November 2019

Nicholas Snashall-Woodhams

Address: Department of Economics
Yale University
New Haven, CT 06520-8268

Telephone: +1 (631) 507-7764

E-mail: nicholas.snashall-woodhams@yale.edu

Webpage: https://sites.google.com/view/nicsw

Citizenship: Australian, F-1 Visa

Fields of Concentration:

Industrial Organization
Energy and Environmental Economics

Desired Teaching:

Industrial Organization
Econometrics
Energy and Environmental Economics

Comprehensive Examinations Completed:

2016 (Oral): Industrial Organization, Econometrics
2015 (Written): Microeconomics, Macroeconomics

Dissertation Title: *Essays in Industrial Organization*

Committee:

Professor Steven Berry (Co-Chair)
Professor Philip Haile (Co-Chair)
Professor Kenneth Gillingham

Expected Completion Date: May 2020

Degrees:

Ph.D., Economics, Yale University, 2020 (expected)
M.Phil., Economics, Yale University, 2017
M.A., Economics, Yale University, 2017
B.Comm.(Hons.), Economics, University of Melbourne, 2013, First Class Honors

Fellowships, Honors and Awards:

Yale University Dissertation Fellowship, 2018-2019
Cowles Foundation Fellowship, Yale University, 2014-2018

Yale University Graduate Fellowship, 2014-Present
William Noall & Son Prize, 2013
Economics Honors Prize, 2013
C.S. Soper and Joan Rydon Scholarship, 2013

Teaching Experience:

Teaching assistant for undergraduate classes at Yale
Intermediate Microeconomics, Professor Evangelia Chalioti, Fall 2019
Introductory Microeconomics, Professor Pinelopi Goldberg, Spring 2018
Introductory Microeconomics, Professor Steven Berry, Fall 2016, Fall 2017
Econometrics & Data Analysis I, Professor Nicholas Ryan, Spring 2017

Research and Work Experience:

Research Assistant to Professor Philip Haile, 2015
Research Assistant to Professor Catherine de Fontenay, 2013-2014
Intern, Regulatory Development Branch, ACCC, 2012-2013

Working Papers:

"Targeting Solar Subsidies" (2019), *Job Market Paper*

Work in Progress:

"Identifying and Estimating Price Perceptions Under Non-linear Pricing"

Seminar and Conference Presentations:

2018: Monash University

Languages:

English (Native)

References:

Prof. Steven Berry
Yale University
Department of Economics
New Haven, CT 06520
PO Box 208264
Phone: 203-432-3556
steven.berry@yale.edu

Prof. Philip Haile
Yale University
Department of Economics
New Haven, CT 06520
PO Box 208264
Phone: 203-432-3568
philip.haile@yale.edu

Prof. Kenneth Gillingham
Yale University
School of Forestry &
Environmental Studies
195 Prospect Street
New Haven, CT 06511
Phone: 203-436-5465
kenneth.gillingham@yale.edu

November 2019

Dissertation Abstract

Targeting Solar Subsidies [Job Market Paper]

Policymakers confront two competing goals when designing market-based mechanisms for mitigating climate change. On the one hand, programs should attract consumers who would most benefit the environment by reducing their reliance on dirty means of electricity production, such as fossil fuels, and adopting green technologies. On the other hand, programs should target those on the margin between investing and not, avoiding costly rents to inframarginal participants.

I assemble a rich new dataset to study the design and effectiveness of targeted subsidy programs for rooftop solar. This novel dataset links administrative billing data from California electric utilities with measures of rooftop solar energy potential from Google Project Sunroof. The dataset contains the same information that solar installers commonly use to prepare quotes for potential customers.

I develop and estimate a dynamic model of rooftop solar investment that incorporates several features that are necessary to capture the tradeoffs a policymaker faces in this setting. First, household-level persistent tastes for electricity generate differences in the private benefit of solar adoption, leading to substantial heterogeneity in the ex ante probability that a household chooses to install solar panels. Second, households choose whether to install solar panels and how many to install, potentially allowing the policymaker to reduce inframarginal rents by screening households along the intensive margin of investment. Finally, consumer preferences vary with the site-specific benefits, creating a direct conflict between the policymaker's two goals. The model is identified by cross-sectional variation in grid electricity rates and falling solar panel prices throughout the sample period.

I use the model to assess modifications of the California Solar Initiative and Federal investment tax credit. I consider targeted subsidies that vary with each household's historical electricity consumption, the number of solar panels they install, and the site-specific environmental benefits of adoption. I show that the optimal subsidy has a simple form, substantially simplifying the policymaker's design problem. I find that the optimal subsidy would reduce program costs by about 25%, a within-sample saving of $500 million. In contrast, performance-based and capacity-based designs, reduce costs by at most 5%. The results suggest that improving the design of existing policies could play a significant role in reducing the cost of combating climate change and the associated deadweight loss of taxation.