

Market vs. Planning: Emission Abatement under Incomplete Information and with Local Externalities

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ABSTRACT:

To achieve a pre-determined target of emission abatement, one can adopt a planning approach, i.e., to carefully distribute and enforce non-tradable permits onto emitters, or use a market approach, i.e., to allow them to trade the permits with each other. We compare the welfare implications of the two approaches under incomplete information about the abatement cost, and with local externalities of such abatement, which may incur, for example, via changes in emissions of other substances. We show that market can address incomplete information but not heterogeneous local externalities; the opposite is true for planning. Therefore, the policy choice depends on the relative significance of the informational and externality problems. Applying the theoretical results to China's abatement of carbon emissions, we show that while a national carbon market can achieve a slightly better welfare outcome than a carefully designed national abatement plan, it will be substantially outperformed by a hybrid scheme, in which planning is applied to regions with the least incomplete information, while the rest are sorted into a limited number of subnational carbon markets by their local externalities of abatement.

BIOGRAPHY:

Guojun He is an economist working on environmental, development, and governance issues. He is now an associate professor in Economics at the University of Hong Kong. He holds a concurrent appointment at the University of Chicago's interdisciplinary Energy Policy Institute (EPIC) and serves as the research director of its China center (EPIC-China).

He's research tries to address some of the most challenging problems faced by developing countries and seeks to produce empirically-grounded estimates for optimal policy design. The majority of his work focuses on understanding the benefits and costs of environmental policies.

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