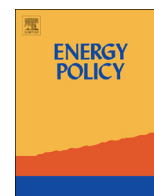




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Short Communication

From intention to action: Can nudges help consumers to choose renewable energy?

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HIGHLIGHTS

- Preferences concerning renewable energy contracts do not translate into action.
- Nudges are cheap policy tools, easily scaled up, coercion-free, and usually unavoidable.
- We design and implement a survey experiment to test various nudges.
- A default nudge proves effective in aligning intention and action.

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ABSTRACT

In energy consumption, individuals feature a gap between intention and action. Survey data from the US, the UK, and other European countries show that 50–90% of respondents favour energy from renewable sources, even at a small premium. Yet less than 3% actually buy renewable energy. We investigate how nudges – a slight change in the information set that an individual faces when taking a decision – can help individuals align behaviour with intention. We present evidence from an original survey experiment on which nudges affect the choice whether to contract renewable energy or conventional energy. We find that only a default nudge has a significant effect, while all other nudges prove ineffective. In our setting, a default nudge increases the share of individuals who choose renewable energy by 44.6%.

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1. Introduction

One of the most pressing environmental problems is climate change (Nordhaus, 2013; Stern, 2006). While energy production is the biggest single contributor to greenhouse gas emissions (IPCC, 2007), consuming renewable energy instead of conventional energy reduces these emissions (Shafiei and Salim, 2014). Renewable energy policies that address climate change thus either focus on innovations in technology or changes in behaviour. While policy-making has predominantly relied on the former, we investigate the latter. The following stylized fact shows the potential of our research:

Surveys in various Western countries typically show that 50–90% of respondents favour energy from renewable sources, even at a small premium (Kaenzig et al., 2013; Pichert and Katsikopoulos, 2008). Yet, those preferences do not translate into action: actual users of renewable energy constitute but a tiny fraction of the

population, 0.4% in Finland, 0.5% in the UK, 1% in Ireland and Germany, 2% in Switzerland, and 2.8% in the US (Bird et al., 2002; Heeter and Nicholas, 2013). The gap between intention and action has only recently been recognised in research on energy behaviour (Allcott and Mullainathan, 2010; Sunstein and Reisch, 2013). A nudge – a slight change in the information set that an individual faces when taking a decision – can help people align intention and action.

The use of nudges as a policy tool has become widespread following Thaler and Sunstein (2008) and Camerer et al. (2003). This literature suggests two complementary rationales for using nudges: firstly, the gap between intention and action shows that individuals are boundedly rational in the choice between conventional and renewable energy. Due to their limitations in cognitive processes and attention, individuals have difficulties understanding the situation they are in and suffer from an imperfect ability to process new information (Ariely, 2009; Spiegel, 2011; Thaler and Sunstein, 2003). Consequently, they often fail to act upon their long-term intentions (O'Donoghue and Rabin, 1999; Taubinsky, 2013). This is where nudges can help individuals. Nudges are an attractive policy tool: they are cheap and can easily be scaled up. Furthermore, nudges are coercion-free: individuals retain the freedom to pick from the

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original choice set. Lastly, they are uncontroversial: it is unavoidable to present a decision in some way or another.

Secondly, research on the effectiveness of nudges in energy consumption (Allcott, 2011; Allcott and Mullainathan, 2010; Allcott and Rogers, 2012; Costa and Kahn, 2013) has shown the great effectiveness of using nudges as energy policy instruments. Allcott and Mullainathan (2010), for instance, find that a nudge can lower energy consumption by as much as 2% and at a negative cost. Empirical evidence on the effectiveness of different nudges for the choice between conventional and renewable energy is missing, however. Our research fills this gap. We use an original survey experiment to test how several nudges affect the choice whether to contract renewable energy or conventional energy. The nudges we implement in our survey each address one or more potential biases in the behaviour of decision makers.

The remainder of this article is structured as follows: Section 2.1 presents the setting of our experiment, Section 2.2 describes each nudge and its implementation, and Section 3 presents and discusses the empirical results. Section 4 concludes and provides policy recommendations.

2. Methods: an original experiment

2.1. Setting

We provide evidence on which nudges do and which do not work at the time of choosing an energy contract. Our original experiment imitates the situation that a consumer faces when she has just clicked on the website of a utility company and can choose between two different contract offers. To emulate this setting, we implemented the experiment as an online survey (a similar methodology is used by Lillemo, 2014).

Our experiment runs as follows: we ask the subjects to imagine they have moved to a new neighbourhood and need to sign an energy contract. The control group faces two options: buy conventional energy or buy a 50%/50% mix of renewable and conventional energy at a higher cost.¹ The decision for the control group is depicted in Fig. 1.

Note that we cannot exclude that our subjects were distracted while taking part in our experiment. We consider these potential disturbances a good thing, however, because they add realism to our setting: disturbances also occur when people choose an energy contract in real life.

2. Imagine you are a student who just moved to a new flat in a new neighbourhood. Your monthly income is 800€. There are two possible contracts for you to choose from the local energy supplier. Please act as if real money was involved.

Usually, you spend your budget in the following way:

- Flat and utility bill: 330
- Alimentation: 160
- Clothing: 50
- Study materials: 30
- Transportation: 75
- Insurance and Medicine: 60
- Communication: 35
- Leisure: 60

Your task is to choose one of the following contracts:

Contract A: 100% conventional energy, priced at 30€ per month.

Contract B: 50% renewable energy / 50% conventional energy, priced at 45€ per month.

Fig. 1. Decision screen for the control group.

¹ The choice between a purely conventional energy contract and a contract that offers a 50%/50% mix is due to the offers that were available at the authors' local utility companies at the time of creation of the experiment in early summer 2011.

The survey was sent to German and international students in June 2011.² Since we expected a large share of Germans, the economic choice situation is built on data for income, prices and spending that reflect the typical German student.³ Note that the default nudge was implemented using a different software. Due to a programming error, we did not obtain any data in 2011. After changing the software, we reran the original default survey without any changes in October 2013 targeting similar subjects.⁴

2.2. The nudges

We operationalise each nudge in up to three experimental treatments. The original decision screens for all nudges are shown in the Appendix Online (Supplementary material). The following section presents (i) a review of the theory and evidence on the working of each nudge and (ii) our implementation in the survey experiment.

2.2.1. Priming

Review: Mazar and Ariely (2006) find that having subjects recall the ten commandments decreases cheating. A similar effect can be found in consumption: Morwitz et al. (1993) find that when asked whether they intend to buy a car in the following six months, consumers' purchase rates increased by 35%. This effect is called "priming" and can be explained by bounded rationality. Tversky and Kahneman (1974), for instance, argue that people assess the probability that an event occurs with the ease by which they can recall examples of it. Following this line of reasoning, Gennaioli and Shleifer (2010) find that a decision maker does not use all available information but relies on what comes to mind. According to Kahneman and Frederick (2005), what comes to mind is shaped by stimulus salience and priming.

Implementation: We implement three different kinds of treatments for priming. *Priming-Intention:* Directly before presenting the actual choice problem, we ask subjects whether they intend to buy renewable energy in the future. *Priming-Memory:* We ask subjects to write down from memory everything they know about the link between climate change and energy production. They therefore have their own knowledge in mind when taking the decision. *Priming-Reassemble:* Here, we ask subjects to reassemble fragments of sentences about the relationship of energy production and climate change. This revives the subjects' knowledge and makes the negative effects of choosing conventional energy more salient.

2.2.2. Mental accounting

Review: A lab experiment performed by Mazar and Zhong (2010) shows that individuals who have spent money on green products behave in a less altruistic way in a dictator game than individuals who have spent money on conventional products. The authors cannot fully explain this licensing effect, where a previous ethically favourable action induces subsequent reductions in ethical behaviour. In our view, the above behaviour can be interpreted in the light of mental accounting, according to which individuals classify

² To be precise, we sent it to mailing list subscribers of Club der Ehemaligen e.V., Friedrich-Ebert-Stiftung, Max Weber-Programm Bayern, and Studienstiftung des deutschen Volkes, as well as to graduate students of the Barcelona Graduate School of Economics.

³ Our main source is a study by the German National Association for Student Affairs (19. Sozialerhebung des Deutschen Studentenwerkes, Kurzfassung (p. 22)) that investigated the average budget of German students in 2009. The energy budget comes from a casual survey done among our colleagues at the Barcelona Graduate School of Economics. We round these data for convenience. Our sample features 77% Germans.

⁴ We used SurveyMonkey for the main part of the experiment, but needed to use GoogleDrive for the default nudge due to that feature not being implementable in SurveyMonkey. Unbeknownst to us, GoogleDrive neither recorded the choices nor other data.

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