

Empower the consumer! Energy-related financial literacy and its implications for economic decision making

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1. Motivations underlying the research

Untapped energy savings potential in the residential sector are a barrier to achieving ambitious national energy-efficiency targets. In fact, they may lead to substantial welfare losses. Among the several potential causes for consumers to not invest in energy-efficient appliances and equipment, which—over their lifetimes—are often also the cost-minimizing choices, are consumers' limited energy-specific knowledge and investment skills. Consumers' decisions to invest in energy-using durables represent a type of intertemporal decision, for which it has been observed in other domains that consumers are myopic or inattentive to costs arising in the future. Previous research in different countries has shown that large shares of the population are unaware of the savings they could realize by replacing their electric appliances by more energy-efficient ones.

Yet, investments in energy-using durables require not only awareness of future operation costs but also a combination of specific knowledge and skills: information about the energy consumption and the lifetime of appliances as well as of possible new, more efficient, appliances that could replace the old ones. Furthermore, consumers need to know the cost of electricity and make assumptions on how frequently they plan to use their appliances. Eventually, they need the skills to process all this knowledge in order to identify the possible savings from replacing their appliances by more energy-efficient ones. Research shows that these processing costs are relatively high for a substantial share of individuals. In combination with the lack of energy-specific knowledge and skills, this might represent an important barrier to households' energy conservation.

2. A short account of the research performed

To clarify the focus of our analysis, we summarize the various existing definitions of the term 'energy literacy' as well as its relation to the concept of 'financial literacy'. Moreover, we propose an integrated concept of literacy that we call 'energy-related financial literacy'. This concept combines both (1) the energy cost-specific knowledge households need in order to take informed energy-related decisions and (2) the set of skills needed to process this information and take optimal intertemporal investment decisions. We hypothesize that the combination of these elements is a better predictor of cost-efficient energy-related investment decisions than a standard financial literacy measure.

Using data from a large sample survey carried out in three European countries, we first present key facts about individual's financial literacy (as measured with the standard "Big Three" questions) and energy-related financial literacy. We document a substantial lack-of energy cost-specific knowledge among the respondents in our sample. Using multivariate regression analysis, we then study the determinants of energy-related financial literacy, with particular emphasis on the role of gender. The results provide

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evidence for a substantial gender gap in energy-related financial literacy, consistently with the evidence for financial literacy.

We then explore the role of financial literacy and ‘energy-related financial literacy’ for the adoption of energy-efficient technologies. Focusing on the adoption of energy-efficient light bulbs, we exploit data on actual investment decisions rather than hypothetical choices. The results of the econometric analysis show that energy-related financial literacy is positively associated with the adoption of energy-efficient light bulbs. Specifically, consumers with high energy-related financial literacy are associated with a 5 percent higher share of LED light bulbs at home. In contrast, we do not find an influence of financial literacy on lighting efficiency.

3. Main conclusions and policy implications of the work

Our analysis documents that, while the majority of the respondents in our sample perform quite well in standard financial literacy questions, a substantial lack of energy cost-specific knowledge prevails. The empirical analysis also shows significant heterogeneity in energy-related financial literacy scores among respondents. Importantly, we document a substantial gender gap in our measure of energy-related financial literacy, with males scoring higher levels of the index, consistent with the evidence on the gender gap in financial literacy. We also find that our measure of energy-related financial literacy is a better predictor of cost-efficient investment decisions than financial literacy, which suggests that standard financial knowledge alone is not sufficient to ensure optimal energy-related investment choices.

Our results inform models of consumer behavior for the choice of energy-consuming durables about the importance of considering limited energy-specific knowledge and skills to perform an inter-temporal investment calculation. Further, they point towards the promotion of energy-specific and financial education programs as a mean to address consumers’ lack of energy-related knowledge and skills and increase the adoption of energy-efficient durables. This is important to reach energy-efficiency goals since the decision of adoption of durables have implications in the long-run electricity consumption. Such programs would be even more relevant in the light of the prevailing energy poverty within several EU Member States, which is often associated with further problems such as poor health of household members.