

2022-2023 MIT Economics

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MIT PLACEMENT ADMINISTRATOR

Ms. Shannon May
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DOCTORAL STUDIES Massachusetts Institute of Technology (MIT)
 PhD, Economics, Expected completion June 2023
 DISSERTATION: “*Essays in Market Design and Political Economy*”

DISSERTATION COMMITTEE AND REFERENCES

Parag Pathak
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Glenn Ellison
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PRIOR EDUCATION Koc University 2017
 M.A. in Economics
 Koc University 2016
 B.A. in Economics, Valedictorian

CITIZENSHIP Turkey **GENDER:** Male

LANGUAGES Turkish, English

FIELDS Primary Fields: Theory, Market Design
 Secondary Fields: Political Economy

TEACHING EXPERIENCE	14.283-284 Topics in Organizational Economics I & II (Graduate)	2022
	Teaching Assistant to Juan Ortner and Charles Angelucci	
	14.121 Microeconomic Theory I (Graduate)	2021
	Teaching Assistant to Parag Pathak	
	14.12 Game Theory (Undergraduate)	
	Teaching Assistant to Ian Ball	
	14.773 Political Economy II (Graduate)	
	Teaching Assistant to Daron Acemoglu and Leopoldo Fergusson	
	14.121 Microeconomic Theory I (Graduate)	2020
	Teaching Assistant to Parag Pathak	
FELLOWSHIPS, HONORS, AND AWARDS	14.125 Market Design (Graduate)	
	Teaching Assistant to Parag Pathak	
	14.770 Introduction to Political Economy (Graduate)	
	Teaching Assistant to Abhijit Banerjee and Elias Papaioannou	
	14.770 Introduction to Political Economy (Graduate)	2019
	Teaching Assistant to Ro'ee Levy and Ben Olken	
	14.122 Microeconomic Theory II (Graduate)	
	Teaching Assistant to Glenn Ellison	
	Unicredit & Universities Crivelli Europe Scholarship (2017)	
	The Scientific and Technological Research Council of Turkey Scholarship for Graduate Studies (2016)	
PROFESSIONAL ACTIVITIES	Valedictorian, Koc University (2016)	
	<u>Presentations</u>	
	2022: Iowa State University, INFORMS Workshop on Market Design, Society for the Advancement of Economic Theory Conference	
	2021: London Business School	
	<u>Refereeing</u>	
	<i>AEJ:Microeconomics, The Review of Economic Studies</i>	
	PUBLICATIONS	
	“Priority Design in Centralized Matching Markets” (with Joel Flynn)	
	<i>The Review of Economic Studies</i> , May 2022, 89(3): 1245-1277.	
	In many centralized matching markets, agents' property rights over objects are derived from a coarse transformation of an underlying score. Prominent examples include the distance-based system employed by Boston Public Schools, where students who lived within a certain radius of each school were prioritized over all others, and the income-based system used in New York public housing allocation, where eligibility is determined by a sharp income cutoff. Motivated by this, we study how to optimally coarsen an underlying score. Our main result is that, for any continuous objective function and under stable matching mechanisms, the optimal design can be attained by splitting	

agents into at most three indifference classes for each object. We provide insights into this design problem in three applications: distance-based scores in Boston Public Schools, test-based scores for Chicago exam schools, and income-based scores in New York public housing allocation.

RESEARCH PAPERS

“Adaptive Priority Mechanisms” (Job Market Paper) (with Joel Flynn)

How should authorities that care about match quality and diversity allocate resources when they are uncertain of the market they face? Such a question appears in many contexts, including the allocation of school seats to students from various socioeconomic groups with differing exam scores. We propose a new class of *adaptive priority mechanisms* (APM) that prioritize agents as a function of both scores that reflect match quality and the number of assigned agents with the same socioeconomic characteristics. When there is a single authority and preferences over scores and diversity are separable, we derive an APM that is optimal, generates a unique outcome, and can be specified solely in terms of the preferences of the authority. By contrast, the ubiquitous priority and quota mechanisms are optimal if and only if the authority is risk-neutral or extremely risk-averse over diversity, respectively. When there are many authorities, it is dominant for each of them to use the optimal APM, and each so doing implements the unique stable matching. However, this is generally inefficient for the authorities. A centralized allocation mechanism that first uses an aggregate APM and then implements authority-specific quotas restores efficiency. Using data from Chicago Public Schools, we estimate that the gains from adopting APM are considerable.

“Diversity Preferences, Affirmative Action and Choice Rules”

Many institutions implement affirmative action policies for hiring individuals or allocating resources, indicating a preference for diversity as well as match quality. I introduce a framework to analyze diversity preferences and their effect on the affirmative action policies and choice rules adopted by institutions. I characterize the choice rules that can be rationalized by diversity preferences and demonstrate that the rule used to allocate government positions in India cannot be rationalized. I show that if institutions evaluate diversity using marginal (*i.e.*, not cross-sectional) distribution of identities, then choices induced by their preferences cannot satisfy the substitutes condition, which is crucial for the existence of competitive equilibria and stable allocations. I characterize a class of choice rules that satisfy the substitutes condition and are rationalizable by preferences that evaluate diversity and quality separately and identify the preferences that induce some widely used choice rules. My framework and results provide a systematic way of evaluating the diversity preferences behind the choices made by institutions.

“Best-Response Dynamics in the Boston Mechanism”

I analyze a setting where the Boston Mechanism (BM) is applied repeatedly and students form their application strategies by best-responding to the admission cutoffs of the previous period, a process I call the Repeated Boston Mechanism (RBM). If students are truthful in the initial period, the allocation under RBM converges in finite time to the student optimal stable matching (SOSM), which is the Pareto-dominant equilibrium of BM and the outcome of the strategy-proof Deferred Acceptance Mechanism. If some students are sincere and do not strategize, then the allocation under RBM with sincere students converges to the SOSM of a market in which sincere students lose their priorities. When students best-reply to some initial cutoffs in the first period, RBM converges to SOSM if students are initially optimistic about their admissions chances but may cycle between allocations Pareto-dominated by SOSM if they are pessimistic. My results provide a foundation for equilibrium analysis under BM and help explain why students play suboptimal and overcautious strategies.

“International Unions and Integration”

(with Elias Papaioannou)

We consider a model of international unions in which countries have heterogeneous preferences for integration and their integration decisions are strategic complements. We analyze equilibrium under several integration protocols that differ in the flexibility countries have in choosing how much to integrate. Our model can explain the evolution of the EU, where enlargement and flexible integration are often spearheaded by the “core” countries and coincide with enhanced integration. Moreover, when non-members can partially integrate with the union, restrictions on the integration of non-members are necessary for fostering integration and determine the union's size and scope. Motivated by Brexit, we allow countries to leave the union and demonstrate how restrictions on the integration of leaving countries make the union robust to changes in members' preferences.

“Substitutability of Favors and Bilateral Enforcement of Cooperation”

I introduce a favor exchange model that allows players to rely on multiple partners to obtain favors (*i.e.*, cooperation is substitutable) and study bilateral enforcement of cooperation. Without substitutability, there is either no cooperation or universal cooperation, while under substitutability, each additional relationship is less valuable than the previous one and intermediate levels of cooperation are observed. I show that transfers facilitate cooperation but may exacerbate inequality when players are heterogeneous. I extend the model to allow for community and legal enforcement and characterize when each enforcement mechanism is optimal. In applications, I demonstrate how my model can offer insights into the stratification of social networks in post-Soviet states and the adoption of different enforcement mechanisms by medieval traders.

“Segmented Trading Markets: Competition, Fees, and Tax Policies”

(with Kerry Back, Ali Kakhbod and A. Max Reppen)

We study the competition among segmented trading venues in which the venues differ in technology (fast vs. slow). Technological differentiation leads to higher trading fees but has an ambiguous impact on trading volumes. Improvements in the slow venue increase trading volumes, whereas improvements in the fast venue might increase or decrease it. We also study the welfare effect of tax policies. In equilibrium, the tax rate to optimize tax revenue depends only on trader preferences and is thus independent of the venue competition. With non-constant welfare weights, the aggregate welfare can be maximized at nontrivial tax rates.

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DOCTORAL STUDIES Massachusetts Institute of Technology (MIT)
 PhD, Economics, Expected completion June 2023
 DISSERTATION: *"Essays in Applied Health Economics"*

DISSERTATION COMMITTEE AND REFERENCES

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PRIOR EDUCATION University of California, Berkeley 2016
 B.A., Applied Mathematics, Economics, Statistics
Highest Distinction in General Scholarship

CITIZENSHIP Singapore **GENDER:** Male

LANGUAGES English, Mandarin

FIELDS Primary Field: Health Economics
 Secondary Fields: Applied Econometrics, Labor Economics

TEACHING EXPERIENCE 14.01 Principles of Microeconomics 2022
 Teaching Assistant to Professor Sara Ellison

	14.01 Principles of Microeconomics	2020
	Teaching Assistant to Professor Jonathan Gruber	
	14.30 Introduction to Statistical Methods in Economics	2020
	Teaching Assistant to Professor Alberto Abadie	
RELEVANT POSITIONS	Research Assistant to Professor Nikhil Agarwal	2018
	Research Assistant to Professor Amy Finkelstein	2017
FELLOWSHIPS, HONORS, AND AWARDS	Sahin (1963) Presidential Fellowship, MIT	2017
PUBLICATIONS	“Mixed Beam Murine Harderian Gland Tumorigenesis: Predicted Dose-Effect Relationships if neither Synergism nor Antagonism Occurs” (with Nopphon Siranart, Eleanor A. Blakely, Naval Handa, and Rainer K. Sachs). <i>Radiation Research</i> , 2016.	
RESEARCH PAPERS	“Demand for Quality in the Presence of Information Frictions: Evidence from the Nursing Home Market” (Job Market Paper) <p>This paper studies consumers' demand for quality in the nursing home market, where information frictions are a source of concern. I start by estimating quality of nursing homes in California, before using these estimates as inputs into a structural demand model. I find substantial variation in nursing home quality – one standard deviation higher quality is associated with 2 percent lower risk-adjusted 90-day mortality rate. Yet, despite the high stakes, residents' average demand for quality is very low, even after accounting for unobserved supply side constraints arising from selective admissions practices by nursing homes. Patterns of demand heterogeneity point to information frictions being a major reason for this low demand – residents who were younger, highly educated, free from dementia, and who made their choices after the star rating system was introduced were more responsive to quality. Counterfactual simulations based on estimates of the structural demand model and a competing risks model suggest that eliminating information frictions may reduce deaths by at least 8 to 28 percent in the short run, and potentially even more in the long run.</p> “Regression Discontinuity Designs with Multiple Running Variables” <p>In this paper, I introduce a new estimator for regression discontinuity designs with multiple running variables. My estimator provides efficiency gains relative to the common empirical practice of analyzing each running variable separately. In addition, it can be used to estimate heterogeneous treatment effects over a subset of the running variable space. I derive Bayesian confidence intervals for my estimator, and confirm their validity in simulations. Finally, I demonstrate the performance of my estimator in an empirical application from Londoño-Vélez, Rodríguez, and Sánchez (2020), which studies the effect of a large financial aid program on higher education in Colombia.</p>	

RESEARCH IN PROGRESS

“Information Transmission and Racial Disparities in Nursing Homes”

There are pronounced patterns of racial segregation across nursing homes in the US, with black residents tending to stay in lower-quality nursing homes. Canonical explanations for racial segregation in other settings include discrimination and in-group preferences. In this paper, I propose an additional channel through which such segregation may arise – information transmission. This posits that if the current share of black residents at a nursing home is low, potential future black residents face greater uncertainty about the quality of said nursing home, due to greater in-group interaction. Similar to a model of in-group preferences, this implies that the low share of black residents at high-quality nursing homes can become a self-perpetuating cycle. However, a key prediction of the information channel which distinguishes it from in-group preferences is that effect of a positive shock to the current share of black residents in a nursing home on the future share depends on the quality of the nursing home. Indeed, I find that conditional on the nursing home, higher share of past black admissions predicts higher future share of black admissions at high-quality nursing homes, but *lower* future share of black admissions at low-quality nursing homes. This pattern holds for a range of quality measures, such as skilled staffing levels and CMS star ratings, as well as components of quality that consumers cannot infer from publicly available data.

“Selective Admissions and Discharges by Nursing Homes”

Previous research has shown that as a consequence of capacity constraints, nursing homes selectively choose which types of residents to admit (Gandhi, 2019; Cheng, 2022), and when to discharge residents (Hackmann, Pohl, and Ziebarth, 2020). I provide a microfoundation for a structural model where nursing homes solve an optimal control problem by choosing admission and discharge policies, faced with stochastic arrivals of different types of potential residents, as well as stochastic evolution of existing residents’ “discharge readiness”. I characterize the solution to this problem, and derive comparative statics that shed light on identification of the structural model – intuitively, nursing homes’ admission and discharge policies are identified based on differences in the characteristics of residents they admit and discharge during times of high and low occupancy. I estimate the model using an extension of the Gibbs sampler in Agarwal and Somaini (2022) and Cheng (2022), with data augmentation on residents’ indirect utility and latent variables that determine nursing homes’ admission decisions for potential residents and discharge decisions for existing residents.

“Bounds on Omitted Variables Bias in Discrete Choice Models”

In this project, I extend methods in Altonji, Elder, and Taber (2005), and Oster (2019) for bounding omitted variables bias in OLS to discrete choice settings. I derive bounds for the bias based on movements in the coefficient of interest before and after the inclusion of additional regressors, combined with an

assumption about the importance of the omitted variables for consumer utility relative to the importance of the additional regressors. I evaluate the robustness of this bounding procedure to alternative functional form assumptions using simulations. In addition, I conduct an empirical application studying nursing home residents' demand for quality, which shows that the procedure produces economically meaningful bounds.

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
 PhD, Economics, Expected completion February 2023
 DISSERTATION: Essays in Labor Economics

DISSERTATION COMMITTEE AND REFERENCES

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PRIOR EDUCATION

Northwestern University 2015
 B.A., Economics and Mathematics
Summa Cum Laude

FIELDS

Primary Fields: Labor, Public Finance
 Secondary Fields: Econometrics

TEACHING EXPERIENCE

Public Finance (PhD)	2019-2021
TA to Professors Amy Finkelstein and Peter Ganong	
Course evaluation: 7.0/7, 6.3/7, 6.1/7	
Research and Communication (undergraduate)	2020, 2022
TA to Professors Simon Jäger and Martin Beraja	
Course evaluations: 6.7/7, 6.3/7	
Microeconomic Theory and Public Policy (undergraduate)	2019, 2022
TA to Professors David Autor and Tobias Salz	

Course evaluations: In progress, 5.8/7

RELEVANT POSITIONS	Research Assistant to Professor Simon Jäger (MIT)	2019
	Research Assistant to Professor James Poterba (MIT)	2018
	Research Assistant to Professors David Laibson, Brigitte Madrian, James Choi, and John Beshears (NBER)	2015-2017

FELLOWSHIPS, HONORS, AND AWARDS

NBER Retirement and Disability Research Center Fellow
 3 US economics Ph.D. candidates annually
 George and Obie Shultz Fund
 Awarded funding for original data collection
 Bradley Foundation Fellow
 1 MIT economics Ph.D. candidate annually
 MIT Presidential Fellow
 ~10% of MIT entering graduate students annually
 Phi Beta Kappa

RESEARCH PAPERS

“No-Fault Job Loss? Less Moral Hazard” (Job Market Paper)
 (with Geoffrey Schnorr)
 Unemployment insurance (UI) eligibility requires a claimant to have lost their job through no fault of their own. Approximately 10% of claims are deemed ineligible solely on these grounds. Using the systematic variation in approval leniency rates across UI claims examiners in California from 2002 to 2019, we show that receiving any UI benefits causes 2-9 additional weeks of nonemployment. By comparing the fiscal externality due to the marginal claimant's behavioral response with the mechanical transfer to approved claimants, we find that our context's extensive margin disincentive effect is lower than nearly every published disincentive effect estimate based on intensive margin variation in replacement rate and potential benefit duration. Heterogeneity analysis shows these effects are smallest for lower income claimants. We discuss implications for UI policy reforms depending on plausible values of consumption-smoothing benefits, administrative costs, and redistributive preferences.

“Skill Stability During Unemployment”
 (with Andrew Johnston and Attila Lindner)
 We document the evolution of earnings and skills for unemployed workers using a multi-year panel survey of newly unemployed German workers linked to administrative employment records. Both the reemployment hazard rate and reemployment earnings steadily fall with unemployment duration. Despite this, we find no decline in a wide range of cognitive and non-cognitive skills while workers remain unemployed. We replicate these patterns around unemployment onset for older workers in the United States using the Health and Retirement Survey. The results imply that skill depreciation is unlikely to be a major explanation for duration dependence.

RESEARCH IN PROGRESS

“Federal Government Pay Policies”
 (with Martina Uccioli)
 We scrape and digitize data on the usage on broad pay flexibility in the US federal government. Difference-in-differences analyses around either the introduction of broad location-based pay in the early 1990's or granular special pay rates for specific agency-location-occupation categories yields no effect on employee quits.

“Employment Effects of Unemployment Insurance: A Meta-Analysis”

(with Peter Ganong)

The empirical literature on unemployment insurance (UI) robustly finds significant effects of UI benefit generosity on unemployment duration. We systematically collect estimates and contextual factors from over 70 studies to generate a consensus estimate and document important drivers of heterogeneity.

“The Degree-Attainment and Labor-Market Effects of Reverse Transfer”

(with Aaron Goodman and Vod Vilfort)

We use linked administrative education and employment data from Colorado since 2010 to study the impact of reverse transfer, which allows students who did not complete a 4-year college degree to apply their credits towards a 2-year degree. Our selection on observables identification strategy leverages idiosyncratic variation in the transferability of courses across schools.

REFeree EXPERIENCE

AER: Insights (x4, 2021 Excellence in Refereeing Award)
Journal of Public Economics

VOLUNTEER SERVICE

Application Assistance and Mentoring matchmaker and mentor	2021-Present
Undergraduate research outreach coordinator	2018-Present
Cambridge Public Schools weekly math tutor	2021-Present
Graduate Economics Association	2018-2019
City of Boston Volunteer Income Tax Assistance financial guide	2016-2017
Project SOAR weekly mentor for middle school student	2014-2015

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DOCTORAL STUDIES Massachusetts Institute of Technology (MIT)
 PhD, Economics, Expected completion June 2023
 DISSERTATION: “*Essays in Macroeconomics and Mechanism Design*”

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Professor Stephen Morris
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PRIOR EDUCATION University of Cambridge (King’s College) 2017
 B.A. (Hons), Economics
Triple First-Class Honours, Ranked Joint First in Class

CITIZENSHIP British, Irish **GENDER** Male

FIELDS Primary Fields: Macroeconomics, Theory
 Secondary Fields: Finance

TEACHING EXPERIENCE	15.454 Fundamentals of Financial Mathematics (Graduate) Lecturer	2022
	15.454 Fundamentals of Financial Mathematics (Graduate) Teaching Assistant to Professor Kathryn Kaminski	2021
	14.452 Economic Growth (Graduate) Teaching Assistant to Professor Daron Acemoglu	2020
	14.05 Intermediate Macroeconomics (Undergraduate) Teaching Assistant to Professor George-Marios Angeletos	2020

MIT Economics

JOEL FLYNN

OCTOBER 2022-- PAGE 2

	15.454 Fundamentals of Financial Mathematics (Graduate)	2020
	Teaching Assistant to Professor Kathryn Kaminski	
	15.454 Fundamentals of Financial Mathematics (Graduate)	2019
	Teaching Assistant to Professor Kathryn Kaminski	
	15.470 Asset Pricing (Graduate)	2018
	Teaching Assistant to Professor Leonid Kogan and Professor Lawrence Schmidt	
RELEVANT POSITIONS	Research Assistant to Professor Daron Acemoglu	2019-21
	Research Assistant to Professor Alp Simsek	2020
	Research Assistant to Professor Robert Townsend	2018
	Research Assistant to Professor Chryssi Giannitsarou	2015
FELLOWSHIPS, HONORS, AND AWARDS	Gordon B. Pye Dissertation Fellowship, MIT	2021
	Shultz Fund Grant, MIT	2019
	Alumni Fellowship, MIT	2017
	Department of Economics Fellowship, MIT	2017
	Adam Smith Prize (Joint), University of Cambridge	2017
	Scholar of the College, King's College, University of Cambridge	2015-17
PROFESSIONAL ACTIVITIES	<u>Presentations</u>	
	2022: ETH-Zurich (Invited, Scheduled), The European Summer Meeting of the Econometric Society, The European Economic Association Annual Congress, The Australasia Meeting of the Econometric Society, The NBER Summer Institute (Behavioral Macroeconomics), The Society for Economic Dynamics Annual Meeting, The North American Summer Meeting of the Econometric Society	
	2021: The NBER Summer Institute (Impulse and Propagation Mechanisms), The European Winter Meeting of the Econometric Society	
	<u>Refereeing</u>	
	<i>American Economic Review: Insights, Mathematics of Operations Research, The Review of Economic Studies</i>	
PUBLICATIONS	“Priority Design in Centralized Matching Markets” (with Oguzhan Celebi)	
	<i>The Review of Economic Studies</i> , May 2022, 89(3): 1245-77.	
	<p>In many centralized matching markets, agents' property rights over objects are derived from a coarse transformation of an underlying score. Prominent examples include the distance-based system employed by Boston Public Schools, where students who lived within a certain radius of each school were prioritized over all others, and the income-based system used in New York public housing allocation, where eligibility is determined by a sharp income cutoff. Motivated by this, we study how to optimally coarsen an underlying score. Our main result is that, for any continuous objective function and under stable matching mechanisms, the optimal design can be attained by splitting agents into at most three indifference classes for each object. We provide</p>	

insights into this design problem in three applications: distance-based scores in Boston Public Schools, test-based scores for Chicago exam schools, and income-based scores in New York public housing allocation.

“Robust Comparative Statics for the Elasticity of Intertemporal Substitution” (with Lawrence D.W. Schmidt and Alexis Akira Toda)
Theoretical Economics, Forthcoming.

We study a general class of consumption-savings problems with recursive preferences. We characterize the sign of the consumption response to arbitrary shocks in terms of the product of two sufficient statistics: the elasticity of intertemporal substitution between contemporaneous consumption and continuation utility (EIS), and the relative elasticity of the marginal value of wealth (REMV). Under homotheticity, the REMV always equals one, so the propensity of the agent to save or dis-save is always signed by the relationship of the EIS with unity. We apply our results to derive comparative statics in classical problems of portfolio allocation, consumption-savings with income risk, and entrepreneurial investment. Our results suggest empirical identification strategies for both the value of the EIS and its relationship with unity.

RESEARCH PAPERS

“The Macroeconomics of Narratives” (Job Market Paper)
(with Karthik A. Sastry)

We study the macroeconomic implications of viral, belief-altering narratives. Empirically, we use natural-language-processing methods to measure narratives in the text of all US public firms' end-of-year reports (Forms 10-K). We find that: (i) firms' hiring decisions respond strongly to narratives, (ii) narratives spread virally among firms, and (iii) this spread is responsive to macroeconomic conditions. To understand the macroeconomic implications of these forces, we embed viral narratives in a Neoclassical business-cycle model. We characterize, in terms of the decision-relevance and virality of narratives, when the unique equilibrium features: (i) non-fundamentally driven business-cycle fluctuations, (ii) multiple, self-fulfilling steady states (hysteresis), and (iii) the coexistence of hump-shaped responses to small shocks with regime-shifting behavior in response to large shocks. Conditional on calibrating standard preference and technological parameters, our empirical estimates identify both the static, general equilibrium effect of narratives on output and their dynamics. Statically, we find that aggregate fluctuations in narratives account for approximately 32% of the output reduction during the Early 2000s Recession and 18% during the Great Recession. Dynamically, we reject the possibility of narratively driven hysteresis for most, but not all, narratives.

“Nonlinear Pricing with Under-Utilization: A Theory of Multi-Part Tariffs”

(with Roberto Corrao and Karthik A. Sastry)

Revise and Resubmit, American Economic Review

We study the nonlinear pricing of goods whose usage generates revenue for the seller and of which buyers can freely dispose. The optimal price schedule is a multi-part tariff, featuring tiers within which buyers pay a marginal price of zero. We apply our model to digital goods, for which advertising, data generation, and network effects make usage valuable, but monitoring legitimate usage is infeasible. Our results rationalize common pricing schemes including free products, free trials, and unlimited subscriptions. The possibility of free disposal harms producer and consumer welfare and makes both less sensitive to changes in usage-based revenue and demand.

“Strategic Mistakes”

(with Karthik A. Sastry)

Revise and Resubmit, Journal of Economic Theory

To study the equilibrium implications of imperfect optimization, we introduce a model of costly control in continuum-player games in which agents interact via an aggregate of the actions of others. We find primitive conditions such that equilibria exist, are unique, are efficient, and feature monotone comparative statics for action distributions, aggregates, and the size of agents' mistakes. We use our results to provide robust equilibrium predictions in a class of generalized beauty contests, which we apply to study the implications of imperfect optimization for financial speculation, price-setting, and the business cycle. We contrast our model with the mutual information model (Sims, 2003), which in the same games can produce non-unique predictions and non-monotone comparative statics.

“Attention Cycles”

(with Karthik A. Sastry)

We document that, in aggregate downturns, US public firms' attention to macroeconomic conditions rises and the size of their input-choice mistakes falls. We explain these phenomena with a business-cycle model in which firms face a cognitive cost of making precise decisions. Because firms are owned by risk-averse households, there are greater incentives to deliver profits by making smaller input-choice mistakes when aggregate consumption is low. In the data, consistent with our model, financial markets punish mistakes more in downturns and macroeconomically attentive firms make smaller mistakes. Quantitatively, attention cycles generate asymmetric, state-dependent shock propagation and stochastic volatility of output growth.

“Fiscal Policy in a Networked Economy” (with Christina Patterson and John Sturm)

Advanced economies feature complicated networks that connect households, firms, and regions. How do these structures affect the impact of fiscal policy and its optimal targeting? We study these questions in a model with input-output linkages, regional structure, and household heterogeneity in MPCs, consumption baskets, and shock exposures. Theoretically, we derive estimable formulae for the effects of fiscal policies on aggregate GDP, or fiscal multipliers, and show how network structures determine their size. Empirically, we find that multipliers vary substantially across policies, so targeting is important. Beneath these aggregate effects are large spatial and sectoral spillovers from policies directed to any one firm or household. However, virtually all variation in multipliers stems from differences in policies' direct incidence onto households' MPCs. Thus, while the distributional effects of fiscal policy depend on the detailed structure of the economy, maximally expansionary fiscal policy simply targets households' MPCs.

“Adaptive Priority Mechanisms” (with Oguzhan Celebi)

How should authorities that care about match quality and diversity allocate resources when they are uncertain of the market they face? Such a question appears in many contexts, including the allocation of school seats to students from various socioeconomic groups with differing exam scores. We propose a new class of adaptive priority mechanisms (APM) that prioritize agents as a function of both scores that reflect match quality and the number of assigned agents with the same socioeconomic characteristics. When there is a single authority and preferences over scores and diversity are separable, we derive an APM that is optimal, generates a unique outcome, and can be specified solely in terms of the preferences of the authority. By contrast, the ubiquitous priority and quota mechanisms are optimal if and only if the authority is risk-neutral or extremely risk-averse over diversity, respectively. When there are many authorities, it is dominant for each of them to use the optimal APM, and each so doing implements the unique stable matching. However, this is generally inefficient for the authorities. A centralized allocation mechanism that first uses an aggregate APM and then implements authority-specific quotas restores efficiency. Using data from Chicago Public Schools, we estimate that the gains from adopting APM are considerable.

“Dynamic Unravelling”

This paper studies price and liquidity dynamics in the presence of costly short-selling when uninformed traders have limited willingness-to-pay to trade securities. In this setting, the combination of unravelling (Akerlof, 1970) and Bayesian social learning interact to produce a novel mechanism, dynamic unravelling: unravelling that generates signals that lead to future unravelling.

Applying the theory, I show how dynamic unravelling provides an explanation for low volume crashes: falls in the prices of securities on low or declining trading volume. In this context, short-selling restrictions can make low volume crashes more likely by intensifying dynamic unravelling but liquidity injections have the opposite effect.

RESEARCH IN PROGRESS

“Nonlinear Beauty Contests” (with Roberto Corrao)

“Structural Change and Labor Market Dynamics” (with Daron Acemoglu)

“Causal Models, Complexity, and Equilibrium” (with Karthik A. Sastry)

“Holding Up Private Investment” (with Roberto Corrao and Karthik A. Sastry)

“Nonlinear Pricing with Partial Contractibility” (with Roberto Corrao and Karthik A. Sastry)

“Import Risk and Directed Innovation” (with Antoine Levy and Jacob Moscona)

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DOCTORAL STUDIES Massachusetts Institute of Technology (MIT)
 PhD, Economics, 2017-2023
 DISSERTATION: "Essays in Economic Theory"

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PRIOR EDUCATION Bocconi University:
 Bachelor of Science, *summa cum laude* 2014
 Master of Science, *summa cum laude* 2016

CITIZENSHIP Italian **GENDER:** Male

LANGUAGES Italian, English, Spanish

FIELDS Primary Fields: Theory
 Secondary Fields: Behavioral, Networks

TEACHING EXPERIENCE	Graduate Topics in Game Theory	2019-22
	Teaching Assistant to Professor Drew Fudenberg	
	Undergraduate Economic Applications of Game Theory	2020
	Teaching Assistant to Professor Muhamet Yildiz	
FELLOWSHIPS AND AWARDS	Decision Analysis Society Best Student Paper Award	
	Guido Cazzavillan Ph.D. Fellowship, full-tuition and stipend scholarship	
	Bocconi Merit Awards, full-tuition scholarship	
PROFESSIONAL ACTIVITIES	<u>Refereeing:</u>	
	<i>American Economic Review, Quarterly Journal of Economics, Review of Economic Studies, American Economic Review: Insights, Theoretical Economics, Journal of Economic Theory, Mathematics of Operations Research, Management Science, Games and Economic Behavior, Economic Theory, Mathematical Social Sciences, European Journal of Operational Research</i>	
	<u>Presentations:</u>	
	2022: Barcelona School of Economics Summer Forum, Advances in Decision Analysis, Risk Uncertainty and Decision, D-Tea,	
	2021: Asian Summer Meeting of the Econometric Society, D-Tea,	
	2020: World Congress of the Econometric Society, Congress of the European Economic Association,	
	2019: Summer Institute of Theoretical Economics (Stanford), Workshop on the Cognitive Foundations of Economic Behavior (NYU, Invited), Advances in Decision Analysis, Bayesian Crowd Conference, Workshop on Attention and Choice (University of Zurich), EAYE workshop on Social Networks (Paris School of Economics), European Winter Meeting of the Econometrics Society	
	2018: North American Summer Meeting of the Econometric Society, European Summer Meeting of the Econometric Society	
PUBLICATIONS	“Correlation Made Simple: Applications to Salience and Regret Theory”	
	<i>Quarterly Journal of Economics</i> , 2022	
	“Limit Points of Endogenous Misspecified Learning” (with D. Fudenberg and P. Strack), <i>Econometrica</i> , 2021	
	“Which Misspecifications Persist?” (with D. Fudenberg), <i>Theoretical Economics</i> , Forthcoming	
	“Learning and Self-confirming Long-Run Biases” (with P. Battigalli, A. Francetich, and M. Marinacci), <i>Journal of Economic Theory</i> , 2019	
	“Ambiguity Attitudes and Self-Confirming Equilibrium in Sequential Games” (with P. Battigalli, E. Catonini, and M. Marinacci), <i>Games and Economic Behavior</i> , 2019	

RESEARCH PAPERS

“Dynamic Concern for Misspecification” (Job Market Paper)

Decision Analysis Society Best Student Paper Award

We consider an agent who posits a set of probabilistic models for the payoff relevant outcomes. The agent has a prior over this set but fears the actual model is omitted and hedges against this possibility. The concern for misspecification is endogenous: If a model explains the previous observations well, the concern attenuates. We show that different preferences under uncertainty can arise in the long run, depending on how quickly the agent becomes unsatisfied with unexplained evidence and whether they are misspecified. The misspecification concern's endogeneity naturally induces behavior cycles, and we characterize the limit action frequency. This model rationalizes the empirical evidence on monetary policy cycles and labor supply choices in the face of complex tax schedules. Finally, we axiomatize in terms of observable choices this decision criterion and how quickly the agent adjusts their misspecification concern.

“Dynamic Opinion Aggregation: Long-run Stability and Disagreement”

(with S. Cerreia-Vioglio and R. Corrao)

Revise and Resubmit at the Review of Economic Studies

This paper proposes a model of non-Bayesian social learning in networks that accounts for heuristics and biases in opinion aggregation. The updating rules are represented by nonlinear opinion aggregators from which we extract two extreme networks capturing strong and weak links. We provide graph-theoretic conditions on these networks that characterize opinions' convergence, consensus formation, and efficient or biased information aggregation. Under these updating rules, agents may ignore some of their neighbors' opinions, reducing the number of effective connections and inducing long-run disagreement for finite populations. For the wisdom of the crowd in large populations, we highlight a trade-off between how connected the society is and the nonlinearity of the opinion aggregator. Our framework bridges several models in the social learning literature, thereby providing a unifying approach to the field.

“Pathwise Concentration Bounds for Bayesian Beliefs,”

(with D. Fudenberg and P. Strack)

Revise and Resubmit at Theoretical Economics

We show that the probability that Bayesian posteriors assign to the outcome distributions that do not “best fit” the empirical distribution in terms of Kullback-Leibler divergence converges to zero at a uniform and exponential rate, even when the prior does not have full support. This extends the uniform convergence result of Diaconis and Freedman (1990), which assumes a full support prior, and lets us provide a rate of convergence for Berk (1966)'s result that the posterior concentrates around the Kullback-Leibler minimizers with respect to the true data generating process. Our analysis bounds the error in the “anticipated-utility” models used in macroeconomics. We also extend our analysis to the case where outcomes are perceived to have a Markov structure.

“(Un-)Common Preferences, Ambiguity, and Coordination”

(with S. Cerreia-Vioglio and R. Corrao)

We study the "common prior" assumption and its implications when agents have preferences beyond SEU. We consider interim preferences consistent with the same ex-ante evaluation and characterize the latter in terms of higher-order expectations. Agents are mutually dynamic consistent with the same ex-ante evaluation if and only if all the higher-order expectations limits coincide, extending beyond SEU the characterization of the common prior in Samet (1998). We characterize the equilibrium prices in financial beauty contests in terms of the agents' information, coordination motives, and attitudes toward uncertainty. Differently from the SEU case, the limit price does not coincide in general with the common ex-ante expectation. Moreover, when the agents share the same benchmark probabilistic model, high-coordination motives eliminate their concern for misspecification in equilibrium, exposing them to a divergence between the market price and the fundamental value of the security.

“Selective Memory Equilibrium”

(with D. Fudenberg and P. Strack)

We study agents who are more likely to remember some experiences than others, but update beliefs as if the experiences they remember are the only ones that occurred. If the agent's behavior converges, their limit strategy is a selective memory equilibrium. We illustrate how selective memory equilibrium can be used to understand the long-run effects of several well-documented memory biases, such as ego-boosting bias, associativeness, interference, and extreme experience bias. We then extend our analysis to cases where the expected number of recalled experiences is bounded and experiences that are recalled once are more likely to be recalled again. Here the frequency of recalled experiences does not converge, but we characterize the long-run action frequencies that can arise.

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CURRENT POSITION	Prize Fellow in Economics, History, and Politics, Harvard University Postdoctoral Fellow at J-PAL, MIT	2021-
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DOCTORAL STUDIES	Massachusetts Institute of Technology (MIT) PhD, Economics, September 2021 DISSERTATION: "Technological Change and Agricultural Development"
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PRIOR EDUCATION	Harvard College A.B. in Economics with a Secondary Field in Mathematics	2016
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CITIZENSHIP:	USA	GENDER:	Male
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LANGUAGES	English, Spanish, Portuguese (intermediate)
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FIELDS	Primary Fields: Development, Environmental, Political Economy Secondary Fields: Innovation, Economic Growth
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TEACHING EXPERIENCE	Development Economics: Macro (graduate, MIT course 14.772) Teaching Assistant to R. Townsend, B. Olken, and A. Banerjee	2020
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MIT Economics

JACOB MOSCONA

OCTOBER 2022-- PAGE 2

RELEVANT POSITIONS	Research Assistant to Daron Acemoglu	2018-2019
FELLOWSHIPS,	Hausman Dissertation Fellowship, MIT	2020
HONORS, AND	George and Obie Shultz Fund Grant (x4), MIT	2018-2019
AWARDS	Kenneth & Doreen Wang (1971) Fellowship, MIT	2017
	John Krob Castle Fellowship, MIT	2016
	Thomas T. Hoopes Prize, Harvard	2016
	Phi Beta Kappa, Harvard	2016
	Lawrence Lader Prize in Writing, Harvard	2013
PROFESSIONAL ACTIVITIES	Referee: <i>American Economic Journal: Applied Economics, American Economic Review, American Economic Review: Insights, American Journal of Political Science, Climate Policy, Econometrica, Economic Journal, Journal of the Association of Environmental and Resource Economists, Journal of Development Economics, Journal of Economic Growth, Journal of Political Economy, PNAS, Review of Economics and Statistics, Review of Economic Studies, Quarterly Journal of Economics</i>	
	Conference Presentations: ASSA Annual Meeting (2023 scheduled); Twelfth Annual Conference of the Julis-Rabinowitz Center for Public Finance at Princeton (2023 scheduled), Columbia-NYU Trade Day (2022 scheduled); WIDER Development Conference in Bogota (2022); European Meeting of the Econometric Society (2022); NBER Summer Institute, Environmental and Energy Economics (2022); NBER Summer Institute, Macroeconomics and Productivity (2022); NBER Summer Institute, Development of the American Economy (2022); Brown Conference on the Roots of Comparative Development (2022); BREAD Development Conference at Northwestern (2022); RIDGE Forum, Towards Sustainable Growth (2021); NEUDC (2021); CEPR/LEAP Workshop in Development Economics (2021); NBER Development Economics/BREAD Fall Program Meeting (2021); European Economics Association/Econometric Society Congress (2021); NBER Summer Institute, Environmental and Energy Economics (2021); NBER Summer Institute, Innovation (2021); UC Berkeley Advanced Climate Economics Workshop (2020); Association for Psychological Science Annual Convention (2019); NEUDC (2017)	
	Invited Seminar Presentations: Cornell (2023 scheduled); Stanford (2022 scheduled); NYU (2022); Harvard (2022); University of Southern California (2022); UC Berkeley Economics (2022 x2); UC Berkeley Haas School of Business (2022); UC San Diego (2022); Penn State University (2022); IIES Stockholm (2022); Stockholm School of Economics (2022); University of British Columbia (2021); University of Hawaii (2021)	
PUBLICATIONS	Does Directed Innovation Mitigate Climate Damage? Evidence from US Agriculture ” (with Karthik Sastry), Forthcoming, <i>Quarterly Journal of Economics</i> This paper studies how innovation reacts to climate change and shapes its economic impacts, focusing on US agriculture. We show in a model that directed innovation can	

either mitigate or exacerbate climate change's potential economic damage depending on the substitutability between new technology and favorable climatic conditions. To empirically investigate the technological response to climate change, we measure crop-specific exposure to damaging extreme temperatures and crop-specific innovation embodied in new variety releases and patents. We find that innovation has re-directed since the mid 20th century toward crops with increasing exposure to extreme temperatures. Moreover, this effect is driven by types of agricultural technology most related to environmental adaptation. We next show that US counties' exposure to induced innovation significantly dampens the local economic damage from extreme temperatures. Combining these estimates with the model, we find that directed innovation has offset 20% of potential losses in US agricultural land value due to damaging climate trends since 1960, and that innovation could offset 13% of projected damage by 2100. These findings highlight the vital importance, but incomplete effectiveness, of endogenous technological change as a source of adaptation to climate change.

“Segmentary Lineage Organization and Conflict in Sub-Saharan Africa” (with Nathan Nunn and James A. Robinson), *Econometrica*, 88(5): 1999-2036.

We test the longstanding hypothesis that ethnic groups organized around “segmentary lineages” are more prone to conflict. Ethnographic accounts suggest that in such societies, which are characterized by strong allegiances to distant relatives, individuals are obligated to come to the aid of fellow lineage members when they become involved in conflicts. As a consequence, small disagreements often escalate into larger-scale conflicts involving many individuals. We test for a link between segmentary lineage organization and conflict across ethnic groups in sub-Saharan Africa. Using a number of estimation strategies, including a regression discontinuity design at ethnic boundaries, we find that segmentary lineage societies experience more conflicts, and particularly ones that are retaliatory, long in duration, and large in scale.

“Keeping it in the Family: Lineage Organization and the Scope of Trust in Sub-Saharan Africa.” (with Nathan Nunn and James A. Robinson), *American Economic Review: Papers and Proceedings* 107(5): 565-571.

We present evidence that the traditional structure of society is an important determinant of the scope of trust today. Within Africa, individuals belonging to ethnic groups that organized society using segmentary lineages exhibit a more limited scope of trust, measured by the gap between trust in relatives and trust in non-relatives. This trust gap arises because of lower levels of trust in non-relatives and not higher levels of trust in relatives. A causal interpretation of these correlations is supported by the fact that the effects are primarily found in rural areas where these forms of organization are still prevalent.

“State Capacity and American Technology: Evidence from the 19th Century” (with Daron Acemoglu and James A. Robinson), *American Economic Review: Papers and Proceedings* 106(5): 61-67.

Robert Gordon's *The Rise and Fall of American Economic Growth* provides a compelling interpretation of how technical change and innovation has radically changed the living standards of the citizens of the US in the past 150 years. Lying behind these changes are the institutions which have allowed the country to harness its human potential. In this paper we conduct an empirical investigation of the impact of one key set of institutions, the capacity of the US state as proxied by the presence of post offices in a county, on innovation. We show that between 1804 and 1899, the time when the US became the world technological leader, there is a strong association between the presence and number of post offices in a county and patenting activity, and it appears that it is the opening of postal offices that leads to surges in patenting activity, not the other way around. Our evidence suggests that part of the yet untold story of US technological exceptionalism is the way in which the US created an immensely capable and effective state.

RESEARCH PAPERS

“Inappropriate Technology: Evidence from Global Agriculture” (Job Market Paper) (with Karthik Sastry)

An influential explanation for global productivity differences is that frontier technologies are adapted to the high-income, research-intensive countries that develop them and “inappropriate” elsewhere. We study this hypothesis in the context of global agriculture by using mismatch in the presence of crop-specific pests and pathogens (CPPs) as a shifter of technology's inappropriateness and investigating its effect on global innovation, technology diffusion and productivity. We find that (i) technology development is biased toward CPP threats in high-income countries; (ii) CPP mismatch reduces plant-variety transfer at the crop-by-country-pair level, particularly from innovation-intensive origins; and (iii) CPP mismatch with innovation-intensive countries reduces crop production, both statically in the modern cross-section and dynamically in response to historical events that have altered the geography of agricultural innovation. Our estimates, combined with a model, imply that the inappropriateness of technology reduces global productivity by 58% and increases cross-country disparities by 15%. We use our framework to explore how global productivity gaps would be affected by counterfactual changes to both the geography of innovation, for example from the rise of R&D in emerging markets, and environmental differences across countries, for example due to climate change. Together, these findings provide support for each pillar of the inappropriate technology hypothesis and demonstrate how the endogenous direction of innovation underlies disparities in global agricultural productivity.

“Age Set vs. Kin: Culture and Financial Ties in East Africa” (with Awa Ambra Seck), Revise and Resubmit, *American Economic Review*

We study how social organization shapes patterns of economic interaction and the effects of national policy, focusing on the distinction between age-based and kin-based groups in sub-Saharan Africa. Motivated by ethnographic accounts suggesting that this distinction affects redistribution, we analyze a cash transfer program in Kenya and find that in age-based societies there are consumption spillovers within the age cohort, but not the extended family, while in kin-based societies we find the opposite. Next, we document that social structure shapes the impact of policy by

showing that Uganda's pension program had positive effects on child nutrition only in kin-based societies.

“The Management of Aid and Conflict in Africa,” Revise and Resubmit,
American Economic Journal: Economic Policy

This study investigates the relationship between the management of development aid and violent conflict in Africa. I exploit variation in World Bank project management quality driven by the assignment of project leaders of varying capacity, combined with geo-coded data on lending and project performance scores. I find that better project management reduces violent conflict across sub-national aid receiving regions. Poorly-managed projects increase conflict while well-managed projects do the opposite. Project monitoring is particularly important and management matters most in regions with a recent history of warfare. The results suggest that the quality of aid implementation affects patterns of conflict.

“Environmental Catastrophe and the Direction of Invention: Evidence from the American Dust Bowl”

This paper investigates how innovation responded to and shaped the economic impact of the American Dust Bowl, an environmental catastrophe that led to widespread soil erosion on the US Plains during the 1930s. Combining data on county-level erosion, the historical geography of crop production, and crop-specific innovation, I document that in the wake of the environmental crisis, agricultural technology development was strongly re-directed toward more Dust Bowl-exposed crops and, within crops, toward bio-chemical and planting technologies that could directly mitigate economic losses from environmental distress. County-level exposure to Dust Bowl-induced innovation significantly dampened the effect of land erosion on agricultural land values and revenue. These results highlight the role of crises in shaping the direction of innovation and the importance of endogenous technological progress as an adaptive force in the face of disasters.

“Flowers of Invention: Patent Protection and Productivity Growth in US Agriculture”

Patent protection was introduced for plant biotechnology in the United States in 1985, and it affected crops differentially depending on their reproductive structures. Exploiting this unique feature of plant physiology and a new dataset of crop-specific technology development, I find that the introduction of patent rights increased the development of novel plant varieties in affected crops. Technology development was driven by a rapid increase in private sector investment, was accompanied by positive spillover effects on innovation in certain non-biological agricultural technologies and led to an increase in crop yields. Patent rights, however, could come with potentially significant costs to the consumers of technology and distortions to downstream production. Nevertheless, I document that in US counties that were more exposed to the change in patent law because of their crop composition, land values and profits increased. Taken together, the results suggest that the prospect of patent protection spurred technological progress and increased downstream productivity and profits.

“Agricultural Development and Structural Change, Within and Across Countries”

This study exploits rapid technological development during the Green Revolution (1960-1990) to estimate the causal effect of agricultural productivity growth on structural change both within and across countries. I use variation in ecological characteristics that determined the maximum potential impact of new crop-specific technologies on agricultural productivity to construct an instrument for agricultural productivity growth. Across districts in India, agricultural productivity growth spurred income growth, employment, and land use in the agricultural sector; it also reduced urban development and manufacturing employment. Across countries, agricultural productivity increased specialization in agricultural production and reduced urbanization. I find no evidence that agricultural productivity growth increased national income on average. Estimated effects are most pronounced for districts and countries that were more open to trade in 1960 and had a negative impact on income in countries that were most open.

“Specializing in Cities: Density and the Pattern of Trade” (with Antoine Levy)

Variation in urban density is a core determinant of patterns of productivity within countries, but does it also shape patterns of trade across countries? We develop a strategy to estimate the extent to which local population density boosts productivity in each industry. Combining these industry-level estimates with fine-grained global population data, we show that both US states and countries with more spatially concentrated (“denser”) populations disproportionately export in density-loving sectors. The estimates are similar using an instrumental variables strategy that exploits countries' historical population distributions, and they are driven by variation across sectors in the importance of R&D and collaborative/interactive tasks in production. We rationalize these findings with a model in which national export specialization emerges endogenously from the distribution of factors within countries and show how location-level data can be aggregated to measure country-level specialization and derive our empirical regression equations.

RESEARCH IN PROGRESS

“Rich-World Bias in Global Biomedical Innovation” (with Daron Acemoglu, Karthik Sastry, and Heidi Williams)

“The Direction of Biomedical Research, in Principle and in Practice” (with Daron Acemoglu, Karthik Sastry, and Heidi Williams)

“Import Risk and Directed Innovation” (with Joel Flynn and Antoine Levy)

“The Globalization of Silicon Valley: The Dynamics of Start-Up Diffusion” (with Josh Lerner and David Yang)

“Temperature Shocks and Innovation” (with Ben Jones and Ben Olken)

“Global Warming and the Siesta Effect: Temperature Shocks and the Shifting Time of Work” (with Ben Olken)

“Markets, Morals, and Mores: Constructing a New Ethnographic Database for Africa” (with Awa Ambra Seck, Sara Lowes, and Nathan Nunn)

“Labor Coercion, Wages, and Technology” (with Daron Acemoglu)

MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics, Expected completion June 2023
DISSERTATION: “Essays on Long-Term Relationships and Networks”

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PRIOR EDUCATION

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Bachelor of Economics, *First Class Honors*

2016

CITIZENSHIP

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GENDER:

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LANGUAGES

Vietnamese (native), English (fluent)

FIELDS

Primary Fields: Industrial Organization

Secondary Fields: Theory, Organizational Economics

TEACHING EXPERIENCE	14.18 Mathematical Economic Modeling (MIT, undergraduate)	2021
	Teaching Assistant to Professor Muhamet Yildiz	
	14.281 Contract Economics (MIT, graduate)	2020
	Teaching Assistant to Professor Stephen Morris	
	14.19 Market Design (MIT, undergraduate)	2020
	Teaching Assistant to Professor Nicolas Lambert	
	14.281 Contract Economics (MIT, graduate)	2019
	Teaching Assistant to Professor Stephen Morris	
	ECON3010 Advanced Microeconomics (UQ, undergraduate)	2016
	Teaching Assistant to Professor Jeffrey Kline	
RELEVANT POSITIONS	Research Assistant to Professor Tobias Salz	2019-20
	Research Assistant to Professors KK Tang and Alicia Rambaldi	2015
FELLOWSHIPS, HONORS, AND AWARDS	Jerry A. Hausman Graduate Dissertation Fellowship, MIT	2021
	George and Obie Shultz Fund, MIT	2020
	Emma Krob Castle Graduate Fellowship, MIT	2017-18
	University Medal, UQ	2016
	Best Honors Thesis in Economics, UQ	2016
	Vietnam Scholarship (full tuition), UQ	2013-15
PROFESSIONAL ACTIVITIES	Presentations: 2021 European Summer Meeting of the Econometric Society	
RESEARCH PAPERS	“Long-Term Relationships and the Spot Market: Evidence from US Trucking” (Job Market Paper)	
	(with Adam Harris)	
	<p>Long-term informal relationships play an important role in the economy, capitalizing on match-specific efficiency gains and mitigating incentive problems. However, the prevalence of long-term relationships can also lead to thinner, less efficient spot markets. We develop an empirical framework to quantify the market-level tradeoff between long-term relationships and the spot market. We apply this framework to an economically important setting—the US truckload freight industry—exploiting detailed transaction-level data for estimation. At the relationship level, we find that long-term relationships have large intrinsic benefits over spot transactions. At the market level, we find a strong link between the thickness and efficiency of the spot market. Overall, the current institution performs fairly well against our first-best benchmarks, achieving 44% of the relationship-level first-best surplus and even more of the market-level first-best surplus. The findings motivate two counterfactuals: (i) a centralized spot market for optimal spot market efficiency and (ii) index pricing for optimal gains from individual long-term relationships. The former results in substantial welfare loss, and the latter leads to welfare gains during periods of high demand.</p>	

“Long-Term Relationships in the US Truckload Freight Industry”

(with Adam Harris)

Revise and Resubmit – AEJ: Microeconomics

This paper provides evidence on relational contracting in the US truckload freight industry. In this setting, shippers and carriers engage in repeated interactions under contracts that fix prices but leave scope for inefficient opportunism. We describe empirically the strategies of shippers and the responses of carriers. We show that shippers use the threat of relationship termination to deter carriers from short-term opportunism. Carriers respond to the resultant dynamic incentives, behaving more cooperatively when their potential future rents are higher. While shippers and carriers often interact on multiple lanes, we show that separate relational contracts appear to govern transactions on each lane.

“Empiricist Learning Rules on Social Networks: Convergence and Quality of Information Aggregation”

This paper proposes a novel learning model on social networks that captures settings where individuals interact frequently on multiple, relatively short-lived topics. In this model, each period features a new draw of nature and multiple rounds in which information arrives, gets aggregated, and diffuses through network links. The repetitive nature of interactions across periods allows for a separation between learning about the environment and aggregating information about the current state. A class of empiricist learning rules achieve convergence of learning on all networks. On clique trees, these learning rules further achieve strong efficiency in information aggregation. The paper also presents a converse to the positive efficiency result and identifies distinct reasons why efficiency is hard to obtain in general circumstances, even though convergence of learning holds generally.

RESEARCH IN PROGRESS

“Product Variety and Search Frictions in Online Markets”

(with José Ignacio Cuesta, Adam Rosenberg and Tobias Salz)

Platforms (e.g., Etsy, Airbnb, and eBay) play an important role in aggregating information about heterogeneous products, which helps them make better matches between consumers and products. However, the gains from increasing product variety on such platforms could be limited by search frictions. On the intensive margin, search frictions affect which products are considered by platform participants. On the extensive margin, search frictions affect the decision to participate. This project seeks to quantify the gains from product variety and the role of search frictions on online platforms on both the intensive and extensive margins. We obtain a detailed data set of dealers' search and bidding behaviors on an online platform that auctions used cars. In the middle of our sample period, the platform increases the homogeneity in product variety across auction batches. We will exploit this change in two ways: First, variation in product variety before this homogenization helps us quantify the effects of

product variety on search behaviors and matching outcomes. Second, variation in platform participation before and after this homogenization reflects the change in potential participants' expectations of product variety.

“Relaxing the Liquidity Constraints of Bidders: An Experiment on Dealer Loans”

(with José Ignacio Cuesta and Tobias Salz)

There is little empirical evidence on the effects of extending credit on competition. This project studies the effects of a small-scaled randomized loan program for used car dealers on a platform auctioning used cars. In this context, relaxing liquidity constraints allows low-credit but high-value bidders to win (efficiency effect) and increases the price paid by the auction winner (competition effect). We find early evidence suggesting that dealers are financially constrained and that the platform may benefit from lifting these constraints.

“Interoperability and Competition in Electronic Health Records”

(with Rebekah Dix and Kelsey Moran)

While the adoption of electronic health record (EHR) systems by hospitals in the US is very high, interoperability—the ability to easily share patient data between different EHR systems—is quite low. Moreover, the market for EHR systems has become increasingly concentrated over time. In this project, we examine the role of vendor competition in within- and across-system interoperability. We ask: do hospitals value interoperability, and, if so, do large vendors strategically choose low across-system interoperability in an attempt to protect their market shares? We will use state-level data on hospitals' finances as well as AHA and CMS data on hospitals' EHR choices and referral patterns to estimate our model. We will then conduct counterfactuals to examine the effect of interoperability regulation on hospital EHR vendor adoption decisions, EHR prices, and EHR functionalities.

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DOCTORAL STUDIES Massachusetts Institute of Technology (MIT)
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 DISSERTATION: "The Economics of Environmental and Health Risk"

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PRIOR EDUCATION Massachusetts Institute of Technology 2016
 Bachelor of Science, Mathematics

CITIZENSHIP: United States of America **GENDER:** Female

FIELDS Primary Fields: Public Finance, Environmental Economics

TEACHING EXPERIENCE Data Analysis for Social Scientists (14.310x) 2022
 Teaching Assistant to Dr. Karene Chu

RELEVANT POSITIONS Research assistant to Prof. Amy Finkelstein 2016-2018
 Undergraduate research assistant to Prof. Nikhil Agarwal 2015-2016
 Research analyst intern, The Brattle Group 2015

MIT Economics

ABIGAIL OSTRICKER

OCTOBER 2022-- PAGE 2

FELLOWSHIPS, HONORS, AND AWARDS	Hausman Dissertation Fellow, MIT	2021
	Young Researcher Seed Grant (\$15,000), MIT	2021
	C. Lowell Harriss Dissertation Fellowship (\$10,000), Lincoln Institute Department of Valuation and Taxation	2020
	Graduate Research Fellowship, National Science Foundation	2020
	Carl (1976) Shapiro Fellow, MIT	2019
	Honorable Mention, Graduate Research Fellowship, National Science Foundation	2018
	Phi Beta Kappa	2016
PROFESSIONAL ACTIVITIES	Referee: American Economic Review: Insights	
PUBLICATIONS	“Screening and Selection: The Case of Mammograms” (with L. Einav, A. Finkelstein, T. Oostrom and H. Williams) <i>American Economic Review</i> , December 2020.	
	We analyze selection into screening in the context of recommendations that breast cancer screening start at age 40. Combining medical claims with a clinical oncology model, we document that compliers with the recommendation are less likely to have cancer than younger women who select into screening or women who never screen. We show this selection is quantitatively important: shifting the recommendation from age 40 to 45 results in three times as many deaths if compliers were randomly selected than under the estimated patterns of selection. The results highlight the importance of considering characteristics of compliers when making and designing recommendations.	
RESEARCH PAPERS	“The Effects of Floodplain Regulations on Housing Markets” (Job Market Paper) (with A. Russo)	
	We investigate the effects of housing regulations designed to correct a wedge between privately- and socially-optimal construction in areas at risk of flooding in Florida. Using a spatial regression discontinuity around regulatory boundaries and an event study around the policy's introduction, we document that floodplain regulation reduces new construction in high-risk areas and increases the share of newly-built houses that are elevated. Embedding these effects in a model of residential choices with elastic housing supply, we find that the policy reduces expected flood damages by 29%. One-third of this reduction is driven by relocation of new construction to lower-risk areas, and two-thirds is driven by adaptation of houses remaining in risky areas. However, this second-best policy does not improve welfare: it overcorrects the market frictions, inducing more consumers to move away from high-risk areas than is socially-optimal.	
RESEARCH IN PROGRESS	“Ex-Ante Moral Hazard in Wildfire Insurance” (with A. Russo)	
	We study whether home insurance coverage increases wildfire risk in California. We have leveraged quasi-random variation in insurance premiums to provide an instrument for insurance coverage. In ongoing work, we are exploring the impact of insurance on wildfire risk. Thinning vegetation reduces wildfire risk, but until recently, insurers have been unable to contract on this behavior, potentially leading to moral	

hazard. We will use computer vision algorithms to extract vegetation extent from high-resolution satellite data, and we will combine this with building footprint data to measure risk mitigation activity.

“Weathering Shocks: The Case of Energy Bills”

I study the income risk imposed on low-income households by extreme weather events which trigger spikes in energy bills. With aggregated grocery store spending data, I find that cold snaps induce low-income households to disproportionately substitute towards home cooking. Using proprietary, anonymized administrative financial transactions data, I will be able to isolate the causal effect of larger energy bills by interacting extreme weather events with quasi-random spatial, temporal, and technological variation in energy costs. I will also be able to measure the impact of changes in energy bills on outcomes such as restaurant spending, appliance purchases, prescription drug spending, and hospital visits.

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DISSERTATION: “*Essays in Behavioral and Theoretical Economics*”

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PRIOR EDUCATION	Stanford University M.S, Computer Science	2019
	Stanford University B.A.S, Mathematics B.A.S, Economics	2017

CITIZENSHIP	USA	GENDER:	FEMALE
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LANGUAGES English, Hindi

FIELDS Primary Fields: Theory, Finance, Behavioral

MIT Economics

INDIRA PURI
OCTOBER 2022-- PAGE 2

FELLOWSHIPS, HONORS, AND AWARDS	Paul and Daisy Soros Fellowship for New Americans	2019
	National Science Foundation Graduate Fellowship	2017-22
	Kritzman Goreman Research Grant, MIT	2022
	Shultz Fund Research Grant, MIT	2020-22
	Firestone Medal, Stanford University	2017
	J.E Wallace Sterling Award, Stanford University	2017
	Phi Beta Kappa	2016
	Detur Prize, Harvard University	2013
	United States Presidential Scholar	2012
	United States State Department NSLI Language Scholarship	2012

SERVICE	Graduate Chair, Stanford Women in Computer Science	2018
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PROFESSIONAL ACTIVITIES	<u>Presentations</u>	
	2022:	
	California Institute of Technology (invited seminar)	
	Decision: Theory, Experiments, and Applications (conference)	
	Society for Financial Studies Cavalcade (conference)	
	2021:	
	ASSA/AEA Annual Meetings (conference)	
	Econometric Society, North American Summer Meeting (conference)	
	Financial Management Association Annual Meeting (conference)	
	Decision: Theory, Experiments, and Application (conference)	
	Econometric Society, European Summer Meeting (conference)	
	European Financial Management Association (conference)	
	2020:	
	Decision: Theory, Experiments, and Applications (conference)	
	Economic Science Association (conference)	
	Econometric Society Word Congress (conference)	
	Econometric Society, European Winter Meeting (conference)	

Refereeing
Quarterly Journal of Economics

JOB MARKET PAPERS **Simplicity and Risk**

I introduce and test for preference for simplicity in choice under risk. Empirically, my theoretically-motivated experiments document that people value simplicity in ways not fully captured by canonical models including expected utility theory cumulative prospect theory, prospect theory, rational inattention, sparsity, salience, or probability weighting that differs by number of outcomes. Participants' risk premia increase as complexity increases, holding moments fixed; their dominance

violations increase in complexity; and their complexity aversion is heterogeneous in cognitive ability. I characterize the theory mathematically, derive its properties, and test the characterizing axiom in the data. The theory captures not only cardinality, but also broader measures of complexity including obfuscation or language effects.

Bulls and Binaries: Pricing Anomalies and Behavioral Biases

(with Aaron Goodman)

In an empirical analysis of the retail binary option market, we show that traders purchase binary options when strictly dominant bull spreads are available at lower prices. Using a yearlong sample of binary option trades, we find that 15% of S&P index, 19% of gold, and 25% of silver trades violate canonical no-arbitrage conditions. Buyers of dominated binary options on average lose about a third of the contract price by forgoing the dominating bull spread. After showing that standard institutional justifications for mispricing, including random price volatility and implicit or explicit trading costs, do not fully capture these results, we examine possible behavioral explanations. We show that our results cannot be explained by canonical behavioral models such as prospect theory or ambiguity aversion. Instead, we rationalize our findings with a novel behavioral model in which investors prefer simple binary lotteries to more complicated sets of outcomes. An online survey of binary option traders supplements our analysis of market data, providing direct evidence that a preference for simplicity is common among these traders.

OTHER RESEARCH

Evaluating and Extending Theories of Choice under Risk

(with Drew Fudenberg)

Working paper, basis for Simplicity and Probability Weighting in Choice Under Risk, American Economic Review Papers & Proceedings, Vol. 112, May 2022.

Using machine learning, we evaluate the predictive performance of simplicity theory (Puri, 2022) and prospect and cumulative prospect theory (Kahneman and Tversky, 1979, 1992) and heterogeneous models combining them. We find a model combining simplicity with CPT comes closest to matching ML performance, and analyze observable predictors of behavior.

Cognition, Complexity, and Choice

(with Advik Shreekumar; in progress)

What are the underlying mechanisms that cause people to display a preference for simplicity? We design a within-person RCT to distinguish the effects of competing rational and cognitive mechanisms on choice, with channels including but not limited to numeracy, effort and attention, and working memory.

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PRIOR EDUCATION Stanford University 2015
 Bachelor of Arts in Economics, with Honors & Distinction

CITIZENSHIP India

LANGUAGES English (fluent), Hindi (native)

FIELDS Primary Fields: Development Economics, Labor Economics
 Secondary Fields: Econometrics, Industrial Organization

RELEVANT POSITIONS Research Assistant to Professors Abhijit Banerjee & Esther Dufo 2019-2021
 Research Assistant, Precision Agriculture for Development, Ahmedabad India 2016-2017

Research Assistant, Development Impact Evaluation Unit,
World Bank, Washington DC 2015-2016

FELLOWSHIPS, HONORS, AND AWARDS	Jerry Hausman Graduate Dissertation Fellowship	2021
	George & Obie Shultz Fund Grant	2020, 2021
	Weiss Fund for Research in Development Economics	2018, 2019
	MIT Economics Graduate Fellowship	2017, 2018
	Firestone Medal for Excellence in Undergraduate Research	2015
	Michelle Zimbalist Rosaldo Prize in the Social Sciences (best B.A. or M.A. thesis on gender)	2015

**PROFESSIONAL
ACTIVITIES** **Refereeing:** *American Economic Review*, *American Economic Review: Insights*,
National Science Foundation

Presentations:

The NBER Summer Institute, Labor Studies (2022)
Society of Labor Economists Annual Meeting (2022)

PUBLICATIONS **“Long-term Effects of the Targeting the Ultra Poor Program”** *American Economic Review: Insights*, December 2021.

This paper studies the long-run effects of a "big-push" program providing a large asset transfer to the poorest Indian households. In a randomized controlled trial that follows these households over ten years, we find positive effects on consumption (0.6 SD), food security (0.1 SD), income (0.3 SD), and health (0.2 SD). These effects grow for the first seven years following the transfer and persist until year ten. One main channel for persistence is that treated households take better advantage of opportunities to diversify into more lucrative wage employment, especially through migration.

**RESEARCH
PAPERS** **“Monopsony and Gender” (Job Market Paper)**

I explore the role of labor market power in driving the gender wage gap in Brazil. By exploiting firm-level demand shocks induced by the end of the Multi-Fiber Arrangement, I document that gender differences in monopsony explain approximately half of the observed 42% gender earnings gap (19%), seen in the relatively low job separation elasticities of women. To distinguish between women’s stronger preference for their current employer (horizontal differentiation) and concentration of women’s employment opportunity among fewer good employers (vertical differentiation) as explanations for gender differences in monopsony, I develop a discrete choice model where a set of sufficient statistics capture these forces. Of the 19 percentage point gender wage gap attributable to monopsony, I estimate that 11 points are attributable to the former and 8 points to the high concentration of women in the textile industry. This concentration is in turn driven by the concentrated distribution of sectoral amenities/disamenities rather than gender-specific comparative advantage. Eliminating gender productivity differences across industries would lower the gender gap by only 2 percentage points whereas leveling gender-specific amenities across sectors would eliminate 8 percentage points of the gender wage gap. I conclude by considering why only a few sectors offer women desirable jobs whereas many offer men such jobs and developing a data-driven method to causally uncover

the boundaries of men and women's labor markets.

“Collective Bargaining for Women: How Unions Can Create Female-Friendly Jobs”

(with Viola Corradini and Lorenzo Lagos)

Why aren't workplaces better designed for women? We show that changing the priorities of those who set workplace policies can create female-friendly jobs. Starting in 2015, Brazil's largest trade union federation made women central to its bargaining agenda. Neither establishments nor workers choose their union, permitting a difference-in-differences design to study causal effects. We find that “bargaining for women” increases female-centric amenities in collective bargaining agreements, which are then reflected in practice (e.g., more female managers, longer maternity leaves, longer job protection). These changes cause women to queue for jobs at treated establishments and separate from them less—both revealed preference measures of firm value. We find no evidence that these gains come at the expense of employment, workers' wages, or firm profits. Hence, prioritizing women's preferences in decision-making can lower within-firm gender inequality through more efficient bargaining.

“Depression and Loneliness Among the Elderly Poor”

(with Abhijit Banerjee, Esther Duflo, Erin Grela, Madeline McKelway, Frank Schilbach, and Girija Vaidyanathan)

invited for consideration at the *Journal of Economic Perspectives*

The mental health of the elderly in low- and middle-income countries (LMICs) is a largely neglected subject, both by policy and research. We combine data from the health and retirement family of surveys in seven LMICs (plus the US) to document that depressive symptoms among those aged 55 and above are more prevalent in those countries and increase sharply with age. Depressive symptoms in one survey wave are associated with a greater decline in functional abilities and higher probability of death in the next wave. Using data from a panel survey we conducted in Tamil Nadu with a focus on elderly living alone, we document that social isolation, poverty, and health challenges are three of the leading correlates of depression. We discuss potential policy interventions in these three domains, including some results from our randomized control trials in the Tamil Nadu sample.

“Impacts of Cognitive Behavioral Therapy and Cash Transfers on Depression and Impairment of Elderly Living Alone: A Randomized Trial in India”

(with Abhijit Banerjee, Esther Duflo, Erin Grela, Madeline McKelway, Frank Schilbach, and Girija Vaidyanathan)

Revise & Resubmit at the *Annals of Internal Medicine*

This paper studies the impact of phone-delivered cognitive behavioral therapy and/or a cash transfer on depression and functional impairment in a sample of low-income elderly living alone in India. Each of the three treatment arms --- therapy only, therapy plus cash, and cash only --- reduced depression and functional impairment three weeks post treatment. These treatment effects do not persist: we find no impacts on depression or functional impairment from any of the treatments three months after intervention.

Participants appear to value the benefits of therapy: 30% of participants prefer another person to receive therapy rather than a cash transfer of an equivalent amount as our cash treatment. This fraction of participants is significantly higher in the group assigned both therapy and cash, suggesting that first-hand experience with both interventions increases participants' appreciation of therapy's benefits.

RESEARCH IN PROGRESS

“The Effects of Mandated Maternity Leave on Young Women’s Labor Market Outcomes”

(with Lisa Ho and Pulak Ghosh)

Over 148 countries now offer at least ten weeks of paid maternity leave (Hyland et al. 2020). These laws have limited long-run effects on the wages and employment of new mothers (e.g., Lalive et al. 2009, Bailey et al. 2019). But how do they affect young women in anticipation of motherhood? This project studies the effects of a 2017 Indian law that increased the duration of paid maternity leave from 12 to 26 weeks, using linked employer-employee social security records from India. We exploit pre-reform variation in the duration of leave offered by organizations along with policy-induced variation in who between the government or employer pays for leave, to ask (i) whether employers hire fewer women as a result, and (ii) the extent to which this is driven by a motive to avoid the direct cost of paid leave versus the indirect cost of replacing workers. The second question is particularly salient in developing countries, many of which have recently expanded paid maternity leave policies (India in 2017, Nigeria in 2018, and Pakistan in 2020) and where the employer and social security administration typically share its direct cost.

“Collusion Among Employers in India”

“The Impact of Old Age Pensions on Elders’ Wellbeing: Evidence from India”

(with Abhijit Banerjee, Esther Duflo, Madeline McKelway, Frank Schilbach)

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PRIOR EDUCATION	University College London	2017
	MSc, Computational Statistics & Machine Learning <i>Distinction</i>	
	The London School of Economics & Political Science	2016
	MSc, Econometrics & Mathematical Economics <i>Distinction</i>	
	Yale University	2015
	BA, Economics & Mathematics <i>Magna Cum Laude, Distinction in the Major</i>	

CITIZENSHIP USA

GENDER Male

FIELDS	Primary Fields: Econometrics, Causal Inference, Machine Learning	
	Secondary Field: Labor Economics	
TEACHING EXPERIENCE	Econometrics (graduate)	2023
	Teaching Assistant to Profs. Alberto Abadie & Whitney Newey	
	Research & Communication in Economics (undergraduate)	2023
	Teaching Assistant to Prof. Sara Ellison	
	Intro to Stat in Economics (undergraduate; 7.0/7.0 median rating)	2021
	Teaching Assistant to Prof. Alberto Abadie	
	Intro to Stat in Economics (undergraduate; 7.0/7.0 median rating)	2019
	Teaching Assistant to Profs. Alberto Abadie & Whitney Newey	
	Nonlinear Econometrics (graduate; 6.0/7.0 median rating)	2019
	Teaching Assistant to Profs. Alberto Abadie & Whitney Newey	
RELEVANT POSITIONS	Causality Research Fellow, Simons Institute for the Theory of Computing, UC Berkeley	2022
	Machine Learning Research Intern to Prof. Vasilis Syrgkanis, Microsoft Research New England	2020
	Research Assistant to Profs. Glenn Ellison & Parag Pathak, NBER	2016
	Risk Intern, Earnest, San Francisco CA	2015
	Summer Intern, The President's Council of Economic Advisers, The White House (Obama Administration)	2014
	Financial Literacy Teacher, New Haven Reads, New Haven CT	2013-14
	Tobin Research Assistant to Prof. Costas Meghir, Yale	2013
FELLOWSHIPS, HONORS, AND AWARDS	Simons-Berkeley Research Fellowship	2022
	MIT Prize for Open Data, Runner Up	2022
	ICML Outstanding Reviewer Award	2022
	NeurIPS Outstanding Reviewer Award	2021
	Jerry A. Hausman Graduate Fellowship	2018, 20
	MIT Presidential Fellowship	2017
	Marshall Scholarship	2015
	Phi Beta Kappa	2015
	Senator John Heinz Government Service Fellowship	2014
	Henry James TenEyck Oratory Prize, 2 nd	2014
	E. Francis Riggs Humanities Prize, 2 nd	2013
PROFESSIONAL ACTIVITIES	Referee: <i>Econometrica</i> , <i>Review of Economic Studies</i> , <i>Review of Economics & Statistics</i> , <i>Journal of Econometrics</i> ; <i>Journal of the American Statistical Association: Theory & Methods</i> , <i>Biometrika</i> , <i>Journal of the Royal Statistical Society: Series B</i> , <i>Journal of Nonparametric Statistics</i> ; <i>Journal of Machine Learning Research</i> , <i>NeurIPS</i> , <i>ICML</i> , <i>ICLR</i> .	

Service:

Co-coordinator, Statistical Theory for Causal Estimation Working Group, Simons Institute	2022
Mentor, Application Assistance and Mentoring Program, MIT	2020-22
Mentor, Undergraduate Research Opportunity Program, MIT	2020-22
Program Committee, Workshop on Machine Learning Meets Econometrics, NeurIPS	2021
Program Committee, Workshop on Causal Sequential Decisions, NeurIPS	2021
Session Chair, Econometric Society World Congress	2020
Co-coordinator, High Dimensional Probability & Statistics Reading Group, MIT	2018-19
Rossborough Fellow, Women's Center, Yale	2013-14
Peer Liaison, Asian American Cultural Center, Yale	2012

Presentations:

ASSA Annual Meeting	2023
Online Causal Inference Seminar	2022
Conference on Computational and Methodological Statistics	2022
INFORMS Annual Meeting, Oral Presentation	2022
American Causal Inference Conference, Oral Presentation	2022
California Econometrics Conference, Oral Presentation	2022
Berkeley Econometrics Seminar	2022
Berkeley Causal Inference Research Group	2022
Berkeley Biostatistics Seminar	2022
Simons Workshop on Algorithmic Aspects of Causal Inference	2022
ASSA Annual Meeting (co-author)	2022
Wharton Statistics (Tchetgen Tchetgen Lab)	2021
ETH Zurich Causality Reading Group	2020
Microsoft Research New England	2020
Econometric Society World Congress	2020
ASSA Annual Meeting (co-author)	2020
NeurIPS Oral Presentation	2019
NeurIPS Workshop on Causal ML, Spotlight (co-author)	2019
MIT LIDS Causal Inference Tutorial	2019

PUBLICATIONS

“Automatic debiased machine learning of causal and structural effects”
(with Victor Chernozhukov and Whitney K. Newey) *Econometrica*, 2022.

“A simple and general debiased machine learning theorem with finite sample guarantees” (with Victor Chernozhukov and Whitney K. Newey)
Biometrika, 2022.

“Debiased machine learning of global and local parameters using regularized Riesz representers” (with Victor Chernozhukov and Whitney K. Newey) *Econometrics Journal*, 2022.

“Kernel instrumental variable regression” (first author; with Maneesh Sahani and Arthur Gretton) *NeurIPS*, 2019 (Oral presentation; 0.5% acceptance rate).

RESEARCH PAPERS

“Causal inference with corrupted data: Measurement error, missing values, discretization, and differential privacy” (Job Market Paper) (with Anish Agarwal)

arXiv: 2107.02780, 2021. Extended abstract in *NeurIPS Workshop on Machine Learning Meets Econometrics*, 2021.

The 2020 US Census will be published with differential privacy, implemented by injecting synthetic noise into the data. Controversy has ensued, with debates that center on the painful trade-off between the privacy of respondents and the precision of economic analysis. Is this trade-off inevitable? To answer this question, we formulate a semiparametric model of causal inference with high dimensional data that may be noisy, missing, discretized, or privatized. We propose a new end-to-end procedure for data cleaning, estimation, and inference with data cleaning-adjusted confidence intervals. We prove consistency, Gaussian approximation, and semiparametric efficiency by finite sample arguments. The rate of Gaussian approximation is $n^{-1/2}$ for semiparametric estimands such as the average treatment effect, and it degrades gracefully for nonparametric estimands such as heterogeneous treatment effects. Our key assumption is that the true covariates are approximately low rank, which we interpret as approximate repeated measurements and validate in the Census. In our analysis, we provide nonasymptotic theoretical contributions to matrix completion, statistical learning, and semiparametric statistics. We verify the coverage of the data cleaning-adjusted confidence intervals in simulations. Finally, we conduct a semi-synthetic exercise calibrated to privacy levels mandated for the 2020 US Census.

“Kernel methods for unobserved confounding: Negative controls, proxies, and instruments”

arXiv: 2012.10315, 2020. Revised & resubmitted to *Journal of the American Statistical Association: Theory & Methods*.

Negative control is a strategy for learning the causal relationship between treatment and outcome in the presence of unmeasured confounding. The treatment effect can nonetheless be identified if two auxiliary variables are available: a negative control treatment (which has no effect on the actual outcome), and a negative control outcome (which is not affected by the actual treatment). These auxiliary variables can also be viewed as proxies for a traditional set of control variables, and they bear resemblance to instrumental variables. I propose a family of algorithms based on kernel ridge regression for learning nonparametric treatment effects with negative controls. Examples include dose response curves, dose response curves with distribution shift, and heterogeneous treatment effects. Data may be discrete or continuous, and low, high, or infinite dimensional. I prove uniform consistency and provide finite

sample rates of convergence. I estimate the dose response curve of cigarette smoking on infant birth weight adjusting for unobserved confounding due to household income, using a data set of singleton births in the state of Pennsylvania between 1989 and 1991.

“Double robustness for complier parameters and a semiparametric test for complier characteristics”

(with Liyang Sun)

arXiv: 1909.05244, 2019. Extended abstract in *NeurIPS Workshop on Causal Machine Learning*, 2019 (Spotlight presentation). Submitted.

We study low dimensional complier parameters that are identified using a binary instrumental variable Z , which is valid conditional on a possibly high dimensional vector of covariates X . We characterize the doubly robust moment function for the entire class of complier parameters defined by Abadie (2003) by combining two classic formulations: the Wald formula and the κ weight. In particular, we reinterpret the κ weight as the Riesz representer to the Wald formula, which appears to be a new insight. The main result includes new cases such as average complier characteristics. We use the main result to propose a hypothesis test, free of functional form restrictions, to evaluate (i) whether two different instruments induce compliers with the same observable characteristics on average, and (ii) whether compliers have observable characteristics that are the same as the full population on average. By developing this hypothesis test, we equip empirical researchers with a new robustness check.

“Kernel methods for causal functions: Dose, heterogeneous, and incremental response curves”

(first author; with Liyuan Xu and Arthur Gretton)

arXiv: 2010.04855, 2020. Extended abstract in *NeurIPS Workshop on Machine Learning for Economic Policy*, 2020. Submitted.

We propose estimators based on kernel ridge regression for nonparametric causal functions such as dose, heterogeneous, and incremental response curves. Treatment and covariates may be discrete or continuous in general spaces. Due to a decomposition property specific to the RKHS, our estimators have simple closed form solutions. We prove uniform consistency with improved finite sample rates, via original analysis of generalized kernel ridge regression. We extend our main results to counterfactual distributions and to causal functions identified by front and back door criteria. In nonlinear simulations with many covariates, we achieve state-of-the-art performance.

“Kernel methods for multistage causal inference: Mediation analysis and dynamic treatment effects”

(first author; with Liyuan Xu and Arthur Gretton)

arXiv: 2111.03950, 2021. Extended abstract in *NeurIPS Workshop on Causal Sequential Decisions*, 2021. Submitted.

We propose simple estimators for mediation analysis and dynamic treatment effects over short horizons, which preserve the nonlinearity, dependence, and effect modification of identification theory. We allow treatments, mediators, and covariates to be discrete or continuous in general spaces. Across this broad variety of data settings, the estimators have closed form solutions in terms of kernel matrix operations due to our algorithmic innovation: sequential mean embedding of the mediator and covariate conditional distributions given a hypothetical treatment sequence. The simple estimators have strong guarantees. For the continuous treatment case, we prove uniform consistency with finite sample rates that match the minimax optimal rate for standard kernel ridge regression. For the discrete treatment case, we prove $n^{-1/2}$ consistency, finite sample Gaussian approximation, and semiparametric efficiency. We extend the analysis to incremental effects and counterfactual distributions, identifying and estimating new causal estimands. In nonlinear simulations with many covariates, we demonstrate state-of-the-art performance. We estimate mediated and dynamic treatment effects of the US Job Corps program for disadvantaged youth, and share a cleaned data set that may serve as a benchmark in future work.

“A finite sample theorem for longitudinal causal inference with machine learning: Long term, dynamic, and mediated effects”

arXiv: 2112.14249, 2021.

I construct and justify confidence intervals for longitudinal causal parameters estimated with machine learning. Longitudinal parameters include long term, dynamic, and mediated effects. I provide a nonasymptotic theorem for any longitudinal causal parameter in a general class, estimated with any machine learning algorithm that satisfies a few simple conditions. The main result encompasses local parameters defined for specific demographics as well as proximal parameters defined in the presence of unobserved confounding. I prove consistency, Gaussian approximation, and semiparametric efficiency. The rate of Gaussian approximation is $n^{-1/2}$ for global parameters, and it degrades gracefully for local parameters. I articulate a simple set of conditions to translate mean square rates into statistical inference, and verify that they hold for adversarial estimators over generic function spaces. A key feature of the main result is a new multiple robustness to ill posedness for proximal causal inference in longitudinal settings. Of independent interest, I provide what appears to be the first mean square rate for nested nonparametric instrumental variable regression.

“Adversarial estimation of Riesz representers”

(with Victor Chernozhukov, Whitney K. Newey, and Vasilis Syrgkanis)

arXiv: 2101.00009, 2020. Extended abstract in ICML Workshop on New Frontiers in Adversarial Machine Learning, 2022.

We provide an adversarial approach to estimating Riesz representers of linear functionals within arbitrary function spaces. We prove oracle inequalities based on the localized Rademacher complexity of the function space used to

approximate the Riesz representer and the approximation error. These inequalities imply fast finite sample mean square error rates for many function spaces of interest, such as high dimensional sparse linear functions, neural networks and reproducing kernel Hilbert spaces. Our approach offers a new way of estimating Riesz representers with a plethora of recently introduced machine learning techniques. We show how our estimator can be used in the context of debiasing structural and causal parameters in semiparametric models, for automated orthogonalization of moment equations, and for estimating the stochastic discount factor in the context of asset pricing.

“Automatic debiased machine learning for dynamic treatment effects and general nested functionals”

(with Victor Chernozhukov, Whitney K. Newey, and Vasilis Syrgkanis)

arXiv: 2203.13887, 2022.

We extend the idea of automated debiased machine learning to the dynamic treatment regime and more generally to nested functionals. We show that the multiply robust formula for the dynamic treatment regime with discrete treatments can be restated in terms of a recursive Riesz representer characterization of nested mean regressions. We then apply a recursive Riesz representer estimation learning algorithm that estimates debiasing corrections without the need to characterize how the correction terms look—such as for instance, products of inverse probability weighting terms, as is done in prior work on doubly robust estimation in the dynamic regime. Our approach defines a sequence of loss minimization problems, whose minimizers are the multipliers of the debiasing correction, hence circumventing the need for solving auxiliary propensity models and directly optimizing for the mean square error of the target debiasing correction. We provide further applications of our approach to estimation of dynamic discrete choice models and estimation of long term effects with surrogates.

**RESEARCH IN
PROGRESS**

“Debiased kernel methods” *arXiv: 2102.11076, 2021.*

“Kernel methods for attrition bias” *arXiv: 2111.05277, 2021.*

“Kernel methods for long term causal inference” *arXiv: 2201.05139, 2022.*

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PRIOR EDUCATION	University of Cambridge MPhil, Economics <i>Distinction</i>	2016
	Harvard University A.B., Physics and Mathematics <i>Summa Cum Laude</i>	2015

CITIZENSHIP	USA	GENDER	Male (he/him/his)
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LANGUAGES	English (native), French (conversant)
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FIELDS	Macroeconomics, Public Finance, Trade
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TEACHING EXPERIENCE	Math Camp (graduate)	2019-2021
	Sole Instructor	
	International Trade II (graduate, MIT course 14.582)	2020, 2022
	Teaching Assistant to Professors David Atkin, Arnaud Costinot, and Dave Donaldson	
RELEVANT POSITIONS	Research Assistant to Dave Donaldson and Arnaud Costinot	2021
	Research Assistant to Daron Acemoglu	2022
	Research Assistant to Arnaud Costinot and Ivan Werning	2019
	Research Assistant to Ben Golub	2018
	Research Assistant to Joseph Stiglitz (pre-doctoral)	2016-2017
FELLOWSHIPS, HONORS, AND AWARDS	Global Priorities Fellowship, Forethought Foundation	2022
	Palm Fund Fellowship, MIT Economics Department	2017-2019
	Paul Williams Fellowship (full scholarship, Cambridge Univ.)	2015-2016
	Sanderson Prize (best academic record, Harvard physics majors)	2015
PROFESSIONAL ACTIVITIES	Referee: <i>American Economic Review</i> , <i>American Economic Review: Insights</i>	
	Presentations:	
	[Future] Annual Meeting of the American Economic Association	2023
	[Future] National Tax Association Annual Conference	2022
	“Smart Sanctions” Online Workshop	2022
	European Winter Meeting of the Econometric Society	2021
	Mentorship:	
	Application Assistance and Mentorship Program	2020-2022
	RESEARCH PAPERS	
	“How to Fix a Coordination Failure: A ‘Super-Pigouvian’ Approach” (Job Market Paper)	
	<p>A central concern in industrial policy discussions is that sector-specific external economies of scale may create multiple equilibria—and therefore the potential for coordination failure. Unfortunately, Pigouvian policies that address market failures on the margin do not remove the risk of mis-coordination globally. I propose a new “super-Pigouvian” (SP) policy that retains the decentralized spirit of Pigouvian policy—regulating prices rather than quantities—but also prevents coordination failure. The main idea behind SP is to subsidize market behavior, both on and off the equilibrium path, according to the population’s willingness to pay for the externalities that (a) those behaviors generate directly, like Pigou, and also (b) they generate indirectly by affecting other households’ choices. After demonstrating SP’s welfare properties theoretically, I quantify them in a dynamic model of structural transformation calibrated to South Korea’s heavy and chemical industry drive in the 1970s. SP modestly improves welfare compared to the worst equilibrium under Pigouvian policy.</p>	

“A Theory of Economic Sanctions as Terms-of-Trade Manipulation”

How can a country design economic sanctions to maximize their economic cost to the sanctioned country at the lowest cost to the sanctioner? I consider this problem from the perspective of international trade and draw a close connection between trade restrictions as economic sanctions and trade restrictions as terms-of-trade manipulation. This connection has several useful implications for sanction design: Small sanctions increase welfare in the sanctioning country. Sanctions target the same goods as terms-of-trade manipulation. Sanctions ignore elasticities of demand and supply in the sanctioning country. Sanctions treat imports and exports asymmetrically.

“Income Taxation with Elasticity Heterogeneity”

(with André Sztutman)

We provide a new efficiency test for non-linear income tax schedules when households have heterogeneous elasticities of taxable income (ETIs). The test fails when ETIs vary enough among households with the same income. In such cases, the planner can reform taxes to sort households into different parts of the income distribution based on their elasticities and—at the same time—exploit this separation using higher marginal taxes on the less elastic. We evaluate our test empirically using novel estimates of the variance of ETI by income bracket. The test fails, implying that a “free lunch” is available through tax reform.

“Fiscal Policy in a Networked Economy”

(with Joel Flynn and Christina Patterson) *NBER Working Paper*

Advanced economies feature complicated networks that connect households, firms, and regions. How do these structures affect the impact of fiscal policy and its optimal targeting? In a model with rich heterogeneity in goods, households, sectors, and regions, we derive estimable formulas for the effects of fiscal policies on output—i.e. fiscal multipliers. We then estimate this model using detailed U.S. data. We find that multipliers vary substantially across policies, and the detailed structure of economic interconnections shapes their distributional impacts. However, aggregate multipliers are nearly unaffected by these networks, so maximally expansionary fiscal policy simply targets households’ MPCs.

**RESEARCH IN
PROGRESS****“The Non-Substitution Theorem: A Modern Treatment”**

available upon request

When do factor prices determine goods prices and/or input-output structure? I provide a modern treatment of the non-substitution theorem first introduced by Samuelson (1949) and Georgescu-Roegen (1951). A focus on price uniqueness rather than production methods allows me to weaken assumptions in the existing literature. All of my results extend to models with multiple factors and imperfect competition with constant markups.

“Changing Taxes for Changing Times”

(with André Sztutman)

How should income taxes respond to changes in technology or labor markets? Starting from a benchmark where changes in the income distribution do not affect the fiscal cost of redistribution, we emphasize three key factors: First, increased income inequality decreases the cost of redistribution. Second, uniform income growth decreases the cost of redistribution when higher income households have higher labor supply elasticities. Third, uniform income growth increases (decreases) the cost of redistribution at high (low) incomes when elasticities vary within income levels. A preliminary calibration to the U.S. between 1982 and 2008 suggests the third effect has dominated, making redistribution more expensive.

POLICY WRITING

“The Simple Economics of Trade Sanctions on Russia: A Policymaker’s Guide”

What economic tradeoffs should inform the design of trade sanctions? This paper—intended as a guide for policymakers with some background in economics—uses supply and demand diagrams to illustrate seven simple lessons. [Press: [VoxEU](#)]

“The Simple Economics of Optimal Sanctions: The Case of EU-Russia Energy Trade” (with Kai Menzel and Jan Schmitz)

We study trade sanctions in a simple framework that accounts for an EU-Russian import tariff’s effects on both countries’ terms of trade with the rest of the world. In this context, we provide a test for when tariffs on Russian energy imports can simultaneously damage the Russian economy and increase EU welfare.

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**DOCTORAL
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**PRIOR
EDUCATION**

Instituto Tecnológico Autónomo de México (ITAM)
B.A. in Economics, graduated with highest honors
Concentration in Economic Theory

2015

CITIZENSHIP

USA and Mexico

GENDER

Female

LANGUAGES

English (fluent), Spanish (native), French (intermediate), Hebrew (intermediate)

FIELDS

Primary Fields: Development Economics

Secondary Fields: Public Economics

MIT Economics

DIANA SVERDLIN LISKER

OCTOBER 2022-- PAGE 2

TEACHING EXPERIENCE	Political Economy and Economic Development (undergraduate)	2022
	Teaching Assistant to Profs. Esther Duflo and Sarah Lowes	
	Firms, Markets, Trade and Growth (undergraduate)	2022
	Teaching Assistant to Profs. David Atkin and Dave Donaldson	
	Data Analysis for Social Scientists (EdX, online)	2021
	Teaching Assistant to Profs. Esther Duflo and Sarah Ellison	
	Public Finance and Public Policy (undergraduate)	2020
	Teaching Assistant to Professor Jonathan Gruber	
	The Challenges of Global Poverty (EdX, online)	2019/20
	Teaching Assistant to Profs. Abhijit Banerjee and Esther Duflo	
RELEVANT POSITIONS (ACADEMIA)	Research Assistant to Professors Abhijit Banerjee, Rema Hanna and Benjamin Olken	2018
	Research Assistant to Professor Enrique Seira	2014
RELEVANT POSITIONS (PUBLIC SECTOR)	Petróleos Mexicanos (PEMEX)	2016-2017
	<i>Led a group of four analysts to model Pemex's fiscal regime and proposed variations to align its interests with the government's and those of new entrants into the energy market.</i>	
	<i>Wrote the presentation of Pemex's Business Plan to the President, the Finance Ministry, rating agencies and investors.</i>	
	Mexican Institute of Social Security (IMSS)	2013-2015
	<i>Worked in the director's strategic planning unit, researching the disparity between GDP and formal employment growth.</i>	
	<i>Modeled historic consumption of medicines to improve the supply of the Institute's 1,400 pharmacies, thereby increasing patients' adherence to prescriptions by ensuring their availability.</i>	
	<i>Managed and trained a group of 20 implementers to improve processes and increase oversight in key metrics to reduce consultation and hospital admission waiting times system-wide.</i>	
	Mexican National Institute of Public Health	2013
	<i>Modeled a proposed nationwide soda tax to estimate its expected revenue and degree of regressivity. Our work was cited by the legislative commission that drafted a bill on the matter.</i>	
FELLOWSHIPS, HONORS, AND AWARDS	Economics Department Summer Fellowship, MIT	2022
	George and Obie Shultz Fund Grant, MIT	2019/21
	Pre-Doctoral Aging and Health Fellowship, NBER	2019/20
	National Science Foundation Graduate Research Fellowship	2017
	ITAM: Merit Scholarship	2011

PROFESSIONAL **Referee:** *American Economic Review: Insights*

ACTIVITIES

Presentations:

NEUDC, Yale University	2022
Workshop on Small Firms, Growth and Development	2022
Alumni Conference, ITAM	2022

Service/Leadership:

Graduate Resident Advisor, MIT's McCormick Hall	2018-present
Mentor, Harvard/MIT Application Assistance Mentoring Program	2021-2022
Tutor, ESL Program for Service Employees at MIT	2020-2021
President, MIT Graduate Economic Association	2019-2020
Co-director, ITAM Economics Gazette	2014-2015
Facilitator, Harvard T.H. Chan School Winter Course	2014

**RESEARCH IN
PROGRESS**

“Fragmented Markets and the Proliferation of Small Firms: Evidence from Mom-and-Pop Shops in Mexico” (Job Market Paper)
(with Daniel Ramos-Menchelli)

Developing countries are characterized by the prevalence of small firms in the retail sector. We explain this phenomenon through a spatial model in which high transport costs lead to small effective market sizes and, consequently, to the proliferation of smaller and lower quality firms. We show that low costs of entry are key for this result. By creating a new, confidential panel of firm-level data surveying the universe of mom-and-pop shops in Mexico, we test the implications of our model. We exploit the deregulation of the Mexican gasoline market in 2017 as an exogenous shock on consumer transport costs. Where gas prices increased, the number of mom-and-pop shops differentially increased while their average size and quality fell. We give evidence of fragmentation and localized demand as the mechanism behind these effects. With our estimated model, we evaluate the welfare consequences of a licensing program in Mexico City which increased costs of entry for mom-and-pop shops creating a trade-off between the number and quality of shops. We show that, in the presence of high transport costs, such program would have larger negative impact on consumer and producer welfare.

“Social Protection in the Developing World”

(with Abhijit Banerjee, Rema Hanna and Benjamin Olken)

Social protection programs have become increasingly widespread in low- and middle-income countries, with their own distinct characteristics to match the environments in which they are operating. This paper reviews the growing literature on the design and impact of these programs. We review how to identify potential beneficiaries given the large informal sector, the design and implementation of redistribution and income support programs, and the challenges and potential of social insurance. We use our frameworks as a guide for consolidating and organizing the existing literature, and also to highlight areas and questions for future research.

“Spillovers of private provision of healthcare on the public sector”

How does the private provision of healthcare affect access and health outcomes in the public sector? In this project, I study the implications of expanding private clinic access by leveraging a regulation change in Mexico that exogenously led to a growth of pharmacy clinics in some places relative to others. I document a decrease in both the intensive (number of appointments) and extensive margin (number of users) in the public sector in places where more openings occurred. Contrary to concerns about lowered quality of care, I find no adverse effects on health outcomes.

OLDER RESEARCH

“Externalities of Environmental Regulation: New Evidence on the Impact of U.S. Lead Regulation on Mexican Children from Social Security Records”

Cross-country externalities associated with environmental regulation have been at the core of policy debates regarding international agreements on toxic emissions. While the economics literature has greatly advanced on the effects of environmental regulation on the production side, research on the effect of this type of regulations on health across countries has just started. This study provides new evidence of the effects of strengthening the US lead regulation in 2009 on Mexican infants' birth outcomes. Most lead production in North America comes from the recycling of used lead-acid batteries and after 2009 a sharp increase of US battery exports to Mexico was documented. Using this as background and a newly constructed birth outcomes dataset from hospitals belonging to the Mexican Institute of Social Security, I compare birth outcomes of newborn babies in areas close to battery recycling plants with those born slightly away before and after 2009. Relative to the most important previous study in the same context, the dataset allows me to (a) analyze complications arising for mothers, (b) analyze birth outcomes for same mothers by controlling for mother fixed effects, and (c) check for longer background trends before the regulation. My difference in differences estimation shows that birth weight decreased, and complications increased after 2009, but not before. I further show that the effects remain quantitatively similar after controlling for mothers, in particular mothers whose first baby had lower-than-median birth weight, suggesting that the negative health consequence is concentrated in more disadvantaged families. The findings add further evidence on cross-country health externalities of environmental regulations.

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PRIOR EDUCATION	Pontifícia Universidade Católica do Rio de Janeiro	2017
	MSc, Economics	
	Universidade de São Paulo	2014
	BA, Economics	

CITIZENSHIP	Brazilian	GENDER:	Male
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LANGUAGES English (fluent), Portuguese (native), Spanish (advanced), French (advanced)

FIELDS Primary Fields: Public Finance, Macroeconomics

Secondary Fields: Contract Theory, Finance, Information Economics

TEACHING EXPERIENCE	MIT 14.471* – Public Economics I	2020/21
	Teaching Assistant to Prof. Poterba and Prof. Werning	
	MIT 14.462* – Advanced Macroeconomics II	2020
	Teaching Assistant to Prof. Townsend and Prof. Angeletos	
	MIT 14.02 – Introduction to Macroeconomics	2020
	Teaching Assistant to Prof. Beraja	
	MIT 14.41/14.410* – Public Finance	2019
	Teaching Assistant to Prof. Gruber	
	PUC-Rio Macroeconomics I *	2020
	Teaching Assistant to Prof. Zilberman	
	*graduate level courses	
RELEVANT POSITIONS	Research Assistant to Professor Robert Townsend	2017-19
	Research Assistant to Professor Carlos Viana de Carvalho	2017
FELLOWSHIPS, HONORS, AND AWARDS	Accenture Industry Convergence Fellowship	2021
	Clyo Castle Fellowship	2018
	Clyo Castle and Grace Koo Fellowship	2017
	Fundação Estudar Leadership Program	2017
	Faperj Bolsa Nota 10	2016
	CNPq scholarship	2015
	1 st place exam of Brazilian Assoc. of Economics Grad. Programs	2014
	Luiz de F. Bueno Prize – best graduating student in Economics	2014
PROFESSIONAL ACTIVITIES	Discussant:	
	NTA Annual Conference on Taxation	2022
	Presentations:	
	European Winter Meeting of the Econometric Society	2022
	NTA Annual Conference on Taxation	
	ACM Equity and Access in Algorithms, Mechanisms, Optimization	
	ACM Economics and Computation	
	North American Summer Meeting of the Econometric Society	
	Marketplace Innovation Workshop	
	NTA Annual Conference on Taxation	2021
	European Winter Meeting of the Econometric Society	

**RESEARCH
PAPERS****“Dynamic Job Market Signaling and Optimal Taxation” (Job Market Paper)**

How are optimal taxes affected by reputation building and imperfect information in labor markets? In this paper, I build a model of labor markets with incomplete and asymmetric information where job histories play a crucial role in transmitting information about workers' productivity, which allows us to better understand the efficiency and distributive consequences of imperfect monitoring and screening in labor markets, and the tradeoffs the government faces when setting taxes. Optimal taxes are described by generalized versions of standard redistributive and corrective taxation formulas, which depend crucially on labor wedges: the ratios of the marginal contribution to output over the increases in lifetime earnings that result from supplying one extra unit of labor at each period. Combining estimates from the literature and new estimates using data from the Health and Retirement Study, I find that, once career concerns are taken into account, the current tax system may look less redistributive than previously thought.

“Income Taxation with Elasticity Heterogeneity”
(with John Sturm)

How should income taxes account for differences in households' tax responses? We address this question with a new efficiency test for non-linear income tax schedules when households have heterogeneous elasticities of taxable income (ETIs). The test fails when ETIs vary enough among households with the same income. In such cases, the planner can reform taxes to sort households into different parts of the income distribution based on their elasticities and—at the same time—exploit this separation using higher marginal taxes on the less elastic. We evaluate our test empirically using novel estimates of the variance of ETI by income bracket. The test fails, implying that a “free lunch” is available through tax reform.

“Optimal Credit Scores Under Adverse Selection”
(with Nicole Immorlica and Robert Townsend)

The increasing availability of data in credit markets may appear to make adverse selection concerns less relevant. However, when there is adverse selection, more information does not necessarily increase welfare. We provide tools for making better use of the data that is collected from potential borrowers, formulating and solving the optimal disclosure problem of an intermediary with commitment that seeks to maximize the probability of successful transactions, weighted by the size of the gains of these transactions. We show that any optimal disclosure policy needs to satisfy some simple conditions in terms of local sufficient statistics. These conditions relate prices to the price elasticities of the expected value of the loans for the investors. Empirically, combining machine learning methods and information design theory, we apply our results to the data from

the Townsend Thai Project, which is a long panel dataset with rich information on credit histories, balance sheets, and income statements, to evaluate whether it can help develop the particularly thin formal rural credit markets in Thailand, finding economically meaningful gains from adopting limited information disclosure policies.

**RESEARCH IN
PROGRESS****“Changing Taxes for Changing Times”**
(with John Sturm)

How should income taxes respond to changes in technology or labor markets? Starting from a benchmark where changes in the income distribution do not affect the fiscal cost of redistribution, we emphasize three key factors: First, increased income inequality decreases the cost of redistribution. Second, uniform income growth decreases the cost of redistribution when higher income households have higher labor supply elasticities. Third, uniform income growth increases (decreases) the cost of redistribution at high (low) incomes when elasticities vary within income levels. A preliminary calibration to the U.S. between 1982 and 2008 suggests the third effect has dominated, making redistribution more expensive.

“What is the Variance of Taxable Income Elasticities? A Bagged Forest Approach”
(with John Sturm)

Recent work in public finance has emphasized the role that variance in taxable income elasticities (ETIs) plays in tax design. However, estimating these variances presents a number of empirical challenges. We present a novel bagged forest method for estimating the variance of ETIs. This method combines a debiasing correction within the trees' construction, cross-fitting half-samples, and a bootstrap procedure that aims to preserve the correlation across half-samples. Our results indicate that there is substantial heterogeneity in how people respond to tax changes even within the same income brackets.

“Optimal Menus, Moral Hazard and Adverse Selection in Data-Rich Lending Markets”
(with Yingju Ma and Robert Townsend)

Are rich datasets making adverse selection and moral hazard concerns less relevant? Leveraging abrupt and geographically discontinuous changes in lending policies from a major financial provider in China, we test for the presence of adverse selection and moral hazard across multiple lending markets in a scenario where detailed information from potential borrowers is available. We connect estimates for the degrees of adverse selection and moral hazard to the design of optimal menus in those markets, and evaluate the response of the financial provider to different types of informational frictions.

“Information Design for Social Insurance”

In many modern sectors of the economy, workers are exposed to a series of risks, ranging from traffic accidents to job insecurity. At the same time, many of the firms have large amounts of data. In principle, this data could be used to alleviate information asymmetries that prevent insurance markets from functioning properly. However, because the relationship between adverse selection and the amount of public information available is not monotonic, alleviating adverse selection requires the careful design of disclosure rules. In this project, I develop general principles for the design of these disclosure rules to the benefit of the firm and its workers. Using data from the Health and Retirement Study, I will evaluate whether optimal disclosure rules could remedy adverse selection in the markets for unemployment, disability and long-term care insurance, illustrating more generally how these rules could be used by data-rich firms.

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PERSONAL CONTACT INFORMATION

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MIT PLACEMENT ADMINISTRATOR

Ms. Shannon May
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DOCTORAL STUDIES Massachusetts Institute of Technology (MIT)
 PhD, Economics, Expected completion June 2023
 DISSERTATION: "Essays in Labor Economics"

DISSERTATION COMMITTEE AND REFERENCES

Professor Amy Finkelstein
 MIT Department of Economics
 77 Massachusetts Avenue, E52-442
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Professor Simon Jäger
 MIT Department of Economics
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Professor Daron Acemoglu
 MIT Department of Economics
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PRIOR EDUCATION	University of Oxford	2015
	MPhil in Economics <i>Distinction</i>	
	Bocconi University	2013
	BSc in Economics (BIEMF) <i>110/110 Cum Laude</i>	

CITIZENSHIP Italian

GENDER: Female

LANGUAGES English (fluent), Italian (native)

FIELDS Primary Field: Labor Economics
 Secondary Field: Public Finance

TEACHING EXPERIENCE	14.32 Econometric Data Science (undergraduate)	2023
	Teaching Assistant to Professor Josh Angrist	(planned)
	14.13 Psychology and Economics (undergraduate)	2023
	Teaching Assistant to Professor Frank Schilbach	(planned)
	14.33 Research and Communication in Economics (undergraduate)	2022
	Teaching Assistant to Professor Simon Jäger	

RELEVANT POSITIONS	Research Assistant to Professors Simon Jäger and Benjamin Schoefer (MIT)	2019-20
	Research Assistant to Professors Daron Acemoglu and Pascual Restrepo (MIT)	2018
	Research Assistant to Professors Ivan Werning and Arnaud Costinot (MIT)	2018
	Research Assistant to Professor Amy Finkelstein (NBER)	2015-17
	Research Intern (Oxera, Economic consulting)	2014

FELLOWSHIPS, HONORS, AND AWARDS	NBER Pre-Doctoral Fellowship in Retirement and Disability Policy Research	2020-22
	Jerry A. Hausman Dissertation Fellowship	2020-22
	MIT Economics Departmental Fellowship	2018-19
	Bank of Italy, “Ando-Modigliani” Fellowship	2017-18
	Bocconi-ISU, Scholarship	2012-13

PROFESSIONAL ACTIVITIES	Referee: AER: Insights	
	Presentations:	
	Society of Labor Economists (SOLE)	2022
	IZA Workshop: Labor Market Institutions*; European Economic Association (EEA); European Association of Labour Economists (EALE) *coauthor presenting	2021
	Service: Graduate Economic Association (GEA) co-president (2018-19), MIT third-fourth year lunch co-organizer (2019-21), MIT Labor coffee co-organizer (2020-22), MIT Application Assistance and Mentorship Program (2020)	

RESEARCH PAPERS	“What Works for Working Mothers? A Regular Schedule Lowers the Child Penalty” (Job Market Paper) (with Ludovica Ciasullo)
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Which working arrangements do mothers prefer, and how do these working arrangements affect the child penalty they experience? The Australian 2009 Fair Work Act explicitly entitled parents of young children to request a (reasonable) change in working arrangements. Leveraging variation in the timing of the law, timing of childbirth, and the bite of the law across different occupations and industries, we establish two main results. First, if allowed to request a change in working arrangements, new mothers ask for regularity in their schedule. Second,

with regular schedules, working mothers' child penalty declined from a 47 percent drop in hours worked to a 40 percent drop. For the most exposed mothers, the Fair Work Act led to both a doubling in schedule regularity, and a 30% decrease in the child penalty in hours of work.

“Employment Protection and the Direction of Technology Adoption”

(with Andrea Manera)

We study the impact of employment protection legislation (EPL) on firms' innovation, through an event-study analysis of labor market reforms occurring in Europe over 2000-2016. Data from the Community Innovation Survey reveal that substantial drops in EPL for temporary workers prompt a reallocation of innovation towards the introduction of new products, away from process innovation aimed at cutting labor costs. Among innovative firms, the share of product innovators increases by 15% of the pre-reform value, while the share of firms specializing in process innovation falls by 35%. We develop a theoretical framework of directed technical change to rationalize our findings.

“Optimal Labor Income Taxation in the Assortative Matching Model”

(2015)

I consider an assortative matching model in which workers who differ in ability match with firms which differ in size. I first extend the original (Beckerian) model in order to account for endogenous labor supply choice, and show that in this case positive assortative matching is optimal when the firms' production function is supermodular and the worker cost of effort function is submodular, or vice-versa. I then derive the optimal linear tax rate in presence of assortative matching, and compare it with the tax rate in Rothschild and Scheuer's (2011) Self-Confirming Policy Equilibrium (SCPE), the tax policy believed to be optimal by a government that assumes a frictionless labor market with exogenous wages. I show that the rigidities introduced by assortative matching make the optimal linear tax rate generally larger than the one in the SCPE when the effect on firms' profits is not taken into account (partial equilibrium), but the optimal linear tax rate is typically smaller than the one in the SCPE when general equilibrium effects are considered.

RESEARCH IN PROGRESS

“The Effects of Sectoral Bargaining: Quasi-Experimental Evidence from Contract Extensions in Germany”

(with Simon Jäger, Benjamin Schoefer and Jörg Heining)

Sectoral bargaining, in which employer and worker associations negotiate collective agreements binding for the entire industry, is common in many countries. We study the effects of sectoral bargaining in Germany, where only some collective bargaining agreements (CBAs) are extended to the entire industry, while most CBAs are only binding for employers that join the agreement (employer association). Our design exploits a series of government-mandated extension events (and their reverse), which declare a CBA binding for all firms within a certain region and industry.

“Maternal Labor Market Prospects and Intra-household Bargaining over Time Allocation”

(with Ludovica Ciasullo)

How do couples allocate their time when they have a child, and does it change with changing labor market prospect for mothers? First, we document that after the birth of their first child, women significantly reallocate their time use, sharply decreasing their labor supply in order to spend time playing with the child and doubling the time spent in housework, while men don't change time spent in paid work or doing housework. Men do spend time with the child, although only one third of the time spent by women. Secondly, we exploit an exogenous change in working conditions of mothers, the 2009 Australian Fair Work Act, which increased maternal labor supply, to study how it affected time use of the couple. We show that mothers who spend more hours in paid employment cut on time spent doing housework almost by the same amount, but not on time spent directly with the kid; and that their male partners do not pick up the slack in housework. We plan to use these preliminary findings to inform a model of intra-household bargaining over time and task allocation, and how it changes in the presence of children.

“Full-Time Mothers, Part-Time Workers”

(with Ludovica Ciasullo)

We study two determinants of the choice of mothers to return to work after giving birth: indivisibility of labor, and signaling. In Italy, new mothers have to take five months of mandatory leave. In addition, parents are allowed up to 10 more months of leave. A 2015 law (i) gives parents the possibility of taking the voluntary leave on an hourly rather than a daily basis, and (ii) allows parents to turn a full-time contract into a part-time contract for any remaining months of voluntary leave. By comparing new parents before and after the law, we can study whether these provisions change maternal labor supply - which could go in either direction, depending on whether the compliers are mothers that in absence of the law would have worked full time or not worked -, thus addressing the question of whether indivisibility of labor is a binding constraint. We can also study, both theoretically and empirically, how the expanded choice set affects signaling - the notion whereby if you take the longest possible leave you signal to your employer that you are “low attachment type”, thus risking passed over for training or promotions - by comparing sectors in which the signaling motive is likely to be more or less relevant (for example, private vs public sector).