THE ROLE OF ENERGY PERFORMANCE CERTIFICATES IN REDUCING THE INFORMATION BARRIERS: EVIDENCE FROM SLOVENIA

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Overview

The Energy Performance of Buildings Directive (2002/91/EC) was adopted in December 2002, stipulating energy performance certification of buildings in the EU, and requiring EU member states to bring into force the laws, regulations, and administrative provisions necessary to comply with the directive until 2006, with a possibility of extending the deadline until 2009 in case of a lack of qualified or accredited experts. The directive was subsequently recast for clarity purposes in 2010 (Directive 2010/31/EU), revised in 2018 (Directive 2018/844/EU), and is currently undergoing another revision. Energy performance certificates provide information on the energy performance of buildings in a standardized way, rating the building's energy efficiency on a scale using letters from A (the most energy-efficient) to G (the least energy-efficient). Although there has been influential research concerning energy performance certificates (Andaloro et al., 2010; Brounen & Kok, 2011; Gonzalez-Caceres et al., 2020; Olaussen et al., 2017), there has not been substantial research on the effectiveness of energy performance certificates as a means of tackling information barriers to residential energy efficiency. This paper aims to bridge the identified gap, providing evidence from an EU member state of Slovenia. In a stated choice experiment, we explore whether better energy performance of residential buildings leads to respondents accepting a price premium for real estate, with all other elements kept constant. We consider whether financial and energy literacy influences household decisions of selecting real estate that is more energy- and/or cost-efficient, and whether providing monetary information on the energy label facilitates decision-making. Finally, we wish to determine whether energy performance certificates are effective as an informative measure in supporting energy-efficient decision-making in residential buildings.

Methods

The initial sample included 2537 respondents from Slovenia, economic decision-makers within the household, who are either owners or co-owners of their home. The data was collected from an online household survey in August 2020 as part of the EU-funded Care4Climate project. Characteristics of respondents in the sample closely resemble the population with respect to the region, gender, and age, with a slight over-representation of individuals with higher levels of education, possibly related to the fact that the survey was conducted online. After removing certain mischievous responders, there were 2484 respondents left in the sample. We designed a discrete choice experiment with stated preference to establish whether a better energy performance certificate rating would encourage respondents to accept paying a price premium, with all other elements kept constant. Different discrete choice methods were employed to estimate the specified model (Hoffman & Duncan, 1988; McFadden & Train, 2000; Train, 2009). As we were interested in exploring the roles of financial and energy literacy (Blasch et al., 2019), we estimated two probit models. We first estimated how different socio-economic factors, energy literacy, financial literacy, and moral attitudes towards energy conservation influence the respondents' decision to rely on the energy label when making real estate purchase decisions. The choice experiment required respondents to select between two apartments: the current home they are residing in and a home with a better energy rating for which they would be required to pay a price premium, ceteris paribus. The treatment group received information both on the monthly level of energy savings expressed in monetary terms (in EUR) and the energy performance certificate, while the control group had information only on the energy performance certificate. We then estimated the second probit model, observing how different factors impact the real estate choice. Finally, we estimated a bivariate probit model and a recursive bivariate probit model, with the dependent variable from the first probit model being the explanatory variable in the second.

Results

We report the preliminary results of the bivariate probit model. It was found that higher levels of energy literacy, financial literacy, energy-efficient behavior, and pronounced moral values about energy conservation and climate-change mitigation significantly and positively influence the respondent to take into account the energy label when making real estate purchase and rental decisions. When it comes to the actual decision to pay a price premium for real estate with a better energy rating, financial literacy, moral attitudes towards energy conservation, and energy-efficient behavior significantly and positively impact the choice, while a larger premium and having a 'free-rider' attitude towards energy conservation negatively impact the choice. We also found pronounced positive effects of the surface of the dwelling (possibly due to larger homes having higher energy costs) and residing in a home that is not energy-

efficient, which can be an additional incentive for the respondents to improve their living conditions. Certain socio-economic characteristics, such as education and income also appear as drivers, while the age of respondents has a negative impact. Interestingly, we did not find the treatment variable to have a significant impact, meaning that in our sample, it did not matter whether the respondents received both monetary information and the information on the energy performance certificate, or just the information on the energy performance certificate.

Conclusions

Although energy performance certificates have been present for some time, more research is required to assess whether they are effective as a means of reducing the information barrier to achieving residential energy efficiency. It bears to mention, that our sample exhibited low levels of energy literacy, with more than half of homeowners not knowing the energy rating of the home they live in. This leads us to believe that while energy performance certificates can visually serve as a heuristic device, the respondents still do not possess the knowledge necessary to make an informed choice. Low energy literacy may also be the reason why monetary saving did not turn out to significantly influence the choice of energy-efficient real estate. In addition, monetary savings might have seemed too low compared to the price premium at the time. The energy price rise we are presently experiencing in the EU could imply different conclusions, however, this remains to be investigated in future research. We thus conclude that continued education and information campaigns that raise awareness of energy efficiency are required to improve the effectiveness of energy performance certificates and tackle the information barriers to achieving residential energy efficiency.

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