Do environmental markets improve allocative efficiency? Evidence from U.S. air pollution

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Abstract

Across many domains, market-based interventions hold the promise of reducing costs through improved allocative efficiency in settings where prices are otherwise missing. This claim is also fundamentally challenging to verify: the very absence of prices before a market makes establishing misallocation changes due to the market difficult. This paper develops an empirical framework showing how a theoretical change in allocative efficiency following a policy change can be recovered using a quasi-experimental panel data estimator, without needing input prices. We apply this framework, together with administrative data, to the study of two major U.S. markets for air pollution, a canonical missing markets setting where concerns over high abatement costs have made market-based interventions particularly appealing. We find that for California's RECLAIM Program, where an pollution market replaced existing regulation, allocative efficiency improved by 10%. For the U.S.'s NO_x Budget (NBP) Program in which a pollution market was overlaid onto existing regulation, we do not detect efficiency gains. Heterogeneity analyses reveal that plants with pre-existing distortions in capital and labor, and facing more limited abatement options experienced less allocative efficiency gains. These results highlight the conditions whereby market-based environmental policies achieve allocative efficiency gains.

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