

The effect of economic incentive and comparative feedback on household electricity saving:

A field experiment in Matsuyama, Japan

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Abstract

This study examines the effectiveness of economic incentives, i.e. monetary rewards, and comparative feedback in promoting electricity conservation behavior. Two hundreds thirty-six ($n=236$) Japanese households participated in the field experiment, and they were offered monetary rewards depending on the reduction in electricity consumption. And some participants could know an individual electricity-saving rate of all participants and compared with own electricity-saving rate, i.e., comparative feedback. Results showed that about 70% of the participants attained reduction of electricity consumption. The average saving-rates of (i) economic incentive group (5.9%) and (ii) combined with comparative feedback group (8.2%) are statistically larger than (iii) control group (1.6%). Our econometric analysis confirmed that monetary rewards had a positive influence on the electricity conservation behavior, and combined with comparative feedback was more effective than only the economic incentive. The marginal costs of electricity saving behavior become 200 yen when the electricity saving rate approaches 4.1%. Responses to the questionnaire before and after the experiment suggest that participants may have underestimated the marginal costs of the electricity conservation behavior. We also showed that the NEP-score which is well known as the degree of environmental concern has positive influence to a self-reported environmental behavior, such as asked in a questionnaire survey, but may not affect the actual behavior, such as electricity-saving rate in our field experiment.