I am a development economist whose research seeks to improve our understanding of the migratory processes of the poor. I focus on two aspects of migration:

1) **The effects of migration**: When people migrate, what happens to them, the origins they leave, the destinations they arrive in, and the overall economy?

2) **The determinants of migration**: What are the individual, community, and national factors that facilitate or discourage migration?

I take a broad perspective, studying many different types of movement: migration across international borders, permanent and temporary migration within countries, and within-city residential choice. I employ diverse methods, depending on what the research question requires. I conduct randomized controlled trials (RCTs), collect original data, and analyze secondary data, guided by economic theory. As cause and effect are not always distinct, a key component of my research agenda is to develop general equilibrium models of the economy and take these models to data. This enables me to study the complex general equilibrium effects present in the movement of labor as well as to undertake policy-relevant counterfactual analysis.

### I. THE EFFECTS OF MIGRATION

Individuals move both across countries and within them in the search for better opportunities — often better employment prospects and higher wages. But migration does not only affect migrants themselves. Migration often happens at such a large scale that it may lead to aggregate effects in the overall organization of economic activity within a country. When people migrate, what happens to them, the origins they leave, the destinations they arrive in, and the overall economy?

a. **Effects at the origin: interaction between migration and informal insurance**

Households in low-income countries often rely on other households for financial assistance because formal markets for credit and insurance are generally missing (Townsend, 1994; Udry, 1994). Migration could undermine the strength of such network connections, or it could improve income diversification in the network. In two papers, I study how temporary migration interacts with the provision of informal insurance, affecting both those who migrate as well as those who are left behind.

i. **Informal insurance in village India**

In “[Endogenous Risk Sharing and Temporary Migration in Village India](https://example.com),” (Accepted, *JPE*), I study what happens to informal risk sharing when migration opportunities are introduced into a village. Because households make migration and risk-sharing decisions at the same time, and in both cases as a response to income risk, it is important to consider how migration and risk sharing will respond when designing policies that might help households address income risk.
I model the joint determination of risk sharing and migration using a limited commitment framework (Kocherlakota, 1996; Ligon, Thomas, & Worrall, 2002). Limited commitment implies that any agreement must be self-enforcing: a household with high income today will give only as much money to another as will make it indifferent between remaining part of the network (and receiving help in the future) and not remaining part of the network (and consuming more today, but then receiving no help in the future).

The opportunity to migrate makes a household weakly better off. This then endogenously affects how much it needs insurance, and therefore how much money it will give to others when it receives relatively high income shocks. At the same time, the potential provision of insurance may also affect the decision to migrate, since final consumption will be net of any transfers given or received by the household.

I test these ideas using the new ICRISAT panel of households in South India. I first show patterns in the data that suggest a link between migration and risk sharing: households migrate more frequently when there is a bad rainfall shock; households are insured, although not perfectly; and the level of insurance is negatively correlated with the amount of migration in the village. I then estimate the full model of endogenous risk sharing and migration using this data. I find that, in this context, the introduction of migration has reduced informal risk sharing. I also find that, overall, the insurance provided by the network reduced the amount of migration.

What does this mean for policy? Other work has shown that formal insurance may crowd out informal insurance, reducing the benefit of the formal insurance (Albarran & Attanasio, 2003). Migration may operate in the same way: a policy that reduces income risk in the village may crowd out migration, as households do not need to migrate when hit by a negative shock. This channel may be in addition to any effects the policy has on informal insurance. To illustrate this, I simulate the effect of the Indian government’s MNREGA rural employment guarantee program and show that the welfare gains of introducing the MNREGA policy are 50–70% lower once the endogenous migration and risk-sharing responses are accounted for. That is, not accounting for how behavior changes in response to the program, one could overstate the benefit of the MNREGA policy.

ii. Incorporating experimental and seasonal estimates

In many rural settings there is a pronounced agricultural lean season, usually after planting but before harvest time, when there is little work in the village. During this period, food prices are high, and people reduce their caloric intake. The lean season may thus be a period with particularly high returns to migrating to the city. In ongoing work, “Migration and Consumption Insurance in Bangladesh,” joint with Costas Meghir, Mushfiq Mobarak, and Corina Mommaerts, we are studying the effects on informal risk sharing after households were randomly offered subsidies if they migrated during this lean season (Bryan, Chowdhury, & Mobarak, 2014).

We find that, in this setting, an exogenous change in the ability to migrate increases informal insurance. We document this result by showing that the standard risk-sharing measure, the correlation between income and consumption, decreases in response to the randomized experiment. This change does not appear to be driven by a change in savings, nor is it due to measurement error. It is also corroborated by responses to hypothetical questions about access to help from friends and family.
It may seem that finding crowd-in of informal insurance in one setting (Bangladesh), and crowd-out in another (India), generates an empirical puzzle. Are the two papers consistent? In fact, the same model rationalizes both findings. In the Bangladeshi setting, the migration destination is particularly risky. The risk-sharing network provides insurance to migrants. This amplifies the effect of the migration subsidy and hence crowds in informal risk sharing. As a result, migration rates are higher than if risk sharing had not increased. In the Indian setting, this channel was not as prominent. The primary effect of migration was to crowd out informal risk sharing; risk sharing also substituted for migration, and so migration was lower than if households did not have access to risk sharing.

The results in these two papers suggest a broader policy implication: informal insurance may be an important factor determining if, and when, people adopt new income-generating methods. In some cases, because of obligations to transfer some of the returns, informal insurance may reduce the take-up of new methods to generate income. In others, by providing a safety net in case of failure, informal insurance may increase take-up.

b. Effects at the destination: understanding urbanization in developing countries

Developing countries are rapidly urbanizing because of migration and population growth. Urbanization has the potential to increase countries’ productivity, but also brings many challenges: How do people decide where to live? Do they find jobs? Does increasing urbanization lead to other negative externalities, such as pollution and congestion; if so, how can these be managed? In ongoing fieldwork, I am undertaking research to study the urban labor and housing markets to answer these questions.

i. Urban congestion

Congestion restricts access to jobs and markets, potentially limiting the benefits of urbanization. In Dar es Salaam, together with Clare Balboni (a fifth-year graduate student at the LSE), Gharad Bryan, and Bilal Siddiqi, we are studying whether the introduction of a new mode of public transport, the Bus Rapid Transit (BRT) system, will lead to more employment, higher wages, and higher house prices. We have fielded baseline (January 2016) and midline (August 2017) surveys and have planned an endline survey for mid-2018. The funding for this research is from the IGC, 3ie, the World Bank, and Stanford.

Because the BRT may lead to people moving house, we will analyze the effects of the BRT system in two parts. First, we will consider the dwelling as the unit of observation. Second, we will consider the initial resident of a dwelling as the unit of observation, and track them if they move. We will therefore be able to analyze the impact of the BRT for those who were initially living in a neighborhood separately from those who later moved in. We are primarily interested in questions relating to employment status, house prices, income, and an index of amenities for the particular location.

An important question when analyzing the benefits of any spatial investment is whether the investment leads to the creation of new economic activity, or simply the reorganization of existing activity. A research design based on relative changes cannot differentiate between the two. Therefore, in addition to analyzing a spatial difference-in-difference estimation, we plan to write down a model of within-city economic choice. We will combine our household survey data, elasticities estimated by two experiments, discussed below, and administrative data to
estimate this model. This will allow us to quantify the overall effect of the infrastructure investment in the city.

ii. Urban residential choice

We hypothesize that, while the BRT may provide access to higher-paying opportunities, realizing these opportunities could take some time. If rents increase near transit, missing credit markets may make it difficult for poorer households to pay the upfront costs to live close to the BRT. Infrastructure investments implemented without complementary interventions, such as housing assistance, may therefore cause problems for the displaced urban poor, such as longer commute times, reduced employment prospects, and the break-up of communities. In order to directly examine this, we are planning to run a conditional cash transfer program where we subsidize people to remain living near the BRT. We plan to study whether (i) the subsidies change their location choice, and (ii) there is a causal effect on earnings and income from living closer to the BRT line.

With experimental estimates in hand, we will be able to use the extensive household and administrative data to simulate counterfactuals for the economy. This will shed light on issues such as the effects of expanding urban infrastructure; the outcome of providing long-term residential help; and (in another planned experiment on subsidizing the fare), the expected productivity benefits of different pricing schedules for the BRT.

iii. Urban labor markets: understanding contracting frictions

In NSF-funded research (co-PI, NSF SES-1530791), Arun Chandrasekhar, Alessandra Peter (a fifth-year graduate student at Stanford), and I are studying the impact of information frictions, such as the inability of managers to monitor their staff, on firm size. Many firms in developing countries stay small — at the level of the family — rather than expanding by hiring workers. This affects how easily we expect firms to be able to offer wage employment and absorb workers in urban labor markets. The presence of information frictions may also affect whether employers are willing to hire people, such as migrants, with whom they lack social ties. We have set up a bicycle courier franchise in Bangalore, India. We recruit “managers,” provide them with working capital (bicycles), and then study who they hire and how they set wages for their employees, depending on what monitoring technology (such as GPS tracking) we provide. We are also exploring their willingness to pay for more capital to expand their businesses.

c. Effects at the aggregate level: could migration increase aggregate productivity?

One fact stands out when thinking about poverty reduction: within the same country, urban (or non-agricultural) productivity is often two or three times higher than rural productivity (Caselli, 2005; Gollin, Lagakos, & Waugh, 2014). This “agricultural productivity gap” is a potential arbitrage opportunity that offers great promise for development: is it possible for individuals to increase their income and grow out of poverty simply by moving from rural to urban areas? If so, why isn’t this happening faster?

In “The Aggregate Productivity Effects of Internal Migration...” (R&R at the JPE), Gharad Bryan and I ask whether increasing migration would lead to higher aggregate productivity by allowing people to work where they are most productive. The answer is not as simple as looking at the rural-urban wage gap. If cities are more productive simply because more productive people chose to live in them, moving more people to cities will not increase productivity. Using microdata from Indonesia, we start by showing four facts: (i) people migrate to places that are
closer; (ii) within a destination, those who have come from further away earn a higher wage; (iii) within a destination, those who come from areas where more people from that area have migrated to the destination earn lower wages; and (iv) within a destination, even after controlling for distance, those who come from areas where more people from that area have migrated to the destination earn lower wages. Fact (i) suggests a cost to migrating longer distance. Facts (ii) and (iii) suggest selection. Fact (iv) suggests that the migration cost drives the selection effect.

We then write down a model that can explain the above facts using the following elements: migration is costly, and people sort into locations according to their comparative advantage, taking into account general equilibrium congestion and agglomeration forces. We estimate the model using 40 years of microdata. We then simulate, within the model, what would happen if migration costs were reduced to the level of the United States, which we take as a low-friction benchmark. We find modest gains — of the order of an increase of 8% in GDP — but important heterogeneity — the areas that gain the most would see gains of over 100%. We take this to suggest that, to a first order, because much of the gap is driven by selection, the gains from facilitating migration are not as transformational as the aggregate productivity gap suggests. However, well-targeted regional policies, such as building roads to isolated regions, may have a large impact on the lives of people living in those areas.

II. THE DETERMINANTS OF MIGRATION

The canonical model of migration predicts that an individual migrates voluntarily if the gains of doing so are larger than the costs (Harris & Todaro, 1970). My research focuses on both sides of this equation: I am studying the role of migration costs in the migration decision, and, in ongoing fieldwork, I am studying whether there is heterogeneity in returns to migration.

a. How do migration costs affect migration?

Migration costs can be one explanation for the lack of wage convergence across space. But, one could argue that, since the cost of moving can be annuitized over time, migration costs should not be very important. This conjecture seems to contradict the data: migration flows are strongly correlated with distance, and other studies have found that migrants are very responsive to paying the cost of traveling (Bryan et al., 2014). What are the determinants of migration costs, and are there policies to reduce these costs? And under what conditions would policymakers want to do so?

i. Do roads facilitate migration?

In our paper, “The Effects of Roads on Trade and Migration,” Jaqueline Oliveira and I ask whether road building facilitates labor market integration by enabling migration. We study the case of Brazil, which built a new centrally located capital city, Brasilia, in 1960 and subsequently constructed a new highway system connecting Brasilia and cities throughout the country.

Using state-level data that spans before and after Brasilia, we show that the elasticity of migration to Euclidean distance decreased after Brasilia. The decrease was larger for origin-destination pairs when one pair-member was the state of Goias, the state closest to Brasilia, which therefore increased the most in road density. This is consistent with roads lowering the cost of traveling one kilometer. Our primary analysis then uses rich data on migration patterns,
coded to the municipality level. Using this much finer data, we show that the travel time by road is a key determinant of where, and if, people migrate.

We then ask, given that roads aid labor movement, whether labor market integration generates an additional benefit over and above the oft-studied role of infrastructure in facilitating trade (Allen & Arkolakis, 2014; Donaldson, 2016). To answer this question, we use a general equilibrium model where both migration and trade are costly. We estimate the model using microdata and find that, while the main welfare effects of roads occur through the goods market (91% of the gains), the estimate of the total benefit is 10% higher if the migration effects are included. Accounting for migration also induces heterogeneous benefits of infrastructure: when it is not costless to move out of an area, welfare is no longer equalized across space, as in the case of models without barriers to migration.

**ii. Do migration barriers prevent migration from Mexico to the United States?**

International migration usually occurs through tightly regulated channels, making it difficult to study the underlying economic factors that drive migration. However, this is not the case for all international flows. For example, the Pew Research Center estimates that of the 12 million Mexican citizens living in the United States, about half are doing so illegally (Pew Research Center, 2017). While the question of the economic effects of migrants in the labor market has generated an extensive academic debate (Borjas, Grogger, & Hanson, 2008, 2012; Card, 1990; Ottaviano & Peri, 2012), several unanswered questions remain. One outstanding issue is that the migration literature generally does not incorporate general equilibrium effects and so cannot study policy counterfactuals or compute aggregate effects on the economy from migration. Another is that the majority of this work is focused on understanding the effects of migration in the United States, but much less on understanding the regional effects of migration in Mexico. Indeed, because the two countries are so tightly integrated, it makes sense to think about modeling migration decisions taking the binational component of migration seriously.

In ongoing work, “Migration and Walls,” joint with Treb Allen and Cauê Dobbin (a third-year graduate student at Stanford), we are studying whether migration flows between Mexico and the United States responded to the construction of 700 miles of border fence on the Mexico-United States border. We are using a new source of data on migration flows, the *matrícula consular* (consulate ID cards) database, which measures migration between Mexican municipalities and U.S. states. We examine whether migratory flows between specific origins in Mexico and specific destinations in the United States changed after a fence was built along some, but not all, of the U.S.-Mexico border. We find a strong negative elasticity to an increase in travel time. The second part of the paper then computes the overall change in the number of migrants in both origins and destinations, and traces out the effect of this migrant shock on labor market outcomes for local workers as well as other migrants. The third part of the paper uses these reduced-form facts in a general equilibrium framework to compute the incidence of the fence shock for groups of workers, categorized by educational attainment and nativity.

The findings in these two papers have direct implications for policy. Our results imply that people do respond by migrating less when the cost of doing so increases. A second important question is then whether the government would want fewer migrants. In the first paper, we find that the improvement in labor market integration provided an additional welfare benefit over and above the standard market integration effects, and so the additional migration was beneficial for
In the second paper, our results, once finalized, will speak to the spillovers on the domestic labor market from changes in the amount of international migration.

b. **Heterogeneity in the returns to migrating**

In the canonical framework, individuals migrate if their return of doing so is positive. But, people may have different returns to migrating. As such, in order to understand why some people migrate while others don’t, it is necessary to separate out the causal effects of migration itself from the effects of an individual’s characteristics. Some of these characteristics, such as education, may be observable; others, such as perseverance, may be less so.

In the paper, “The Aggregate Productivity...,” discussed earlier, we documented evidence consistent with migrant selection for permanent migrants in Indonesia. In ongoing work, joint with Gharad Bryan, Mushfiq Mobarak, and Shyamal Chowdhury, we are studying the heterogeneity in returns to migration and how migration decisions respond to private information on returns for seasonal migrants in Indonesia. We are running a two-stage experiment amongst rural households that face seasonal poverty. Prospective internal migrants will be offered either “low” or “high” subsidies to migrate. Some of those who receive “low” subsidies will be surprised with a “high” subsidy after they have made a migration decision. We will compare the employment outcomes of workers who were randomly given different incentives to migrate, with the surprise treatment controlling for any income effects of the high subsidy. This research has been funded by Evidence Action through its “No Lean Season” initiative.

### III. TEACHING

I teach two classes at Stanford. The first is Introductory Economics (Econ 1). The second is Econ 215, part of the PhD sequence in development economics. I have also co-organized the development seminar (Econ 315) for the last three years.

The syllabus for Econ 1, which covers introductory microeconomics and macroeconomics, primarily follows standard introductory textbooks. I have incorporated many examples from current research into the class, especially ones involving development economics and applied microeconomics. For Econ 215, I designed the syllabus to focus on macro-development. The course broadly covers “misallocation,” where we focus on markets for land, labor, and capital, and discuss microeconomic evidence for the presence of market imperfections. We then tie this empirical evidence to aggregate models of the economy. Through this class I introduce students to the tools needed to estimate quantitative models and show them how to incorporate experimental and microeconomic data into these quantitative frameworks.

I believe it is important for students, particularly those studying development, to gain real-world experience. Over the summer of 2016, I sent five students to the field for the summer (two to Tanzania, two to Armenia, and one to India); two of these students have been successful in gaining funding to conduct their own research based on the contacts and experience they gained. Over the summer of 2017, I provided fieldwork opportunities for two students in Tanzania. In the coming years, I plan to continue providing similar opportunities to graduate students. I also plan to integrate undergraduate students into my research through utilizing programs at Stanford, such as SCID, that support undergraduate research experience.
IV. WORK BY THE AUTHOR

5. “Migration and Consumption Insurance in Bangladesh,” (with Mushfiq Mobarak, Costas Meghir, and Corina Mommaerts) [in progress]

V. REFERENCES


Studies, 69(1), 209–244.


