Tarikua G. Erda
100 Morningside Drive, Apt. 2F, New York, NY 10027 • 609-906-1861 • te2289@columbia.edu

February 1, 2024

Dear IRBC Application Review Committee,

I am writing to apply to the 2024 NBER Innovation Research Boot Camp. I am a fifth-year PhD student in the Sustainable Development doctoral program at Columbia University, where I am a Dean's Fellow. The boot camp would be an excellent learning opportunity to enhance my current work and long-term research directions at the intersection of innovation and entrepreneurship. Given my interdisciplinary graduate training in economics and in the STEM sciences relevant to my research, I am also academically well-prepared and uniquely-positioned to take advantage of the boot camp and enrich the learning environment for fellow attendees.

My research interests primarily include innovation, entrepreneurship, labor economics, and public policy. My job market research uses restricted-access US microdata to examine firm entry, technological upgrading, patenting, and economic dynamism after exogenous disasters and the role of federal disaster spending in mediating outcomes. This research builds on my working paper (linked in my CV) that demonstrates novel evidence on the large spillovers of federal disaster assistance onto the firm entry margin that, in turn, boost creative destruction and regional economic recovery. I also have a late-stage project (with Prof. Jeffrey Shrader) on the extent, impact, and potential remedies of racial bias that may explain the attrition of underrepresented minorities from STEM fields, a key input into the workforce of innovative sectors.

While I have attended the NBER Entrepreneurship Research Boot Camp (ERBC) in 2021, I would benefit immensely from attending the 2024 IRBC as well for two reasons: first, I am eager to deepen my knowledge of core theory, methods, and emerging topics concerning innovation and innovation policy, which I am deeply fascinated by but have not had the chance to study in formal coursework or in the ERBC. As detailed in my research essay, my main research agenda lies at the intersection of entrepreneurship and innovation as it aims to expand our understanding of the direct and indirect channels through which young firms spur innovation and creative destruction in the economy. Additionally, my other research projects on the leaky pipeline in STEM and on R&D involving genetic materials are squarely focused on innovation and R&D topics, which are topics exclusive to the IRBC. Hence, attending the IRBC would be an excellent complement to the ERBC experience I have already been fortunate to have. Second, I did the ERBC over Zoom due to COVID-19 restrictions. While I made the most of the virtual experience, I am highly interested in taking full advantage of the in-person IRBC format in July 2024 to connect with, learn from, and start new collaborations with other boot camp attendees, field experts as well as the broader community in the NBER Productivity, Innovation, and Entrepreneurship Program. The IRBC would be a well-timed and formative experience for the long, prolific, and collaborative career I want to have in innovation research so the chance to do all of this in person at the NBER this summer would be invaluable.

Thank you for considering my application!

Best regards,

Tarikua Erda
PhD Student, Columbia University, School of International and Public Affairs

Recommendation letter writer: Prof. Jeffrey Shrader (jgs2103@columbia.edu)

Tarikua Erda

www.tarikuaerda.com ✉ tarikua.erda@columbia.edu Updated: January 2024

Education

Columbia University, School of International and Public Affairs New York, NY

- Ph.D. Candidate, Sustainable Development 2019 – 2025 (expected)
- *en route*: M.A. (Oct. 2021) and M.Phil. (May 2022)
- *Fields and interests*: Applied micro & labor; Entrepreneurship and innovation
- Core microeconomics and econometrics PhD sequences in the Columbia economics department

Princeton University Princeton, NJ

- A.B., Economics, *cum laude* 2013 – 2017
- *Senior Thesis*: "Food For Thought: The Impact of Early Life Undernutrition on Preadolescent Human Capital in Ethiopia." (Adviser: Benjamin Moll)

Research

Working papers

- Spillovers that Pay Dividends: The Impact of Federal Disaster Assistance on Firm Entry [Paper] *(Under review)*

Ongoing

- Technological Upgrading and Productivity
- The On-campus Recruiting Labor Market (joint with Laura Caron)
- Appearance and Perception in Academic Settings (joint with Jeff Shrader)

Research Grants

- Washington Center for Equitable Growth, Doctoral Research Grant, 2022 ($15,000)
- National Science Foundation, Dissertation Research Grant in Economics, 2022 ($25,000)
- Russell Sage Foundation, Dissertation Research Grant, 2022 ($10,000)
- Institute for Social and Economic Research and Policy, Seed Grant (PI: Jeff Shrader), 2022 ($30,550)
- Columbia Experimental Laboratory for Social Sciences, Seed Grant (PI: Jeff Shrader), 2021 ($4,000)

Invited Presentations, Conferences, Workshops

- Society of Labor Economists May 2024 (scheduled)
- Association of Public Policy Analysis and Management (APPAM) Annual Conference Nov. 2023
- Eastern Economics Association (EEA) Annual Conference Feb. 2023
- APPAM Annual Conference Nov. 2022
- Sustainable Development Research Symposium at Columbia University May 2022
- Interdisciplinary PhD Workshop on Sustainable Development at Columbia University Apr. 2022
- Workshop on Entrepreneurial Finance and Innovation, PhD Student Workshop Nov. 2021
- NBER Entrepreneurship Research Boot Camp Aug. 2021

Fellowships and Awards

- Beijer Institute of the Royal Swedish Academy of Sciences, Beijer Young Scholar 2024-2027
- APPAM, Entrepreneurship and Policy PhD Fellow 2022-2023

- Workshop on Entrepreneurial Finance and Innovation (WEFI), PhD Fellow 2022-present
- Columbia Population Research Center, Fellow 2021-present
- Columbia University, Dean's Fellow 2019-2025
- Princeton University Economics Departmental Honors, Distinction 2017

Relevant Positions

CSWEP Dissertation Fellow, Federal Reserve Bank of Chicago Summer 2023

Teaching Assistant

- *Disasters and Development* (for Profs. John Mutter & Sonali Deraniyagala) Fall '20, '21, '22, '23
- *Challenges of Sustainable Development* (for Prof. Lisa Dale) Spring '21, '22

Research Assistant

- for Prof. Jeff Shrader Summer 2021
- for Prof. Elizabeth Ananat Summer, Fall 2020
- for Prof. Belinda Archibong Summer 2020

Analyst, Analysis Group 2017 – 2019

Other

- *Clearances*: Special Sworn Status Researcher, U.S. Census Bureau (2023-2028)
- *Referee Service*: Journal of Banking and Finance
- *Personal*: Ethiopian citizen (F1 visa)

Skills

- *Computing*: Stata, Python, ArcGIS, SQL, LaTeX2e
- *Languages*: English (native/bilingual proficiency); Amharic (native)

References

Sandra Black
Professor of Economics and Int'l & Public Affairs
Columbia University
sblack@columbia.edu

Jeffrey Shrader
Assistant Professor of Int'l & Public Affairs
Columbia University
jgs2103@columbia.edu

Jorge Guzman
Associate Professor of Management
Columbia Business School
jag2367@gsb.columbia.edu

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List of PhD courses (all are completed):

In Economics (all from Columbia Economics PhD Program):

- [ECONGR6211] Microeconomic Analysis I
- [ECONGR 6212] Microeconomic Analysis II
- [ECONGR6411] Introduction to Econometrics I
- [ECONGR 6412] Introduction to Econometrics II
- [ECONGR6410] Mathematical Methods for Economists
- [ECONGR 6307] Public and Development Economics
- [ECONGR6451] Labor Economics I

In Sustainable Development (all from the Sustainable Development PhD Program):

- [SDEVU6240] Environmental Science for Sustainable Development
- [SDEVU 9240] Human Ecology
- [SDEVU 9248] Collective Action for Global Sustainable Development
- [SDEV 9245] Environment and Resource Economics
- [SDEV 9280] Causal Inference Workshop

Natural Science and Quantitative Courses (from various Science departments at Columbia):

- [EHSC9300] Environmental Health Sciences
- [EEEB4195] Marine Conservation Ecology
- [EAEEE4009] GIS: Resource, Environment, and Infrastructure Management
- [QMSS5073] Machine Learning for Social Sciences
- [QMSS5019] Data Analysis with Python

My research leverages my interdisciplinary PhD training in economics and in environmental sciences to understand how various phenomena—from natural disasters to international treaties to implicit bias—shape business dynamics, innovation, and ultimately the pace and inclusivity of economic growth.

My most mature research agenda examines the impact of natural disasters and federal disaster assistance on firm dynamics and creative destruction in the aggregate economy (see Erda, 2024). In this work, I examine how bank lending, firm entry, and firm performance evolve following rare flood shocks. I find that, banks cater to the increased credit demand of established incumbents after flooding, but decrease credit supply to (aspiring) entrants. This reduces firm entry, entrant job creation, and wages, demonstrating young firms' outsized contribution to regional growth. However, when low-interest federal loans are available after a disaster, they offer an appealing alternative to affected-businesses, *indirectly* offsetting entrants' disadvantage in accessing bank credit. This increases young firm activity without reducing entrant quality, sustaining regional wages. My welfare analysis suggests that federal spending on disaster loans to incumbent firms ultimately pays for itself in the long term due to its positive spillovers onto firm entry that, in turn, boost creative destruction and economic recovery.

Building on these results, I am currently working with restricted-access Census microdata to examine how technology upgrading and innovation evolve after disasters, the role of government aid, and the direct and indirect channels through which young firm activity factor into disaster recovery.[1] Disasters are likely to slow down firms' pace of machine upgrading from used to new capital because they cause financing constraints and also, as demonstrated by my aforementioned findings, reduce entry of young firms, which have been shown to typically buy used capital from older (see Ma et al., 2022). However, the impact of federal disaster assistance is ex-ante ambiguous: it may accelerate the pace of capital upgrading, thereby enhancing aggregate productivity, but may also sustain unproductive firms that should have exited, distorting efficiency goals. I test these hypotheses using confidential microdata on manufacturing establishments and explore what intermediating role firm entrants may play. Additionally, given prior findings that young firms generate more novel patents, I plan to investigate how the pace and direction of innovation evolves following large disasters with a particular focus on green innovation.

In addition, I have a survey-based project (joint with Prof. Jeff Shrader) about the role of implicit bias in driving attrition of underrepresented minorities, particularly Black individuals, from STEM fields. Disparities in access to and persistence in STEM fields can reduce the diversity of the workforce in downstream academic, innovation/R&D, and healthcare jobs, where the perspectives of a diverse workforce are vital to solve the pressing challenges facing society, particularly minority populations. Based on (pre-registered) experiments on university students and a representative sample of US adults, we identify bias in the perception of the professionalism, competence, and agreeableness of hypothetical Black (especially Black female) candidates for STEM professor jobs when pictured in their naturally curly hair compared to straight hair. Using longitudinal data on undergraduate students' intended and declared major choices, we find a strong association between feelings of belonging—which sentiments like hair bias can erode—and attrition of Black students from STEM majors. These findings highlight the need to increase cultural awareness and inclusivity of academic atmospheres.

I have an early project involving access to tangible R&D inputs and follow-on innovation. Existing work indicates that blockage of access to tangible materials may have a negative impact on follow-on innovation,[2] yet there are limited contexts to study this in detail. I aim to study the impact of international treaties like the Nagoya Protocol that have increased the transaction costs of acquiring biological specimens impact the behavior and outcomes of scientists and innovators who rely on genetic materials as R&D inputs.

I am interested in participating in the IRBC for two main reasons. First, because I have not taken formal coursework on innovation, the boot camp would equip me with a stronger and broader intellectual foundation that matches my deep interest in the field. Given the unique focus of my research at the intersection of young firms, innovation, and experimentation, attending the 2024 IRBC would be an excellent complement to my experience at the 2021 NBER Entrepreneurship Boot Camp. Second, the IRBC would be an unique opportunity to connect with a diverse group of leading and early-career scholars and graduate students interested in innovation research. I am eager to engage with, learn from, and start long-term collaborations with other attendees.

I am thrilled at the prospect of attending the IRBC. Thank you for your time and consideration!

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[1] While I have some results on these questions, they have not yet gone through the Census' disclosure clearance process yet and thus can only discuss the research question and potential outcomes here.

[2] See Williams (2013); Sampat (2018); Sampat and Williams (2019).

Works Cited

Erda, Tarikua (2024) "Spillovers that Pay Dividends: The Impact of Federal Disaster Assistance on Firm Entry and Economic Recovery." Working Paper. PDF.

Ewens, Michael & Matt Marx, (2023) "Startup Patenting," forthcoming. https://foundingpatents.com/

Ma, Song, Justin Murfin & Ryan Pratt (2022), "Young firms, old capital," Journal of Financial Economics, 146(1): 331-356. https://doi.org/10.1016/j.jfineco.2021.09.017

Sampat, B. N. (2018). A Survey of Empirical Evidence on Patents and Innovation. National Bureau of Economic Research Working Paper No. 25383. https://doi.org/10.3386/w25383

Sampat, B. & Williams, H.L.. (2019). How Do Patents Affect Follow-On Innovation? Evidence from the Human Genome. *American Economic Review*, 109 (1): 203-36. https://doi.org/10.1257/aer.20151398

Williams, H. L. (2013). Intellectual Property Rights and Innovation: Evidence from the Human Genome. *Journal of Political Economy*, 121(1), 1–27. https://doi.org/10.1086/669706

COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK
SCHOOL OF INTERNATIONAL AND PUBLIC AFFAIRS

To Whom It May Concern:

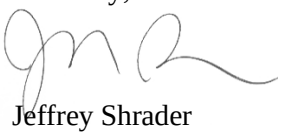
I am writing to recommend Tarikua Erda for the 2023 NBER Innovation Research Boot Camp. I am one of Ms. Erda's advisors in the Sustainable Development PhD program at Columbia University. Ms. Erda attended a 2021 NBER boot camp on innovation, which helped her develop a series of promising research projects on the effects of environmental disasters on business dynamics.

In the project "Sink or Swim: Access to Credit and Firm Entry after Flood Shocks," Ms. Erda examines the effect of flooding on new firm entry, financing, and local labor markets. She finds that in the absence of Federal disaster aid, floods cause newer firms to exit the market. One of the primary channels for the effect is that larger, incumbent firms respond to the disaster by taking a larger share of private-market credit, crowding out smaller firms. Federal loans serve a valuable purpose by providing funding for smaller firms and new entrants. In areas where Federal loans are made available after a disaster, these smaller firms lead to greater job growth. Analyzing the provision of disaster loans through the lens of the marginal value of public funds, Ms. Erda shows that the greater job growth created by the loans makes them a highly attractive public policy.

In a second, ongoing paper, Ms. Erda is using restricted-access RDC data to further study firm and worker-level responses to disasters. The RDC data allow her to characterize the effects of disasters more fully across the distribution of firms within a location. And using detailed worker-level data, she is studying the decision to start new businesses in the wake of a disaster.

The NBER boot camp will allow Ms. Erda to deepen her understanding of cutting-edge innovation research, in turn making both of these projects—as well as the rest of Ms. Erda's research portfolio—stronger. If you have any other questions or would like to follow up, please don't hesitate to contact me by email (jgs2103@columbia.edu) or phone (+1 646-484-8517).

Sincerely,



Jeffrey Shrader
Assistant Professor
School of International and Public Affairs
Columbia University