MIT Economics

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Professor Rob Townsend
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CURRENT POSITION	Associate Economist (Postdoc), St. Louis Fed	2022-present
	Visiting Scholar (Postdoc), Washington University in St. Louis	2022-present

DOCTORAL STUDIES Massachusetts Institute of Technology (MIT)
PhD, Economics, May 2022
DISSERTATION: "Essays in Empirical Macroeconomics and Development"

DISSERTATION COMMITTEE AND REFERENCES

Professor Benjamin Olken
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Professors Paco Buera and Yongs Shin
Washington University in St. Louis
Seigle Hall 336 and 333
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PRIOR EDUCATION	Stanford University	2015
	B.A. with Honors in Economics, Secondary Major in Math	

CITIZENSHIP USA and UK   **GENDER:** Male

LANGUAGES Spanish (proficient)

FIELDS Primary Fields: Development and Macroeconomics

Secondary Fields: Applied Econometrics

TEACHING EXPERIENCE	14.76: Firms, Markets, Trade, and Growth (Undergrad/Master's) TA to Dave Donaldson and Lauren Bergquist	2021,22
	14.772: Development Economics: Macroeconomic Issues (PhD) TA to Abhijit Banerjee, Ben Olken, and Rob Townsend	2019,22
	14.771: Development Economics: Microeconomic Issues (PhD) TA to Abhijit Banerjee, Esther Duflo, and Ben Olken	2018
	14.75: Political Economy and Development (Undergrad) TA to Abhijit Banerjee and Ben Olken	2018

RELEVANT POSITIONS	Research Assistant to Raj Chetty, Nathan Hendren, and John Friedman	2015-16
	Research Assistant to Caroline Hoxby	2015
	Research Assistant to Frederico Finan	2014
	Research Assistant to Saki Bigio	2013-14

FELLOWSHIPS, HONORS, AND AWARDS	Weidenbaum Center Small Grant	2022
	Bank of Mexico Summer Research Program	2019
	Jerry A. Hausman Graduate Dissertation Fellowship	2019-20
	George and Obie Shultz Fund	2017
	NSF Graduate Research Fellowship	2016-20
	Sterling Award for Scholastic Achievement	2015
	Firestone Medal for Excellence in Undergraduate Research	2015
	Kennedy Honors Thesis Prize for Social Sciences	2015

PROFESSIONAL ACTIVITIES

Presentations:

Measuring Misallocation with Experiments
IGC/Yale Firms, Trade and Development Conference (2023, Scheduled), NEUDC (2023, Scheduled), Oxford CSAE Conference (2024, Scheduled)
How Much Should We Trust Regional Exposure Designs?
Society for Economic Dynamics Annual Meeting (2023), Barcelona Summer Forum (2023), KU Leuven Summer Event (2023)
Misallocation and the Selection Channel
University of Kent Workshop on Firm Dynamics (2023)
A Q-Theory of Banks
Bank of Mexico Conference on Financial Stability (2019)

Referee for Journal of Development Economics
Organizer of MIT Development Tea (2018–2022)
Co-Founder of EconREFs (Group devoted to improving graduate student mental health and well-being; 2018–2021)
Co-Organizer of MIT Application Assistance and Mentoring Program (Program for prospective PhD applicants from underrepresented backgrounds; 2020–2021)

PUBLICATIONS

"Childhood Environment and Gender Gaps in Adulthood" (with Raj Chetty, Nathan Hendren, Frina Lin, and Ben Scuderi). 2016. *American Economic Review Papers and Proceedings* 106(5): 282-88.

RESEARCH
PAPERS

"Measuring Misallocation with Experiments" (Job Market Paper) (with David Hughes)

Misallocation of inputs across firms has been proposed as a reason for low levels of development in some countries. However, existing work has largely relied on strong assumptions about production functions in order to estimate the cost of misallocation. We show that, for arbitrary production functions, the cost of misallocation can be expressed as a function of the variance of marginal products. Using an RCT that gave grants to microenterprises, we estimate heterogeneous returns to capital by baseline characteristics, and provide a lower bound on the total variance of returns to capital. This lower bound is a nonlinear function of the parameters from a linear IV model, and we show that standard methods (e.g. the delta method or projection) fail in this setting. We provide novel econometric tools that provide uniformly valid confidence intervals for nonlinear functions of parameters. We find evidence for sizable losses from misallocation of inputs across the firms we study, although the magnitude depends critically on which inputs we allow to be reallocated. We estimate that optimally reallocating capital would increase output by 22%, while optimally reallocating all inputs would increase output by 301%.

"Misallocation and the Selection Channel"

An important determinant of aggregate productivity is the selection channel: the process by which less efficient firms are driven out of the market by more efficient firms. Conventional wisdom suggests that markets in developing countries are more sclerotic, allowing inefficient firms to survive that would have exited in a developed country. I provide a tractable model to examine the importance of the selection channel, and show how to calibrate it to panel data on firms. I use this model to show that the effect of the selection channel on aggregate productivity is approximately equal to the average difference in log productivity between stayers and exiters, which can be measured easily in firm panel data. Results for Indonesia, Spain, Chile, and Colombia suggest that Indonesia could raise its aggregate productivity by roughly 30% if its firm exit process became as selective as Spain's. However, cross-country estimates suggest that the selection channel is not an important explanation for cross-country differences in output per capita.

"A Q-Theory of Banks" (with Juliane Begenau, Saki Bigio, and Matías Vieyra), Revise and Resubmit, *Review of Economic Studies*

We propose a dynamic bank theory with a delayed loss recognition mechanism and a regulatory capital constraint at its core. The estimated model matches four facts about banks' Tobin's Q that summarize bank leverage dynamics. (1)

Book and market equity values diverge, especially during crises; (2) Tobin's Q predicts future bank profitability; (3) neither book nor market leverage constraints are binding for most banks; (4) bank leverage and Tobin's Q are mean reverting but highly persistent. We examine a counterfactual experiment where different accounting rules produce a novel policy tradeoff.

"How Much Should We Trust Regional-Exposure Designs?" (with Karthik Sastry)

Many studies use panel data to implement a regional-exposure design, interacting aggregate shocks with heterogeneous exposures. We show how unobserved aggregate shocks complicate inference in this setting and induce substantial under-coverage when clustering by region. We suggest two-way clustering, potentially with an autocorrelation correction, and randomization inference as solutions, and develop a feasible optimal instrument to improve efficiency. In an application to estimating regional fiscal multipliers, valid 95% confidence intervals cannot reject near-zero multipliers, although 90% intervals are informative. The feasible optimal instrument doubles power. Our results suggest that the precision promised by regional data may disappear with correct inference.

"Consolidation on Aisle Five: Effects of Mergers in Consumer Packaged Goods" (with Anthony Yu)

We study the effects of mergers in the consumer packaged goods industry, a sector that comprises approximately one-tenth of GDP in the United States. We match data on all recorded mergers between 2006 and 2017 with retail scanner data. In comparison to prior work, which focuses on case studies of large mergers, our approach allows us to estimate the effect of a typical merger. Most mergers we study are highly asymmetric (a large firm acquires a much smaller firm) and rarely challenged. By studying these mergers, we provide new evidence on the effects of mergers on prices, quantities, product availability, and exit. On average, mergers lead to a short-run price effect at the target of 1% and declines in total revenue of 7%. These average effects hide substantial heterogeneity across different groups of mergers. Our results highlight the importance of effects not captured in the canonical model, such as effects on consumer surplus through changes in product availability, and through inefficient firms' capital being repurposed by more productive acquirors.

RESEARCH IN PROGRESS

"Risky Business and the Process of Development" (with Francisco Buera, Yongseok Shin, and Kuldeep Singh)

Risk is an important factor that affects investment decisions, especially for undiversified entrepreneurs in less developed economies. Yet standard macro models of financial frictions do not incorporate risk: short-term returns are known in advance, and investment is fully reversible. Thus, even if

entrepreneurs are risk averse and credit constrained, they will invest all of their assets in the firm, until the marginal product of capital equals the interest rate. As a result, standard models often find that productive entrepreneurs quickly save their way out of credit constraints, limiting the effect of financial frictions on output and aggregate productivity. We incorporate risk into a model of financial frictions, by making investment partially irreversible. Productive entrepreneurs accumulate capital substantially more slowly than in the first-best, leading to a reduction in aggregate productivity. Credit can play a role in undoing these frictions if firms have an option to default. Default creates a state-contingent contract, in which the entrepreneur repays if productivity stays high and defaults if productivity falls; this encourages investment and improves welfare through risk-sharing with the bank.

"Estimating Trends in Intergenerational Mobility by Race Using Multiple Data Sources"

Both economists and the public are deeply interested in the degree to which a child's adult income is determined by her parent's income and race. Recent work (Chetty, Hendren, Jones, and Porter, 2020) has shown, for recent cohorts, that black boys have much lower incomes in adulthood than do white boys, even after controlling for parent income. Moreover, their estimates suggest that the black-white income gap is already at its steady state: the gap will remain at its current level unless upward mobility improves for black children. This begs the question: has the black-white mobility gap been improving or worsening over time? Estimating intergenerational mobility by race for earlier cohorts has been difficult to date because of data limitations: accurate estimates require large, high-quality data sets, and such linked data containing parent income, child income, and race are only currently available for recent cohorts. I provide a solution to this problem, using a GMM approach to combine panel data from the NLS and NLSY with cross-sectional data from the Census. The addition of the Census data imposes restrictions on the coefficients that allows for substantially more precise estimates over time.