Rational habits in residential electricity demand

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Abstract

Dynamic partial adjustment models of residential electricity demand account for the fact that households may not adjust electricity consumption immediately in response to changes in prices, income, and other relevant factors, because of behavioral habits or adjustment costs for the capital stock of appliances. However, forward-looking behavior is generally neglected. Expectations about future prices or consumption may have an impact on current decisions. In this paper we propose rational habit models for residential electricity demand and apply them to a panel of 48 US states between 1995 and 2011. We estimate lead-consumption models using fixed-effects, instrumental variables, and the GMM Blundell-Bond estimator. We find that expectations about future prices and consumption significantly influence current consumption decisions, which suggests that households behave rationally when making electricity consumption decisions. This novel approach may improve our understanding of the dynamics of residential electricity demand and the evaluation of the effects of energy policies.

JEL classification: D12, D84, D99, Q41, Q47, Q50

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