



## WELL-DESIGNED, TARGETED POLICIES NECESSARY FOR INCENTIVES TO CHANGE BEHAVIOR

*Response to fiscal carrots and sticks correlates to household income*

The United States uses a complicated mix of taxes and incentives to encourage certain behaviors such as energy conservation and energy efficiency investments. These policies interact with broader laws such as income and sales taxes. For example, a consumer interested in purchasing a refrigerator might be eligible for a state rebate if they buy a particularly energy efficient model while also lured by a product boasting an ENERGY STAR label. Their purchase would also be subject to sales tax, which could vary based on the efficiency of the model. These overlapping policies impact how effective any individual policy is at swaying a consumer's decision.

New research by The E2e Project's Faculty Affiliate Sébastien Houde, Research Scientist at ETH Zürich, and Joseph Aldy, Associate Professor of Public Policy at the John F. Kennedy School of Government at Harvard University, looks at how taxes and rebates or other subsidies work together to affect the adoption of energy-efficient products.

The working paper, [\*The Efficiency Consequences of Heterogeneous Behavioral Responses to Energy Fiscal Policies\*](#), finds that when tax and subsidy policies are deployed with the intent to promote a specific behavioral change, consumers response varies depending on their income and preferences, ultimately impacting the success of the policy.

The researchers studied the U.S. refrigerator market from 2008 to 2012, a time when local, state, and national policymakers implemented a rich array of fiscal instruments intended to promote energy efficient purchases. This included policies such as ENERGY STAR, Cash for Appliances (a rebate program launched in various ways in the states in 2010), sales taxes and tax holidays for energy efficient products. Also, electricity prices varied across states and, in some areas, over time. The researchers studied millions of transactions from a large U.S. retailer, which matched household demographic data to individual purchases.

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## Lower income households respond better to rebates and other incentives than taxes

Houde and Aldy found that lower income consumers are more likely than their higher income counterparts to change their purchasing behavior when presented with a rebate for a more energy-efficient product. The reason for this is likely fairly intuitive: the value of the rebate is greater to lower-income households and therefore, for them, worth any additional paperwork or other costs that may be involved. In fact, since low-income households have a higher propensity to claim a rebate, smaller rebates are necessary to change their behavior relative to high-income households.



## Higher income households respond to policy that impact the price of energy more than rebates

Economy-wide policies, such as carbon taxes or a cap on carbon, or increases in sales or income taxes, are more likely to alter the consuming behavior of higher-income households. There are various explanations that can rationalize these patterns. For instance, regarding the response to energy costs, higher income households might be less credit constrained, more prone to plan for the future, or simply more sophisticated and thus pay more attention to this attribute, relative to lower income households.



The findings of this research point to the need for legislators and regulators to consider how various energy policies operate together and differently impact consumers. The results also suggest the need for policymakers to consider the differences in how consumers respond to various legislative measures in order to optimize investments in efficiency programs and achieve the greatest energy savings at the lowest cost.

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**The E2e Project**



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