Federalism and Regulation: Some Generalizations

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Since the early 1990s, the legal academic literature has paid a great deal of attention to how responsibility over environmental regulation in the United States should be allocated between the federal government and the states. One purpose of this chapter, to which I turn in Part I, is to defend the approach for the analysis of this issue that I have developed in a series of prior articles (Revisz 1997a, 1997c, 1996, 1992).

A second goal of the chapter is to suggest how the analysis of federalism and environmental regulation in the United States can cast light on other questions that are of central concern to the contributors to this volume. Part II deals with the allocation of responsibility over environmental regulation in other systems of economic integration, particularly the European Union. Part III discusses the treatment of environmental matters in international trade disputes. Finally, Part IV turns its attention to other areas of government intervention, such as corporate law, banking, and programmes of economic redistribution.

I. FEDERALISM AND ENVIRONMENTAL REGULATION IN THE UNITED STATES

Traditionally, the two justifications most prominently offered in the academic literature and the legislative arena for vesting responsibility for environmental regulation at the federal level have focused on the existence of a 'race to the bottom' and of interstate externalities. The race-to-the-bottom rationale for federal environmental regulation posits that states, in an effort to induce geographically mobile firms to locate within their jurisdictions, will offer them suboptimally lax environmental standards so as to benefit from additional jobs and tax revenues. In an article published in 1992, I cast doubt on the validity of the race-to-the-bottom rationale as an across-the-board argument for justifying federal intervention (1992).

The problem of interstate externalities arises because a state that sends pollution to another state obtains the labour and fiscal benefits of the economic activity that generates the pollution but does not suffer the full costs of the activity. In an article published in 1996, I showed how the federal environmental statutes had been ineffective in constraining interstate externalities in a desirable manner (1996).

More recently, advocates of federal regulation have devoted considerable attention to the public choice rationale for federal intervention (1997a: 558-61). The...
public choice rationale maintains that federal regulation is necessary because state political processes lead to the systematic underprotection of environmental quality. Relative to the federal government, the claims go, pro-environmental interests are underrepresented and/or anti-environmental interests are overrepresented at the state level. My criticism of this view, or which I am currently working, is previewed in this chapter.

The race-to-the-bottom justification

When states compete for mobile industry through their environmental standards, they are essentially competing for the sale of a good; the right to locate within their jurisdictions (1997c, 99-107). This market, like all markets, might be characterized by either conditions of perfect competition or imperfect competition. Perhaps the most effective way to dispel the idea that interstate competition for industry would inevitably lead to suboptimally lax environmental standards in the absence of federal intervention is through the analysis of the two leading models of the effects of interstate competition on environmental regulation. They show that under conditions of perfect competition the state environmental regulations would be optimal, and that under conditions of imperfect competition they could either be overly stringent or overly lax.

This theoretical inquiry therefore contradicts the claim of race-to-the-bottom advocates that, left to their own devices, states would systematically underregulate. The claim would therefore have to be supported empirically, but convincing empirical support is lacking as well. So far, the weight of the evidence points in the opposite direction (though this situation could change over time).

Theoretical models

The most influential economic model of the effects of interstate competition on the choice of environmental standards—a model of perfect competition—shows that interjurisdictional competition leads to the maximization of social welfare, rather than to a race to the bottom (Oates and Schwab 1988). In this model, Wallace Oates and Robert Schwab posit jurisdictions that compete for mobile capital through the choice of taxes and environmental standards. A higher capital stock benefits residents in the form of higher wages, but hurs them as a result of the foregone tax revenues and lower environmental quality needed to attract the capital.

Each jurisdiction makes two policy decisions: it sets a tax rate on capital and an environmental standard. Professor Oates and Schwab show that competitive jurisdictions will set a net tax rate on capital of zero (the rate that exactly covers the cost of public services provided to the capital; such as police and fire protection). In turn, competitive jurisdictions will set an environmental standard that is defined by equating the willingness to pay for an additional unit of environmental quality with the corresponding change in wages. Oates and Schwab show that these choices of tax rates and environmental standards are socially optimal.

In the absence of perfect competition, game-theoretic interactions among the states could lead to underregulation absent federal intervention. In such cases, federal minimum standards would be desirable, but it is equally plausible that in other instances the reverse would be true: that the game-theoretic interactions among the states would lead to overregulation absent federal intervention. In such cases, federal regulation would be desirable as well, but in such cases federal maximum standards would be called for. Accordingly, there is no compelling race-to-the-bottom justification for across-the-board federal minimum standards, which are the cornerstone of federal environmental law.

The most extensive analyses of effects of imperfect competition among the states show that either overregulation or underregulation could result (Marken, Morley, and Oleskevich 1995). These studies relax the assumption of constant returns to scale in the production functions of firms, which is a necessary condition for perfect competition and a cornerstone of the Oates and Schwab model. Instead, they consider the effects of state regulation on an industry that exhibits increasing returns to scale, a condition associated with imperfect competition. The studies show that, depending on the levels of firm-specific costs, plant-specific costs, and transportation costs, interstate competition can produce either suboptimally lax or suboptimally stringent levels of pollution.

Similarly, if a firm has market power enabling it to affect prices, it will be able to extract a suboptimally lax standard, but if a state has market power, the reverse would be true (Revesz 1992: 1241-2; 1997b: 104-5). In summary, just as there are game-theoretic situations in which interstate competition produces overenvironmental overregulation, there are other plausible scenarios under which the result is overregulation.

Moreover, even if states systematically enacted suboptimally lax environmental standards, federal environmental regulation would not necessarily improve the situation. If states cannot compete over environmental regulation because it has been federalized, they will compete along other regulatory dimensions, leading to suboptimally lax standards in other areas, or along the fiscal dimension, leading to the underprovision of public goods. Thus the reduction in social welfare implicit in race-to-the-bottom arguments would not be eliminated merely by federalizing environmental regulation: the federalization of all regulatory and fiscal decisions would be necessary to solve the problem.

Similarly, there is a concern that absent federal regulation, firms could capture rents created, for example, by locational advantages that otherwise would accrue to the states. But if environmental regulation is federalized, the rents could be captured with respect to another component of costs: only complete centralization would address the problem (Engel and Rose-Ackerman, Ch. 7).

Empirical studies

The validity of race-to-the-bottom arguments for federal environmental regulation therefore cannot be resolved on theoretical grounds alone; one needs to resort to
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Emission Race—but must also purchase offsets from existing sources, so that the aggregate pollution in the jurisdiction decreases in spite of the location of the new source (42 U.S.C. § 7503 (1994)). The study does not attempt to ascertain how much of the locational impact is due to the more stringent standard and how much is due to the offset requirement.

One commentator, Professor Kirsten Engel (1997: 279), makes an ingenious argument based on a survey of state regulators purporting to show that "a substantial minority of states rely on their environmental standards in order to attract industrial firms." The majority of respondents, however, indicated that they would not engage in competitive action in response to a firm's threat to exit the jurisdiction.

Professor Engel argues that if (1) states compete for industry by lowering environmental standards (relying on her survey), but (2) industry location is substantially unaffected by this competition (relying on the existing empirical evidence discussed above), it logically follows that (3) states' welfare will be reduced because there will be no economic gain to compensate for the environmental quality losses" (279). Addressing this claim in a prior article, he noted that making environmental standards more lax is not necessarily undesirable from a social welfare perspective (1997a). If, for example, a state believes that it has market power and therefore sets a baseline that is substantively stringent, a relaxation of the environmental standards would increase social welfare.

In a more recent article, Professor Engel, together with Scott Saleska (1998), attempts to respond to this challenge. On the basis of further empirical examination, they claim that states willing to "compete" with other states by making their environmental standards less stringent in order not to lose industry do not obtain gains in economic performance. Such gains would accrue, they maintain, if competition were desirable (66-7). The authors recognize, however, that states with relatively weak economies could be more likely to compete for industry by making environmental standards less stringent. Even if the economies of these states improved as a result of such action, they may remain weak compared to those of states with strong economies that did not compete for industry in this manner (71).

The authors purport to control for this possibility by means of multiple regression analysis. What needs to be done, however, is to simultaneously determine whether states with weaker economies are more likely to compete for industry and whether such competition improves their economic performance relative to what it would otherwise be (72-3). The authors do not perform such a two-step analysis or appropriately control for the most important factor—such as labor productivity, business climate, or unemployment—that can affect a state's economic performance.

The interstate externality justification

The presence of interstate externalities provides a compelling argument for federal regulation under conditions in which Coasian bargaining is unlikely to occur (Revesz 1996). Particularly with respect to air pollution, transaction costs are likely
to be sufficiently high to prevent the formation of interstate compacts. It is difficult for such compacts to emerge in the absence of a clearly defined baseline concerning when upwind states have the right to send pollution downwind, and in the absence of generally accepted mathematical models for translating a source's emissions into a quantity of ambient air quality degradation at all the places at which the emissions affect ambient air quality. Moreover, for different pollution sources, the range of affected states will vary; this shifting membership among the participants at the bargaining table makes less likely the emergence of conditions favouring cooperation (2375 and n. 123).

Nonetheless, the fact that interstate externalities provide a compelling justification for intervention does not mean that all federal environmental regulation can be justified on these grounds. For environmental problems such as the control of drinking water quality, there are virtually no interstate pollution externalities; the effects are almost exclusively local. Even with respect to problems for which there are interstate externalities, such as air pollution, the rationale calls only for a response well targeted to the problem, such as a limit on the amount of pollution that can cross state lines, rather than across-the-board federal regulation.

Indeed, the environmental statutes have been an ineffective response to the problem of interstate externalities. For example, the core of the US Clean Air Act—the statute designed to deal with the pollution that gives rise to the most serious problems of interstate externalities—is full of a series of federally prescribed ambient standards and emission standards. The federal emissions standards do not effectively combat the problem of interstate externalities because they do not regulate the number of sources within a state or the location of the sources. Similarly, the various federal ambient air quality standards are not well targeted to address the problem of interstate externalities. They are overinclusive because they require a state to restrict pollution that has only in-state consequences. But they are also underinclusive because a state could meet the applicable ambient standards but nonetheless export a great deal of pollution to downwind states (through tall stacks or location near the interstate border). In fact, a state might meet its ambient standards precisely because it exports a large proportion of its pollution.

In fact, in some ways the federal environmental statutes have exacerbated, rather than ameliorated, the problem of interstate externalities. Again, in the context of the US Clean Air Act, the federal ambient standards give states an incentive to encourage sources within their jurisdiction to use taller stacks (or to locate close to downwind borders). In this way, states can externalize not only the health and environmental effects of the pollution but also the regulatory costs of complying with the federal ambient standards. Thus, not surprisingly, the use of tall stacks expanded considerably after the passage of the Clean Air Act in 1970. In 1970, only

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2. 42 U.S.C. § 7411 (1994) sets national ambient air quality standards. Section 7411 sets emission standards for new sources. Ambient standards prescribe maximum permissible concentrations of pollutants in air, but do not directly constrain the behaviour of individual polluters. Emission standards, in contrast, impose enforceable limitations on individual sources.

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two stacks in the United States were higher than 300 feet. By 1985, more than 180 stacks were higher than 500 feet and 23 were higher than 1,000 feet. While this method of externalizing pollution is now less of a problem as a result of stack height regulations that followed the 1977 Amendments to the Clean Air Act, tall stacks remain a means by which excessive pollution can be sent to downwind states (Revesz 1996: 253).

The one environmental programme specifically designed to deal with an interstate externality problem has been the acid rain provisions of the 1990 Amendments to the Clean Air Act, which established a marketable permit scheme in sulphur dioxide emissions. The aggregate decrease in emissions over time is likely to reduce the problem of acid rain in the Northeast, but the fact that trading takes place in a single national market interferes with a desirable allocation of the permits between upwind and downwind sources (2375–60).

There is, moreover, one provision under the Clean Air Act that is specifically designed to combat interstate externalities by creating a mechanism under which downwind states can seek to enjoin excessive upward pollution (42 U.S.C. §§ 7410 (D), 7426 (1994)). It is particularly ironic that no downwind state has ever succeeded under this provision. In summary, while we should have federal environmental statutes that control interstate externalities, relatively little of the current federal statutory scheme can be justified on these grounds.

The public choice justification

Advocates of federal regulation on public choice grounds cannot simply say that state political processes undervalue the benefits of environmental regulation, or overvalue the corresponding costs. Federal regulation is justifiable only if its outcome at the federal level is socially more desirable, either because there is less underregulation or because any overregulation leads to smaller social welfare losses. There are several reasons for being sceptical about the soundness of a general claim of this sort.

The logic of collective action

The public choice mechanism that makes it possible for federal regulation to correct for underregulation at the state level is far from self-evident (Revesz 1997: 588–61). For example, Professor Daniel Esty states that '[if] the centralized level, environmental groups find it easier to reach critical mass and thereby to compete on more equal footing with industrial interests' (1996: 650 n. 302). He adds that '[the difficulty of mobilizing the public in many separate jurisdictions is well established' (650–1).

In fact, however, the logic of collective action might suggest the opposite. The cost of organizing on a larger scale magnifies the free-rider problems faced by environmental groups. Moreover, because environmental concerns vary throughout...
the country, there will be a loss in the homogeneity of the environmental interests when they are aggregated at the federal level, thereby further complicating the organizational problems. For example, environmentalists in Massachusetts may care primarily about air quality whereas environmentalists in Colorado may rank limitations on logging on public lands as most important. Other things being equal, state-based environmental groups seeking, respectively, better air quality in Massachusetts and more protection of public lands in Colorado are therefore likely to be more effective than a national environmental group seeking, at the federal level, better environmental quality with respect to both of these attributes.

In contrast, the situation is likely to be different for industry groups. For many environmental problems, an important portion of the regulated community consists of firms with nationwide operations. For such firms, operating at the federal level poses no additional free-rider problems or loss of homogeneity.

The relevant question is whether the additional problems faced by environmental groups at the federal level are outweighed by benefits arising from the fact that the clash of interest groups takes place before a single legislature, a single administrative agency, and, in part, as a result of the exclusive venue of the D.C. Circuit over important environmental statutes, is a single court (Revesz 1997a).

For example, if one assumed that, beyond a certain threshold, additional resources do not increase a group's probability of being successful in the political process, and if this threshold at the federal level is sufficiently lower than the sum of the corresponding thresholds at the state level, it may be that environmental groups would not be disadvantaged at the federal level even if they were disadvantaged in the states. In this case, the economies of scale of operating at the federal level would more than outweigh the increased first-rider problems.

The assumptions behind such a model, however, are not particularly plausible. The threshold concept might properly describe certain costs associated with effective participation in the regulatory process. For example, with respect to the regulation of a particular carcinogen, each group might need to hire a scientist to review the regulation's risk assessment. It may well be the case that a certain minimum will secure the services of a competent scientist and that devoting additional resources to the problem would be of little, if any, use. Thus, for costs of this type, the marginal benefit of additional expenditures is zero, or close to zero, regardless of the party's expenditures.

The structure of other costs, however, is likely to be quite different. For example, with respect to access to the legislative process, a standard public choice account is that the highest bidder prevails (Peltzman 1976; Stigler 1971). Thus the benefit that a party receives from its expenditures is a function of the expenditures of the other party. Unless the costs of this type are quite small, the economies of scale of operating at the federal level are unlikely to outweigh the additional first-rider problems.
1970, the federal government did comparatively little in this area (and probably continues to underinvest in it even today). It would thus not be surprising if the states, lacking an appropriate scientific basis for regulating, did little on the regulatory front. But even so, the view that the states were ignoring environmental problems until 1970 is not correct. For example, several empirical studies show, quite clearly, that during the 1960s, without federal prodding, states were making considerable strides with respect to the control of air pollution. In particular, the concentrations of important air pollutants were falling at significant rates and the number of states, counties, and municipalities with regulatory programmes to control air pollution was increasing rapidly (Crandall 1983: 19–22; Goldanly 1989a; 1988b: 12; Pormey 1980: 26–9, 50–3, Stens 1982).

Most strikingly, sulphur dioxide concentrations appear to have fallen by 11.3 percent per year between 1964 and 1971 (before the presence of an active federal role with respect to air pollution control) but only 4.6 percent per year in the 1970s (in the era of federal regulation). Similarly, the concentrations of total suspended particulates fell by 2.3 percent per year between 1960 and 1971 but by only 0.6 percent per year from 1972 to 1980 (Crandall 1983: 19). In a study conducted for the Brookings Institution, Robert Crandall Run concludes that 'these data suggest that pollution reduction was more effective in the 1960s, before there was a serious federal policy dealing with stationary sources, than since the 1970 Clean Air Act amendments' (19).

The leading account of the genesis of federal environmental regulation, which focuses on the passage of the Clean Air Act, is consistent with this evidence. This study argues that the Clean Air Act of 1970 was a response to industry pressure for federal intervention as a means of discouraging states from setting more stringent (and dissonant) standards (Elliott, Ackerman, and Millman 1985).

The current situation

A full analysis of what states are currently doing with respect to environmental regulation cannot be undertaken here, but a few examples are nonetheless instructive. As a threshold matter, however, a note of caution is in order. It could well be misleading to point to the existence of state environmental statutes as evidence of environmental concern because it may be that the statutes are merely symbolic and are not being enforced. But in the brief case studies presented below, the state programmes did in fact result in actual environmental improvements.

Moreover, care must be taken to ensure that the examples of state intervention are not federally compelled. Thus the programmes discussed below differ from state regulatory actions, such as the preparation of State Implementation Plans (SIPs) under the Clean Air Act, which are performed under federal command. The claim here is not that every state is being active in the environmental regulatory arena. The citizens of some states may have preferences for later environmental regulation than the federal regulatory level and may therefore not have any reason to voluntarily adopt additional environmental programmes. But it is rele-

vant that a significant number of states are adopting innovative forms of regulation and imposing costs of in-state firms. A brief discussion of state involvement with respect to five important environmental issues follows.

Automobile emission standards

The Clean Air Act contemplates two possible sets of automobile standards: the federal standards and the more stringent California standards. The Act gives states the freedom to choose the California standards if they wish (42 U.S.C. § 7507 (1994)).

In 1991, the twelve Northeastern states that were members of the Ozone Transport Commission (OTC) established under the Act agreed to do so. Massachusetts and New York were the first states to adopt the standards, but their action provoked legal challenges that ultimately proved unsuccessful. Nonetheless, to put their desired standards on a firmer legal footing, the OTC members asked the EPA to require them to adopt the California standards. Ultimately, this process resulted in a voluntary agreement between the automobile manufacturers and the Northeastern states for a set of automobile emission standards that are more stringent than the federal standards. These new standards are now in effect in most of the Northeastern states, and will go into effect nationally in model year 2001 (63 Fed Reg 11, 374 (1998); Fern 1998).

Hazardous waste regulation

The federal Superfund statute has devoted the bulk of its attention to the approximately 1200 sites that are on the National Priorities List (NPL) (Environmental Law Institute 1998: 3). The federal approach has essentially ignored thousands of hazardous waste sites around the country, some of which pose serious risks to health and the environment.

Over the last decade, the states have gradually moved in to fill the vacuum. All fifty states have now enacted state Superfund programmes. Moreover, as part of these programmes, some states maintain clean-up funds, raised by means of state taxation, to pay for clean-ups at sites at which responsible parties with sufficient solvency cannot be found (Environmental Law Institute 1998). The state programmes have been an effective mechanism for obtaining clean-ups and have recently been the subject of a report by the US General Accounting Office (GAO), which is seeking to determine what lessons the federal government can derive from the experience of the states (General Accounting Office 1998; Guerrero 1999).

One area in which states have taken a definite lead is with respect to the redevelopment of so-called brownfield sites. These sites are typically abandoned former industrial sites in urban areas. They tend to escape the EPA’s interest and attention because they are not sufficiently contaminated to qualify for listing under the NPL. Nonetheless, these abandoned sites provide many inner cities with much-needed opportunities for economic development and give rise to environmental justice problems. The sustained actions of several states in sponsoring and facilitating
brownfields redevelopment is now leading the EPA to consider playing more of a role in this area. States have also acted in innovative ways with respect to land transfer statutes. Under the federal Superfund program, there is no requirement for a clean-up to take place at the time that commercial real estate is transferred. Although both the seller and the buyer are typically liable in the event of a subsequent clean-up (42 U.S.C. §§ 9601 (33), 9707(a) (1994)), many sites that change hands never come to the attention of regulators. A majority of states now require that either clean-ups, covenants to undertake clean-ups, or detailed disclosures take place contemporaneously with real estate transfers. A recent survey indicated that thirty-four states now have some form of property transfer provision, up from six in 1995 (Environmental Institute 1998: 36).

Non-hazardous solid waste regulation

The federal government has done very little with respect to the control of non-hazardous solid waste. In the last ten years, municipalities have undertaken considerable efforts to decrease the volume of waste generated, primarily in the form of residential curbside recycling programs and volume-based pricing of solid waste disposal services.

For example, in 1988 there were approximately 1,000 curbside recycling programs in the United States; the number of such programs had reached about 5,000 in 1992 and about 9,000 in 1996. Similarly, whereas in the late 1980s there were only a few dozen volume-based pricing programs, by 1996 there were 3,600, covering close to 10 percent of the population of the United States (Junkins et al. 1999). The pressure for recycling and for the reduction of the volume of waste generated has come almost exclusively from outside the federal government.

States have also taken the lead with respect to a variety of other matters. A 1995 survey found that ten states had bottle bills, and that these states are responsible for 98 percent of the recycled plastic in the United States (Depalo 1995: 881). Similarly, forty-five states had legislation requiring state agencies to purchase goods made from a minimum percentage of recycled materials, or requiring such agencies to use a minimum portion of their budget to purchase products made from recycled materials (887).

State environmental protection acts

The National Environmental Protection Act (NEPA) requires the preparation of environmental impact statements for any project involving 'major Federal actions significantly affecting the quality of the human environment' (42 U.S.C. § 4332 (1994) (emphasis added)). In the absence of federal actions, such as federal funding or permitting, NEPA does not impose any obligations, and thus does not reach state actions that might pose environmental harm. In most states, however, environmental impact statements must be prepared in such situations as a matter of state law. A recent study suggests that twenty-eight states have now imposed such requirements (Caldwell 1998: 227). As a result, a larger range of projects require the preparation of environmental impact statements; the state programs have a direct effect on projects for which there is state involvement but no federal involvement.

Moreover, as a result of the Supreme Court's decision in Stryker's Bay Neighborhood Council v. Katon (44 U.S. 223 (1980)), the federal NEPA statute is essentially limited to a procedural requirement, which is satisfied by an appropriate environmental impact statement is prepared. Under this interpretation, NEPA has no independent substantive component. Thus, for example, there is no requirement for a project to mitigate its adverse environmental consequences. In contrast, the state statutes of the District of Columbia and at least four states have substantive elements (Cal. Pub. Resources Code § 21902.1; D.C. Code § 6-861; Mass. Gen. L. ch. 30, § 61; Minn. Stat. § 116D.02; N.Y. Envtl. Conserv. L. § 40109). While some courts have interpreted these substantive provisions in a restrictive manner (Laurel Heights Improvement Ass'n v. Reports of the Univ. of California. 764 P.2d 278, 283 (Cal. 1988)), others have given them full effect (Jackson v. New York State Urban Dev. Corp., 494 N.E.2d 429, 434-35 (N.Y. 1986)). As a result, environmental projects involving both federal and state action might fail a challenge under state law even if they survive a challenge under federal law.

Wetlands protection

A number of states are beginning to take an active role with respect to wetlands protection. For example, in 1987, Maryland, Virginia, Pennsylvania, and the District of Columbia signed the Chesapeake Bay Wetlands Policy, which set a goal of achieving 'a net resource gain in wetlands acreage and function over existing conditions' (Grasso 1996). The agreement also called for reducing by 40 percent the amount of nutrients flowing into the Bay by the year 2000. This agreement led to the tidal Wetland Program and Nontidal Wetland Program, administered by the Maryland Department of Natural Resources; the Tidal Wetlands Program and Submerged Lands Program, administered by the Virginia Marine Resources Commission; and the Dan Safety and Waterway Management Program, administered by the Pennsylvania Department of Environmental Resources. A recent empirical study suggests that these programmes have had a salutary effect (Grasso 1996). Similarly, an empirical study has shown that wetlands loss in Massachusetts has slowed considerably since the passage in 1991 of the state Wetlands Protection Act (Payne 1998).

Toward a desirable federal policy: a regulatory mismatch

The preceding discussion shows why the three principal justifications for federal intervention do not serve as across-the-board arguments justifying federal regulation. This chapter is not the place to work out the details of a desirable federal role with respect to environmental regulation. To add some concreteness
to the discussion it is useful, however, to briefly describe the areas in which federal intervention can correct the various pathologies that otherwise would result (Revesz 1997c).

**Interstate externalities**

The preceding discussion has focused on pollution externalities, principally air pollution crossing state lines, and shown why the existence of such externalities provides a compelling reason for federal regulation. Other externalities that merit federal regulation arise with respect to different environmental problems. For example, to the extent that certain endangered species are located in a particular state, the costs of protection are largely concentrated in that state. The benefits of preservation, however, accrue nationally, or, for that matter, globally.

Similarly, out-of-state citizens place value on the existence of certain natural resources—even resources that they never plan to use. Such existence, or non-use, values provide a powerful justification for federal control over exceptional natural resources such as national parks.

**Economic of scale**

Advocates of federal regulation often maintain, though without much empirical support, that centralization has strong economies of scale advantages. The economies of scale argument is most plausible in the early stages of the regulatory process, particularly with respect to the determination of the adverse effects of particular pollutants through risk assessment. Indeed, there is little reason for this determination to be replicated by each state.

The force of the rationale, however, is far less compelling at the standard-setting phase. At this stage, not only are the savings from eliminating duplication of efforts likely to be much lower, but centralization will have serious social costs as a result of the difficulty of setting standards that are responsive to the preferences and physical conditions of different regions.

**Uniformity**

As previously discussed, federal environmental standards are generally minimum standards. The states remain free to impose more stringent standards if they wish. Some standards that apply to pesticides and mobile sources such as automobiles (7 U.S.C. § 136v (b) (1944) (pesticides); 42 U.S.C. § 7416 (1994) (mobile sources)), however, are both floors and ceilings: they pre-empt both more stringent and less stringent state standards. Uniformity of this sort can be desirable for products with significant economies of scale in production. In such cases, disparate regulation would break up the national market for the product and be costly in terms of foregone economies of scale.

The benefits of uniformity, however, are less compelling in the case of process standards, which govern the environmental consequences of the manner in which goods are produced rather than the consequences of the products themselves.
moderates this comparative advantage but does not wholly eliminate it. Highly
industrialized states, where the centralized ambient standards constrain further
growth, would be unable to attract new sources without imposing additional costs
on existing sources.

In the light of these weaknesses, it is not surprising that recent European scholar-
ship has sought to recharacterize the quest for harmonization in race-to-the-
bottom terms. Commentators have argued, as have race-to-the-bottom advocates
in the United States, that the goal of centralized intervention is to protect states
from the pressure to impose suboptimally lax environmental standards as a means
of attracting jobs and tax revenues (Kraizer 1995; Van den Bergh, Faure, and
Leffeure 1996). But, obviously, the analytical shortcomings of the race-to-the-
bottom rationale for centralized environmental regulation are not confined to one
side of the Atlantic.

The legal status of the debates concerning the strength of the rationales for cen-
tralized environmental regulation is also different in the European Union and the
United States. In the United States, the choice between federal and state regulation
(except when state regulation is coupled with trade restrictions) is, for the most
part, a matter of policy. The constitutional constraints are extremely weak, even
after the Supreme Court's decisions in New York v. United States (505 U.S. 144
(1992)) (holding that Congress may not require states to enact or administer a fed-
eral program), United States v. Lopez (115 S.Ct. 1624 (1995)) (holding, for the
first time in over fifty years, that Congress exceeded its authority under the
Commerce Clause), and Printz v. United States (117 S.Ct. 2365 (1997)) (holding
that Congress may not compel state officials to execute federal laws).

In the European Union, in contrast, the subsidiarity principle adopted in the
Maastricht Treaty in 1992 permits action at the federal level 'only and no further as
the objectives of the proposed action cannot be sufficiently achieved by the Member
States and can therefore, by reason of the scale or effects of the proposed action, be
better achieved by the Community' (EC Treaty, Art. 36). Thus, in the European
Union, the subsidiarity principle constitutionalizes the inquiry concerning the level
of government at which responsibility for environmental regulation should be allo-
cated. Although commentators are divided about the likely role of the European
Court of Justice in enforcing the subsidiarity principle, some believe that the prin-
ciple is fully justiciable. As a result, the debates concerning the proper allocation
of authority over environmental regulation currently being waged primarily on the

4 A similar principle has applied exclusively to environmental regulation, between 1986 and 1992,
under Article 130(l) of the Single European Act. 1986. For discussion of the application of the sub-
ordinating principle to environmental law, see Braidwood (1993); Van den Bergh, Faure, and Leffeure
(1996); and Delcée (1994).

5 Commentators are divided about the role of the European Court of Justice in subsidiarity inquiries.
Lehmann (1994) argues that the Court could merely require reasons for federal actions. Toth (1994)
argues that the subsidiarity principle raises political questions, and Schlee (1994) argues that the sub-
ordinating principle is fully justiciable.
US side of the Atlantic may well acquire an even greater salience in the European Union.

Moreover, the subsidiarity principle may affect the substantive nature of the federalism inquiry. In the European Union, the subsidiarity principle could be read as giving rise to a presumption for decentralization grounded in positive law. In contrast, in the United States, any argument in favour of such a presumption must rest on policy grounds, as no constitutional provision, statute, regulation, or judicial decision speaks to this question.

III. IMPLICATIONS FOR THE INTERNATIONAL COMMUNITY

In the international community, the issues concerning the interactions between environmental regulation and systems of economic integration are different than in federal systems (Revese 1997: 1332–5; 1341–5). First, in the international community, there is only weak capacity for centralized environmental standard setting and virtually no capacity for centralized environmental enforcement. Second, the differences in wealth and economic development are far more salient in the international community than in federal systems. Third, environmental conditions in some countries are sufficiently dire to give rise to concerns that basic human rights are being violated.6

As a result of the lack of a viable system of environmental standard-setting and enforcement, there are stronger arguments in the international community than in federal systems for allowing countries to impose environmentally based trade restrictions. Even where centralized regulation might be preferable, for example as a result of interjurisdictional externalities, state regulation coupled with trade measures might be the best available outcome if centralized regulation is not feasible, or if it is not feasible in an enforceable manner.

The different treatment of process standards in federal systems and in the international community is therefore not surprising. In both the United States and the European Union, state-imposed trade restrictions have been coupled with product standards but not with process standards (Stewart 1992: 1342). Instead, environmental regulation with respect to processes has been the domain of the federal government. There is little justification for allowing a state to impose a process standard designed to change the environmental behaviour of another state when a centralized authority can do so directly.

In contrast, process standards have been coupled with trade restrictions in the international community—the United States’ restrictions on the import of certain tuna products at issue in the Tuna-Dolphin case is probably the best known example.

The GATT Secretariat (1992: 37–38) notes, ‘in principle, it is not possible under GATT’s rules to achieve access to one’s own market dependent on domestic environmental policies or practices of the exporting country’.

The recent Shrimp-Turtle decision may herald a more favourable reception on the part of the WTO to the enforcement of process standards by means of trade restrictions (United States: Import Restrictions of Certain Shrimp and Shrimp Products, 1996 WL 720123 (WTO) (report of the Appellate Body)). In any event, in the coming years, this issue will be the subject of intense scrutiny in the context of the work of the WTO’s Committee on Trade and the Environment.

The second important difference between the systems of the United States and the European Union on the one hand and the international community on the other arises as a result of the more extreme differences in wealth and levels of economic development in the international community. This factor, coupled with the lack of a viable, widespread system for economic redistribution in the international community, implies that the distributional consequences of each policy ought to play a far more salient role in evaluating their relative desirability.

For example, in a federal system of relatively homogeneous states, it might be desirable to adopt policies that lead to the maximization of social welfare without undue concern about how the costs and benefits of such policies are distributed across different geographic subdomains. Indeed, federal governments regulate in many areas, and the distributional consequences may well even out across programmes. Thus it may not be sensible to compromise the social welfare properties of each programme in order to achieve a better programme-specific distribution.

Moreover, even if such evening out of the aggregate distributional consequences does not occur, it is likely to be more desirable to redistribute through a system of taxes and subsidies than by compromising the efficiency of the various regulatory programmes. The situation is different in the international community, with its larger differences in wealth and economic development, and lesser opportunities for redistribution.

Third, because a sufficiently egregious disregard for human health and the environment can be equated with a violation of basic human rights, the use of trade restrictions might be seen as a desirable mechanism for combating such violations. The example of child labour is somewhat analogous.

The following taxonomy seeks to provide a useful way to begin the analysis of when trade measures (either restrictions or sanctions) would be a desirable way of combating overly lax process standards in exporting countries. The emphasis here is on what would be desirable policy; other contributors to this volume are far more interested in what might be achieved in practice.
better able to analyze what the treaty language would actually allow under current interpretations.

The first element of this taxonomy is defined by reference to the geographic scope of the physical effects of the pollution that gives rise to a call for the trade measure. Six situations are relevant: (1) purely domestic effects in the exporting country; (2) physical spillovers into the importing country; (3) physical spillovers into third countries; (4) impairment of existence values in the importing country; (5) impairment of existence values in third countries; and (6) effects on the global commons.

In the first situation—the effects of the pollution are confined to the exporting country—trade measures are hardest to justify. Producers in the importing country may be upset that one factor of production is cheap in the exporting country, but restrictions imposed for this reason are unlikely to be welfare enhancing. Moreover, given that the costs of production have many non-competitive components, such as wages, labour productivity, infrastructure, and educational systems, it is not clear why a single factor should be singled out for special treatment.

Finally, just because the exporting country might subject its people to less desirable health and environmental conditions than does the importing country does not necessarily imply that a violation of a basic human right has occurred.7

In the second situation—the case of physical spillovers—trade measures might be the only way for the importing country to protect itself. In the United States, the permissibility of such restrictions is sometimes determined by comparing the welfare gains in the importing state with the corresponding welfare losses in the exporting state (Reves 1996: 2465–8). In the international community, however, the distributional concerns discussed above should complicate the inquiry.

In the third situation—where the physical spillovers affect third countries—the importing country's trade measure might nonetheless increase the global social welfare. Because the exporting country is not affected by the pollution, however, one might be concerned that the asserted environmental reason for the restriction is a mere subterfuge, masking a protectionist motivation.

With respect to the fourth and fifth situations, there is no analytical reason for treating existence values, also sometimes known as non-use values, differently from physical spillovers. Citizens of the importing country might suffer a real loss in utility from learning about the destruction of a valuable natural resource abroad, even if they never planned to visit it. The claims of citizens of wealthy countries for trade measures to protect their existence values might not seem particularly sympathetic if the costs fall on citizens of far poorer countries, whose very livelihood might be at stake. Moreover, the controversy surrounding the use of the contingent valuation methodology, which is used to value existence values, makes problematic any attempt to weigh the interests of the various jurisdictions (Portney 1994). As a result, trade measures motivated by the impairment of existence values are likely to be viewed as less legitimate than trade measures motivated by physical spillovers.

Finally, with respect to impacts on the global commons, in some cases trade measures will be expressly permitted by international treaties (Reves 1997d). Such treaties, however, often take a long time to negotiate (and an even longer time to result in the imposition of specific obligations). In the interim, unilateral trade measures may well be the best available way to protect the global commons.

The second element of the classification system is defined by reference to how the environmental standards in the exporting and importing countries compare to those that would maximize social welfare in the respective jurisdictions. The relevant categories are set out in Table 1.

<table>
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<th></th>
<th>U</th>
<th>A</th>
<th>B</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Less than optimal</td>
<td>Optimal</td>
<td>More stringent than optimal</td>
</tr>
<tr>
<td>A</td>
<td>a</td>
<td>b</td>
<td>c</td>
</tr>
<tr>
<td>B</td>
<td>d</td>
<td>e</td>
<td>f</td>
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<td></td>
<td>g</td>
<td>h</td>
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To illustrate this table by means of an example, consider the following situation, which is consistent with the box labelled 'A'. In A, the exporting country, the actual standard is 10 parts per million (ppm) of a pollutant, whereas its optimal standard is 12 ppm; thus, A's actual standard is more stringent than its optimal standard. In turn, in B, the importing country, the actual standard is 8 ppm (more stringent than A's actual standard) but its optimal standard is 6 ppm; thus, B's standard is less stringent than its optimal standard.

Should B's use of trade measures be appropriate merely because its standards are more stringent than A's? Such an approach was embodied in the proposed International Pollution Deterrence Act (594, 102d Cong. (1991)), which would have authorized the imposition of countervailing duties equal to the amount that the foreign firm would have to expend in order to comply with the US standards. Similarly, US Vice President Al Gore (1992: 343) wrote, while he was still a Senator, 'Just as government subsidies of a particular industry are sometimes considered unfair under the trade laws, weak and ineffectual enforcement of pollution control measures should also be included in the definition of unfair trading practices'.

The problem with this approach is that it would authorize the erection of trade barriers even when the disparity in the environmental standards is justified by differences in the preferences for environmental protection, differences in the costs of
pollution control, and differences in the extent to which pollution produces adverse health and environmental effects in the two countries.

Alternatively, should trade measures be appropriate only in situations a, b, and c, in which A’s standards are lower than optimal? Such an approach would recognize the reasons why it is desirable for different countries to have different levels of environmental protection.

Or should B be barred from using trade measures in situations a, d, and e because its own standards are lower than optimal, even though A’s are lower still? Such an approach would create incentives for B to adopt socially desirable standards.

In situations c, e, and d, where B’s standards are more stringent than optimal, should B be permitted to use trade measures only if its optimal standards are more stringent than A’s standards? An affirmative answer might be predicated on the desirability of allowing B to penalize other countries as a result of its own public choice problems that lead it to adopt suboptimally stringent standards.

A full analysis of this issue cannot be undertaken here. It ought to be clear, however, that trade measures ought not to be permitted merely because the importing country has more stringent environmental standards than the exporting country.

IV. IMPLICATIONS FOR OTHER REGULATORY CONTEXTS

The race-to-the-bottom label has been applied in a wide variety of regulatory contexts (Revesz 1992: 1247–53). My focus here is to show how these contexts are analytically distinct—an issue that has not received the attention of the relevant literatures. As a result, for example, how one comes out on the existence of a race to the bottom over environmental regulation should vary virtually nothing about the analysis of the so-called races to the bottom caused by interstate competition over corporate and banking charters, and over programmes of economic redistribution. My analysis with respect to environmental problems, however, applies more generally whenever states impose costs on the physical assets of mobile firms to promote the welfare of their citizens.

Competition over corporate charters: principal-agent problems

In the corporate arena, the problem alleged by race-to-the-bottom advocates is the principal-agent problem that arises between managers and shareholders when managers make decisions about where to incorporate. The claim is that managers, who effectively are the decision makers on this issue, will choose states of incorporation that maximize their interests at the expense of those of their company’s shareholders. The corporate literature does not, however, generally point to any problems that can be solved by competition.

* The competing positions are set out by Cary (1976), who poses a race to the bottom, and Winer (1979), who explains why markets prevent managerial rent seeking. The more recent literature includes Belobok (1990), Macz and Miller (1987), and Romani (1987b, 1985).

caused by the competition for corporate charters among the states themselves: the problem, instead, is internal to the decision-making structure of the firm (Ayers 1985). In contrast, race-to-the-bottom arguments in the environmental area do not refer to any principal-agent problems between managers and shareholders in deciding where to locate a plant (or to any other internal decision-making problems of firms deciding where to locate their plants). Instead, the focus is on a posted prisoner’s dilemma in the relationship among the states themselves.

The two literatures can be classified by reference to the two-by-two matrix in Table 2. It shows that the defects to be corrected by federal regulation can arise in the locational decision-making process of private actors or in the competitive process among states. Race-to-the-bottom advocates in the corporate literature fit into Box 2; they believe that locational decisions are defective but that the competitive process among the states is not.10 Race-to-the-bottom advocates in the environmental literature fit into Box 3: they believe that the competitive process among the states is defective but that locational decisions of private actors are not. Thus, the two literatures do not deal with analogous issues.

### Table 2: Environmental and Corporate Races to the Bottom

<table>
<thead>
<tr>
<th>Firm decision-making process</th>
<th>Corporate Process</th>
<th>Intestate Competitive Process</th>
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<tbody>
<tr>
<td>Defective</td>
<td>Box 1</td>
<td>Box 2: Corporate Race</td>
</tr>
<tr>
<td>Not Defective</td>
<td>Box 3</td>
<td>Environmental race</td>
</tr>
</tbody>
</table>

Competition over bank charters: interstate externalities

Henry Butler and Jonathan Macey (1988: 715) argue that state chartering of banks gives rise to a "destructive "race to the bottom". They maintain that the major cause for this race is that the Federal Deposit Insurance Corporation (FDIC) charges banks a deposit insurance premium that is independent of the bank’s risk of default (598, 714).

For two distinct reasons, states then have an incentive to set suboptimally lax regulatory regimes. First, a state seeking to attract banks, and thereby obtain

10 Other commentators, however, have suggested that such problems exist (Czarnetzki and Fogel 1986).

11 Competition among the states can exacerbate the principal-agent problem by increasing the opportunity for managerial rent seeking. Nevertheless, if the principal-agent problem could be corrected, interstate competition would not have undesirable effects.
chartering fees and legal business, will offer the regulatory regime most attractive to bank shareholders (or managers)\(^{12}\), who will naturally prefer to make risk choices that are unconstrained by a regulatory regime.

Second, a state seeking to promote the interests of in-state depositors will also provide a less regulatory regime. If the bank can engage in tit-for-tat activities, it may pay depositors higher interest rates. If the risky projects fail, the depositors are protected by FDIC insurance. Thus depositors capture the benefits of higher risk, but do not bear any of the costs. In any event, given the possibility of making deposits across state lines, depositors would bank in the state that offered the lowest provisions, independent of their state of residence.\(^{12}\)

The undesirable effects of both instances are caused by the presence of an interstate externality. Bank shareholders and depositors capture the benefits of increased risk, but the corresponding cost is borne by the FDIC, and, indirectly, by the nation’s taxpayers. While some of these taxpayers will be residents of the state that adopted the suboptimally lax regulatory structure, most will not.

In the environmental context, I showed why race-to-the-bottom justifications for federal regulation should be seen as distinct from externality-based justifications. I thus use the term “race to the bottom” in the environmental area to refer exclusively to the destructiveness of interstate competition for industry that is alleged to occur even in the absence of interstate pollution externalities. The banking literature, in contrast, uses the race-to-the-bottom label to refer to a problem that would be corrected by eliminating the interstate externality, for example through the imposition by the FDIC of risk-adjusted rates (Butler and Macy 1988: 715).

The distinction between the problems addressed in the two literatures is illustrated in Table 3. The table shows that the defects to be corrected by federal regulation can arise from interstate externalities or from the competitive process among states. Banking race-to-the-bottom advocates fit into Box 2: they believe that there are interstate externalities but that the competitive process among the states is not otherwise flawed. The environmental race to the bottom, in distinction from the problem of interstate pollution externalities, fits into Box 3. These literatures therefore do not deal with analogous issues, even though they both invoke the race-to-the-bottom label.

### Competition over programmes of economic redistribution: mobility of individuals

The standard account of the effects of interstate competition over programmes of economic redistribution, principally welfare programmes, focuses heavily on the mobility of individuals across jurisdictions. The idea is that wealthy individuals, who would bear the burden of paying the bulk of the cost of economic redistribution, would move to jurisdictions with lower taxes, and consequently lower welfare payments. In turn, welfare beneficiaries would move to jurisdictions that imposed high taxes in order to finance generous programmes. But in the end the jurisdiction with the high tax rates would lose all its wealthy individuals, as tax base would be destroyed, and there would be no funds with which to pay the welfare recipients (Cashin 1999; Lelouch 1994; Peterson 1995). This phenomenon has been described in race-to-the-bottom terms (Alescit 1994: 452; Calabrese 1998: 1019; Mahavir and Craly 1994: 321; Oles 1998b: 935-6).\(^{13}\)

In the environmental context, in contrast, the raced race to the bottom occurs in the absence of the mobility of individuals, and the standard models in the area generally assume that individuals are immobile.\(^{14}\) The defect in the competitive process necessary to support race-to-the-bottom claims is independent of the mobility of individuals. Table 4 shows the analytical differences between the two contexts.

### Generalizing from the environmental experience

The environmental, corporate, banking, and redistribution races to the bottom deal, respectfully, with the following distinct types of problems: (1) defects in the interstate competitive process; (2) divergence of interests over locational decisions between principals and their agents; (3) interstate externalities; and (4) mobility of individuals. Little is gained, and a great deal of analytical clarity is lost by attaching the race-to-the-bottom label to these four disparate problems.

\(^{12}\) In principle, the divergence between the interests of shareholders and managers that precipitates the corporate law literature could also affect bank chartering decisions.

\(^{13}\) The problem, under other formulation, it different from the alleged race to the bottom that arises from the existence of a choice between federal and state sharing (Seavey 1997: 13). For a view that the competition is beneficial, see Fischel, Rosefield and Stollman (1987: 335).

\(^{14}\) Interestingly, preliminary results of the impact of the recent devolution of responsibility over welfare programmes do not provide a clear picture common with race-to-the-bottom claims (Brockacker 1988: 19-26; Holdsen et al. 1995: 81-86; Backesgerg 1999: 69-70).

\(^{15}\) This is the case with the Quasi and Shubik (1989) and the Markovits, Mejory, and Okolski (1995, 1998) models described above. In a companion, unpublished paper, Quasi and Shubik (1987) show that interstate competition over environmental standards lead to the internalization of social welfare even if individuals are mobile.
There are ways, however, in which one can generalize from the environmental analysis. The assessment of race-to-the-bottom arguments in the environmental context is relevant whenever states impose costs on the physical assets of mobile plants, through regulatory programmes or through taxes, in order to promote the interests of their citizens. From the preceding analysis of environmental regulation, one would expect that under models of perfect competition the interstate interactions would be welfare enhancing, and that under models of imperfect competition the result of the interstate competition would be overregulation in certain instances and underregulation in others.

CONCLUSION

This chapter attempts to explain why the race-to-the-bottom, interstate externality, and public choice arguments for federal environmental protection, as traditionally discussed in the legal academic literature and in the political process, cannot bear the weight placed on them. They cannot credibly be used to justify across-the-board federal environmental regulation on the ground that states would otherwise underregulate.

At the same time, however, there is a serious mismatch between what federal environmental regulation ought to do and what it in fact does. The current regime is both overinclusive, needlessly trumping the legitimate preferences of the states, and underinclusive, leaving uncorrected serious pathologies for which federal intervention is necessary.

The analysis of federalism issues in the context of the United States sheds considerable light on the treatment of these matters in the European Union. In particular, the strong push toward harmonization in the European context is undesirable. Moreover, harmonization will not provide the level playing field that its supporters so fervently seek. In fact, the effect of harmonization is to advantage countries that already have stringent environmental standards. Moreover, the whole notion of a level playing field is essentially unsustainable and, if attained, would go a long way toward destroying the very comparative advantage that makes trade (and, to a large extent, European integration) desirable.