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Environmental Regulatory Reform: Discussion

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Within the general rubric of environmental policy reform, the three papers in this session address the current policy situation, the issues driving the policy reform movement, and how economics can contribute to the debate and its outcome. The papers fit together well to paint a picture of the evolution of environmental policy and some of the issues and challenges for economists associated with that evolution. Although the authors note a number of issues and challenges, there are other important points which deserve attention. In addition, I find myself challenging some of the points raised by the authors. It is toward these points that I focus this discussion paper.

Evolution of Environmental Policy

Carriker offers a thorough overview of the history of environmental policy in the U.S. since passage of the National Environmental Policy Act on January 1, 1970. To no one's surprise, history provides examples of radical improvements in the design and implementation of environmental policy over the last 25-plus years, as well as examples of stymied efforts on the part of lawmakers, rulemakers, and the regulated community. I wish Carriker had provided more of his own insights into why specific policies evolved as they did and the lessons to be learned by this study of our environmental policy history. We are perched at the edge of yet another stage in the evolutionary process, and our deliberations and decisions could benefit from a more thorough understanding of past successes and failures.

In his brief appraisal of environmental policy, Carriker describes substantial improvements in environmental quality, particularly air and water quality. However, he also describes critical problems which remain: air quality problems in major urban areas, nonpoint source water pollution, contaminated drinking water, and loss of biodiversity. Given these and other remaining environmental concerns, the ongoing policy debate seems to revolve around three critical questions: (*a*) How much is the American public willing to pay to solve these problems? (*b*) How are the costs of solving these problems to be distributed? and (*c*) How can the costs be minimized?

Much of the debate has focused on how federal agencies have promulgated regulations in response to laws passed by Congress. While there is little question that substantial inefficiencies exist in the regulatory process, and that, due to problems with ambiguity, inconsistency, duplication, and delay, costs to the regulated community are quite high, we have to remember that the system has developed in response to the set of constraints and incentives within which it operates.

Might the costs to the regulated community be less if the regulatory agency were in a position to bear a larger burden of administrative and enforcement costs? Have bureaucrats, in their own internal cost/benefit analyses, found that environmental goals identified by Congress can be achieved at least cost to their limited budget by requiring compliance with regulations which impose higher costs on those who must comply? Our set of broad, uniform environmental regulations—which treat all geographical, hydrological, and social situations equally—have undoubtedly imposed unnecessary costs in some regions; the implications of the Resource Conservation and Recovery Act, Subtitle D, landfill regulations for western states is a case in point. The ease of administering a uniform policy,

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the ability to fall back on arguments of fairness when criticisms are levied, and the lower costs of enforcing a single, uniform standard must have been important factors when the Subtitle D regulations were being drafted.

Attention to the actions of regulatory agencies has, in some cases, diverted attention from the kinds of laws being passed by Congress. It is clear that over the last decade, Congress passed increasingly detailed laws which provided less and less flexibility for regulators. Consider the Clean Air Act and the Federal Insecticide, Fungicide, and Rodenticide Act. Both have, in the last few years, become more and more explicit in their directions to the Environmental Protection Agency (EPA), including specific lists of chemicals to be regulated and specific mechanisms to be used by the regulators. The attempt by various members of Congress to lay the blame for costly regulation at the door of EPA overlooks the role that Congress has played in the evolution of our set of environmental regulations.

Environmental Regulatory Reform Debate

Infanger cautions that "there are broader issues and principles" involved in the policy debate than the partisan wrangling we have seen over risk assessments, unfunded mandates, and property rights. He presents several in his paper; I would like to discuss some others.

With respect to unfunded mandates, the implications of increasing environmental federalism must be discussed. Since increasing federal funding to support implementation of environmental programs at the state and local levels is unlikely, let's assume that the alternative is a reduction in federal oversight of environmental protection activities. Decentralization of environmental policy means more emphasis on localized priorities and budget constraints. Broad, one-size-fits-all environmental regulations will be replaced with programs which reflect regional and local differences in physical environment and associated environmental concerns. Decentralization of environmental policy also means a whole new set of issues. The economics profession may contribute by clarifying the tradeoffs associated with decentralization—whether related to extra-regional impacts, environmental justice, interregional differences in preferences, or economies or diseconomies associated with uniformity.

Infanger reports that Americans, by and large, still perceive of themselves as environmentalists, but feel that local, immediate problems are not sufficient to justify the localized costs of current programs. Rather, they tend to focus their concerns on more global, large-scale risks, suggesting a belief that those risks are more deserving of attention by federal regulators. In fact, in its own risk-ranking exercise, the EPA placed such risks at the top of the list. However, two precautionary notes are needed.

First, research has shown that individuals tend to underestimate the risks of activities or events with which they are unfamiliar, which are scientifically complex, or which are distant in time or space. Thus, should more concerted efforts to address these larger, more global risks result in significantly increased costs to individuals, they may again question whether risks justify costs.

Second, the public has been asked to bear only minimal costs associated with attempts to address problems like global greenhouse gas emissions and ozone depletion. Granted, costs of controls are spread over a much larger portion of the population. But I'm sure there are many among us who grumbled a bit when we could no longer get freon to recharge our own car air conditioners and were forced, instead, to pay an automobile mechanic for the freon, the labor, and the special equipment required to prevent discharges into the atmosphere.

Also, implementation of comprehensive programs to address such problems has been somewhere between weak and nonexistent. We know that chlorofluorocarbon (CFC) emissions in the U.S. have actually increased since the expressed commitment to phase-out of CFCs. So we don't yet have a clear picture of the costs associated with addressing these global issues. Economists can play an important role in helping to identify those costs and their distribution. In addition, we may help to define the tradeoffs faced in finally committing to reducing global environmental risks.

I must raise one point of disagreement with Infanger. When noting the inefficiencies associated with requiring a zero discharge of materials into air and water, he equates this with requiring zero loss of species. That is, the zero-loss goal of the En-

dangered Species Act is equivalent to the zero-discharge goal of the Clean Water Act. In fact, there are significant differences between the two. We know that air and water environments each have some assimilative capacity; a certain amount of waste material discharged into air or water can, through dilution, degradation, or other processes, be rendered harmless over a relatively short period of time. Consider, for example, the oxygen sag curve observed when dissolved oxygen in a stream responds to an influx of organic wastes. Thus, the case for allowing some level of discharge can be made fairly strongly, so long as the assimilative capacity of the physical environment is not overwhelmed.

The same is not true for protection of species. Loss of a species is an irreversible event. Our understanding of ecology tells us that species are involved in intricate webs within specific ecosystems; history has shown that loss of keystone species, or even introduction of alien species, can have significant negative impacts on the health and sustainability of the system. Unfortunately, we don't know the long-term impacts of loss of biodiversity.

A simplistic analogy is the gradual removal of bolts from an automobile. Which bolt is the one which causes the automobile to stop functioning? Similarly, you may recall a short story about a time traveler who, during a trip to the past, accidentally killed a butterfly—the repercussions of which were staggering upon his return to the present. In reality, loss of a single organism is unlikely to result in a particularly catastrophic outcome. But can we say the same about loss of a species?

Each of the issues addressed by Infanger—unfunded mandates, risk assessments, and property rights—is in fact a different angle on the overriding concern that our environmental protection efforts are too costly. The question I must ask is whether the reaction by lawmakers and the public is turning out to be an attempt to reduce the amount of environmental protection afforded, rather than an attempt to reduce the costs of achieving environmental goals. Consider, for example, the issue of risk assessments. The call seems to be for an assessment of whether we really need to spend the money for environmental programs: Are the environmental risks sufficient to justify the expenditures? But the flip side of that question is whether we can find less costly ways to minimize the risks.

Approaches to Environmental Regulatory Reform

Shabman and Stephenson's discussion of market-based approaches for reducing pollution is based, in large, on the proposition that traditional command and control approaches have been too costly. So, Infanger's conclusion that we are somewhere beyond the efficient quantity of environmental protection may be less than accurate if, in fact, the marginal cost curve reflects pollution control efforts which could be made more cost effective.

Shabman and Stephenson do an excellent job of delineating similarities and differences among various members of the profession who consider market-based incentive approaches superior to command and control approaches for controlling waste discharges to the environment. However, those members of the economics profession who have adopted the label "ecological economists" or "steady-state economists" likely would find it difficult to identify with any of the classifications that Shabman and Stephenson have described.

In general, ecological economists assert that traditional economic approaches to addressing environmental problems suffer from the fundamental assumption that the environment is part of the human economy, rather than the other way around. The environment is viewed as a resource or input to production processes—a good to be valued by and traded in a market. In fact, they would argue, the natural environment encompasses the human economy. The economy is an open system within the ecosphere, importing useful resources from and exporting wastes to the environment. The ecosphere is a closed system (recall Boulding's "spaceship earth"). They would also argue that environmental policy has, with rare exception, failed to account for this fact and has, as a result, failed to address the crucial question: How big can the economy become within the ecosystem before the ecosystem is overloaded and irreparably damaged or destroyed?

This is the issue of scale—a central principle of the ecological economics paradigm. Scale is simply the total volume of throughput in the economy, the

total use of resources and discharge of wastes. The scale issue arises because as the economy grows, the volume of throughput increases—more production means more throughput. The ecosphere has a carrying capacity, and environmental policies developed without a formal decision on how big the economy can get risk exceeding that carrying capacity.

In general, economists have tended to focus largely on questions of allocation. The groups of economists identified by Shabman and Stephenson are examples. Although each comes at the question in a slightly different way, all seek the optimal allocation of environmental resources or rights to "use" the environment. The market managers come closest to the ecological economics perspective when, in the first step, they seek to define environmental goals. Nevertheless, if they "argue for reconsideration of environmental goals using economic concepts of opportunity costs and marginal values instead of stressing empirical measurements," as Shabman and Stephenson assert, then they fail to recognize that environmental goals require consideration of scale—i.e., there are absolute limits to the quantity of throughput which can be sustained. The importance of opportunity costs in setting environmental goals is not questioned, but such tradeoffs occur as societies consider alternative levels of environmental quality within the global constraint of carrying capacity.

In his article, "Allocation, Distribution, and Scale: Towards an Economics That Is Efficient, Just, and Sustainable," Herman Daly uses the following analogy to illustrate the problems which arise from consideration of allocation in absence of scale.

> In loading a boat we also have the problems of allocation and scale—allocating or balancing the load is one problem (a microeconomic problem), and not overloading a well-balanced boat is another problem (a macroeconomic problem). . . . Economists who are obsessed with allocation to the exclusion of scale really deserve the environmentalists' criticism that they are busy rearranging deck chairs on the Titanic (pp. 191–92).

Daly suggests that tradable discharge permits is one policy approach which has successfully addressed the issues of scale, distribution, and allocation. A limited number of rights to discharge are created based on the absorption capacity of the receiving environment. Those rights are distributed, to citizens or firms. Finally, individuals can reallocate the permits through market channels in the interest of efficiency. This process fixes scale (the number of permits) but allows price to vary. Other market-based approaches, he would argue, fail to explicitly include scale as a critical design factor.

To follow the lead of Shabman and Stephenson, a three-stage process in designing and implementing environmental policy might be described by the ecological economists. Step one would be to fix scale—establish that level of economic activity (throughput) which can be sustained ecologically. The second step is to distribute rights—a socially determined distribution. The third step is the choice of environmental policy tool, whether it be a command and control mechanism or a market-based incentive approach. In the context of tradable discharge permits, those individuals or groups desiring a level of environmental quality greater than the level afforded by the scale decision would be able, through participating in the permit market, to restrict discharges to a level lower than the absolute maximum allowable.

Choice of an environmental policy tool may be complicated by the fact that different resource situations may require different approaches for protection. In their book, *Natural Capital and Human Economic Survival,* Prugh et al. use importance and irreversibility guidelines to delineate three types of resource situations. First, resources which are extremely important, and which cannot have their ecological functions restored by human intervention or natural processes, would require the firmest constraints on use, such as outright prohibitions.

At the other extreme are resources of relatively lesser importance and high reversibility. Use of this group would be left to the choices of individuals and markets, provided that all costs are carefully accounted for.

At the center is that group of resources that lies somewhere in between in terms of importance and reversibility. They would not require the strict controls of the first group, but would require more protection than an open market situation would allow—some mix of standards, quotas, etc. Prugh et al. assert that this scheme acknowledges that some decisions to protect or conserve environmen-

tal resources can be made primarily on the basis of an understanding of their ecological importance, apart from the results of any formal benefit/cost analysis.

In summary, ecological economists offer a more constrained approach to seeking out environmental policies that are more efficient. While efficient allocation is important, scale must be addressed first. This is the critical difference between the ecological economists and each of the groups described by Shabman and Stephenson. A review of the ecological economics literature provides further evidence of differences in the professional understanding of and support for market-based mechanisms for achieving environmental goals.

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