

## COVER LETTER

Dear Postdoctoral Fellows Recruitment Committee,

I am writing to apply for the position of Postdoctoral Fellow in the School of Business at Columbia University. I am completing my Ph.D. in Economics at the University of Chicago, and I expect to graduate in June 2025. I work at the intersection of macroeconomics, environmental economics, and international trade under the guidance of Mikhail Golosov, Lars Hansen, Esteban Rossi-Hansberg, and Michael Greenstone.

My research agenda focuses on designing optimal economic policies to address major global challenges, particularly climate change, while accounting for inequality across countries. My job market paper, “The Optimal Design of Climate Agreements,” examines how to structure climate clubs, as in Nordhaus (2015), accounting for strategic behavior and free-riding incentives. Using a quantitative Integrated Assessment Model with heterogeneous countries, energy markets, and international trade, I show how to choose optimally the carbon tax and tariffs to maximize global welfare when countries can leave the agreement. I show that the optimal club consists of all countries except Russia, implementing a  $\$100/tCO_2$  carbon tax with a 50% tariff on non-members. This research combines a rich theoretical analysis with practical implications for addressing real-world policy challenges.

My broader research portfolio includes works on (i) optimal carbon taxation in the presence of inequality and redistributive effects across countries, (ii) supply chain disruptions, (iii) energy shocks’ impact on business cycles, and (iv) several methodological contributions regarding solving heterogeneous agent models with aggregate risk, leveraging perturbation methods or mathematical tools from the Mean-Field Game literature. I am currently working on several promising projects examining the dynamics of climate agreements, climate damage uncertainty, fairness in economic policy, or industrial climate policy. My research has benefited from presenting at major conferences, for example, at the NBER Summer Institute or the Society of Economics Dynamics.

My research experience mirrors my commitment to excellence in teaching and mentoring. I have taught at the graduate and undergraduate levels for more than fifteen courses across multiple institutions, including the University of Chicago, Chicago Booth, and Sciences Po Paris. I have also organized various reading groups and workshops for graduate students, with the goal of fostering academic excellence.

In addition to my dedication to academic life, my record of research and teaching makes me a strong candidate for the position at the School of Business at Columbia. The research environment and frontier academic research make it an attractive setting for discussing welfare-enhancing policies. In the future, I intend to study further how industrial policies, such as renewable energy subsidies, can be used both for environmental and growth externalities motives or to correct for other market frictions, topics that have been studied recently by several researchers at Columbia University. Such policies can be justified with several motives: Pigouvian climate externalities, but also the protection of infant industries, or Schumpeterian and learning-by-doing externalities. However, a unified theoretical framework is still needed for policy evaluation. The models I studied in my research extend easily to such considerations. On these topics, the research of Prof. J. Stiglitz is truly inspiring at the intersection of public economics and taxation, information economics, international economics and inequalities, and I would be enthusiastic to work on these topics under his guidance. More generally, I am convinced that climate policies, such as carbon taxation and international agreements linking trade and environmental regulations, can offer effective tools to shield vulnerable countries affected by global warming and provide a pivotal step in the fight against climate change.

I look forward to discussing how my research, teaching, and service experience could contribute to Columbia’s School of Business. Additional information on my academic research is available [on my webpage](#).

Thank you for your consideration.

Sincerely,

Thomas Bourany