**Are Prosumer Households That Much Different? Evidence from stated residential energy consumption in Germany**

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## Overview

## This paper analyzes the effect of owning a micro-generation system (MGS) on residential electricity and heating expenditures. We take the ownership of MGS as well as stated strong preference for self-supply as proxy variables for being a (potential) prosumer household. Prosumer households, by definition, are partial self-suppliers with energy. The role and relevance of energy prosumer households is continuously evolving, due to promotion policies, technological advancements in related products, emergence of new energy services, and business opportunities. Specifically, decreasing feed-in tariffs, changes in the Renewable Energy Act, and rising retail energy prices, in recent years in Germany have made the consumption of self-generated electricity more attractive relative to the feed-in into the grid. The behavioral adjustment of private households to these changing market and regulatory conditions are still largely unexplored. In our study, we focus on differences in consumption behavior between prosumer and consumer households, which also provide evidence regarding possible prosumer energy rebound effects. As prosumer households are on average quite different from traditional consumer households regarding housing situation and socio-economic characteristics, the presence of sample selection bias is likely. Therefore, we employ a quasi-experimental technique in the form of propensity score matching in order to strengthen the identified causal arguments in our data analysis. We explore different survey data sets from Germany, including choice experimental data from a recent survey that focused on motives for self-production (Oberst and Madlener, 2014) as well as annual data from the German Socio Economic Panel (SOEP), a longitudinal household panel maintained by the German Institute of Economics Research (DIW Berlin).

## Methods

## Due to the likelihood of selection bias, we use Propensity Score Matching (PSM) with energy expenditures as our outcome variable and prosuming as the treatment.

## Results

## Preliminary analyses show weak evidence for a higher consumption by MGS owners, but lower consumption by households with a strong stated preference for self-supply. Evidence from the household’s appliance stock is mixed: while MGS owners tend to own a higher number of energy-consuming appliances, some of those indicate more innovative energy consumption behavior, such as the adoption and use of e-bikes and smart meters. However, other appliances signal a more energy-intensive lifestyle by MGS owners (e.g. ownership of saunas).

## References

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