

Energy Cost Information and Consumer Decisions: Results from a Choice Experiment on Refrigerator Purchase in India

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Research shows that energy-efficient appliances are cost-effective, yet they are not widely adopted. The phenomenon is commonly referred to as the “energy-efficiency gap”. Most studies find that inadequate information is an essential factor contributing to this gap. While deciding to buy a product, the capital cost information is more salient than operating cost information. Labels on appliances are being used globally to provide energy use information to consumers. In the majority of countries, these labels give information in physical energy units such as kilowatt-hour. Several researchers have studied whether financial information, such as annual operating cost can be more useful for consumer decision-making. A review of these studies shows that there is a difference in the impact across appliances within studies. A difference in the impact is also observed for the same appliance across studies. Recent studies on refrigerators show that annual operating cost information on labels increases the probability that consumers compare products based on costs and benefits of alternatives and are more likely to choose energy-efficient options. These studies are limited to the European markets. Moreover, these studies do not estimate consumer willingness to pay for a product in a higher energy efficiency category.

In this study, we extend the work by examining the impact of annual energy cost information on labels of refrigerators in the Indian market. We estimate the change in consumer willingness to pay for a higher category of energy efficiency when the annual operating cost information is provided on labels. We conducted a stated preference survey in a metropolitan city in India. In this survey, we interviewed households on their choice of refrigerators from two alternatives differing in their characteristics such as energy efficiency category, brand and price on a series of choice-sets. We divided the sample of 302 households randomly into control and experiment group. In the choice sets shown to the respondents in the experiment group, the annual energy cost of the refrigerator was also presented alongside the label. We specified a mixed-logit model so that we could estimate the magnitude and the distribution of consumer willingness to pay for a higher category of efficiency in the two groups.

Our results confirm the findings of past studies that unlike the existing label, the labels with annual operating cost information allows consumers to compare products based on energy efficiency categories. Using the operating cost information on labels, consumers differentiate between different classes of energy efficiency and place a higher value on a higher category of energy efficiency. In the absence of energy cost information, consumers are indifferent to categories of energy efficiency. We find that the willingness to pay for a higher category of energy efficiency is insignificant in the control group. However, in the experiment group, the consumer willingness to pay for the higher efficiency category is estimated to be US\$200 at a 95% confidence interval of \$104–296. To place these values in perspective, the mean price of the refrigerators considered in the study is \$285, and the associated lifetime savings in the operating cost due to increase in energy efficiency for a range of assumed discount rate (1–10%) is \$102–66. The share of the sample placing a higher value on

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the highest energy efficiency category as compared to a lower category increased from 54% in the control group to 76% in the experiment group.

Despite the growing research and evidence on a positive impact of monetary cost information on the effectiveness of appliance labeling, it is rarely used. The estimates of operating cost estimates based on average national energy prices could vary among consumers incurring different electricity costs. Hence, such information may still be inadequate for effective decision-making. It is essential to look at the mechanism by which the operating cost information operates on consumer decisions. Several studies have shown that consumers do not have the right knowledge about the energy costs of products. Hence, it is likely that the energy cost information on labels is operating by either providing or correcting the knowledge about the energy cost. Following this, we suggest that policy interventions to enhance consumer knowledge on energy costs of energy-using products through labels or other communication channels can help consumers make cost-effective decisions and address one of the causes of the energy-efficiency gap.