

Five Conclusions about U.S. Market-Based Environmental Regulation

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In our longer paper, we examine the structure and economics of the major U.S. market-based environmental policies (and proposed policies) such as the Acid Rain Trading Program, the Climate Stewardship Act, Renewable Portfolio Standards, and water quality trading. Market-based regulation consists of green taxes or cap-and-trade, or their hybrids. We drew five major conclusions:

1. Cap-and-trade is preferred over taxes by U.S. policymakers.

Both environmental taxes and cap-and-trade systems, the two forms of market-based regulation, are used in U.S. environmental policies but cap-and-trade systems are considerably more prevalent. They are used in several new regulations and proposed legislation pertaining to air and greenhouse gas emissions, in numerous water quality trading schemes across the U.S., in state approaches to farmland preservation, and in fisheries. Taxes or other price approaches have shown up in a significant way only in gas and hazardous waste taxes, and even here they have not been treated as the backbone of a regulatory policy.

As a further example of the primacy of cap-and-trade, consider the climate change policy that has made it farthest in the U.S. political system, the proposed Climate Stewardship Act. This Act proposed a cap-and-trade system for carbon fuels. Greenhouse gas emissions from carbon fuels arguably could have been tackled more simply, more quickly, and with less regulatory uncertainty using carbon taxes since taxes would use an already-existing institutional and legal infrastructure. The alternative virtues of cap-and-trade, however, whatever they might be in the eyes of policymakers, clearly have won over the supporters of a federal response to climate change.

Price instruments appear to have potential only in a few areas. The most likely adoption of a pure price approach is for traffic congestion. Congestion pricing and tolls seem far more likely to be used to reduce congestion delays than any kind of quantity instrument.

A price-type approach is also being used to increase use of renewable electricity, through Renewable Portfolio Standards. It is notable that in this case, the regulation and accompanying discussion have been framed in terms of a cap-and-trade approach. Only economists will recognize that this is essentially a form of taxes.

2. Hybrid policies are common.

A hybrid policy is a cap-and-trade system that contains a safety value provision, in which extra allowances are made available at a pre-announced price. Safety-valves appear in some form in the Acid Rain Trading Program, the Clear Skies proposal, CAFE, renewable portfolio standards, and many water quality trading systems. A safety-valve price was considered for the Clean Air Mercury Rule but abandoned in the final rule. Current U.S. policies exhibit a range of safety-valves, from those that are invoked routinely to those that would be invoked only in rare circumstances.

3. Market mechanisms are almost never the sole instrument used to regulate environmental behavior.

They are almost always combined with other regulations, in stark contrast to the theoretical literature which, with equal uniformity, models market mechanisms as the sole regulation that polluters face. Thus, much of the theory of real-world “mixed” approaches remains undeveloped.

An important corollary of our conclusion is that non-market approaches remain pervasive throughout U.S. environmental policy. Non-market elements show up *even in the most market-oriented of policies*, such as the Acid Rain Trading Program’s subsidy for early adoption of scrubbers and its continued requirement of the inefficient New Source Review and New Source Performance Standards. Likewise, the ITQ approach to fishery management has not been uniformly accompanied by a removal of inefficient gear or vessel capacity restrictions. Other market stalwarts, such as the Lead Trading Program and the Ozone-Depleting Chemicals program, simultaneously contained numerous restrictions on trades and on products.

4. Cap-and-trade often does not cap a true externality or cap the externality it appears to be aimed at.

Mileage standards for new cars do not cap gasoline consumption, which appears to be the law's target. Renewable Portfolio Standards promote renewable electricity but do not explicitly penalize the air quality or carbon content of nonrenewable electricity. Under tradable development rights, it is the underlying zoning regulation that effectively caps the number of farmland acres that may be converted to development but this cap is never binding even though the price of a development right is positive.

Note that many of the arguments for the transparency of market mechanisms are no longer valid when the "wrong" item is capped. Mileage standards probably reduce gasoline consumption, but their effects on such consumption are difficult to tease out because gasoline consumption is not capped and the connection between new car mileage and aggregate gasoline consumption (by both new and old cars) is complex. If the cap-and-trade applied directly to gasoline, the effects would be easier to identify and predict.

The misplaced-cap issue arises, at times, because legislators or regulators are attempting to remedy several different externalities simultaneously. Therefore, policy design in the presence of multiple externalities deserves much more research attention. Optimal regulation of multiple externalities typically requires multiple instruments. If only a single instrument can be used, it is not clear what regulatory instrument is best, although we presume that it will involve a market-based approach.

5. Non-point source trading and the related opt-in problem are the next stumbling block.

Non-point source trading for water quality remains one of the most active areas for new markets, but thin markets, the inability to monitor discharges, and the fact that non-point sources are unregulated create a situation that is far from the market paradigm envisioned by Montgomery (1972) or Baumol and Oates (1988). The latter two issues also arise for carbon sequestration.

There are two broad issues to consider. First, although the markets are inherently thin, there may be some ways to make them operate more efficiently. Regulators could adopt some sort of hybrid approach, as used in the Long Island Sound or Tar-Pamlico

programs. Under this approach, the safety valve, which regulators and sources may then *expect* to be invoked, eliminates the thin-market problems of market power, high transactions costs, and price uncertainty. Alternatively, regulators could identify concrete, short-term activities, such as the planting of a winter cover crop, that non-point sources could engage in for credits. The simplicity and observability of this action would allow more non-point sources to participate and with much lower transactions costs.

Second, because non-point sources are largely unregulated, their participation in a market invokes the *opt-in* problem. Regulators must determine a baseline level of discharges. This baseline is difficult to determine, yet if it is calculated incorrectly – either too high or too low – the regulation will be inefficient, possibly dramatically so. This problem arises in many circumstances beyond water pollution, and especially so in the context of allowing developing countries to opt in to a global agreement on greenhouse gas limits, rather than requiring specific reductions from them. The problem also arises for greenhouse gas regulation within the U.S., since landowners who undertake reforestation or other carbon-sequestration actions may want to opt-in to a domestic carbon cap-and-trade program. Understanding and solving the opt-in problem remain key challenges for environmental economists.

Some Final Remarks

Economists have written extensively and for many decades on the advantages of market-based approaches to environmental problems. As a result of this long-standing support – and, presumably, the correctness of most of the economists’ claims – policies that contain at least some elements of a market approach have now been applied to many environmental concerns.

Further improvement in market mechanisms is likely to occupy the attention of economists and policymakers in the coming decade. Non-market elements remain part of even the most market-oriented of policies. Economists need to examine the implications of and justifications for such elements and, where needed, press for their elimination.

Many cap-and-trade systems also do not focus on the item that they appear to be aimed at. The economics of this “misplaced-cap” problem are worth exploring further. In some cases the disjunction occurs because the true externality-causing item cannot be

feasibly monitored. Future improvements in monitoring capabilities are likely and should greatly enhance the government's ability to set-up efficient market instruments aimed at the true externality. In the cases where a cap-and-trade could at present be imposed on the true externality, economists should push for such a shift.

Finally, many remaining environmental problems arise from non-point sources, which do not initially appear to be amenable to market-based approaches. The U.S. experience with burgeoning point-non-point trading for water quality should help economists and policymakers learn how market approaches might be used even for non-point sources. The economics of the opt-in problem that occurs in these situations also remains under-explored.

Although there is a rich literature on the features and applicability of market approaches to regulating the environment, we believe the growing roles of these regulations present new, real-world issues that warrant further analysis. Our scrutiny of the existing and proposed environmental regulations demonstrates that there are still many areas in which economists can help improve environmental policies.