Penelope **Buckley**

Behavioural Economics · Environmental Economics · Experimental Economics

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Current Position

PhD Research and Teaching Assistant
Grenoble, France

Grenoble Applied Economics Laboratory
Oct 2015 - present

Teaching Responsibilities
Grenoble, France

Université Grenoble Alpes
Sep 2016 - present

- Industrial Economics - Final year undergraduates - 14 hours
- Introduction to Microeconomics - First year undergraduates - 100 hours
- Contemporary Economic Questions - First year undergraduates - 74 hours
- Descriptive Statistics - First year undergraduates - 72 hours
- University Study Methods - First year undergraduates - 54 hours

Experience

Visiting PhD Student
St Gallen, Switzerland

University of St Gallen
Jan 2018

- PhD research seminar
- Assisted in the development of the "8th Consumer Barometer of Renewable Energy"

Research internship
Grenoble, France

Grenoble Applied Economics Laboratory
Mar 2015 - Jul 2015

- Review of academic literature on smart meters and dynamic pricing experiments
- Design of dynamic pricing choice experiment

Education

PhD in Economics
Grenoble, France

Université Grenoble Alpes
Oct 2015 - May 2019

Thesis title: Household electricity consumption behaviour: A meta-analysis and experimental approaches
Supervisors: Daniel Llerena and Cédric Clastres.
Thesis committee members: Patrice Geoffron, Anne Rozan, Mireille Chiroleu-Assouline and Stéphane Robin

Discrete Choice Modelling
London, UK

Cemmap, University College London
Jan 2016

Course delivered by William Greene New York University, Stern Business School

Master in Economics and Statistics
Grenoble, France

Université Grenoble Alpes
Sep 2014 - Jul 2015

Master's dissertation: A review of household experience with smart meters and dynamic pricing for demand response

Master in Management *Grenoble, France*

Grenoble School of Management *Sep 2013 - Jul 2014*

Master's dissertation: Cultural influences on food consumption decisions in China, Germany and the UK

Master in Economics and Statistics (First year of programme) *Grenoble, France*

Université Grenoble Alpes *Sep 2012 - Jun 2013*

Master's dissertation: Pricing strategies of experience goods - The case of eBusiness Service Providers

BSc in European Economics (French): First Class Honors *Canterbury, United Kingdom*

University of Kent *Sep 2007 - Jun 2011*

Applied economics project: The impact of the National Minimum Wage on workers in the United Kingdom

Current Research

Buckley, P., Llerena D. (2018). Demand response as a common pool resource game: Nudges and peak pricing. *Working paper.*

The aim of demand response is to encourage consumers to be more flexible with their energy consumption during peak periods. Using a contextualised common pool resource (CPR) framework, energy consumption choices are studied. Subjects choose how much to consume by deciding whether to use five different appliances during 10 periods. The total consumption of these activities is the CPR contribution, and payoffs depend on personal consumption and the amount consumed by the group. In the nudge treatment, subjects are nudged towards the socially optimal level of consumption by the use of a happy or sad face if they are underconsuming or overconsuming. In the price treatment, a price is set to incentivise subjects to choose the level of consumption observed in the nudge treatment. The objective is to quantify the nudge via an equivalent price. Across all 10 periods, consumption is significantly lower in treatment groups compared to control groups. There are implications for policy makers as the nudge treatment performs as well as an equivalent price without the implied loss of welfare, and is understood and integrated into subjects' decision making quicker than an equivalent price. However, the nudge reinforces existing consumption behaviour as those who over consume continue to over consume.

Buckley, P. (2018) Incentivising households to reduce electricity consumption: A meta-analysis *Working paper.*

A meta-analysis approach is used to analyse the results of recent field experiments and pilot studies which explore the effects of different methods of incentivising residential consumers to lower their energy consumption. The strategies currently used fall into one of two categories: financial incentives (pricing strategies, monetary information), and non-financial incentives: informational incentives (historic feedback, real-time information, tailored advice, generic savings tips) and 'nudges' (social norms, social approval). Heterogeneity in studies is limited by focusing only on recent studies (2005 onwards) when there has been a greater understanding of the risks of climate change. Both peer-reviewed and grey literature (utility and government reports) are included to limit publication bias. The sample includes 105 observations from 39 papers. Results show that, on average, across studies, real-time feedback and monetary information have the greatest effect at reducing energy consumption. Compared to previous meta-analysis, the results show that recent studies use larger samples and are more robust (include a control group, subjects are assigned randomly to treatments, demographics and weather are controlled for). As a result, the effect sizes observed are generally smaller than those reported in previous meta-analyses and more indicative of the results of a national roll-out.

Current Research (*contd.*)

Buckley, P., Llerena, D. Field experiment on social conformity and varying remuneration for different efforts. *Working title.*

A 3-month experiment with 200 subjects tests behavioural hypotheses relating to effort provision in an environmental situation. Individuals are asked to perform a simple task and a relatively more difficult task in exchange for a respectively lower or higher remuneration. Two treatments are implemented to test the impact of feedback on effort provision. Each week, individuals are informed of their weekly earnings. In the first treatment, individuals are informed of their earnings in relation to the group's average earnings. The working hypothesis is that individuals who earn less than the average will increase their efforts. In the second treatment, individuals are not informed of the group's average performance. Initial results show that the provision of information on the group's average performance has very little effect on behaviour.

Buckley, P., Roussillon, B., Teyssier, S. Loss aversion framing to incentivise small efforts for repetitive tasks. *Working title.*

When trying to save energy, households are required to perform small, repetitive tasks, e.g.: turning off lights, or turning appliances off standby. Each individual action has little effect on energy consumption and on household bills, however, they can add up to sizeable savings. This paper explores different methods of framing incentives to motivate subjects to perform a simple yet repetitive, real-effort task for a piece-rate payoff. Each individual effort does not earn much for the individual, but combined the payoff is significant. A 2 by 3 design is used: either gain-framed or loss-framed incentives, combined with either a control treatment with a fixed payoff, an ex-ante treatment with a low or high payoff with equal probability, revealed to individuals prior to the task, or an ex-post treatment where the low or high payoff with equal probability is revealed after completing the task. Individuals are expected to perform better under loss-framing. Results show little difference in performance across treatments. Knowledge of the higher payoff improves performance in the gain-framed, ex-ante treatment, and subjects perform significantly better when the payoff is higher in both ex-ante treatments.

Buckley, P. Barriers to acceptance and adoption of smart meters and incentives to lower residential energy consumption. *Working title.*

Qualitative studies which explore consumer acceptance and use of smart meters and incentives are reviewed in order to identify barriers to their use for encouraging consumers to lower their energy consumption and to engage in demand response. Consumers do not trust energy companies to act in their best interests and are wary of data misuse and automation of their consumption. They are uncertain of what smart meters and incentives such as dynamic pricing are and can do, and they perceive electricity contracts to be complex. While financial reasons are a significant motivating factor, the realised savings are often smaller than anticipated. Smart meters and devices encourage reductions in energy consumption in the short-run while they are a novelty; consumers use them to identify and maintain an acceptable level of consumption which trades-off energy savings for comfort, and are reluctant to lower demand further due to inflexibility in daily routines. Finally, recommendations for overcoming the identified barriers are given. Notably that a one-size-fits-all approach may not be appropriate as different segments of consumers accept and engage with smart services to different degrees.

Scientific Communications

May 2019	**Grenoble School of Political Science**. Workshop	*Grenoble, France*
Nov 2018	**French Association for Energy Economists**. Seminar	*Paris, France*
Sep 2018	**University of Kent**. Seminar	*Canterbury, UK*
Sep 2018	**British Institute for Energy Economics**. Conference	*Oxford, UK*
Jun 2018	**World Congress of Environmental and Resource Economists**. 6th World Congress	*Gothenburg, Sweden*
Jun 2018	**International Association for Energy Economics**. 41st International Conference	*Groningen, the Netherlands*
Apr 2018	**Ministry of Higher Education, Research and Innovation**. Ministerial lunch	*Paris, France*
Mar 2018	**9th Day of Doctoral Economics**. Scientific Day	*Grenoble, France*
Jan 2018	**University of St Gallen**. Seminar	*St Gallen, Switzerland*
Nov 2017	**French Association for Energy Economists**. Annual Conference	*Paris, France*
Nov 2017	**French Association for Energy Economists**. 10th Student Workshop	*Paris, France*
Nov 2017	**Italian Association for Energy Economists**. 2nd AIEE Energy Symposium	*Rome, Italy*
Mar 2017	**8th Day of Doctoral Economics**. Scientific Day	*Grenoble, France*
May 2016	**Grenoble Applied Economics Laboratory**. Doctoral Seminar	*Grenoble, France*

Participation in Research Projects

NEWTS (2019-2022) European Commission, Water JIP
Experimentation of nudges and tariffs designed to encourage households to lower their water consumption

ExpeSigno (2017-2021) Auvergne-Rhone-Alpes
Experimentation of different methods of feedback (monetary and non-monetary) designed to incentivise consumers to be more flexible during periods of peak electricity demand

CDP Eco-SESA (2017-2021) IDEX
Experimentation of incentives designed to encourage individuals to lower their demand for electricity within a neighbourhood

TARDYSS (2015-2018)
Dynamic Pricing and Smart Grids: An experimental analysis of household electricity consuming behaviour

Additional Responsibilities

Université Grenoble Alpes

Member of the Administrative Board of the Doctoral Association of Economics — *Grenoble, France*
Organisation of the 9th Day of Doctoral Economics — *Dec 2017 - Nov 2018*

President of the Doctoral Association of Economics Doctorale — *Grenoble, France*
Organisation of the 8th Day of Doctoral Economics — *Dec 2016 - Nov 2017*

Doctoral representative at the Council of the Economics Doctoral School — *Grenoble, France*
May 2016 - Apr 2018

Grenoble Applied Economics Laboratory

Doctoral seminar coordinator — *Grenoble, France*
Organisation of doctoral research seminars at GAEL — *Jan 2016 - Dec 2016*

Honours

2017	**Laureate**. Best student paper at 10th Student Workshop of the French Association for Energy Economists	*Paris, France*
2015	**First in year**. Master Economics and Statistics	*Grenoble, France*
2011	**Laureate**. School of Economics Prize, University of Kent	*Canterbury, Kent*
2011	**Laureate**. Social Sciences Faculty Prize, University of Kent	*Canterbury, Kent*
2007	**Laureate**. School of Economics Prize, University of Kent	*Canterbury, Kent*

Skills

Languages

English (native language), French (bilingual), German (basic)

Software

LaTeX, Microsoft Office, R, Stata, z-Tree

References

Daniel Llerena
Professor of Economics
Grenoble Applied Economics Laboratory
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