Muhammad Ali Sajid
Department of Economics, University of Toronto
150 St. George Street, Toronto, ON M5S 3G7
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February 13, 2026

**NBER Innovation Research Boot Camp 2026**
Selection Committee: Kevin Bryan, Ina Ganguli, Kyle Myers
National Bureau of Economic Research
1050 Massachusetts Avenue, Cambridge, MA 02138

Dear Selection Committee,

I am writing to apply for the NBER Innovation Research Boot Camp. I am a third year Ph.D. student in Economics at the University of Toronto. My fields are Labor Economics and Industrial Organization. My research examines how institutions shape innovation, technology diffusion, and the behavior of multinational enterprises.

My work connects to the economics of innovation through two channels. First, I study how occupational licensing restricts labor mobility and slows the adoption of new technologies. My second year paper exploits a 1975 Canadian reform that doubled mandatory training for family physicians. I find the reform reduced physician supply by 13 percent and increased working age mortality by 12 percent. The broader lesson is that entry regulations designed to raise quality can impose severe costs when they restrict the mobility of skilled workers. Rigid licensing frameworks of course also lock in incumbent methods, creating friction that prevents disruptive technologies and new business models from entering regulated markets, which I hope to look at in future work.

Second, I have two co-authored papers studying how intangible capital drives multinational expansion and shapes the returns to innovation. Using firm level evidence on the 2017 U.S. Tax Cuts and Jobs Act and a quantitative general equilibrium model, we show that corporate tax reforms propagate across borders through the nonrival nature of intangible assets like patents, software, and R&D. We find the TCJA generated positive international spillovers by raising U.S. intangible investment, which scaled across foreign subsidiaries. A companion paper decomposes aggregate productivity growth into contributions from technological change, globalization, and their interaction.

The Boot Camp would give me a structured foundation in the economics of innovation. Learning from Pierre Azoulay, Ben Jones, Chad Jones, Heidi Williams, and the other instructors would sharpen how I frame my research questions.

My recommendation letter will come from: **Sebastian Dyrda**, University of Toronto.
Email: sebastian.dyrda@utoronto.ca

Thank you for your consideration.

Sincerely,

Muhammad Ali Sajid

# Muhammad Ali Sajid

Department of Economics, University of Toronto
150 St. George Street, Toronto, ON M5S 3G7
ali.sajid@mail.utoronto.ca

## Education

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|---|---|
| 2023– | Ph.D. candidate in Economics, University of Toronto |
| **Ph.D. Field courses:** | Topics in Growth & Development (A+); Industrial Organization I & II (A+; A); Economics of Algorithms (A); Labor Economics (A+); Advanced Topics in Urban and Real Estates Economics (A). |
| 2022–2023 | M.A. Economics, University of Toronto |
| 2017–2021 | B.S. (Hons) Economics (Focus in Data Analytics), University of Toronto<br>Minors in Statistics and Mathematics |

## Research

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| Areas | Labor, Public, Industrial Organization |
| Advisors | Kory Kroft, Sebastian Dyrda |

In-progress

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|---|---|
| 1 | Global Ripple Effects of Corporate Tax Reforms. With Sebastian Dyrda, Guangbin Hong, and Joseph B. Steinberg. *Submitted.* NBER Working Paper #34627 (link) |
| 2 | Intangible Capital, Multinational Production, and Productivity Growth. With Sebastian Dyrda, Guangbin Hong, and Joseph B. Steinberg. |
| 3 | License to Heal: Balancing Standards and Supply in Healthcare. |
| 4 | Parents as Partners: The Academic Returns to Family-Focused Early Childhood Programs. With Elizabeth Dhuey, Jon Duan, and Brett Wilmer. |

## Affiliations

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| 2022–2023 | Future Skills Lab, University of Toronto |
| 2020–2021 | School of Cities, University of Toronto |
| 2019–2021 | Reach Alliance, Munk School of Global Affairs & Public Policy |

## Research Assistantships

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|---|---|
| 2025– | Kory Kroft, University of Toronto |
| 2024–2025 | Sebastian Dyrda and Joseph Steinberg, University of Toronto |
| 2021–2023 | Elizabeth Dhuey, University of Toronto |

## Teaching

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|---|---|
| 2025–2026 | TA (UG): Foundations of Econometrics; Money, Banking & Financial Markets; International Monetary Economics; Data Analysis & Applied Econometrics |
| 2024–2025 | TA (UG): Advanced Economic Theory – Macro; Public Economics I; Intro to Data Analysis & Applied Econometrics |
| 2023–2024 | TA (UG): Public Economics I; Principles of Economics |

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| 2022–2023 | TA (UG): Data Analysis & Applied Econometrics; Money, Banking & Financial Markets; Economic Development |

## Awards & Fellowships

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| 2023– | University of Toronto PhD Fellowship |
| 2020-2022 | School of Cities Fellowship, University of Toronto ($2,000) |
| 2019–2020 | Laidlaw Undergraduate Research and Leadership Scholarship ($12,580) |
| 2017–2021 | Dean’s List Scholar, Faculty of Arts & Science (all eligible years) |
| 2017–2021 | Lester B. Pearson International Scholarship, University of Toronto ($281,000) |

## Leadership & Service

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|---|---|
| 2022–2025 | Lester B. Pearson International Scholarship Assessor, University of Toronto |
| 2022–2024 | Canadian Economics Diversity Committee, Canadian Economics Association |
| 2020–2021 | President, Pakistan Development Foundation |

# Research Statement

*Muhammad Ali Sajid, University of Toronto*

My research studies how institutions and policy shape innovation, technology diffusion, and firm behavior. I work on two sets of questions. The first asks how labor market regulation affects the mobility of skilled workers and the spread of new technologies. The second asks how the rise of intangible capital has transformed multinational enterprises and the international tax system. Both sit at the core of innovation economics.

**Occupational Licensing, Labor Mobility, and Innovation.** My second year paper, "License to Heal," provides causal evidence on the costs and benefits of raising entry standards in a licensed profession. I exploit Alberta's 1975 reform, which doubled mandatory postgraduate training for physician licensure from one year to two. Using difference in differences and synthetic control methods, I find the reform reduced family physician supply by 13 percent while raising average workforce quality by 0.22 standard deviations. The quality gains did not offset the access losses. Working age mortality rose by 12 percent, driven entirely by conditions treatable through primary care. The supply contraction operated through heightened barriers for international medical graduates and occupational substitution toward specialty training.

This paper speaks to innovation because occupational licensing shapes who can practice, where they can move, and what methods they can use. Tacit knowledge travels with workers. When licensing restricts mobility, it prevents the cross pollination of ideas that drives agglomeration and technology adoption. I plan to extend this agenda by studying how licensing portability across U.S. states and Canadian provinces affects the geographic diffusion of medical innovations, including telemedicine, AI diagnostic tools, and scope of practice reforms.

**Intangible Capital, Multinational Enterprises, and Productivity Growth.** My coauthored work with Sebastian Dyrda, Guangbin Hong, and Joseph Steinberg studies the interconnected rise of intangible capital, multinational expansion, and international profit shifting. In "Global Ripple Effects of Corporate Tax Reforms," we combine firm level evidence on the 2017 TCJA with a quantitative general equilibrium model. We show the TCJA generated positive outward spillovers by raising U.S. intangible investment, which scaled across foreign subsidiaries due to the nonrival nature of intangible assets. Our companion paper, "Intangible Capital, Multinational Production, and Productivity Growth," formalizes scalable complementarity: because intangible capital can be deployed across many locations without losing value, multinational expansion and intangible investment reinforce each other. We decompose productivity growth into contributions from technological change, globalization, and their interaction.

These papers connect to innovation because intangible capital (R&D, patents, software) is the direct output of innovative activity. Understanding how tax policy shapes intangible investment tells us about the returns to innovation and the policies that encourage or discourage it. Future work will incorporate endogenous R&D decisions and study how international tax coordination affects innovation incentives across countries.

**Why the Boot Camp.** The NBER Innovation Research Boot Camp fills a gap in my training. I want to learn the foundational frameworks, empirical strategies, and institutional knowledge that the instructors bring to the study of innovation. The Boot Camp would also connect me to a network of scholars working on these problems, something that would shape the direction of my research.

UNIVERSITY OF TORONTO

3 February, 2026

To Whom It May Concern,

I am writing this confidential letter in strong support of Muhammad Ali Sajid, a third-year PhD student in Economics at the University of Toronto, for admission to the NBER Innovation Research Boot Camp.

I have worked closely with Ali for the past two years. He initially joined my research group as a research assistant and quickly developed into a full coauthor on two research projects, "Global Ripple Effects of Corporate Tax Reforms" and "Intangible Capital, Multinational Production, and Productivity Growth." Throughout this collaboration, Ali has demonstrated exceptional analytical ability, independence, and intellectual maturity well beyond his stage in the program.

Ali's research interests lie squarely at the intersection of innovation, intangible capital, firm dynamics, and productivity. He is highly effective at combining theory, data, and institutional detail, and he engages naturally with frontier research questions related to knowledge creation and diffusion. He is also an active and constructive participant in research discussions, consistently offering thoughtful comments and original insights. I am confident that Ali would benefit greatly from the Boot Camp and that he would also be a valuable contributor to the program. I give him my highest recommendation.

Sincerely,

Sebastian Dyrda

**Sebastian Dyrda**
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Department of Economics,
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Max Gluskin House 210,
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Homepage | Google Scholar | GitHub