships

Machine Learning in Economics Summer Institute - Admitted Attendee, Center for Applied Artifical Intelligence, University of Chicago Booth School of Business — 2025
Centennial Teaching Assistant Award, School of Humanities & Sciences — 2025
Preparing Future Teaching Professors Fellowship, Office of the Vice Provost for Graduate Education — 2024-2025
Ric Weiland Graduate Fellowship, School of Humanities & Sciences — 2022-2024
Sean Buckley Memorial Award for Best 2nd Year Paper, Department of Economics and Stanford Institute for Economic Policy Research — 2021
Best Thesis Award, Stichting Wetenschapsbeoefening UM — 2018

Seminars & Conferences

CAMSE-CLIMB Mini-Conference, Women in Data-Driven Discovery (WiD3) — 2025
Berkeley-Stanford Econometrics Jamboree — 2023
Stanford Causal Science Center Conference — 2022
Econometric Society European Summer Meeting — 2021

Research Experience

Stanford University
Research Assistant to Guido Imbens — 2020-present

Mentorship & Service

WE RISE Head of Undergraduate Outreach, Stanford Department of Economics — 2024-present
Mentor, Economics Mentoring Program — 2024-present
Research Mentor, Stanford-Spelman-Sloan Scholar Program — 2023-2024
Mentor, Mentor Tutor Connection — 2022-2025
WE RISE Head of Committee, Stanford Department of Economics — 2022-2024
Graduate Student Council Member, Stanford Department of Economics — 2022-2024
Econometrics Lunch Organizer, Stanford Department of Economics — 2021-2024
Graduate Recruitment Committee Member, Stanford Department of Economics — 2021-2022
Graduate Student Social Chair, Stanford Department of Economics — 2020-2021