DISCLOSURE EFFECT: EVIDENCE FROM PUBLIC BUILDING ENERGY CONSUMPTION

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Overview

The essence of this research question is whether individuals respond to public perceptions as it relates to disclosing information about themselves or the institutions they serve. Specifically, do individuals who manage buildings respond to disclosing energy consumption to the public by reducing energy consumption in the years following disclosure? Evidence from this paper suggests that indeed, there is some intrinsic motivation to do so. The goal of this paper is to contribute to the larger projects of both efficient 'nudge' type policies and information as currency.

Context and Previous Research

Disclosure policies are not new but they are relatively recent in the domain of building energy management. Policies are mixed across states between adoption and mandate as well as year of implementation and sector – public or private. These differences allow for variation which can be exploited as a natural experiment using econometric estimation strategy.

Existing literature shows a mix of reactions to information disclosure, some positive and some negative. Specific to building energy use reductions, there is a study which was done in New York City with respect to this disclosure policy – referred to as a benchmarking ordinance – showing a 17% reduction in per square foot energy use in privately owned buildings.

This paper builds atop the model specified in New York City (DID) and examines it across six other cities where such a policy has been implemented. Data come from open-data portals hosted by the cities and total just under 20,000 observations, staggered over an eight-year period, 2009-2017. Public (government) and private buildings are explicitly categorized in these datasets allowing for a test group and a control group. Public buildings act as a test group – when assessing intrinsic motivation – because I assert they do not face the same market pressures (less efficient) that private building owners do.

Results and Remaining Questions

Using three different models, the results from this research suggest that indeed, there is on average a 6% decrease in per square foot energy use in public buildings when controlling for other factors. This can be interpreted a few different ways: reference point changes when building owners and operators observe how peer facilities are actually performing, gathering energy information makes individuals more aware and therefore more inclined to reduce or data provides sufficient leverage for capital projects to progress. There remains the primary question of endogeneity in how well the test and control groups are identified, some of which can be addressed by another dataset with distinct features (e.g. uploading energy data to a database *but not publishing* to the public).

Conclusion, Implications and Future Research

The early evidence of this policy's effect on energy consumption in non-residential buildings suggests the policy is effective. Given the policy's low cost of enforcement and low level of market distortion, it appears to be one worthy

of spreading to other municipalities. These policies vary in distribution across the US but building owners and operators in states which do not currently have the policy should expect it in the future as carbon emissions continue to be targeted for reduction. This current work on intrinsic motivation should continue to be looked at as energy prices remain inefficiently low to make costs salient and there needs to be other prompts for people who do not face costs at the time of consumption.