

# ENVIRONMENTAL INSTRUMENT CHOICE IN A SECOND-BEST WORLD: A COMMENT ON PROFESSOR RICHARDS

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Economists and legal scholars have long touted the efficiency advantages of “market-based” approaches to environmental protection—particularly effluent taxes and tradeable permits—over traditional command-and-control regulatory approaches such as technology-based standards.<sup>1</sup> Recent successful experiments with tradeable permitting, most notably in the acid rain program of the 1990 Clean Air Act Amendments,<sup>2</sup> have buoyed their claims that market-based approaches can achieve society’s environmental protection goals at far lower cost than command-and-control regulations. According to some estimates, the acid rain program’s sulfur dioxide trading program has saved \$97 million or 13 percent of compliance costs (in 1995), compared to a non-tradeable quota system.<sup>3</sup> This success, along with various other studies suggesting that “market-based” approaches have general efficiency advantages over command-and-control regulation,<sup>4</sup> have led policy analysts and legal scholars to advocate market-based approaches for all manner of environmental protection and re-

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1. See, e.g., J.H. DALES, *POLLUTION, PROPERTY, AND PRICES* (1968); T.H. TIETENBERG, *EMISSIONS TRADING: AN EXERCISE IN REFORMING POLLUTION POLICY* (1985); Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 *STAN. L. REV.* 1333 (1985); J.B. OPSCHOOR & HANS B. VOS, *ECONOMIC INSTRUMENTS FOR ENVIRONMENTAL PROTECTION* (1989).

2. 42 U.S.C. § 7651 (1997).

3. See DALLAS BURTRAW & ERIN MANSUR, *THE EFFECTS OF TRADING AND BANKING IN THE SO<sub>2</sub> ALLOWANCE MARKET 2* (Resources for the Future Discussion Paper No. 99-25, 1999).

4. For a list and general assessment of various “empirical” studies supposedly demonstrating efficiency advantages of tradeable permits over command-and-control regulation, see T.H. Tietenberg, *Economic Instruments for Environmental Regulation*, in *ECONOMIC POLICY TOWARDS THE ENVIRONMENT* 86 (Dieter Helm ed., 1991). For a critique of Tietenberg’s conclusions, see Daniel H. Cole & Peter Z. Grossman, *When is Command-and-Control Efficient? Institutions, Technology, and the Comparative Efficiency of Alternative Regulatory Regimes for Environmental Protection*, 1999 *WISC. L. REV.* 887, 889-92.

source conservation activities.<sup>5</sup> Some go so far as to argue that the entire regulatory system should be overhauled; presumptively “inefficient” command-and-control programs should be completely replaced with the “next generation” of “market-based” environmental policies.<sup>6</sup>

In response, other scholars have cautioned against the wholesale reformulation of environmental policy.<sup>7</sup> Steinzor has warned that “without dramatically expanding the resources available to federal and state regulators, and without placing challenging, new demands on pollution sources to track emissions and research their toxicological effects, the shift to the ‘next generation’ of regulatory policy is likely to result in severe degradation of environmental quality.”<sup>8</sup> Cole and Grossman have shown that command-and-control regulation can be efficient, and in some circumstances, more efficient than tradable permits or other market-based approaches.<sup>9</sup> And Driesen has argued that the presumed dichotomy between command-and-control and “market-based” approaches is overblown and prejudicial to policy making; he recommends replacing the dichotomy with “a more nuanced analytical approach to both traditional regulation and economic incentive programs.”<sup>10</sup>

Now, Professor Richards, in *Framing Environmental Policy Instrument Choice*,<sup>11</sup> provides a framework for understanding the wide variety of circumstances in which alternative instruments for envi-

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5. See, e.g., William W. Sapp, *The Supply-Side and Demand-Side of Wetlands Mitigation Banking*, 74 OR. L. REV. 951 (1993); David Sohn & Madeline Cohen, *From Smokestacks to Species: Extending the Tradeable Permit Approach from Air Pollution to Habitat Conservation*, 15 STAN. ENVTL. L.J. 405 (1996); Carrie A. Tipton, Note, *Protecting Tomorrow's Harvest: Developing a National System of Individual Transferable Quotas to Conserve Ocean Resources*, 14 VA. ENVTL. L.J. 381 (1995).

6. See, e.g., ENTERPRISE FOR THE ENVIRONMENT, *THE ENVIRONMENTAL PROTECTION SYSTEM IN TRANSITION: TOWARD A MORE DESIRABLE FUTURE* (1998); THINKING ECOLOGICALLY: THE NEXT GENERATION OF ENVIRONMENTAL POLICY (M.R. Chertow & D.C. Esty eds., 1997).

7. See, e.g., William F. Pedersen, Jr., *The Limits of Market-Based Approaches to Environmental Protection*, 24 ENVTL. L. REP. 10,173 (1994); David M. Driesen, *Is Emissions Trading an Economic Incentive Program?: Replacing the Command and Control/Economic Incentive Dichotomy*, 55 WASH. & LEE L. REV. 289 (1998); Rena I. Steinzor, *Reinventing Environmental Regulation: Back to the Past by Way of the Future*, 28 ELR NEWS & ANALYSIS 10361 (1998); Cole & Grossman, *supra* note 4.

8. Steinzor, *supra* note 7, at 10362.

9. See Cole & Grossman, *supra* note 4, at 937. Richards evidently concurs. See Kenneth R. Richards, *Framing Environmental Policy Instrument Choice*, 10 DUKE ENVTL. L. & POL'Y F. 221, 226 (2000).

10. See Driesen, *supra* note 7, at 295.

11. Richards, *supra* note 9.

ronmental protection might be preferred. His work emphasizes two important points: the range of policy choices is far broader than analysts often assume; and policy choices depend on a number of variables beyond cost-of-compliance, which has been the almost exclusive focus of economic literature on environmental instrument choice. Consequently, a “one-size-fits-all approach to instrument choice” cannot possibly succeed.<sup>12</sup> In the real, second-best world, first-best solutions may not be possible, let alone preferable.

Richards’ general thesis seems beyond legitimate dispute. His taxonomy appears to provide a clear improvement over the more simplistic comparative environmental-policy analyses that he abjures. In his view, the economic literature on environmental protection has focused on too few policy options and has over-emphasized the differences among those options. Indeed, the distinction between command-and-control regulations and economic instruments, such as tradable permits, is “not as stark as it appears,” because “most of the market approaches that have been used in the United States operate within the standard command-and-control framework.”<sup>13</sup> As Cole and Grossman have observed, tradable permit programs are basically commands-without-control.<sup>14</sup>

More generally, it is a misnomer to refer to certain regulatory approaches as “market-based” or “incentive-based,” implying that others are not. All regulatory approaches are designed to affect market behavior by creating incentives (of one kind or another) to reduce pollution levels.<sup>15</sup> The only *real* grounds for distinguishing between alternative approaches to environmental protection is on the basis of their comparative environmental and economic performance, which inevitably depend on several endogenous and exogenous variables—more than are accounted for in standard analytical frameworks. Indeed, many (if not most) economic analyses focus on a single cost variable:<sup>16</sup> comparative compliance/abatement cost (which Richards

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12. *See id.* at 223.

13. *See* J. CLARENCE DAVIES & JAN MAZUREK, POLLUTION CONTROL IN THE UNITED STATES: EVALUATING THE SYSTEM 15 (1998).

14. *See* Cole & Grossman, *supra* note 4, at 895.

15. *See* Driesen, *supra* note 7, at 290. Similarly, as I have argued elsewhere, it is a misnomer to refer to only some environmental protection approaches as “property-based,” because *all* approaches to resolving the “tragedy of the commons” inevitably are property-based, including command-and-control regulation or outright government ownership of environmental goods. *See* Daniel H. Cole, *Clearing the Air: Four Propositions about Property Rights and Environmental Protection*, 10 DUKE ENVTL. L. & POL’Y F. 103, 105-109 (1999). Richards seems to concur expressly with this view in Footnote 47. *See* Richards, *supra* note 9, at 231, n.47.

16. *See, e.g.*, WALTER O. SPOFFORD, JR., EFFICIENCY PROPERTIES OF ALTERNATIVE

describes as “production costs”).<sup>17</sup> As Russell et al. have noted, economic analyses of environmental regulation tend to assume “perfect (and, incidentally, costless) monitoring;”<sup>18</sup> or they mistakenly assume that monitoring costs do not vary among policy alternatives.<sup>19</sup> In addition, Richards notes, they ignore the public finance implications of alternative policy choices.<sup>20</sup> Richards’ taxonomy accounts for more important variables, including monitoring costs, public finance implications, legal constraints, and, importantly, the extent and distribution of residual pollution harm. The result should be a better-informed approach to questions of instrument choice.

A distinctive contribution of Richards’ article is his explicit application of the New Institutional Economics (NIE) to questions of environmental instrument choice. Although most legal scholars are familiar with the work of one of the founders of NIE, Ronald Coase, most are unaware of this distinctive approach to Law & Economics, and how it differs from conventional, Chicago-school Law and Economics.

The NIE is a distinct school of thought within the family of Law & Economics. As its name suggests, NIE builds on “old” institutionalist arguments about the embeddedness of economic activity in social (including legal) institutions,<sup>21</sup> but without jettisoning the explanatory powers of standard, neoclassical economic theory. Following Ronald Coase’s insight about the critical role *transaction costs* play in determining economic structures and performance, NIE scholars realize that the comparative efficiency of alternative organizational structures (of markets, firms, and governments) and policy instruments varies with the precise institutional (and technological) circumstances. As Coase himself has noted, all of society’s primary mechanisms for organizing economic behavior—markets, firms, and

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SOURCE CONTROL POLICIES FOR MEETING AMBIENT AIR QUALITY STANDARDS: AN EMPIRICAL APPLICATION TO THE LOWER DELAWARE VALLEY, (Resources for the Future Discussion Paper No. R-2524-EPA, 1980); Scott E. Atkinson & Donald H. Lewis, *A Cost-Effectiveness Study of Alternative Air Quality Control Strategies*, 1 J. ENVTL. ECON. & MGMT. 237, 239-240 (1974); Alan J. Krupnick, *Costs of Alternative Policies for the Control of Nitrogen Dioxide in Baltimore*, 13 J. ENVTL. ECON. & MGMT. 189 (1986).

17. See Richards, *supra* note 9, at 228-29.

18. See CLIFFORD S. RUSSELL ET AL., ENFORCING POLLUTION CONTROL LAWS 3 (1986).

19. For an explanation of why this assumption is mistaken, see Cole & Grossman, *supra* note 4, at 904-05.

20. See Richards, *supra* note 9, at 229.

21. For an introduction to the “Old” and “New” Institutionalisms, see NICHOLAS MERCURO & STEVEN G. MEDEMA, *ECONOMICS AND THE LAW: FROM POSNER TO POST-MODERNISM* 101-156 (1997).

governments—are “more or less failures.”<sup>22</sup> Consequently, there is no universal, first-best institutional solution to every perceived social and legal problem regardless of context. We inhabit a second-best world, in which our goal must be to structure social and economic interactions by those institutions and organizations that, in the circumstances, are least likely to fail, or are likely to fail the least. This requires the kind of Comparative Institutional Analysis advocated by the “old” institutionalists,<sup>23</sup> but with an important new metric: transaction costs. The costs of transacting (positively) explain why different institutional and organizational arrangements result in differential economic performance *and* (normatively) prescribe certain institutional and organizational forms as more efficient than others. The NIE’s focus on *institutions*, which are defined as formal laws and informal social norms that together comprise the “rules of the game,”<sup>24</sup> and *organizations*, which are the mechanisms by which the “rules of the game” are created, applied, and enforced,<sup>25</sup> require NIE scholars to take a broad, inclusive approach to analysis.

German New Institutionalists Eirik Furubotn and Rudolf Richter have identified five distinct but related strands of NIE research:<sup>26</sup>

- Transaction-cost economics
- Property-rights analysis
- Economic theory of contracts
- Agency theory
- Relational and incomplete contract theory
- The new institutional approach to economic history
- The new institutional approach to political economics

Cole and Grossman have previously applied several of these analytical strands of the NIE school to environmental instrument choice.<sup>27</sup> But Richards’ is the first work to explicitly apply Williamsonian contract theory to the problem of environmental instrument choice,<sup>28</sup> with important benefits for theory. Richards notes that in

22. See Ronald H. Coase, *The Regulated Industries: Discussion* 54 AMER. ECON. REV. 194, 195 (1964).

23. See MERCURO & MEDEMA, *supra* note 21, at 121-23.

24. See DOUGLASS C. NORTH, INSTITUTIONS, INSTITUTIONAL CHANGE AND ECONOMIC PERFORMANCE 3-6 (1990).

25. See *id.*

26. See EIRIK G. FURUBOTN & RUDOLF RICHTER, INSTITUTIONS AND ECONOMIC THEORY: THE CONTRIBUTION OF THE NEW INSTITUTIONAL ECONOMICS 31-32 (1998).

27. See, e.g., Cole & Grossman, *supra* note 4; Cole, *supra* note 15.

28. See Richards, *supra* note 9, at 259-66.

environmental instrument choice, as with contracts, the degree of asset specificity—in the form of transaction-specific investments—together with the degree of *ex ante* uncertainty about the future can affect instrument choice.<sup>29</sup>

In addition to his explicit application of NIE theory to environmental instrument choice, Richards' framework is unique in attending to the public finance implications of environmental instrument choice. He makes clear that the use of different environmental instruments (taxes, subsidies, quotas, etc.) would have differential impacts for public finance, impacts that are relevant to policy-making.

Richards is also quite correct to note “legal constraints” on instrument choice,<sup>30</sup> but his discussion of legal constraints is somewhat misleading. Regulatory takings doctrine, for example, never really “prevent[s] the government from employing the regulatory option,” as Richards asserts;<sup>31</sup> it merely raises the costs to the government and the taxpayer of the government's decision to use certain regulatory options in some circumstances. Thus, it has IC and TX implications (in Richards' formula for determining total environmental protection costs).<sup>32</sup> Another “legal constraint,” Richards notes, is that land-use control has traditionally been a local-government concern, rather than a federal-government concern.<sup>33</sup> This is true, but it has less to do with legal than *political* constraints. There are, of course, important (and controversial) examples of direct federal land-use regulation, most notably the wetlands permitting program under the Clean Water Act<sup>34</sup> and the Endangered Species Act.<sup>35</sup> And, no doubt, under the Supreme Court's expansive reading of the Constitution's commerce clause,<sup>36</sup> the federal government has plenty of power to further regulate land use, if it so desires.

More appropriately, Richards notes as a “legal constraint” on environmental policy choice the rule against “legislative entrench-

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29. *See id.* at 261.

30. *See id.* at 273-78.

31. *See id.* at 273.

32. For further explanation of IC (implementation costs) and TX (public finance impacts), see *id.* at 229.

33. *See id.* at 275-76.

34. 33 U.S.C. § 1344 (1997).

35. 16 U.S.C. § 1538(a)(1)(B) (1997) (prohibiting landowners from doing anything on their land that would constitute a “tak[ing]” of an endangered species).

36. Const. (US), Art. I, § 8, cl. 3.; see generally *Hodel v. Virginia Surface Mining & Reclamation Ass'n*, 452 U.S. 264 (1981).

ment.”<sup>37</sup> This rule arguably obstructs the government from providing the “credible commitments” necessary to give regulated industries confidence that the government would not change the rules mid-game (so to speak). However, this may not be as significant a problem as Richards suggests. He notes that “credible commitments” are most important for environmental taxes and subsidies because those environmental instruments are less durable (that is, more changeable) than command-and-control regulations.<sup>38</sup> There is reason, however, to be suspicious of this assertion. Environmental taxes and subsidies require legislative action (authorization and appropriation), while changes in command-and-control regulations—for instance, changes in the determination of “best available technology”—may only require new administrative rules. It is surely no quick and easy matter for bureaucrats to promulgate new rules, but intuition suggests that it is easier to change administrative rules than legislation.<sup>39</sup>

There is, however, reason to suppose that the problem of “credible commitment” would bear on some environmental instruments more than others. With wholly coercive instruments, such as command-and-control regulations, the credibility of the government’s commitment would seem relatively (though not completely) unimportant.<sup>40</sup> Since the regulated industry has to comply anyway, whether or not the rules are changeable should not greatly influence their behavior, except perhaps their decisions to engage in research to innovate new pollution-control technologies.<sup>41</sup> On the other hand, a lack of “credible commitment” could well affect a permit trading market, where the willingness of regulated firms to trade pollution “allow-

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37. See Richards, *supra* note 9, at 276-78.

38. See *id.*

39. Richards even notes that one of the primary advantages of hierarchical instruments (*i.e.*, direct regulations) is that they allow rapid adaptation to changes. See Richards, *supra* note 9, at 264.

40. A credible commitment to enforce the rules (however changeable) would, of course, remain critical.

41. There is a sizeable amount of literature about the differential impacts that alternative environmental instruments have on incentives to innovate pollution-control technologies. See, *e.g.*, Adam Jaffe & Robert N. Stavins, *Dynamic Incentives of Environmental Regulations: The Effects of Alternative Policy Instruments on Technology Diffusion*, 29 J. ENVTL. ECON. & MGMT. S43 (1995); Wesley A. Magat, *The Effects of Environmental Regulation on Innovation*, 43 LAW & CONTEMP. PROBS. 4 (1979); Alan S. Miller, *Environmental Regulation, Technological Innovation, and Technology-Forcing*, NAT. RESOURCES & ENV'T, Fall 1995, at 64; Scott R. Milliman & Raymond Prince, *Firm Incentives To Promote Technological Change in Pollution Control*, 17 J. ENVTL. ECON. & MGMT. 247 (1989). It is worth noting, however, that most of these studies focus on incentives to innovate only within the regulated industries themselves; they ignore the incentives that may be created for third-party innovation.

ances” could easily depend on their level of confidence in the security of the market itself—that is, whether they feel secure that the government will not intervene haphazardly and reduce quotas, thereby rendering past trades worthless. This has been a concern, for example, with the sulfur dioxide trading market of the Clean Air Act’s acid rain program.<sup>42</sup> The Environmental Protection Agency has confronted this problem directly in regulations relating to previous trading programs.<sup>43</sup>

This leads to the only significant failing of Richards’ paper: the absence of any applications of the framework to demonstrate how it would operate *in real cases* to yield better-informed evaluations of environmental instrument choices. Including empirical applications would, of course, have made an already sizeable paper substantially longer; perhaps that is reason enough for leaving the task for another day. But it would have been instructive if Richards had provided at least one application of his analytical framework, perhaps in comparison with another, more simplistic framework upon which his improves.

Empirical applications would be helpful in resolving several questions, which cannot be answered by a general set of “heuristic principles.”<sup>44</sup> Consider, for example, Richards’ “Summary of Factors Affecting Instrument Choice.”<sup>45</sup> In that summary, he suggests that zero-baseline taxes may be the most attractive instrument from the perspective of the marginal cost of public funds, but relatively unattractive from the perspective of monitoring costs (which he describes as “Cost of Output Measurement”).<sup>46</sup> But would not monitoring costs, which obviously require government spending, have a bearing on the marginal cost of public funds? And if so, might that not reduce the comparative advantage of a tax instrument with respect to the marginal cost of public funds?

More generally, the utility of Richards’ framework should be determined not just by its more inclusive list of cost factors but also by the practical ability of policy-makers and policy analysts to accurately assess those cost factors in particular cases. Empirical applications

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42. See, e.g., Jeanne M. Dennis, *Smoke for Sale: Paradoxes and Problems of the Emissions Trading Program of the Clean Air Act Amendments of 1990*, 40 U.C.L.A. L. REV. 1101, 1118-1122 (1992).

43. See EPA, *Emissions Trading Technical Document* 51 Fed. Reg. 43,814, 43,847, n. 48 (1986).

44. See Richards, *supra* note 9, at 279.

45. See *id.* at 280.

46. See *id.*



would help to assess just how difficult or easy it would be to put dollar signs on the various factors Richards' framework incorporates. If it turned out to be difficult, that might militate in favor of more limited frameworks that incorporate fewer and most easily quantified cost factors. We might intuit that analytical frameworks focused on compliance/abatement costs (which Richards refers to as "production costs")<sup>47</sup> have an advantage because, compared to other costs involved in the regulatory process, compliance/abatement costs are *relatively* easy to estimate, compared to implementation and public finance costs. On the other hand, a recent study suggests that *ex ante* compliance-cost estimates regularly exceed actual costs.<sup>48</sup> This reminds us that pervasive uncertainty limits our ability to accurately estimate *ex ante* costs and benefits, whatever the analytical framework. It is important, nevertheless, to learn whether (and, if so, the extent to which) Richards' framework is workable; and that requires empirical applications.

Before it is tested in applications, it would be premature to conclude that Richards' framework for environmental instrument choice marks a clear improvement over previous models. But it is tempting to draw that conclusion anyway, if only because the earlier models are so plainly flawed. If nothing else, Richards reminds us that it is insufficient to focus exclusively on compliance/abatement costs, as many previous studies have done,<sup>49</sup> for choosing from among alternative environmental instruments. Implementation costs (e.g., costs of monitoring and enforcement) and public finance implications are equally important factors.

It may be possible for scholars, in the future, to study environmental instrument choice without using Richards' precise taxonomy, but we can no longer ignore the vitally important factors his taxonomy incorporates. To analyze instrument choice solely on the basis of compliance/abatement costs, with no consideration of monitoring costs or the implications for public finance, is to assess only a fraction of the *total* costs involved. More than anything else, Richards' taxonomy points the way toward a much-needed total-cost model of environmental instrument choice.

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47. *See id.* at 228-29.

48. These presumptions may well be counterfactual, however. If *actual* cost-of-compliance estimates are any indication, then regulated industries seem unable to make accurate *ex ante* estimates of compliance costs. *See* WINSTON HARRINGTON ET AL., ON THE ACCURACY OF REGULATORY COST ESTIMATES (Resources for the Future Discussion Paper No. 99-18, 1999) <[http://www.rff.org/disc\\_papers/PDF\\_files/9918.pdf](http://www.rff.org/disc_papers/PDF_files/9918.pdf)>.

49. *See supra* note 15 and accompanying text.