Xianru Han

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EDUCATION

University of Maryland, College Park, MD   08/2020 – expected 05/2025
Ph.D. in Agricultural and Resource Economics

Columbia University, New York, NY   09/2018 – 12/2019
M.A. in Statistics

University of Maryland, College Park, MD   08/2016 – 05/2018
B.S. in Mathematics & Agricultural and Resource Economics

China Agricultural University, Beijing, China   09/2014 – 06/2016
B.A. in Economics

FIELDS OF SPECIALIZATION

Environmental & Energy Economics, Applied Econometrics

RESEARCH EXPERIENCE

Graduate Research Assistant for Rebecca Epanchin-Niell, University of Maryland   07/2022 – 01/2024
Graduate Research Assistant for Kenneth L. Leonard, University of Maryland   01/2021 – 08/2021
Research Assistant for Jack Willis, Columbia University   05/2019 – 12/2019
Research Assistant for Martin Rotemberg, New York University   05/2019 – 12/2019

WORKING PAPERS

The Distributional Effects of Tighter Regulations: New Evidence from the Sugarcane Burning in Florida

Abstract: Discriminatory environmental regulations can affect the distribution of pollution and therefore change who bears the cost of pollution. In South Florida, the discriminatory wind-based sugarcane burning regulation prohibits burning when winds are likely to direct pollution toward higher-income and more populated areas. In 2019, however, additional burn restrictions were implemented to prevent burning on low air quality days. Drawing on data from satellite-based active fire products and Aerosol Optical Depth (AOD) levels, I empirically evaluate the air quality and distributional effects of the new, more stringent 2019 burning restrictions using difference-in-differences and triple difference estimations. I find that on the restricted day, the number of daily fires in the major sugarcane growing region decreases by 41% relative to the protected zone. And the results may provide suggestive evidence that farmers strategically shift burnings to non-restricted days. As a result, on non-restricted days, the highly vulnerable communities around the sugarcane experience worse air quality. These results highlight an undiscussed implication of stringent regulation on top of discriminatory regulation: its distributional consequences.

A Burning Issue: The Effects of Wildfire Smoke Exposure on Consumer Behavior and Sales of Medical Supplies (joint with Wenying Li and Haoluan Wang)

Abstract: Wildfire events have increased in frequency and severity across the United States in recent decades. We combine a newly developed and digitized dataset on daily surface wildfire smoke PM2.5 concentrations between 2006 and 2020 with weekly Nielsen retail scanner data to quantify how wildfire smoke exposure affects sales of air purifiers, cold remedies, nasal products, cough products, nutritional products, and minerals & vitamins. We find that one unit ($1\ \mu g/m^3$) increase in weekly smoke-driven PM2.5 is associated with a significant increase in weekly sales of these products by 0.25%-1.39%, particularly those directly related to the diseases caused by smoke exposure. We also explore how the effects of wildfire smoke exposure vary with county characteristics, showing that smoke exposure causes more significant increases in sales of medical supplies in countries with higher proportions of uninsured individuals, senior citizens, or minors. Our findings highlight the need for proactive policies to address the increased demand for medical products during the wildfire season. Policymakers should collaborate with relevant agencies to ensure affordable and effective medical supplies are readily available. Targeted strategies can enhance preparedness, mitigate health risks, and support affected communities during wildfire events.

Coastal agricultural land use adaptation to sea level rise and saltwater intrusion (joint with Rebecca Epanchin-Niell, Alexandra Thompson, Jessica Post, Jarrod Miller, Dave Newburn, Keryn Gedan and Kate Tully)

Abstract: Coastal areas face increasing risks from sea level rise and storm surge, including agricultural lands susceptible to inundation and saltwater intrusion. This study examines how farmers adapt to these impacts in a low-lying, ecologically important region of the Mid-Atlantic USA. Using fine-scale land use data, we analyze shifts in agricultural lands, such as transitions away from salt-sensitive crops (e.g., corn) and conversion to wetlands. We relate field-level crop rotation and land cover to local sea level and soil conditions using multinomial logit models with bootstrapped sampling of fields across years. We find that lower elevation fields – likely to be affected by more frequent inundation and coastal influences – are more likely to have transitioned out of agriculture to woody or herbaceous wetlands and, if remaining in agriculture, are less likely to be planted in corn than in other grain crops. Our predictions suggest that by 2050, 10.5% of fields will convert to wetlands, with a decline in agricultural area. Understanding these land use changes aids in climate adaptation planning and resource management to support regional goals.

WORKS IN PROGRESS

- Movements of CO_2-intensive goods across more and less regulated countries (joint with Anna Alberini)

CONFERENCE & SEMINAR PRESENTATION

- 2023: Association of Environmental and Resource Economists 2023 Summer Conference (scheduled), Western Economic Association International 98th Annual Conference (scheduled), 2023 Agricultural and Applied Economics Association Annual Meeting (scheduled), Interdisciplinary Ph.D. Workshop in Sustainable Development (IPWSD)

TEACHING EXPERIENCE

- Teaching Assistant, Applied Microeconomics (graduate), University of Maryland, Spring 2022
- Teaching Assistant, Gender in Economics (undergraduate), University of Maryland, Fall 2021
- Teaching Assistant, Applied Machine Learning for Financial Modeling (graduate), Columbia University, Spring 2020
- Academic math tutor, ASCDU, University of Maryland, Spring 2017, Fall 2017, Spring 2018

HONORS & SCHOLARSHIPS

University of Maryland, College Park

- Dean's fellowship **2023**
- Jacob K. Goldhaber Travel Grant **2023**
- Dean's fellowship **2020**
- Magna Cum Laude Honor Graduate **2018**
- Ray A. Murray Scholarship **2016 – 2018**

China Agricultural University

- China Merited Undergraduate Student Scholarship **2014 – 2016**
- China National Scholarship awarded by Chinese government (0.2%) **2014 – 2015**

SKILLS

R, Stata, Matlab, Python, SAS, Excel, SQL, JavaScript