

CONTACT INFORMATION

World Trade Organization
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RESEARCH FIELDS

Macroeconomics, Economics of Climate Change, Development Economics, International Trade

EDUCATION

University of Notre Dame
Ph.D. in Economics

Notre Dame, IN
2024

The University of Texas at Austin
B.A. in Economics (Graduating with Highest Honors)

Austin, TX
2019

WORKING PAPERS

Technology Choice, Energy Efficiency, and Second-Best Climate Policy (Job Market Paper), 2025 [Link](#)

Abstract:

I study the effectiveness of subsidies as an alternative to carbon taxes in reducing carbon emissions in a quantitative climate-economy model. An energy firm uses brown and green energy inputs to produce energy. A representative firm-household then uses energy, capital, and labor to produce final goods. The short-run elasticity between energy and other inputs is low. However, higher energy prices encourage higher energy efficiency, leading to a higher elasticity in the long run. The key weakness of green energy subsidies, as an alternative to carbon taxes, is that they cannot promote higher energy efficiency. Thus, in the baseline model, the optimal green subsidies result in a modest 1.0% decrease in emissions by the end of the century relative to cumulative emissions in the business-as-usual scenario. However, if the government subsidizes green energy usage and energy-saving technical change simultaneously, the optimal subsidies are nearly as effective in reducing emissions as the first-best taxes on carbon emissions. Under this approach, 90% of the emission reductions and 88% of the welfare gains achievable through optimal carbon taxes can be realized.

Investing in Climate Adaptation under Trade and Financing Constraints: Balanced Strategies for Food Security (with Chen Chen and Koralai Kirabaeva, IMF working paper), 2024 [Link](#)

Agriculture, Relative Prices, and Climate Policy, 2023 [Link](#)

WORK IN PROGRESS

Small (not Big) Data: A Machine Learning Approach for Structural Dynamic Economies
(with Zachary Stangebye)

EXTERNAL PRESENTATIONS

2025: Bank of Canada

2024: The Chinese Economists Society North America Annual Conference, The Society for Computational Economics Annual Conference, European Association of Environmental and Resource Economists Annual Conference

2022: 20th Annual GEP/CEPR Postgraduate Conference

2021: Berkeley/Sloan Summer School in Environmental and Energy Economics

TEACHING

Instructor:

Principles of Microeconomics

Fall 2024 (4.2 / 5.0), Spring 2025 (4.9 / 5.0)

Teaching Assistant:

Statistics for Economics Tutorial

Fall 2021

Principles of Microeconomics

Spring and Fall 2020, Spring and Fall 2021

Fall 2022, Spring 2023

RESEARCH EXPERIENCES

University of Notre Dame

Research Assistant to Dr. Robert Johnson

Notre Dame, IN

Fall 2023-Fall 2024

International Monetary Fund

Fund Intern Program

Washington, DC

Summer 2023

The University of Texas at Austin

Research Assistant to Dr. Olivier Coibion

Austin, TX

Fall 2017

COMPUTATIONAL SKILLS

MATLAB, Python, Julia, Stata, GEMPACK

REFERENCES

Professor Nelson Mark

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University of Notre Dame
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Professor Zachary Stangebye

Assistant Professor of Economics
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Professor Robert Johnson

Brian and Jeannelle Brady Associate Professor
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Dr. Toan Phan

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