

# Allen Peters

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Canadian Citizen

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## RESEARCH INTERESTS

Energy, Resource, and Environmental Economics; Industrial Organization; Macroeconomics

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## EDUCATION

Ph.D. Economics	University of British Columbia	2018–2024 ( <i>Expected</i> )
M.A. Economics	University of Victoria	2016–2018
M.Sc. Microengineering	Ecole Polytechnique Fédérale de Lausanne	2011–2013
B.Sc. Engineering Physics	University of Alberta	2004–2008

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## REFERENCES

Hiro Kasahara (Co-Supervisor)  
Professor  
Vancouver School of Economics  
University of British Columbia  
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## WORKING PAPERS

### Beached Assets? Capital Turnover and Emissions in Shipping (**Job Market Paper**)

This paper examines the equilibrium impacts of emissions regulations on the time path of CO<sub>2</sub> emissions for the maritime shipping industry. Notably, it explores the interactions between travel speed, price, and capital turnover: Fleet fuel efficiency improves when larger ships replace existing ones, but the long lifespan of ships makes turnover slow. Regulations that reduce travel speeds lower emissions quickly, but also limit the supply and increase the price of shipping, thereby impacting shipbuilding and scrapping incentives. To quantitatively assess these mechanisms and their time horizons, I construct a dynamic model of the dry bulk shipping industry with endogenous entry, exit, and travel speed, as well as fleet heterogeneity across age and size. Using a rich dataset on the global fleet and its operation, I structurally estimate the model and use it to simulate the dynamic effects of a fuel tax, an efficiency standard that limits speeds, and an entry subsidy. I find that a fuel tax has a persistent impact, while the effect of a speed limit diminishes considerably over time due to induced ship building. Counterintuitively, rather than hastening the exit of older ships, both policies initially suppress exits, even while reducing emissions. An entry subsidy is more effective at removing old ships from service.

## Estimating Time Preferences with Structure: Crop Rotations in Agriculture

Time preferences are omnipresent, but they are difficult to measure in the contexts in which they are applied. In agriculture, farmers' time preferences drive choices that impact food security, industry sustainability, and the environment. I structurally estimate the discount rate of farm operators in Alberta, Canada using a dynamic discrete choice model of crop rotation decisions. My estimation strategy leverages the finite temporal dependence of expected yields on crop history and builds on a recent identification result for dynamic discrete choice models. My estimates suggest a strong present bias, somewhat in line with experimental estimates and in contrast to common modelling assumptions.

## WORK IN PROGRESS

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### Peaking Plant Investment and Climate Change

How does climate change affect investment in peaking power plants that ensure electricity grid reliability? Flexible generation is essential when supply and demand fluctuate rapidly, but is not profitable under normal conditions, which has resulted in an ongoing concern over underinvestment in deregulated markets. However, climate change is expected to increase volatility through (a) increasing extreme weather events that disrupt generation and distribution and fuel demand, and (b) spurring expansion of intermittent renewable generation that in turn depends on weather. Using data from deregulated regions in the US, I provide evidence that these phenomena are indeed associated with increased peaking plant investment. I construct a dynamic model of peaking plant investment to explore the interaction of these phenomena and their joint impact on the evolution of the electricity supply.

### Improving Maritime Shipping CO<sub>2</sub> Emissions Estimates Using Machine Learning (with Hiro Kasahara and Oliver Xu)

We explore the potential of machine learning algorithms to improve upon engineering estimates of CO<sub>2</sub> emissions from maritime shipping. Traditional estimates rely on engineering approximations that may not entirely capture actual fuel use. We match reported annual ship-level emissions from a European Union emissions reporting program with tracking data and technical characteristics for the global fleet of dry bulk ships. As a baseline, we follow industry standard procedures to calculate engineering estimates of annual ship-level emissions. We then train various machine learning algorithms on the residual—the discrepancy between reported and calculated emissions—and are able to improve out-of-sample prediction.

### Quantifying the Response of Maritime Shipping CO<sub>2</sub> Emissions to Trade Shocks and Regulations (with Hiro Kasahara)

While shipping emissions are clearly linked with trade volumes, the quantitative relationship is unknown. We first quantify monthly, fleet-level CO<sub>2</sub> emissions from worldwide maritime shipping activity before and during the COVID pandemic. We then examine the change in these emissions during the COVID pandemic in terms of changes in bilateral trade volumes and provide a decomposition analysis. Finally, we model the heterogeneous elasticities of CO<sub>2</sub> emissions from maritime shipping with respect to international trade and use them to conduct a counterfactual analysis of potential emissions policies.

## OTHER RESEARCH EXPERIENCE

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Research Assistant (Prof. Kasahara, University of British Columbia)  
Research Assistant (Prof. Siu, University of British Columbia)

2020  
2018–2019

## TA EXPERIENCE

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University of British Columbia			
Environmental Economics I (MA/PhD)	Econ 573		2023
Economics of Nonrenewable Resources	Econ 471	2019, 2022	
Economics of the Environment	Econ 371		2022
Macroeconomics I (PhD)	Econ 602		2021
Topics in Canadian Industrial Organization and Regulation Policy	Econ 365	2020, 2021	
Economics of Renewable Resources	Econ 472		2020
University of Victoria			
Economics of Firm Strategy	Econ 413		2017
Mathematical Economics II: An Introduction to Dynamic Methods	Econ 351		2016
Mathematical Economics I: An Introduction to Static Methods	Econ 350		2016

## AWARDS, FELLOWSHIPS, & GRANTS

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Doctoral Fellowship	Social Sciences and Humanities Research Council		2022–2023
Four Year Fellowship	University of British Columbia		2022–2023
Small Grant in Innovative Data (\$29,680)	Centre for Innovative Data in Economics Research		2021
British Columbia Graduate Scholarship	University of British Columbia		2019–2021
Faculty of Arts Graduate Award	University of British Columbia		2018–2019
Economics Alumni Graduate Scholarship	University of Victoria		2017
Graduate Award	University of Victoria		2016
Postgraduate Scholarship (PGS M)	Natural Sciences and Engineering Research Council		2012
Undergraduate Student Research Award	Natural Sciences and Engineering Research Council		2006, 2007
Chancellor's Citation	University of Alberta		2004–2008

## SKILLS

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Coding: R, Python, Julia, Matlab

Languages: English (Native), French (Professional working proficiency)

## PROFESSIONAL EXPERIENCE

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Economics Co-op Student	Environment and Climate Change Canada, Analysis and Modeling Division	Gatineau, Canada	2017
R&D Engineer/ Project Manager	Preciflex SA	Neuchatel, Switzerland	2013–2016
Development Engineer	Alberta Centre for Advanced MNT Products	Edmonton, Canada	2008–2011

## PATENTS

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Peters, A.; Clement, X. "Miniature user-powered lighting device, system and method of using same" U.S. Patent No. 10254715, April 9, 2019.