

Moudachirou Oumarou

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Research Interests

Primary: Environmental Economics

Secondary: Energy economics, Public Economics

Education

Ph.D. candidate in Economics, University of Montreal, Canada	09/2018– 08/2024
MSc in Statistics and Economics, Ecole Nationale de la Statistique et de l'Analyse Economique (ENSAE), summa cum laude, Senegal	2015–2018
BSc in Statistics, Ecole Nationale d'Economie Appliquée et de Management (ENEAM), summa cum laude, Benin	2012–2015

Research and Publications

Working Papers

- *Size-Dependent Exemptions in Cap-and-Trade and Aggregate Productivity (JMP)*

This paper examines the long-term effects of size-dependent exemptions in cap-and-trade systems, which allow firms below a certain emissions threshold to avoid regulation. Using data from California's Cap-and-Trade program, I find that 40% of firms qualify for these exemptions, with significant clustering just below the threshold. A discontinuity test reveals a jump in the emissions distribution post-regulation, indicating that some firms strategically adjust emissions to stay below the regulatory limit. By extending an industry dynamics model to include heterogeneous "dirty" firms that produce emissions as a byproduct, I quantify the policy's impact on aggregate productivity. I find that removing these exemptions, while maintaining the same emissions target, raises productivity by 0.2%, as resources shift to more efficient firms. The misallocation created by the size-dependent exemption policy arises from intermediate-productivity firms near the threshold, which exhibit higher average Total Factor Productivity (TFPR) than larger firms that are subject to emissions costs.

- *The Hidden Impact of Abatement Tax Incentives on the Labor Share*

This paper investigates how tax incentives for abatement investment affect the labor share and aggregate abatement investment. Micro-level data from Colombia's manufacturing industry reveals a strong negative correlation between abatement investment and labor share, with no association to capital investment. I develop a general equilibrium model to show that a 20% income tax deduction for pollution control reduces the labor share by 20% due to a shift toward capital-intensive firms, increasing abatement investment by 45%. Similarly, a carbon tax decreases the labor share and boosts abatement investment, while higher corporate taxes raise the labor share but reduce abatement investment. These findings highlight the importance of carefully designed tax incentives to achieve economic and environmental objectives.

- *Offset Credits in Cap-and-Trade and Firm Size Distribution*

This paper examines the macroeconomic effects of integrating Offset Credits (OCs) into traditional emissions pricing systems, allowing covered firms to negotiate OC prices with non-covered entities. Using data from California's Cap-and-Trade program, I find that: (1) OC usage increases with firm emissions, reducing effective carbon costs for larger emitters; (2) established firms rely more on OCs than new or exiting firms; and (3) OC retirement rates decline over time. Extending an industry dynamics model to include cap-and-trade with OCs priced via Nash bargaining, results suggest OCs can enhance environmental outcomes with welfare gain (0.021%) and slight productivity trade-off (0.002%). Findings are compared across permit allocation methods: auction, grandfathering, and output-based rebate.

Policy Reports

Report for Quebec's Ministry of Finances: *Gestion optimale de la dette en réponse à la crise sanitaire de la Covid-19*, with Guillaume Sublet, September 2020.

Report for The World Bank: *COVID-19 impacts on the food system in Guinea*, with Ayala Wineman, Aissatou Ouedraogo and Nouhoum Traore, September 2021.

Experiences

- **Economist, Ministry of Finances of Quebec**, Quebec, Canada 09/24 – Now
- **Consultant, African Development Bank, AfDB**, Country Office of Burkina Faso, 04/23 – 10/23
- **Consultant, The World Bank**, Poverty and Equity Global Practice, Washington DC, 02/21 – 06/22
- **Research, Ministry of Finances of Quebec**, Canada, 05/20 – 11/20
- **Research Assistant, Observatoire de la Francophonie Economique (OFE)**, Canada, 01/20 – 06/20
- **Intern, Central Bank**, Banque Centrale des Etats de l'Afrique de l'Ouest, BCEAO, 07/17 – 10/17

Teaching Fellows

- **Lecturer**, University of Montreal, Canada
 - **Introduction to Economics**, Fall (2020), Fall (2022), Fall (2023)
 - **Economic Data Analysis**, Winter (2021)
- **Teaching Assistant**, University of Montreal, Canada
 - **Introduction to Macroeconomics**, Summer (2019), Winter (2022), Summer (2022)
 - **Economics Principles**, Summer (2019), Fall (2020), Winter (2021), Winter (2023)
 - **Quantitative Methods I for Undergraduate**, Fall (2021), Fall (2023)
 - **Quantitative Methods II for Undergraduate**, Fall (2019), Summer (2021), Winter (2022)
 - **Econometrics**, Winter (2024)

Seminar and Conference Presentations

- Harvard Climate Economics Pipeline Workshop, Harvard university, USA June 2023
- CIREQ Interdisciplinary PhD Student Symposium on Climate Change, Canada June 2023
- 18th CIREQ Ph.D. Students' Conference, Canada May 2022
- 17th CIREQ Ph.D. Students' Conference, Canada June 2022
- Economics, Statistics, and Finance Ph.D. workshop in Quebec 2020, 2021, 2022, 2023
- Macro workshops group, University of Montreal 2019, 2020, 2021, 2022, 2023

Research Grants, Scholarships, & Fellowships

- PhD student travel grant, Harvard Climate Workshop 2023
- FRQSC - Doctoral Research Scholarship 2021-2023
- Fund of Quebec's Ministry of finance, 9000\$ 2020
- Ph.D. Fellowship of CIREQ and Department of Economics, University of Montreal 2018-2023
- MSc. in Statistics, Merit Scholarship, Government of Benin 2015-2018
- Full scholarship from Government of Benin 2012-2015
- Prize of Excellence received from the Association of Statisticians of Benin (ASSES Benin) 2014

Skills and Languages

- **Programming:** MATLAB, PYTHON, STATA, GAMS, \LaTeX
- **Languages:** English (proficiency), French (native)
- **Status:** Canadian Permanent Resident

References

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