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Reducing household electricity demand through smart metering: The role of improved information about energy saving

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Highlights

- Estimate the effect of consumption feedback on household electricity knowledge.
- Investigate the role of knowledge improvements in demand reductions.
- Feedback significantly improves household knowledge.
- Improved household knowledge does not lead to short-run demand reductions.
- Results suggest that frameworks which go beyond imperfect

information are justified.

Abstract

The international roll out of residential smart meters has increased considerably in recent years. The improved consumption feedback provided, and in particular, the installation of in-house displays, has been shown to significantly reduce residential electricity demand in some international trials. This paper attempts to uncover the underlying drivers of such information-led reductions by exploring two research questions. First, does feedback improve a household's stock of information about potential energy reducing behaviours? And second, do improvements in such information help explain the demand reductions associated with the introduction of smart metering and time-of-use tariffs? Data is from a randomised controlled smart metering trial (Ireland) which also collected extensive information on household attitudes towards energy conservation and self-reported stocks of information related to energy saving. As with previous results in Ireland, we find that participation in a smart metering programme with time-of-use tariffs significantly reduces demand. Although treated households also increased their self-reported energy-reducing information, such improvements are not correlated with demand reductions in the short-run. Given this result, it is possible that feedback and other information provided in the context of smart metering are mainly effective in reducing and shifting demand because they act as a reminder and motivator.



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Keywords

Residential electricity demand; Smart meters; Consumption feedback; Household knowledge; Conservation motivations

JEL classification

D04; D10; D12; Q41; Q48; Q49

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