

WWZ Research Seminar

Faculty of Business and Economics, University of Basel

Tuesday, April 13, 2021, 17:00, ZOOM

Prof. Severin Borenstein,
University of California, Berkeley

"Do Two Electricity Pricing Wrongs Make a Right?
Cost Recovery, Externalities, and Efficiency"
(with James Bushnell)

Abstract

Advocates of using market mechanisms for addressing greenhouse gases and other pollutants typically argue that it is a necessary step in pricing polluting goods at their social marginal cost (SMC). Retail electricity prices, however, deviate from social marginal cost for many reasons. Some cause prices to be too low such as unpriced pollution externalities while others cause prices to be too high such as recovery of fixed costs. Furthermore, because electricity is not storable, marginal cost can fluctuate widely within even a day, while nearly all residential retail prices are static over weeks or months. We study the relationship between residential electricity prices and social marginal cost in the US, both on average and over time. We find that the difference between the standard residential electricity rate and the utility's average (over hours) social marginal cost exhibits large regional variation, with price well above average SMC in some areas and price well below average SMC in other areas. Furthermore, we find that for most utilities the largest source of difference between price and SMC is the failure of price to reflect variation in SMC over time. In a standard demand framework, total deadweight loss over a time period is proportional to the sum of squared differences between a constant price and SMC, which can be decomposed into the component due to price deviating from average SMC and the component due to the variation in SMC. Our estimates imply if demand elasticity were the same in response to hourly price variation as to changes in average price, then for most utilities the majority of deadweight loss would be attributable to the failure to adopt time-varying pricing. Nonetheless, in a few areas led by California price greatly exceeds average SMC causing the largest deadweight losses.

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