

Research Statement

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I am an applied microeconomist with a research focus on economic development and health economics. I study the ways that individuals and markets process health information, and the ramifications of these choices for economic and health outcomes. An ongoing research agenda examines the links between poverty and poor mental health. My research spans several international settings; recent projects involve randomized field experiments and primary data collection in South Asia, as well as studies of COVID-19 and mental health in the United States. I have 1714 citations and an h-index of 18 in Google Scholar.

Research Philosophy

In my work, I strive to use the best available methods of causal inference to test economic theories and assess economic relationships. I use experimental variation where possible and implement rigorous robustness tests to establish causality. My work also incorporates strong micro-foundations. Findings should be informative about economic theories and relationships in addition to delivering policy implications. My papers often seek to resolve empirical puzzles by calling upon economic models to obtain additional theoretical predictions.

My research agenda can be organized into three primary themes: (1) poverty and mental health, (2) the role of health information in markets, (3) the impact of information on health behavior.

Poverty and Mental Health

My current research interest focuses on the relationship between poverty and poor mental health. Depression is very common throughout the world, and living in poverty may exacerbate depression and contribute to poverty traps. The link between poverty and mental health is a frontier topic that has received little attention from economists until recently.

With Manuela Angelucci (University of Texas at Austin), I implemented a randomized field experiment to measure the relationship between depression treatment and economic outcomes, including labor supply, child investment, and risk and time preferences. **"The Economic Impact of Depression Treatment in India: Evidence from Community-Based Provision of Pharmacotherapy,"** is forthcoming in the [American Economic Review](#). We recruited 1000 adults with depression and cross-randomized pharmacotherapy and livelihoods assistance interventions. The study evaluates impacts on depression severity, socioeconomic outcomes, and several potential pathways over 26 months. The pharmacotherapy treatments reduce depression severity, with benefits that persist after treatment concludes. They substantially increase child human capital investment, particularly for older children, and reduce risk intolerance and the incidence of negative shocks. These findings suggest depression may perpetuate poverty across generations.

My latest paper continues this research agenda. **"Depression, Pharmacotherapy, and the Demand for a Novel Health Product"** (with Manuela Angelucci) studies the link between pervasive depression in poor communities and low demand for preventative health products. We show that depression treatment increases the willingness to pay for hand sanitizer, a novel health product with high utility in developing countries. Studying the adoption of a new technology allows us to

explore pathways that link depression to economic decision-making. Another key result is that depression treatment does not affect product use, which is consistent with a “decision costs” pathway and is not consistent with most alternative explanations. Our findings contribute to the policy debate related to cost sharing and other strategies to target health product subsidies.

Additional work in this area examines how socioeconomic status moderates the impact of mental health treatment (**“Socioeconomic Status and the Impact of Coordinated Specialty Care for First Episode Psychosis”**, with Robert Rosenheck, [Health Services Research](#), 2021). Factors associated with poverty, such as more severe illness and weaker treatment compliance, may undermine the effectiveness of mental health care and contribute to mental health disparities. The RAISE trial was a high-profile study of enhanced treatment for first-episode psychosis (the precursor to schizophrenia). Despite studies propounding the success of this intervention, we show that only patients in the highest SES quartile benefited from treatment, while the remaining patients did not. The paper rules out several possible channels for this differential effect.

The Role of Health Information in Markets

Three papers examine the way that markets process health information in diverse contexts. A recurrent finding is that markets enable people to overcome asymmetric information, but these responses may have unintended consequences.

“Adverse Selection in the Marriage Market: HIV Testing and Marriage in Rural Malawi” (with Manuela Angelucci, [The Review of Economic Studies](#), 2021) studies how asymmetric information about sexual safety influences marriage timing. Because partner quality is unobservable in the status quo, “high-quality” participants may strategically delay marriage in order to signal and screen. We develop a model in which safe people delay marriage in the status quo, which creates adverse selection. We then test this model through a randomized field experiment in which some women and their partners were offered HIV testing repeatedly over 28 months. The intervention dramatically increased marriage and pregnancy, particularly for “safe” women. We also test several equilibrium predictions of this model using a sample of women who were already married. This paper provides the first analysis to my knowledge of the effect of asymmetric information in the marriage market. The HIV/AIDS epidemic has heightened the importance of sexual safety as a partner trait, however our approach is also relevant for other partner attributes such as debt, the propensity for domestic violence, and other hidden health conditions and personal characteristics.

“The Market for High Quality Medicine: Retail Chain Entry and Drug Quality in India” (with Wesley Yin, [Review of Economics and Statistics](#), 2019) considers the role of asymmetric information in the retail market for pharmaceuticals. Low-quality medicine is a persistent public health concern in developing countries. Consumers cannot easily observe drug quality and developing countries often lack the regulatory structures to enforce drug quality directly. While economic growth should lead firms to supply higher-quality products, it is unclear how the economic development process encourages improvements in drug quality if quality is unobservable. To investigate this question, we collaborated with a high-quality pharmacy chain to study how its entry affected retail pharmacy markets. We implemented an audit of incumbent mom-and-pop pharmacies, in which we purchased medicine and sent it to a laboratory for quality assessment. The study uses a difference-in-differences design with observations before and after entry in treatment and control markets. We find that despite the concern about unobservable drug quality, incumbents responded by raising quality and lowering prices, and consumers correctly perceived

these changes. Quality improvements broadly benefited consumers, regardless of socioeconomic status. This pattern suggests that firms and consumers can adapt to overcome information asymmetries.

Also within this theme, **“Health Care Competition, Antibiotic Use, and Antibiotic Resistance in Taiwan”** (with Che-Lung Hung and Tsai-Ling Lauderdale, Journal of Industrial Economics, 2015) examines how unobservable doctor quality may exacerbate the overuse of antibiotics and contribute to the emergence of drug-resistant pathogens. A plurality of outpatients seek care for upper respiratory infections, such as the common cold, ear infections, and influenza. In most cases, these infections are viral and antibiotics are not an appropriate treatment. However, doctors can signal effort to patients by offering antibiotic prescriptions. The paper shows a strong correlation between competition in local outpatient health care markets and antibiotic use. A regulation that enhanced the oversight of doctors substantially curtailed this practice, suggesting that doctors relied on this signaling technology because it was inexpensive. In this situation, asymmetric information leads market participants to adopt a quality signal – antibiotic prescriptions – with negative externalities, so that making doctor quality more observable might help to address the overuse of antibiotics.

These studies build upon my doctoral work on the tradeoff between clean water and sanitation. Sanitation (e.g. avoiding open defecation) and water purification are substitutes in health production. Therefore, water supply improvements may lead people to adopt worse sanitary practices. Moreover, since sanitation has large positive externalities, the health impact of this behavioral response may overwhelm the direct benefit of clean water. **“Does Clean Water Make You Dirty? Water Supply and Sanitation in the Philippines”** (Journal of Human Resources, 2012) investigates this relationship for households who were provided municipal piped water in Metro Cebu, the Philippines. Neighborhoods with clean water exhibited greater open defecation and more severe child diarrhea, and household sanitation behavior was associated with neighborhood, rather than household, water supply. Results suggest that sanitation is a local public good that communities provide through informal mechanisms like social norms. Initiatives such as municipal piped water provision may have unintended consequences if they disrupt these informal institutions.

The Impact of Information on Health Behavior

Another series of papers examines how people process health information in order to optimize their health behavior. Despite the conventional assumption of full information, these papers show that people are not fully informed and that substantial barriers reduce the impact of providing information.

Diarrheal disease prevention is a particularly important context in which to study the impact of information. Preventing diarrhea, a leading cause of child mortality, requires simple and inexpensive steps such as hand washing, safe food handling, and using improved latrines. It is a puzzle why compliance with these practices remains low despite the clear benefits of controlling diarrheal disease. **“Learning, Hygiene, and Traditional Medicine”** (with Asjad Naqvi and Wolf-Peter Schmidt, The Economic Journal, 2018) evaluates a novel hygiene education program in order to investigate these issues. Since many people in rural Pakistan are skeptical of health messages that invoke invisible pathogens, this intervention uses microscopes to demonstrate the existence of microbes before delivering hygiene information. We show that the microscope demonstration substantially enhanced the impact of information on hygiene and child health, suggesting that the lack of credibility is an important barrier for information campaigns.

The paper takes up a larger question about the tradeoff between traditional and Western medical beliefs. The extent of substitutability between traditional and Western beliefs and behaviors is a first-order public health question that has received little attention. We proceed to implement a heterogeneity analysis according to the strength of participants' traditional medical beliefs. Those with weak traditional beliefs responded strongly, while those with strong traditional beliefs did not, which suggests that traditional beliefs may make people less receptive to hygiene messages. This paper is the first study to my knowledge to document this relationship.

A novel epidemic is another context in which people lack the information they need to make health decisions. **"Learning During a Crisis: the SARS Epidemic in Taiwan"** (with Chun-Fang Chiang and Anup Malani, Journal of Development Economics, 2015) studies the response to SARS risk during the 2003 SARS outbreak in Taiwan. At the time, many people worried about contracting SARS by visiting the doctor, and health care visits plummeted by over 30 percent within several weeks. The paper develops and tests a model in which the absence of public information about disease risk leads people to infer risk from the actions of their peers. This mechanism can generate large reactions to small pieces of information through herding. Using rich claims data, we provide evidence that social interactions had a particularly important influence on health care utilization during SARS. We use a difference-in-differences design to compare the peer effects for people who were longtime community residents (and therefore had stronger social connections) and those who arrived recently. We use our estimates to simulate the response to SARS with and without social learning. This paper is among the first to analyze protective responses to a novel disease outbreak, which has become a prominent question in the context of COVID-19.

"The Indirect Impact of Antiretroviral Therapy: Mortality Risk, Mental Health, and HIV-Negative Labor Supply" (with Victoria Baranov and Hans-Peter Kohler, Journal of Health Economics, 2015) makes a novel connection between HIV risk information and mental health. The paper uses a difference-in-difference design to examine the impact of the provision of antiretroviral AIDS treatment. While this treatment is only useful to people with HIV, we show a large impact of AIDS treatment access on mental health and labor supply among HIV-negative respondents. This impact appears to operate through subjective expectations: the intervention made HIV-negative people perceive less HIV risk, which in turn improved their mental health and made them more productive.

COVID-19

The COVID-19 pandemic created an compelling opportunity to advance this research agenda. Throughout the COVID-19 pandemic, the Center for Economic and Social Research (CESR) collected high-frequency longitudinal survey of economic and health outcomes in the United States. I was integral to designing and administering this survey and I am the coauthor of seven publications related to this data collection.

Future Research

My future work will continue to focus on the links between poverty and poor mental health, as well as the impacts of incomplete and asymmetric information on health decision-making. I am interested in understanding how mental health stigma moderates the impact of mental health care. We are currently fielding a seven-year follow-up survey of the participants in our depression trial. This survey will examine the long-term impacts of depression treatment on participants and their children.

Fundraising and Research Support

I recently received an award for €294,000 for **“Depression Treatment and Female Performance in the Labor and Marriage Markets in India”** from the Institute of Labor Economics (IZA). I am the PI for **“RAPID: Evaluating the Impact of COVID-19 on Labor market, Social, and Mental Health Outcomes”**, an NSF award for \$200,000 related to CESR’s work on COVID-19. I am the PI for an R03 award (\$100,000) to NIMH entitled **“Socioeconomic Heterogeneity in the Impact of Psychiatric Care: A Secondary Analysis of the RAISE-ETP Trial for Patients with First Episode Psychosis”**. I collaborated with Simone Schaner on the grant **“Following Up for Better Health: Improving Non-Communicable Disease Compliance in Urban India”**, which received an award for \$323,000 from the Jameel Poverty Action Lab (JPAL) Urban Services Initiative. Funding for my research on depression treatment in India came primarily from the Swiss Programme for Research on Global Issues for Development r4d Grant, with additional support from JPAL.