Research Statement
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I am a development economist and my research examines how access to labor market opportunities and modern technologies shape economic outcomes in the developing world. Persistent gaps in labor productivity both within and across countries suggest that the rural poor are often disadvantaged both because of low returns to their labor in the agricultural sector and because they are far removed from lucrative labor market opportunities. My research agenda seeks to understand the microeconomic mechanisms underlying these sectoral and cross-country productivity differences and focuses on frictions that influence (1) labor misallocation and (2) technology adoption. Across both of these areas, I assess the importance of information frictions and the effectiveness of policies intended to relax these frictions and promote opportunity.

In doing so, my research examines how formal and informal institutions—norms, networks, and intermediaries—interact with technological change and markets. My research consists of both experimental and quasi-experimental methods; in the course of completing this research, I have raised nearly $1 million in research funding. At the time of writing, my research has been cited over 650 times including in the World Bank's flagship *World Development Report* on digital technologies (2016) and migration (2023) and has been covered by several media outlets including *The Financial Times*, *The Hindu,* and the *Harvard Business Review.* I have also presented my work at numerous academic economics seminars, including at Northwestern, UCSD, and Michigan and at several conferences including at the NBER and the World Bank. I will focus first on papers related to the two key areas of my research agenda and will then discuss ongoing work.

Frictions Underlying Labor Misallocation

My work examines how access to labor market opportunities is influenced by: (1) constraints to spatial mobility, (2) institutions mediating labor market matching, and (3) biases in hiring.

Models of occupational choice and credit constraints show that increases to an endowment of wealth may provide the poor with the collateral they need to access high-return opportunities and escape poverty traps. In "Shackled to the Soil: Inherited Land, Cultural Norms, and Labor Mobility" published in the *Journal of Human Resources* (2022), I test whether inheriting land in rural India promotes access to opportunities outside agriculture or hinders it in the presence of limited land markets. To identify the causal effect of inheriting land, I construct an instrument that relies on patrilineal inheritance customs and sibling sex composition. I find that larger inheritances, on average, increase borrowing and the level of future household consumption. However, this result masks important heterogeneity: first-born sons do not experience consumption gains when they inherit more land and doing so makes them less likely to migrate to urban areas. I attribute this result to a norm of parental support incumbent upon first-borns, but show that the extent to which the norm binds is increasing in inherited land. Consequently, for first-borns, the wealth effect of inheriting more land may be outweighed by the cost of foregone opportunities outside rural areas. In contrast, latter-born sons, who are unencumbered by this norm, experience the predicted benefits of inheriting more land. My findings show how land market frictions can interact with norms to distort the allocation of labor.

Even when workers are able to migrate to urban areas, they may be excluded from job opportunities if they fall outside firms' traditional recruitment networks: friends, family, and employee referrals. Though they limit the scope of recruitment, traditional networks allow employers to vet the trustworthiness of workers and may deter malfeasance; these functions may be especially important in informal industries with several contracting frictions. In contrast, online job portals vastly expand recruitment networks for firms and access to opportunities for workers, but employers may be reluctant to hire unfamiliar workers. In "Hiring Frictions and the Promise of Online Job Portals: Evidence from India" published in *American Economic Review-Insights* (2023), Niharika Singh, Gabriel Tourek, and I partnered with QuikrJobs—India's largest job portal for blue collar vacancies—to conduct a field experiment with 1,500 firms in Bangalore, India.[1] We randomly assigned vacancies on the portal to receive permutations of ancillary services intended to aid recruitment. Firms either received premium advertising (doubling the number of applicants to their posted vacancy), applicant identity verification services (allowing employers to screen workers), both of these services or neither one. At baseline, firms receiving neither of these services are unable to fill 25% of their vacancies. Firms receiving both advertising and verification are 68% more likely to hire a worker through the online platform and 11% more likely to fill a vacancy. The complementarity generated by these services induces firms to hire high-quality workers outside their networks: portal-based hires are retained well beyond the standard assessment period. These results show how technology can improve labor market matching and firm recruitment while promoting opportunity for workers.

Credible estimates of the returns to international migration both underscore its importance to development policy and suggest that labor is greatly misallocated across countries. In South and South-East Asia, migration to the Gulf region offers lucrative remuneration, but reports of widespread abuse have led governments to impose sweeping migration restrictions.[2] In "Understanding Adverse Outcomes in Gulf Migration: Evidence from Administrative Data from Sri Lanka" published in *International Migration Review* (2022), Alison Lodermeier and I use administrative data on over 1.5 million Sri Lankan migrants to establish the extent and determinants of abuse. We link these data to complaints made by Sri Lankan migrants to consulates and establish two facts: (1) abuse is widespread and almost 9% of Sri Lankan migrants make a complaint to a consulate, and (2) the identity of the local intermediary (or recruitment agency) and the employer at which a migrant is placed explain four times as much variation in the incidence of complaints as do country, time, and sector-specific factors. Migrant intermediaries play a crucial role in matching migrants to employers abroad, but our results suggest there is considerable variation in the quality of matches they produce.

Building on these findings, in "Regulation by Reputation? Intermediaries, Labor Abuses, and International Migration," forthcoming in *The Review of Economics and Statistics*, Niharika Singh and I examine whether regulatory policy governing migrant recruitment agencies can influence the quality of jobs at which migrants are placed. We develop a Bayesian model of agency reputations and show that information frictions reduce an agency's incentive to screen foreign employers, lowering placement quality. Using administrative data and original surveys of recruitment agencies, we study the impact of a government program that rated local recruitment agencies. The regulator first announced the ratings criteria and, two years later, revealed a star rating (0-5) to the public. We use a difference-in-difference design based on the eligibility criteria for the program to construct a valid counterfactual. We show that prior to the public revelation of the star ratings, eligible agencies—

[1] Unfortunately, our follow-up surveying was interrupted by the COVID-19 pandemic and greatly reduced response rates, allowing us to only reach approximately 50% of firms surveyed at baseline.
[2] By 'Gulf Region' I refer to the countries in the Gulf Cooperation Council (GCC).

and, especially, underperforming agencies—invest in the rating criteria announced by the regulator. In doing so, these agencies place migrants with less abusive employers that pay higher salaries, and offer better non-wage amenities. Consistent with our model, our results suggest that a credible threat of future quality revelation induces agencies to prospectively invest in placement quality to secure future demand. Our findings show how regulatory policy can address information frictions and improve matching. In addition, we show the effectiveness of an alternative to migration bans that can have unintended adverse welfare consequences that I explore in ongoing research.

Workers may also be excluded from opportunities because of discrimination. For example, the gender or racial composition of hiring committees may systematically influence who is hired. When this bias results from taste-based discrimination, we have limited evidence on the effectiveness of anti-discrimination policy. In "Peer Pressure and Discrimination: Evidence from International Cricket" published in the *Journal of Law, Economics, and Organization* (2024), Siddharth George and I study how reforms to the composition of umpiring panels in international cricket influence the impartiality of split-second, independent, decisions made by two on-field umpires. Prior to 1994, both on-field umpires shared the same nationality as the home team. Thereafter, a reform mandated that a neutral umpire (i.e. a different nationality to the home and foreign team) replace one of the on-field home umpires in a subset of matches. Using a difference-in-difference design, we show that this reform reduced the relative frequency of decisions that penalize the foreign team, but only when the decision-type requires that an umpire make a subjective judgement. This result is partly driven by impartial neutral umpires but, in addition, we show that the physical presence of a neutral umpire also debiases home umpires–-a fact we attribute to social pressure. Our results imply that small changes to the composition of evaluators can temper bias and we find evidence for similar 'presence effects' among both Indian election officials and the US judicial system.

Collectively, these findings show how formal and informal institutions—norms, intermediaries, networks—influence the allocation of labor and how policy can address information frictions towards promoting opportunity.

Constraints to Technology Adoption

Technology diffusion is a key determinant of productivity differences in the agricultural sector. My research examines how an advisory service can overcome information frictions to encourage: (1) technology adoption and (2) information diffusion and the demand for advice. As a methodological contribution, I consider how to experimentally estimate demand for new technologies to support optimal pricing and adoption.

Technological innovations in the agriculture can improve input allocation and the productivity of agriculture. Yet, information frictions may limit awareness and the knowhow needed to wield modern technologies. In "'Mobile'izing Agricultural Advice: Technology Adoption, Diffusion, and Sustainability" published in the *Economic Journal* (2021), Shawn Cole and I use a field experiment to estimate the impact of a mobile phone-based agricultural extension service among 1,200 cotton farmers in Gujarat, India. We find that the demand for agricultural advice is substantial and 90% of farmers offered treatment use the service. Treated farmers are more likely to adopt recommended inputs for cotton cultivation and invest in irrigation. We find that cumin yields—a cash-crop grown by 41% of farmers in the study— increased substantially (26%). However, we do not find robust gains in cotton yields, though we are likely underpowered to detect these effects. Our findings suggest that there is substantial unmet demand for agricultural advisory service and that mobile phone-based extension can meet this need and encourage the adoption of modern technologies.

Mobile phones have dramatically altered the availability of information in rural areas of the developing world. In doing so, they may change the returns to in-person information sharing. This may be especially consequential in the agricultural sector, where information sharing and 'social learning' among farmers is critical for technology adoption. In "Seeking the Treated: The Impact of Mobile Extension on Peer Information Exchange in India" published in the *Journal of Development Economics* (2022), I estimate the effect of a mobile phone-based agricultural extension service on the structure of information exchange in Gujarat, India. While the service greatly reduces reliance on peer advice, it does not crowd out in-person peer interactions. Rather, treated farmers are more likely to recommend inputs to their peers and this increases their popularity as a source of agricultural information. Respondents exposed to a treated farmer through their peer groups at baseline are more likely to report discussing agriculture with a new treated respondent after the service is introduced. Consequently, exposure to the treatment, both directly and through one's peer group, increases willingness-to-pay for the service. These findings show that mobile phone-based advisory services spur in-person information sharing and support the technology diffusion at scale.

The private provision of information-based technologies like mobile advisory services may be suboptimal because of the non-rivalry of the service. Consequently, even armed with credible estimates of the impact of these interventions, policy-makers must credibly estimate demand to be able to optimally price services to support adoption. In "Field Comparisons of Incentive-Compatible Preference Elicitation Techniques" published in the *Journal of Economic Behavior and Organization* (2020), Shawn Cole, Daniel Stein, Jeremy Tobacman and I assess the reliability of two common experimental methods for demand elicitation. One method for incentive-compatible demand elicitation, the Becker-DeGroot-Marschak (BDM) mechanism, has been widely used in laboratory settings but rarely evaluated for reliability at scale in the field. Using multiple large-scale field experiments across India, we estimate demand curves for an index-based rainfall insurance product and mobile phone-based agricultural extension. We compare demand curves estimated using the BDM mechanism to those estimated using take-it-or-leave-it choices (TIOLI) that randomize fixed prices. Overall, we find limited evidence for systematic bias between these two methods, but we detail a new, cost-effective, demand elicitation mechanism that augments the BDM method using discrete prices to reduce the influence of focal points.

Collectively, these findings demonstrate how information and communication technologies (ICTs) can relax information frictions, encourage technology adoption, and improve productivity in the agricultural sector.

Ongoing Research

In the future, I plan to leverage the access I have obtained to administrative data on migration, census microdata, and several other household surveys to develop an agenda focused on: (1) the causes and consequences of migration and (2) labor market institutions and labor mobility. As with my previous research, I am especially interested in understanding the role of norms and informal institutions in shaping economic outcomes.

Together with Paul Shaloka and Alison Lodermeier, I study the consequences of a migration ban implemented by the Sri Lankan government. The ban restricted women's migration opportunities to the Gulf region on the basis of their age and the age of their children. The intended effect of the ban was to protect migrants vulnerable to abuse and to improve outcomes for the children of migrant mothers, who may suffer worse outcomes in the absence of their care. We find that the policy drastically reduced the flow of female migration. Second, we use several waves of the Demographic and Health Surveys (DHS) to implement a cohort design that compares households affected by the ban because of the age of their children, before and after the ban was implemented. Households affected by the ban experience a large reduction in remittances that lowers their household consumption. Mothers subject to this ban reduce their fertility—an effect driven by behavioral responses to the ban, rather than compositional changes resulting from deterred migrant women. To estimate the effect of the ban on child outcomes, we compare the outcomes of older siblings subject to the ban because of the age of their younger sibling, to older siblings who were not. Ban affected children are less likely to report attending school and have fewer years of education.

Towards understanding the consequences of migration more generally, together with John Marshall I explore how the intensity of migration to the Gulf region in Sri Lanka has influenced socially conservative attitudes in regions with many Muslim migrants and support for anti-Muslim political parties among regions with many non-Muslim migrants. I also plan to continue my work on migration intermediaries by studying whether the introduction of mobile phones and, therefore, the availability of information influences the comparative advantage of migration intermediaries and the frequency of mediated migration.

Finally, Chungeun Yoon and I explore the long-term effects of the 2004 Indian Ocean Tsunami on structural change in Sri Lanka. Our findings suggest that the devastation to the agricultural sector, as well as the displacement and loss of human life, resulted in persistent changes in the share of employment in agriculture a decade later.

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