Job search costs are high in rural labor markets in developing countries. Consequently, the flow of information on jobs and wages is limited, and wages tend to be dispersed. To lower search costs, I develop an SMS-based messaging app that connects agricultural workers and employers. The treatment reduces within-village wage dispersion by 16–40%.
percent. Wage compression occurs from both sides of the wage distribution, leaving the average wage unchanged. Consistent with reduced wage dispersion, I find evidence that labor is reallocated within villages. Dispersion in per-acre labor input across farms decreases. Workers divert job applications from lower-paying to higher-paying employers.


We collect data on prices, travel costs and farmer decisions to quantify market access and its impact on agricultural productivity in 1,183 villages in two regions of Tanzania. Villages at the bottom of the travel cost-adjusted price distribution face 40-55% less favorable input prices than those at the top. One standard deviation of remoteness is associated with 20-25% lower input adoption and output sales. A spatial model of input adoption conservatively estimates that farmers behave as if travel costs are 5.7% ad-valorem per kilometer. Counterfactual estimates suggest that halving travel costs would double adoption and reduce the gradient by 15%.

“Earnings and Takings: Self-Dealing in Local Public Office in India” with Ajay Shenoy and Laura Zimmermann. [IGC Ideas for India]. Under Review

Models of political selection predict that when public office enables lucrative self-dealing it attracts politicians motivated by greed. But since self-dealing is typically unobserved there are few good estimates of its magnitude. Linking millions of job records to election outcomes, we estimate the returns earned by Indian village council presidents from self-dealing public-works jobs. We find that the monetary benefits are large. Winners of close elections receive 3 times as many workdays as losers, yielding extra wages equal to two-thirds of the median president’s official salary. We show suggestive evidence consistent with the idea that these returns induce negative political selection.


We study whether ruling parties can systematically win a slender majority of seats in close legislative elections, a phenomenon called “precise control.” We test for discontinuities in two outcomes that, in the absence of precise control, should be smooth at the 50% cutoff: the probability density of the share of seats won, and the identity of the party that previously held a majority. We find robust evidence of precise control, but only in high-stakes state elections that determine which party controls Congressional redistricting. Its absence in other elections suggests precise control is a strategic option used at the ruling party’s discretion. It shifts its strategy in high-stakes elections from seat maximization to majority-seeking, winning fewer seats but reducing the chance it loses its majority. These tactics are disproportionately effective for the party defending a majority. It is 4 times more likely to win than to lose a close election.


We propose a method that simultaneously identifies where parties take control of Congressional redistricting, and how they use it to win U.S. House races. Our method exploits the discontinuous change in a party’s control of redistricting triggered when its share of seats in the state legislature exceeds 50 percent during redistricting. In
the election before redistricting, parties systematically win narrow majorities in legislatures of states where they have lost recent House races. We use a difference-in-discontinuities estimator to control for this systematic difference in pre-redistricting U.S. House outcomes. We estimate that whichever party controls the state legislature during redistricting is 11 percentage points more likely to win House races immediately after redistricting. These gains effectively reverse the party’s pre-redistricting losses. Opposition votes are less efficiently converted to seats and, under Republican redistricting, African Americans are more likely to be segregated into overwhelmingly black districts.

Work in Progress

“The Effect of Cash Transfers and Market Access on Households in Rural Liberia and Malawi” with Shilpa Aggarwal, Jenny Aker, Naresh Kumar, David Sungho Park, Jonathan Robinson, and Alan Spearot. [AEA RCT Registry]. In the field.

We are evaluating the impact of two cross-cut interventions: (1) a cash transfer program implemented by the NGO GiveDirectly, and (2) a market access intervention which reduces travel costs for farmers to access agricultural inputs like fertilizer and improved seeds. The study takes place in 600 villages in Liberia and Malawi. In each country, 100 villages will receive cash transfers only, 100 will serve as control, 50 will receive both cash transfers and market access, and 50 will receive market access only. We conduct two separate analyses from this experiment. First, we evaluate the direct effect of cash transfers (controlling for market access). In particular, we conduct high-frequency phone surveys to measure the dynamic impacts of transfers, with a particular focus on food consumption and related outcomes. Second, we evaluate the effect of market access and cash, focusing primarily on agricultural technology adoption.

Relevant Positions

Research Assistant to Professor Laura Zimmermann, Univ. of Georgia 2017-2018
Research Assistant to Professor Jesse Cunha, Naval Postgraduate School 2017
Research Assistant to Professor Jonathan Robinson (UCSC), Alan Spearot (UCSC) and Shilpa Aggarwal (ISB) 2017-2018
Research Assistant to Professor Kristian Lopez Vargas, UCSC 2016-2017
Research Assistant to Professor Veronica Terrriquez, UCSC 2016
Research Assistant to Professor Ajay Shenoy, UCSC 2015
Research Assistant to Professor David Atkin and Antoinette Schoar, MIT and Institute for Financial Management and Research (IFMR) 2015
Research Assistant to Professor David Sahn, Cornell 2014
Research Assistant to Professor James Berry, Cornell 2013

Teaching Experience

University of California, Santa Cruz
Awarded Milam-McGinty-Kaun Award, highest honor in the division of Social Sciences
Average TA Rating from Instructors: 5.0/5.0
Average TA Rating from Students: 4.7/5.0
ECON 113 Introduction to Econometrics (Undergraduate) - 2x 2015, 2019
Teaching Assistant to Professor Brenda Samaniego de la Parra, and Lecturer Aaron Meininger
ECON 216 Applied Econometric Analysis I (Graduate) 2018
Teaching Assistant to Professor George Bulman
ECON 120 Development Economics (Undergraduate) - 2x 2016, 2018
Teaching Assistant to Professor Jonathan Robinson
ECON 100A Intermediate Microeconomics (Undergraduate) - 2x 2017
Head Teaching Assistant to Professor Kristian Lopez Vargas
ECON 2 Introductory Macroeconomics (Undergraduate) - 2x 2015, 2016
  Teaching Assistant to Professor Ajay Shenoy
ECON 104 Truth in Numbers (Undergraduate) 2016
  Teaching Assistant to Professor Carlos Dobkin

Cornell University
PAM4070 Early Childhood Policy (Undergraduate) 2014
  Teaching Assistant to Professor Hyuncheol Kim
CEE6930 Public Systems Modeling (Graduate) 2013
  Teaching Assistant to Professor Daniel Peter Louck

Fellowships, Honors, and Awards
Research Grants
NSF Economics Dissertation Grant, $50,000 2018
MIT/J-PAL Agricultural Technology Adoption Initiative, $50,000 2018
UCSC Economics Department Research Grant, $5,000 - 2x 2017, 2018
UCSC Blum Scholars Grant, $2,000 2017

Fellowships and Awards
UCSC Milam-McGinty-Kaun Award for Teaching Excellence, $2,200 2018
UCSC Teaching Assistant Award for Excellence in Teaching - 2x 2016, 2017
UCSC Eileen Brooks Memorial Research Paper Award, $1,500 2016
UCSC Regents’ Fellowship, $7,500 2014
Cornell University Fellowship Award, $20,000 - 2x 2012, 2013
Mirae Asset Securities Exchange Student Scholarship, $9,000 2010
Korea University Outstanding Academic Performance Scholarship - 2x 2009, 2010

Presentations
Western Social Science Association 2020
CSAE (Centre for the Study of African Economies) 2020
All California Labor Economics Conference (Poster) 2019
UCSC Brown Bag Lunch Seminar 2019
UCSC Micro Workshop 2016-2019

Fieldwork
India (4 months), Tanzania (9 months), Malawi (1 month)

Languages
Korean (native), English (fluent), Chinese (conversational),
Japanese (basic), Swahili (basic)

STATA, R, Matlab, QGIS, ODK, Linux, Git, Fortran, Python, JavaScript

Other Experience
Military Service, Sergeant, 2nd Infantry Division, 2007-2008
Korean Augmentation to the U.S. Army