

Causal Tree Estimation of Heterogeneous Household Response to Time-Of-Use Electricity Pricing Schemes

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Abstract We examine the distributional effects of the introduction of Time-of-Use (TOU) electricity pricing schemes. Using a causal forest (Athey and Imbens, 2016; Wager and Athey, 2017), we consider the association between past consumption and survey variables, and the effect of TOU pricing on household electricity demand. We describe the heterogeneity in household variables across quartiles of estimated demand response and utilise variable importance measures. Given that a number of standard variable importance measures can be biased towards continuous variables, we include permutation-based tests for our variable importance results.

Keywords Machine learning, TOU tariffs, Smart metering, Household electricity demand.

JEL Classification Q41, C55.

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