SAHEEL CHODAVADIA – NBER INNOVATION RESEARCH BOOT CAMP – COVER LETTER

Dear NBER Innovation Research Boot Camp Coordinators,

I am writing to express my interest in the NBER Innovation Research Boot Camp 2025. I am a PhD Student in Economics and Public Policy at the University of Michigan.

I have had a long-standing interest in the economics of innovation, fostered and made more concrete by my two-year, full-time Pre-Doctoral Fellowship with Professor William Kerr (HBS).

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**Name**: Saheel Chodavadia

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**Email:** saheel@umich.edu
**Phone:** +15124265197
**Website:** https://saheelchodavadia.com
**Address:** 611 Tappan Avenue
Department of Economics
University of Michigan
Ann Arbor, MI 48109

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**School:** University of Michigan
**Program:** PhD in Economics and Public Policy
**Year of Entry:** 2023
**Expected Year of Completion:** 2028

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**Recommendation Letter Writer:** Professor William Kerr (HBS)

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**PhD Coursework:** My PhD coursework has been meticulously chosen to enable me to speak rigorously about the economics of innovation. From labor and development to industrial organization and international trade, I have gathered both a depth of methodologies and toolkits to engage seriously in the economics of innovation and a breadth of academic understandings and perspectives to think critically and creatively in this space. I detail my PhD coursework later in this application.

**Current + Future Research:** One stream of my current research leverages applied methods and experimental design tools in labor and development to identify the causal effects of artificial intelligence on the production function for innovation. Another stream of my current research develops structural models and quantitative frameworks in industrial organization and international trade to analyze dynamic, optimal resource allocation within start-ups, dynamic, optimal competitive spatial organization across start-ups, and counterfactual equilibriums. I detail these projects and my future research later in this application.

**Value Add of Attendance:** I would benefit greatly from attending this boot camp, both from the instruction and potential collaborations with fellow attendees. I detail these benefits later in this application.

Thank you for your consideration. I look forward to hearing from you.

Cheers,
Saheel Chodavadia
PhD Student in Economics and Public Policy
University of Michigan

# Saheel A. Chodavadia


CONTACT INFORMATION

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Department of Economics
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RESEARCH INTERESTS

Economics of Innovation, Labor Economics,
Industrial Organization, Trade

EDUCATION

**University of Michigan**, Ann Arbor, MI

Ph.D., Economics & Public Policy — Expected 2028

**The London School of Economics & Political Science**, London, UK

M.S., Economics (Fulbright Scholar) — 2021

**Duke University**, Durham, NC

B.S., Economics — 2020

WORKING PAPERS

"Immigrant Entrepreneurship: New Estimates & A Research Agenda"
(with Sari Pekkala Kerr, William Kerr, and Louis Maiden)
*NBER Working Paper 32400*, **2024**

WORKS IN PROGRESS

"Who Benefits from Million Dollar Plants? The Missing Local Beneficiaries"
(with Rahul Gupta, William Kerr, and Stephen Ross)

"The Labor Market Effects of Technology Innovation Clusters"
(with William Kerr)

"Long-Term Effects of Colonial Forced Labor Institutions"
(with Dean Yang)

"Artificial Intelligence (AI) and Innovation Rates"

"Start-Up Employee Business Expenses and Innovation"

"Networks, Social Perception, and Technology Adoption: Evidence From Nepal"

HONORS AND AWARDS

Population Studies Center (PSC) Fellowship, University of Michigan, **2024-2028**

Fulbright Scholar, The London School of Economics & Political Science, **2020-2021**

Best Thesis Finalist, Duke University, **2020**

Rhodes Scholarship Finalist, **2020**

Marshall Scholarship Finalist, **2020**

## Small Grants

International Policy Center (IPC), University of Michigan ($3,000)
*Networks, Social Perception, and Technology Adoption: Evidence From Nepal*, **2024**

International Policy Center (IPC), University of Michigan ($2,000)
*Nepal Exploratory Grant*, **2024**

## Presentations

Development Economics Seminar, Tribhuvan University
*Networks, Social Perception, and Technology Adoption: Evidence From Smallholder Farmers in Nepal*, **May 2024**

Dissertation Workshop, The London School of Economics & Political Science
*Differential Smoothing of Violence Shocks at the Urban-Rural Divide: Evidence from the Boko Haram Insurgency*, **May 2021**

Thesis Workshop, Duke University
*Navigating the Maize of Poverty: Intra-Household Allocation and Investment in Children's Human Capital in Tanzania*, **May 2020**

Development Economics Course Workshop, Duke University
*Hey, I'm Poor Again. What's the Deal?*, **May 2019**

## Professional Experience

**University of Michigan**, Ann Arbor, MI

Research Associate for Dr. Dean Yang 2024

**Harvard Business School**, Boston, MA

Research Associate for Dr. William Kerr 2021–2023

**The London School of Economics & Political Science**, London, UK

Research Associate for Dr. Oriana Bandiera 2020–2021

**Center for Global Development**, Washington, D.C.

Research Associate for Dr. Michael Clemens 2020

## Non-Economics Publications

"Ethical Guidelines for DNA Testing in Migrant Family Reunification"
(with Nita Farahany and Sara H. Katsanis)
*American Journal of Bioethics*, **2019**

## Miscellaneous

Citizenship: U.S.

Clearance: Special Sworn Status

Affiliations: Population Studies Center, Stone Center for Inequality Dynamics

Languages: English (Native), Gujarati (Native), Hindi (Proficient), Spanish (Proficient)

Software: STATA (Advanced), MATLAB (Advanced), LaTeX (Advanced), Python (Intermediate), R (Intermediate), ArcGIS (Intermediate)

Last Updated: January 2025

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STATE OF MICHIGAN UIC



University Registrar

**UNIVERSITY OF MICHIGAN**
OFFICE OF THE REGISTRAR - ANN ARBOR, MI 48109-1382

**NON-UNIVERSITY OF MICHIGAN ACADEMIC EXPERIENCE**

Duke University
Durham NC 27706
Bachelor of Science Awarded: 01-May-2020

London School of Economics and Political Science
London WC2A 2AE United Kingdom

**BEGINNING OF GRADUATE RECORD**

| Fall 2023 | | Rackham | Grade | Hours | MSH | CTP | MHP |
|---|---|---|---|---|---|---|---|
| ECON | 600 | Math-Economists | A | 2.00 | 2.00 | 2.00 | 8.00 |
| ECON | 601 | Microecon Theory I | A | 1.50 | 1.50 | 1.50 | 6.00 |
| ECON | 603 | Microecon Theory III | B+ | 1.50 | 1.50 | 1.50 | 4.95 |
| ECON | 605 | Macroecon Theory I | A | 3.00 | 3.00 | 3.00 | 12.00 |
| ECON | 671 | Econometric Anlys I | A | 3.00 | 3.00 | 3.00 | 12.00 |
| ECON | 899 | Responsible Cond Res | S | 0.65 | 0.00 | 0.65 | 0.00 |
| PUBPOL | 810 | Policy Research Sem | S | 1.00 | 0.00 | 1.00 | 0.00 |
| **Term Total** | | **GPA: 3.904** | | **12.65** | **11.00** | **12.65** | **42.95** |

| Winter 2024 | | Rackham | Grade | Hours | MSH | CTP | MHP |
|---|---|---|---|---|---|---|---|
| ECON | 602 | Microecon Theory II | A | 1.50 | 1.50 | 1.50 | 6.00 |
| ECON | 604 | Microecon Theory IV | A- | 1.50 | 1.50 | 1.50 | 5.55 |
| ECON | 607 | Macroecon Theory II | A | 3.00 | 3.00 | 3.00 | 12.00 |
| ECON | 672 | Econometric Anl II | A | 3.00 | 3.00 | 3.00 | 12.00 |
| PUBPOL | 810 | Policy Research Sem<br>PhD Policy Research Seminar | S | 1.00 | 0.00 | 1.00 | 0.00 |
| **Term Total** | | **GPA: 3.950** | | **10.00** | **9.00** | **10.00** | **35.55** |

| Fall 2024 | | Rackham | Grade | Hours | MSH | CTP | MHP |
|---|---|---|---|---|---|---|---|
| ECON | 621 | Labor Economics I | A | 3.00 | 3.00 | 3.00 | 12.00 |
| ECON | 631 | Ind Org & Pub Pol | A | 3.00 | 3.00 | 3.00 | 12.00 |
| ECON | 641 | Internat Trade | A | 3.00 | 3.00 | 3.00 | 12.00 |
| ECON | 665 | Ec Dev&Transition I | A | 3.00 | 3.00 | 3.00 | 12.00 |
| PUBPOL | 810 | Policy Research Sem<br>PhD Policy Research Seminar | S | 1.00 | 0.00 | 1.00 | 0.00 |
| **Term Total** | | **GPA: 4.000** | | **13.00** | **12.00** | **13.00** | **48.00** |
| **Rackham Cumulative Total** | | **GPA: 3.953** | | | **32.00** | **35.65** | **126.50** |

| Winter 2025 | | Rackham | Grade | Hours | MSH | CTP | MHP |
|---|---|---|---|---|---|---|---|
| Elections as of: 30-Jan-2025 | | | | | | | |
| ECON | 642 | Internat Finance | | 3.00 | 0.00 | 0.00 | 0.00 |
| ECON | 666 | Econ Dev&Transitn II | | 3.00 | 0.00 | 0.00 | 0.00 |
| ECON | 751 | Computational Econ | | 1.50 | 0.00 | 0.00 | 0.00 |
| ECON | 752 | AdvMathMethDynModel | | 1.50 | 0.00 | 0.00 | 0.00 |
| PUBPOL | 564 | Gov Reg Ind & Envir<br>Reg of Industry & Environ | | 3.00 | 0.00 | 0.00 | 0.00 |
| PUBPOL | 810 | Policy Research Sem<br>PhD Policy Research Seminar | | 1.00 | 0.00 | 0.00 | 0.00 |
| **Total Elected Term Hours** | | | | **13.00** | **0.00** | **0.00** | **0.00** |

**END OF GRADUATE RECORD**

**End of Transcript**
Total Number of Pages 1

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SAHEEL CHODAVADIA – NBER INNOVATION RESEARCH BOOT CAMP – ESSAY

**Current Research:** My current research is divided into two streams within the economics of innovation.

First Stream: What is the impact of AI on the rate of innovation? Are there decreasing returns to higher levels of AI integration in the production function for innovation?

AI is rapidly integrating into daily activity. Anecdotal evidence suggests an increasing reliance on AI tools, such as ChatGPT and Claude, at the top of the knowledge distribution. It is often those at the top of the knowledge distribution that engage in innovation. Increased rates of innovation are often linked to radical innovations and high-skilled inventor collaboration. An increasing reliance on AI tools at the top of the knowledge distribution therefore has the potential to (1) reduce the number of radical innovations because AI tools coalesce pre-existing information and radical ideas by definition are not pre-existing and (2) dilute high-skilled inventor collaboration because AI tools reduce barriers to entry for lower-skilled inventors.

I make several contributions with this stream. I develop a theoretical model of innovation production, flexibly incorporating level of AI integration and two costs to increased AI integration: (1) cost of foregone radical innovation from over-reliance on AI tools for high-skilled inventors and (2) cost of dilution from increased entry of lower-skilled inventors. By doing so, I derive an optimal level of AI integration in the production function for innovation and demonstrate an inverse U-shaped relationship between level of AI integration and innovation. Then, I experimentally validate the model through a fairly complex design that enables me to identify parameters.

Second Stream: What is the effect of start-up employee business expenses on innovation? Is there an optimal distribution of start-up employee business expenses (by type of purchase) to maximize innovation?

Innovation has long been considered an engine of long-term productivity and growth. Firm-level innovation is often quantified using patents. Start-up patents have a significant advantage in terms of forward citations and outlier-patent rates and a start-up's first patent approval increases number of subsequent patents and number of forward citations per subsequent patents. Therefore, there are two benefits to understanding why some start-ups produce more patents than others. First, such understanding would identify drivers of radical innovation. Second, such understanding would identify drivers of start-up success.

I make several contributions with this stream. I develop a quantitative framework in which start-ups allocate employee business expenses across knowledge-building activities and productivity-enhancing software, shaping firm-level innovation and competitive advantage. By incorporating a dynamic model of firm decision-making, I examine how heterogeneous start-ups strategically allocate expenses over time, taking into account the constraints imposed by financial frictions, market competition, and the spatial distribution of innovation clusters. The model allows for counterfactual analysis, estimating how changes in the cost and availability of different expense categories affect innovation outcomes and long-run firm survival. To support this stream, I am in the process of gaining access to extremely granular micro-level transactions data from a major corporate card and bill payment platform ($30B+ transaction volume).

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**Future Research:** My future research, including my dissertation, will operate at the intersection of labor, industrial organization, and international trade in the context of innovation. I am particularly curious how AI reshapes firm heterogeneity, knowledge spillovers, and the spatial distribution of innovation by influencing talent allocation, labor market frictions, and the diffusion of new technologies across borders. By examining these dynamics, I aim to understand what role policy interventions – such as R&D incentives, workforce training, and trade regulations – can play in optimizing AI's impact on long-run innovation.

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**Value Add of Attendance:** At Michigan, few faculty focus fully on the economics of innovation. The boot camp offers direct exposure to frontier research in this space, which I would not be able to gain otherwise. Moreover, engaging with top researchers and policymakers would provide critical feedback on my current and future research, and connections with fellow attendees could lead to valuable collaborations.

HARVARD | BUSINESS | SCHOOL

**WILLIAM R. KERR** |
DIMITRI V. D'ARBELOFF - MBA CLASS OF 1955 PROFESSOR OF BUSINESS ADMINISTRATION
UNIT HEAD, ENTREPRENEURIAL MANAGEMENT

Saheel Chodavadia Recommendation Letter
January 2025

Dear Selection Committee:

I enthusiastically recommend Saheel Chodavadia to you for the Innovation Research Bootcamp. Saheel worked with me as a research assistant before entering graduate school, and we continue to work on projects together. Saheel is terrific with a very promising research future ahead of him. In my 20 years of working with 100+ research assistants between HBS and my coauthors in the econ departments at top schools, Saheel ranks among the very best. He is very smart, creative, and exceptionally diligent.

In our work together, we have developed one completed book chapter ("Immigrant Entrepreneurship: New Estimates and a Research Agenda"). For this paper, Saheel led the empirical work in the Census Bureau with Annual Business Survey to measure the higher rates of innovation for immigrant-founded businesses compared to US-native-founded businesses. He further showed that higher rates of STEM educations only partly explained the immigrant founded businesses advantage towards innovation. We also have an early working paper ("Who Benefits from Million Dollar Plants: The Missing Local Beneficiaries") that uses LEHD data to explore the local job and welfare effects from MDPs. Perhaps depressingly, we find that local employment grows in counties that win the MDP compared to runner-up counties, but few of those new industry jobs go to initial residents of the county. We hope to submit the paper this spring.

Additionally, Saheel and I are resuming a project that tests theories regarding the labor markets of tech clusters (tentative title, "The Labor Markets of Tech Innovation Custers"). There are multiple theories regarding the labor markets of clusters like the biotech hotspot around Kendall Square in Boston; two examples include better matching of specialized workers to unique projects (e.g., mRNA-trained researchers to Moderna) and the capacity to rapidly scale very skilled and modularized businesses (e.g., Moderna's rapid growth through local hiring of specialized talent during the pandemic). The multiple theories of clusters "over-identify" the role of the labor market, and Saheel worked before graduate school to develop testable empirical predictions to separate among models that could be tested with inventor data and LEHD. This work paused for his first year in grad school and due to the MDP work that took priority, but we have good evidence towards the matching model, with very limited congruence for scaling/modularity theories.

Saheel also outlines two promising individual research ideas in his proposal, with the second one on start-up employee business expenses on innovation being most closely related to my work. Inclusion in the bootcamp would help Saheel learn a larger literature base to approach this new work. He would also benefit greatly from a deeper network of graduate student peers interested in innovation to collaborate with. Saheel is also applying to ERBC; while I mostly hope he can attend one of the two, I think IRBC would be the better fit if feasible (and am saying that in the ERBC letter). You won't regret including him!

Sincerely,



William Kerr

CUMNOCK CENTER 161 | SOLDIERS FIELD | BOSTON, MA 02163 | Ph 617.496.7021 | wkerr@hbs.edu

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