Spencer D. Sween

(562) 280-4546 | spencersween@ucsb.edu | linkedin.com/in/spencersween

Profile Summary: Quantitative economist and data scientist specializing in causal inference and applied econometrics. Ph.D. candidate in Economics at UC Santa Barbara with industry and policy experience at Amazon and the Federal Reserve. Experienced with quasi-experimental methods (DiD, RDD, DoubleML) and the econometric foundations of randomized experiments and A/B testing. Strong background in R, Python, and Stata. Focused on identifying and operationalizing heterogeneous treatment effects to inform targeting, personalization, and policy design.

Education

University of California, Santa Barbara Santa Barbara, CA
Ph.D. in Economics (Expected: Dec. 2025 to June 2026)
M.A. in Economics (June 2022)
Committee: Doug Steigerwald (Chair), Max Farrell, Gonzalo Vazquez-Bare, Mitch Hoffman
Research interests: Applied econometrics, causal machine learning, entrepreneurship, finance
Activities: Econometrics Reading Group (2023 to 2025), Applied Microeconomics Lunch Seminar (2025)

B.A. in Economics (March 2021)
Honors: Phi Beta Kappa, Distinction in the Major, Dean's Honor Roll (GPA 3.88)

Industry Experience

Amazon Bellevue, WA
Economist Intern, Fulfillment by Amazon (FBA) June 2025 to Sept. 2025

- Delivered a quasi-experimental evaluation of the Sub Same Day Delivery program, quantifying its impact on marketplace seller outcomes using large-scale transaction data
- Implemented regression discontinuity, synthetic control, and staggered-adoption DiD designs, supplemented with DoubleML and comprehensive robustness analyses
- Built replication toolkits and high-throughput CATE estimators, orchestrating AWS SageMaker jobs with deep neural networks in Torch
- Translated heterogeneity analyses into group-level targeting recommendations and assignment policies for program expansion in collaboration with product teams

Amazon Seattle, WA
Economist Intern, Seller Fees Science June 2024 to Sept. 2024

- Estimated downstream effects of item availability shocks on long-term consumer behavior using DiD, synthetic control, and supporting ML methods
- Designed diagnostics for consumer-level analyses and integrated deep-learning representations into DiD models to capture treatment heterogeneity
- Shipped reusable software in R, Python, and Torch to standardize analytical workflows and improve iteration speed
- Synthesized parallel analyses into a unified metric quantifying long-run effects of product selection changes and provided implementation guidance
- Findings informed leadership decisions for the launch of Amazon Haul

Research Experience

Federal Reserve Board of Governors — Washington, DC
Graduate Research Intern, Division of Monetary Affairs — June 2022 to June 2023
Research Intern — Summers 2020 and 2021

- Led empirical analysis of emergency liquidity facilities and their effects on nonbank lender activity during COVID-19, contributing to policy-facing memos
- Collected, harmonized, and linked administrative datasets on federal lending programs and Federal Reserve facilities; merged loan-level participation with financial outcomes using Stata and SQL
- Constructed analysis-ready panels with consistency checks and documentation; produced visualizations of risk-transmission channels for program assessment

Argos Global Advisors — Santa Barbara, CA
ESG Financial Analyst — Jan. 2020 to June 2023

- Built ESG screening models integrating firm-level fundamentals and sustainability metrics; backtested strategies in R and validated performance
- Performed portfolio optimization and sensitivity analyses; collaborated with partners to finalize an ESG hedge fund product with investment bank partners

Research Papers

Targeted Credit Access and Entrepreneurship (Job Market Paper)
Working paper
Estimates the causal impact of nonbank lender expansion on entrepreneurship and employment using staggered-adoption DiD with ML-based nuisance estimation, doubly robust aggregation, and heterogeneity analysis; finds larger gains in disadvantaged neighborhoods.

Semi parametric Difference in Differences for Dynamic Impulse Responses and Multiple Treatments
Working paper
Develops a machine learning augmented panel DiD estimator for time varying, continuous exposures with staggered adoption; applies cross-fitted DoubleML and orthogonal moments. Application to SBA 504 loan guarantees shows persistent employment multipliers of approximately 1.1 percent per loan over five years.

Semiparametric Non Linear Difference in Differences for Policy Evaluation: New Evidence on the Entrepreneurial Impacts of State Business Tax Incentives
Working paper
Introduces semiparametric estimators that incorporate machine learning when the parallel trends assumption holds under a non linear link transformation. Re-examines the impact of state R&D tax credits on county level startup activity and finds large, persistent negative effects that contrast with prior estimates generated by mis-specified outcome models.

Contagion Risks of Stablecoins: Investor Level Evidence from the Terra Shock
Working paper
Uses high-frequency investor panel data from Celsius Network to study responses to the 2022 Terra collapse; event study and time series evidence indicate liquidity spirals and cross stablecoin contagion.

Technical Skills

Programming: R, Python, Stata, SQL, Torch (PyTorch)
Econometrics and causal methods: difference in differences (staggered and continuous), DoubleML, causal forests (GRF), instrumental variables, semiparametric two-stage estimators, synthetic control
Machine learning: trees and forests, deep neural networks (Torch), CATE estimation

Selected capabilities:

- Build modular causal and ML pipelines for high-dimensional panel data with reproducible workflows
- Implement AutoDML style estimators with Riesz regression for efficient estimation and inference
- Apply outlier robust methods for causal analysis with heavy-tailed outcomes
- Integrate neural network representations with economic structure to analyze model heterogeneity
- Conduct heterogeneity, sensitivity, and robustness analyses for observational and experimental designs

Teaching and Academic Service

University of California, Santa Barbara Sept. 2022 to Present
Head Teaching Assistant, Introduction to Econometrics (Econ 140A)

- Led curriculum design, logistics, and instruction for a 300-plus student econometrics course focused on causal inference and regression analysis
- Built reproducible Stata and R modules covering regression, hypothesis testing, and coding practices
- Automated grading and analytics and mentored new TAs to standardize instructional quality

Honors and Awards

Outstanding Teaching Assistant Award (2023, 2025)
Phi Beta Kappa
Distinction in the Major, UCSB Economics

Personal Interests

Tennis, pickleball, snowboarding, deep-sea fishing, Italian art and history, beachside camping