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Perspectives on environmental regulations and environmental protection

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The laws and regulations that govern the use of environmental resources have complicated effects on our society and our economy. Efforts to regulate environmental impacts are frequently controversial precisely because they have such complicated effects. No single perspective can adequately encompass all of the issues that arise in environmental regulation and environmental protection. Even the terms themselves suggest the fundamentally opposed philosophies that approach the assessment of environmental laws: While proponents of greater environmental activism emphasize the need to "protect" the environment, critics of more stringent controls emphasize that these laws "regulate" and limit the actions of individuals. At the PURE '92 conference, we invited four speakers with very different perspectives to share their views of the important issues in environmental protection and environmental regulation. Three of them are represented here: A. Myrick Freeman, III, an economist at Bowdoin College; John Graham of the Harvard School of Public Health; and Dean Marriott, commissioner of the Maine Department of Environmental Protection.

An economic perspective on environmental regulation

by A. Myrick Freeman III, Professor of Economics Bowdoin College

Regulations impose costs but they also create benefits. We need to look at both the benefits and the costs to decide how to use society's resources wisely when regulating activities that have an effect on the environment and on people. But I have a sense that many critics of regulation talk more about the costs than the benefits, so I will spend more time talking about the benefits than the costs. I want to use an analogy from a long-dead economist, Alfred Marshall, who wrote what was then the most widely used textbook in economics around the turn of the century. He was analyzing what we need to understand to see how markets work. He introduced the idea of a "two-bladed scissors": You have to look at both supply, that is one blade, and demand, that is the other blade. You cannot focus on just one, because you cannot cut a cloth with a one-bladed scissors. I think environmental policy works in essentially the same way: We have look at both the cost and the benefit. Looking at only one is like trying to make environmental policy with a one-bladed scissors. As an example of someone not recognizing the need for both blades of the scissors, Governor McKernan, in December of 1991, issued an executive order that required all state agencies to prepare an analysis of the costs of any regulatory initiative before implementing that rule. There is no mention in this executive order about looking at the benefits. That is a one-bladed environmental policy.

An underlying principle is that environmental policy should be designed to enhance human welfare. Welfare depends upon health, esthetics, and income, as well as consumption of non-market environmental services. There is substitutability among these different things that contribute to human welfare. A basic objective of economics is to understand how to make the best use of society's resources to sustain human welfare. Economists can point to data that show that people are willing to absorb an increased health risk if they get something in return. In fact,

they make everyday choices that imply just that kind of tradeoff. In public policy analysis, we need to understand people's preferences for how much public health they want versus how much esthetics they want. One objective is not higher or more valuable than another; rather people make choices among alternatives. Economic analysis of environmental policy tries to use the government to accomplish what the people themselves would choose if there were markets and opportunities to make choices.

Where should we look if we are to evaluate the benefits of a regulation? We start with the recognition that many kinds of economic activities do cause harm to people. The harms can take many forms. There are chemicals that are released into the air and water that pose risk to human health. Chemicals released into air and water can cause damages to other kinds of resources that people use, as when pollutants affect fish life and make water bodies less pleasant and less valuable for recreational fishing, boating, and swimming. Other kinds of harmful activities can reduce the economic productivity of resources used for commercial purposes. For example, we know that ozone air pollution reduces agricultural productivity significantly in many parts of the country. Ozone may also be implicated in the reduction of productivity in forests in New England and perhaps in the southeast. Damage to the environment can threaten the survival of species that people value for one reason or another. These are all potential damages that regulations are meant to curb, to limit and to prevent. Regulations may ban certain activities or place restrictions on these activities, in order to prevent environmental damage. Suppose we are considering some particular regulation: Is the regulation good, is it at the right level? This must explicitly involve a comparison of the benefits as well as the costs. We cannot answer that question without both blades of the scissors. This means that we must use benefit-cost analysis and economic analysis in environmental policy. When I say this, I often get hostile reactions from people who say that, for one reason or another, this is not a good idea.

Sometimes people argue that we should not base environmental policy on economic analysis because the benefits cannot be measured. I do not think that this is true; in fact, I have spent most of my professional life developing and implementing methods for estimating in monetary terms the benefits of a wide variety of environmental policies. In some areas the benefits are harder to measure. But sometimes it is not a problem of economics, but rather it is a problem with the underlying science. Scientific questions and uncertainties may prevent economic analysis. If the scientist cannot evaluate the risk a chemical poses to human health, the economist cannot do a benefit-cost analysis of regulating that chemical. But in many areas, and particularly with air and water pollution, we have fairly good models, facts, and data to answer questions about what are the benefits of a particular policy.

It is sometimes argued that the benefits are likely to be underestimated and that the costs are likely to be overstated. This might be the case when the analyses are done in a bureaucratic agency where people are responsive to special interests and especially when the analyses are done by pro-industry bureaucrats. I have some observations on that charge. First, this is just an argument to elect or appoint more objective people to these positions. Moreover, when I look at the work done in the federal agencies, and in particular at EPA, I do not observe anything like that. There may in fact be a tendency to underestimate costs and perhaps even to overestimate benefits, although I do not want to push that argument very far. The real assurance against bias of either sort, is the way the work is carried out and professionally reviewed. This work is

usually done by economists who have professional reputations to protect, and the work is subject to peer review. Drafts of analysis are sent outside the agency to be critically reviewed, and the agency has its own internal procedures to assure equivalent, critical peer review by committees and boards, such as the Science Advisory Board and the Clean Air Science Advisory Committee. I think that we do have both the analytical capabilities and the procedural capabilities to assure good quality control of the work done.

If we do a benefit-cost analysis, will the benefits be enough to justify regulations? The honest answer is sometimes yes, sometimes no and you cannot tell until you do the analysis. Just listening to the public debate over a particular regulation will be particularly uninformative, because typically the costs will fall on a fairly well-defined group that is organized to prevent having costs imposed upon it. So you will hear many complaints on the cost side. But typically the benefits of an environmental regulation are very widely distributed. They may amount to very large sums of money, but because they are widely distributed, no one individual or group of individuals will experience a large enough benefit that would cause those groups to organize.

Some years ago, I did an estimate of the benefits of controlling air pollution that had been realized by the Clean Air Act of 1970. This was in 1978. Updating to current dollars, the figures are somewhere between \$12 and \$120 billion per year. I estimated that the most likely value was somewhere in the middle, around \$60 billion. That is somewhere between \$50 and \$500 per person in the United States. When costs are in the billions of dollars, the people who bear the costs can make a lot of noise. But because the benefits are so widely distributed, the benefits are not likely to have the same kind of political support.

Finally, it has been absolutely clear to me that virtually without exception, when environmental regulations are proposed or established at the federal level, they are proposed in a form that makes them more costly than necessary to achieve the desired level of protection. In the economist's language, the regulations are generally not cost effective. This is a defect of the typical approach to regulation, which is "command and control." I advocate changing the direction of environmental policy to make more use of economic incentives, such as taxes and charges on pollution, or the trading of allowances and permits for pollution as has been embedded in the Clean Air Act Amendments of 1990 for emissions of sulfur dioxide. I also urge Governor McKernan to retract the one-bladed executive order and replace it with an order that requires that all regulations be analyzed for their cost effectiveness. That is the only way to see if there is a way to reduce the cost that a regulation would impose while still achieving the desired benefits.

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