Job Market Candidates **2024-2025**

MIT Economics

	Applied Econometrics	Behavioral	Development	Digital Economics	Econometrics	Environmental Economics	Finance	Health	Industrial Organization	Innovation	International Macroeconomics	Labor	Macroeconomics	Market Design	Microeconomic Theory	Natural Language Processing	Organizational	Political Economy	Public Finance	Public Economics	Urban Economics	Statistics	Trade
Aspelund, Karl						P			P										S				
Becko, John Sturm												S						P					P
Celebi, Oguzhan													P	P			S						
Dix, Rebekah								S	P	S													
Garg, Tishara			P						S														P
Gertler, Sarah											P		S										S
Gulek, Ahmet	S		S									P								P			
Houeix, Deivy			P														S						
Kikuchi, Shin												S	P					S					P
Klosin, Sylvia					P	P																	
Lensman, Todd									S	P			P										
Moran, Kelsey								P	S			S						P					
O'Connor, Daniel													P							S			P
Orestes, Victor					S		P						P										
Orzach, Roi															P		S						
Sapiro-Gheilier, Eitan															S	S		P					
Shreekumar, Advik	S	P						P															
Solomon, Adam						S	S											P					
Veiel, Rafael															P								
Vives, Jaume	S				P				S													S	
Wiles, Edward			P														S						S
Zhang, Henry						S	P						P										
Zhou, Jie			S	P														P					S

P= Primary Field, S= Secondary Field

MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
Ph.D. in Economics. Expected completion June 2025

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PRIOR EDUCATION

Harvard University — 2017
Bachelor of Arts in Environmental Science and Public Policy,
magna cum laude with highest honors

CITIZENSHIP

United States of America, Iceland

LANGUAGES

English (native), Icelandic (native), German (reading)

CODING

Julia, Python, Stata, R. Intermediate in ArcGIS. Beginner in SQL.

FIELDS

Major fields: Environmental Economics, Industrial Organization
Minor fields: Public Economics

TEACHING EXPERIENCE

Microeconomic Theory and Public Policy (14.03), — 2023
Teaching Assistant to Prof. Tobias Salz

RELEVANT PRIOR POSITIONS

Research Associate to Profs. Simon Jäger and Benjamin Schoefer, MIT — 2018-2019

Pre-Doctoral Fellow, — 2017-2018
Education Innovation Laboratory at Harvard University

Research Intern, — 2016
Resources for the Future

Research Intern, — 2015
OECD Nuclear Energy Agency

FELLOWSHIPS, HONORS, AND AWARDS

MIT Graduate Conference Travel Grant	2023
US NOAA-Sea Grant Fellowship	2022-2025
George and Obie Shultz Fund (3x)	2020-2023
Graduate Fellow, Minda de Gunzburg Center for European Studies at Harvard University	2020-2025
National Science Foundation Graduate Research Fellowship	2019-2024
Enel Endowment Prize for Best Undergraduate Thesis in Environmental Economics	2017
Environmental Science and Public Policy Undergraduate Thesis Prize	2017
Phi Beta Kappa	2016

PROFESSIONAL ACTIVITIES

Refereeing: *American Economic Review: Insights*

Presentations:
Occasional Workshop in Environmental and Resource Economics (2024)
University of California, Davis (2024)
NMFS Social Science Symposium (2024)
NMFS-Sea Grant Fellows Research Symposium (2023, 2024)
North American Association of Fisheries Economists Forum (2023)
Academic Workshop for Icelandic Economists Abroad (2023)

Other Activities:
Invited participant, NBER Summer Institute, IO and EEE (2024)
Berkeley-Sloan Summer School in Environmental & Energy Economics (2020)

RESEARCH PAPERS

"Who Gets the Fish? Designing Permit Markets in the Commons" (Job Market Paper)

Regulators often impose trade limits in environmental permit markets, reducing gains from trade to redistribute value to groups like harvesting firms' labor that do not benefit directly from the permit market. I examine the efficiency and distributional impacts of two common designs—segmenting permit trading by firm size and imposing production requirements—in Iceland's fisheries permit market. Using a difference-in-differences approach, I find that trade limits shifted production to more productive boats, increasing earning disparities between low- and high-productivity fishery workers. Simulating equilibria without trade limits, I show that segmentation reduces gains by 7%, benefiting small-boat workers at the expense of small-boat owners and large-boat labor, while the production requirement cuts gains by 15% but more effectively targets low-income workers, concentrating losses on high-profit boat owners. Combining both policies improves targeting to low-income workers at a similar per-dollar cost as the production requirement alone.

"Additionality and Asymmetric Information in Environmental Markets: Evidence from Conservation Auctions"
(with Anna Russo)

Market mechanisms aim to deliver environmental services at low cost. However, this objective is undermined by participants whose conservation actions are not marginal to the incentive — or "additional" — as the lowest cost providers of environmental services may not be the highest social value. We investigate this potential market failure in the world's largest auction mechanism for ecosystem services, the Conservation Reserve Program, with a dataset linking bids in the program's scoring auction to satellite-derived land use. We use a regression discontinuity design to show that three of four marginal winners of the auction are not additional. Moreover, we find that the heterogeneity in counterfactual land use introduces adverse selection in the market. We then develop and estimate a joint model of multi-dimensional bidding and land use to quantify the implications of this market failure for the performance of environmental procurement mechanisms and competitive offset markets. We design alternative auctions with scoring rules that incorporate the expected impact of the auction on bidders' land use. These auctions increase efficiency by using bids and observed characteristics to select participants based on both costs and expected additionality.

RESEARCH IN PROGRESS

"Spatially Managing the Commons"
(with Aaron Berman)

The closure of specific areas to economic activity is a common approach to preventing excessive depletion of renewable natural resources. However, displacement—or "leakage"—of extractive activity to unregulated areas can undermine the effectiveness of such policies by increasing depletion elsewhere. We outline a framework that decomposes the net value of spatial closures into the static costs of congestion and foregone harvests today, the dynamic benefits of resource regrowth in the closed area, and the dynamic costs of increased depletion in unregulated areas. We apply this framework to the spatial regulation of the US Northeast scallop fishery, one of the most valuable fisheries in the country, where regulators have implemented area closures over the last two decades. Using geospatial data on vessel-level harvesting decisions and scallop population estimates, we first document the displacement of activity across space and congestion effects from vessels concentrating in open areas. Next, we estimate profits under observed and counterfactual policies to quantify how closures improve aggregate value and how displacement undermines that improvement. Finally, we test whether "access areas" that allow limited harvesting in closed regions mitigate the negative impacts of displacement and explore how the displacement effects differ under landing fees rather than effort restrictions.

OTHER RESEARCH

With Michael C. Droste, James H. Stock, and Christopher D. Walker. 2020. "Identification and Estimation of Undetected COVID-19 Cases Using Testing Data from Iceland." NBER Working Paper No. 2752.

With Jan-Horst Keppler. 2018. Chapters 5 and 8. In *Full Costs of Electricity Provision*. OECD: Paris, France.

MIT Economics

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ACADEMIC POSITIONS
Postdoctoral Research Fellow, Stanford University
Faculty Sponsor: Alvin Roth

DOCTORAL STUDIES
Massachusetts Institute of Technology (MIT)
PhD, Economics, June 2023
DISSERTATION: "*Essays in Market Design and Political Economy*"

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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
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

FELLOWSHIPS, HONORS, AND AWARDS

Unicredit & Universities Crivelli Europe Scholarship (2017)
The Scientific and Technological Research Council of Turkey Scholarship for Graduate Studies (2016)
Valedictorian, Koc University (2016)

PROFESSIONAL ACTIVITIES

Presentations
2024: UC Davis, Stony Brook International Conference on Game Theory, EC'24
2023: UC Berkeley, Washington University in St. Louis, Stanford Market Design Workshop
2022: Iowa State University, INFORMS Workshop on Market Design, Society for the Advancement of Economic Theory Conference
2021: London Business School

Refereeing
AEJ:Microeconomics, The Review of Economic Studies, Theoretical Economics, Econometrica, Economics Letters, Journal of European Economic Association, Journal of Political Economy, Scandinavian Journal of Economics, JPE:Microeconomics

PUBLICATIONS

"Priority Design in Centralized Matching Markets" (with Joel Flynn)
The Review of Economic Studies, 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

"Diversity Preferences and Affirmative Action" (Job Market Paper 1)

In various contexts, institutions allocate resources using rules that determine selections given the set of candidates. Many of these rules incorporate affirmative action, accounting for both identity and (match) quality of individuals. This paper studies the relationship between these rules and the preferences underlying them. I map the standard setting of market design to the revealed preference framework, interpreting choice rules as observed choices made across different situations. I provide a condition that characterizes when a rule can be rationalized by preferences based on identities and qualities. I apply tests based on this condition to evaluate real-world mechanisms, including India's main affirmative action policy for allocating government jobs, and find that it cannot be rationalized. When identities are multidimensional, I show that non-intersectional views of diversity can be exploited by dominant groups to increase their representation and cause the choice rules to violate the substitutes condition, a key requirement for the use of stable matching mechanisms. I also characterize rules that can be rationalized by preferences separable in diversity and quality, demonstrating that they lead to a unique selection within the broader set of policies that reserve places based on individuals' identities.

"Adaptive Priority Mechanisms" (Job Market Paper 2) (with Joel Flynn),
Reject and Resubmit at American Economic Review

How should authorities that care about match quality and diversity allocate resources when they are uncertain about the market? We introduce *adaptive priority mechanisms* (APM) that prioritize agents based on their scores and characteristics. We derive an APM that is optimal and show that the ubiquitous priority and quota mechanisms are optimal if and *only if* the authority is risk-neutral or extremely risk-averse over diversity, respectively. Deferred Acceptance implements the unique stable matching when all authorities use the

optimal APM. We provide a practical roadmap for implementing APM as a market-design solution and illustrate this using Chicago Public Schools data.

"Segmented Trading Markets" (with Kerry Back, Ali Kakhbod and A. Max Reppen), *Revise and Resubmit at Theoretical Economics*

We study competition and endogenous fragmentation among heterogenous trading venues that differ in technology (fast vs. slow), where traders can dynamically choose which venue to trade in. We show that technological improvements increase trading speed, but may also heighten differentiation, which reduces competition, leads to higher trading fees, and potentially reduces trading volume and welfare. Improvements in the slower venue lead to increased trading speed, decreased differentiation, and thus increased trading volume and welfare. Conversely, the effect of improvements in the faster venue is generally ambiguous and depends on the extent of traders' patience, the frequency of their preference shocks, and the competition between venue owners. We further study the effect of technological improvement in one of the venues when both initially have the same trading speed. We find that if the trading speeds are initially slow enough, the technological improvement will increase trading volume and trader welfare. Conversely, if the trading speeds are initially fast, the increase in trading fees outweighs the speed advantage that comes with technological improvement, leading to decreased trading volume and trader welfare.

"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 study various integration protocols that differ in flexibility to shed light on the formation, expansion, and cohesion of the European Union (EU). Unlike previous models with strategic substitutes, our results align with the EU's history, where enlargement and flexible integration went hand in hand with deepening integration, often spearheaded by the ``core'' countries. Extending the framework to study unions' integration with non-members (candidates, exiting countries, and others) reveals the necessity of restrictions to non-member integration to foster cooperation and make the union robust to changing preferences of its members. We conclude with an exploration of the trade-offs of two-tier unions, an increasingly topical issue. Our results demonstrate the important role complementarities play in expanding membership and deepening integration in international unions.

"Substitutability in Favor Exchange"

I study a favor exchange model in which players enforce cooperation bilaterally and can rely on multiple partners for favors, that is, relationships are potentially substitutable. With substitutability, the frequency players interact and the value of their relationships are determined by the network, and the equilibrium exhibits empirically observed intermediate cooperation. With heterogeneous players,

substitutability causes homophily and exacerbates inequality. Community enforcement prevents bilateral ties and cannot be combined with bilateral enforcement. By considering substitutability, my model can explain the stratification of social networks in post-Soviet states and the absence of bilateral relationships for medieval traders who practiced community enforcement.

"Best-Response Dynamics in the Boston Mechanism"

I introduce and analyze a dynamic process called Repeated Boston Mechanism (RBM), where the Boston Mechanism (BM) is used for multiple periods, and students form their application strategies by best responding to the admission cutoffs of the previous period. 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 converges to the SOSM of a market in which sincere students lose their priorities to sophisticated ones. When students are not truthful in the first period but best reply to some initial admission cutoffs, the allocation 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 the earlier characterizations of equilibria of BM and are in line with the observations of non-equilibrium play in BM in real-world markets.

MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics, Expected Completion June 2025
DISSERTATION: "Essays on Industrial Organization"

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PRIOR EDUCATION

University of Wisconsin-Madison 2019
B.A. in Economics (Mathematical Emphasis) and Mathematics,
with Distinction and Comprehensive Honors
Certificates (minors) in Computer Science and African Studies

CITIZENSHIP United States **GENDER** Female

LANGUAGES English, Spanish (advanced), Arabic (intermediate)

FIELDS Primary Field: Industrial Organization

Secondary Fields: Innovation, Health Economics

TEACHING EXPERIENCE	Open Source Economics (OSE) Laboratory Boot Camp, University of Chicago (Graduate Instructor)	2019
RELEVANT POSITIONS	Research Assistant to Professors Nikhil Agarwal and Daron Acemoglu	2020-21
	Research Intern, Microsoft Research (advised by Dr. James Brand)	2022
FELLOWSHIPS, HONORS, AND AWARDS (SELECTED)	NBER Pre-Doctoral Fellowship in Aging and Health Research	2024-25
	Jerry A. Hausman Graduate Dissertation Fellowship	2022-23
	NSF Graduate Research Fellowship	2019-24
	College of Letters & Science Dean's Prize	2019
	Teddy Kubly Award for Initiative and Efficiency	2019
	Juli Plant Grainger Scholarship in Economics	2019
	Hilldale Undergraduate/Faculty Fellowship (with Marzena Rostek)	2018
	Mary Claire Phipps Scholarship in Economics	2018
	UW-Madison Full Scholarship for Music Performance	2015-19

PROFESSIONAL ACTIVITIES

Conference Presentations: International Industrial Organization Conference Rising Stars Session (2022)

Referee: *The Review of Economics and Statistics*

Service: MIT Econ Application Assistance and Mentoring Program Mentor, Co-President of the MIT Graduate Economics Association, MIT Industrial Organization Field Lunch Organizer, MIT Structural Reading Group Organizer

Affiliations: US Census Bureau Special Sworn Status

RESEARCH PAPERS

"Combining Complements: Theory and Evidence from Cancer Treatment Innovation" (Job Market Paper)
(with Todd Lensman)

Innovations often combine several components to achieve outcomes greater than the "sum of the parts." We argue that such combination innovations can introduce an understudied inefficiency – a positive market expansion externality that benefits the owners of the components. We demonstrate the existence of this externality in the market for pharmaceutical cancer treatments, where drug combination therapies have proven highly effective. Using data on clinical trial investments, we document several facts consistent with inefficiently low private innovation: firms are less likely than publicly funded researchers to trial combinations, firms are less likely to trial combinations including other firms' drugs than those including their own drugs, and firms often wait to trial combinations including other firms' drugs until those drugs experience generic entry. Using microdata on drug prices and utilization, we quantify the externalities that arise from new combinations and find that the market expansion externality often dominates the standard negative business stealing externality, suggesting too little innovation in combination therapies. As a result, firms may have incentives to free ride off others' innovation, which we analyze with a dynamic

structural model of innovation decisions. Finally, we use the estimated model to design cost-effective policies that advance combination innovation. Redirecting publicly funded innovation toward combinations with high predicted market expansion or consumer surplus spillovers minimizes crowd out of private investments, increasing the rate of combination innovation and total welfare while remaining budget neutral.

"Costs of Technological Frictions: Evidence from EHR (Non-)Interoperability"
(with Kelsey Moran and Thi Mai Anh Nguyen)

Interoperability—the ability of different systems to work together—is an increasingly vital component of product markets. We study the impact of interoperability frictions in the context of US hospital Electronic Health Record (EHR) systems. While use of EHR systems is widespread, interoperability of these systems remains low, particularly across those produced by different EHR vendors. We examine how interoperability affects patients by considering both a direct, technological effect of influencing health information exchange and an allocative effect of shifting the flow of patients across providers. Using an event study design in which interoperability between hospital pairs changes when one changes EHR vendors, we find evidence for both channels. When two hospitals switch to having the same EHR vendor, charges and readmissions rates for patients who are transferred and referred between them decrease by 4% and 11%, respectively. In addition, these hospitals now share 8% more inpatient transfers and 9-10% more referrals. This change in patient flows further affects patient outcomes: patient health improves when their sending hospitals switch to EHR vendors used by higher-quality hospitals in the market and worsens when the opposite occurs. To quantify the welfare gain from reducing interoperability frictions, we estimate a demand model of how patients and providers trade-off interoperability with other receiving hospital characteristics when choosing where to send patients. The model is identified by changes in patient flows following changes in hospital EHR vendors and interoperability levels. We show that eliminating all interoperability frictions would redirect 7.5% of patients to different hospitals and increase joint hospital-patient welfare by 21%, the equivalent of a 57-kilometer reduction in travel distance.

"Input-Price Responses to Horizontal Mergers and the Bargaining-Leverage Defense"
(with Todd Lensman)

In several recent antitrust cases, defendants have argued that a horizontal merger would allow them to negotiate reduced input prices with suppliers and pass on the resulting savings to consumers. This input price effect is often supported by models in which firms simultaneously set goods prices and bargain with suppliers over input prices, because a downstream merger can reduce suppliers' outside options. We study new forces that arise when input prices are set before goods prices, and we show that they often tend to increase input prices after a merger. Generalizing the first-order approach to merger analysis, we derive a measure of incentives to adjust input prices after a downstream merger, Input Pricing Pressure. We use this measure to show that

mergers often incentivize higher input prices, and that these incentives hinge on changes in downstream pass-through rates, marginal cost efficiencies generated by the merger, and input-output linkages. By implication, consumer surplus-maximizing antitrust policy may be too lax when input prices are assumed fixed, and it should be biased against claims that input prices will fall after a downstream merger. In an empirical application to local retail beer markets, endogenizing input prices substantially raises the consumer harm from mergers of retailers.

"Market Power Spillovers Across Airline Routes"
(with Roi Orzach)

Airlines operate complicated flight networks, often utilizing hub-and-spoke systems to efficiently route connecting travelers and optimize costs. Despite the prevalence of connecting travelers—accounting for approximately one-third of passenger itineraries—most analyses of the welfare effects of changes in competition focus on nonstop routes. We show that when firms face capacity constraints or adjustment costs, a price decrease on a direct route may incentivize firms to decrease prices on indirect routes using this route as a leg. We document that this pass-through is positive using the price effects of low-cost carrier entry and airline mergers: connecting fares decrease after low-cost carrier entry on one of the legs and increase after a merger of carriers that competed on one of the legs. Our findings demonstrate that ignoring these network effects leads to significantly underestimating changes in consumer surplus—by up to 115%—in response to changes in competition. Thus, considering full airline networks is essential to accurately estimating the impact of changes in competition on consumers.

RESEARCH IN PROGRESS

"How On-Demand Inputs Change Firm Production and Business Dynamism: The Case of Cloud Computing"
(with James Brand and Mert Demirer) **(slides available)**

Dynamic frictions in adjusting firm inputs are an important source of misallocation inefficiencies in firm production. The emergence of "on-demand" inputs has the potential to reduce these dynamic frictions and increase firms' flexibility. In this paper, we study one such technology: cloud computing, which has fundamentally changed how firms access IT input by turning it from a high fixed-cost input to a highly elastic variable-cost one. We measure the economic implications of cloud computing by developing a model of industry dynamics with cloud computing and combining firms' daily IT usage. Using our model, we simulate economies with and without cloud technology and find that cloud computing can increase output by as much as 30% in the software industry. Most of the gain comes from increased business dynamism by increasing the speed with which firms can respond to shocks and reducing entry costs.

The US Manufacturing Labor Share Decline: Demand, Technology, or Automation?
(with Daron Acemoglu, Nikhil Agarwal, and Pascual Restrepo)

This paper studies the causes and consequences of the decline in the manufacturing labor share over the last three decades. We develop a semi-parametric method to estimate production functions that allow for changes in the capital intensity of production (e.g., due to automation) as well as for factor-augmenting technological changes. Using this estimation strategy and data from US manufacturing Census as well as price data from exports for a subset of firms, we decompose observed changes in firm outcomes into (i) changes in demand, (ii) changes in factor-augmenting technology, and (iii) shifts towards more capital-intensive production techniques. Our results quantify the relative importance of these channels for the decline in the manufacturing labor share.

"Interoperability and Competition in Electronic Health Records"
(with Kelsey Moran and Thi Mai Anh Nguyen)

While electronic health record (EHR) systems are widely used by US hospitals, interoperability—the ability to easily share patient data between different EHR systems—is limited. Advocates argue that increasing interoperability benefits patient health while reducing healthcare costs. However, the trend towards greater concentration in the EHR market introduces a potential trade-off between interoperability and EHR system costs. In this project, we examine the role of interoperability in EHR vendor competition. At the core of our analysis is a model of hospital demand for EHR systems that incorporates the effects of interoperability on patient flows and outcomes (Dix, Moran, and Nguyen, 2024), EHR system costs, and EHR system functionalities. We will estimate this model using data on hospital finances, EHR system choices, interoperability, and patient flows and outcomes. This demand model allows us to infer vendor incentives for setting interoperability levels, functionalities, and prices. Specifically, the model enables us to quantify the incentives for EHR vendors to improve within-system interoperability, which strengthens their market power, versus across-system interoperability, which has positive spillovers on the rest of the market. Our results are informative on the design of technology adoption subsidies and interoperability regulations in industries with large adjustment costs and interoperability concerns.

MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
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DISSERTATION: "Essays in Trade and Industrial Policy"

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PRIOR EDUCATION

Indian Statistical Institute, Delhi — 2018
MS Quantitative Economics (93.4%)
Shri Ram College of Commerce, University of Delhi — 2016
BA Economics (Honors) - University First Rank (91.7%)

CITIZENSHIP India **GENDER:** Female

LANGUAGES Hindi (native), English (fluent), Sanskrit (intermediate)

FIELDS

Primary Fields: Trade, Development Economics
Secondary Fields: Industrial Organization

TEACHING EXPERIENCE

Math Camp (Graduate)	2022, 23
Sole Instructor	
Adv Topics in Industrial Org (Graduate, MIT 14.273)	2022, 23
TA to Profs Nikhil Agarwal, Tobias Salz and Charles Murray	
Mathematical Economic Modeling (UG, MIT 14.18)	2023
TA to Prof Jonathan Weinstein	
Econ Apps of Game Theory (UG, MIT 14.12)	2021
TA to Prof Ian Ball	
Principles of Macroeconomics (UG, MIT 14.02)	2021
TA to Prof Martin Beraja	

RELEVANT POSITIONS

RA to Profs David Atkin and Dave Donaldson	2021-
RA to Profs Shoumitro Chatterjee and Aprajit Mahajan	2021-22
RA to Profs Sara Ellison and Chris Synder	2021-22
RA to Profs Ricardo Cabellaro and Alp Simsek	2021
RA to Prof Arnaud Costinot	2020
RA to Prof Ivan Werning	2020
Analyst (Macro, FinRes/Fundamental Research) DE Shaw & Co.	2018-19

FELLOWSHIPS, HONORS, AND AWARDS

Dartmouth Globalization PhD Fellowship (2023)
Jerry A. Hausman Fellowship, MIT
Presidential Fellowship, MIT
Graduate Fellowship, Indian Statistical Institute
President's Gold Medal, University of Delhi
Best Woman Candidate, University of Delhi
Mitsubishi Fellowship, University of Delhi (2014, 2015)
All India Bhaskar Genius Fellowship (2012, 2013)

PROFESSIONAL ACTIVITIES

Refereeing: Econometrica, European Economic Review
Mentorship: Application Assistance and Mentorship Program, MIT

PUBLICATIONS

Optimal Intergenerational Transfers: Public Education and Pensions.
(with Monisankar Bishnu, Shresth Garg, and Tridip Ray)
Journal of Public Economics, Volume 198, June 2021

Intergenerational Transfers: Public Education and Pensions with Endogenous Fertility.
(with Monisankar Bishnu, Shresth Garg, and Tridip Ray)
Journal of Economic Dynamics & Control, Volume 153, August 2023

RESEARCH PAPERS

Can Industrial Policy overcome Coordination Failures? Theory and Evidence from Industrial Zones" (Job Market Paper)

This paper introduces a method to study the impact of industrial policy on equilibrium selection in economies where strong complementarities can create the possibility of coordination failures. Despite the prevalence of many policies predicated on coordination failures and big-push ideas, empirical evidence on their

success is limited due to the difficulty in disentangling equilibrium shifts from direct changes to fundamentals. By leveraging tools from Industrial Organization and Algebraic Geometry, I develop an approach that recovers the equilibrium selection rule without imposing strong assumptions on the distribution of economic fundamentals or their responses to policy. Using a novel dataset that I construct, I apply this method to the study of state-developed Industrial Zones in India. I find that regions with Industrial Zones are 30% more likely to switch to a high-industrialization equilibria over a 15-year period than comparable regions without the zones. About a third of the effect of Industrial Zones on industrialization and welfare is attributable to coordination effects. The proposed method can be more broadly applied to study settings with multiple equilibria such as the structure of cities, trade liberalization episodes, and technology adoption.

The Effects of Immigration on the Places that Don't Receive Immigrants (with Ahmet Gulek)

This paper investigates how immigration-induced wage shocks can propagate beyond the regions directly affected by immigrant arrivals through production networks. Using the Syrian refugee crisis in Turkey as a quasi-experiment, we first show that low-skill immigrants lower labor costs in low-skill intensive industries in the host regions. We then use the universe of Turkish employer-employee-linked records, balance sheet data, and near universe of firm-to-firm transactions from VAT records to show that firms in non-host regions who were relatively more exposed to the inflow of immigrants through their supply chain hired more workers, increased production and share of labor in production costs. The latter suggests that labor and intermediate goods are gross complements, with an estimated elasticity of substitution around 0.78. Finally, we study the general equilibrium effects of an immigration shock on real wages and welfare throughout the economy by incorporating immigration into a model of production networks. Our analytical results show that immigration can increase or decrease real wages in the control regions based on the structure of the production network. We calibrate the model using our data and reduced-form estimates. Our counterfactual estimates show that immigrants' effects on nonhost regions are negligeable in the aggregate, but can be economically meaningful for industries that are trade-dependent on the host region.

The Incidence of Distortions (with David Atkin, Baptiste Bernadac, Dave Donaldson, and Federico Huneeus)

Economic distortions---such as market power, taxes, credit constraints, etc.--- are fundamental in understanding the difference between developing and developed economies. Recent work has documented the pervasive extent of economic distortions and how they lead to substantial misallocation, or aggregate productivity loss. Far less well understood is how these phenomena affect members of society differently. In this paper we combine unique datasets from Chile, linking workers and owners to firms, firms to each other, firms to consumers, and firms and consumers to the government, in order to quantify the

full incidence of distortions for the first time.

RESEARCH IN PROGRESS

Who Picks Winners? Evidence from Industrial Policy Application Cycles (with Vishan Nigam)
In real-world settings, a firm's application for industrial policy incentives must be approved by multiple actors, including politicians, bureaucrats, and firms themselves (through self-selection). *Who* ultimately picks winners, *whom* they favor, and *how* favoritism interacts with incentive design remain open questions. Using confidential data on industrial subsidy applications and decisions in a large Indian state, we document several stylized facts. First, most variation in winning subsidies is conditional on final bureaucrat approval. While bureaucrats approve over 90% of applications, less than 30% of approved subsidies are paid, with an average delay of 3.5 years among winners. Second, winners are actively chosen at the payment stage: each subsidy release order covers either a single high-profile plant or an industrial cluster. Firm bargaining power (proxied by size and in-state headquarters) predicts earlier payments. Third, payments support struggling firms: in a shift-share design based on firms' pre-pandemic product mixes, those facing larger negative demand shocks in 2020 are more likely to receive payments in 2023 for investments made years earlier. Favoritism is more pronounced for subsidies on variable inputs (e.g., sales tax and electricity), which can be filed years after the eligible investment. These results underscore the challenge of insulating industrial policy from political influence, as constrained funds controlled by politicians lead to favoritism in a black box, years after investments.

Quantifying the Benefits of Economic Integration: Evidence from a VAT Reform in India (with Edward Wiles)

We study the benefits of economic integration from reducing policy-induced barriers to trade. A landmark 2017 fiscal reform in India substantially reduced barriers to crossing internal state borders. Using the reform as a natural experiment and aggregate data on trade flows, we estimate gravity regressions and find that each additional border in a shipping route reduces trade by 15%. Calibrating a quantitative trade model to this elasticity, we find that reducing all such border frictions would increase GDP by 3%. To examine how supply chains may have reorganized, and the implications this has for gains from trade, we intend to exploit detailed micro-level data which we constructed from the universe of VAT records in India.

Trade, Deindustrialization and Service-led Growth (with Shin Kikuchi and Edward Wiles)

We examine the impact of trade liberalization on structural change patterns in

India. Leveraging district-level variations in sectoral composition, we find that districts with greater tariff reductions experienced larger declines in manufacturing employment shares. By extending Matsuyama's 1992 model of deindustrialization to include a non-tradable service sector, we demonstrate analytically and through simulations that India's observed deindustrialization and service-led growth can be qualitatively attributed to trade liberalization. We aim to structurally estimate the model parameters to quantify the role of trade liberalization in driving these structural changes.

MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics, Expected completion June 2025
DISSERTATION: "Essays in International Macroeconomics"

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PRIOR EDUCATION

Dartmouth College 2017
Economics, Mathematics

CITIZENSHIP United States

GENDER: Female

FIELDS

Primary Fields: International Macroeconomics

Secondary Fields: Trade, Macroeconomics

RELEVANT POSITIONS

Research Assistant for Daron Acemoglu and David Autor	2019-present
Senior Research Analyst Federal Reserve Bank of New York	2017-2019
Research Assistant for Paul Goldsmith-Pinkham Federal Reserve Bank of New York	2016

FELLOWSHIPS, HONORS, AND AWARDS

US Census Bureau: solo-authored project approval for multiple papers 2023-2028, Special Sworn Status.
National Science Foundation Graduate Fellowship
Dartmouth: Phi Beta Kappa, Rufus Choate Scholar, Presidential Scholar

RESEARCH PAPERS

Exchange Rate Pass-through and Expenditure-Switching Revisited
(*under Census Bureau Project #2874)* **(Job Market Paper)**

Conventional wisdom is that low trade price pass-through of exchange rate movements generates small trade fluctuations. If true, exchange rates lose their expenditure-switching power and allocative role. In this paper, I offer evidence to the contrary. Using confidential US micro-data and a macroeconometric technique applied to panel data, I show that although pass-through is substantially lower in US imports than US exports, the resulting trade quantity-exchange rate elasticities do not reflect that difference. The results imply that the low pass-through environment is subject to a higher import demand (quantity-price) elasticity than the high pass-through. To explain this fact, I propose and validate an extension of a standard small open economy New Keynesian model in which exporting and importing agents are both subject to price rigidities. Increasing the exporter's trade price rigidity lowers exchange rate pass-through but causes it to be more persistent. The importer's rigidity causes the importer to respond more to persistent pass-through, leading to a higher import demand elasticity in response to low pass-through. I conclude by exploring the implications of this framework for monetary and exchange rate policy.

WORKING PAPERS

The Structural Drivers of Price and Quantity Adjustment: Insights from Tariff and Exchange Rate Pass-through

Why is there complete long-run pass-through of both tariffs and exchange rates in US exports, despite evidence of flexible markups? To answer this question, I develop a methodology to leverage tariffs and exchange rates to uncover the structural drivers of pass-through, the markup elasticity and the marginal cost scale elasticity. I derive and quantify the scale channel of pass-through, which can be decomposed into a bilateral scale and the novel “shock span" scale effect. The shock span channel arises because different correlation patterns across customers enters prices via the scale channel. Because exchange rates are correlated across trading partners, compared to tariffs they have greater capacity for shock-span effects of scale economies. Quantifying the bilateral and shock span components of the scale channel, the paper demonstrates that scale economies can rationalize the discrepancy between markup flexibility and observed pass-through.

Temporary Foreign Crisis Transmission to Local Labor via Exports: Evidence from the 1997 Asian Crisis

This paper exploits the temporary US export drop during the 1997 Asian Crisis to demonstrate that short-run foreign crises can have local labor spillovers via the export channel. I embed a Roy model into a specific-factors setting to guide analysis, linking export fluctuations to labor markets. Empirically, traded employment fell associated with the drop in exports to Crisis-4 countries, there was sluggish post-Crisis adjustment, and nontraded employment in lower-education areas also fell. Using the model I estimate that short-run cross-sector distributional heterogeneity is larger than long-run. Computational estimates find the shock lowered 1998 US traded employment by 135,000-150,000 workers.

RESEARCH IN PROGRESS

Broken Links: The Disruptive Impact of Import Competition on Local Supply Chains and Employment (with Daron Acemoglu, David Autor, David Dorn, and Gordon Hanson) *(under Census Bureau Project #1684)*

Although the substantial job loss that followed from the surge of imports from China is well documented, why import flows created such large adverse effects on local labor markets is poorly understood. This paper documents the overlooked role of supply chain disruptions. We build empirical measures of local and national supply linkages by exploiting commodity-level input-output tables and the gravity-like structure of supply relationships. Consistent with standard input-output models, we find that establishments whose customers are adversely affected by Chinese import shocks see a drop in their own output and employment. The standard model further suggests that establishments whose suppliers are exposed to rising import competition stand to benefit from the availability of less expensive Chinese imports. Contrary to this prediction, we document that establishments whose suppliers compete with cheaper imported substitutes actually experience falling sales and employment effects. These "downstream" impacts appear to reflect costly disruptions to US supply chains, whose operation depends on local long-term relationships. Supporting this interpretation, we show that it is local, rather than national, downstream effects that are most consequential, and that these downstream impacts are driven by customer-supplier linkages involving significant relationship specificities rather than arms-length transactions. We conclude that domestic firms are challenged in exploiting potential gains from cheaper imported inputs when long-term supply chain relationships are threatened.

The International Elasticity Puzzle: Identifying Codetermining Frictions (*under Census Bureau Project #2874)*

The International Elasticity Puzzle focuses on a discrepancy in the import demand elasticity in international trade versus macroeconomic models, but it relates to both the horizon and the underlying shock (tariff or exchange rate). I present two facts consistent with the puzzle's duality: the elasticity is increasing over time, and is dependent on the underlying shock. I then apply the general framework from Gertler (2024a) to rationalize the puzzle. First, I demonstrate that both within exchange rates and across to tariffs, more persistent shocks generate larger demand effects. Second, I show that import buyer rigidities attenuate the elasticity and cause it to be increasing in shock persistence and over time. Third, I leverage the model structure and the estimates to measure the demand rigidity and the underlying static elasticity: the paper quantitatively explains the puzzle. Finally, I employ the framework and estimates to analyze the rate-of-convergence for exchange rates versus tariffs: in the short-run the persistence effect dominates so that the exchange rate converges to the static elasticity more slowly than the tariff.

RESEARCH IN PROGRESS

The Macrofinancial Link Between Tariffs, Exchange Rates, and Trade (with Victor Orestes)

We examine how macrofinancial factors, particularly the aggregate interest rate, shape exchange rate and trade responses to tariff shocks. First, we find that US import tariffs substantially influence the exchange rate, and in contrast little effect from tariffs imposed on the US. Second, we find that countries with which maintain higher interest rates than the US experience larger depreciations than lower-interest-rate countries. Third, we present evidence that high-interest-rate countries' trade are subject to higher demand elasticities, which is driven by supply- or demand-side factors depending on exchange rate regime. Our findings are consistent with a model of centrality in which financial and real factors co-amplify and can offset each other on aggregate but not necessarily in terms of incidence.

MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
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DISSERTATION:
"Effects of Immigration on Labor Markets: Theory, Methods, and Evidence"

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PRIOR EDUCATION

Koc University
Bachelor of Arts in Economics and Bachelor of Science in Mathematics — *2017*
Master of Arts in Economics — *2019*

CITIZENSHIP Turkish

GENDER: Male

LANGUAGES Turkish, English, French

FIELDS
Primary: Labor Economics
Secondary: Applied Econometrics, Development Economics, Public Economics

TEACHING EXPERIENCE

14.41 Public Finance & Public Policy (undergraduate) *2024*
Teaching Assistant to Professor Jon Gruber

14.01 Principles of Microeconomics (undergraduate) *2023*
Head Teaching Assistant to Professor Sara Ellison

14.01 Principles of Microeconomics (undergraduate) *2021*
Teaching Assistant to Professor Jon Gruber

14.64 / 14.661 Labor Economics (undergraduate/graduate) *2021*
Teaching Assistant to Professors Joshua Angrist and Heather Sarsons

14.662 Labor Economics 2 (graduate) *2024 (planned)*
Teaching Assistant to Professors Joshua Angrist and Heather Sarsons

RELEVANT POSITIONS

Research Assistant to Professor Joshua Angrist *2022-24*

FELLOWSHIPS, HONORS, AND AWARDS

International Association for Applied Econometrics Conference *2024*
Best Paper Presented by a Graduate Student Award
for *Synthetic IV estimation in panels* (joint with Jaume Vives-i-Bastida)

Institute of Humane Studies Junior Fellow Conference *2024*

MIT Hausman Dissertation Fellowship *2024*

MIT Global Seed Fund *2023*

MIT Shultz Fund *2022-2024*

MIT Center for International Studies Summer Research Grant *2022-2023*

Unicredit Foundation Crivelli Europe Scholarship *2019*

PROFESSIONAL ACTIVITIES

Referee: American Economic Review Insights, Journal of Development Economics, European Economic Review

Conferences and Presentations: International Association of Applied Econometrics, Society of Labor Economics, Identity & Conflict Lab at Yale, American Causal Inference Conference, IZA workshop on Labor Markets and Innovation during Times of War and Reconstruction, Bilkent University, Koc University, Ted University

Service: Organizer, MIT Labor Lunch (2021-2022)

PUBLICATIONS

"Driving While Hungry: The Effect of Fasting on Traffic Accidents"
***Journal of Development Economics, May 2024*.**
Abstract: I study the impact of hunger on traffic accidents by exploiting the fasting that is religiously mandated during the month of Ramadan. Identification comes from working hours not being adjusted during Ramadan in Turkey. I find that driving while fasting at rush hour is associated with a significant increase in road traffic accidents. Using existing survey evidence on fasting rates in

Turkey, I conclude that hunger induced by fasting increases the probability of an accident by 25%, which is smaller than the effect of driving while intoxicated, but larger than the effect of mild sleep deprivation.

RESEARCH PAPERS

"Effect of Immigrants on Regions that Don't Receive Immigrants" (Job Market Paper) with Tishara Garg

Abstract: This paper investigates how immigration-induced wage shocks can propagate beyond the regions receiving immigrants through the production network. Theoretically, we characterize the impact of immigration on real wages in host and non-host regions as a function of the shape of the production network and two elasticities of substitution: one between labor and intermediate goods, and another between different intermediate goods. Using the Syrian refugee crisis in Turkey as a quasi-experiment, along with the near universe of domestic firm to firm transaction data from VAT records, we show that the immigration shock propagates both forward and backward along the supply chain. Firms in non-host regions who directly or indirectly buy from host regions increase their labor share in production. Moreover, firms who sell to host regions increase their sales. Our estimates imply an elasticity of substitution between labor and intermediate goods of 0.76, and an elasticity of substitution of near 1 between intermediate goods. Finally, we quantify the general equilibrium effects of immigration through counterfactuals. We find that the spillover effects on non-host regions are economically meaningful when the host regions are central nodes of the domestic trade network. For example, a 1\% increase in labor supply in Istanbul decreases real wages in Istanbul by 0.56\% and increase real wages in average non-host city by 0.38\%.

"Formal Effects of Informal Labor: Evidence from the Syrian Refugees in Turkey"

Abstract: I study how firms and native workers respond to an informal labor supply shock, driven by an inflow of refugees who are not provided work permits and are thus only employable in the informal economy. Crucially, I distinguish between native workers in the informal and formal sectors, of which the latter may be positively or negatively impacted. The empirical setting is the Syrian refugee crisis in Turkey. Using travel distance as an instrument for refugee location, I show that a one percentage point (pp) increase in the refugee/native ratio decreases native informal salaried employment by 0.17 pp and formal salaried employment by 0.13 pp among low-skill natives. I document two mechanisms: (i) formal firms reduce their formal labor demand, and (ii) new firms relocate from formal to informal economy. These estimates imply a relatively high elasticity of substitution, of approximately 10, between formal and informal workers. This is consistent with the Turkish context, where informal employment is often in the same sectors and even in the same firms as formal employment. As a counterfactual, I predict that granting refugees work permits would have created up to 120,000 more formal jobs in the economy through higher informal wages.

"Synthetic IV estimation in panels" *(joint with Jaume Vives-i-Bastida)*
Abstract: We propose a Synthetic Instrumental Variables (SIV) estimator for panel data that combines the strengths of instrumental variables and synthetic controls to address unmeasured confounding. We derive conditions under which SIV is consistent and asymptotically normal, even when the standard IV estimator is not. Motivated by the finite sample properties of our estimator, we introduce an ensemble estimator that simultaneously addresses multiple sources of bias and provide a permutation-based inference procedure. We demonstrate the effectiveness of our methods through a calibrated simulation exercise, two shift-share empirical applications, and an application in digital economics that includes both observational data and data from a randomized control trial. In our primary empirical application, we examine the impact of the Syrian refugee crisis on Turkish labor markets. Here, the SIV estimator reveals significant effects that the standard IV does not capture. Similarly, in our digital economics application, the SIV estimator successfully recovers the experimental estimates, whereas the standard IV does not.

"Formal Effects of Informal Labor Supply and Work Permits: Evidence from Venezuelan Refugees in Colombia"
(joint with Dany Bahar and Isabel Di Tella)
Abstract: Whether refugees should have work permits is an active policy debate. We formalize the relevant trade-offs of providing work permits to refugees and test them empirically. Our setting is the Venezuelan refugee crisis in Colombia. The keys to our analysis are (1) refugees arrive without work permits initially, and (2) Colombia started granting work permits to Venezuelans in waves. Using a shift-share design and relaxing the exogeneity of shares assumption by employing Synthetic IV à la Gulek and Vives (2023), we find that the arrival of informal refugees displaced formal and informal natives in salaried jobs, which suggests high substitutability between informal and formal labor in production. Work permits allow middle to high-skill refugees to find formal jobs and work closer to their skill level, reducing the mismatch in the economy. This comes at a cost to some natives, who lose their formal jobs, and at a benefit to others, who observe increases in salaries.

"Occupational Heterogeneity of Child Penalty in the United States"
Abstract: I investigate the extent to which the child penalty varies by occupation, the role of occupational heterogeneity in driving gender inequality, and the correlates of occupation-specific gender penalties. I document that fatherhood's average zero effect masks the fact that some occupations have large negative penalties and some have large positives. Even motherhood's large negative effect masks that some occupations have essentially zero or even positive penalties. Occupational change post-parenthood explains one-third of the income penalties for women and almost all for men. Availability of part-time work, not the flexibility of hours, is associated with lesser inequality in employment penalties.

RESEARCH IN PROGRESS

"Does Working From Home Reduce the Child Penalty?"
(joint with Christina Langer)
Abstract: Child penalty accounts for most of the gender gap in earnings in the developed countries. In this paper, we examine how the recent increase in the availability of remote work has affected mothers' labor market outcomes. Our identification strategy exploits the heterogeneous rise in remote work across occupations. By comparing child employment penalties across occupations with higher and lower exposure to remote work, before and after its widespread adoption, we find that the availability of remote work decreases child employment penalties for mothers but does not impact the employment penalties for men. We are currently investigating changes in income, hours, and wage penalties, as well as the implications for gender inequality in earnings.

MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
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DISSERTATION: "Essays on Firms and Technology in Development Economics"

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PRIOR EDUCATION

Ecole Polytechnique and ENSAE ParisTech — 2017
M.Sc. in Economics
Valedictorian, *Summa Cum Laude*

Ecole Normale Superieure (ENS) Paris-Saclay — 2015
B.A. in Economics
Valedictorian, *Summa Cum Laude*

CITIZENSHIP France **GENDER:** Male

LANGUAGES English, French (native)

FIELDS

Primary Fields: Development Economics

Secondary Fields: Organizational Economics

TEACHING EXPERIENCE

Development Economics: Macroeconomics (PhD, MIT 14.772) 2024
Teaching Assistant to Prof. Robert Townsend

Applied Economics for Managers (MIT Sloan Executive MBA, MIT 15.024) 2024
Teaching Assistant to Prof. Namrata Kala and Prof. Tavneet Suri

Econometrics and Research Ethics, JPAL Development Methodologies Summer School, Abidjan and Rabat (African researchers and project leaders) 2022-23

RELEVANT POSITIONS

Research Assistant to Prof. Ben Olken and Prof. Rema Hanna, MIT 2020-23

Research Assistant to Prof. Pascaline Dupas and Prof. Marcel Fafchamps, Stanford University 2017-19

Research Assistant to Dr. Quy-Toan Do, World Bank Development Research Group 2016-17

FELLOWSHIPS, HONORS, AND AWARDS

MIT Sloan Africa Fellowship 2025
J-PAL Fellowship 2024
MIT Presidential Graduate Fellowship 2020
Best Master's Thesis Award 2017
Valedictorian, M.Sc. in Economics, Polytechnique/ENSAE 2017
Full-Ride Academic Scholarship - Normalien 2014-18
Valedictorian, B.A. in Economics, ENS Paris-Saclay 2015

RESEARCH GRANTS

Total Grant Funding: $1,479,412

"Adoption and Impacts of Digital Payment Technologies"
Private Enterprise Development in Low-Income Countries (PEDL), The Shultz Fund, The Weiss Fund, Digital Identification and Finance Initiative in Africa (JPAL DigiFI Africa)

"Relational Frictions Along the Supply Chain: Evidence from Senegalese Traders"
Private Enterprise Development in Low-Income Countries (PEDL), The Shultz Fund, SurveyCTO Research Grant

"Financial Inclusion and Rural Electrification: Evidence from Togo"
Private Enterprise Development in Low-Income Countries (PEDL) - Climate Change

"Eliciting Poverty Rankings from Urban or Rural Neighbors: Methodology and Empirical Evidence"
Innovations for Poverty Action (IPA) - Research Methods Initiative

"Digitalization of Local Tax Collection in Cote d'Ivoire"
USAID - Development Innovation Ventures (DIV), JPAL Governance Initiative

PROFESSIONAL ACTIVITIES

Referee: *American Economic Journal: Applied Economics, Journal of Development Economics, Economic Development and Cultural Change*

Service: *Co-founder of the Harvard/MIT Application Assistance Mentoring Program, which connects prospective students from underrepresented groups with graduate student mentors to increase diversity in economics.*

RESEARCH PAPERS

"Asymmetric Information and Digital Technology Adoption: Evidence from Senegal" (Job Market Paper)

The rise of digital technologies in the workplace can reduce information asymmetry and reshape employer-employee contracts: by making worker actions more observable, these technologies help mitigate moral hazard. However, employees may resist adoption if they fear losing informational rent. I explore this trade-off through two field experiments—guided by contract theory—where I introduce digital payments to the Senegalese taxi industry in partnership with the country's leading payment company. In the first experiment, I randomize access to digital payments for drivers (employees) and, within this group, further randomize the extent to which transactions are observable by taxi owners (employers). I find that digital payments reduce drivers' cash-handling costs by about half and serve as effective monitoring tools for taxi owners. Digital transaction observability enhances driver effort (+29%) as measured through mystery passengers, induces more salaried contracts (+18%), and increases the duration of the driver-owner relationships (+17%). However, 50% of drivers—primarily the least productive and poorest—decline to adopt when transactions are observable. The second experiment shows that the adoption rate doubles when drivers are assured that their transactions will not be observable by the owners. I develop a theoretical framework and use the experimental variations to structurally estimate the welfare impacts of policy counterfactuals. I show that mandating technology adoption may reduce welfare compared to the status quo, while removing payment observability broadens adoption but maintains moral hazard. My findings demonstrate that the information embedded in digital technologies can hinder their adoption when individuals within a firm have conflicting incentives for observability, with important implications for both technology adoption and firm growth.

"Nationwide Diffusion of Technology Within Firms' Social Networks"

I conduct a randomized experiment to study the nationwide technology diffusion of a new digital payment technology in Senegal. By leveraging two novel sources of network data—mobile money transactions and anonymized phone contact directories covering the near universe of the adult population in Senegal—I causally identify three sets of adoption spillovers from taxi firms

randomized to receive early access to the technology: intra-industry among taxi firms; inter-industry between taxi drivers and other small businesses; and inter-regional spillovers from the capital city to businesses in other urban centers. I show that spillovers go beyond strategic complementarities, reflecting social learning within firms' social networks, driven by social ties and remote interactions.

"Relational Frictions Along the Supply Chain: Evidence from Senegalese Traders"
(with Edward Wiles)

Search and trust frictions have historically made it hard for small firms in lower-income countries to buy inputs from foreign markets. The growth in smartphone ownership and social media usage has the potential to alleviate these barriers. We run a field experiment leveraging these technological tools to provide exogenous variation in search and trust frictions in a large international import market. The design is informed by a dynamic relational contracting model featuring sequential search for suppliers and trust frictions in the form of adverse selection and moral hazard. In our search treatment, we connect a randomly selected 80% of 1,862 small garment firms in Senegal to new suppliers in Turkey. We then cross-randomize two trust treatments that provide additional information about the types and incentives of these new suppliers. Alleviating search frictions is sufficient to increase access to foreign markets: in all treated groups, firms are 25% more likely to have the varieties a mystery shopper requests and the goods sold are 32% more likely to be high quality. However, the trust treatments are necessary for longer-term impact: these groups are significantly more likely to develop the connections into relationships that persist beyond the study. These new relationships lead to increases in medium-run profit and sales, particularly among wholesalers in the upper tail. Finally, we use the treatment effects to estimate the model and evaluate counterfactuals where we set various combinations of the frictions to zero, finding that the largest gains come from eliminating adverse selection.

"Financial Inclusion and Rural Electrification: Evidence from Togo"
(with Paul Brimble, Axel Eizmendi Larrinaga, and Toni Oki)

Most people in sub-Saharan Africa still lack access to electricity, despite rural electrification being a policy priority. We provide evidence that high transaction costs, particularly transportation expenses to access mobile money agents for bill payments, are a key friction for rural households. In rural Togo, these costs account for 28% of solar electricity-related expenditures, rising to 43% in more remote areas. To assess the impact of transaction costs on policy outcomes, we analyze the staggered rollout of two nationwide policies in Togo in 2019: a solar home system subsidy and an expansion of mobile money agents. The subsidy, which nearly halves electricity prices, more than doubles adoption rates. However, the effects vary significantly: households with lower transaction costs—those with direct access to mobile money agents—adopt at much higher

rates and decrease the number of payments they make in response to the price reduction. The mobile money agent expansion led to nearly a threefold increase in adoption, an effect similar to that of the subsidy. By reducing transaction costs, these policies enable bulk purchases and lessen the need for frequent payments. Our findings highlight the complementary roles of subsidies and financial inclusion in improving rural electrification and access to essential services.

"Eliciting Poverty Rankings from Urban or Rural Neighbors: Methodology and Empirical Evidence"
(with Pascaline Dupas and Marcel Fafchamps), Revised August 2024 for *Quantitative Economics*

We introduce a novel approach for eliciting relative poverty rankings that aggregates partial orderings reported independently by multiple neighbors. We first identify the conditions under which the method recovers more accurate rankings than the commonly used Borda count method. We then apply the method to secondary data from rural Indonesia and to original data from urban Cote d'Ivoire. We find that the aggregation method works as well as Borda count in the rural setting but, in the urban setting, reconstructed rankings from both the pairwise and Borda count methods are often incomplete and sometimes contain ties. This disparity suggests that eliciting poverty rankings by aggregating rankings from neighbors may be more difficult in urban settings. We also confirm earlier research showing that poverty rankings elicited from neighbors are correlated with measures of poverty obtained from survey data, albeit not strongly. Our original methodology can be applied to many situations in which individuals with incomplete information can only produce a partial ranking of alternatives.

RESEARCH IN PROGRESS

"Internal Migration, Remittances, and Networks: Evidence from Senegal"
(with Edward Wiles)

We explore the relationship between internal migration, remittances, and financial and social networks in lower-income contexts, with a focus on Senegal. To establish new facts and causal evidence, we construct a unique dataset that links migration patterns to both remittance flows and social networks covering the near universe of Senegal's adult population, based on real-time GPS tracking of personal and business transactions and anonymized phone contact directories from the country's largest mobile money provider. We use this dataset to document patterns of migration and remittance flows to a high degree of spatial and temporal precision, and to explore how financial and social networks affect — and are affected by — these patterns, especially in response to economic or environmental shocks.

"Digitalization of Local Tax Collection in Côte d'Ivoire"
(with Pascaline Dupas)

Low tax capacity hampers the ability of municipalities in Côte d'Ivoire, as in many other countries, to provide quality public services for their populations. We study the impacts of the nationwide rollout of a digital tax system, through which municipalities will move to entirely cash-less tax collection. We explore the impact on total tax revenue, size of the tax base, spending (including public good provision), and local government accountability.

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DOCTORAL STUDIES

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PRIOR EDUCATION

University of Tokyo 2019
MA in Economics

University of Tokyo 2016
BA in Economics
summa cum laude and Valedictorian

CITIZENSHIP Japan **GENDER:** Male

LANGUAGES Japanese (native)

FIELDS Primary Fields: Trade, Macro

Secondary Fields: Labor, Political Economy

TEACHING EXPERIENCE

14.05 Intermediate Macroeconomics (Undergrad) TA to Professor Christian Wolf	2021, 2022, 2024
14.452 Economic Growth (PhD) TA to Professor Daron Acemoglu, Chris Edmond	2021, 2022
14.453 Economic Fluctuations (PhD) TA to Professor Iván Werning	2021, 2022

RELEVANT POSITIONS

Visiting Associate Researcher, Keio University	2022-2024
Research Assistant to Professor Daron Acemoglu	2019-2022
Research Assistant to Professor David Autor	2019-2021
Research Assistant to Professor Joshua Angrist	2019
Seasonal Analyst, Macroeconomics, Goldman Sachs	2018-2019
Business Analyst (full-time), McKinsey & Company	2017-2018

GRANTS

Advance Cutting-Edge Humanities and Social Sciences Research, Japan Society for the Promotion of Science, 2023-2029
"*A Comprehensive Study on Disinformation and Political Polarization with a Focus on East Asian Countries*"
(JPJS00123811919)
Joint project. PI: Yuko Kasuya (Keio University)
JPY 114,673,000 ($ 770,000)

Project Research Program of Joint Usage and Research Center, Hitotsubashi IER 2023
"Business network and agglomeration of workers with cognitive tasks in the urban metropolitan area"
(IERPK2306)
Joint with Shota Komatsu, Juan Nelson Martínez Dahbura, Kentaro Nakajima, Takanori Nishida, Kensuke Teshima, and Junichi Yamasaki
JPY 600,000 ($ 4,000)

George and Obie Shultz Fund, MIT Economics 2022
"Technological Change and Upskilling"
Joint with Todd Lensman
$ 10,000

George and Obie Shultz Fund, MIT Economics 2021
"Government Size and Spatial Growth"
Joint with Jie Zhou
$ 12,000

Grant-in-Aid for JSPS Fellows, Japan Society for the Promotion of Science 2019

"*Impacts of Disruptive Technology on Labor Markets and Optimal Policy Responses*" (19J20069)
JPY 3,100,000 ($ 20,800)

FELLOWSHIPS AND HONORS

Gordon B. Pye Dissertation Fellow, MIT Economics	2023-2024
Best Teaching Assistant of the Year, MIT Economics	2022-2023
The Nakajima Foundation Scholarship	2019-2024
Research Fellow, Japan Society for the Promotion of Science	2019
Valedictorian, University of Tokyo	2016
summa cum laude, University of Tokyo, Economics	2016

PRESENTATION AND SEMINARS

2024: Kyoto University, Musashi University, Hitotsubashi-Keio-UTokyo conference on Frontiers in Macro, Hitotsubashi University, Keio University, Kobe University, Aoyama-Gakuin University, Waseda University, Ryukoku University, NBER Japan Project Meeting, Summer Workshop on Economic Theory

2023: Columbia University Japan Economic Seminar, Osaka University, Hitotsubashi University, University of Tokyo, JSQPS Winter Meeting, Kyoto Applied Micro Conference, NBER Japan Project Meeting, Summer Workshop on Economic Theory

2022: Keio University, Econometric Society Asian Meeting, Japan Applied Econometrics Conference, Japan Macroeconomics Conference, Canon Global Institute End of Year Macroeconomics Conference

2020: Waseda University

2019: Econometric Society Asian Meeting

PROFESSIONAL ACTIVITIES

Co-President, MIT Graduate Economic Association	2021-2022
Student Organizer, MIT Macro Lunch	2020-2023
Founder, Econ PhD Application Assistance and Mentoring Program for Female Students in Japan	2019-Present

RESEARCH PAPERS

"Evolution of Comparative Advantage: Why Skill Abundance No Longer Matters" (Job Market Paper)

This paper documents new facts about the evolution of comparative advantage and explores the causes and implications of this evolution. The key finding is that a country's skill abundance once implied a comparative advantage in skill-intensive sectors, but this relationship weakened in the 1990s and disappeared by the 2000s. I show that larger declines in the importance of skill abundance occur in countries and sectors with higher levels of automation, with no

significant—or even opposite—variation observed with offshoring. A multi-sector quantitative trade model incorporating both automation and offshoring suggests that automation, rather than offshoring, is the primary driver behind the change in comparative advantage, and that, without automation, skill abundance would have remained important after 2000. Automation increases skill premia in high-automation, developed countries and increases welfare globally, while offshoring yields positive but smaller and more evenly distributed welfare effects.

"The Granular Origins of Agglomeration" (with Daniel G O'Connor)

A few large firms dominate many local labor markets. How does that granularity affect the geography of economic activity? And what does it mean for the efficiency of firm entry? To answer these questions, we propose a new economic geography model featuring granular firms subject to idiosyncratic shocks. We show that average wages increase in the size of the local labor market due to that granularity and provide a sufficient statistic for the contribution of our mechanism. We further prove that too few firms enter in equilibrium. Using Japanese administrative data on manufacturing, we provide evidence consistent with our mechanism and quantify it. Our mechanism implies that markets with around 2 firms per sector have an elasticity of wages to population of 0.05 and firms capture only 85% of their contribution to production in profits. In large markets like Tokyo, the elasticity is around 0.001, and firm entry is approximately efficient. Enacting optimal place-based industrial policy would increase the number of firms in modest-sized cities by more than 30% and actually decrease the number of firms and people in Tokyo.

"Decomposing the Rise of the Populist Radical Right" (with Oren Danieli, Noam Gidron, and Ro'ee Levy)
Reject & Resubmit at Journal of Political Economy

Support for populist radical right parties in Europe has dramatically increased in recent years. We decompose the rise of these parties from 2005 to 2020 into four components: shifts in party positions, changes in voter attributes (opinions and demographics), changes in voter priorities, and a residual. We merge two wide datasets on party positions and voter attributes and estimate voter priorities using a probabilistic voting model. We find that shifts in party positions and changes in voter attributes do not play a major role in the recent success of populist radical right parties. Instead, the primary driver behind their electoral success lies in voters' changing priorities. Particularly, voters are less likely to decide which party to support based on parties' economic positions. Rather, voters—mainly older, non-unionized, low-educated men—increasingly prioritize nativist cultural positions. This allows populist radical right parties to tap into a preexisting reservoir of culturally conservative voters. Using the same datasets, we provide a set of reduced-form evidence supporting our results. First, while parties' positions have changed, these changes are not consistent with the main supply-side hypothesis for populist support. Second,

on aggregate, voters have not adopted populist right-wing opinions. Third, voters are more likely to self-identify ideologically based on their cultural rather than their economic opinions.

"Welfare Effects of Polarization: Occupational Mobility over the Life-cycle" (with Sagiri Kitao)

What are the welfare effects of polarization: wage and employment losses of middle-class workers relative to low- and high-skill groups? We build a model of overlapping generations who choose consumption, savings, labor supply, and occupations over their life cycles, and accumulate human capital. We simulate a wage shift observed since the early 1980s and investigate individuals' responses. Polarization improves welfare of young individuals that are high-skilled, while it hurts low-skilled individuals across all ages and especially younger ones. The gain of the high-skilled is larger for generations entering in later periods, who can fully exploit the rising skill premium.

RESEARCH IN PROGRESS

"Geography of Business Interactions: Evidence from Business Card Exchange Data" (with Shota Komatsu, Juan Nelson Martínez Dahbura, Kentaro Nakajima, Takanori Nishida, Kensuke Teshima, and Junichi Yamasaki)

In-person business meetings are a critical driver of agglomeration benefits, yet the scarcity of data has hindered exploration into their nature. This study leverages a novel dataset obtained from a business card exchange application, used by 0.4 million workers in Tokyo, to examine the impact of geographical distance on business card exchanges and other types of business networks. By analyzing the moving of firms, we find a distinct pattern in how the frequency of business card exchanges decreases with distance, particularly noting a significant drop beyond a 500-meter radius. Additionally, we observe that the rate of decline in these exchanges due to distance closely correlates with the level of industry agglomeration, and we find similar drops in other types of business networks such as patent collaborations. These findings highlight the pivotal role of very local interaction in fostering agglomeration benefits.

"Optimal Industry Mix with Granular Shocks" (with Daniel G O'Connor)

When firms are subject to granular and industry-wide shocks, regions overspecialize, leaving workers overexposed. Using German employer-employee matched data, we study the optimal industrial policy incorporating heterogeneity in occupation, industry, and region.

"Trade, Deindustrialization, and Service-led Growth" (with Tishara Garg and Edward Wiles)

We examine the impact of trade liberalization on structural change patterns in India. Leveraging district-level variations in sectoral composition, we find that

districts with greater tariff reductions experienced larger declines in manufacturing employment shares. By extending Matsuyama's 1992 model of deindustrialization to include a non-tradable service sector, we demonstrate analytically and through simulations that India's observed deindustrialization and service-led growth can be qualitatively attributed to trade liberalization. We aim to structurally estimate the model parameters to quantify the role of trade liberalization in driving these structural changes.

"Long-run Implications of Labor Market Power in the United States" (approved US Census Project)

POLICY PAPERS/NOTES

"Automation and the Disappearance of Routine Work in Japan" (with Ippei Fujiwara and Toyoichiro Shirota)
Discussion Paper 23-E-082, Research Institute of Economy, Trade and Industry (RIETI)
Revise & Resubmit at *Journal of the Japanese and International Economies*

"Heterogeneous Vulnerability to the COVID-19 Crisis and Implications for Inequality in Japan" (with Sagiri Kitao and Minamo Mikoshiba)
Discussion Paper 20-E-039, Research Institute of Economy, Trade and Industry (RIETI).

PUBLICATION

"Who suffers from the COVID-19 shocks? Labor market heterogeneity and welfare consequences in Japan" (with Sagiri Kitao and Minamo Mikoshiba),
Journal of the Japanese and International Economies 59 (2021): 101117.

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DOCTORAL STUDIES

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PRIOR EDUCATION

University of Chicago 2017
B.A., Economics (with Honors) and B.A., Statistics

CITIZENSHIP USA **GENDER:** Female

LANGUAGES English (native), Polish (fluent)

FIELDS Primary Fields: Econometrics and Environmental Economics

TEACHING EXPERIENCE

Environmental Economics (graduate, MIT course 14.475) 2025
Teaching Assistant to Professors Jacob Moscona and Ben Olken (upcoming Spring 2025)
Time Series Analysis (graduate, MIT course 14.384)
Teaching Assistant to Professor Anna Mikusheva 2021, 24

Statistical Methods in Economics (graduate, MIT course 14.380) 2021
Teaching Assistant to Professor Anna Mikusheva
Applied Econometrics (graduate, MIT course 14.381) 2021
Teaching Assistant to Professor Whitney Newey

RELEVANT POSITIONS

Research Fellows Program, The Stanford Graduate School of Business. Professors Susan Athey and Guido Imbens 2019
Summer Research Intern, The Federal Reserve Bank of New York. Drs. Rajashri Chakrabarti and Wilbert van der Klaauw 2016
White House Summer Research Intern, The Council of Economic Advisors. Professors Abigail Wozniak and Betsy Stevenson 2015

FELLOWSHIPS, HONORS, AND AWARDS

George and Obie Shultz Fund Grant 2022
MIT Economics Best Graduate TA of the Year 2022
Jerry A. Hausman Graduate Dissertation Fellowship 2022
NSF Graduate Research Fellowship 2019
David S. Hu Award (University of Chicago) 2017
Becker-Friedman Institute Award for Outstanding Undergraduate Service (University of Chicago) 2017

PROFESSIONAL ACTIVITIES

Referee: The Econometrics Journal, Journal of the Association of Environmental and Resource Economists

Presentations:

Harvard Climate Economics Pipeline Workshop, Harvard Kennedy School 2023
Africa Meeting of the Econometric Society (Invited Session: Climate Econometrics), The African Economic Research Consortium 2023
Machine Learning in Economics Summer Institute, University of Chicago Economics 2022
Rising Scholars Conference, University of Chicago Booth 2022
International Econometrics PhD Conference, Erasmus School of Economics 2022

RESEARCH PAPERS

Dynamic Biases of Static Panel Data Estimators (Job Market Paper)

This paper identifies an important bias — termed dynamic bias — in fixed effects panel estimators that arises when dynamic feedback is ignored in the estimating equation. Dynamic feedback occurs if past outcomes impact current outcomes, a feature of many settings ranging from economic growth to agricultural and labor markets. When estimating equations omit past outcomes, dynamic bias can lead to significantly inaccurate treatment effect estimates, even with randomly assigned treatments. This dynamic bias in simulations is larger than Nickell bias. I show that dynamic bias stems from the estimation of

fixed effects, as their estimation generates confounding in the data. To recover consistent treatment effects, I present a flexible estimator that provides fixed-T bias correction. I apply this approach to study the impact of temperature shocks on GDP, a canonical example where economic theory points to an important feedback from past to future outcomes. Accounting for dynamic bias lowers the estimated effects of higher yearly temperatures on GDP growth by 10% and GDP levels by 120%.

Estimating Continuous Treatment Effects In Panel Data using Machine Learning with a Climate Application (with Max Vilgalys)

Climate economists often use a two-way fixed effect linear panel data model to estimate the treatment effect of a continuous variable like temperature. However, this approach yields biased estimates if the linear parametric model is misspecified. This paper introduces a high-dimensional machine learning-based estimator for continuous treatment effects, extending the double de-biased machine learning literature to panel settings with fixed effects. We prove our estimator is asymptotically normal. Our estimator leads to significantly larger (by 50%), but just as precise, estimates of the effect of extreme heat on corn yield in comparison to the literature's linear models.

Optimal Insurance Scope: Theory and Evidence from US Crop Insurance (with Adam Solomon)

Distinct risks are typically insured separately. A single `aggregate' contract that pays more when many shocks occur simultaneously, but less when positive shocks offset negative shocks, is utility-increasing absent moral hazard. However, an aggregate contract discourages diversification, leading to a novel insurance-incentive trade-off. We study the US Federal Crop Insurance Program (FCIP), where farmers can choose the `scope' of their policy - whether to insure each field separately, or all fields of the crop as an aggregate unit. Starting in 2009, the FCIP introduced a large subsidy increase for aggregate insurance. We show that farms that moved to aggregate insurance reduced crop diversity and irrigation, farmed less and conserved more land, and insured price risk --- all reducing the diversification of their risks. This increased the variability of farm yield by 14%, raising the fiscal cost of aggregate insurance by about $1.5 billion per year. We find that an aggregate policy is never welfare maximizing, but that the optimal policy lies partway between separate and aggregate.

Bagged Polynomial Regression and Neural Networks (with Jaume Vives)

Series and polynomial regression can approximate the same function classes as neural networks. However, these methods are rarely used in practice, although they offer more interpretability than neural networks. In this paper, we show that a potential reason for this is the slow convergence rate of polynomial regression estimators and propose the use of bagged polynomial

regression (BPR) as an attractive alternative to neural networks. Theoretically, we derive new finite sample and asymptotic L2 convergence rates for series estimators. We demonstrate that BPR performs as well as neural networks in crop classification using satellite data, a setting where prediction accuracy is critical, and interpretability is often required for addressing research questions.

Automatic Double Machine Learning for Continuous Treatment Effects

In this paper, I introduce and prove the asymptotic normality of a novel nonparametric estimator for continuous treatment effects. Continuous variables, such as environmental factors like temperature and pollution levels, are frequently studied in economics and often require flexible modeling approaches. I estimate points on the average dose-response function, which captures the expected outcome at a specific level of the treatment variable. My approach integrates advanced techniques from double debiased machine learning (DML) and automatic double machine learning (ADML) to construct the estimator. A novel debiasing method enhances the theoretical stability and balancing properties of the estimator. Simulations demonstrate that my estimator outperforms existing methods.

Synthetic Differences and Differences with Covariates (with David Hirshberg)

We propose a synthetic difference-in-difference estimator that incorporates time-varying covariates (SDIDC). We incorporate covariates into a high-dimensional least squares with correlated error-in-variables setting. We use results from this setting to derive conditions under which our synthetic differences-in-differences estimator is asymptotically normal with estimable variance. Monte Carlo simulations demonstrate that our estimator outperforms classic synthetic difference-in-differences in settings where covariates contain information about the outcome. We illustrate the practical performance of our estimator by studying the impact of subsidy increases on crop insurance choices. Treatment effects using SDIDC are 72% larger than commonly used two-way fixed effects models that incorporate covariates.

The Long-Term Effect of Childhood Exposure to Technology Using Surrogates (with Nicolaj Søndergaard Mühlbach)

We study how childhood exposure to technology at ages 5-15 via the occupation of the parents affects the ability to climb the social ladder in terms of income at ages 45-49 using the Danish micro data from years 1961-2019. The challenge in estimating this effect is that long-term outcome is observed over a different time horizon than our treatment of interest. We therefore adapt the surrogate index methodology, linking the effect of our childhood treatment on intermediate surrogates, such as income and education at ages 25-29, to the effect on adulthood income. We estimate that a one standard

error increase in exposure to technology increases the income rank by 2%-points, which is economically and statistically significant and robust to cluster-correlation within families. The derived policy recommendation is to update the educational curriculum to expose children to computers to a higher degree, which may then act as a social leveler.

MIT Economics

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DOCTORAL STUDIES

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PhD, Economics, Expected completion June 2025
DISSERTATION: "Essays on Economic Growth and Innovation"

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Professor Jacob Moscona
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PRIOR EDUCATION

Cornell University — 2019
BA in Economics and Mathematics
Summa Cum Laude (x2)

CITIZENSHIP USA **GENDER:** Male

LANGUAGES English (native), Spanish (intermediate)

FIELDS

Primary: Macroeconomics, Innovation
Secondary: Industrial Organization, Economic Theory

TEACHING EXPERIENCE

Industrial Organization II (PhD, MIT course 14.272) — 2025
Teaching Assistant to Prof. Nancy Rose, Prof. Michael Whinston (scheduled)

Economic Growth (PhD, MIT course 14.452) — 2024
Teaching Assistant to Prof. Daron Acemoglu (scheduled)

Economic Growth (PhD, MIT course 14.452) 2023
Teaching Assistant to Prof. Daron Acemoglu
(overall rating: 6.8/7.0)
Public Economics I (PhD, MIT course 14.471) 2022
Teaching Assistant to Prof. James Poterba, Prof. Iván Werning
(overall rating: 7.0/7.0)
Intermediate Macroeconomics (undergrad, MIT course 14.05) 2022
Teaching Assistant to Prof. Christian Wolf
(overall rating: 5.6/7.0)
Public Finance and Public Policy (undergrad, MIT course 14.41) 2022
Teaching Assistant to Prof. Jonathan Gruber
(overall rating: 5.8/7.0)

RELEVANT POSITIONS

Research Assistant to Prof. Daron Acemoglu 2022-2024
Research Assistant to Prof. Neil Thompson (MIT CSAIL) 2023
Research Assistant to Prof. David Atkin, Prof. David Donaldson 2021

FELLOWSHIPS, HONORS, AND AWARDS

Finalist, MIT Economics Best Graduate TA 2024
George and Obie Shultz Fund 2021-2023
NSF Graduate Research Fellowship 2019
MIT Presidential Fellowship (declined) 2019
Uri M. Possen Memorial Award, Best Economics Thesis, Cornell 2019
Merrill Presidential Scholar, Cornell 2019
Phi Beta Kappa (Junior Inductee), Cornell 2018

PROFESSIONAL ACTIVITIES

Refereeing:
Economic Policy, *Journal of Public Economics*, *Proceedings of the National Academy of Sciences*, *Review of Industrial Organization*

Presentations:
LSE Environment Day 2023
International Industrial Organization Conference 2022
Society for Economic Dynamics 2019

PUBLICATIONS

"Regulating Transformative Technologies" (with Daron Acemoglu)
American Economic Review: Insights, September 2024.

Transformative technologies like generative AI promise to accelerate productivity growth across many sectors, but they also present new risks from potential misuse. We develop a multisector technology adoption model to study the optimal regulation of transformative technologies when society can learn about these risks over time. Socially optimal adoption is gradual and typically convex. If social damages are large and proportional to the new technology's productivity, a higher growth rate paradoxically leads to slower optimal adoption. Equilibrium adoption is inefficient when firms do not internalize all social damages, and sector-independent regulation is helpful

but generally not sufficient to restore optimality.

"Implications of Uncertainty for Optimal Policies" (with Maxim Troshkin) *Journal of Economic Theory*, January 2022.

We study the implications of ambiguity for optimal fiscal policy in macro public finance environments with heterogeneous agents and private idiosyncratic shocks. We describe conditions under which ambiguity implies that it is optimal to periodically reform policies. Periodic reforms lead to simplified optimal policies that are not fully contingent on future shocks; at times they also lose dependence on the full history of past shocks. These simplified policies can be characterized without complete backward induction when the time horizon is finite. However, linear policies can be far from optimal. We also show that equilibria in decentralized versions of these economies are not generally efficient, implying a meaningful role for government provision of insurance, unlike in conventional environments with a narrower view of uncertainty.

RESEARCH PAPERS

"Technology Choice, Spillovers, and the Concentration of R&D" (Job Market Paper)

The direction of innovation shapes both current technologies and future innovation opportunities, as firms acquire expertise and create public knowledge through discovery. But how do firms choose which technologies to develop, and why might they fail to exploit new technological paradigms? I study these questions in a tractable new model of directed innovation and firm dynamics, highlighting a novel connection between market structure, the direction of innovation, and economic growth: Expertise in a current technology gives incumbents a comparative advantage at innovating it relative to entrants, who instead favor a new technology with higher growth potential. Each firm's innovation decisions influence others through knowledge spillovers, which can inefficiently delay or prevent the emergence of the new technology. Concentrating R&D resources in a small number of firms can exacerbate this problem by amplifying the influence of incumbents, even though it accelerates growth in the absence of a technology choice. I provide empirical evidence for the theory using data on firm patenting and R&D expenditures, and I apply it to explain the historical development of mRNA vaccines.

"Combining Complements: Theory and Evidence from Cancer Treatment Innovation" (with Rebekah Dix)

Innovations often combine several components to achieve outcomes greater than the "sum of the parts." We argue that such combination innovations can introduce an understudied inefficiency – a positive market expansion externality that benefits the owners of the components. We demonstrate the

existence of this externality in the market for pharmaceutical cancer treatments, where drug combination therapies have proven highly effective. Using data on clinical trial investments, we document several facts consistent with inefficiently low private innovation: firms are less likely than publicly funded researchers to trial combinations, firms are less likely to trial combinations including other firms' drugs than those including their own drugs, and firms often wait to trial combinations including other firms' drugs until those drugs experience generic entry. Using microdata on drug prices and utilization, we quantify the externalities that arise from new combinations and find that the market expansion externality often dominates the standard negative business stealing externality, suggesting too little innovation in combination therapies. As a result, firms may have incentives to free ride off others' innovation, which we analyze with a dynamic structural model of innovation decisions. Finally, we use the estimated model to design cost-effective policies that advance combination innovation. Redirecting publicly funded innovation toward combinations with high predicted market expansion or consumer surplus spillovers minimizes crowd out of private investments, increasing the rate of combination innovation and total welfare while remaining budget neutral.

"Input-Price Responses to Horizontal Mergers and the Bargaining-Leverage Defense" (with Rebekah Dix)

In several recent antitrust cases, defendants have argued that a horizontal merger would allow them to negotiate reduced input prices with suppliers and pass on the resulting savings to consumers. This input price effect is often supported by models in which firms simultaneously set goods prices and bargain with suppliers over input prices, because a downstream merger can reduce suppliers' outside options. We study new forces that arise when input prices are set before goods prices, and we show that they often tend to increase input prices after a merger. Generalizing the first-order approach to merger analysis, we derive a measure of incentives to adjust input prices after a downstream merger, Input Pricing Pressure. We use this measure to show that mergers often incentivize higher input prices, and that these incentives hinge on changes in downstream pass-through rates, marginal cost efficiencies generated by the merger, and input-output linkages. By implication, consumer surplus-maximizing antitrust policy may be too lax when input prices are assumed fixed, and it should be biased against claims that input prices will fall after a downstream merger. In an empirical application to local retail beer markets, endogenizing input prices substantially raises the consumer harm from mergers of retailers.

RESEARCH IN PROGRESS

"Entrepreneurship and Productivity Growth in Tight Labor Markets"

Motivated by recent evidence linking local labor market tightness to business creation, I study conditions under which a positive aggregate demand shock can raise productivity growth by incentivizing high-tech entrepreneurship. I develop a search model of the labor market in which workers face an

occupational choice between employment and entrepreneurship. Successful entrepreneurs create firms by adopting technologies from a productivity frontier, while unsuccessful ones become unemployed. An aggregate demand shock that raises labor demand has an ambiguous effect on entrepreneurship: A tighter labor market lowers the cost of failure by shortening unemployment spells, but it also directly raises the opportunity cost of entrepreneurship. The former channel dominates when successful entrepreneurs primarily come from employment, providing a mechanism by which an increase in aggregate demand can increase productivity. This mechanism suggests a novel role for accommodative monetary policy to stimulate productivity growth, and I consider methods to estimate its magnitude in the data.

"A Theory of Innovative Firms and Power over New Technologies and Researchers"

I construct a theory to explain the emergence of large, innovative firms as a means to internalize spillovers in the innovation process, and I show how these firms exert power over the direction of innovation and the labor market for researchers. Researchers must choose one of several technologies to study, and their innovations generate knowledge spillovers to others working on the same technology. A manager can internalize these spillovers by coordinating researchers' innovation decisions, raising economic growth given a fixed set of technologies. But with limits to firm size from convex monitoring costs, this innovative firm can instead slow growth and reduce welfare when new technologies arrive over time: If innovation is combinatorial, so that the owners of past innovations for a technology benefit from subsequent ones, the firm has an incentive to pursue an old technology even as outside researchers exploit a more productive new one. Limits to firm size imply that spillovers are only partially internalized, so the equilibrium direction of innovation is generally inefficient. These spillovers allow the firm to distort the innovation decisions of outside researchers, and I explore how the firm can exploit its size in the labor market for researchers to affect the direction of innovation.

"Technology Paradigms, Lock-in, and Economic Growth" (with Daron Acemoglu)

We develop a theory of economic growth in which innovation alternates between dominant technological paradigms and the emerging paradigms that might replace them. Innovation within a paradigm is subject to decreasing returns as "ideas get harder to find," but innovations for an emerging paradigm only generate profits after it becomes dominant. Our analysis reveals how this trade-off can generate technological lock-in or growth cycles. Long-run growth requires the development of both dominant and emerging paradigms, and we show how creative destruction within and across paradigms distorts this process. We explore methods to identify technological paradigms in the patent data, facilitating empirical analysis of productivity dynamics as industries proceed along paradigms and transition between them.

We assess the extent to which declining research productivity can be attributed to the maturation of dominant paradigms, suggesting scope for a growth resurgence as innovators explore alternatives.

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DOCTORAL STUDIES

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PRIOR EDUCATION

Wellesley College 2017
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LANGUAGES English (native), Spanish (intermediate)

FIELDS Primary Fields: Health Economics, Public Finance

Secondary Fields: Industrial Organization, Labor Economics

TEACHING EXPERIENCE

Economics Research & Communication (undergraduate, MIT 14.33) Teaching Assistant to Professors Dave Donaldson, Jim Poterba	2021
Econometrics (undergraduate, Wellesley ECON 203) Teaching Assistant to Professor Kristin Butcher	2017
Econometrics (undergraduate, Wellesley ECON 203) Teaching Assistant to Professor Kartini Shastry	2016

RELEVANT POSITIONS

Research Assistant to Professor Joseph Doyle	2022, 2023
Research Assistant to Professor Amy Finkelstein	2020, 2021
Research Assistant at Federal Reserve Board of Governors (Fiscal Analysis Section)	2017-2019
Research Assistant to Professors Kristin Butcher, Kartini Shastry	2016-2017
Research Intern at U.S. Department of the Treasury (Office of Economic Policy)	2016
Research Assistant to Professor Robert Schoeni	2015

FELLOWSHIPS, HONORS, AND AWARDS

NBER Pre-Doctoral Fellowship in Aging and Health Research (x2)	2023-2025
MIT Undergraduate Economics Association Best TA Award	2022
George and Obie Schultz Fund Grant	2022
National Science Foundation Graduate Research Fellowship	2019-2024
Peggy Howard Graduate Fellowship in Economics	2019
Natalie Bolton Faculty Prize in Applied Economics (Wellesley)	2017
Schiff Fellowship (Wellesley)	2016-2017
Case Fellowship (Wellesley)	2016-2017
Wellesley in Washington Fellowship	2016
Phi Beta Kappa (elected Junior Year)	2016

PROFESSIONAL ACTIVITIES

Referee: *American Economic Journal: Applied Economics, American Economic Journal: Economic Policy, American Economic Review: Insights, American Journal of Health Economics*

Presentations:

Wellesley College	2024
American Society of Health Economists (ASHEcon)	2024
Google	2023
American Society of Health Economists (ASHEcon)	2022
Federal Reserve Board Applied Microeconomics Seminar	2019

Service:

Organizer for NBER Aging and Health Fellows Lunch	2024-2025
Organizer for MIT Public Finance Field Lunch	2022-2023
Organizer for MIT Economics Third-Year Lunch	2021
Mentor for Economics Mentoring Program	2021-2025
Treasurer for MIT Graduate Women in Economics	2019-2022
Instructor for Federal Reserve Board's Howard University R Course	2018-2019

PUBLICATIONS

"Immigrant Labor and the Institutionalization of the U.S.-Born Elderly" (with Kristin Butcher and Tara Watson). *Review of International Economics*, 30(5), 2022.

"The Evolution of Infant Mortality Inequality in the United States, 1960–2016" (with Nick Turner and Kaveh Danesh). *Science Advances*, 6(29), 2020.

RESEARCH PAPERS

"Costs of Technological Frictions: Evidence from EHR (Non-)Interoperability" (Job Market Paper)
(with Rebekah Dix and Thi Mai Anh Nguyen)

Interoperability—the ability of different systems to work together—is an increasingly vital component of product markets. We study the impact of interoperability frictions in the context of US hospital Electronic Health Record (EHR) systems. While use of EHR systems is widespread, interoperability of these systems remains low, particularly across those produced by different EHR vendors. We examine how interoperability affects patients by considering both a direct, technological effect of influencing health information exchange and an allocative effect of shifting the flow of patients across providers. Using an event study design in which interoperability between hospital pairs changes when one changes EHR vendors, we find evidence for both channels. When two hospitals switch to having the same EHR vendor, charges and readmissions rates for patients who are transferred and referred between them decrease by 4% and 11%, respectively. In addition, these hospitals now share 8% more inpatient transfers and 9-10% more referrals. This change in patient flows further affects patient outcomes: patient health improves when their sending hospitals switch to EHR vendors used by higher-quality hospitals in the market and worsens when the opposite occurs. To quantify the welfare gain from reducing interoperability frictions, we estimate a demand model of how patients and providers trade-off interoperability with other receiving hospital characteristics when choosing where to send patients. The model is identified by changes in patient flows following changes in hospital EHR vendors and interoperability levels. We show that eliminating all interoperability frictions would redirect 7.5% of patients to different hospitals and increase joint hospital-patient welfare by 21%, the equivalent of a 57-kilometer reduction in travel distance.

"Hospital Charity Care & The Hill-Burton Act"

Hospital provision of charity care plays a crucial role in ensuring healthcare access for uninsured and low-income patients, yet the factors influencing this provision remain poorly understood. This paper examines how hospital charity care responds to regulatory changes by analyzing the long-term effects of the Hill-Burton Act of 1946, which allocated $6 billion to over 3,500 hospitals in exchange for those facilities providing free and reduced-cost care to uninsured patients for 20 years. Using detailed hospital financial data from four large states, patient discharge data from the Healthcare Cost and Utilization Project, and event studies around the expiration of Hill-Burton charity care obligations, I analyze the impact of these regulatory expirations on hospital conduct and patient access to care. I find that Hill-Burton hospitals decrease charity care provision by 30% and reduce admissions of likely charity-eligible patients by 14% after their obligations expire. These patients are

subsequently shifted to neighboring public and non-profit hospitals, where they are required to pay for care. While county-level access to hospital care remains stable, county-level charity care spending drops by 20% after the first expiration of Hill-Burton obligations in the county. These results reveal strategic behavior in hospital charity care provision and highlight the importance of considering hospital objectives and responses when designing polices to improve healthcare access for underinsured populations.

"Safety Net Crowd-Out: How Public Programs Affect Non-Profit Hospital Charity Care"

Medical organizations in the US provide billions of dollars of free and discounted healthcare to uninsured and low-income patients each year. This paper examines the interplay between the two largest providers of this safety net healthcare: private hospitals and the public sector. Using federal tax returns from non-profit hospitals and difference-in-differences strategies, I analyze how increases in the public healthcare safety net affect the private provision of charity care. I find that a one standard deviation increase in publicly funded health centers per capita is associated with a 9% decrease in non-profit hospital charity care spending from hospitals in the same county as these centers. Further, state-level Medicaid expansions coincide with a 35% decrease in non-profit hospital charity care. Finally, I show that non-profit hospitals do not change their financial assistance policies following either of these local increases in the public safety net, but rather allow their charity spending to fall with demand. These findings provide substantial evidence of public spending crowding out private charity in the healthcare sector.

"Heterogeneity in Effectiveness of Flu-Shot Incentives: Evidence from a Large-Scale Field Experiment"
(co-first author with Gail Rosenbaum as well as Amir Goren, Michelle Meyer, Christopher Chabris, and Joseph Doyle)

Despite the proven effectiveness of flu vaccinations in reducing morbidity and mortality, uptake rates remain suboptimal. This paper tests whether offering a state scratch-off lottery ticket before an upcoming primary or specialty appointment can increase vaccination rates in a large-scale field experiment involving nearly 58,000 participants. We compare the lottery incentive with two other nudges: a small cash incentive and a text message reminder, alongside a passive control group. Our findings demonstrate that receiving any intervention significantly increased vaccination rates by 2 percentage points at scheduled appointments (an 8% increase from the control mean) and by 1.45 percentage points over the flu season (a 3% increase from the control mean). Notably, we found no additional benefits from cash or lottery incentives beyond the reminder. Given the large sample size and rich set of covariates from electronic health records, the setting is well-suited for a causal forest machine learning algorithm to identify heterogeneous effects across patient and county characteristics. Patients with characteristics in the top quartile of effectiveness were 3 to 4 times more likely to be influenced by the nudges. These results highlight the importance of targeting behavioral strategies in public health.

RESEARCH IN PROGRESS

"Sharing is Caring: The Role of Health Information Exchange on Patient Care"
(with Ari Bronsoler, Joseph Doyle, and John Van Reenen)

Healthcare has been transformed by health information technology over the past two decades, but the impact of such digital technologies on health outcomes remains a long-standing and controversial question. In this project, we focus on the role of Health Information Exchange (HIE), an innovation designed to improve communication between healthcare systems and one that has been heavily subsidized and promoted as a way to improve quality of care. Using a newly compiled database of annual, state-level health information exchange laws, we show these laws strongly influence the adoption of HIE. Instrumental variable estimates that exploit state law changes show that HIE adoption reduces county-level mortality rates from flu and pneumonia by 18%. Hospital-level readmission rates for common conditions also fall by 4-5%. Given that the proportion of hospitals with HIE capability rose by 50 percentage points over the period in which we find these effects, we estimate that this diffusion saved 27,000 lives per year. We attribute the health improvements to enhanced public health response to infectious disease and improved care coordination.

"Interoperability and Competition in Electronic Health Records"
(with Rebekah Dix and Thi Mai Anh Nguyen)

While electronic health record (EHR) systems are widely used by US hospitals, interoperability—the ability to easily share patient data between different EHR systems—is limited. Advocates argue that increasing interoperability benefits patient health while reducing healthcare costs. However, the trend towards greater concentration in the EHR market introduces a potential trade-off between interoperability and EHR system costs. In this project, we examine the role of interoperability in EHR vendor competition. At the core of our analysis is a model of hospital demand for EHR systems that incorporates the effects of interoperability on patient flows and outcomes (Dix, Moran, and Nguyen, 2024), EHR system costs, and EHR system functionalities. We will estimate this model using data on hospital finances, EHR system choices, interoperability, and patient flows and outcomes. This demand model allows us to infer vendor incentives for setting interoperability levels, functionalities, and prices. Specifically, the model enables us to quantify the incentives for EHR vendors to improve within-system interoperability, which strengthens their market power, versus across-system interoperability, which has positive spillovers on the rest of the market. Our results are informative on the design of technology adoption subsidies and interoperability regulations in industries with large adjustment costs and interoperability concerns.

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DOCTORAL STUDIES

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PRIOR EDUCATION

University of Notre Dame — 2019
BA, Mathematics, summa cum laude

CITIZENSHIP USA **GENDER:** Male

FIELDS

Primary Fields: Trade, Macro

Secondary Fields: Urban

TEACHING EXPERIENCE

Labor Economics I (graduate, MIT course 14.661) — 2023
Teaching Assistant to Professors Acemoglu and Adams-Prassl

International Economics I (graduate, MIT course 14.581) — 2023

	Teaching Assistant to Professor Costinot	
	Microeconomic Theory IV (graduate, MIT course 14.124)	2022
	Teaching Assistant to Professor Wolitzky	
	International Economics I (graduate, MIT course 14.581)	2021
	Teaching Assistant to Professors Costinot and Atkin	
	International Trade (undergraduate, MIT course 14.54)	2021
	Teaching Assistant to Professor Costinot	

FELLOWSHIPS, HONORS, AND AWARDS

Best Teaching Assistant (Department Award)	2024
NSF Graduate Research Fellowship	2019
The George Kolettis Award in Mathematics	2019
Glynn Award for Academic Excellence and Exemplary Leadership	2019
Phi Beta Kappa, Junior Inductee	2018
Notre Dame Scholar	2015

PROFESSIONAL ACTIVITIES

Referee: *American Economic Review, Journal of European Economic Association, Journal of Political Economy*

Presentations:

17th North American Meeting of the Urban Economics Association	2023
16th North American Meeting of the Urban Economics Association	2022
Theoretical Research in Development Economics Conference	2022

Service: MIT Economics International lunch seminar organizer

Affiliations: Census Bureau Special Sworn Status

RESEARCH PAPERS

"Revitalize or Relocate: Optimal Place-based Transfers for Local Recessions" (Job Market Paper)

Cities go through recessions. How does the national government respond to these downturns? And how should it? I provide evidence that commuting zones in the US are subject to idiosyncratic shocks and that population and wages respond only slowly in the aftermath. The US government picks up the slack by transferring money to the affected region through various taxes and public assistance programs. I then present a two-period model of local recessions where I characterize the optimal fiscal policy to achieve macroeconomic stability. Transfers have both a stimulus effect—boosting local demand through home-biased consumption—and a migration effect—encouraging residents to stay, exacerbating the recession. A dynamic New Keynesian economic geography model calibrated to US commuting zones suggests that transfers should be much more generous immediately after a shock, followed by possible taxes in the medium run. The China trade shock, on the other hand, calls for more aggressive transfers targeted towards both the directly impacted and nearby regions.

"The Granular Origins of Agglomeration" (with Shin Kikuchi)

A few large firms dominate many local labor markets. How does that granularity affect the geography of economic activity? And what does it mean for the efficiency of firm entry? To answer these questions, we propose a new economic geography model featuring granular firms subject to idiosyncratic shocks. We show that average wages increase in the size of the local labor market due to that granularity, and provide a sufficient statistic for the contribution of our mechanism. We further prove that too few firms enter in equilibrium. Using Japanese administrative data on manufacturing, we provide evidence consistent with our mechanism and quantify it. Our mechanism implies that markets with around 2 firms per sector have an elasticity of wages to population of 0.05 and firms capture only 85% of their contribution to production in profits. In large markets like Tokyo, the elasticity is around 0.001, and firm entry is approximately efficient. Enacting optimal place-based industrial policy would increase the number of firms in modest-sized cities by more than 30% and actually decrease the number of firms and people in Tokyo.

"Strategic (Dis)Integration" (with John Sturm Becko)

Suppose a country anticipates that it may use trade as a point of leverage in future geopolitical conflicts. How should it develop domestic industries and international trading relationships today in order to strengthen its hand tomorrow? Domestically, we show that the country abstains from peacetime capital subsidies if it can credibly threaten trade taxes as geopolitical punishments during conflict, but not otherwise. Internationally, peacetime trade policy promotes the accumulation of foreign capital that makes foreign prices more sensitive to trade during conflict, but not necessarily capital that increases foreign gains from trade. We apply these insights to quantify the US's optimal policies for building geopolitical power vis-à-vis China. The optimal policy promotes US-China trade on both the import and export margins, especially in consumption goods.

"The Stable Transformation Path" (with Francisco Buera, Joseph Kaboski, Martí Mestieri)

Many growth models lack balanced growth paths (BGPs). Instead, the sectoral, productivity, and capital dynamics change drastically as the economy develops. We define the Stable Transformation Path (STraP), a generalization of the BGP to non-stationary models, for a wide class of models and prove its existence and uniqueness. We use the STraP to evaluate the implications of benchmark models of structural transformation. Secular structural change can account for a quarter of growth in miracle economies, but it fails to explain the growth experience in the early industrial period.

RESEARCH IN PROGRESS

"Optimal Carbon Taxation with Concerns for Redistribution" (with Arnaud Costinot, Joseph Shapiro, Iván Werning)

We provide a general formula for optimal carbon taxes in a second-best world where governments may have concerns for redistribution, but only have access to nonlinear income taxes. Our formula requires adding to standard estimates of the social cost of carbon an extra term that takes into account its potentially adverse consequences for inequality. Our adjustment only depends on a few sufficient statistics: marginal income tax rates, elasticities of labor supply, and elasticities of relative wages with respect to changes in carbon emissions across quantiles of the income distribution. Combining a model of the US economy with detailed administrative data, we provide estimates of these statistics and explore their implications for carbon taxation.

"Optimal Industrial Mix with Granular Shocks" (with Shin Kikuchi)

When firms are subject to granular and industry-wide shocks, regions overspecialize, leaving workers overexposed. Using German employer-employee matched data, we study the optimal industrial policy incorporating heterogeneity in occupation, industry, and region.

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PRIOR EDUCATION

São Paulo School of Economics - FGV — 2019
Msc Economics

University of São Paulo — 2016
Bsc Economics

LANGUAGES

English (advanced), Spanish (intermediate), Portuguese (native)

FIELDS

Primary Fields: Finance, Macroeconomics
Secondary Field: Econometrics

TEACHING EXPERIENCE

14.192 Advanced Research and Communication (Graduate) — 2022-2024
Teaching Assistant to Professors Nikhil Agarwal, Amy Finkelstein, and Stephen Morris

14.380 Statistical Methods in Economics (Graduate) — 2022
Teaching Assistant to Professor Whitney Newey

14.30 Statistical Methods in Economics (Undergraduate) — 2022-2023
Teaching Assistant to Professors Alberto Abadie and Tetsuya Kaji

	14.454 Economic Crises (Graduate); 14.02 Macroeconomics (Undergraduate). Professor Ricardo Caballero.	2022
RELEVANT POSITIONS	Consultant - Central Bank of Brazil: Central Bank Digital Currency Pilot projects	2022-
	Research Assistant to Professor Stephen Morris	2021-22
PROFESSIONAL ACTIVITIES	**Referee:** Journal of Political Economy, Journal of the American Statistical Association	

FELLOWSHIPS, HONORS AND AWARDS	George and Obie Schultz Fund Grant ($14,000)	2024
	Best paper in Econometrics at the Brazilian Econometric Society Meeting (*Quantile Mixture Models: Estimation and Inference*)	2023
	Boston FED Dissertation Fellowship	2023
	Department of Economics Fellowship, MIT	2019
	Inter-American Development Bank Fellowship	2018
	CAPES Master`s Fellowship, Brazil	2017
	Merit Fellowship, FGV-EESP, Brazil	2017
	1st place in the National Exam for Admissions in Economics Graduate Programs (ANPEC), Brazil	2016

RESEARCH PAPERS

Corporate Effects of Monetary Policy: Evidence from Central Bank Liquidity Lines (Job Market Paper) (with Luiz Alvarez and Thiago Silva)

Monetary policy tools increasingly involve operations with corporate assets. This article estimates the causal effects of firms' asset collateral eligibility for central bank liquidity lines on their real and financial outcomes and explores the transmission mechanisms. Leveraging quasi-experimental variation from the rollout of a policy that granted commercial banks access to standing facility lines backed by eligible corporate bonds, combined with a novel dynamic regression discontinuity design, we find significant real effects on firms' employment and supply chain liquidity. These effects were driven by reduced issuance spreads, increased debt issuance, and firms' use of internal finance by reducing safe asset holdings. We discuss how this amplification mechanism arises from reduced precautionary savings due to relaxed borrowing constraints, which has direct implications for the ability of monetary policy to influence the real economy by enhancing risk sharing between financial and non-financial sectors.

Firm-Level and Aggregate Effects of Cheaper Liquidity: Evidence from Factoring (with Thiago Silva and Henry Zhang)

We show that firms experience large contemporaneous increases in sales and purchases after receiving cheaper liquidity. We focus on factoring, defined as the supplier-initiated sale of receivables. In Brazil, receivables funds (FIDCs) securitize receivables for institutional investors. By assembling a novel transaction-level dataset of factoring with other credit operations for all

registered firms and FIDCs, we construct a shift-share instrument for the supply of factoring financing based on FIDC flows. We then use a novel combination of electronic payments, trade credit, and employer-employee matched data to estimate the impacts. A flow-induced increase in receivables demand reduces firms' factoring interest rate. In response, firms demand more permanent labor and less temporary labor. In our model, these effects arise from factoring's purpose of reducing cash inflow volatility, helping firms match inflows to outflows, which firms otherwise achieve at an efficiency cost through substitution across labor types. Using our model, we estimate that an aggregate decrease in the economy-wide factoring spread by 1 percentage point leads to 0.3 to 0.5 percentage point increases in aggregate output and wages.

Quantile Mixture Models: Estimation and Inference (with Luiz Alvarez)

Nonparametric density mixture models are popular in Statistics and Econometrics but suffer from computational and inferential hurdles. This paper introduces nonparametric quantile mixture models as a convenient counterpart, discusses several applications, and proposes a computationally efficient sieve estimator based on a generalized method of L-moments. We develop a full inferential theory for our proposed estimator. In doing so, we make several contributions to statistical theory that allow us to extend a numerical bootstrap method to high-dimensional settings. We show that, as a direct byproduct of our theory, we can provide an inference method for the distributional synthetic controls of Gunsilius (2023), a novel approach to counterfactual analysis for which formal inference methods were not yet available. As an empirical application of the latter, we apply our proposed approach to inference in assessing the effects of a large-scale environmental disaster, the Brumadinho barrage rupture, on the local wage distribution. Our results uncover a range of effects across percentiles, which we argue are consistent displacement effects, whereby median-earning jobs are replaced by low-paying contracts.

Volatility and under-insurance in economies with limited pledgeability: Evidence from the Frost Shock (joint with Thiago Silva and Henry Zhang)

Using transaction-level data on payments, credit, and insurance, we measure the impact, propagation, and adjustment by coffee farmers to an extreme weather shock in Brazil. The severe frost of July 2021 primarily damaged the perennial coffee trees, a negative shock to farmers' capital stock that was large enough to increase world prices. Consistent with an increase in the marginal return to capital, we find that insured farmers increase expenditure on capital replenishment inputs and decrease expenditure elsewhere. Uninsured farmers reduced expenditure as well as both insurance and credit take-up after the shock. We show how this pattern is consistent with models of imperfect pledgeability of a firm’s collateral, where constrained firms neither insure (ex-ante) nor recover from a shock (ex-post). Limited commitment endogenously generates under-insurance through upfront payment of insurance premia and reduced borrowing capacity post-shock due to the decrease in total collateral. We discuss two equilibrium implications of this mechanism regarding the inefficacy of

emergency credit lines in targeting liquidity constrained firms and the amplification of output volatility and drop due to an increase in risk of extreme weather shocks.

RESEARCH IN PROGRESS

Forward Guidance, Speculation, and Liquidity Shortfalls in an OTC Carbon Credit Market (with Luis Alvarez, Thiago Silva and Henry Zhang)

We estimate the effects of forward guidance on the supply of carbon credits when trading is subject to over-the-counter (OTC) frictions, focusing on the CBIO market in Brazil. We combine the OTC tape data with firms' carbon credit holdings, balance sheet outcomes, and interfirm payments to study the impact on demand for carbon credits, borrowing, investment, and supply chain spillovers. We focus on the rapid increase in prices in June 2022 followed by a crash in July 2022, driven by speculation about forward guidance and an unexpected change in carbon credit policy. We show how low liquidity generated the volatility, and then propagated by limited float, insufficient hedging options, and the absence of designated market-makers.

The Macrofinancial Link Between Tariffs, Exchange Rates, and Trade (with Sarah Gertler)

We examine how macrofinancial factors, particularly the aggregate interest rate, shape exchange rate and trade responses to tariff shocks. First, we find that US import tariffs substantially influence the exchange rate, and in contrast little effect from tariffs imposed on the US. Second, we find that countries with floating exchange rates and which maintain higher interest rates than the US experience larger depreciations than lower-interest-rate floating countries. Third, we present evidence that high-interest-rate countries' trade are subject to higher demand elasticities, which is driven by supply- or demand-side factors depending on exchange rate regime. Our findings are consistent with a model of centrality in which financial and real factors co-amplify and can offset each other on aggregate but not necessarily in terms of incidence.

POLICY WRITING

Brazil's Central Bank Digital Currency: Improving Financial Infrastructure with Programmability (with Robert Townsend)
LIFT papers. Volume 5, Issue 5 (2023).

The paper shows how programmable CBDCs, like Brazil's Digital Real, address financial inefficiencies and enable new applications, improving credit policies, foreign investment, and asset transfers. It also highlights how the first round of Brazilian CBDC pilot projects aligns with this agenda. It also explores design challenges and potential fiscal and monetary benefits.

MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics, Expected completion June 2025
DISSERTATION: "*Group Decision-Making*"

DISSERTATION COMMITTEE AND REFERENCES

Professor Glenn Ellison
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Professor Stephen Morris
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Professor Alessandro Bonatti
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PRIOR EDUCATION

University of Michigan — 2019
Bachelors in science in Honors Economics and Honors Mathematics with Highest Distinction

CITIZENSHIP USA and Israel **GENDER:** Male

LANGUAGES English and Hebrew

FIELDS Primary Fields: Microeconomic Theory

Secondary Fields: Organizational Economics

TEACHING EXPERIENCE

Game Theory for Strategic Advantage (EMBA)	2022, 2023
Teaching Assistant to Alessandro Bonatti	
Course evaluations: 6.21/7, 6.59/7	
Managing the Modern Organization (MBA)	2022, 2023
Teaching Assistant to Charles Angelucci	
Course evaluations: 6.5/7, 6.1/7	
Industrial Organization (PhD)	2021, 2022
Teaching Assistant to Glenn Ellison	
Course evaluations: 6.9/7, 7/7	
Market Design (PhD)	2021
Teaching Assistant to Parag Pathak	
Course evaluations: 7/7	
Organizational Economics (PhD)	2022, 2023
Teaching Assistant to Robert Gibbons	
Course evaluations: 6.0/7,7/7	
Organizational Economics (Undergraduate)	2023
Teaching Assistant to Robert Gibbons	
Course evaluations: 6.8/7	

RELEVANT POSITIONS

Research Assistant to Alessandro Bonatti, Glenn Ellison, Robert Gibbons, and Tobias Salz

FELLOWSHIPS, HONORS, AND AWARDS

MIT Presidential Graduate Student Fellowship 2019-2020
Ferrando Prize for best Economics Thesis 2019

PROFESSIONAL ACTIVITIES

Presented at 2024 Stony Brook Game Theory Conference and 2024 North American Summer Meeting of Econometric Society.

PUBLICATIONS

"Who vs When: Designing Decision Processes in Organizations," ***International Journal of Industrial Organization*****, 2024**

"A Corrigendum on `Multiproduct Equilibrium Price Dispersion'," ***Journal of Economic Theory,*** **2022.**

"Strong Matching Preclusion of Joint Pancake Graphs," ***(with Eddie Cheng, Justin Kelm, and Brian Xu), International Journal of Parallel, Emergent and Distributed Systems,*** **2015.**

RESEARCH PAPERS

"Conformity Concerns: A Dynamic Perspective" (Job Market Paper)

In many settings, individuals imitate their peers' public decisions for two distinct reasons: to adapt to a common fundamental state, and to conform to their peers' preferences. In this model, the fundamental state and peers'

preferences are unknown, and the players learn these random variables by observing others' decisions. With each additional decision, the public beliefs about these unknowns become more precise. I show that this increased precision endogenously increases the desire to conform, resulting in decisions that are uninformative of a player's preferences or perceptions of the fundamental state. When this occurs, social learning about peers' preferences and fundamentals fails, resulting in inefficient decisions. In line with social psychology findings, I show that between these two misperceptions, correcting the misperceptions of peers' preferences may lead to more efficient decision-making.

"Multi-Project Collaborations" (with Charles Angelucci), Submitted

We analyze collaborative experimentation across multiple independent domains. Each domain contains infinitely many potential projects with asymmetric benefits. In each period and domain, two players can idle, jointly explore a new project, or jointly exploit a known one, with voluntary transfers. For intermediate discount factors, treating domains as independent during experimentation is suboptimal. The optimal experimentation policy for two domains exhibits common features of collaborative experimentation: lengthy exploration, gradual scope expansion, permanently bounded scope, intermittent domain exploration, and project revival. We connect these findings to research on buyer-supplier dynamics and persistent productivity differences.

"Job Scope and Motivation under Informal Incentives" (Short paper with Charles Angelucci), Submitted

We model the relationship between the number of tasks assigned to an employee and a firm's ability to motivate effort through informal performance-based bonuses. We show that assigning multiple tasks gives the firm a greater range of performance levels that can be rewarded. The firm takes advantage of this by designing equally motivating, flatter, and hence more credible incentives.

"Managerial Intervention, Employee Motivation, and Collaboration" (with Kramer Quist)

The economic literature on delegation focuses on the demotivational effects of managerial intervention. However, many managers motivate employees while proactively intervening in the decision-making process. We build a principal-agent model to analyze when managerial intervention is, and is not, motivational to the agent. While managerial intervention may demotivate the agent by tempting the principal to take actions that waste employee effort, managerial intervention can also motivate the agent by incentivizing principal effort that complements the agent's effort. That is, delegation may demotivate the agent when the principal and agent work collaboratively. Our results speak

to understanding the role of strategic complementarity in determining when various managerial practices do, and do not, motivate employees.

"Market Power Spillovers Across Airline Routes" (with Rebekah Dix, last updated 2022)

Airlines operate complicated flight networks, often utilizing hub-and-spoke systems to efficiently route connecting travelers and optimize costs. Despite the prevalence of connecting travelers—accounting for approximately one-third of passenger itineraries—most analyses of the welfare effects of changes in competition focus on nonstop routes. We show that when firms face capacity constraints or adjustment costs, a price decrease on a direct route may incentivize firms to decrease prices on indirect routes using this route as a leg. We document that this pass-through is positive using the price effects of low-cost carrier entry and airline mergers: connecting fares decrease after low-cost carrier entry on one of the legs and increase after a merger of carriers that competed on one of the legs. Our findings demonstrate that ignoring these network effects leads to significantly underestimating changes in consumer surplus—by up to 115%—in response to changes in competition. Thus, considering full airline networks is essential to accurately estimating the impact of changes in competition on consumers.

RESEARCH IN PROGRESS

"Self-Censoring Hard Information"

Despite their potential to enhance decision-making, many facts remain unspoken. In the model, an agent receives verifiable information and decides to share or conceal such information when advising a principal on aligning her decision with an unknown state. Compared to the principal, the agent is either biased toward high decisions or has the same ideal decision as the principal. Further, all agents aim to build a reputation for being unbiased. I first provide a baseline result, whereby the unbiased agent does not self-censor in equilibrium. I then provide simple extensions showcasing how self-censorship arises in equilibrium. First, whenever the unbiased agent values his reputation, if the unbiased agent is conjectured to not reveal high signals, his best reply is to self-censor. Additionally, if the agents can engage in influence activity, then an unbiased agent has an incentive to distort his signal downwards to separate from the biased agent.

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics, expected completion June 2025
DISSERTATION: "Essays in Political Economy"

DISSERTATION COMMITTEE AND REFERENCES

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PRIOR EDUCATION

Princeton University 2015–2019
B.A., Economics
Summa cum laude, Phi Beta Kappa

GENDER Male

CITIZENSHIP Uruguay, USA

LANGUAGES Spanish (native), English (native), French (fluent)

FIELDS

Primary: Political economy
Secondary: Economic theory, natural language processing

TEACHING EXPERIENCE

14.770 Graduate Political Economy I — Fall 2023
Teaching Assistant to Profs. Abhijit Banerjee and Alexander Wolitzky

14.20 Undergraduate Industrial Organization — Fall 2023
Teaching Assistant to Prof. Nancy Rose

14.126 Graduate Game Theory — Spring 2022
Teaching Assistant to Profs. Muhamet Yildiz and Alexander Wolitzky

14.75 Undergraduate Political Economy — Spring 2022
Teaching Assistant to Profs. Abhijit Banerjee and Benjamin Olken

14.770 Graduate Political Economy I — Fall 2021
Teaching Assistant for Profs. Abhijit Banerjee and Benjamin Olken

RELEVANT POSITIONS

Research Assistant to Prof. Alexander Wolitzky — Summer 2020–Fall 2020

FELLOWSHIPS, HONORS, AND AWARDS

National Science Foundation Graduate Research Fellowship — 2019–2024

Finalist for Best Student-Track Submission, AAAI Conference on Artificial Intelligence — 2019

Princeton University Halbert White '72 Prize in Economics (Top Economics Undergraduate) — 2019

Princeton University Wolf Balleisen Memorial Prize (Best Economics Undergraduate Thesis) — 2019

Princeton University Department of Economics Junior First Prize — 2018

Princeton University Shapiro Prize for Academic Excellence — 2017

PROFESSIONAL ACTIVITIES

Presentations
AAAI Conference on Artificial Intelligence (2019)

Refereeing
PNAS

Service
MIT Economics Behavioral Lunch organizer, 2022-2023

PUBLICATIONS

"Persuasion with Ambiguous Receiver Preferences"
Economic Theory, vol. 77, pp. 1173—1218 (August 2023); link to published version.
I describe a Bayesian persuasion problem where Receiver has a private type representing a cutoff for choosing Sender's preferred action, and Sender has maxmin preferences over all Receiver type distributions with known mean and bounds. This problem can be represented as a zero-sum game where Sender chooses a distribution of posterior mean beliefs that is a mean-preserving contraction of the prior over states, and an adversarial Nature chooses a Receiver type distribution with the known mean; the player with the higher realization from their chosen distribution wins. I formalize the connection between maxmin persuasion and similar games used to model political spending, all-pay auctions, and competitive persuasion. In both a standard binary-state setting and a new continuous-state setting, Sender optimally linearizes the prior distribution over states to create a distribution of posterior means that is uniform on a known interval with an atom at the lower bound of its support.

PUBLICATIONS (CONT.)

"Examining Political Trustworthiness Through Text-Based Measures of Ideology"
Proceedings of the 33rd AAAI Conference on Artificial Intelligence, vol. 33, no. 1, pp. 10029–10030 (January 2019); link to published version.
This work shows the value of word-level statistical data from the US Congressional Record for studying the ideological positions and dynamic behavior of senators. Using classification techniques from machine learning, we predict senators' party with near-perfect accuracy. We also develop text-based ideology scores to embed a politician's ideological position in a one-dimensional policy space. Using these scores, we find that speech that diverges from voting positions may result in higher vote totals. To explain this behavior, we show that politicians use speech to move closer to their party's average position. These results not only provide empirical support for political economy models of commitment, but also add to the growing literature of machine-learning-based text analysis in social science contexts.

RESEARCH PAPERS

"Strategic Opinion-Writing on Appellate Courts" (Job Market Paper)
September 2024; link to most recent version.
Ruling on thousands of cases each year, U.S. federal courts of appeals make some of the most impactful decisions in modern society. I study quasi-random three-judge appellate panels during the period 1970–2013 and show that while bipartisan panels cause a roughly 25% increase in the number of dissenting opinions compared to party-unanimous panels, the minority partisan or most politically extreme judge is no more likely to dissent than their colleagues. This novel result is incompatible with classical median-voter approaches. I reconcile the contrasting effects of partisanship on total and individual dissents through a model where judges prefer coalitions with more similar judges along both partisan and non-partisan dimensions. Using judge metadata, I find that dissimilarity across law school training and gender are associated with larger increases in dissent rates on bipartisan panels. I then introduce state-of-the-art machine learning models from natural language processing to analyze opinion text and show that those same judge characteristics also drive differences in the legal topics covered, while the effect of panel partisanship on text is minimal. More broadly, I illustrate the theoretical and empirical complexity of appellate court behavior and the need for novel approaches to study judicial polarization.

"Partisan Opinions, but Common Language: Similarities in Topic Use by Appellate Judges"
August 2024; draft available upon request.
As the final word on thousands of legal matters each year, appellate courts make some of the most impactful decisions in modern society. Understanding partisan behavior by their judges is therefore critical for the rule of law. However, judicial language is technical, making partisanship challenging to objectively measure and creating a unique opportunity for natural language processing. Using fine-tuned language embeddings from transformer models, we leverage the random assignment of individual judges to three-judge panels, and of those panels to cases, to causally estimate how discussion of legal topics on U.S. appellate courts differs across partisan environments. We show that while Democratic judges write more dispersed opinions, judges of both parties agree on average about the important topics in each legal case. Further, we demonstrate that mandatory bipartisanship does not reduce the range of

RESEARCH PAPERS (CONT.)

topics considered. Judicial partisanship is thus driven by disagreements within legal issues rather than disputes about which issues apply. These results provide a clearer understanding of the structure of judicial language and open new directions for natural language processing research and impact.

"Discovery through Trial Balloons"
November 2022, available on arXiv.
A principal and an agent face symmetric uncertainty about the value of two correlated projects for the agent. The principal chooses which project values to publicly discover and makes a proposal to the agent, who accepts if and only if the expected sum of values is positive. We characterize optimal discovery for various principal preferences: maximizing the probability of the grand bundle, of having at least one project approved, and of a weighted combination of projects. Our results highlight the usefulness of trial balloons: projects which are ex-ante disfavored but have higher variance than a more favored alternative. Discovering disfavored projects may be optimal even when their variance is lower than that of the alternative, so long as their disfavorability is neither too large nor too small. These conclusions rationalize the inclusion of controversial policies in omnibus bills and the presence of moonshot projects in organizations.

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics, Expected completion June 2025
DISSERTATION: "*Healthy Behavior: Essays in Health and Behavioral Economics*"

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PRIOR EDUCATION

Harvard University 2016
A.B., Statistics
Summa Cum Laude

CITIZENSHIP USA **GENDER:** Male

FIELDS

Primary Fields: Health Economics, Behavioral Economics

Secondary Fields: Applied Econometrics

TEACHING EXPERIENCE

Algorithms and Behavioral Science (graduate, MIT course 14.163) Teaching Assistant to Professors Sendhil Mullainathan and Ashesh Rambachan	2025
Introduction to Statistical Methods in Economics (undergraduate, MIT course 14.30) Teaching Assistant to Professor Alberto Abadie	2024
Nonlinear Econometrics (graduate, MIT course 14.385) Teaching Assistant to Professors Whitney Newey and Alberto Abadie	2021
Econometric Data Science (undergraduate, MIT course 14.32) Teaching Assistant to Professor Anna Mikusheva	2021
Introduction to Theoretical Statistics (undergraduate, Harvard course Statistics 111) Teaching Assistant to Doctor Kevin Rader	2016

RELEVANT POSITIONS

Research Assistant to Professor Tamara Broderick	2022
Research Assistant to Professors Sendhil Mullainathan, Jens Ludwig, and Jann Spiess	2018-19
Research Assistant to Professors Sendhil Mullainathan and Ziad Obermeyer	2018-19

FELLOWSHIPS, HONORS, AND AWARDS

Russell Sage Foundation Small Grant in Computational Social Sciences	2020
National Science Foundation Graduate Research Fellowship	2019
Derek Bok Certificate of Distinction in Teaching	2016

PROFESSIONAL ACTIVITIES

Referee: *AER: Insights, Journal of Public Economics, Journal of the European Economic Association*

Conference Reviewing: Early Career Behavioral Economics (2023), NeurIPS Workshop on Behavioral Machine Learning (2024)

Presentations:

SITE (Psychology and Economics), Stanford University	2022
Early Career Behavioral Economics, briq Institute	2022
Advances with Field Experiments, University of Chicago	2022

PUBLICATIONS

When Guidance Changes: Government Stances and Public Beliefs (with Charlie Rafkin and Pierre-Luc Vautrey) *Journal of Public Economics,* April 2021.

RESEARCH PAPERS

X-Raying Experts: Decomposing Systematic Mistakes in Radiology (Job Market Paper)

Human experts often err. How many of these errors are preventable mistakes, and what drives them? I study these questions in the high-stakes field setting of radiology. Using anonymized health records from a large hospital, I compare radiologists' findings of cardiac dysfunction on chest x-rays to algorithmic predictions, adjudicating between the two with exogenously administered blood tests. I find that at least 46 percent of radiologists systematically mis-rank patients for signs of cardiac dysfunction. A decomposition shows that errors reflect individual radiologists falling short of best clinical practice (a "human frontier"), and a further gap between best practice and algorithmic predictions (a "machine frontier"). Raising radiologists to the human frontier could increase their true positive rates by 6% or decrease false positives by 20%; raising them to the machine frontier would further increase true positives by 4% or decrease false positives by 14%. Examining the incidence of error, I find evidence for behavioral inattention: radiologists react appropriately to salient details such as a patient's age and symptoms, but under-react to complex signals captured by algorithmic predictions.

Managing Emotions: The Effects of Online Mindfulness Meditation on Mental Health and Economic Behavior (with Pierre-Luc Vautrey)

Mindfulness meditation has gained popularity, fueled by accessible smartphone apps and rising concerns about mental health. While such apps are claimed to affect mental well-being, productivity, and decision making, existing evidence is inconclusive due to limited sample sizes and high attrition. We address these concerns by conducting a large-scale, low-attrition experiment with 2,384 US adults, randomizing access and usage incentives for a popular mindfulness app. App access improves an index of anxiety, depression, and stress by 0.38 standard deviations (SDs) at two weeks and 0.46 SDs at four weeks, with persistent effects three months later. It also improves earnings on a focused proofreading task by 2 percent. However, we find near-zero effects on a standard cognitive test (a Stroop task), and on decisions over risk and information acquisition where past economics research has indicated that emotions affect choice. This study provides evidence that digital mindfulness improves mental health and can raise productivity, but suggests that these effects do not stem from traditional measures of cognitive skills nor do they accompany more primitive changes in the information and risk preferences we measure.

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD in Economics, Expected Completion: June 2025
DISSERTATION: "Essays on the Design of Social and Private Insurance"

DISSERTATION COMMITTEE AND REFERENCES

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Professor Jonathan Gruber
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PRIOR EDUCATION

University of New South Wales (UNSW), Sydney, Australia — 2018
Bachelor of Economics (Honours Class I, University Medal)
Bachelor of Science in Mathematics (Distinction)

CITIZENSHIP Australia, Ireland **GENDER:** Male

FIELDS

Primary Field: Public Finance
Secondary Fields: Financial Economics, Climate Economics

TEACHING EXPERIENCE

PhD Public Economics II (14.472)
TA to Profs. Nathan Hendren & Amy Finkelstein — 2024
TA to Prof. Nathan Hendren — 2024
TA to Prof. Amy Finkelstein — 2022
Undergraduate Public Finance & Public Policy (14.41)
TA to Prof. Jonathan Gruber — 2021

MIT Economics

ADAM SOLOMON
OCTOBER 2024

RELEVANT POSITIONS

Research Intern, Microsoft Research New England	
Supervised by Prof. Hunt Allcott	2021
RA to Professor James Poterba	2020-21
RA to Professor Richard Holden, UNSW	2017-19

FELLOWSHIPS, HONORS, AND AWARDS

Jerry A. Hausman Graduate Dissertation Fellowship	2022-23
Honorable Mention for Best Student Paper, IIPF	2023
Bradley Public Economics Fellowship	2021-24
George and Obie Shultz Fund	2021-24
Daniel (1972) and Gail Rubinfeld Fellowship	2020-21
MIT Presidential Fellowship	2019-20
Honours Scholarship (UNSW)	2018
University Medal in Economics (UNSW)	2018
Malcolm Chaikin Foundation Scholarship (UNSW)	2013-17
Scientia Scholarship (UNSW)	2013-17
Henry Manson Scholarship (UNSW)	2015-16

PROFESSIONAL ACTIVITIES

Referee: *American Economic Review, American Economic Review: Insights, American Economic Journal: Economic Policy, Economic Journal, Games and Economic Behavior, International Journal of Game Theory, Journal of Retirement*, *Review of Finance*

External Presentations: *ARIA Huebner Colloquium (x2), PSID Annual User Conference, Risk Theory Society, USDA Economic Research Service, Western Economic Association International, UNSW*

Service:

Organizer, MIT Public Finance Lunch	2021-22
President, Graduate Economics Association	2020-21

PUBLICATIONS

"The Dynamics of Majoritarian Blotto Games (with Tilman Klumpp and Kai Konrad)" *Games and Economic Behavior* 117:402-419 , 2019**.**

"Imperfect Private Information in Insurance Markets" *Review of Economics and Statistics, forthcoming.*

This paper studies imperfectly-perceived private information in insurance markets when contracts endogenously respond. Equilibrium contracts, pooling and welfare depend on the joint distribution of risk and misperception. In the Health and Retirement Study (HRS), I show that misperceptions typically co-vary with (medical, long-term care, disability and mortality) risk type: high types under-perceive their risk, low types over-perceive. I develop a general model and algorithm to estimate the equilibrium contracts, pooling and welfare impact of misperceptions that is applicable in many settings. I offer suggestive evidence from US annuity markets that contracts are distorted due to misperceptions, with welfare likely increasing.

RESEARCH PAPERS

"Optimal Insurance Scope: Theory and Evidence from US Crop Insurance" (Job Market Paper) (with Sylvia Klosin)

Distinct risks are typically insured separately. A single `aggregate' contract that pays more when many shocks occur simultaneously, but less when positive shocks offset negative shocks, is utility-increasing absent moral hazard. However, an aggregate contract discourages diversification, leading to a novel insurance-incentive trade-off. We study the US Federal Crop Insurance Program (FCIP), where farmers can choose the `scope' of their policy - whether to insure each field separately, or all fields of the crop as an aggregate unit. Starting in 2009, the FCIP introduced a large subsidy increase for aggregate insurance. We show that farms that moved to aggregate insurance reduced crop diversity and irrigation, farmed less and conserved more land, and insured price risk --- all reducing the diversification of their risks. This increased the variability of farm yield by 14%, raising the fiscal cost of aggregate insurance by about $1.5 billion per year. We derive and estimate a `Baily-Chetty'-style formula for the optimal contract scope. We find that an aggregate policy is never welfare maximizing, but that the optimal policy lies partway between separate and aggregate. More generally, we discuss scope's widespread relevance in insurance design.

"Insuring Catastrophic Climate Risk: Evidence from Public Cyclone Reinsurance"

Increasing climate risk has caused insurance in many locations to become unaffordable or unavailable. I study a novel policy response in Australian home insurance: government provided, mandatory, actuarially fair, reinsurance for cyclone damage. In this scheme, the government reinsures the cyclone risk, while the private market covers the remaining idiosyncratic risk. I find that public reinsurance leads to a 21% decrease in home insurance premiums and an 11% increase in the probability of insurance being offered at all. In terms of mechanisms, I rule out subsidization and show that the ambiguity of the risk has a minimal impact on premiums and insurance offerings. Instead, the entirety of the increase in insurance offered, and much of the decrease in premiums, comes from reducing the implicit costs associated with insuring spatially correlated risk. Increased competition due to insurer entry explains the remaining premium reductions. This isolates the cause of market dysfunction - correlated risk - and suggests that public reinsurance is a cost-effective policy to rehabilitate insurance markets for catastrophic climate risks.

"Bundling in Insurance Markets: Theory and an Application to Long-term Care"

Every insurance contract bundles risks, and explicit bundling discounts are common. I show theoretically that bundling arises in a competitive market whenever correlation between risk types enables insurer "cream-skimming": willingness-to-pay for insurance against one risk must be negatively correlated with expected costs from the other risk. I analyze long-term care insurance, in which both-spouse bundles are discounted by 20-35%. I show that cream-skimming incentives are sufficient to explain these discounts, and rule out

standard economies-of-scale. Counterfactually, banning bundling would raise welfare by 5% by correcting separate-market unraveling, while mandatory family bundling would reduce welfare by 5% by exacerbating advantageous selection.

"Self-Targeting in U.S. Transfer Programs" (with Charlie Rafkin and Evan Soltas)

Transfer receipt is voluntary and costly, generating "self-targeting" through selective take-up among the eligible. How does self-targeting select on need, and what are its policy implications? We show self-targeting is advantageous in eight U.S. transfers: On average, recipients have lower consumption and lifetime incomes than eligible nonrecipients with similar current incomes. Due to self-targeting, these transfers provide 50 to 75 percent more to the consumption-poorest and lifetime-poorest than would automatic transfers that are distributionally equivalent by income. Self-targeting makes automatic transfers undesirable: We estimate the social benefits of self-targeting are approximately six cents per transfer dollar, generally exceeding the social costs of ordeals.

"Projected Mortality Improvement and the Money's Worth of US Individual Annuities" (with James Poterba)

This paper presents new estimates of the money's worth of both immediate and deferred annuities that were available in the US individual annuity market in July 2020. It highlights the sensitivity of these estimates to two inputs to the valuation process: the choice of discount rate and the assumed rate of prospective mortality improvement for annuity buyers. The decline in nominal interest rates in the last two decades has coincided with a decline in the ratio of an annuity's annual payout as a fraction of its purchase price, as well as an increase in the difference between the money's worth estimates using interest rates for safe (US Treasury) and risky (corporate) bonds. In addition, projecting future mortality rates using the rate of mortality improvement observed in the US in the first decade of this century, the data underlying the most recent Society of Actuaries projections, results in much higher money's worth values than when future mortality improvement rates are assumed to follow the assumptions of the Social Security Administration Office of the Actuary. The sensitivity of these valuation calculations highlight potential challenges in designing communications about annuity products for retirement plan participants.

RESEARCH IN PROGRESS

"Household Unemployment Insurance and Spousal Labor Supply: Evidence from Australia"

Unemployment insurance (UI) systems are either individualized (e.g. the US) or family-based (e.g. Australia and the UK). In a family-based system, benefits are means-tested against spousal income: otherwise comparable unemployed people with low-earning spouses receive a higher benefit than those with high-earning spouses. A family-based system targets payments to needier households, but levies an implicit tax against spousal earnings, potentially depressing labor supply. I examine this trade-off in Australia, exploiting variation in the implicit spousal tax rate that ranged from 60% to 25%. When the implicit tax rate fell, spousal

earnings rose by 15%, implying a spousal income elasticity of ~0.25. I use the empirical estimates to estimate a model of optimal family-based UI that trades-off targeting with labor supply responses.

"Ex-Ante Subsidy vs Ex-Post Assistance: The Spillovers of Mispriced Climate Risk" (with Jonathan Gruber)

In many settings where households face substantial and changing climate risk, the government provides both ex-ante insurance subsidies and ex-post disaster assistance. Removing the former so that prices accurately reflect the risk faced would increase expenditures on the latter. We study the US National Flood Insurance Program, which has recently re-priced policies to be actuarially fair, and the spillovers this has on FEMA disaster assistance. We estimate that 1% flood insurance subsidy increases coverage by 0.66%. If a flood occurs, this coverage expansion reduces FEMA disaster assistance expenditures by $148 and disaster loans by $321 per house in the affected county. We explore heterogeneity by risk and region. Using these results, we estimate a model of optimal ex-ante subsidy versus ex-post assistance.

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ACADEMIC POSITIONS
Princeton University, Julis Rabinowitz Center for Public Policy and Finance
Postdoctoral Research Associate

DOCTORAL STUDIES
Massachusetts Institute of Technology (MIT)
PhD, Economics, June 2023
DISSERTATION: "Essays on Economic Policy Design "

REFERENCES

Professor Daron Acemoglu
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Professor Gene Grossman
Princeton Department of Economics
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PRIOR EDUCATION

University of Cambridge — 2016
M.Phil., Economics
Distinction

Harvard College — 2015
A.B., Physics and Mathematics
Summa cum laude

CITIZENSHIP United States

GENDER Male

LANGUAGES English (native), French (conversant)

FIELDS Primary Fields: International Trade, Public Finance

Secondary Fields: Macroeconomics

TEACHING EXPERIENCE	Princeton graduate-level international trade Guest lecturer (two lectures)	2024 [scheduled]
	Princeton senior thesis Advisor to three seniors	2024
	MIT Math Camp for incoming economics Ph.D. students Sole instructor	2019-2021
	MIT graduate-level international trade (14.582) Teaching assistant to Professors David Atkin, Arnaud Costinot, Dave Donaldson	2020, 2022
RELEVANT POSITIONS	Research Assistant to Daron Acemoglu	2022
	Research Assistant to Dave Donaldson and Arnaud Costinot	2021
	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	Longview Philanthropy (grant to support final semester at MIT)	2023
	Global Priorities Fellowship, Forethought Foundation	2022
	Palm Fund Fellowship, MIT Economics Department	2017-2019
	Paul Williams Fellowship (full scholarship at Cambridge)	2015-2016
	Sanderson Prize (best academic record, Harvard physics grads)	2015
PRESENTATIONS	NYU Trade / Spatial Economics Conference [scheduled]	2025
	Econometric Society North American Winter Meeting Double Workshop in Geoeconomics, Geopolitics, etc. Kiel Institute Workshop on Sanctions Effectiveness IES Summer Trade Workshop Society for Economic Dynamics, Annual Meeting NBER Summer Institute, Int'l Economics and Geoeconomics Harvard University [scheduled] Dartmouth College [scheduled]	2024
	American Economic Association Annual Meeting The University of Chicago, Booth School of Business University of Oxford NBER Summer Institute, International Trade and Investment National Tax Association Annual Meeting Boston University International Monetary Fund Biennial European Central Bank Conference	2023
	"Smart Sanctions" Online Workshop	2022
	Econometric Society European Winter Meeting	2021

PROFESSIONAL ACTIVITIES

Refereeing: American Economic Review, American Economic Review: Insights, Journal of International Economics, Journal of Political Economy: Macroeconomics, The Economics Journal, International Economic Review, Oxford Economics Papers

Mentorship: Application Assistance and Mentorship Program (2020-2022)

PUBLICATIONS

"A Theory of Economic Sanctions as Terms of Trade Manipulation," ***Journal of International Economics*****, 2024**

"How Should Sanctions Account for Bystander Countries?" ***AEA Papers and Proceedings,*** **2023**

RESEARCH PAPERS

"Strategic (Dis)Integration" (Job Market Paper) (with Daniel O'Connor)

Suppose a country anticipates that it may use trade as a point of leverage in future geopolitical conflicts. How should it develop domestic industries and international trading relationships today in order to strengthen its hand tomorrow? Domestically, we show that the country abstains from peacetime capital subsidies if it can credibly threaten trade taxes as geopolitical punishments during conflict, but not otherwise. Internationally, peacetime trade policy seeks to influence foreign capital accumulation so as to make foreign prices more sensitive to trade during conflict, but not necessarily to increase foreign gains from trade. We apply these insights provide the first quantitative exploration of the US's optimal policies for building geopolitical power vis-à-vis China. The optimal policy promotes US-China trade on both the import and export margins, especially in consumption goods.

"Income Taxation with Elasticity Heterogeneity" (with Andre Sztutman)

Suppose an income tax schedule is (constrained) Pareto efficient. We show it may still be suboptimal for utilitarian welfare under all cardinalizations of utilities that admit an upper bound on the curvature of household utility with respect to consumption. Taxes are optimal for some such cardinalization if and only if tax revenues are decreasing and concave with respect to a class of narrowly targeted reforms. We reformulate this condition as a test on sufficient statistics. The test fails whenever elasticities of taxable income vary enough within some income level. We evaluate our test empirically and find welfare-improving reforms exist.

"Why is Trade Not Free? A Revealed Preference Approach" (with Rodrigo Adao, Arnaud Costinot, and Dave Donaldson)

A prominent explanation for why trade is not free is politicians' desire to protect some of their constituents at the expense of others. In this paper we develop a methodology that can be used to reveal the welfare weights that a nation's import tariffs implicitly place on different groups of society. Applied

in the context of the United States in 2017, this method implies that redistributive trade protection accounts for a significant fraction of US tariff variation and causes large monetary transfers between US individuals, mostly driven by differences in welfare weights across sectors of employment. Perhaps surprisingly, differences in welfare weights across US states play a much smaller role.

"A World Trading System For Whom? Evidence from Global Tariffs" (with Rodrigo Adao, Arnaud Costinot, and Dave Donaldson)

We use global tariffs to reveal the weights that nations implicitly place on the welfare of their trading partners relative to their own. Our estimated welfare weights suggest that formal and informal rules of the world trading system make countries internalize the impact of their policies onto others to a substantial extent, though not fully. On average, countries place 19% less value on transfers to foreigners than transfers to their own residents. Across nations, we find that countries that put more weights on the welfare of foreigners also tends to receive higher welfare weights from them. Our results are consistent with international cooperation being sustained by a general form of reciprocity among nations: cooperative behavior by one country, in the form of a higher welfare weight, is reciprocated with cooperative behavior by its partner, also in the form of a higher welfare weight. This is true both within and outside the World Trade Organization.

"How to Fix a Coordination Failure: A 'Super-Pigouvian' Approach"

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. 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 welfare gains that those behaviors generate (a) directly, like Pigou, and also (b) 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.

"Fiscal Policy in a Networked Economy" (with Joel Flynn and Christina Patterson)

Fiscal stimulus policies propagate through complex and overlapping economic networks. We study their efficacy and targeting in the presence of input-output linkages, regional trade, and household heterogeneity in employment relationships, marginal propensities to consume (MPCs), and consumption

baskets. Theoretically, we derive estimable formulae for fiscal multipliers and characterize how network structures determine their size. Empirically, we estimate that multipliers vary substantially across policies, so targeting is important. However, virtually all variation in multipliers stems from differences in policies' direct incidence onto households' MPCs. Thus, while policies' distributional effects depend on network structures, maximally expansionary fiscal policy simply targets households' MPCs.

RESEARCH IN PROGRESS

"Changing Taxes for Changing Times" (with André Sztutman and Anchi Xia)

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.

"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

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.

MIT Economics

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics, Expected completion June 2025
DISSERTATION: "Essays on Information Economics"

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PRIOR EDUCATION

École Polytechnique — 2019
Master in Economics

London School of Economics and Political Science — 2016
M.Sc. Applicable Mathematics

Maastricht University — 2015
B.Sc. Economics and Business Economics

CITIZENSHIP German **GENDER:** Male

LANGUAGES English, German, Spanish and French

FIELDS Primary Field: Microeconomic Theory

TEACHING EXPERIENCE

Contract and Information Economics, MIT (graduate)	2021-23
Teaching Assistant to Professors Stephen Morris and Ian Ball	
Advanced Contract Theory, MIT (graduate)	2023
Teaching Assistant to Professor Robert Townsend	
Organizational Economics, MIT (graduate)	2022
Teaching Assistant to Professors Robert Gibbons, Namrata Kala and Charles Angelucci	
Principles of Macroeconomics, MIT (undergraduate)	2022
Teaching Assistant to Professor Ricardo Caballero	
Mathematical Economic Modeling, MIT (undergraduate)	2022
Teaching Assistant to Professor Nicolas Lambert	
Principles of Economics, École Polytechnique (undergraduate)	2019
Teaching Assistant to Professors Olivier Gossner and Jean-Baptiste Michau	

RELEVANT POSITIONS

Research Assistant to Professor Stephen Morris	2019
OECD, Consultant	2018

PRESENTATIONS *SAET, LSE, One World Mathematical Game Theory Seminar, Institut Henry Poincaré, Stony Brook conference in Game Theory, CREST, PSE, Transatlantic Theory Workshop.*

GRANTS Main external collaborator in ERC advanced grant, “SInfoNiA” with Olivier Gossner.

RESEARCH PAPERS

"Limits of Global Games" (Job Market Paper)

Games with strategic complementarities often exhibit multiple equilibria. In a global game, players privately observe a noisy signal of the underlying payoff matrix. As the noise diminishes, a unique equilibrium is selected in almost all two-player, binary-action games with strategic complementarities - a property known as ``limit uniqueness." This paper describes the limits of that approach as we move beyond two actions. Unlike binary-action games, limit uniqueness is not an intrinsic feature of all games with strategic complementarities. We demonstrate that limit uniqueness holds if and only if the payoffs exhibit a generalized ordinal potential property. Moreover, we provide an example illustrating how this condition can be easily violated.

"Information Design for Rationalizability" (with Olivier Gossner)

We study (interim correlated) rationalizability in games with incomplete information. For each given game, we show that a simple and finitely parameterized class of information structures is sufficient to generate every outcome distribution induced by general common prior information structures. In this parameterized family, players observe signals of two kinds: A finite signal and a common state with additive, idiosyncratic noise. We characterize the set of rationalizable outcomes of a given game as a convex polyhedron.

"A Strategic Topology on Information Structures" (with Stephen Morris and Dirk Bergemann)

Two information structures are said to be close if, with high probability, there is approximate common knowledge that interim beliefs are close under the two information structures. We define an "almost common knowledge topology" reflecting this notion of closeness. We show that it is the coarsest topology generating continuity of equilibrium outcomes.

"Strategic Type Spaces" (with Olivier Gossner)

We provide a strategic foundation for information: in any given game with incomplete information we define strategic quotients as information representations that are sufficient for players to compute best-responses to other players. We prove 1) existence and essential uniqueness of a minimal strategic quotient called the Strategic Type Space (STS) in which a type is given by an interim correlated rationalizability hierarchy together with the set of beliefs over other players' types and nature that rationalize this hierarchy 2) that this minimal STS is a quotient of the universal type space and 3) that the minimal STS has a recursive structure that is captured by a finite automaton.

RESEARCH IN PROGRESS

"Robust Information Aggregation"

Consider an investment problem with strategic complementarities and incomplete information about returns. This paper shows that investors aggregate their private information in equilibrium by trading a token and observing its market price over multiple rounds before making an investment decision. This result is robust to the information environment. The paper gives an explicit trading protocol that robustly implements information aggregation and establishes properties of all such trading equilibria: Agents encode their private information in terms of a finite algebraic basis (e.g. prime numbers) that spans the set of equilibrium token prices. Finally, the paper discusses the general implications of this result for privacy and the implementation of robust information aggregation.

"Welfare and Robustness in Matching and Information Design"

We characterize the welfare optimal matching and disclosure procedure that implements asset trades between risk averse buyers and risk neutral sellers. Full disclosure is optimal if the designer knows agents' types - i.e. their beliefs and higher order beliefs. When types are private information, incentive constraints imply that the information structure induced by the optimal matching and disclosure rule is a Global/Email Game. This result highlights the trade-off between welfare and robustness in the joint problem of matching and information design, under private information.

MIT Economics JAUME VIVES-I-BASTIDA

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics and Statistics, Expected Completion June 2025
DISSERTATION: "Essays on Econometrics and Digital Economics"

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PRIOR EDUCATION

London School of Economics, London, United Kingdom — 2018
BSc. in Econometrics and Mathematical Economics
(First Class Honours)

LANGUAGES

Catalan (Native), Spanish (Native), English (Fluent), French (C1)

FIELDS

Primary Field: Econometrics
Secondary Fields: Industrial Organization, Statistics, Applied Econometrics

RELEVANT POSITIONS

RA to Prof. Alberto Abadie, MIT	2020-24
TA to Prof. Roberto Rigobon and Prof. Joseph Doyle for Econometrics for Managers, MIT Sloan	2023
TA to Prof. Whitney Newey and Prof. Max Kasy for Non-linear Econometrics, MIT	2022
Statistics Consultant for the Catalan Government and Ivàlua, Spain	2022-23
Data Science Intern, Chief Economist Team, Google, US	2021
Research Professional for Prof. Eric Budish, U. of Chicago Booth	2018-19

	Data Science Intern, Quantco, Germany	2018

FELLOWSHIPS, HONORS, AND AWARDS

Best Student Paper Award, IAAE	2024
Meta Research PhD Fellowship, Meta	2022-24
ACIC Travel Scholarship, Society for Causal Inference	2023
GSC conference grant, MIT	2022
La Caixa PhD Fellowship, La Caixa Foundation	2020-22
George and Obie Shultz Fund grant, MIT	2020
Economics Department Fellowship, MIT	2019
Departmental Principles of Econometrics Prize, LSE	2017
Extraordinary Baccalaureate Award, Catalan Government	2014
Ernest Lluch Award, Universitat Pompeu Fabra	2014

PROFESSIONAL ACTIVITIES

Referee: *Journal of Applied Econometrics*, *ICML*, *NeurIPS*, *ICLR*, AAAI, *Plos One*, *SERIEs*, *Economica*, NSF grants

Service: Econometrics Lunch Organizer (Spring 2022), MIT Graduate Economics Association Co-president (2020-2021), MIT Graduate Student Council Economics Department Representative (2020-2021).

Presentations:
2025: ASSA

2024: Notre Dame Junior Econometric Conference, BSE Summer Forum, North American Summer Meeting of the Econometric Society, European Summer Meeting of the Econometric Society, IAAE (co-author), Google.

2023: BSE ML and Energy Workshop, European Economic Association Summer Meeting, European Winter Meeting of the Econometric Society, American Causal Inference Conference (oral), Universitat Pompeu Fabra (public lecture).

2022: Rand Causal Inference Symposium, American Causal Inference Conference (poster), DataX Workshop on Synthetic Control Methods (Princeton, poster), Google, Facebook, Two Sigma PhD Symposium.

PUBLICATIONS

"Stretching the Net: Multidimensional Regularization" *Econometric Theory*, 2023

"Synthetic Controls in Action" (with Alberto Abadie) *Econometric Society Monographs, forthcoming*

In this article we propose a set of simple principles to guide empirical practice in synthetic control studies. The proposed principles follow from formal properties of synthetic control estimators, and pertain to the nature, implications, and prevention of over-fitting biases within a synthetic control framework, to the interpretability of the results, and to the availability of validation exercises. We discuss and visually demonstrate the relevance of the proposed principles under a variety of data configurations.

RESEARCH PAPERS

"Synthetic IV estimation in panels" (Job Market Paper) (with Ahmet Gulek)
Co-winner of the Best Student Paper Award at the IAAE (Thessaloniki, 2024)

We propose a Synthetic Instrumental Variables (SIV) estimator for panel data that combines the strengths of instrumental variables and synthetic controls to address unmeasured confounding. We derive conditions under which SIV is consistent and asymptotically normal, even when the standard IV estimator is not. Motivated by the finite sample properties of our estimator, we introduce an ensemble estimator that simultaneously addresses multiple sources of bias and provide a permutation-based inference procedure. We demonstrate the effectiveness of our methods through a calibrated simulation exercise, two shift-share empirical applications, and an application in digital economics that includes both observational data and data from a randomized control trial. In our primary empirical application, we examine the impact of the Syrian refugee crisis on Turkish labor markets. Here, the SIV estimator reveals significant effects that the standard IV does not capture. Similarly, in our digital economics application, the SIV estimator successfully recovers the experimental estimates, whereas the standard IV does not.

"Predictor Selection for Synthetic Controls" *revise and resubmit* at *Journal of Econometrics*

Synthetic control methods often rely on matching pre-treatment characteristics (called predictors) of the treated unit. The choice of predictors and how they are weighted plays a key role in the performance and interpretability of synthetic control estimators. This paper proposes the use of a sparse synthetic control procedure that penalizes the number of predictors used in generating the counterfactual to select the most important predictors. We derive, in a linear factor model framework, a new model selection consistency result and show that the penalized procedure has a faster mean squared error convergence rate. Through a simulation study, we then show that the sparse synthetic control achieves lower bias and has better post-treatment performance than the un-penalized synthetic control. Finally, we apply the method to revisit the study of the passage of Proposition 99 in California in an augmented setting with a large number of predictors available.

"Bayesian and Frequentist Inference for Synthetic Controls" (with Ignacio Martinez)

The synthetic control method has become a widely popular tool to estimate causal effects with observational data. Despite this, inference for synthetic control methods remains challenging. Often, inferential results rely on linear factor model data generating processes. In this paper, we characterize the conditions on the factor model primitives (the factor loadings) for which the statistical risk minimizers are synthetic controls (in the simplex). Then, we propose a Bayesian alternative to the synthetic control method that preserves the main features of the standard method and provides a new way of doing valid inference. We explore a Bernstein-von Mises style result to link our Bayesian inference to the frequentist

inference. For linear factor model frameworks we show that a maximum likelihood estimator (MLE) of the synthetic control weights can consistently estimate the predictive function of the potential outcomes for the treated unit and that our Bayes estimator is asymptotically close to the MLE in the total variation sense. Through simulations, we show that there is convergence between the Bayes and frequentist approach even in sparse settings. Finally, we apply the method to re-visit the study of the economic costs of the German re-unification and the Catalan secession movement. The Bayesian synthetic control method is available in the bsynth R-package.

"Bagged Polynomial Regression and Neural Networks" (with Sylvia Klosin)

Series and polynomial regression are able to approximate the same function classes as neural networks. However, these methods are rarely used in practice, although they offer more interpretability than neural networks. In this paper, we show that a potential reason for this is the slow convergence rate of polynomial regression estimators and propose the use of bagged polynomial regression (BPR) as an attractive alternative to neural networks. Theoretically, we derive new finite sample and asymptotic L2 convergence rates for series estimators. We show that the rates can be improved in smooth settings by splitting the feature space and generating polynomial features separately for each partition. Empirically, we show that our proposed estimator, the BPR, can perform as well as more complex models with more parameters. Our estimator also performs close to state-of-the-art prediction methods in the benchmark MNIST handwritten digit dataset.

RESEARCH IN PROGRESS

"The Effects of Regulating Food Delivery Platform Design" (with Alejandro Sabal)

There is rising interest amongst regulators in understanding how different platform design choices affect welfare. In this project we focus on two important mechanisms platforms have at their disposal: (1) offering preferential treatment to producers in consumer search and (2) determining producer payments (commission fees). We study the welfare implications of different platform choices in the empirical setting of a food delivery platform that bargains with producers to set commission fees and to adjudicate fixed ranking slots in the consumer search wall. Using transaction level data and click stream search data from a large food delivery platform in Europe, we show that both mechanisms are important in practice. Producers with low commission fees are preferred by consumers, and low commission fees are used to attract valuable "anchor" producers that drive consumers into the platform. Search preferencing is also important. Using an A/B test in which rank was randomized we show that search rank is a driver of consumption. To evaluate the impact of different platform designs on consumer and restaurant welfare, we develop a structural model featuring a consumer demand with search frictions, bargaining between restaurants and the platform over ranks and commission fees, and restaurant and consumer entry into the platform. Using the model, we compute counterfactual experiments to assess the impact of regulations forbidding platforms from

providing preferential rank to larger restaurants and from setting differential commission fees across restaurants.

"Pushing Back Against Private Practice: the Spanish Physician Public Exclusivity Bonus" (with Jon Gruber, Núria Mas and Judit Vall)

Most nations in the world have side-by-side private and public health care systems. Policymakers worry that "dual practice" across these sectors might reduce either the quantity or quality of care to the public sector. This concern led regions in Spain to offer "exclusivity bonuses" to physicians who practice exclusively in the public sector. We show theoretically that the impact of these bonuses on the public sector is ambiguous and empirically demonstrate that the bonuses had the opposite of their intended effect. The least skilled workers moved to the public sector and total hours of public sector physician labor supply fell.

POLICY REPORTS

"Synthetic Experimental Design for a UBI pilot study"

This paper provides a guide for practitioners wanting to use synthetic experimental designs to evaluate policy interventions. It focuses on the Catalan universal basic income pilot study that aims to treat two towns in 2023 with a substantial universal basic income for a period of two years. The main goal of the paper is to show how inference on various outcomes of interest can be achieved by choosing the towns to treat using the synthetic experimental design framework of Abadie and Zhao (2021). We show that approximate inference can be achieved despite the small number of treated units. This paper expands beyond the standard synthetic experimental design framework by considering inference on multiple outcomes and by providing a point-by-point rubric to dealing with practical concerns such as choosing exclusion constraints or thinking about allocation fairness.

"Assessment: Universal Basic Income Pilot Project, Recommendations for an Evaluable Design" (with Mireia Borrell-Porta, Júlia de Quintana, Gianmarco León-Ciliotta and Xavier Ramos)

MIT Economics

EDWARD WILES (NÉ DAVENPORT)

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DOCTORAL STUDIES

Massachusetts Institute of Technology (MIT)
PhD, Economics, Expected completion June 2025
DISSERTATION: "Essays in Development Economics and Trade"

DISSERTATION COMMITTEE AND REFERENCES

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PRIOR EDUCATION

London School of Economics — 2018
MSc Economics
(Distinction)

London School of Economics — 2015
BSc Economics
(First Class Honours)

CITIZENSHIP United Kingdom, Canada

GENDER: Male

LANGUAGES English, French

FIELDS

Primary Fields: Development Economics

Secondary Fields: Trade, Organizational Economics

TEACHING EXPERIENCE

Development Economics: Micro (PhD level) TA to Professors Esther Duflo and Ben Olken (MIT)	2021, 2024
Political Economy and Development (Undergraduate level) TA to Professors Ben Olken and Abhijit Banerjee (MIT)	2022, 2024
The Challenge of World Poverty (Undergraduate level) TA to Professors Esther Duflo and Frank Schilbach (MIT)	2021, 2023
Macroeconomics (Masters level) TA to Professor Alwyn Young (LSE)	2018

RELEVANT POSITIONS

Research Assistant to Professor Nava Ashraf (LSE)	2018-2019

FELLOWSHIPS, HONORS, AND AWARDS

TA of the Year Award Awarded annually to one TA in economics by the MIT Undergraduate Economics Association.	2024
Graduate Student Council Teaching Award Awarded annually to one instructor in each of MIT's five schools for excellence in teaching a graduate-level course.	2022
Arrow Award Awarded to the best paper in health economics in English in 2020, by the International Health Economics Association.	2020
Kennedy Scholarship National merit scholarship awarded annually to up to ten British graduate students to study at MIT or Harvard.	2019
John Hicks Prize Awarded annually to the highest ranked student in LSE MSc Economics.	2018

RESEARCH GRANTS

International Science Partnerships Fund (£99,866) with N. Ashraf, O. Bandiera, V. Mukonka.	2024
International Growth Centre (£19,981) with N. Ashraf, O. Bandiera.	2024
George and Obie Shultz Fund ($15,833.33) with D. Houeix	2024
International Growth Centre (£20,000) with N. Ashraf, O. Bandiera.	2023
Private Enterprise Development in Low-Income Countries (£31,000) with D. Houeix.	2023
Private Enterprise Development in Low-Income Countries (£20,720) with T. Garg.	2023

George and Obie Shultz Fund ($14,251.67) with D. Houeix	2023
George and Obie Shultz Fund ($14,982.76) with D. Houeix	2022
George and Obie Shultz Fund ($6,000) with T. Garg	2022
Structural Transformation and Economic Growth (£11,960) with T. Garg.	2021
George and Obie Shultz Fund ($12,000) with I. Puri	2020
International Growth Centre (£9,346) with N. Ashraf.	2019

PROFESSIONAL ACTIVITIES

Referee: *American Economic Review, Econometrica, Journal of Development Economics, Journal of Economic Behavior and Organization, Labour Economics, Economica*

Presentations:

NEUDC, Northeastern University	2024
Cities and Development Workshop, Harvard University	2024
Initiative for the Digital Economy, MIT Sloan	2024
Junior Trade Workshop, LSE	2024

PUBLICATIONS

Losing Prosociality in the Quest for Talent? Sorting, Selection, and Productivity in the Delivery of Public Services (with Nava Ashraf, Oriana Bandiera, and Scott S. Lee). *American Economic Review*, 2020, 110(5): 1355-1394.

We embed a field experiment in a nationwide recruitment drive for a new health care position in Zambia to test whether career benefits attract talent at the expense of prosocial motivation. In line with common wisdom, offering career opportunities attracts less prosocial applicants. However, the trade-off exists only at low levels of talent; the marginal applicants in treatment are more talented and equally prosocial. These are hired, and perform better at every step of the causal chain: they provide more inputs, increase facility utilization, and improve health outcomes including a 25 percent decrease in child malnutrition.

Awarded the Arrow Award for the best paper published in health economics in English in 2020 by the International Health Economics Association.

RESEARCH PAPERS

Relational Frictions along the Supply Chain: Evidence from Senegalese Traders (Job Market Paper) (with Deivy Houeix)

Search and trust frictions have historically made it hard for small firms in lower-

income countries to buy inputs from foreign markets. The growth in smartphone ownership and social media usage has the potential to alleviate these barriers. We run a field experiment leveraging these technological tools to provide exogenous variation in search and trust frictions in a large international import market. The design is informed by a dynamic relational contracting model featuring sequential search for suppliers and trust frictions in the form of adverse selection and moral hazard. In our search treatment, we connect a randomly selected 80% of 1,862 small garment firms in Senegal to new suppliers in Turkey. We then cross-randomize two trust treatments that provide additional information about the types and incentives of these new suppliers. Alleviating search frictions is sufficient to increase access to foreign markets: in all treated groups, firms are 25% more likely to have the varieties a mystery shopper requests and the goods sold are 32% more likely to be high quality. However, the trust treatments are necessary for longer-term impact: these groups are significantly more likely to develop the connections into relationships that persist beyond the study. These new relationships lead to increases in medium-run profit and sales, particularly among wholesalers in the upper tail. Finally, we use the treatment effects to estimate the model and evaluate counterfactuals where we set various combinations of the frictions to zero, finding that the largest gains come from eliminating adverse selection.

Quantifying the Sensitivity of Quantitative Spatial Models (with Habib Ansari and Dave Donaldson)

A modern revolution in spatial economic modelling aims to answer quantitative counterfactual questions by using models that feature micro-level heterogeneity. This heterogeneity is then often assumed to come from particular parametric families — such as Frechet in Eaton and Kortum's (2002) Ricardian model, or Pareto in applications of Melitz's (2003) monopolistic competition model. While these parametric choices greatly enhance the tractability of model simulations, it is unknown how sensitive the answers to counterfactual questions are to these assumptions of convenience because there are infinitely many alternative distributions of heterogeneity to be evaluated. We overcome this challenge by building a general trade model that leverages recent advances in the robustness literature. Our method calculates sharp bounds on the values of model counterfactuals that could obtain — while still exactly matching all aggregate trade data points and satisfying equilibrium constraints — under all possible distributions of underlying heterogeneity that lie within a given divergence from a chosen reference distribution. Applying this method to the Eaton and Kortum (2002) and Melitz (2003) models, we find that the gains from trade in these models could be several times larger or smaller than they appear to be under standard benchmark distributions, even if heterogeneity is drawn from a relatively similar distribution.

RESEARCH IN PROGRESS

Quantifying the Benefits of Economic Integration: Evidence from a VAT Reform in India (with Tishara Garg)

We study the benefits of economic integration from reducing policy-induced barriers to trade. Using a landmark 2017 fiscal reform in India that substantially reduced barriers to crossing internal state borders as a natural experiment, we estimate gravity regressions using aggregate data and find that each additional border in a shipping route reduces trade by 15%. Calibrating a quantitative trade model to this elasticity, we find that reducing all such border frictions would increase GDP by 3%. To examine how supply chains may have re-organized, and the implications this has for gains from trade, we intend to exploit detailed micro-level data that we constructed from VAT records for the universe of firms in India.

Selection into Public Service Delivery and Aspirations Spillovers: Evidence from Zambian Health Workers (with Nava Ashraf and Oriana Bandiera)

We study whether professionalizing public service delivery agents has dynamic spillovers through improving aspirations of the next generation. To do this, we combine the experimental variation in Ashraf, Bandiera, Davenport, Lee (2020)--as well as the subsequent staggered rollout of the program--with data on the universe of exam scores in Zambia. We find that treated villages see large effects on education outcomes. Preliminary evidence suggests treatment effects in the order of 10% on the number of students taking the main Math, English, and Science exams, and similarly sized decreases in the average exam score, consistent with treatment inducing students on the margin to not drop out.

Internal Migration, Remittances, and Networks: Evidence from Senegal (with Deivy Houeix)

We explore the relationship between internal migration, remittances, and financial and social networks in lower-income contexts, with a focus on Senegal. To establish new facts and causal evidence, we construct a unique dataset that links migration patterns to both remittance flows and social networks covering the near universe of Senegal's adult population, based on real-time GPS tracking of personal and business transactions and anonymized phone contact directories from the country's largest mobile money provider. We use this dataset to document patterns of migration and remittance flows to a high degree of spatial and temporal precision, and to explore how financial and social networks affect — and are affected by — these patterns, especially in response to economic or environmental shocks.

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Secondary Field: Environmental Economics

TEACHING EXPERIENCE

14.381 Estimation and Inference for Linear Causal and Structural Models (MIT, Graduate) — 2023
Teaching Assistant to Prof. Whitney Newey

14.380 Statistical Methods in Economics (MIT, Graduate) — 2023
Teaching Assistant to Prof. Anna Mikusheva

14.27 Economics and E-Commerce (MIT, Undergraduate) — 2022
Teaching Assistant to Prof. Sarah Ellison

14.73 The Challenge of World Poverty (MIT, Undergraduate) — 2021
Teaching Assistant to Profs. Esther Duflo and Frank Schilbach

RELEVANT POSITIONS

Pre-Doctoral Fellow and Research Assistant to Michael Greenstone (University of Chicago) — 2016-2019

FELLOWSHIPS HONORS, AND AWARDS

PEDL Exploratory Research Grant — 2022
George and Obie Shultz Fund — 2022, 2024
National Science Foundation Graduate Research Fellowship — 2019-2024

RESEARCH PAPERS

Firm-Level and Aggregate Effects of Cheaper Liquidity: Evidence from Factoring (Job Market Paper) (with Victor Orestes and Thiago Silva)

We show that firms experience large contemporaneous increases in sales and purchases after receiving cheaper liquidity. We focus on factoring, defined as the supplier-initiated sale of receivables. In Brazil, receivables funds (FIDCs) securitize receivables for institutional investors. By assembling a novel transaction-level dataset of factoring with other credit operations for all registered firms and FIDCs, we construct a shift-share instrument for factoring financing supply based on FIDC flows. We then use a novel combination of electronic payments, trade credit, and employer-employee matched data to estimate the impacts. A flow-induced increase in receivables demand reduces firms' factoring interest rate. In response, firms demand more permanent labor and less temporary labor. In our model, these effects arise from factoring's purpose of reducing cash inflow volatility, helping firms match inflows to outflows, which firms otherwise achieve at an efficiency cost through substitution across labor types. Using our model, we estimate that an aggregate decrease in the economy-wide factoring spread by 1 percentage point leads to 0.3 to 0.5 percentage point increases in aggregate output and wages.

Excess Volatility and Under-Insurance with Limited Pledgeability: Evidence from the Frost Shock (with Victor Orestes and Thiago Silva)

We use transaction-level data on payments, credit, and insurance to examine how Brazilian farmers responded to the severe frost of July 2021, a shock that affected coffee, a perennial crop whose plants are a major component of farm value. The frost shock reduced both output and the pledgeable value of farmers' collateral. We find that insured farmers increased investment in the years following the shock, while uninsured farmers reduced investment and borrowing. We show how this pattern is consistent with models of imperfect pledgeability of a firm's collateral, where constrained firms neither insure (ex-ante) nor fully recover from a shock (ex-post). Limited commitment endogenously generates under-insurance through the combination of upfront payment of the insurance premium with the tightening of borrowing constraints post-shock due to the decrease in total collateral. We discuss two equilibrium implications of this mechanism: the inefficacy of emergency credit lines in targeting liquidity constrained firms and the amplification of output volatility from the rising risk of extreme weather shocks.

RESEARCH IN PROGRESS

Aggregate Impacts of Command-and-Control Environmental Policy: Evidence from Court-Ordered Mining Bans in India (with Ananya Kotia and Utkarsh Saxena)

We estimate the aggregate impacts of court-ordered iron ore mining bans in India and consider the counterfactual welfare gains from an alternative policy to the ban. The local sectoral ban is a command-and-control (CAC) policy that is commonly applied to natural resource settings, usually when the regulator has a signal of widespread non-compliance. The Supreme Court of India imposed bans on iron ore mining and outbound iron ore trade in two states in response to reports that mines operated under fake environmental permits and underpaid

mining royalties. Using firm-level industrial survey data, mine-level output data, and bilateral mine-to-firm auction data, we decompose the bans' effects into trade, production networks, and local labor demand channels. Our results indicate substantial revenue and employment declines in iron-consuming plants, with revenues 1 log point lower in the first three years and 2 log points lower in later periods compared to controls. These findings highlight the economic spillovers caused by CAC policies, especially in industries that are upstream in the supply chain.

Forward Guidance, Speculation, and Liquidity Shortfalls in an OTC Carbon Credit Market (with Luis Alvarez, Victor Orestes, and Thiago Silva)

We estimate the effects of forward guidance on the supply of carbon credits when trading is subject to over-the-counter (OTC) frictions, focusing on the CBIO market in Brazil. We combine the OTC tape data with firms' carbon credit holdings, balance sheet outcomes, and interfirm payments to study the impact on demand for carbon credits, borrowing, investment, and supply chain spillovers. We focus on the rapid increase in prices in June 2022 followed by a crash in July 2022, driven by speculation about forward guidance and an unexpected change in carbon credit policy. We show how low liquidity generated the volatility, and then propagated by limited float, insufficient hedging options, and the absence of designated market-makers.

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University of International Business and Economics — 2014
B.A. in International Trade

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Secondary Fields: Development Economics, Trade

TEACHING EXPERIENCE

14.773 Graduate Political Economy II Teaching Assistant to Profs. Daron Acemoglu, Sara Lowes	2023
14.770 Graduate Political Economy I Teaching Assistant to Profs. Daron Acemoglu, Abhijit Banerjee	2022
14.73 Undergraduate Development Economics Teaching Assistant to Profs. Esther Duflo, Frank Schilbach	2022
14.475 Graduate Environmental Economics Teaching Assistant to Prof. Clare Balboni	2021

RELEVANT POSITIONS

Research Assistant to Professor Ben Olken	2021
Research Assistant to Professor Tobias Salz	2021
Research Assistant to Professor Daron Acemoglu	2020
Research Assistant to Professor Melissa Dell	2019

FELLOWSHIPS, HONORS, AND AWARDS

Association for Comparative Economic Studies Research Award	2024
George and Obie Shultz Fund (4x)	2021-2024
Jerry A. Hausman Graduate Dissertation Fellowship	2023
Castle Krob Fellowship	2019-2021

PROFESSIONAL ACTIVITIES

Referee: *Journal of Political Economics; Journal of Law, Economics and Organization; Journal of Development Economics*

Presentations: NEUDC (Northeastern University, 2024); New Thinking on Industrial Policy Conference (Columbia University, 2024); Conference on Digital Experimentation (MIT, 2023); Emerging Markets Institute Conference (Cornell University, 2022)

Service: MIT Undergraduate Research Opportunities Program, MIT Econ Application Assistance and Mentoring Program Mentor

RESEARCH PAPERS

"Firewall for Innovation" (Job Market Paper)

Do protectionist policies foster domestic innovation in the digital economy, and if so, how? This paper investigates the impact of the Great Firewall (GFW) in China -- the world's largest system of internet regulation -- on the development of domestic mobile apps. It uses unique data that track the technologies and their sources in millions of apps over a decade at the monthly level. First, I provide direct evidence that protectionist policies can spur digital innovation with positive demand shocks. Leveraging the staggered monthly timing of major foreign app blockages by the GFW, I show that their Chinese substitute apps see a 14% increase in in-house technologies over 2 years, with more original features being created. Furthermore, there is a higher adoption rate of Chinese technologies in non-Chinese apps post-blockage. Second, I show that blockages drive innovation in part by expanding data scale. Notably, Chinese apps collect 22% more sensitive data per user after their foreign substitutes being blocked. Leveraging quasi-random variation in the introduction of new data access, I

estimate that a 1% increase in user data leads to a 2% rise in in-house technology development. Moreover, data-sharing networks, expanded after blockages with user data 9% more likely to be sent to third parties, are found to enable a spillover effect further promoting innovation.

"Power and the Direction of Research: Evidence from China's Academia"
(with Daron Acemoglu and David Yang)

Can China stimulate and sustain innovation with its juxtaposition of top-down emphasis on innovation and the presence of powerful leaders within academic institutions? In this paper, we investigate whether powerful actors curtail academic autonomy and freedom, and impact the direction and quality of innovation. We collect comprehensive data on the scientific publications of researchers in the leading 109 Chinese universities and the leadership changes in these universities. We use NLP methods to measure the similarity between faculty members' and their leaders' research portfolios. We find that immediately after --- and not before --- the leaders take office, faculty members begin to shift their research direction towards that of their leaders. Such shifts cannot be explained by the signaling of star researchers' activities, but can be attributed to leaders' political power over faculty members' career trajectories. Leaders appointed by the Communist Party exert greater influence on faculty members' research directions, and leaders' influence is stronger among disciplines and institutions that have historically or recently experienced academic persecution. We also document significant costs of leaders' influence on research quality. Below-median productivity leaders lead to even greater increases in similarity, and switches from above-median to below-median leaders is associated with sizable declines in citations. Such decline is driven by citations to papers that are most similar to new leaders.

RESEARCH IN PROGRESS

"From Choice to Compulsion: Does A/B Testing Drive Behavioral Manipulation?"

This study examines the impact of A/B testing -- a widely adopted method by internet companies to leverage user data and inform data-driven decisions -- on the escalation of temptation levels in digital products. I develop a model in which individuals with intertemporally inconsistent preferences make daily decisions regarding the duration for which apps are blocked to mitigate temptation. In collaboration with Freedom, one of the largest and most comprehensive commitment applications for blocking distracting apps and websites, I estimate the temptation levels of over 2,000 apps on a monthly basis from 2021 to 2023 using detailed session-level data. Preliminary findings indicate that approximately 20% of app usage can be attributed to temptation and that temptation levels have intensified over time. This trend is strongly correlated with the increasing adoption of A/B testing practices within these applications.

"Increasing Revenue Collection with Computer Vision: Experiments in Pakistan" (with Sher Afghan Asad, Adnan Khan, Ben Olken, and Mahvish Shaukat)

Economic growth in developing countries is often limited by the state's inability to raise tax revenue. In many countries, tax administration systems rely on infrequently updated and out-of-date property tax valuations, and tax officials often employ significant discretion when assessing properties. These factors can lead to errors that could increase tax leakages or lower citizen trust in the state. This study addresses this challenge in two steps: first, by developing a computer vision algorithm that can use property images to predict property assessments and second, by testing how well the algorithm performs in identifying properties for reassessment.

"Data Sovereignty and Sustainability" (with Yulu Tang)

Developing countries face a trilemma in building their digital economies: (1) the growing need for data centers in the digital age, (2) the high costs of constructing them in warmer regions (Global South), and (3) their potential environmental impact due to energy consumption. To tackle these challenges, we have compiled extensive datasets tracking global internet firms' data center location decisions, user bases, and operating costs across 167 countries over the past two decades. Leveraging this data, we will develop a model to quantify the influence of critical factors -- such as market demand, operational expenses, policy changes related to data security -- on firms' data center site selection. This model will allow us to run policy counterfactuals, identifying the most effective strategies for reducing costs and minimizing environmental impact, while offering valuable insights for policy interventions that promote the development of efficient, sustainable data centers in developing countries.