[*SOCIAL NORMS AND THE RESIDENTIAL ELECTRICITY MIX*]

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Overview

The decarbonization of the electricity sector requires the deployment of renewable energy sources. Additionally, nuclear energy is being phased out in countries such as Switzerland and Germany. This means that renewable energy sources need to replace current capacity of fossil fuels and nuclear energy to cover current electricity consumption levels. In addition, enough capacity through renewable energy sources must be created to also cover potential increases in electricity demand, for example in the residential sector due to an increasing share of electric vehicles. In the residential sector, demand for electricity generated from renewable energy sources is slowly growing (e.g. Verein für umweltgerechte Energie VUE 2019). To accelerate this trend, non-monetary incentives such as social norms can be used as supplementary instruments for policy design. There is evidence from field experiments that social norms are effective in inducing more environmentally friendly behaviour such as avoiding littering and reducing energy consumption (e.g. Alcott 2011, Kallgren et al. 2000, Nolan et al. 2008, Schultz et al. 2007). Eventhough such behaviour is not always directly observable by peers, social norms can still have an impact.

Social norms have proven to be an effective measure to reduce the energy consumption of households. We test whether this is also the case for the choice of the electricity mix of a household in a market where electricity mixes with varying shares of renewables energy sources are available. The objective of this paper is to investigate the influence of social norms on the investment of households in renewable energy. For this purpose, we look at the electricity mix that people choose, as this is a decision that every household makes. By investing in an electricity mix that consists of renewable energy sources households can decarbonize their electricity consumption. Some utility companys also offer electricity products that support environmental improvement funds.

To complement previous work in this field, self-reported and factual data is used for the approach in this paper to analyse social norms in the context of a residential electricity investment decision. In a first step, survey data is used to find a relation between social norms and the choice of the electricity mix. Second, we look at this relation on an aggregate level using data on the municipality level. By doing so, we aim to find the link between social norms and environmentally-friendly behaviour, which has been established in the experimental literature, on a more aggregate level. We intend to find behavioural differences across municipalities in Switzerland by distinguishing social norms on municipality level. The resulting insights can be informing for policy design.

Methods

We conduct an empirical analysis using data from the Swiss Household Energy Demand Survey (SHEDS) and data at the Swiss municipality level. In a first part, survey data is used to establish a link between social norms and investment in renewable energy sources through the choice of the electricity mix. SHEDS is an annually conducted survey covering three different areas of residential energy demand (electricity, heating and mobility). Furthermore, it contains other household-specific information about sociodemographic characteristics, social context and psycological factors. Our variable of interest is the choice of the electricity mix. SHEDS provides information about whether households invest in an electricity mix consisting of a larger share of renewable energy sources than the default mix provided by the utility company. Social norms are measured by several questions in the survey. Respondents indicate whether their peers behave environmentally-friendly. Additionally, they report whether they experience peer pressure to behave in an environmentally-friendly manner. These questions cover two types of social norms: descriptive and injunctive norms. The data allows a detailed analysis as we can take various information about households into account. For this purpose, we will employ a probit regression model.

In a second part, we investigate municipality data to find out whether social norms-induced behavioural changes are observable on a more aggregate level. Electricity providers report the share of consumers per municipality who invest in electricity mixes that consist of renewable energy sources. For social norms there is no direct data available, hence, a proxy is needed. Here, we resort to the unique political setting in Switzerland and utilise voting behaviour to approximate social norms on the municipality level.

Results

The analysis of SHEDS data provides evidence for a positive relation between social norms and the choice of an electricity mix that consists of renewable energy. Households who observe environmentally friendly behaviour among their peers and who feel pressure from peers to behave in an environmentally-friendly manner are more likely to have invested in an electricity mix that consists of a high share of renewable energy sources. The probability of a household paying for an electricity mix that consists of a high share of renewable energy sources is on average around 18 percentage points higher for people who perceive peer pressure to behave in an environmentally-friendly manner compared to households who do not perceive this pressure.

The hypothesis for the analysis using municipality data is that municipalities with stronger social norms in favour of renewable energy sources have a higher share of households paying for a low-carbon-intensive electricity mix. Results are not available at this time but will be obtained until June 2019 to be included in the paper draft for the IAEE Ljubljana conference.

Conclusions

In this paper we analyse the role of social norms in incentivizing households to invest in electricity mixes that are generated from renewable energy sources. Using non-experimental data, we find a positive relation between social norms and the investment in renewable energy sources on the demand side.

In the case of Switzerland, this insight is valuable in two regards. First, Swiss energy policy aims to advance the energy transition towards renewable energy sources and defines the phasing out of nuclear power which requires more power generation from renewable energy sources. Second, the Swiss electricity market is not fully liberalised yet. Taking the prospective market liberalisation for residential customers into account, knowledge about the effects of social norms can be used for policy makers and utility companies to prepare against a potential loss of consumers to “grey” electricity mixes containing fossil fuels.

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