Research Statement – Parker Rogers

Executive Summary — My research addresses core themes in public finance, health economics, and the economics of innovation. In my primary line of research, I consider the longstanding role that the U.S. federal government has played in shaping the procurement and testing of medical technologies through regulation. I find that these regulations dramatically affect innovation and market structure. I show this using quasi-experimental methods and novel databases created with machine learning tools. Such results could help shape regulatory policy that leads not just to more innovation, but that which is affordable, high-quality, and safe. In my second line of research, I analyze ways to improve the take-up and design of social safety net programs to combat poverty and inequality. Future research will build on this exciting agenda with excellent co-author and organizational partnerships.

Dissertation — My dissertation investigates the far-reaching effects of regulation on health care markets. My job market paper focuses on the impacts of medical product regulation on innovation and market structure. Medical product regulation has become a hotly debated topic. Some blame the U.S. Food and Drug Administration (FDA) for delays in COVID-19 vaccine approvals and shortages of at-home test kits and respirator masks. However, FDA regulation has important implications for consumers beyond moments of crisis. In my job market paper, "*Regulating the Innovators: Approval Costs and Innovation in Medical Technologies*," I study how FDA regulation affects innovation and market structure. I examine FDA deregulation events that affected certain medical device types and find that these events significantly increased the quantity and quality of new technologies, especially among inexperienced firms, and decreased market concentration and health care prices. Perhaps counterintuitively, some of these events led to improved product safety, as firms increased emphasis on product safety innovations to avoid litigation risk introduced by deregulation.

Next, researchers have shown that medical innovation is a key driver of rising health care costs. Is it inevitable that new technologies increase costs? In "*Demand Shocks, Procurement Policies, and the Nature of Medical Innovation: Evidence from Wartime Prosthetic Device Patents*," Jeffrey Clemens and I explore whether the generosity of procurement contracts can steer medical innovators to focus on reducing costs or enhancing quality. By analyzing differences in wartime procurement of prosthetic limbs, we find that stingy, fixed-price contracts of the Civil War led inventors to focus on reducing costs, while more generous World War I procurement contracts did not. We also find that inventors emphasized aspects of product quality according to procurer preferences and that sharp increases in wartime amputations led to large increases in prosthetic limb patenting.

Continuing this line of research on procurement and innovation, Yunan Ji and I study how government price reforms affect innovation and welfare in the health care sector. In our paper "*The Dynamic Effects of Health Care Price Reform*," we exploit a Medicare payment reform that effectively reduced the reimbursement price for certain types of durable medical equipment (DME) by 45% but left other DME types unchanged. Using DME patents and the FDA medical device database, we find that manufacturers filed fewer patents and introduced fewer new models in DME types affected by the price cut compared to those unaffected. Text

analysis of the patent documents suggests that patents filed after the price cut were more likely to emphasize cost efficiency relative to the control. However, reported device breakage and adverse events also increased relative to the control. These effects were largely driven by increased contracting with foreign manufacturers, which tend to be lower cost but also lower quality. While price regulation in health care can effectively reduce spending, our results show that welfare gains from these savings can be offset by reduced innovation and product quality in the longer term. Our analysis highlights the importance of incorporating long-run dynamics into policy decisions.

Works in Progress and Future Research Agenda — In the coming years, I will continue to pursue two lines of research. First, I will look further into how regulation can affect health care costs, accessibility, and quality, illuminating policy levers to address health inequities and affordability. Second, I will pursue a line of research that examines different ways of providing disadvantaged households with the resources they need to participate in economic opportunity and growth.

Regulation, Innovation, and Health

In "The Effects of Deregulation on the Cost, Accessibility, and Quality of Health Care" (joint with Yunan Ji and Maggie Shi), we study the effects of FDA regulation on the cost, availability, and quality of health care. Our analysis exploits a deregulation event that removed pre-market testing requirements for over 250 device types. We examine how the effects of this event ripple through the health care supply chain using rich transaction-level data. These data include device purchases made by healthcare providers, as well as claims for medical procedures performed using purchased devices. The proprietary data we acquired for this project will be used for other research projects, including, but not limited to, assessing the provider characteristics that drive the adoption of new medical device technologies and the effects of regulations on supply-chain resiliency.

The U.S. Social Safety Net

Observational studies have found that an individual's environment is strongly associated with income, education, health, and the propensity to invent. However, economically prosperous environments are unequally distributed, raising the question of whether interventions that move individuals to better locations (e.g., better housing or neighborhoods) can improve the well-being of disadvantaged individuals. In a project with Winnie van Dijk, we aim to causally assess whether affordable housing and corresponding neighborhood factors alter the life trajectories of awardees. We will leverage a decades-worth of 40,000 U.S. housing lotteries linked to data on income, education, health, patenting activity, and fertility decisions to analyze how housing environments affect these outcomes.

Another way to improve upward mobility is to ensure all Americans are adequately nourished. The Supplementary Nutrition Assistance Program (SNAP) aims to achieve this goal by subsidizing grocery purchases for low-income households and loosening household budgets for other needs. However, not all eligible individuals use SNAP, a puzzling phenomenon

for researchers and policymakers alike. In a project entitled "*The Unintended Effects of Social Media Nudges on SNAP Take-Up*," I investigate whether nudges delivered via modern outreach modalities, like Facebook and Instagram, increase SNAP take-up. To this end, I conducted a field experiment in California with government and non-profit partners. I find that nudges do not increase take-up. In fact, nudges decrease take-up and increase program withdrawals among Spanish speakers, an effect plausibly driven by stigma and confusion.

Relatedly, a second project will test whether adaptive experimentation, paired with upfront financial incentives, can increase SNAP take-up in California (joint with Davide Viviano). Adaptive experiments exploit treatment interventions that are likely best while balancing the need to explore options about which less is known. We aim to show that such algorithms find optimal treatments quicker and improve participant welfare relative to traditional randomized control trials.