

The Silver Lining of Price Spikes: How electricity price spikes can help overcome the energy efficiency gap

Johannes Mauritzen

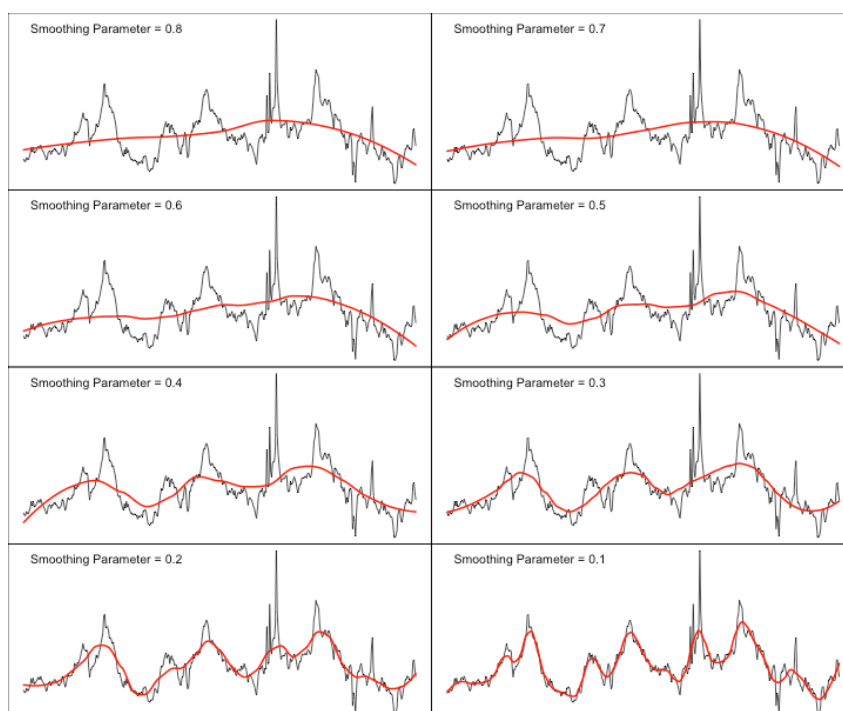
Norwegian School of Economics
Department of Business and Management Science
Helleveien 30
5045 Bergen
Norway
Johannes.mauritzen@nhh.no

(1) Overview

Economists have puzzled over how many consumers and businesses fail to invest in energy efficiency improvements despite seemingly ample financial incentives to do so – the so-called *energy efficiency gap*. Attempts to explain this gap often focus on access to information and searching costs. In this paper I show that the inherently spikey nature of many electricity market – often seen as a negative – has a strong and significant positive effect on searching for information on energy efficiency. I use data on Norwegian electricity prices and google searches for heat pumps in Norway. A novel method of measuring *spikiness* by comparing the actual series with a range of lowess smoothed series is used.

(2) Methods

In this paper I compare jumps in the price of electricity in Norway and searches for heat pumps (“varmepumper”). One difficulty is that the term price spike is itself rather vague. No widely agreed-upon line between what constitutes a spike in prices and normal variation of prices exists. I side-step the issue completely by presenting results for a range of ‘spikiness.’ I do this through a process of creating a lowess smoothed series for the price series and then differencing this from the actual series. By gradually adjusting the smoothing parameter of the lowess regression, I can adjust how much of the price variation to include in the regression: from nearly all the variation from an overall trend line to only large outlier price spikes.



(3) Results

My main finding is that price spikes have a large and significant effect on searches for heat pumps no matter how restrictively price spikes is defined. A doubling of average prices will tend to lead to between 50 and 100 percent more google searches for heat pumps in Norway.

Fig. 1: The effect of price spikes over a range of defined “spikiness”

