Subject: Application for the NBER Entrepreneurship Research Boot Camp

To the selection committee,

I am writing to express my interest in participating in the NBER Entrepreneurship Research Boot Camp, and to apply for a place in this event. With my strong background in econometrics, industrial organization and development economics, and my passion for healthcare economics and innovation, I would bring valuable perspectives and discussions to this bootcamp.

I am a 4th year PhD student in the economics department at the University of California, Berkeley. My coursework on econometrics, industrial organization, and development economics, as well as my past research experiences in these fields have equipped me with the toolkits to conduct rigorous research.

My current and past research projects include studying small independent pharmacies owned by providers in Kenya, the diffusion of new healthcare technologies in Kenya and Mexico, and the effect of public funding on research and development activities in the pharmaceutical industry. Moreover I am interested in exploring in the future the effects of access to managerial technologies and assets such as digital point of sales systems, inventory management tools, and aggregate market intelligence on the growth of businesses in the health sector, as well as any impacts of these tools on the quality of patient care and access to medications.

My research projects would benefit from my participation in this bootcamp since it would allow me to get a clearer understanding of the existing literature on entrepreneurship, and to network with peers with whom I can potentially collaborate in the future.

I have requested Prof. Paul Gertler (gertler@berkeley.edu) with whom I have worked with for over a year and will be part of my dissertation committee to submit a letter of recommendation to this bootcamp on my behalf.

Thank you for considering my application. For any additional information please feel free to reach out to me through email (carlos.paramo@berkeley.edu) or by phone (512 665 5739).

Best,

Carlos Paramo
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University of California, Berkeley
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# Carlos Paramo

**UC Berkeley Economics Department, Berkeley, CA 94720**

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**Research Interests:** Healthcare economics, innovation and technology adoption, industrial organization, development economics, applied econometrics, machine learning.

## Education

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| 2019-Present | Ph.D. Economics (expected 2025)<br>Fields: Industrial Organization and Development Economics<br>University of California, Berkeley |
| 2015-2019 | B.A. Economics & Applied Mathematics<br>University of California, Berkeley |

## Professional experience

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| 2020 - 2022 | Research Assistant, Center for Effective Global Action (CEGA)<br>For Prof. Edward Miguel on various projects in Kenya. |
| 2017 - 2018 | Research assistant for Prof. Yuriy Gorodnichenko |
| Summer 2018 | LA SR-EIP Fellow, Research Assistant, University of Virginia Economics<br>With Professor Gaurab Aryal on pharmaceutical industry. |
| 2017 - 2018 | Undergraduate Research Assistant for Professor Hilary Hoynes, NBER |

## Teaching experience

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| 2021 | Graduate Student Instructor, Introduction to Econometrics (math intensive version), UC Berkeley, Economics Department. With Prof. Demian Pouzo |

## Working papers and presentations

Haushofer, Johannes, Paul Niehaus, Carlos Paramo, Edward Miguel, and Michael Walker. (2021). "Targeting impact versus deprivation". NBER Working Paper No. 30138

Oral Presentation at the Leadership Alliance National Symposium, Hartford, Connecticut, 2018

## Ongoing projects

Impact evaluation of pharmacy-based incentives for long-acting contraception on women's access to family planning in Kenya. Data collection in progress, with Maria Dieci and Paul Gertler.

Public Funding and Innovation: The Case of the Pharmaceutical Industry. We are studying the effects of public funding availability in the R&D investment strategies of pharmaceutical firms. Data analysis in progress, with Kristy Kim, and Yuki Ito.

*Wartime Medical Innovation: Evidence from the USPTO Historical Patent Data*.

## Honors and Awards

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| 2019-2025 | Cota Robles Fellowship, UC Berkeley |
| 2019 | Best Senior Thesis, Economics Department |
| 2019 | Highest Distinction (Summa cum laude), Phi Beta Kappa |
| 2018 | Leadership Alliance SR-EIP Fellow |
| 2018 | The George Douglass Scholarship, George and Mary Poulos Scholarship and The Homan W. Scholarship. |
| 2017 | Leadership Award, California Alumni Association |

## Completed graduate coursework

Core: Economic theory (Econ 201A-201B), Macroeconomic theory (Econ 202A-202B), Econometrics sequence (Econ 240A, Econ 240B), Economic history (210A), Survey of research in economics (Econ 295)

Additional econometric courses: Non-linear models and machine learning (Econ 240C); Applied Econometrics (Econ 244)

Development Economics: Microeconomics of development (Econ 270A); Development economics (Econ 270B)

Industrial Organization: Industrial organization sequence (Econ 220A, Econ 220B)

## Skills

Languages:
- Fluent in Spanish and English

Programming:
- Python
- Stata
- R
- MATLAB

My passion for healthcare economics and innovation has led me to engage in multiple projects that have the potential to contribute to the literature of entrepreneurial economics and entrepreneurial finance including studying small independent pharmacies in Kenya, the diffusion of new healthcare technologies in Kenya and Mexico, and the effect of public funding on research and development activities in the pharmaceutical industry. I am excited to apply for the NBER Entrepreneurship Research Boot Camp because it would complement my research interests and skills, and expose me to a network of peers who are also interested in entrepreneurial economics. I strongly believe that my current and future research projects would benefit from my attendance to this bootcamp.

Most recently, I am studying the diffusion of a new contraceptive technology in the private market in rural and semi-urban Kenya. Injectable contraceptives are the most popular method of birth control in Sub-Saharan Africa. Nevertheless, providing injectables require qualified health providers which can limit access to this type of contraceptive choice. A new injectable contraceptive, Sayana press by Pfizer, can be safely self-administered by patients and a broader set of healthcare providers due to its lower dosage and smaller needle (subcutaneous delivery rather than intramuscular). These technological advantages have the potential to increase access to a popular method of contraception. My co-authors and I are studying the channels that lead to the adoption of Sayana Press in a setting where there is provider agency and financial incentives. Our approach involves a randomized experiment that assigns subsidies for pharmacies and patients.

The study is set in a network of independently owned pharmacies that share a point of sales (POS) system and inventory management software from Maisha Meds, a social start-up that offers administrative services to small pharmacies and clinics. Most of these pharmacies are managed by their owners who also serve as pharmacists. In Kenya, it is very common for patients to receive family planning counseling from pharmacists or clinicians employed by the pharmacy. Therefore, pharmacists in this setting have a role of expert intermediaries while at the same time having direct and indirect financial incentives tied to the family planning choices they recommend to patients.

This project will contribute to the literature on entrepreneurial economics. Survey and administrative data from the POS system will allow me to study the effects of the subsidies and provider incentives on investment, stocking, and hiring decisions on these small independent pharmacies. Early results suggest that these pharmacies re-orient resources towards family planning due to potential capacity constraints. There are a couple of additional questions from entrepreneurial economics that I am planning to

study in the future as I continue collaborating with Maisha Meds. First, investigating how access to management technologies such as POS and inventory management systems impact the business operations and growth of these sites. Second, understanding how access to local market data and analytics can improve the business operations and growth of small businesses.

Another setting which I am interested in studying is the pharmaceutical industry in Mexico. First, the introduction of generic medications in the country three decades ago was accompanied with limited regulations on quality. Combined with high income inequality, this led to an early adoption with market segmentation along patient income. Recent regulations on quality and prescriptions have been accompanied with changes in the composition of consumers of generic medications. I plan to study the effects (on prices, exists, and entry) of these compositional changes in consumers of generic medications on the market and analyze heterogeneous effects on consumer welfare. Second, I am also interested in investigating the expansion of the pharmacy-clinic business model in Mexico, as well as provider agency when it comes to the prescription of generic medications.

Another project which I plan to continue working on in the future involves the pharmaceutical research and development pipelines. Based on my undergraduate senior thesis, my co-authors and I are interested in studying the effects of policies that provide funding for drug-development in the entry and success of R&D projects in the pharmaceutical industry. I use variation on the introduction of the Biomedical Advanced Research and Development Authority in the United States to study entry, and success rates on therapeutic areas that are eligible for federal funding.

Given that many of my research interests overlap with or have the potential to contribute to the field of entrepreneurial economics and entrepreneurial finance, I want to gain a clear understanding of the current state of the literature in these two research areas. I believe that the NBER Entrepreneurship Research Boot Camp would help me identify areas where my research interests can further expand the frontier in these fields while building on existing work. Moreover, the bootcamp would give me an opportunity to join a network of peers who are interested in similar topics, which can ultimately lead to fruitful collaborations that contribute to entrepreneurial economics and entrepreneurial finance.