Danchen Zhao

Updated: September 19, 2024

CONTACT INFORMATION

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RESEARCH FIELDS

Economics of Climate Change, Macroeconomics, International Trade

EDUCATION

University of Notre Dame – Notre Dame, IN
Ph.D. in Economics (2024)
The University of Texas at Austin – Austin, TX
B.A. in Economics (2019)

REFERENCES

Professor Nelson Mark
Alfred C. DeCrane Jr. Professor of Economics
University of Notre Dame
nmark@nd.edu

Professor Zachary Stangebye
Assistant Professor of Economics
University of Notre Dame
zstangeb@nd.edu

Professor Robert Johnson
Brian and Jeannelle Brady Associate Professor
University of Notre Dame
rjohns24@nd.edu

Dr. Toan Phan
Senior Economist
Federal Reserve Bank of Richmond
toanvphan@gmail.com

WORKING PAPERS

Technology Choice, Energy Efficiency, and Second-Best Climate Policy (Job Market Paper), 2024

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, cumulative carbon emissions are reduced by 12.2% by the end of the century.

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

Agriculture, Relative Prices, and Climate Policy, 2023

WORK IN PROGRESS

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

EXTERNAL PRESENTATIONS

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:

Statistics for Economics Tutorial	Fall 2021
Principles of Microeconomics	Fall 2024

Teaching Assistant:

Intermediate Microeconomics	Fall 2019
Principles of Microeconomics	2020, 2021, Fall 2022, Spring 2023
Real Estate Fundamentals	Spring 2022

RESEARCH ASSISTANCE

The University of Texas at Austin — Austin, TX
Research Assistant to Dr. Olivier Coibion — Fall 2017

International Monetary Fund — Washington, DC
Fund Intern Program — Summer 2023

University of Notre Dame — Notre Dame, IN
Research Assistant to Dr. Robert Johnson — Fall 2023-Fall 2024

COMPUTATIONAL SKILLS

MATLAB, Python, Julia, Stata

PERSONAL

Citizenship: China
Work Authorization: USA - 3 year OPT starting Aug 2024 (STEM designation)