

THE ROLE OF FORMAL AND INFORMAL ADVICE AND INFORMATION SEEKING IN ENERGY-EFFICIENT RENOVATION DECISIONS

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Overview

Improving energy efficiency is viewed to be one of the most cost-effective ways of reducing greenhouse gas emissions, increasing security of energy supply, leading to more sustainable energy policy and enhancing industry competitiveness (EC, 2010). Member states are, in comparison with projected trends, expected to achieve 20% savings of its primary energy consumption by 2020. Residential sector is regarded as one of the areas holding the greatest potential for energy savings, however, the implementation of cost-effective energy-saving measures is typically hindered by various barriers such as a lack of investment funds and available information about the possibilities and benefits of efficient energy use. In order to identify effective policy measures to induce investment in buildings' energy efficiency, it is important to have detailed information about the factors that influence the decision-making process of homeowners when planning a retrofit.

Literature review reveals a growing interest in investigating factors that influence energy-efficient renovations, see for example, Banfi et al. (2008), Nair et al. (2010), Alberini et al. (2013), Gamtessa (2013), and Achtnicht and Madlener (2014). More specifically, some most recent studies address the free riding behaviour related to incentives for home renovation programs (Grösche et al., 2013; Alberini et al., 2014) and investigate the role of energy audits and energy performance certificates (Frondel and Vance, 2013; Palmer et al., 2013; Christensen et al., 2014; Murphy, 2014). The objective of this paper is to identify which determinants have the most important influence on decisions for energy-saving renovations made by Slovenian homeowners. It contributes to the existing literature by focusing on the role of different sources of energy information and advice. Besides formal energy consultation provided by professional public agencies we also investigate the role of other sources of advice, such as advice received from friends and relatives, architects, craftsmen, construction companies, media and internet.

Methods

The empirical analysis of relevant determinants affecting the energy-efficient renovation decisions of single-family house owners is based on the random utility theory (Louviere et al., 2000) and is performed using revealed preferences. In order to gather the data, a survey on renovations undertaken by single-house owners in Slovenia was conducted in spring 2010. The collected data set consists of 1,022 homeowners of single-family houses built before 1991. In this way we obtained information on the renovation activity of homeowners in the last 15 years as well as dwelling characteristics and socio-economic characteristics of households. Since renovation decisions by homeowners in multi-dwelling buildings require a majority of the owners' votes and are therefore not autonomous, only decisions by single-house owners are investigated. In particular, we focus on renovations of the façade, roof, basement and windows, where a distinction is made between energy-efficient renovations (e.g., insulation) and maintenance or repairment activities. To model energy-efficient renovation decisions, limited dependent variable models are employed, namely the probit and count data (Poisson) models (Maddala, 1983; Greene, 2000). Several location and dwelling characteristics as well as the socio-economic characteristics of households are considered in order to explain decisions related to energy-saving measures adopted.

Results

The results show that 68% of homeowners decided to renovate building envelope during the last 15 years. The most frequent elements of building envelope being renovated are roof (47%) and windows (45%), followed by façade (30%) and basement (11%). In line with our expectations, energy-efficiency was highly pronounced in the case of window renovations (93% of all window renovations), quite high shares of energy-efficient renovations can also be observed for roof (68%) and façade (60%), while only minority of basement renovations (32%) took into account energy-efficiency aspect. Among those households that performed at least one renovation, energy-efficiency was completely disregarded by 16.8% of households. One, two and three elements of building envelope were renovated in energy-efficient way by 40.1%, 29.5% and 13.2% of households, respectively. On the other hand, energy-efficient renovation of all four elements was only done by 0.3% of homeowners that decided to renovate.

Preliminary results of the probit model reveal that the likelihood to perform energy-efficient renovation is negatively affected by the age of homeowner and house loan, while energy consultation makes it more likely to undergo energy-efficient renovation. Positive effect can be confirmed for different sources of energy advice and information: (i) energy consultation performed by professional public agency, (ii) advice from friends, relatives or acquaintances, (iii) advice from architects, engineers or energy consultants, (iv) advice from craftsmen or construction company, and (v) advice received from media or internet. Similarly, in the Poisson model the number of energy-efficient renovations decreases with the age of homeowner, while the household income, living area space and homeowner's decision to seek energy advice prior to renovation increase the number of energy-efficient renovations. Interestingly, advice from professional public agency and friends, relatives or acquaintances is not shown to be significant in this case, while the effect of other three sources of advice corresponds to the findings from the first model.

Conclusions

Results of the econometric analysis indicate that introduction of financial incentives in combination with informing and educating the public may have important impact on future improvements in energy-efficiency of homes. While previous studies typically stress the positive effect of professional energy consultation, we show that other formal and informal sources of information and advice also have an important role in fostering energy-efficient renovation decisions. Analysis therefore provides a better insight into relevant determinants affecting the renovation decisions and may prove valuable for policymaking in the area of promoting energy-efficient residential renovations.

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