

Christoph Semken

PHD CANDIDATE · UNIVERSITAT POMPEU FABRA

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Doctoral studies

Universitat Pompeu Fabra

PHD ECONOMICS

• Fields: Applied Micro, Environmental, Behavioral, Public

Barcelona, Spain

2019 – 2024

VISITING POSITIONS

University of California, Berkeley, U.S.

04/2023 – 08/2023

briq Institute, Bonn, Germany

11/2022 – 12/2022

University of Zurich, Switzerland

01/2022 – 08/2022

References

Prof. Jose Apesteguia

Supervisor

Universitat Pompeu Fabra
jose.apesteguia@upf.edu
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Prof. Ruben Durante

Supervisor

National University of Singapore
rdurante@nus.edu.sg
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Prof. Hunt Allcott

Stanford University
allcott@stanford.edu

Prof. Ernst Fehr

University of Zurich
ernst.fehr@econ.uzh.ch
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Education

Universitat Pompeu Fabra

MRES ECONOMICS

Barcelona, Spain

2018 – 2019

Barcelona School of Economics

MSc ECONOMICS

Barcelona, Spain

2017 – 2018

Sciences Po

MASTER INTERNATIONAL ECONOMIC POLICY (M1)

Paris, France

2016 – 2017

University of Aberdeen

MA ECONOMICS AND INTERNATIONAL RELATIONS (UNDERGRADUATE DEGREE)

• Exchange at the University of British Columbia, Vancouver, Canada, 2013-2014

Aberdeen, U.K.

2012 – 2016

Papers

WORKING PAPERS

The Marginal Impact of Emission Reductions: Estimates, Beliefs and Behavior, *Job Market Paper*

An important driver for climate change inaction is the belief that individuals cannot have any tangible impact on climate change through their own actions. Currently available statistics are not suited to systematically assess this belief. In this paper, I derive the marginal impact of emission reductions – the effect of reducing emissions by 1 tonne of CO₂ (tCO₂) – on physical climate change outcomes, document important misperceptions and show how they affect behavior. Using climate models, I find that impact of reducing emissions by 1 tCO₂ is 4.000 liters less glacier ice melting, 6 additional hours of aggregate life expectancy and 5 m² less vegetation undergoing ecosystem change. Subjects underestimate these figures by 5 orders of magnitude on average. Moreover, their mental models are inconsistent with

climate models. First, they assume that the marginal impact increases when others reduce their emissions (strategic complementarity). Second, they think emission reductions are a threshold public goods game. Providing subjects with the climate scientific findings causally increases perceived self-efficacy, intentions to reduce emissions and real donations to offset emissions. The findings are consistent with a model of threshold thinking, which predicts positive overall emission reductions of information provision in equilibrium.

PUBLICATIONS

Specification analysis for technology use and teenager well-being: statistical validity and a Bayesian proposal (with David Rossell), *Journal of the Royal Statistical Society: Series C (Applied Statistics)* 71 (5): 1330–55, 2022

A key issue in science is assessing robustness to data analysis choices, while avoiding selective reporting and providing valid inference. Specification Curve Analysis is a tool intended to prevent selective reporting. Alas, when used for inference it can create severe biases and false positives, due to wrongly adjusting for covariates, and mask important treatment effect heterogeneity. As our motivating application, it led an influential study to conclude there is no relevant association between technology use and teenager mental well-being. We discuss these issues and propose a strategy for valid inference. Bayesian Specification Curve Analysis (BSCA) uses Bayesian Model Averaging to incorporate covariates and heterogeneous effects across treatments, outcomes and sub-populations. BSCA gives significantly different insights into teenager well-being. It provides strong evidence that technology has relevant associations with teenager well-being: (1) well-being is negatively associated with electronic device usage, (2) social media use is negatively associated with self-assessed well-being but positively associated with parent-assessed well-being, and (3) has a stronger negative association with self-assessed well-being for girls compared to boys.

WORK IN PROGRESS

Do Consumers Reward Green Campaigns? Evidence from a Nationwide True Cost Experiment (with Hunt Allcott, Tobias Gaugler, Amelie Michalke and Lennart Stein)

Many companies state that they would like to help making the economy more sustainable. A key question is therefore if companies operating in a competitive environment can have a meaningful environmental impact without compromising profitability. In this project, we work with a large German supermarket to implement a pricing experiment in over 2000 stores. For one week, customers paid an environmental surcharge reflecting pollution and climate change externalities on nine products. We calculated the surcharges using “true cost accounting”. We are analysing the effect on consumption, externalities and revenue using store scanner data. We find that the surcharge elasticity is lower than expected. We propose the marginal value of reduced profit (MVRP) as a measure of the social return on forgone profits. Using surveys, we also estimate the effect of the campaign on perceived elasticities, the image of the supermarket and support for similar policies. We analyze the mechanism behind the change in perceptions using a content analysis of the over 1000 media reports of the campaign.

The not-so-marginal impact of marginal emission reductions on climate change outcomes (with Ben Marzeion, Tamma Carleton, Katja Frieler, Gerhard Krinner, Matti Kummu, Stefan Lange, Malte Meinshausen, Matthias Mengel, Dirk Notz, Aimee Slangen, Philip Thornton, Lila Warszawski, Karim Zantout and the FishMIP Team)

Optimal climate change mitigation requires easily understandable estimates of the benefits of marginal emission reductions. Currently, such estimates are not readily available. Here we propose a general framework for estimating the impact of marginal emission reductions from climate model projections. The marginal impact is the change in a climate change outcome due to reducing emissions by 1 tCO₂ today, holding others’ actions constant. We estimate the marginal impact for 19 climate change outcomes: livestock production, Arctic sea ice, biome shift, coral reefs, crop failure, crop production, droughts, fish mass, glacier ice, heat mortality, heatwaves, livestock welfare, ocean heat, permafrost thaw, radiative forcing, river floods, snow cover, ocean expansion, and wildfires. We provide the estimates as a function of the outcome time horizon. Moreover, we analyze the variance in the estimates stemming from six sources of uncertainty included in the analysis: climate models, impact models, functional form of the emulator, statistical parameters, temperature response to emissions, and future overall emissions.

Vegetarian*ism: Evidence from 200 Million Home Deliveries (with Ruben Durante and Milan Quentel)

The consumption of meat and other animal products have large externalities on health care spending, climate change and animal welfare. Reducing their consumption is therefore often seen as key in addressing these problems. Yet, there is little causal evidence for many determinants of meat consumption. We leverage a unique dataset of over 200 million home deliveries from restaurants and supermarkets in over 30 countries to study the role of movies, news and the availability of plant-based meat alternatives in reducing meat consumption. We exploit the high time frequency of the data together with the timing of movie releases, news coverage and introduction of new items at nearby food providers for causal identification.

No Ethical Consumption in General Equilibrium? Evidence from the U.S. meat market (with Trevor Woolley)

Many consumers engage in ethical consumption, altering their consumption choices so as to mitigate their personal contributions to negative externalities such as climate change, animal welfare, or pollution. But do individual consumption choice have any impact on overall externalities in a competitive market? In this paper, we estimate the effect of consumption changes on externalities in general equilibrium for the U.S. meat market. We derive sufficient statistics based on the demand and supply cross-price elasticities of all goods with externalities. We estimate the elasticities using home scanner data and farmer surveys, respectively, and derive the effect of ethical meat consumption

on animal welfare. We further show that the effect on other externalities can be estimated using bounding assumptions on substitution patterns. Using such assumptions, we also estimate the effect of ethical meat consumption on overall greenhouse gas emissions.

PRE-DOCTORAL RESEARCH

Gauging the Gravity of the Situation: The Use and Abuse of Expertise in Estimating the Economic Costs of Brexit (with Colin Hay), *MaxPo Discussion Paper 21/3*, 2021

Blue Mission Tracking: Real-Time Location of UN Peacekeepers (with Walter Dorn), *International Peacekeeping* 22(5): 545-64, 2015

Awards, fellowships & grants

2022	Visiting grant “Swiss-European Mobility”, University of Zurich	CHF3,500
2020	Fellowship of the Europaeum Scholars Programme, University of Oxford	€20,000
2019	Doctoral fellowship “INPHINIT”, Fundación La Caixa	€115,000
2018	Postgraduate fellowship, German Academic Exchange Service	€11,700
2017	Research grant “EUROGLOB”, Princeton University and Sciences Po	€2,000
2016	Fellowship for distinguished University of Aberdeen graduates, John Reid Trust	£1,500
	1 st Class Honors, University of Aberdeen	
	Best international relations dissertation of the year award, University of Aberdeen	
2015	Research grant “New Issues in Peacekeeping”, International Peace Institute	\$1,000
2007	Advancement award, History competition of the German president	

Presentations

* = online

2023	UC Berkeley, Stanford, Early-Career Behavioral Economics Conference (Harvard), UPF (×3), IMPRS BeSmart Workshop (Barcelona)
2022	UZH (×2), Maastricht, Barcelona Supercomputing Center, UPF, briq Climate Change Workshop (Bonn), European Winter Meeting of the Econometric Society (Berlin)
2021	Europaeum Scholars Conferences (Leiden*, Geneva*, Toledo), UPF (×2)
2020	Behavioral Insights Group Workshop (Harvard)*, Europaeum Scholars Conferences (Oxford*, Prague*, Brussels*), UPF*, RUD Consortium on Behavioral Decision Making (IE University)*
2019	ADRES Doctoral Conference (Aix-Marseille), UPF, SEA Symposium & PhD School (Alicante)

Teaching

2022	Corporate strategy, teaching assistant, undergraduate (in Spanish), UPF
	Operations management, teaching assistant, undergraduate, UPF
2021	Advanced programming techniques for economists, initiator and instructor, graduate (unofficial), UPF
2020	Microeconomics II, teaching assistant, undergraduate, UPF
2019	Probability and statistics, teaching assistant, undergraduate, UPF
2009-12	Maths and English, private tutor
2008-10	Programming, high-school teaching assistant, Utbremen and Wotton Upper School, U.K.

Professional service

REFEREE

European Economic Review (×2), *European Journal of Political Economy*, *Journal of Public Economics*

SEMINAR AND CONFERENCE ORGANISATION

2021	Applied graduate student workshop, co-initiator and organizer, UPF
2017	Bbk-IWH-CEPR conference on Financial Intermediation, reviewer, Bundesbank

OPEN SOURCE SOFTWARE

[Project template](#) (GitHub template): A project template and methodology for large teams based on the Gentzkow-Shapiro-Allcott lab – featuring task management, full reproducibility, autofilling values and Overleaf synchronization.

[Beamer Appendix Note](#) (L^AT_EX package): A command which puts extra content on an appendix slide and automatically inserts interactive buttons to go to the appendix and back.

[TeXpro](#) (Python package): A set of classes that allow researchers using Python and LaTeX to easily view and export their results as they appear in the final publication, thus increasing transparency and reproducibility.

[oTree Survey](#) (Python package): interactive, principled and modern surveys for the social sciences.

Relevant skills

PROGRAMMING

Python, R, JavaScript, Java, Shell, Ruby; Stan, Stata, Matlab; L^AT_EX, HTML, CSS; oTree, Django, Numpy, Pandas, Statsmodels, Matplotlib, Plotly; Tidyverse, renv, BAS, ggplot2; astro, node.js, vue.js, jQuery, Bootstrap; git, dvc, Docker, AWS, Selenium, Jekyll

LANGUAGES

German (native), English (fluent), French (fluent), Spanish (fluent), Catalan (intermediate)

Last updated: November 11, 2023