MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics, Expected completion June 2026
DISSERTATION: "Essays in Econometrics"

DISSERTATION COMMITTEE AND REFERENCES

Isaiah Andrews
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Alberto Abadie
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PRIOR EDUCATION

Brown University — 2018
B.S. Computer Science, B.S. Mathematics *(magna cum laude)*

CITIZENSHIP USA, Switzerland

GENDER: Female

FIELDS

Primary Field: Econometrics, Statistics
Secondary Fields: Development, Experimental

Teaching Experience

MIT

14.386 - New Econometric Methods (PhD) — 2026
Teaching Assistant to Alberto Abadie and Anna Mikusheva

14.39/390 - Large-Scale Decision Making and Inference — 2025
Teaching Assistant to Isaiah Andrews

14.381 - Estimation & Inference of Linear Models (PhD Core II) Teaching Assistant to Whitney Newey — 2022-24

14.380 - Statistical Methods in Economics (PhD Core I) — 2024
Teaching Assistant to Ashesh Rambachan

14.76/760 - Firms, Markets, Trade, and Growth — 2023
Teaching Assistant to David Atkin and Dave Donaldson

14.009 - Economics and Society's Greatest Problems — 2022
Teaching Assistant to Esther Duflo

Brown University

CSCI 1915K - Algorithmic Game Theory — 2018
Teaching Assistant to Amy Greenwald

CSCI 1570 - Design and Analysis of Algorithms — 2017
Teaching Assistant to Paul Valiant

CSCI 0160 - Intro to Algorithms and Data Structures — 2017
Teaching Assistant to Seny Tamara

PLCY 2455 - Statistics for Public Policy (MPA) — 2016
Teaching Assistant to John Friedman

PLCY 2460 - Microeconomics for Public Policy (MPA) — 2016
Teaching Assistant to Emily Oster

Relevant Positions

President, MIT Graduate Economics Association — 2022-24

Research Analyst, Federal Reserve Bank of New York, Macroeconomic and Monetary Studies — 2018-20

Fellowships, Honors, and Awards

Best Graduate Teaching Assistant, *MIT Dept. of Economics* — 2025

Graduate Research Fellowship, *National Science Foundation* — 2020-26

Phi Beta Kappa & Sigma Xi, *Brown University* — 2018

Women of Computer Science '84 Undergraduate Teaching Assistant Award, *Brown University*. — 2017

Publications

"Online Estimation of DSGE Models," *The Econometrics Journal,* Vol. 24, Issue 1, January 2021**.** (with Michael Cai, Marco Del Negro, Edward Herbst, Ethan Matlin, and Frank Schorfheide). **[Paper]**

Conference Papers

"Estimating HANK for Central Banks," *Heterogeneity in Macroeconomics: Implications for Monetary Policy, 1st ed. Central Bank of Chile, 2024.* (with Sushant Acharya, Marco Del Negro, Ethan Matlin, William Chen, Keshav Dogra, Shlok Goyal, Donggyu Lee, Sikata Sengupta). **[Paper]**

"Hindsight and Sequential Rationality of Correlated Play," *Proceedings of the AAAI Conference on Artificial Intelligence,* May 2021. (with Morrill, Ryan D'Orazio, Marc Lanctot, James R Wright, Amy Greenwald, Michael Bowling). **[Paper]**

Coauthored Statistical Packages

DSGE.jl: This package implements the New York Fed dynamic stochastic general equilibrium (DSGE) model and provides general code to estimate many user-specified DSGE models. The package is introduced in the *Liberty Street Economics* blog post, "The FRBNY DSGE Model Meets Julia."

SMC.jl: This package implements the Sequential Monte Carlo (SMC) sampling algorithm, an alternative to Metropolis Hastings Markov Chain Monte Carlo sampling for approximating posterior distributions. The SMC algorithm implemented here is based upon and extends Edward Herbst and Frank Schorfheide's paper "Sequential Monte Carlo Sampling for DSGE Models" and the code accompanying their book, *Bayesian Estimation of DSGE Models*.

- Our implementation features an adaptive schedule and what we term *generalized tempering* for "online" estimation, as outlined in our paper, "Online Estimation of DSGE Models." For a broad overview of the algorithm, one may refer to the following *Liberty Street Economics* article.

StateSpaceRoutines.jl: This package implements common computational routines for state-space models. Provided algorithms include the Kalman filter; Chandrasekhar recursions; Tempered Particle Filter; Hamilton and Koopman Kalman smoothers; as well as Carter and Kohn and Durbin and Koopman simulation smoothers.

ModelConstructors.jl: This package contains the building blocks of model objects, such as Parameter, Observable, Setting, and State types. You may define any custom model, so long as it has parameters. The model object is used in both DSGE.jl and SMC.jl.

RESEARCH PAPERS

"Post Pre-Analysis Plans: Valid Inference for Non-Preregistered Specifications" (Job Market Paper) (with Vod Vilfort)
[Latest Draft] [arXiv]

Pre-analysis plans (PAPs) have become standard in experimental economics research, but it is nevertheless common to see researchers deviating from their PAPs to supplement preregistered estimates with non-prespecified findings. While such ex-post analysis can yield valuable insights, there is broad uncertainty over how to interpret -- or whether to even acknowledge -- non-preregistered results. In this paper, we consider the case of a truth-seeking researcher who, after seeing the data, earnestly wishes to report additional estimates alongside those preregistered in their PAP. We show that, even absent "nefarious" behavior, conventional confidence intervals and point estimators are invalid due to the fact that non-preregistered estimates are only reported in a subset of potential data realizations. We propose inference procedures that account for this conditional reporting. We apply these procedures to Bessone et al. (2021), which studies the economic effects of increased sleep among the urban poor. We demonstrate that, depending on the reason for deviating, the adjustments from our procedures can range from having no difference to an economically significant difference relative to conventional practice. Finally, we consider the robustness of our procedure to certain forms of misspecification, motivating possible heuristic checks and norms for journals to adopt.

“Narrative-Hacking” [Draft]

Economists seldom base conclusions on isolated hypothesis tests. Rather, it is common to combine multiple atomic tests in a logical structure to serve higher-order purposes, such as distinguishing between competing theories, defending causal claims, diagnosing mechanisms, and arranging disparate facts into coherent stories. These economic "narratives" are foundational to how findings are framed, interpreted, and communicated—governing a paper's overarching message and ultimate societal impact. Yet, a single set of test outcomes can support many narratives, not all of which are true. While practitioners today recognize the importance of multiple testing corrections to guard against practices such as *p*-hacking, these procedures target atomic errors, not those of downstream narratives built upon them. This paper presents a general model for the construction and testing of narratives that admits a formal definition of Type I "narrative error.” After partitioning narratives into two classes—monotonic (e.g., impact evaluations) and non-monotonic (e.g., balance checks)—we first show a positive result: if a narrative admits a representative test that is (weakly) increasing in atomic rejections, any procedure that controls the family-wise error rate (FWER) over underlying atomic tests at level alpha automatically delivers uniform narrative size control at alpha. A corollary is a "free narrative shopping" guarantee: once atomic tests are fixed or preregistered, researchers may explore any monotone narratives ex post without inflating size, thereby immunizing them against potential concerns of ex post "narrative-hacking." We then find an impossibility result: when testing sets include non-monotone narratives—such as a set containing both a narrative and its negation—atomic FWER control cannot achieve uniform narrative size control with alpha < 0.5. To accommodate arbitrary collections of narratives, we provide a novel procedure that relates uniform size control to the construction of joint confidence sets. We show the necessary and sufficiency of this approach for uniform narrative error control. We demonstrate practical implementation of this framework by replicating findings in Dell (2010).

Research In Progress

Correcting for Selection Bias from Specification Testing in Econometric Models (with Vod Vilfort)

Applied researchers routinely employ specification checks to assess whether their econometric models adequately capture the data-generating process. When specification problems are detected, researchers typically either modify their models—through variable transformations, additional controls, instrumental variables, or alternative estimation techniques—or abandon the analysis altogether. As has previously been established, this common practice of conditioning analysis on specification test outcomes constitutes a form of selective reporting that distorts the sampling distribution of reported estimators and invalidates conventional inference. I show, however, that there is a 'free lunch' available in this setting: By using an estimator that residualizes by specification checks, a researcher can simultaneously: (i) reduce standard errors if the model is correctly specified, (ii) ensure immunity to the aforementioned pretest bias arising from pre-tests of unknown form, and (iii) reduce the estimator's worst-case bias under local misspecification.

Inference with Selected Instruments (with Vod Vilfort)

Instrumental variable estimation often involves data-dependent selection, from discarding instruments yielding implausible estimates to the ubiquitous practice of pre-testing for instrument strength using first-stage F-statistics (Stock & Yogo, 2005). While a long literature has theoretically identified and empirically documented the resulting inference distortions (Hall, Rudebusch and Wilcox, 1996; Guggenberger, 2010; Andrews, Stock and Sun, 2019; Young, 2022), existing solutions primarily rely on sample splitting methods that sacrifice statistical power. In this early-stage project, we develop a general inference framework that remains valid after arbitrary data-dependent instrument selection. Our proposed conditional inference procedure corrects these distortions by properly accounting for the selection event while preserving the full sample for estimation. The method accommodates the nonlinear selection rules common in practice and remains robust to unknown instrument strength, while uniformly dominating sample-splitting approaches in terms of statistical power.