

WILLINGNESS TO PAY FOR ENERGY RETROFITS BY HOMEOWNERS AND LANDLORDS

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Overview

The decarbonization of the building sector represents an important contribution to achieving the Paris climate targets. The deployment of the renewable technologies and energy efficiency measures needed to achieve this requires numerous and extensive energy retrofits in private properties. Since decisions for or against energy retrofits depend on the preferences and willingness to pay of homeowners and landlords, these decision-makers are of particular importance.

In the current and recent literature, this question is explored with different focuses. However, not in a comprehensive study linking both homeowners and landlords and heating technologies with insulation measures by means of a choice experiment. Achtnicht and Madlener (2014) conducted a choice experiment on a heating retrofit or insulation measure among German homeowners. In a study focused on heating technologies, Lang et al. (2021) show preference heterogeneity in technology switching and suggest incentivizing low-carbon heating technologies. Additionally, Schleich et al. (2020) point out that the effectiveness of rebates for new heating systems differs across countries. In studies with choice experiments conducted further back in time, preferences for insulation measures were investigated in more detail (Banfi et al., 2008; Philips, 2012). Related to the sample, previous empirical studies in Germany examined preferences of retrofit decisions for example of homeowners (Achtnicht and Madlener, 2014; Schleich, 2020) and homeowners and tenants (Galassi and Madlener, 2017).

However, there is a lack of research on homeowners' and landlords' current preferences and willingness to pay for heating technologies and insulation. A comparative study between homeowners and landlords, both about single homes and apartments, is missing. In this paper, we investigate the preferences of homeowners and landlords for energy retrofits and their willingness to pay for specific energy retrofit options with respect to single homes and apartments. In doing so, we consider differences between homeowners and landlords.

Methods

We will elicit the preferences of homeowners and landlords in Germany when deciding on energy retrofits. For this purpose, we will conduct a large online survey of 2000 homeowners and around 1000 landlords with a professional survey institute in April to May 2022. The questionnaire contains a stated choice experiment using a within-between subject design. For each participant, the choice experiment contains twelve choice sets. This study refers to the first six of the twelve choice tasks of the homeowner and landlord sample. At the beginning of the choice experiment, all homeowners and landlords receive detailed and identical information about the hypothetical choice situation. The description for the landlords is adapted in some places to a landlord-specific context, e.g. to the attribute 2022 rent. The attribute levels shown in the stated choice experiment are individualized based on previous responses in the questionnaire and are additionally option-specific.

In the choice experiment, respondents are asked to choose between different hypothetical options for energy retrofits. We consider six different characteristics of energy retrofits (i.e., attributes): heating system, insulation, investment costs, subsidies, and carbon emissions. Homeowners receive the 2022 heating and hot water costs, while landlords receive the 2022 rent as the sixth attribute.

The survey company ensures the representativeness of our homeowner sample with respect to age, gender, inhabited federal state and high school graduation rate of the German population. Our survey focuses on a representative sample of German household decision makers who are also homeowners, which we believe is most suitable for eliciting preferences for energy retrofits. We expect about 18000 observations for the analysis of this paper.

To answer the research questions, we consider a split sample analysis. A separate mixed logit model is used for each sample of the homeowners and landlords. Depending on the results, further analyses with latent class logit models may be performed. If necessary, we will also consider multinomial logit or probit models. In addition, we will use

suitable non-parametric or parametric tests, for example, the complete combinatorial test, to compare, for example, the willingness to pay for different energy retrofit options between homeowners and landlords.

Results

For homeowners, we expect the willingness to pay for the heating system (compared to the baseline “no change of the heating system”) and insulation (compared to the baseline “no insulation upgrade) to be positive, whereas the willingness to pay for 2022 heating and hot water costs and carbon emissions are expected to be negative. For landlords, we expect the same effect directions. The willingness to pay for 2022 rent is expected to be positive. In addition, we expect a leverage effect of subsidies, which is analyzed using willingness-to-pay calculations.

Conclusions

Achieving decarbonization targets will require substantial investments by homeowners and landlords in the building sector. Therefore, decision makers are of particular research interest. With our study, we contribute to investigate preferences and willingness to pay for retrofit options. With this understanding, targeted measures can be derived to shape decarbonization in a goal-oriented way.

References

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