Alireza Marahel

Economics Ph.D. Candidate

CONTACT INFORMATION

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EDUCATION

Doctor of Philosophy, Economics 2018 - 2024
Indiana University, *Bloomington, IN, USA* (Expected Graduation Date: May 2024)

Master of Arts, Economics 2018 - 2021
Indiana University, *Bloomington, IN, USA*

Bachelor of Science, Mechanical Engineering, *(with Minor in Economics)* 2013 - 2018
Sharif University of Technology, *Tehran, Iran*

RESEARCH

Research Interests: Quantitative Economics, Climate Policy, Financial Econometrics, Machine Learning

Job Market Paper: "Evaluating Alternative Designs for Carbon Border Adjustment Mechanisms" Draft: October 2023

Abstract: This paper examines the Carbon Border Adjustment Mechanism (CBAM) as a potential tool to mitigate carbon leakage, with its design varying based on the inclusion of export subsidies and discrimination across trading partners. To this end, I adopt a quantitative multi-country, multi-industry trade model with climate externalities and abatement. I provide a novel theoretical decomposition of the welfare effects associated with carbon pricing in open economies, underscoring the incidence of the home country's carbon tax on foreign residents as a vital welfare channel. The welfare decomposition reveals ambiguous welfare effects when export subsidies are incorporated in the CBAM, as they mitigate leakage but reduce the incidence of home's carbon tax on foreign residents. I then map the model to data to evaluate these trade-offs quantitatively for the European Union. I find that non-discriminatory EU border adjustments lead to a Pareto improvement only if they exclude export subsidies, resulting in a 36 million tonnes reduction in carbon leakage. On the other hand, discriminatory EU border adjustments are Pareto improving if they feature export subsidies in addition to import tariffs, yielding a 130 million tonnes reduction in leakage. These results provide a possible justification for the current design of the EU CBAM.

Ongoing Research:

"Evaluating Asset Pricing Models Under Endogenous Regime Switching", *with Yoosoon Chang and Joon Y. Park*
Working Paper Draft: May 2023

- Developed a panel endogenous regime switching model, using an autoregressive latent facotr, to allow for discrete time-variation in asset pricing model parameters based on market conditions.
- Applied the proposed methodology to evaluate the Capital Asset Pricing Model (CAPM) and found improved performance when volatility regimes emerge endogenously from the data, suggesting traditional models may be misspecified by imposing constant parameters and exogenous regime changes.

"On the Effectiveness of Long-Short Term Memory Models in Predicting Inflation", *with Yoosoon Chang and Joon Y. Park*
Work in Progress

- Developing LSTM architectures for inflation forecasting, addressing sensitivity to initial values. Comparing performance with traditional models like VARs and ARIMA, enhancing LSTM's predictive accuracy through optimized initialization.

Publications:

"Revenue Mobilization for a Resilient and Inclusive Recovery in the Middle East and Central Asia" 2022
with Fiscal Policy Group, Middle East and Central Asia Department, International Monetary Fund [Link]

RELEVANT POSITIONS

International Monetary Fund (IMF) Fund Internship Program, *International Monetary Fund (Washington D.C., U.S.A.)* 2021

- Developed a framework to assess the tax capacity, identify its key determinants, and estimate the tax revenue gaps/inefficiency in the Middle East and Central Asia (MCD) countries, using a Stochastic Tax Frontier model for panel data with time-variant inefficiency.
- Composed report sections and presented research findings within the IMF's MCD department, thereby providing the methodological and empirical foundation for the subsequent publication.

McKinney Climate Fellow, Office of Sustainability *City of Indianapolis* 2023
(Indianapolis, IN, U.S.A.)

- Developed a community-wide greenhouse gas inventory for the City of Indianapolis for 2022 using ICLEI ClearPath, by identifying, categorizing, and analyzing emissions sources across sectors and scopes, in preparation for CDP (Carbon Disclosure Project) reporting.
- Coordinated sessions and streamlined communications with government agencies, industries, and local government officials to efficiently obtain relevant data.

EXPERIENCE

Selected Teaching: *(For the complete list of teaching positions, visit my website)*

Associate Instructor, ECON-E 370 (Statistical Analysis for Business and Economics) 8 Semesters
Indiana University

Teaching Assistant, ECON-B 251 (Fundamentals of Economics I) Fall 2023
Indiana University

Teaching Assistant, ECON-E 211 (Applied Principles of Microeconomics: Creative Commerce) Fall 2023
Indiana University

Teaching Assistant, Introduction to Macroeconomics Spring 2017
Sharif University of Technology

Research:

Research Assistant for Professor Yoosoon Chang, Department of Economics 2020
Indiana University

HONORS AND AWARDS

McKinney Climate Fellowship, *Environmental Resilience Institute* 2023

Doctoral Assistantship, *IU Department of Economics* 2019 - 2023

College Graduate Fellowship recipient, *IU College of Arts and Sciences* 2018 - 2019

Top-Up Fellowship recipient, *IU College of Arts and Sciences* 2018 - 2019

Ranked Top 0.1% in Iran's Physics and Mathematics Nation-wide Universities Entrance Exam
(61st among approximately 250k applicants) 2013

PRESENTATIONS

IMF Middle East and Central Asia Department Virtual Discussion Forum, *International Monetary Fund* 2021

IU Trade Talk Seminar Series, *Indiana University* 2021

Hoosier Economics Conference, *Indiana University* 2021

OTHER INFORMATION

Programming: Python (Tensorflow, SciKit-Learn), MATLAB, R, Stata, Unix, Slurm, SQL, Excel(VBA), ArcGIS, LaTeX

Language : English (fluent), Farsi (native)

Visa: F-1 (*STEM certified 3-year OPT*)

REFERENCES

Department of Economics, Indiana University Bloomington

Professor Joon Y. Park
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Professor Yoosoon Chang
Email: yoosoon@iu.edu
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Professor Ahmad Lashkaripour
Email: alashkar@iu.edu
Phone: (812) 855-9531

Professor Christian Matthes
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