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A GAME THEORETIC ANALYSIS OF ALTERNATIVE INSTITUTIONS FOR REGULATORY COST-BENEFIT ANALYSIS

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INTRODUCTION: RE-VISIONING THE COST-BENEFIT CONTROVERSY

How and whether federal regulators consider both the costs and benefits of regulation has become a central issue in proposals to reform the federal administrative state. To the horror of many labor and environmental group leaders, the Bush administration began by

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rescinding or withdrawing several high profile workplace and environmental rules and announcing the practical death of the Kyoto Treaty on global warming. These actions were justified on the ground that the measures' benefits were far outweighed by their economic costs.¹ Those executive branch decisions followed quickly on the heels of the United States Supreme Court's recent decision that Congress does not impermissibly delegate its legislative authority when it bars federal agencies from considering the cost of regulations.²

These recent events have elevated the public prominence of the debate over regulatory cost-benefit analysis. That debate, however, has been with us since the day the first wave of late twentieth-century federal health and environmental statutes were passed. Executive orders requiring agency cost-benefit analysis have been a significant feature of the regulatory landscape since the Nixon administration.³ Requiring regulations to undergo rigorous cost-benefit analysis was one of the foundations of the Contract with America on which House Re-

¹ See, e.g., John Fialka, *Arsenic and Wild Space: Green Activists from Across the Spectrum Unite Against Bush*, WALL ST. J., Apr. 11, 2001, at A20 ("When the Bush administration said it had no more interest in the Kyoto Protocol to curb climate change, most environmental groups went on the attack."); Bruce Handy & Glynis Sweeny, *Safety Is for Sissies*, TIME, Apr. 16, 2001, at 88 ("Critics say the Bush Administration has been recklessly reversing Clinton-era policies . . ."); Anitha Reddy, *New Rule on Injury Reporting Rejected: Repetitive Motion Ills Deemed Vague*, WASH. POST, June 30, 2001, at E1 ("The federal government . . . rejected a proposal to require employers to separately report [certain types of workplace injuries.] a decision critics say will make it harder to identify health problems caused by repetitive motion."); Cindy Skrzycki, *Opposition Braces for Rule Rollback*, WASH. POST, Feb. 20, 2001, at E1 ("Members of public-interest groups, who played key roles during the Clinton administration in [implementing various rules,] now find themselves scrambling to protect their handiwork.").

² *Whitman v. Am. Trucking Ass'n*, 531 U.S. 457, 486 (2001).

³ For overviews of the history of executive orders that have attempted to require agencies to consider regulatory compliance costs, see EDWARD PAUL FUCHS, *PRESIDENTS, MANAGEMENT AND REGULATION* (1988); THOMAS O. MCGARITY, *REINVENTING RATIONALITY: THE ROLE OF REGULATORY ANALYSIS IN THE FEDERAL BUREAUCRACY* 17-25 (1991); Harold H. Bruff, *Presidential Management of Agency Rulemaking*, 57 GEO. WASH. L. REV. 533, 546-51 (1989), which catalogues presidential efforts to provide oversight to regulatory programs; Joseph Cooper & William F. West, *Presidential Power and Republican Government: The Theory and Practice of OMB Review of Agency Rules*, 50 J. POL. 864, 880 (1988), which theorizes that review by the Office of Management and Budget (OMB) is an assertion of the power of the presidency in the rapidly developing administrative state and that this review has had a significant coercive effect on agency activities; and *Project: The Impact of Cost-Benefit Analysis on Federal Administrative Law*, 42 ADMIN. L. REV. 545, 553-63 (1990), which chronicles the use of cost-benefit analysis in public decision making from the mid-nineteenth century to the present. On environmental regulation in particular, see MARC K. LANDY ET AL., *THE ENVIRONMENTAL PROTECTION AGENCY: ASKING THE WRONG QUESTIONS FROM NIXON TO CLINTON* (expanded ed. 1994).

publicans successfully campaigned during the 1994 midterm elections. The 104th Congress failed in its attempt to enact a statutory "supermandate"⁴ requiring that all new federal regulations be justified by cost-benefit analysis.⁵ It did succeed, however, in requiring all federal agencies to disclose rulemakings to Congress and include a cost-benefit analysis with any "major" rulemaking (one determined by the Office of Management and Budget to involve at least \$100 million in economic costs).⁶ Although congressional attempts to amend specific statutes to require that regulatory standards be cost-benefit justified have failed,⁷ Congress has recently funded a three-year pilot project in which the General Accounting Office will conduct an independent cost-benefit analysis of all "economically significant" regulations (those with an economic impact of \$100 million or more).

With policymakers focusing so much attention on regulatory cost-benefit analysis, it is not surprising that legal commentators have recently undertaken important reevaluations of whether and how cost-benefit analysis should be done. Before his appointment to the United States Supreme Court, Justice Breyer published an influential book skewering the apparent irrationality of the Environmental Protection Agency's risk regulations.⁸ According to Justice Breyer's fig-

⁴ The term is Cass Sunstein's. Cass R. Sunstein, *Congress, Constitutional Moments, and the Cost-Benefit State*, 48 STAN. L. REV. 247, 270 (1996).

⁵ The cost-benefit supermandate was included in the Comprehensive Regulatory Reform Act of 1995, S. 343, 104th Cong. § 2 (1st Sess. 1995). For an explanation of why this bill failed to pass, see Marc Landy & Kyle D. Dell, *The Failure of Risk Reform Legislation in the 104th Congress*, 9 DUKE ENVTL. L. & POL'Y F. 113, 120-21 (1998). The 104th Congress did, however, pass the Unfunded Mandates Reform Act of 1995, Pub. L. No. 104-4 §§ 202(a), 205(a), 109 Stat. 48, 64-66 (codified at 2 U.S.C. §§602, 632, 653, 658, 658a-658g, 1501-1571 (Supp. I 1995)), which requires quantitative assessment of benefits and cost-benefit balancing for all proposed and final rules with an expected cost above \$100 million and also mandates that agencies choose the least cost regulatory alternative (what is known as "cost effective" regulation).

⁶ The Unfunded Mandates Reform Act of 1995, 2 U.S.C. §§ 1501-71 (2000), requires regulatory agencies to do cost-benefit analysis of "major" rules, and the Congressional Review Act of 1996, included as Subtitle E of the Small Business Regulatory Enforcement Fairness Act of 1996, Pub. L. No. 104-121, § 251, 110 Stat. 857, 868-74 (codified at 5 U.S.C. §§ 801-808 (2000)), requires that all agencies report on all regulations to each house of Congress and to the Comptroller General and delays finalization of "major" regulations until at least sixty days after the required report is submitted to Congress.

⁷ The OSHA Reform Act of 1999, H.R. 1192, 106th Cong. (1st Sess. 1999), Regulatory Improvement Act of 2000, H.R. 3311, 106th Cong. (1st Sess. 1999), and Air Quality Standard Improvement Act of 2000, S. 2362, 106th Cong. (2d Sess. 2000) would all have required that regulatory standards be justified by a substantive cost-benefit test.

⁸ STEPHEN BREYER, *BREAKING THE VICIOUS CIRCLE* (1993).

ures,⁹ the Environmental Protection Agency (EPA) often promulgated regulations whose benefits were miniscule in comparison to the costs they imposed on the affected industry, and failed to regulate many risks that scientists felt were serious and should be regulated. To solve the problem, Breyer proposed a super-agency composed of experts who would evaluate the actual costs and benefits of risk regulation, and then prioritize regulations according to their net social benefits. Similarly convinced that "under any measure, there can be no doubt that resources for risk reduction are badly allocated,"¹⁰ Professor Sunstein has advocated the enactment of a federal statute requiring that all federal agencies must at least consider and balance regulatory costs against regulatory benefits.¹¹ More recently, Sunstein has argued that by frequently either requiring cost-benefit analysis in statutes or interpreting existing statutes to at least allow agencies to consider compliance costs in standard-setting, the federal courts and Congress may have made such a statutory supermandate unnecessary: the "cost-benefit" state may already be here.¹² Indeed, although some analysts have attempted to provide a rigorous normative justification for regulatory cost-benefit analysis,¹³ much of the recent literature on federal regulation takes regulatory cost-benefit analysis as a given, and compares how agencies actually do cost-benefit analysis with various conceptions of how they should do so.¹⁴

⁹ Figures cogently critiqued by Lisa Heinzerling, *Regulatory Costs of Mythic Proportions*, 107 YALE L.J. 1981 (1998).

¹⁰ Sunstein, *supra* note 4, at 257.

¹¹ *Id.* at 308-09. The sort of informal balancing advocated by Sunstein is somewhat similar to the modified, "environmentalist baseline" version of cost-benefit analysis put forth in DANIEL A. FARBER, *ECO-PRAGMATISM: MAKING SENSIBLE DECISIONS IN AN UNCERTAIN WORLD* 114-40 (1999). Farber's approach, which recommends that "to the extent feasible without incurring costs grossly disproportionate to any benefit, the government should eliminate significant environmental risks," *id.* at 131, basically restates what has in fact become the default regime under the default principles explicated by Cass Sunstein. See Cass R. Sunstein, *Cost-Benefit Default Principles*, 99 MICH. L. REV. 1651 (2001) (outlining the basic features of the default principles).

¹² CASS R. SUNSTEIN, *THE ARITHMETIC OF ARSENIC* 10-14 (Univ. of Chi. John M. Olin Law & Econ. Working Paper No. 135, 2001) [hereinafter SUNSTEIN, *ARITHMETIC OF ARSENIC*]; Sunstein, *supra* note 11, at 1656-63. For an exhaustive critique of the "cost-benefit state" see Thomas O. McGarity, *A Cost-Benefit State*, 50 ADMIN. L. REV. 7 (1998).

¹³ Most notably, perhaps, Matthew D. Adler & Eric A. Posner, *Rethinking Cost-Benefit Analysis*, 109 YALE L.J. 165 (1999). See generally *COST-BENEFIT ANALYSIS: LEGAL, ECONOMIC, AND PHILOSOPHICAL PERSPECTIVES* (Matthew D. Adler & Eric A. Posner eds., 2001) (providing a multidisciplinary evaluation of cost-benefit methodology).

¹⁴ A primary issue in this debate is whether an agency such as EPA should discount back to present value the benefits of future lives saved (or lengthened) by regulation.

Other commentators criticize the failure of particular statutes to explicitly require cost-benefit analysis. Because nationally uniform federal pollution standards fail to take account of the actual costs and benefits of pollution control in particular localities, they have long been criticized as inefficient.¹⁵ As a number of scholars have recently pointed out, however, supposedly uniform national environmental standards are in practice subject to tremendous regional variation that reflect primarily the varying cost of compliance.¹⁶ Some argue that since the costs of environmental regulations inevitably enter the regulatory process *sub rosa*—as regulatory cost-bearers and beneficiaries lobby the President, Congress and the agency, and engage in protracted litigation if a rule is actually finalized—the consideration of costs should become an explicit part of the agency's statutory mandate.¹⁷

Despite this general enthusiasm for regulatory cost-benefit analysis, little work has yet been done analyzing how the actual behavior of regulatory agencies is likely to be affected by alternative institutional requirements for cost-benefit analysis. Many cost-benefit advocates seem to think that it is obvious that if statutes were amended to require regulatory agencies to analyze the costs and benefits of their proposed rules, then those agencies would promulgate fewer regulations. These advocates further assume that these few regulations

Compare Lisa Heinzerling, *Regulatory Costs of Mythic Proportions*, 107 YALE L.J. 1981, 2043-56 (1998) (arguing that discounting human lives is justifiable only if human life is measured in dollars), with FARBER, *ECO-PRAGMATISM*, *supra* note 11, at 133-62, and Richard L. Revesz, *Environmental Regulation, Cost-Benefit Analysis, and the Discounting of Human Lives*, 99 COLUM. L. REV. 941, 996-1007 (1999) (arguing that discounting in the context of harms to future generations is unjustified).

¹⁵ E.g., Bruce A. Ackerman & Richard Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1335 (1985) ("Uniform . . . requirements waste many billions of dollars annually by ignoring variations among plants and industries in the cost of reducing pollution and by ignoring geographic variations in pollution effects.").

¹⁶ E.g., Daniel A. Farber, *Taking Slippage Seriously: Noncompliance and Creative Compliance in Environmental Law*, 23 HARV. ENVTL. L.J. 297, 316-17 (1999) (theorizing that a source with high compliance costs has a greater incentive to resist government activity, that this leads to regulatory "slippage," and that this slippage has led to "incomplete and underenforced" regulation of "supposedly uniform standards").

¹⁷ See James E. Krier, *On the Topology of Uniform Environmental Standards in a Federal System—And Why It Matters*, 54 MD. L. REV. 1226, 1231-33 (1995) (noting that Congress and the EPA make provisions for waivers and delayed timetables because they know that it is more difficult to meet standards in some areas than in others); Barton H. Thompson, Jr., *People or Prairie Chickens: The Uncertain Search for Optimal Biodiversity*, 51 STAN. L. REV. 1127, 1156 (1999) ("The current submerged consideration of costs and benefits [under the federal Endangered Species Act] . . . is not a substitute for a direct, open balancing [of costs and benefits.]").

would be "better," because agencies would have taken a better and more detailed account of the real economic costs of regulatory compliance.¹⁸ But there has been neither empirical nor theoretical investigation of these conjectures.

This gap in the literature is especially striking given the fact that regulatory cost-benefit analysis is in fact already required by both a series of executive orders¹⁹ and recent federal statutes.²⁰ Under those orders, through its Office of Information and Regulatory Affairs (OIRA), the White House Office of Management and Budget (OMB)

¹⁸ This position is taken by Stephen F. Williams, *Squaring the Vicious Circle*, 53 ADMIN. L. REV. 257 (2001).

¹⁹ As part of a general strategy to reassert executive branch control over policy implementation, in 1981 President Reagan issued Executive Order 12,291, which required all regulatory agencies to submit "regulatory impact statements" to the Office of Information and Regulatory Affairs (OIRA) within the Office of Management and Budget (OMB). Exec. Order No. 12,291, 3 C.F.R. 127, 128 (1982). These statements were required to include cost-benefit analysis justifying the regulation. J. Clarence Davies, *Environmental Institutions and the Reagan Administration*, in ENVIRONMENTAL POLICY IN THE 1980S: REAGAN'S NEW AGENDA 143, 149 (Norman J. Vig & Michael E. Kraft eds., 1991). Four years later, executive branch control was further enhanced by Executive Order 12,498, which required agencies to give OIRA one year's notice of anticipated rulemaking. Norman J. Vig, *Presidential Leadership and the Environment: From Reagan to Clinton*, in ENVIRONMENTAL POLICY: NEW DIRECTIONS FOR THE TWENTY-FIRST CENTURY 98, 103 (Norman J. Vig & Michael E. Kraft eds., 4th ed. 2000). Using Executive Order 12,291 as a legal basis, in its final year and a half, the (first) Bush Administration shifted substantial regulatory review authority to the White House Council on Competitiveness, a group chaired by the Vice President and including the secretaries of treasury and commerce and the attorney general. The so-called "Quayle Council" provided a forum for industry complaints about regulatory compliance costs and conducted its own cost-benefit analysis of regulations. Norman J. Vig, *Presidential Leadership and the Environment: From Reagan and Bush to Clinton*, in ENVIRONMENTAL POLICY IN THE 1990S: TOWARD A NEW AGENDA 71, 85 (Norman J. Vig & Michael E. Kraft eds., 2d ed. 1994). An important change was made by President Clinton's Executive Order 12,866 of 1993. This Order replaced Executive Orders 12,291 and 12,498 and, while it continued to require agencies to assess the costs and benefits of their regulations, it significantly changed policy by stressing that "[c]osts and benefits shall be understood to include both quantifiable measures . . . and qualitative measures of costs and benefits . . . [and] in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity . . .)." Exec. Order No. 12,866, 3 C.F.R. 638, 639 (1994). As argued by Susan E. Dudley & Angela Antonelli, *Congress and the Clinton OMB: Unwilling Partners in Regulatory Oversight?*, REGULATION, Fall 1997, at 17, by placing "environmental, public health and safety . . . distributive impacts; and equity" on a par with economic costs and benefits, Clinton's order in fact represented a complete reversal of the Reagan-Bush strategy of White House regulatory review and returned policymaking authority to regulatory agencies.

²⁰ See *supra* notes 5-7 (describing Congress's attempts at requiring usage of cost-benefit analysis).

has come to specialize in regulatory cost-benefit analysis. But in the eyes of OMB's critics, it does not conduct an open and objective cost-benefit analysis, but rather provides a closed, nonpublic forum for regulated firms to present only their side—the cost side—of the story.²¹ There have been all sorts of proposals to reform the OMB regulatory review process.²² Yet as with proposals to make cost-benefit analysis a statutory requirement, there has been little if any empirical or theoretical analysis of how OMB review influences the behavior of regulatory agencies.²³

²¹ The debate over how OMB conducts regulatory review is as old as regulatory review. Compare, e.g., Thomas O. McGarity, *Regulatory Analysis and Regulatory Reform*, 65 TEX. L. REV. 1243, 1332 (1987) (recommending that the OMB "coordinate its regulatory analysis review function with its paperwork function, so that it approves information gathering activities designed to yield information that it is likely to require later in the reviewing process"), and Alan B. Morrison, *OMB Interference with Agency Rulemaking: The Wrong Way to Write a Regulation*, 99 HARV. L. REV. 1059, 1059-60 (1986) (arguing that the "unwarranted" dominance of the OMB in the regulatory rulemaking process requires the restriction and ultimate elimination of the OMB's involvement in the process), with Christopher D. DeMuth & Douglas H. Ginsburg, *White House Review of Agency Rulemaking*, 99 HARV. L. REV. 1075 (1986) (arguing in favor of regulatory review by the Executive Office of the President). For more recent work, see Robert V. Percival, *Checks Without Balance: Executive Office Oversight of the Environmental Protection Agency*, LAW & CONTEMP. PROBS., Autumn 1991, at 127, 161-68, which argues that OMB review has made it more difficult for the EPA to issue regulations and has "made the regulations that the agency has been able to pass less stringent"; and THOMAS O. MCGARITY, *RETHINKING RATIONALITY: THE ROLE OF REGULATORY ANALYSIS IN THE FEDERAL BUREAUCRACY* (1991).

²² E.g., E. Donald Elliot, *TQM-ing OMB: Or Why Regulatory Review Under Executive Order 12,291 Works Poorly and What President Clinton Should Do About It*, LAW & CONTEMP. PROBS., Spring 1994, at 167, 181-84 (outlining what President Clinton should to improve the OMB's role in the regulatory review process); Richard H. Pildes & Cass R. Sunstein, *Reinventing the Regulatory State*, 62 U. CHI. L. REV. 1, 7 (1995) (discussing the substantive and procedural changes to the regulatory process made by Executive Order 12,866, which include reducing the number of rules that the OMB reviews by half).

²³ Eric A. Posner, *Controlling Agencies with Cost-Benefit Analysis: A Positive Political Theory Perspective*, 68 U. CHI. L. REV. 1137 (2001), attempts to apply the analytical framework developed by Thomas Gilligan & Keith Krehbiel, *Collective Decisionmaking and Standing Committees: An Informational Rationale for Restrictive Amendment Procedures*, 3 J.L. ECON. & ORG. 287 (1987), and extended by David Epstein & Sharyn O'Halloran, *A Theory of Strategic Oversight: Congress, Lobbyists, and the Bureaucracy*, 11 J.L. ECON. & ORG. 227 (1995), to think about cost-benefit analysis as a way for the Executive (or Congress) to get the information that the agency has by virtue of its expertise. Within this general framework—which rigorously establishes what has become known as the informational rationale for political delegation—a principal (Congress as a whole, or the President) delegates authority to an agent (a congressional committee, or a regulatory agency), which acquires specialized information about the relationship between announced policies and actual policy outcomes. The agent uses its specialized knowledge and expertise (asymmetric information) to get policy outcomes that it likes. Notwithstanding the fact that the agent moves outcomes toward its preferred point

In this Article, I address these gaps in the literature by using the tools of game theory to model how regulatory decision making is likely to vary both with statutory type—whether the statute explicitly requires cost-benefit analysis—and with the substantive expertise and procedural openness of OMB review. I model notice-and-comment rulemaking as a sequential game. This game begins with (1) the agency's decision whether to propose a rule, proceeds through (2) a lobbying stage in which both the agency and regulatory targets lobby the executive and legislative branches, and ends with (3) a decision by the regulatory target on whether or not to seek judicial review of the regulation. In this game, regulatory targets possess private information as to the cost of compliance and have two opportunities to block regulation. Their first chance is provided by a lobbying contest that is initiated by (and sometimes even before) a regulation is proposed. Here, they attempt to increase the political costs to the agency from going forward with the regulation as proposed. If they fail to kill the regulation, then targets have an opportunity to seek judicial review of the regulation. Although simplified, this sequential game captures many of the key strategic features of the regulation game, and generates a number of nonintuitive insights into agency rulemaking incentives under alternative institutional environments.

The model is first employed to analyze agency rulemaking incentives under a *benefits* statute versus a *cost-benefit* statute.²⁴ It is important to begin with a clear idea of what I mean by these terms. Under a

and away from those preferred by the principal, the principal nonetheless prefers to delegate to the agent because the agent uses its expertise to reduce uncertainty over actual outcomes. Since in this model both the principal and the agent are risk averse, they both gain from the reduction in uncertainty. The general issue that Posner identifies—whether cost-benefit analysis might prevent the agency from using its expertise to bias policy toward outcomes that it favors—is interesting and important, but his application of the informational model of delegation is highly problematic. Most seriously, in concluding that the agency is better off when a cost-benefit requirement forces it to reveal its information to the President or Congress than when it can keep such information to itself, Posner states a conclusion that is simply inconsistent with the model he applies: in that model (see Proposition 1 and its explanation, Epstein & O'Halloran, *supra*, at 235-36), the agency is always better off when it can use its asymmetric information to evade control by the President (or Congress) than when the President or Congress has complete information; and the more extreme the agency, the more advantage it takes of its superior information (if the agency's preferences are too extreme, the rationale for delegation fails).

²⁴ By restricting the formal analysis to the choice between a benefits and (alternative versions of) a cost-benefit statute, I do not mean to suggest that these are the only types of regulatory statutes. Sunstein, *supra* note 11, at 1701-03, is clearly correct, for instance, in identifying feasibility statutes (those that tell the regulator to regulate to the extent "feasible") as another important general statutory type.

benefits statute, the agency is commanded to focus only on gross, not net regulatory benefits. Under section 101(a) of the Federal Water Pollution Control Act Amendments of 1972, for instance, Congress instructed the EPA to eliminate totally the discharge of pollutants into the navigable waters of the United States by 1985, and "wherever attainable" to bring all such waters up to fishable/swimmable quality by 1983.²⁵ Likewise, under section 109 of the Clean Air Act (as amended in 1990), the EPA is instructed to set primary national ambient air quality standards (NAAQs) at that level "which . . . allowing an adequate margin of safety, are requisite to protect the public health."²⁶ Neither of these statutory provisions makes any mention of the cost of achieving their ambitious goals. They are, in my terminology, benefits statutes.

There are two species of cost-benefit statutes. Under what I shall call a *substantive* cost-benefit statute, the agency is explicitly instructed to balance the costs and benefits of alternative standards for reducing environmental or health risks, and to set the standard at a "reasonable" level. One illustration of a substantive cost-benefit statute is provided by the Flood Control Act of 1936. The Act instructs the Army Corps of Engineers to "improve or participate in the improvement of navigable waters . . . for flood-control purposes if the benefits to whomsoever they may accrue are in excess of the estimated costs."²⁷ Another substantive cost-benefit statute is the Toxic Substances Control Act (TSCA). This statute mentions the term "unreasonable risk" thirty-five times,²⁸ and authorizes the EPA to regulate chemical substances if it finds that there is a "reasonable basis to conclude" that the manufacture, use, processing, or distribution of such substance "presents or will present an unreasonable risk of injury to health or the environment."²⁹ The Act explicitly requires that EPA investigate not only

²⁵ Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, § 101(a)(1)-(2), 86 Stat. 816, 816 (codified as amended at 33 U.S.C. § 1251(a)(1)-(2) (1994)).

²⁶ Clean Air Amendments of 1970, Pub. L. No. 91-604, § 109(b)(1), 84 Stat. 1676, 1680 (codified as amended at 42 U.S.C. § 7409(b)(1) (1994)).

²⁷ Flood Control Act of 1936 § 1, 33 U.S.C. § 701a (1994). It is worth noting that the Supreme Court has often taken this provision as exemplifying an explicit statutory cost-benefit mandate. See, e.g., *Am. Textile Mfrs. Inst. Inc. v. Donovan*, 452 U.S. 490, 510 (1981) ("When Congress has intended that an agency engage in cost-benefit analysis, it has clearly indicated such intent on the face of its statute. One early example is the Flood Control Act of 1936 . . .").

²⁸ William H. Rodgers, Jr., *The Lesson of the Owls and the Crows: The Role of Deception in the Evolution of the Environmental Statutes*, 4 J. LAND USE & ENVTL. L. 377, 379 (1989).

²⁹ Toxic Substances Control Act § 6(a), 15 U.S.C. § 2605(a) (1994).

the health and environmental risks of the substance, but also the benefits flowing from its use, "the availability of substitutes for it, and 'the reasonably ascertainable economic consequences' of regulation."³⁰ More generally, TSCA declares that its policy is "not to impede unduly or create unnecessary economic barriers to technological innovation."³¹

In contrast with substantive cost-benefit statutes, *procedural* cost-benefit statutes say nothing about *how* the agency strikes the cost-benefit balance; they merely require the agency to do the balancing. Paradigmatic of such a statute is the National Environmental Policy Act of 1969 (NEPA). Section 102(c) of NEPA requires federal agencies to prepare an environmental impact statement (EIS) for any "major" federal action with a "significant" environmental impact.³² To survive judicial review under NEPA, agencies must be able to show that they have prepared an EIS if one was required and used that statement in a good faith attempt to balance the environmental costs of a federal program against the program's benefits.³³

Benefits statutes differ in important ways from both types of cost-benefit statutes. Under a benefits statute, the agency has no statutory obligation to consider regulatory costs, and may even be expressly forbidden from taking such costs into account in setting the regulatory standard.³⁴ Under a cost-benefit statute, by contrast, the agency

³⁰ ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 456 (3d ed. 2000) (quoting Toxic Substances Control Act, § 6(c)(1), 15 U.S.C. § 2605(c)(1) (1994)).

³¹ Toxic Substances Control Act § 2(b)(3), 15 U.S.C. § 2601(b)(3) (1994).

³² NEPA, Pub. L. No. 91-190, § 102(c), 83 Stat. 852, 853 (1970) (codified as amended at 42 U.S.C. § 4332(C)(1994)). That section requires all federal agencies to "include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement . . . on . . . (i) the environmental impact of the proposed action." *Id.*

³³ As the court held in *Calvert Cliffs Coordinating Committee v. United States Atomic Energy Commission*:

reviewing courts probably cannot reverse a substantive decision on the merits, [under NEPA] unless it be shown that the actual balance of costs and benefits that was struck was arbitrary or clearly gave insufficient weight to environmental values. But if the decision was reached procedurally without individualized consideration and balancing of environmental factors—conducted fully and in good faith—it is the responsibility of courts to reverse.

449 F.2d 1109, 1115 (D.C. Cir. 1971).

³⁴ The extent to which an agency *may* consider costs in setting standards under a benefits statute varies with the language of the particular statutory provision at issue. Compare, e.g., *Am. Trucking Ass'n v. EPA*, 175 F.3d 1027, 1038 (D.C. Cir. 1999) (reaffirming that under the line of decisions beginning with *Lead Industries Ass'n v. EPA*,

has a statutory obligation to balance both costs and benefits, and thus is obliged to specifically consider costs.

Just as courts generally have assumed that benefits statutes not only do not mandate but in fact may preclude the agency from considering costs, so too have they generally understood cost-benefit statutes as requiring explicit and detailed evaluation by the agency of both costs and benefits.³⁵ What this means is that if a firm or individual wants to argue that a regulation under a cost-benefit statute is too costly, then it can make the argument to the court *after* the regulation is finalized. Under a benefits statute, by contrast, arguments attacking a regulation as too costly can only be made to the agency, the legislature or the Executive. The cost-benefit statute provides parties who bear regulatory costs an additional forum in which to try to block such a regulation on the ground that costs were not adequately considered by the agency.

The sequential game model of regulation generates a number of nonintuitive insights into the regulatory process. First, even under a benefits statute—where the agency has no statutory obligation to balance compliance costs with social benefits—the agency generally will internalize some of the compliance costs its regulation will impose. The reason is that the higher is the regulatory target's perceived cost of compliance, the greater is its equilibrium expenditure on lobbyists and lawyers at both the lobbying and judicial review stages. And the greater the target's effort and expenditure in resisting regulation, the lower the agency's expected net return from promulgating the regulation. As a consequence, among regulatory alternatives yielding an equal benefit as perceived by the regulator, the regulatory game itself provides an incentive for the regulator to choose the cost-minimizing alternative.

647 F.2d 1130 (D.C. Cir. 1980), the EPA may not consider costs in promulgating air quality standards under section 109(b)(1) of the Clean Air Act), *with* *Michigan v. EPA*, 213 F.3d 663, 678-79 (D.C. Cir. 2000) (holding that EPA may consider costs in determining whether a state "contributes significantly" to interstate air pollution under section 110(a)(2)(D) of the Clean Air Act). A fair reading of the cases supports the argument made by Sunstein, *supra* note 11, at 1676-79, that the courts have adopted a default presumption that even under a benefits statute, an agency *may* consider costs unless statutory language clearly precludes such consideration.

³⁵ See *Strycker's Bay Neighborhood Council, Inc. v. Karlen*, 444 U.S. 223, 228 (1980) (holding that section 102(c) of NEPA requires agencies to balance environmental costs against project benefits, but does not set a substantive standard for such balancing); *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201, 1215-17 (5th Cir. 1991) (interpreting TSCA to require the EPA to show that its regulation is the least burdensome available to it).

Another result from the model is that lobbying itself may generate socially valuable information. If the judicial review process is procedurally complex and costly, then a regulatory target with a high cost of compliance may be willing to spend so much on judicial review that the regulator would not pursue the regulation if it knew that the firm had high compliance cost. In this circumstance, the high cost of compliance type of regulatory target will make a separating expenditure of effort on lobbying, choosing such a high level that the regulator learns from the target's lobbying effort that the target has high compliance cost and is not worth regulating.

Whenever there is a chance that the agency will decide not to proceed with the regulation as a consequence of the firm's lobbying effort (whether due to the information that effort conveys or the political cost it imposes on the agency), the agency has an incentive to acquire information as to the firm's compliance cost at the time it initiates a rulemaking. In this way, even under a benefits statute, a costly regulatory process creates an incentive for the agency to gain information about, and weigh carefully, the target's cost of complying with the contemplated regulation.

This in no way implies that benefits statutes incentivize the agency to perform a complete, detailed, and thoughtful balance of costs and benefits. For this reason, it may seem desirable to write the cost-benefit balancing requirement into the statute.

Incentives under a cost-benefit statute are not necessarily what one might expect. When the court is a perfect *ex post* verifier of regulatory costs and benefits, a substantive cost-benefit statute guarantees that the agency will never end up regulating inefficiently. But it also threatens a low-compliance-cost target (regulation of which is efficient) with certain defeat at the judicial review stage if a regulation is promulgated. For this reason, the perfect substantive cost-benefit statute maximizes a low-compliance-cost target's incentive for very high, type-concealing lobbying expenditures. The model predicts that even within a given industry, not all regulatory targets would prefer to move to a substantive cost-benefit statute. More generally, one would expect to see lobbying increase rather than decrease if Congress does change the law from a benefits to a cost-benefit standard. Thus, the formal model shows that contrary to the intuition of many commentators, explicit statutory cost-benefit requirements may enhance rather than reduce the incentive to politicize regulatory costs.

Unguided intuition suggests that procedural cost-benefit statutes such as NEPA will have only a weak effect on agency incentives. After

all, such statutes merely impose a legal requirement that the agency acquire and weigh information about regulatory costs. My sequential regulatory game model shows that this intuition may be quite wrong, and that such a procedural requirement may be remarkably effective in altering agency behavior. A procedural cost-benefit statute guarantees an agency that it will succeed at the judicial review stage if it does the required *ex ante* balancing. Relative to other regimes, such a statute maximizes the agency's final stage benefit from doing such *ex ante* balancing. Because the agency will drop the regulation when it learns early on that the target has high compliance cost, the procedural cost-benefit statute is likely to eliminate even more regulation than does a substantive cost-benefit statute.

After explaining these results, and exploring potential extensions of the model to add realism, I develop some of the many positive implications of the more formal analysis. The relative success of NEPA in altering the type and reducing the volume of projects done by federal project agencies such as the Corps of Engineers confirms the model's prediction about the effect of procedural cost-benefit statutes. Similarly, the history of continued lobbying by the pesticide manufacturing and agricultural industries under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)³⁶—a substantive cost-benefit statute—supports the model's analysis of incentives under such a statute.

Additionally, the model argues that the courts have read benefits statutes the way Congress intended by interpreting such statutes to allow, but not require, regulatory agencies to consider compliance costs. Even though regulatory targets would always prefer a cost-benefit statute, Congress prefers benefits statutes. The reason is that such statutes preserve congressional control over future, oftentimes unforeseen extensions of regulatory authority, and allow Congress maximum flexibility to respond to the political costs of regulation. More concretely, as a body composed of members representing geographic places, members of Congress generally want the flexibility to intervene on behalf of industries and other regulatory targets that are locally important (whether at the state or district level). Benefits statutes maximize congressional discretion to play such an interventionist, regulation-curbing role.

The Article concludes with a cautionary note on the potential for cost-benefit analysis to reform environmental regulation. NEPA was

³⁶ 7 U.S.C. §§ 136-136y (2000). See the discussion of FIFRA, *infra* text and notes 89-120 and accompanying text.

effective precisely because it overcame the strong strategic incentives of federal project agencies (e.g., the Bureau of Reclamation) to provide concentrated benefits while concealing the large but diffuse environmental costs of their projects. Unlike federal development projects, federal environmental regulation imposes predominantly private costs about which targets are systematically better informed than are regulators. But environmental regulators have a choice among alternative regulatory instruments. Just as environmental regulators have an incentive to overstate the benefits of environmental regulation, so too do they have an incentive to prefer regulatory instruments—most importantly, technology-based standards—that reduce the inherent advantage regulatory targets have with respect to information about costs. Revising environmental statutes to require the EPA to consider regulatory costs is not the solution to the problem of inefficient technology-based standards. The need to survive judicial review of its cost-benefit calculation will merely reinforce the agency's incentive to stick with known pollution-abatement technologies rather than experimenting with novel and potentially more effective, but also more uncertain and potentially more costly approaches. To create the incentives necessary for further environmental improvement requires a much more radical devolution to states, localities, and private self-regulatory groups.

I. THE STRATEGIES OF ADVERSARIAL REGULATION UNDER ALTERNATIVE STATUTORY SCHEMES

This Part develops a simple model of the regulation process as a sequential game.³⁷ I use the model to study a regulatory agency's incentive to consider both the costs and benefits of a potential regulation. My primary aim is to show that an agency's incentive to weigh regulatory compliance costs is likely to differ under a benefits versus a cost-benefit statute. A crucial feature of the model is that it allows for regulatory cost-bearers to make their case both in lobbying (before a regulation is promulgated) as well as in mounting a legal challenge after a regulation has been promulgated.³⁸ For this reason, the model

³⁷ Inasmuch as the authors consider a regulation game where the regulatory target is asymmetrically well informed, Tracy Lewis & Michel Poitevin, *Disclosure of Information in Regulatory Proceedings*, 13 J.L. ECON. & ORG. 50 (1997), bears some similarity to the model developed below. Their focus, however, is on how the incentive of a regulatory target to disclose information (more precisely, an evidentiary signal) to the regulator varies with the cost of disclosure, and they do not model lobbying.

³⁸ My approach owes much to the pathbreaking general insights of Matthew D.

shows a great deal about how lobbying and litigation incentives interact in the regulatory process. Beyond this particular issue, the analysis generates very concrete predictions about agency behavior in rule-making that are strongly borne out by actual agency practice.

A. *The Regulation Game*

Consider a representative federal democracy with an executive, legislature, and executive agency. I abstract from the effect of national political party affiliation, an important topic that I treat separately below. I shall refer to legislative districts (for my purposes, the bicameral nature of the United States Congress is not central). I take it as given that regulation has both costs and benefits. Not all of the costs of regulation are borne by regulatory targets. If, for instance, regulation is so costly that it causes some (typically small) firms to close and lay off workers, then not only do firm owners suffer lost profits, but workers suffer lost wages, while the lost income and property tax revenues previously generated by the firm may lead to a reduction in various public services that have even wider effects on the community within which the firm was located. The distinction between the direct private cost of regulation and other social costs of regulation will figure later in my analysis. In modeling the regulation game, however, I simplify initially by assuming that all of the costs of regulation are private and borne by regulated firms and their workers.

I shall refer to those persons who bear the costs of regulation as regulatory targets or cost-bearers, while those who get the benefits will be referred to as regulatory beneficiaries. Reflecting the most recent political science evidence, I assume that regulation results from what

McCubbins et al., *Administrative Procedures as Instruments of Political Control*, 3 J.L. ECON. & ORG. 243 (1987), who first set out the basic notion that judicial review ought to be looked at, along with lobbying, as sequential stages of the regulatory process. My model formalizes many of the insights contained there, *id.* at 251-53, although on some points—such as my assumption that it is costless for the Executive and Congress to impose political sanctions—I differ from their analysis.

The only other paper of which I am aware that looks at how litigation and lobbying incentives interact is John M. de Figueiredo & Rui J.P. de Figueiredo, Jr., *The Allocation of Resources by Interest Groups: Lobbying, Litigation and Administrative Regulation* (June 2001) (unpublished manuscript, on file with author). Where our models overlap, we obtain similar results: for instance, I explain how the incentive to lobby vanishes for a high-compliance-cost firm under a perfect cost-benefit regime, *infra* Part I.C.1. But the overlap is small: their paper does not address the problem of asymmetric firm information regarding compliance cost, which is central to my analysis; and because I take judges as random but faithful implementers of whatever legislative regime Congress has established, I do not explore the separate effect of judicial ideology.

is fundamentally an adversarial process in which the agency must choose between pursuing a particular regulatory program or not. The simple formal model of this Part thus does not allow the agency to “fine-tune” the regulation in response to feedback it gets during the notice-and-comment rulemaking process. The regulatory game I posit has the following sequential structure depicted by Figure 1 below.

1. The agency acts first, deciding whether or not to develop regulations on a certain issue. I assume that the agency perceives some benefit, B , from regulating. The agency simultaneously decides whether to invest some amount, I , in acquiring information about regulatory compliance cost.

2. If the agency decides to regulate, both before and after the publication of a proposed regulation, regulatory targets, beneficiaries, and the agency itself engage in a lobbying contest. At this stage, the adversaries make expenditures to persuade Congress and the President that the proposed regulation is or is not a good idea. Of course, a fundamental goal of notice-and-comment rulemaking is to ensure an opportunity for just such public participation before the agency. There are no such procedural access guarantees when it comes to lobbying the Executive and the legislature. Indeed, a traditional criticism of cost-benefit analysis of environmental regulations by the executive-level OMB is that access to OMB is limited and its reasoning and methods shielded from public scrutiny.³⁹ In the model here, lobbying is important because if the agency continues and promulgates a final regulation, its net regulatory benefit falls from B to $B - D$ as a consequence of lobbying activities, where D denotes the political costs imposed through lobbying.

Political costs may be imposed either by Congress or by the President. Congressional opponents of a regulation can hold oversight hearings, sapping time from other agency activities, and cut agency appropriations. The President can recommend budgetary cuts and exert direct control over agency staffing, hiring, and firing decisions. For the time being, I assume that any political penalty imposed on the agency is imposed only if the agency actually finalizes the regulation. A final and important feature of lobbying in this model is that lobbying is costly. In general, one would expect that lobbying efforts by the agency cut the political penalty, while those by the firm increase the penalty. That is, if we let e_a denote the agency's lobbying effort and e_f

³⁹ See *infra* text Part III.C (discussing OMB review and the roles of regulatory beneficiaries).

Figure 1: Sequential Structure of the Regulation Game

denote the target firm's lobbying effort, then $D = D(e_a, e_f)$, with $D_1 < 0$ and $D_2 > 0$.⁴⁰

3. If the agency promulgates a final regulation, then the regulatory target chooses between complying with the regulation and challenging it in court. This is, of course, a simplification since the target might simply refuse to comply and then defend against an enforcement action. For purposes of the present analysis, though, this is functionally identical to challenging the regulation.

4. If the target seeks judicial review, then the parties simultaneously choose their litigation expenditures, L_a and L_f for the agency and firm respectively. These expenditures induce a probability r , $0 < r < 1$, that the regulation will be vacated, with $r = r(L_a, L_f)$, $r_1 < 0$, and $r_2 > 0$. That is, the higher the litigation effort by the firm (agency), the higher (lower) the probability of judicial reversal of the agency's decision.⁴¹ For simplicity, I assume that if the regulation is vacated, then it is dead—the agency cannot take up and begin the process again. The court's decision induces the payoffs indicated by Figure 1, where c denotes the firm's cost of compliance. Compliance cost has two possible realizations, $c_l < c_h$.

The firm's objective is to choose a strategy that minimizes its total expected cost. This expected cost is equal to the cost of lobbying and litigating plus the firm's expected compliance cost. Symbolically, the firm minimizes $e_f + L_f + (1 - r(L_a, L_f))c$. As one can see immediately, the only way that lobbying effort directly enters this function is as a cost. This is because I have assumed that the agency does not modify the regulation (lowering the firm's compliance cost) in response to the firm's opposition to the regulation.

With so much in this model turning on the agency's net benefit, it is important to clarify precisely what I am assuming about the behavior of a regulatory agency by unpacking what goes into its net benefit, $B - D$. Economists working within the public finance tradition often assume benevolent regulators—those who seek, for instance, to maximize the net benefits of regulation to the society.⁴² Economists

⁴⁰ Lobbying by regulatory beneficiaries is also important, and I consider this in discussing the incentive effects of OMB review, *infra* Part III.C.

⁴¹ Although it surely is possible that certain kinds of litigation effort would be counterproductive—such as filing motions that the judge believes to be frivolous—given the structure of the game that I have set out, a rational actor will never take such actions.

⁴² For a lucid exposition of this tradition as applied to the design of environmental regulatory policy, see Maureen L. Cropper & Wallace E. Oates, *Environmental Economics: A Survey*, 30 J. ECON. LITERATURE 675, 682 (1992), describing how, if perfect

(and political scientists) working within the contrasting public choice tradition often assume that regulators are self-interested budget maximizers,⁴³ or are subject to capture by regulated entities that promise future employment and other fairly direct benefits.⁴⁴ Taken alone, each of these models is incomplete. Together, they suggest a richer model.

A fundamental insight of recent work in positive political theory is that people who work for regulatory agencies have preferences about the programs and policies that those agencies implement.⁴⁵ Experience shapes preferences, but, to a large extent, career regulators bring their preferences with them to the agencies they join. For instance, in creating the United States Forest Service in the early part of last century, Gifford Pinchot chose his new foresters from the ranks of recent graduates of the newly formed Yale School of Forestry.⁴⁶ Trained in the emerging discipline of "scientific forestry," Pinchot's foresters had an almost religious commitment to certain forest management policies.⁴⁷ Regardless of the official policy choices made by

knowledge is assumed, regulators can achieve the same benefits from taxing emissions as from providing marketable emissions permits.

⁴³ In this tradition, WILLIAM A. NISKANEN, JR., *BUREAUCRACY AND REPRESENTATIVE GOVERNMENT* (1971), is seminal.

⁴⁴ On the contrast between the public finance and public choice traditions, see JAMES M. BUCHANAN & RICHARD A. MUSGRAVE, *PUBLIC FINANCE AND PUBLIC CHOICE: TWO CONTRASTING VISIONS OF THE STATE* (1999), which records the comments and papers presented during a week-long lecture series debating the relative merits of the public finance and public choice decision-making models, and AVINASH K. DIXIT, *THE MAKING OF ECONOMIC POLICY: A TRANSACTION-COST POLITICS PERSPECTIVE* 1-19 (Hans-Werner Sinn ed., 1996).

⁴⁵ As James Q. Wilson puts it:

Government agencies are not billiard balls driven hither and yon by the impact of forces and interests. When bureaucrats are free to choose a course of action their choices will reflect the full array of incentives operating on them: some will reflect the need to manage a workload; others will reflect the expectations of workplace peers and professional colleagues elsewhere; still others may reflect their own convictions.

JAMES Q. WILSON, *BUREAUCRACY: WHAT GOVERNMENT AGENCIES DO AND WHY THEY DO IT* 88 (1989); see also RICHARD A. HARRIS & SIDNEY M. MILKIS, *THE POLITICS OF REGULATORY CHANGE* 231 (2d ed. 1996) (describing how, in its early years, the EPA attracted "zealots" committed to stringent environmental regulation); JOHN QUARLES, *CLEANING UP AMERICA: AN INSIDER'S VIEW OF THE ENVIRONMENTAL PROTECTION AGENCY* 58-76 (1976) (discussing lobbying by regulatory targets). For an illustration of positive political theory put to work to explain the role and composition of congressional committees, see KEITH KREHBIEL, *INFORMATION AND LEGISLATIVE ORGANIZATION* (1991).

⁴⁶ NANCY LANGSTON, *FOREST DREAMS, FOREST NIGHTMARES* 109 (1995).

⁴⁷ MICHAEL WILLIAMS, *AMERICANS AND THEIR FORESTS: A HISTORICAL GEOGRAPHY*

political appointees at the top of the agency hierarchy, economists at the OMB are likely to have very different views about what constitutes good policy than do conservation biologists employed by the United States Fish and Wildlife Service. There is thus a considerable amount of self-selection that goes on when people choose which agency to work for. While hardly monolithic, agencies may usefully be thought of as having collective preferences.

In somewhat more technical economist lingo, regulatory agencies get collective utility from policies and programs. To see their preferences realized in actual policies and programs, however, agencies need time and money. Through the appropriations process, Congress controls agency budgets.⁴⁸ In recent years, party leaders within the House and Senate have exercised increasingly close control over the makeup of appropriations committees.⁴⁹ When agencies pursue policies or programs that are opposed by party leaders, they risk triggering congressional reaction, not only in the form of costly oversight hearings, at which they will be grilled for hours by hostile committee members, but also in the form of reduced future appropriations. Hence when I refer to the net benefit to an agency from any particular proposed regulation (represented formally by $B - D$ above) what I mean more precisely is: the utility to the agency from the regulation (the B term), minus the lost current and future utility from regulations that cannot be pursued because of costly oversight hearings and/or budgetary reductions imposed by congressional opponents of the regulation (the D term above).⁵⁰

419 (1989).

⁴⁸ This is of course a simplification, in that it is the executive branch that has the budgetary proposal power. Still, Congress has the final say. For a detailed account of the structure and evolution of the federal budgetary process, see AARON WILDAVSKY, *THE NEW POLITICS OF THE BUDGETARY PROCESS* (1998).

⁴⁹ See GARY W. COX & MATHEW D. MCCUBBINS, *LEGISLATIVE LEVIATHAN: PARTY GOVERNMENT IN THE HOUSE 163-87* (1993) (summarizing the importance of knowing congressional leaders in order to receive an appointment to a committee).

⁵⁰ Anecdotal support for the reasonableness of this specification is provided by comments made by former Securities and Exchange Commission (SEC) Chairman Arthur Levitt, Jr. While SEC Chairman, Levitt had proposed toughening conflict-of-interest regulations governing accounting firms. The accounting industry lobbied fiercely and ultimately successfully against these regulations. Levitt, who served longer than any other SEC chairman in the sixty-seven-year history of the agency, has vividly described the cost of such lobbying: "I have never been subjected to a more intensive and venal lobbying campaign. I spent nearly all of my time during those months responding to senatorial and congressional queries and visits. It was totally time consuming." Stephen Labaton, *Auditing Firms Exercise Power in Washington*, N.Y. TIMES, Jan. 19, 2002, at A1. More systematic empirical support for the agency objective function I

At any given time, a regulatory agency has fixed resources. Thus what I formally assume about agency behavior in this Part of the Article is that an agency seeks to maximize the net present value of its utility from regulating (given by $B - D$), given its present budgetary/resource constraint. If the agency is regulating to the limit of its present budgetary ability, then both litigating and lobbying expenditures have a real resource cost to the agency (its foregone benefit if the resources were expended on other regulations). Hence the full statement of the agency's objective is to maximize $(1 - r(L_o, L_f))(B - D(e_o, e_f)) - e_a - L_a$.

Although obviously reductionist, this approach does permit one to analyze a number of very important aspects of the regulatory process, including (in a way described in the Appendix) the degree of discretion given to the agency by Congress. In general, the more discretion that an agency has been given by Congress—the less it is subject to direct control by Congress—the better able it is to pursue its preferred policies and programs. Whether the statute requires the agency to do cost-benefit analysis may have an important bearing on the degree of agency discretion, and I turn to this issue—that figured so centrally in the recent decision in *Whitman v. American Trucking*⁵¹—in the next Part of the Article.

B. *Incentives for Regulatory Cost Consideration Under a Benefits Statute*

There is much to be learned in the meantime from the admittedly simplified model of the regulatory process set out above. I begin with the analysis of a benefits statute. In this model, the distinguishing feature of a benefits statute is that the agency has no statutory duty to consider the firm's cost of compliance with the regulation. The functional significance of this is that at the judicial review stage of the game, the probability that the regulation is vacated, $r()$, does not depend upon whether or not the agency incurred the cost I of investigating the firm's compliance cost. The method of analysis, as in the analysis of all sequential games, is to begin with the final, judicial re-

employ is provided by WESLEY A. MAGAT ET AL., RULES IN THE MAKING: A STATISTICAL ANALYSIS OF REGULATORY AGENCY BEHAVIOR 54, 141-54 (1986) (testing and finding support for the "external signals theory" that "a regulatory agency sets the stringency of its standards to maximize the net support for a regulation that it receives or expects to receive from interested outside parties, subject to a constraint on total agency resources").

⁵¹ 531 U.S. 457 (2001).

view stage and to work backward.⁵²

1. Judicial Review and the Incentive for Cost-Effective Rulemaking

Under any reasonable assumption about the final, judicial review stage, the firm's litigation effort increases in its perceived compliance cost, c .⁵³ Intuitively, the more it will cost the firm to comply with the regulation, the more the firm is willing to spend in an attempt to get the courts to invalidate the regulation. As in more general models of litigation expenditure,⁵⁴ the litigation efforts of the firm and the agency are likely to be strategic complements. That means that, as the level of one increases, the optimal level of the other also increases. If, for instance, the firm simply files a complaint but does little else, then the agency needs to do very little to win, but if the firm actually pursues the complaint, further efforts by the agency will be productive in offsetting the firm's arguments. The marginal productivity of each additional issue and argument raised may fall for each side. Yet provided that the argument is not completely irrelevant, one side's raising the argument makes it strategically optimal for the other side to spend something refuting it.

Under these very plausible assumptions, the judicial review process may itself create an incentive for the regulatory agency to choose that regulation which is least costly among the set of regulations generating a particular level and type of benefit. A strategically rational agency will realize that the higher is the firm's compliance cost, the higher will be the amount that the firm will spend challenging the regulation in court, and hence the higher will be the agency's optimal expenditure in defending the regulation. The higher is the agency's expenditure at the judicial review stage, the lower will be its net benefit from the regulation, since resources are diverted to legal defense that might have been used to pursue other regulations and policies. (That is, in the formal notation developed above, the higher L_a is, the

⁵² In game theory, this solution technique is known as backward induction. For an elucidation, see HERBERT GINTIS, *GAME THEORY EVOLVING* 16-17 (2000), which describes how backward induction starts at the end point to eliminate weakly dominated strategies.

⁵³ See Proposition 1 in the Appendix for a demonstration of this point.

⁵⁴ See, e.g., Avery Katz, *Measuring the Demand for Litigation: Is the English Rule Really Cheaper?*, 3 J.L. ECON. & ORG. 143, 144 (1987) (arguing "that the stakes of a lawsuit and the marginal cost of legal services affect the equilibrium level of expenditure only through the stakes-cost ratio [and that] the price elasticity of demand for legal services is identical in magnitude to the elasticity of expenditure with respect to the stakes").

lower $B - D - e_a - L_a$ is). Hence, for any given level of benefit B , the agency's incentive is to choose that regulation which minimizes the firm's compliance cost. This is because, other things equal, the lower the firm's compliance cost, the lower its optimal level of litigation effort will be, and the more effective the agency will likely be in getting the regulation upheld on judicial review.⁵⁵

Thus judicial review—even review that ignores whether the agency ever tried to ascertain firm compliance cost—is a mechanism that incentivizes the agency to internalize a regulatory target's compliance cost. Because the firm's compliance cost is a primary determinant of how much it will spend litigating to overturn a regulation, the regulator increases the probability that the regulation will survive judicial review by lowering regulatory compliance cost. Observe that in the economic literature on cost-benefit analysis, procedures by which the least cost regulatory option is identified is known as “cost-effective regulation.”⁵⁶ The first result of the simple sequential model is that judicial review creates an incentive for cost-effective regulation.

2. Lobbying, Litigation, and the Agency's Incentive to Learn About Cost

Regulatory compliance is a primary determinant of strategic behavior at the lobbying stage as well. As modeled here, firm lobbying directly reduces the agency's payoff by making it clear to the agency that if it continues and promulgates a final regulation, then there will be a definite price to pay in the form of reduced future appropriations or increased levels of present and future oversight. By directly lowering the agency's perceived net return from the regulation, lobbying by firms indirectly lowers the agency's optimal level of effort in the judicial review stage. That is, just as compliance costs will affect how much the firm will spend to resist a regulation in court, net benefits from regulation will affect how much an agency will spend to defend the regulation. There are thus two ways that firms benefit from lobby-

⁵⁵ For this statement to be true, the equilibrium probability of reversal, r^* , must not increase as the firm's litigation effort increases. This must be true, since only agency litigation effort reduces r , and the agency is free to choose any effort level—to make any argument or raise any issue—that it wishes regardless of the firm's effort level.

⁵⁶ For a discussion of the increasing emphasis on cost-effective environmental regulation during the latter part of the Clinton Administration, see SHEILA M. CAVANAGH ET AL., NATIONAL ENVIRONMENTAL POLICY DURING THE CLINTON YEARS 7, 9 (AEI-Brookings Joint Ctr. for Regulatory Studies, Working Paper No. 01-09, 2001).

ing. The first is by inflicting such a large political penalty, D , on the agency if it finalizes the regulation that the agency will rationally decide to drop the regulation. Second, even if the agency goes ahead with the regulation, lobbying has effectively weakened its value to the agency, so the agency will spend less effort defending it before the courts, and that increases the firm's equilibrium probability of getting the regulation reversed.

Together with judicial review, the agency thus has a very strong incentive to learn about the firm's compliance cost beforehand even under a benefits statute. If the firm's cost of compliance is high enough, then it may spend so much on lobbying that the agency ends up dropping the regulation entirely, thus wasting agency resources spent in studying, proposing, and lobbying for the regulation. Even if lobbying doesn't kill the regulation, it may so weaken it (in terms of its net benefit to the agency) that the agency's expected net benefit—discounted by the probability of judicial reversal—is so low that the cost of producing the regulation proves to have been uneconomical. For these reasons, the agency will often have an incentive to incur the cost I to learn about the likely cost of compliance before it goes ahead and proposes the regulation. Better to incur the cost I than to lose potentially much more than that by pursuing a regulation to its eventual graveyard. The model thus shows that even when there is no statutory obligation to do so, the administrative rulemaking process will itself often create strong incentives for the agency to do an independent inquiry into the likely cost imposed by the regulation.

This is intuitive. Not so obvious to intuition, but revealed by the model, are the strategic determinants of the agency's incentive to investigate regulatory compliance costs. The first and most general implication is that the costlier the lobbying and litigation processes, the greater the agency's incentive to investigate and weigh the firm's compliance cost. Moreover, the more risk averse the agency, the greater the agency's incentive to learn about compliance cost. This is because a risk averse agency does not like the risk of incurring lobbying and litigation costs without any benefit.⁵⁷

The model also shows, however, that there is no necessary correspondence between social costs and benefits and the costs and benefits that the regulatory process in effect forces the agency to internalize under a benefits statute. Suppose, for instance, that the Congress

⁵⁷ Within this context, risk aversion arises when the agency's marginal benefit from increasingly beneficial regulation is positive but declining.

and President are strongly predisposed to disfavor a particular sort of regulation and to severely penalize the agency if it promulgates such a regulation. If so, then the political cost of promulgation to the agency may be regulation-detering even though the firm's actual cost of compliance is very low. The contrary case is also possible. If, for instance, the courts basically rubber stamp regulations and neither the President nor Congress is much interested in a regulated area, then even a firm whose compliance costs are far in excess of the regulator's net benefit cannot effectively stave off regulation. Knowing this, the agency would have little or no incentive to bother gaining information about firm compliance cost at its own expense.

One might question whether these are testable predictions. It is, after all, difficult to acquire data on how much investigation an agency has done even prior to issuing a proposed regulation. Observed agency behavior does, however, strongly support my model's plausibility. A large number of agencies, including notably both the Environmental Protection Agency and the Federal Communications Commission, voluntarily issue "Notices of Proposed Rulemaking." Such notices are a way for the agency to get some sense beforehand of the regulated community's likely reaction to the potential (proposed) rulemaking. More formally, early notification of the intent to regulate is a way for the agency to take advantage of the strategic incentive that regulated entities have to reveal regulatory compliance cost. It is a way for regulators to cheaply get information about the likely opposition they will face if they decide to proceed with the regulation game modeled above.

3. The Administrative Process as an Information Revelation Device

Cheap information is not necessarily reliable information. Pre-rulemaking notification will not work to elicit firm information unless firms have an incentive to truthfully convey compliance cost information. One might think that this is unlikely because all firms will have an incentive to say that they have high compliance cost to stave off regulation. Under the earlier notation, one might well ask why the low-compliance-cost type firm will not pretend to be a high-compliance-cost firm.

If the communication of compliance cost information is pure cheap talk—with no direct cost to the firm—then this intuition will

hold.⁵⁸ If the regulator will go ahead and propose regulation only if it learns that the firm has a low compliance cost (and hence will not spend much to resist regulation), then the low-compliance-cost firm will mimic whatever it is that the high-cost firm does to avoid being revealed as low cost. Regardless of what the regulator will do when it is not informed as to firm type, the low-compliance-cost firm is best off mimicking the high-cost firm's communication to the agency.

Even at the pre-regulation stage, however, communicating with a regulatory agency is not necessarily cheap talk. To effectively reach the agency, a regulated firm may need to pay large fees to lawyers and lobbyists. With such costly communication, the pre-regulation phase becomes in effect just an earlier stage of the general lobbying game stage of the sequential regulation game model set out above. Early notification of an intent to regulate may nonetheless be valuable to the agency, *if* firms can somehow credibly communicate what they know about the likely compliance cost. For the earlier the agency finds out that a firm has a high-compliance-cost and will aggressively resist regulation, the lower the agency's cost of changing course and looking at other regulatory opportunities.

Hence the key behavioral question is whether costly lobbying by regulatory targets can inform the agency about the firm's compliance cost. It turns out that lobbying is sometimes informative and sometimes not. Consider first the case when lobbying is uninformative. Retaining our simple situation in which there are two types of firms—low compliance cost and high compliance cost—suppose that the agency will drop the regulation if it does not learn the firm's type. In this situation, the low compliance cost firm has an incentive to mimic whatever the high cost firm says in lobbying because if it does, then the regulation will be dropped. In this mimicry, the low compliance cost firm is willing to spend up to its total expected cost in resisting a finalized regulation, which is equal to its expected compliance cost plus the cost of pursuing judicial review. Such a pooling⁵⁹ or uninformative lobbying equilibrium is more likely to obtain, when the

⁵⁸ Formally, cheap talk is defined in game theory as an action that does not directly affect payoffs from the game, but affects payoffs only through the information that such talk may convey. Whether talk is cheap depends crucially upon whether communicated commitments are enforceable. H. SCOTT BIERMAN & LUIS FERNANDEZ, *GAME THEORY WITH ECONOMIC APPLICATIONS* 131-33 (2d ed. 1998).

⁵⁹ For more on pooling versus separating equilibria in signaling games, see GINTIS, *supra* note 52, at 303. "A separating equilibrium is one in which the 'type' of player (e.g. sane/crazy) is revealed by the player's behavior, whereas a pooling equilibrium is one in which different types of players behave in the same way." *Id.*

President and Congress are more predisposed against regulation (so that the political penalty is higher, other things equal) and lobbying and litigation are expensive for the agency. In this uninformative, pooling equilibrium, firms spend the minimum amount on lobbying necessary to induce a sufficiently large political penalty so that the regulator will not proceed. Thus in a world of very effective and costly lobbying and litigation by regulatory targets, the regulator learns nothing about firm type from lobbying, and, as before, has a very strong incentive to do independent investigation into firm compliance cost before proceeding down the regulation game tree.⁶⁰

This is not the only potential equilibrium. Suppose that the agency will drop the regulation if and only if it learns that the firm has high compliance cost. This describes a regulatory process in which the likely political cost to the agency from regulating is low, but the probability of judicial reversal is strongly influenced by how much the regulated firm spends on litigation and hence may be quite high for sufficiently large firm litigation effort. In this case, the unique (Bayesian Perfect)⁶¹ equilibrium calls for the high-cost firm to identify itself and forestall regulation by making a very high lobbying expenditure. To see this, suppose that the high-cost firm sets its lobbying expenditure just equal to its total expected cost (lobbying plus expected cost from the litigation stage to come) if it does not succeed in using lobbying to reveal its type. Because optimal litigation and lobbying expenditures increase with the firm's compliance cost, we know that this expenditure is more than the low-cost firm's total expected cost if the regulation is finalized. Hence the low-cost firm will be better off if the regulation is finalized (and then challenged by it in court) than if the low-cost firm were to match the high-cost firm's lobbying expenditure.

In this equilibrium, the lobbying game itself screens out high-compliance-cost regulations. The only regulations that survive are those that have relatively low compliance cost. This equilibrium arises when the final stage litigation process is such that the agency has a very low chance of succeeding in judicial review when the regulation imposes high compliance costs and incentivizes the target to make

⁶⁰ Note that as shown in the Appendix, Proposition 3, this pooling equilibrium is stable, in the sense that neither a low nor high-compliance-cost firm has an incentive to deviate from the equilibrium, uninformative lobbying expenditure, which is the minimal expenditure. Appendix at 1419-21.

⁶¹ In a Bayesian Perfect Equilibrium, equilibrium strategies are optimal at any given stage of the game in which they are played with positive probability, given that players update their beliefs about the probability of different player types according to Bayes' Rule. GINTIS, *supra* note 52, at 92.

very large litigation expenditures. The sort of judicial review process that rewards high effort levels in this way is one that is complex and detailed, one in which even small procedural errors by the agency may cause a court to vacate the regulation. When judges engage in such detailed procedural review, they make no attempt to discern regulatory benefits and costs and then to balance one against the other. Yet because such a process is very sensitive to the effort committed to it by the regulatory target, the process benefits regulatory targets who have a lot at stake in overturning the regulation. Additionally, because the process differentially favors such high-compliance-cost targets, such intensive procedural review may actually allow such targets to distinguish themselves by the high expenditures they make at the earlier, lobbying stage of the regulatory game.

4. Winners, Losers, and Regulatory Reform

The previous analysis shows that potential regulatory targets with low compliance cost may be the ones most at risk under a benefits-statute-based regulatory process. When lobbying is uninformative, the agency has a strong incentive to conduct its own independent investigation to determine the likely cost of compliance. Informative lobbying reveals that a regulatory target has low compliance cost. Regulatory targets with low compliance cost therefore not only have an interest in concealing the fact that their compliance cost is low, but also an interest in lobbying for statutes and rules that make it difficult or costly for an agency to acquire compliance cost information. Even worse, such targets would rationally oppose the efforts of high-compliance-cost firms to disclose the fact that their costs are high. Since a (if not the) primary mechanism by which such high-cost firms convey cost information is through their lobbying and litigation efforts, low-compliance-cost firms have an incentive to limit lobbying and litigation expenditures, to shorten and simplify both the notice-and-comment process and the process of judicial review.

C. *Cost-Benefit Statutes and Agency Behavior*

The last set of implications suggests that the case for cost-benefit statutes may be much more complex than is commonly supposed. Intuitively, moving from a benefits statute to a cost-benefit statute seems to help high-compliance regulated entities by giving them a better chance of communicating the actual cost of regulation and making that communication count. The previous section concluded, how-

ever, by emphasizing the incentive for low-compliance-cost regulatory targets to resist any kind of reform that increases parties' ability to effectively communicate compliance cost information to the regulator. This suggests that low-compliance-cost targets will be systematically disadvantaged under cost-benefit statute relative to a benefits statute.

To explore this possibility, I modify the simple model of the preceding Section to consider how the regulation game might look under a cost-benefit statute. There are actually two types of cost-benefit statutes, which I shall refer to as *substantive* and *procedural*. Under a substantive cost-benefit statute, the question is whether the agency actually got the cost-benefit calculus correct. Under such a statute, the probability that a regulation is vacated depends negatively on the ratio of benefits to costs; that is, we now must write $r(L_a, L_p, B/c)$ with $\partial r / \partial (B/c) < 0$. Under a procedural cost-benefit statute (exemplified by NEPA), the courts do not ask whether the agency correctly balanced costs and benefits, but simply whether the agency incurred the cost I to investigate and weigh costs against benefits. Under a procedural cost-benefit statute, the probability of reversal is given by $r(L_a, L_p, I)$ with $\partial r / \partial I < 0$ (that is, the reversal probability at the judicial review stage is lower when the agency has done the balancing than when it has not).

1. Substantive Cost-Benefit Statutes and Agency Incentives

The simple analytical framework I have set out here reveals immediately that even under costless and error-free judicial review, agency incentives under a substantive cost-benefit statute are not quite what one might have thought. A substantive cost-benefit statute instructs the agency to regulate only if the benefits of the regulation exceed its costs. If judicial review of agency decision making under such a statute is perfect, then the probability of agency reversal is 1 if $B < c$ and 0 if $B > c$. Now if the agency *observed* the firm's compliance cost, then it would never regulate under a perfect substantive cost-benefit regime unless $B > c$. This is because any regulation with $B < c$ would certainly be challenged (because judicial review is costless) and vacated by the court (because judicial review is perfect), and so the agency would get, at best, a zero payout from promulgating the regulation.

But the agency does not observe firm compliance cost. Perfect judicial review of the substantive cost-benefit statute does mean that the courts will block the agency from regulating a high-compliance-cost ($c > B$) firm. But perfect judicial review also means that the

agency will always succeed in regulating a low-compliance-cost ($c < B$) firm. The specter of certain defeat at the judicial review stage under a perfectly reviewed substantive cost-benefit statute enhances the incentive for a low-compliance-cost target to make high, regulation-killing investments in lobbying.⁶² Such regulation-killing lobbying is more likely if the low realization of compliance cost is higher and the greater is the political significance of the regulation (the more sensitive is the political penalty faced by the agency if it goes ahead and finalizes the regulation). Hence in an important and non-intuitive way, the social desirability of a perfectly reviewed substantive cost-benefit statute depends upon politics. The smaller the impact of pre-finalization lobbying—in the sense that lobbying imposes only a very small or no penalty on the agency for regulating—the more likely it is that the agency will always promulgate and finalize the regulation under a perfect substantive cost-benefit statute.⁶³ On the other hand, when the courts are very good at ex post balancing, the substantive cost-benefit statute will incentivize firms that have low compliance cost but lots of political influence to successfully deter regulation through concentrated lobbying.

Thus the case for even a perfectly implemented substantive cost-benefit statute is much more complex than is conventionally assumed. Logically but not necessarily intuitively, when the firm cannot kill regulation by lobbying, the agency always regulates under a substantive cost-benefit statute. Its regulation is vacated by the courts whenever $c > B$, so there is no social loss from regulating when costs exceed benefits. Still, under the (perfect) substantive cost-benefit statute, it is the courts rather than the agency that assumes the job of screening

⁶² As shown in the Appendix, the result that regulation-killing lobbying is more likely to be optimal for the firm under a perfectly reviewed substantive cost-benefit statute than under a benefits statute depends upon how the judicial reversal function $r()$ differs under these alternative statutory regimes. It is true that the firm can make all the arguments under a cost-benefit regime that it can make under a benefits regime, *plus* being able to argue that $c > B$. This might seem to imply that the firm—regardless of its compliance cost—cannot be worse off at the judicial review stage under a cost-benefit statute than it is under a benefits statute. It can, however, in a variety of cases. A clear case is when benefits are close to the threshold—such as “significant risk”—required by the benefits statute (so the firm can productively argue that benefits are too low at the judicial review stage) but compliance costs are very low relative to benefits (so that the firm will surely lose if it tries to argue the contrary to the court).

⁶³ To be precise, when the low-compliance-cost firm knows that it cannot kill the regulation with lobbying, there is no reason for it to spend any positive amount on lobbying, since because the agency always gets a costless victory at the judicial review stage, the firm will simply comply. Hence the agency regulates whenever $p_i > 0$, that is, whenever it perceives any positive probability that the firm has low compliance costs.

overly costly regulation. Such a statutory regime eliminates any incentive for the agency to expend resources to do its own investigation into regulatory compliance costs. By contrast, when applied to industries and issues of high political salience, the substantive cost-benefit statute will maximize the likelihood that low-compliance-cost targets kill regulation at the lobbying stage. When we recognize that the regulatory game has both a judicial review stage and a prior, lobbying stage, we see that the case for substantive cost-benefit statutes depends not just upon the ability of courts to implement such statutes on judicial review, but on politics. Ironically, a regime that is often defended as one that will get political influence out of the regulatory process⁶⁴ may actually make politics determinative.

Costless and error-free judicial review is, however, not only unrealistic, but also contrary to the spirit of the benefits statute analysis developed earlier, which presumed that the judicial review reversal probability depends upon the respective litigation expenditures of the target and the agency. In line with this benefits model, consider the more general case, where the reversal probability depends negatively on the ratio of benefits and costs, B/c (that is, $r_j < 0$). Figure 2 depicts this relationship between r and B/c .⁶⁵

Figure 2: Reversal Probability Under Imperfect Judicial Review of a Substantive Cost-Benefit Statute

⁶⁴ See Krier, *supra* note 17, at 1232-33 (arguing that an "out in the open" consideration of costs is preferable to consideration "sub rosa, on the pretense that calculations are being ignored"); Thompson, *supra* note 17, at 1156 ("[N]o one can argue that our current system of covert, indirect consideration of costs is better than direct consideration.").

⁶⁵ The relationship depicted by Figure 2 is quite general, in the sense that to be even minimally rational, substantive judicial review under a substantive cost-benefit statute should be such that for any given level of litigation effort, the high-cost target has a better chance of getting the regulation vacated than does a low-cost target. This is just to say that substantive judicial review is not totally random: that the actual costs and benefits of regulation actually influence the probability of judicial reversal of a regulation written to implement a statute commanding cost-benefit-justified regulations.

Because judges make errors in determining the ratio B/c , there is a positive probability that even a high-cost target will be regulated. For this reason, both high- and low-compliance-cost target types have an incentive to resist regulation at the lobbying stage as well as afterward in the judicial review stage. Incentives at the lobbying stage are, as before, determined by anticipated outcomes at the judicial review stage to follow. One might suppose that even under imperfect judicial review, the low-compliance-cost target has more at stake (higher expected total cost) at the judicial review stage than does the high-compliance-cost target. It is indeed true that the cheaper and more accurate the judicial review process under a substantive cost-benefit statute, the more likely it is that the low-cost target does have greater total expected cost if the regulation is finalized. Additionally, a cheaper and more accurate judicial review process more likely produces an equilibrium in which either the low-cost type kills the regulation with very high lobbying, or simply concedes. More generally, however, since both types of regulatory targets spend at the lobbying stage, and the low-cost target actually spends more than under a benefits statute, the lobbying spending that the agency expects to encounter will be higher under a cost-benefit statute than under a benefits statute. The higher the expected target lobbying expenditure, the higher the agency's political penalty if it goes ahead with the regulation. The higher the agency's political penalty, the lower its perceived net benefit from regulating. Thus under imperfect judicial review, some of what a substantive cost-benefit statute appears to give the agency—an increased likelihood that the regulation will withstand judicial review when the target has low cost—is taken away by rational target behavior at the earlier lobbying stage.

The cheaper and more accurate the judicial review process, the more a substantive cost-benefit statute really generates different outcomes at the final judicial review stage than does a benefits statute, and the greater the difference in the incentives created by these alternative regimes. Flipping the point of view and taking the judicial review process as fixed, the case for substantive cost-benefit statutes can be seen as dependent upon the distribution of regulatory compliance costs. The best case for substantive cost-benefit statutes arises when the distribution of compliance cost is strongly bimodal (in my discrete case, either very high or very low) and centered around the agency's perceived benefit. Under such a distribution, both the agency and the court are unlikely to err in balancing costs and benefits. Even if the agency overstates benefits, when costs are very low, benefits likely ex-

ceed costs; when costs are very high, even the agency likely will perceive that costs exceed benefits. On judicial review, error is unlikely. When compliance cost is very low, the court is very unlikely to vacate the agency's rule incorrectly (i.e., there is a low probability of a false negative on judicial review). When compliance cost is very high, the court would be very likely to vacate if the agency regulated. With only extreme realizations of compliance cost, imperfect judicial review approximates closely perfect judicial review.

The worst case for substantive cost benefit arises when compliance cost is unimodal and is tightly centered around the agency's perceived benefit. In this case, judicial errors of both types are likely. The court is likely to vacate the regulation of a low-compliance-cost target (which should be regulated, on cost-benefit grounds) and to uphold the regulation of a high-compliance-cost target (which should not be regulated, on cost-benefit grounds). When both false positives—incorrect findings by the court that benefits were bigger than costs and so the agency should be upheld—and false negatives—incorrect findings by the court that benefits were less than costs and so the regulation should be vacated—are likely, the actual ratio of benefits to costs becomes increasingly insignificant in influencing the outcome of judicial review. The substantive cost-benefit regime collapses into a costly version of the benefits regime—costly because both costs and benefits are at issue.

2. Procedural Cost-Benefit Statutes and Agency Incentives

Procedural cost-benefit statutes are exemplified by section 102(C) of the NEPA. NEPA requires that the agency prepare an environmental impact statement for "major federal actions" having a "significant" impact on the environment.⁶⁶ To survive judicial review under NEPA, agencies must be able to show that they have prepared an EIS if one was required and used that EIS in a good-faith attempt to balance the environmental costs of a federal program against the program's benefits.⁶⁷ Procedural cost-benefit statutes such as NEPA do

⁶⁶ Section 102(C) of NEPA requires that all federal agencies "include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement . . . on—(i) the environmental impact of the proposed action." 42 U.S.C. § 4332(C) (1994).

⁶⁷ As the D.C. Circuit explained:

[R]eviewing courts probably cannot reverse a substantive decision on its merits, under [NEPA], unless it be shown that the actual balance of costs and

not tell agencies to regulate only if benefits exceed costs, but rather provide that the agency must incur the cost of determining costs and balancing those costs against regulatory benefits. Such statutes merely mandate a balancing process, without saying anything about how that balancing should be done.

In terms of the more formal approach developed here, procedural cost-benefit statutes make the agency's reversal probability r a function of whether the agency incurred the cost I of determining regulatory compliance cost. In reviewing agency decision making under a procedural cost-benefit statute, the question for courts is not whether the agency got the cost-benefit calculus right, but rather whether the agency incurred the cost I of investigating regulatory costs and balancing them against regulatory benefits. In general, the more careful and thorough the agency's balancing process (the bigger I is), the lower the probability of reversal under a procedural cost-benefit statute.⁶⁸ The key incentives created by such a statute can be seen by considering a special case in which by investing I , the agency certainly learns the target's compliance cost, and invests I , and is assured that the regulation will survive (costless) judicial review if defended by the agency at that stage.

In this special case of perfect and costless judicial review of rule-making under a procedural cost-benefit statute, if the agency does not invest I in its own ex ante balancing, then it is sure to lose at the judicial review stage. With certain victory at that stage, all types of firms successively will seek judicial review, and so the agency gets a zero payout from regulating. Hence under such a statute, the agency never regulates when it fails to invest $I > 0$ and balance ex ante. By investing I , the agency ensures that it will win on judicial review. But the agency does not actually regulate unless the firm either cannot kill the regulation by lobbying or finds it cheaper to comply than to kill the regulation by lobbying. That is, the agency will not engage in costly ex ante investigation into and balancing of firm compliance cost, unless it expects to finalize the regulation successfully.

benefits that was struck was arbitrary or clearly gave insufficient weight to environmental values. But if the decision was reached procedurally without individualized consideration and balancing of environmental factors—conducted fully and in good faith—it is the responsibility of courts to reverse.

Calvert Cliffs' Coordinating Comm., Inc. v. United States Atomic Energy Comm'n, 449 F.2d 1109, 1115 (D.C. Cir. 1971). The view that NEPA requires balancing but does not say how the balance should be struck (that is, NEPA is not substantive) was affirmed in *Strycker's Bay Neighborhood Council, Inc. v. Karlen*, 444 U.S. 223, 227-28 (1980).

⁶⁸ For an analysis of this general case, see Part I.E of the Appendix.

The comparative performance of a procedural cost-benefit statute thus depends upon how the tremendous weight given to ex ante agency balancing by such a statute affects the lobbying process. As explained in the Appendix, certain victory at the final stage maximizes the agency's incentive to invest in costly lobbying to preserve the net benefit of regulating. For the same reasons, the procedural cost-benefit statute minimizes the productivity of firm lobbying. That is, given that the agency has invested I , the procedural cost-benefit statute minimizes the possibility that the firm kills the regulation with high lobbying effort relative to the other statutory regimes.

The problem with a perfect procedural cost-benefit statute is that it may attach too much weight to whether the agency balanced costs and benefits ex ante. If even a minimal ex ante expenditure I guarantees the agency success at the judicial review stage, then the agency will regulate regardless of the net social benefit, and even when its own perceived benefit is small. The model thus would seem to confirm the skeptical intuition that the only thing accomplished by a procedural cost-benefit statute such as NEPA is to create an incentive for pro forma agency balancing, with little or no effect on the type or quantity of agency projects proposed.

That reading or intuition, however, misinterprets the model. Just like ex post lobbying, ex ante regulatory cost-benefit balancing is costly. The cost required is, moreover, not fixed, but rather determined by the courts as they interpret the procedural cost-benefit statute. The higher the level of ex ante investigation and/or balancing I required by the courts in interpreting the procedural cost-benefit statute, the bigger must be the regulator's net benefit for it to regulate. Indeed, by construing procedural cost-benefit statutes as requiring agencies to conduct a very costly and searching inquiry into compliance costs, courts may deter overregulation significantly. In particular, when the agency's perceived benefit B systematically overstates the actual social benefit of regulation, a tough ex ante balancing requirement will effectively screen out regulations that have small or even negative net social benefit.

An additional virtue of a procedural cost-benefit statute is that even when subject to imperfect judicial review, such a statute maximizes an agency's incentive to spend I to determine the firm's compliance cost. To see why, recall that under a benefits statute, the agency often will have a relatively weak incentive to acquire costly information about firm compliance cost even when lobbying is uninformative. This weakness arises when the judicial review process is relatively in-

sensitive to the amount that compliance targets spend attacking the regulation and there is a fairly high probability that the firm has low compliance cost (and hence will not mount much of a fight) anyway. Observe that in this case, the agency would not regulate if it knew that the firm has high compliance cost. By greatly increasing the marginal benefit to the agency of acquiring information about target compliance cost, the procedural cost-benefit statute may cause the agency to learn compliance cost when it would not under the benefits statute.⁶⁹ Since by assumption the agency will not regulate in this case if it learns that compliance cost is high, the procedural cost-benefit statute will reduce the chance that the agency regulates a high-compliance-cost target, relative to the pure benefits statute.

II. EXTENSIONS

A. *Shifting the Litigation Cost Burden*

My analysis has thus far assumed that it is the regulatory agency that bears the cost of defending the regulation at the judicial review stage. By statutory requirement, however, the office of General Attorney has authority over all federal regulatory agency litigation.⁷⁰ Justice Department litigators, rather than regulatory agency counsel, have exercised historically varying degrees of control over regulatory litigation.⁷¹ Still, the fact that regulatory agencies do not bear all of the litigation stage cost is a potentially important variation on my maintained assumptions. Modifying the model developed above to take account

⁶⁹ The model thus confirms an informal prediction made by John A. Ferejohn, *The Structure of Agency Decision Process*, in CONGRESS: STRUCTURE AND POLICY 441, 447-48 (Mathew McCubbins & Terry Sullivan eds., 1987), regarding the impact of NEPA.

⁷⁰ See 28 U.S.C. §§ 515-519, 547 (1994) (reserving power over the conduct of agency litigation in the Supreme Court to the Department of Justice).

⁷¹ In the eyes of their critics, DOJ litigators are lawyers "without a client, favoring their roles as advocates over their roles as advisers, and unconstrained by the demands of time, money or available lawyers." W. Perry Pendley, *No Clients, No Responsibility*, LEGAL TIMES, Feb. 15, 1988, at 17. As a legal matter, of course, DOJ attorneys do have clients—the agencies that they represent. Still, as Barbara Allen Babcock observes, by statute, central litigating authority is in the Attorney General, not regulatory agencies, and those agencies are captive clients who cannot change lawyers. Barbara Allen Babcock, *Defending the Government: Justice and the Civil Division*, 23 J. MARSHALL L. REV. 181, 185 (1990). As a practical matter, the extent of actual attorney general control over litigation has tended to reflect more general efforts by the Executive to exert more centralized control over regulatory agencies. See Cornell W. Clayton, *Introduction: Politics and the Legal Bureaucracy*, in GOVERNMENT LAWYERS 1, 8-9 (Cornell W. Clayton ed., 1995) ("As with other areas of the administrative state, centralizing control over agency legal work meant strengthening presidential influence over it").

of this fact might seem to be a simple matter. Absent some internal cost-allocation method—whereby agency budgets are debited the amount spent on their behalf by the Justice Department—the Justice Department acts to substantially subsidize agency litigation expenses. Full subsidization of agency litigation expenditures would cause the agency to finalize any regulation from which it expected positive net benefits given the political penalty. More precisely, if the agency bears none of the litigation cost, then the risk of high regulatory compliance cost that triggers very costly litigation at the judicial review stage does little to create an incentive for the agency to learn target compliance cost ahead of time.

This is overly simplistic. Department of Justice litigators presumably do not perceive or realize the same benefits from agency regulations as do the regulators themselves.⁷² There is in fact little if any empirical work on precisely what might determine Department of Justice litigation expenditures across case type.⁷³ Given this paucity of evidence, a reasonable assumption is that while Justice Department litigators have some idea of the stakes involved, their litigation effort tends to vary much less with the actual net regulatory benefits than would the regulatory agency's.⁷⁴ This means that Justice Department lawyers tend to overinvest in defending relatively unimportant regulations (as measured by the agency's perceived net benefit) and underinvest in defending relatively significant regulations.

From the regulatory agency's point of view, subsidized litigation

⁷² For a concrete example, see the discussion in Neal Devins & Michael Herz, *The Battle That Never Was: Congress, the White House, and Agency Litigation Authority*, 61 LAW & CONTEMP. PROBS. 205, 209-10 (1998), of the way in which the Department of Justice's position in *Public Research Group v. Hercules, Inc.*, 50 F.3d 1239 (3d Cir. 1995), diverged from EPA's position on that same case. My focus here is on the standard-setting game; DOJ and agency incentives differ at least as much when it comes to regulatory enforcement. See Michael Herz & Neal Devins, *The Consequences of DOJ Control of Litigation on Agencies's Programs*, 52 ADMIN. L. REV. 1345, 1346 (2000) ("Allowing DOJ to control agency litigation . . . reduce[s] the scope and effectiveness of agency enforcement."). For a more general discussion of the differences in outlook and incentives between agency counsel and DOJ litigators, see DONALD L. HOROWITZ, *THE JUROCRACY: GOVERNMENT LAWYERS, AGENCY PROGRAMS, AND JUDICIAL DECISIONS* 39-67 (1977), which argues that the sharpest conflicts arise at the appellate stage of judicial review.

⁷³ For an important exception, finding evidence of very strong selection effects in solicitor general decisions on whether to apply for certiorari, see Linda R. Cohen & Matthew L. Spitzer, *The Government Litigant Advantage: Implications for the Law*, 28 FLA. ST. U. L. REV. 391, 395-96 (2000).

⁷⁴ For an interesting argument that centralization of litigation in the Justice Department is intended precisely to prevent such congressional influence on agency litigation decisions, see Nicholas S. Zeppos, *Department of Justice Litigation: Externalizing Costs and Searching for Subsidies*, 161 LAW & CONTEMP. PROBS. 171, 186 (1998).

expense has two primary effects (relative to the world where the agency internalizes the full cost of litigation). The most significant is the underinvestment problem. When compliance costs are high, the target will invest a great deal in litigating to vacate or modify the regulation. With a very costly but—from the agency's point of view—socially valuable regulation, the agency would also invest a substantial amount in litigation. Department of Justice officials who do not fully internalize the social benefit from regulating will not invest nearly so much. The agency will perceive a much higher probability of reversal than if it controlled the litigation. Hence it will perceive (for any given political cost) a lower net benefit from pursuing the regulation. Costly regulations that bring big net social benefits will be made less likely by the delegation of litigation to the Justice Department.

The overinvestment problem causes more or less the reverse phenomenon. If compliance cost is low, then Justice Department litigators may succeed often in defending regulations, even when the regulatory benefits are small relative to costs. Because the agency bears only a fraction of the litigation costs, delegation to the Justice Department creates a much stronger incentive for the agency to pursue regulations that impose relatively low costs—even if the benefits are small as well—because the agency can anticipate that many such regulations will be defended successfully by the Department of Justice. Delegation of litigation expenses tends to clog the courts with litigation over regulations that regulatory agencies would not defend, and therefore not finalize in the first place, if they had to bear the full cost of judicial review.

B. *Uncertainty and Incomplete Information About Regulatory Benefits and Costs*

My analysis thus far has been simplified by assuming that while the regulator has only incomplete information about the target's compliance cost (knowing only the probability that the cost is, respectively, high or low), the regulator's benefit is known to all strategic actors in the regulation game. There are two ways that this assumption can be generalized. One way is to suppose that regulators have better information about regulatory benefits than do regulatory targets. (This may be true even if outside interest groups have provided the impetus for the regulation, because outside groups lobbying for regulation have a strong incentive to persuade the agency that benefits are high.) Even more generally—and as a moment's reflection upon health, safety and environmental regulation shows—very often both regula-

tory benefits and costs are uncertain to both the regulator and the regulatory target.

1. Two-Sided Incomplete Information

Regardless of the statutory regime—benefits, substantive or procedural cost-benefits—the regulatory agency risks reversal at the judicial review stage if it cannot demonstrate a statutorily required level of benefits, such as that the regulation helps to lessen a “significant risk of harm”⁷⁵ or protects human health with an “adequate margin of safety.”⁷⁶ For this reason, it is not credible for an agency to propose a regulation unless the agency first believes that it can make a plausible case that the benefits promised by the regulation are sufficiently high. In more technical, game-theoretic language, the fact that an agency even reaches the stage of proposing a regulation is itself a credible signal that the agency perceives nontrivial benefits from the regulation.

The ability of the agency to drop a regulation after the lobbying stage, however, makes the regulatory proposal itself a relatively weak signal of the agency’s information about the magnitude of regulatory benefits. The option to drop means that the initial proposal decision is not overly costly to the agency even if the regulation does not have particularly high benefits: if the agency observes a high level of lobbying expenditure by the regulatory target, indicating high compliance costs, then it can drop the regulation and save further expense. For this same reason, an agency decision to commit significant resources to the defense of the regulation at the lobbying stage may be a credible signal to the regulatory target that the agency perceives very large benefits from the regulation, and hence will continue in the game, to finalize the regulation and then defend it in court. Thus just as regulatory target lobbying can inform the agency about target compliance cost, so too can agency lobbying inform targets about the agency’s perceived regulatory benefit. As a positive matter, high lobbying expenditures by the agency should often deter low compliance cost firms from fighting the regulation.

As for the effect of incomplete regulatory benefits information on

⁷⁵ This was the administrator’s interpretation of language in section 211(c)(1)(A) of the Clean Air Act, 42 U.S.C. § 7545(c)(1)(A) (1994), authorizing the EPA to regulate gasoline additives whose emission products will endanger the public health or welfare, which was upheld in *Ethyl Corp. v. EPA*, 541 F.2d 1, 7 (D.C. Cir. 1976) (en banc).

⁷⁶ This is required of the EPA in setting primary ambient air quality standards under section 109 of the Clean Air Act. 42 U.S.C. § 7409(b)(1) (1994).

the choice among our three alternative statutory regimes, it is helpful to recall first how a substantive cost-benefit statute creates very strong incentive for low compliance cost firms to expend large amounts in lobbying to kill the regulation. This is because such firms are very likely to lose in the judicial review stage, or simply to concede and comply if they fail to kill the regulation by lobbying. Incomplete information as to regulatory benefits can have a similar effect on agency incentives. Under any statutory regime I have considered, as the agency's chances of being reversed in judicial review increase, its expected regulatory benefits decrease. This suggests that the agency may have an informational incentive to make high lobbying expenditures. The informational incentive arises when the agency wishes to conceal the fact that regulatory benefits are actually quite low. The reason for making such expenditures is to induce the regulatory target to concede. Such an equilibrium arises when the target's costs are sufficiently low; it will only fight the regulation in court if it knows for sure that the agency will not fight hard in court because its perceived benefit is low.

The important policy question is whether and if the choice of statutory regime affects incentives for costly and socially unproductive lobbying by regulatory agencies with asymmetric information as to regulatory benefits. Significantly, the incentive for an agency to make such large, concealing lobbying expenditures to induce the target to comply may disappear under substantive cost-benefit statutes. It will do so if the agency's benefit is big enough so that the low compliance cost target loses even when the agency benefit is relatively low. If the target concedes if the regulation is finalized no matter what it learns about regulatory benefits, then a low benefit agency does not need to conceal its type. If, conversely, the low agency benefit type has such low benefits that the target will win in court under the substantive cost-benefit statute, then the target will not concede if it learns that the agency has low benefit, and hence the agency still has an incentive for concealing lobbying expenditures. Thus moving to a substantive cost-benefit statute may deter the agency from making very high, benefit-concealing lobbying expenditures, but only if the agency benefits are sufficiently high that the agency can expect to win in judicial review under the substantive cost-benefit statute.

2. Uncertain Costs and Benefits: Cooperative Aspects of the Regulation Game

Health, safety, and environmental regulation typically involve

benefits and costs that are known with precision by neither the regulator nor the entities it seeks to regulate. When the regulator is uncertain about the benefits, and the target about the costs of regulation, the regulatory process provides an opportunity for learning about costs and benefits. The acquisition of information may be mutually beneficial to regulator and target. If the regulator knew that the benefits of a proposed regulation were low and its compliance costs high, then the regulator might be better off discarding the regulation entirely, rather than incurring even the cost of proposal.

It might seem that the regulatory process, at least as I have modeled it thus far, is so adversarial that it does not permit credible communication between regulator and target. It is indeed true that on the asymmetric information version of the model, there may be, as shown above, a very strong incentive for concealing lobbying expenditure by regulator, target, or both. The strategic incentive for the regulator to deceive the target into thinking that regulatory benefits are high, and the corresponding incentive for the target to deceive the regulator into thinking that its compliance costs are high, is likely always to predominate at later stages of the regulatory process, when each side has gained private information regarding either benefits or costs. At earlier stages, however, it is possible that both sides will gain by cooperating to generate better information about benefits and costs.

To see how this may be so, consider the following example. Suppose all that the regulator and the target know about regulatory benefits at the outset of the regulation game is that they are equally likely to be either \$25 or \$125, while costs are equally likely to be either \$40 or \$100. (Observe that in expected net benefit terms, the regulation is marginally valuable, generating an expected net benefit of $(.5)(25 + 125) - (.5)(40 + 100) = 75 - 70 = \5). Assume that the lobbying and litigation game conflict functions $D()$ and $r()$ are such that the regulator would not propose to regulate if it knew that the benefits were only \$25, yet it would regulate no matter what the costs if it knew that the benefits were \$125, regardless of the statutory regime in place. Suppose now that by hiring engineers, scientists, and other experts, uncertainty over regulatory benefits can be eliminated. From a regulatory target's point of view, the return on investing to eliminate regulatory uncertainty and sharing the information discovered with the regulator comes from the 50% probability that it will discover regulatory benefits of only \$25. When such low benefits are communicated credibly and verifiably to the regulator, it will not regulate.

This means that if it is sufficiently cheap to eliminate uncertainty, then the regulatory target may itself have an incentive to do so. Just how cheap is cheap enough depends upon the return from uncertainty elimination. This return is equal to the difference in the target's expected cost with and without uncertainty. To find this return using the numbers in this example, the expected cost to the regulator target from regulation cannot be bigger than its expected cost of compliance, which is given by $(.5)(40) + (.5)(100) = 70$. It is regulated only when the benefits turn out to be \$125, which occurs with a 50% probability. Therefore the expected cost to the target when it learns and reveals the actual regulatory benefit is less than or equal to \$35. If the target did not invest to learn or reveal the actual regulatory benefit, then its expected compliance cost would be \$70. The target thus would secure a 50% reduction in expected compliance costs by investing to learn and communicating the true social benefit of regulation.

The crucial assumption underlying this sanguine example is that not all uncertainty can be eliminated. In general, any significant reduction in uncertainty over benefits or costs will forestall some regulation. The crucial assumption is rather that the target can communicate credibly and verifiably what it has learned about regulatory benefits to the regulator. If the information conveyed by the target cannot be verified, then the target would have an obvious incentive to generate studies indicating a low regulatory benefit of \$25; the purpose of such an action would be to forestall regulation. The regulator would not attach any credibility to the target's studies, and we would be back to the game of pure strategic conflict analyzed earlier.

As a matter of positive or predictive theory, the most important implication of this example (and counterexamples that may be constructed) is that the greater the extent to which uncertainty over regulatory costs and benefits may be credibly and verifiably reduced, the stronger is the incentive for both the regulator and regulatory targets to make such costly uncertainty-reducing investments. This translates directly into institutional design. Both sides in the regulation game may gain enormously from reducing uncertainty about regulatory benefits and costs, but this requires the creation of an expert evaluative body, independent of both the regulator and the regulated entity, and with no stake in how its findings are used.

C. *Endogenous Objectives: The Regulatory Game as an End in Itself*

It is important to stress that all of the theoretical results discussed

thus far presume that the regulatory agency benefits, or suffers a political penalty, if and only if the agency finalizes a regulation that actually survives judicial review and is implemented. For a variety of reasons, this may well not be the case.

The first possibility arises when one of the model's assumptions about the political penalty structure is changed to suppose that the agency suffers a political penalty regardless of whether it finalizes the regulation. The regulation game model reveals that, from the point of view of Congress, such a response makes little sense. If the agency suffers a political penalty (for example, present or future budgetary reductions or costly oversight hearings) just for proposing the regulation, then it has no reason other than anticipated judicial review problems not to finalize any regulation that it proposes. Congress loses a substantial amount in controlling agency rulemaking if its sanctions are triggered by proposed as well as finalized rulemaking.

A second possibility occurs when the agency gets a benefit from the regulatory process itself, just from proposing a regulation, regardless of whether the regulation is finalized. To see why this is very plausible, consider an agency that is known to be under budgetary pressure, so that its ability to lobby successfully for any regulation is quite limited. Suppose further that there is an identifiable class of regulatory beneficiaries, such as labor unions or environmental groups that are highly informed about the structure and incentives in the regulation game. These groups realize that the agency will not finalize a desired regulation unless they—the actual beneficiaries—are prepared to commit substantial sums to the lobbying game. In such a case, the agency may be under political pressure to propose regulations in a certain area, and may benefit politically by so doing regardless of whether the regulation is ultimately finalized and implemented. Such a situation is actually the flip side of the political penalty modeled above. Just as congressional members representing regulatory targets might inflict present and future budgetary penalties on the agency for finalizing a regulation, so too might congressional members representing regulatory beneficiaries reward the agency for proposing a regulation, even if it is ultimately defeated.

III. POSITIVE APPLICATIONS

A. *Empirical Support for the Model's Predictions*

The model developed above generates a number of testable predictions. While my primary purpose here is not to provide a detailed

empirical study of regulation, anecdotal support for some of the model's primary predictions isolates many of the important strategic incentives in the regulation game.

1. Procedural Cost-Benefit Statutes and Agency Behavior

In analyzing procedural cost-benefit statutes, I presented the National Environmental Policy Act as the paradigm for such a statute. To recall, section 102 of the Act requires federal project agencies to prepare a detailed statement balancing environmental impact against project benefits for major federal projects with potentially significant environmental impact. Even though it is merely procedural—requiring agencies to balance environmental costs against project benefits—NEPA has had a surprisingly discernible impact on the behavior of federal project agencies.

To understand this success requires a bit of background. From 1945 until the late 1960s, an amazingly small group of powerful congressmen and federal bureaucrats transformed the American environment by spending billions of taxpayer dollars on hundreds of thousands of federal projects. These projects brought highly concentrated benefits but diffuse costs.⁷⁷ If a single industrial sector can take credit for energizing late-twentieth-century federal environmental legislation, that sector is the federal government. The primary actors in this great American environmental transformation were not private companies, but federal project agencies: the Army Corps of Engineers, the Bureau of Reclamation, the Soil Conservation Service, and the Department of Defense.⁷⁸

In terms of the model developed above, these agencies implemented benefits statutes. Until the 1970s, the Reclamation Act, Federal Power Act, Rivers and Harbors Act, and various agricultural assistance acts were all pure benefits statutes, with no requirement that project agencies balance environmental costs against project benefits.⁷⁹ The projects developed by these agencies and funded by Con-

⁷⁷ See generally *THE ENVIRONMENT COMMITTEES* (Ralph Nader Cong. Project ed., 1975) (describing the powerful interior, agricultural, and space congressional committees).

⁷⁸ For a detailed and historically sensitive discussion of the enormous role played by these federal project agencies in eliminating wetlands and helping to provoke the late-twentieth-century environmental movement, see ANN VILEISIS, *DISCOVERING THE UNKNOWN LANDSCAPE: A HISTORY OF AMERICA'S WETLANDS* 195-252 (1997).

⁷⁹ See Federal Power Act § 10(a), 16 U.S.C. § 803(a) (2000) (focusing on benefits to interstate commerce rather than costs to the environment); Rivers and Harbors Act

gress may be thought of as “regulations” that generated very concentrated benefits but diffuse costs. The costs were primarily in the form of harm, often catastrophic, to publicly held resources—rivers, forests, marshes, floodplains, and ecosystems in general. It took some time for regulatory cost-bearers to take collective action. Federal resource or environmental agencies such as the United States Fish and Wildlife Service were the first organizations to actively oppose federal development projects. But as the woeful history of the Fish and Wildlife Coordination Act⁸⁰ illustrates, the resource agencies enjoyed only limited success in persuading project agency administration, the executive, or legislature that Cold War-era federal projects had sufficiently high environmental costs to warrant their cancellation.⁸¹

As is well known, NEPA’s requirement—that all federal agencies prepare an environmental impact statement on major federal actions significantly affecting the quality of the environment—is purely procedural.⁸² NEPA does not tell federal project agencies how much weight should be attached to environmental costs, but just that the agencies must explicitly and publicly balance those costs against project benefits. In determining whether those costs are “significant” enough to require an EIS, federal project agencies are under execu-

§ 13, 33 U.S.C. § 407 (1994) (focusing on the accrual of benefits to the government rather than possible costs to the environment).

⁸⁰ 16 U.S.C. §§ 661-666c (2000).

⁸¹ As observed by Samuel P. Hays, the Fish and Wildlife Service objected to dozens of federal projects during the 1960s and finally did succeed in persuading Congressman Dingell to draft legislation that would have required the Army Corps of Engineers to seek approval from the Fish and Wildlife Service before issuing a dredge-and-fill permit. Samuel P. Hays, *The Politics of Environmental Administration*, in *THE NEW AMERICAN STATE: BUREAUCRACIES AND POLICIES SINCE WORLD WAR II*, at 21, 34-35 (Louis Galambos ed., 1987). Although similar in many ways to NEPA—as in requiring federal project agencies to consult with and consider the recommendations of fish and wildlife agencies—the Fish and Wildlife Coordination Act did not require anything like NEPA’s formal environmental impact statement. Furthermore, under the Fish and Wildlife Coordination Act, there was no White House Council on Environmental Quality to explain the technicalities of consultation and consideration. By the late 1960s, it was clear to all observers that the Fish and Wildlife Coordination Act had produced virtually no impact on federal project agency behavior. See Michael Veiluva, *The Fish and Wildlife Coordination Act in Environmental Litigation*, 9 *ECOLOGY L.Q.* 489, 491 (1981) (“A reassessment of FWCA by Congress and members of the Executive Branch in the early 1970’s [sic] revealed failures at every step of the FWCA process: federal action agencies had failed to consult adequately with FWS and often glossed over or ignored impacts on wildlife . . .” (footnote omitted)).

⁸² See *Strycker’s Bay Neighborhood Council, Inc. v. Karlen*, 444 U.S. 223, 227 (1980) (reasoning that preparation of an environmental impact statement was procedural, and that consideration of the environmental consequences of a decision was all that was required under NEPA).

tive instructions to consider not only the magnitude and distribution of costs, but also whether the costs will be "controversial."⁸³ An agency's failure to prepare an EIS, or its preparation of an insufficiently detailed EIS, is grounds for judicial reversal of project approval. In this way, NEPA functions to open and politicize federal project agency cost-benefit calculus.

The most obvious consequence of NEPA, predicted by the model developed above, is that federal project agencies have hired ecologists and other professional scientists, and have invested significant amounts to learn about the environmental costs of their projects.⁸⁴ Also predicted by the model is the finding that although the statute has "made agencies take a hard look at the environmental consequences of their actions," some agencies "act as if the detailed statement called for in the statute is an end in itself, rather than a tool to enhance and improve decision-making."⁸⁵ On my model, a transformation in the statutory environment does not by itself alter agency preferences. The agency invests to determine regulatory costs for strategic reasons because, by so doing, it increases the probability that the regulatory program or government project, as in the case of NEPA, will survive judicial review.

By requiring that environmental impact statements be made publicly available, NEPA has also altered the lobbying stage of the regulatory game. Here, NEPA has directly altered the informational environment under which lobbying about federal projects occurs. For a demonstration of this change, take for example the paradigmatic "bad" federal project—one with relatively small but highly concentrated benefits, and large but very diffuse costs. Suppose that federal project managers prefer to do the project because they get political benefits from so doing (conferring benefits on a small number of politically helpful members of Congress). The best way for those managers to minimize political costs is to conceal and hide the fact that any costs exist, and to get the project approved and underway before the costs are even generally appreciated. That is, absent NEPA, federal project managers used their superior information about project

⁸³ Council on Environmental Quality regulations instruct agencies to use a very broad lens when deciding what might constitute a "significant" environmental impact. See 40 C.F.R. § 1508.27 (2001) ("[T]he significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality.").

⁸⁴ COUNCIL ON ENVTL. QUALITY, *THE NATIONAL ENVIRONMENTAL POLICY ACT: A STUDY OF ITS EFFECTIVENESS AFTER TWENTY-FIVE YEARS* 27 (1997).

⁸⁵ *Id.*

benefits and costs essentially to derail opposition at the lobbying stage. By requiring the disclosure of significant environmental impacts, NEPA opens up the lobbying process and transforms the agency's perceived political benefits and political costs.

Thus, on my model, one would predict that NEPA's greatest effect would be in altering federal project agency decisions between the stage of project proposal and project finalization. To be more precise, NEPA should have relatively little effect on decisions to proceed with finalized projects, but many proposed projects should have been dropped by project agencies as a result of changes in the agency's perceived political benefits and costs due to lobbying. This is indeed perhaps the central finding of Mazmanian and Nienaber's study of the impact of NEPA on the Army Corps of Engineers.⁸⁶ They found that, while few Corps projects in the final planning stages have been halted as a result of NEPA, by May 1973 (roughly four years after its passage), 175 Corps projects had been modified as a result of NEPA.⁸⁷ Many of the modifications led to "significantly different" projects than those that had first been proposed. NEPA has been effective precisely because it has forced project sponsors to reveal information to project cost-bearers, information that has facilitated the lobbying-stage game and transformed the implementation of federal project statutes.⁸⁸ In

⁸⁶ DANIEL A. MAZMANIAN & JEANNE NIENABER, CAN ORGANIZATIONS CHANGE?: ENVIRONMENTAL PROTECTION, CITIZEN PARTICIPATION, AND THE CORPS OF ENGINEERS 180-94 (1979).

⁸⁷ *Id.* at 184-85.

⁸⁸ As described in detail by Bradley C. Karkkainen, *Toward a Smarter NEPA: Monitoring and Managing Government's Environmental Performance*, 102 COLUM. L. REV. (forthcoming 2002), one of the ways that agencies have responded to NEPA's costly environmental impact statement requirement is by considering a variety of ways to mitigate a project's environmental impact in an initial (and much cheaper) Environmental Assessment. Such assessments typically find that there is no need for a full EIS because the project, as mitigated, will not have a significant impact on the environment. While difficult to prove conclusively, a number of knowledgeable commentators express confidence that this conventional practice is not a technical way around NEPA, but rather evidence that NEPA has actually caused federal project agencies to rethink and redesign their projects to lessen their environmental costs. See Albert I. Herson, *Project Mitigation Revisited: Most Courts Approve Findings of No Significant Impact Justified by Mitigation*, 13 ECOLOGY L.Q. 51, 68 (1986) (finding that those agencies whose mitigation efforts alleviated the need for a full EIS "had adequately demonstrated the efficacy of proposed mitigation measures"); Karkkainen, *supra* (manuscript at 8) (arguing that agencies may use environmental assessments "to avoid especially harmful projects, choose less environmentally harmful variants, add mitigation measures, or select and design projects with greater initial sensitivity to environmental concerns"); Geoffrey T. McDonald & Lex Brown, *Going Beyond Environmental Impact Assessment: Environmental Input to Planning and Design*, 15 ENVTL. IMPACT ASSESSMENT REV. 483, 487 (1995).

other words, NEPA has restored the incentives ordinarily created by benefits statutes for regulatory cost-bearers to politically advocate project costs.

2. Substantive Cost-Benefit Statutes and Lobbying Expenditures

The analytical framework developed above implies a non-intuitive relationship between substantive cost-benefit statutes and lobbying. One might suppose that the success of a regulatory target group in persuading Congress to explicitly require agency cost-benefit analysis means that those targets will then spend less during the lobbying stage of the regulatory game. My model shows that precisely the opposite is likely to occur: substantive cost-benefit statutes and lobbying are complements, rather than substitutes. Under a substantive cost-benefit statute, low-compliance-cost regulatory targets have little chance of succeeding at the judicial review stage once a regulation is finalized. Thus targets have an enhanced incentive to lobby against promulgation.

This prediction is dramatically confirmed by the legal and political history of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).⁸⁹ That law requires the registration of all pesticides sold or distributed in the United States. In order to register a pesticide, a FIFRA applicant must show that the product can be used without causing "unreasonable adverse effects on the environment,"⁹⁰ which the statute defines as "unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide."⁹¹

FIFRA has been interpreted by the courts as imposing substantive cost-benefit requirements: that is, as permitting legal challenges to agency rulemaking not just on the ground that the agency failed to consider costs, but on the ground that the agency failed to strike the correct balance between costs and benefits.⁹² In understanding

⁸⁹ 7 U.S.C. §§ 136-136y (2000).

⁹⁰ 7 U.S.C. § 136a(c)(5)(D) (2000).

⁹¹ 7 U.S.C. § 136(bb) (2000).

⁹² See *Save Our Ecosystems v. Clark*, 747 F.2d 1240, 1248 (9th Cir. 1984) ("FIFRA registration is a cost-benefit analysis that no unreasonable risk exists to man or the environment taking into account the economic, social and environmental costs and benefits of the use of any pesticide." (citation and quotation marks omitted)); see also *Merrell v. Thomas*, 807 F.2d 776, 780 (9th Cir. 1986) ("The FIFRA standard distinctly balances the environmental harm of using a pesticide against its economic, social, and environmental benefits."); *Atochem N. Am. v. EPA*, 759 F. Supp. 861, 870-71 (D.D.C. 1991) (applying the statutory standard that applicants must consider if there will be

FIFRA, it is important to know that up until the 1960s, the primary public concern about pesticides was their effect on the environment, not human health.⁹³ The Department of Agriculture, which had acted as the primary government sponsor of pesticide research and had heavily promoted pesticide use, was also charged with the task of determining which pesticides would be regulated. Unsurprisingly, between 1947 and 1963, the Department of Agriculture registered roughly fifty-five thousand separate products containing pesticides, and only twenty-three of which were registered "under protest" due to health or environmental concerns.⁹⁴ When new pesticide legislation was finally passed in 1972, registration authority was moved from Agriculture to the newly created Environmental Protection Agency. The standard for registration, however, was revised to the "unreasonable adverse effects on the environment" language still found in FIFRA.⁹⁵ Even more importantly, the law required the cost-benefit test to be applied not only to new registrations, but also to re-registrations of the nearly sixty thousand compounds that the Department of Agriculture had already registered.⁹⁶

In going about the task of analyzing the costs and benefits of re-registering pesticides, the EPA started with benefits data—data showing pesticide effectiveness that manufacturers had supplied to the Department of Agriculture in support of the initial registration.⁹⁷ Pesticide manufacturers also provided information about costs—the environmental and health effects from various pesticides. As late as 1983, the EPA did not even have the ability to audit such cost data effectively.⁹⁸

FIFRA provides built-in flexibility to lobbying pressure. Not only does FIFRA provide for the indemnification of costs incurred by a manufacturer whose pesticide is deregistered, but it also gives the EPA

unreasonable risks to man or the environment, taking into account the economic, social, and environmental costs and benefits of the pesticide).

⁹³ JOHN WARGO, *OUR CHILDREN'S TOXIC LEGACY: HOW SCIENCE AND LAW FAIL TO PROTECT US FROM PESTICIDES* 78-85 (1996).

⁹⁴ *Id.* at 81.

⁹⁵ See *supra* text accompanying notes 90-91 (providing the statutory definition of the "unreasonable adverse effects on the environment" language).

⁹⁶ See WARGO, *supra* note 93, at 89-91 (explaining the enormous risk assessment problem for EPA in reregistering the previously registered products).

⁹⁷ See *id.* at 94 (describing the overwhelming task of reviewing "the truckloads of poorly organized data submitted by manufacturers to support registrations").

⁹⁸ See *id.* at 95 (stating that EPA's laboratory audit program comprised only one full-time position in 1983).

the authority to allow "emergency" use of pesticides and additional uses beyond those approved if a "special local need" authorized by the states is present.⁹⁹ Since 1978, EPA and the states have issued over 4000 "emergency" exemptions from the reregistration process and, through the end of 1982, 8650 "special local need" registrations.¹⁰⁰

Even with this built-in flexibility to lobbying pressure, the Reagan administration was under intense lobbying pressure from pesticide manufacturers, resulting in the pesticide registration program becoming one of the prime targets for regulatory relief.¹⁰¹ Between 1980 and 1983, the pesticide program staff was reduced from 760 to 540 (where it remained roughly until 1992) and emergency exemptions increased from 180 in 1978 to 750 in 1982.¹⁰² By 1992, only two out of the 19,000 older pesticides had been reregistered.¹⁰³

Virtually since the day of its passage, FIFRA has been under sustained lobbying pressure from agricultural users and pesticide manufacturers. In 1975, FIFRA was amended to increase agriculture's influence on registration decisions by requiring the administrator to prepare an "agricultural impact statement" before issuing a notice of intent to cancel a registration.¹⁰⁴ Pressure on the EPA has been equally intense. Targets have attacked the quality of the agency's pesticide risk data and, aided by the Department of Agriculture, presented grim numbers on the loss in jobs, crop productivity, and international trade that would result from deregistration, confident that "the near-term costs of regulation are more politically potent than [sic] hypothetical long-term risks."¹⁰⁵ As one commentator concluded: "As long as the balancing standard, which provides EPA with infinite discretion, is applied, industry has felt confident that it could influence regulatory outcomes."¹⁰⁶

⁹⁹ FIFRA §§ 18, 24(c), 7 U.S.C. §§ 136p, 136v(c) (2000).

¹⁰⁰ WARGO, *supra* note 93, at 97-98.

¹⁰¹ See *id.* at 98-99 (describing how the pesticide registration program was targeted by Vice President Bush's Regulatory Relief Task Force).

¹⁰² *Id.* at 98.

¹⁰³ *Id.* at 100.

¹⁰⁴ See Act of Nov. 28, 1975, Pub. L. No. 94-140, § 1, 89 Stat. 751, 752 (codified as amended at 7 U.S.C. § 136d(b) (2000)) ("[T]he Administrator shall provide the Secretary of Agriculture with a copy of such notice and an analysis of such impact on the agricultural economy.").

¹⁰⁵ WARGO, *supra* note 93, at 127.

¹⁰⁶ *Id.* The recently enacted Food Quality Protection Act of 1996 adopted a health-based benefits standard—"a reasonable certainty that no harm will result from aggregate exposure to the pesticide chemical residue"—for threshold levels (tolerances) of pesticide residues on food. Food Quality Protection Act of 1996, 21 U.S.C.

More recent (though also more tentative) confirmation for the model's predicted complementarity between substantive cost-benefit statutes and lobbying is provided by the 1996 amendments to the Safe Drinking Water Act (SDWA).¹⁰⁷ As amended, the SDWA is a kind of statutory hybrid.¹⁰⁸ It instructs EPA to set maximum contaminant levels (MCLs) for contaminants in drinking water at levels that are as close "as is feasible" to levels at which "no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety."¹⁰⁹ In this, the SDWA would appear to be what I have termed a benefits statute. The statute, however, goes on to define "feasible" to mean "feasible with the use of the best technology, treatment techniques and other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration)."¹¹⁰ Moreover, not only is "feasible" defined to require the regulator to take cost into consideration, but the statute also specifically requires that the maximum feasible contaminant level may not be required if the agency determines that the quantifiable and nonquantifiable benefits of that level "would not justify the costs of complying with the level."¹¹¹ This is the language of a substantive cost-benefit statute.¹¹²

It was under this final provision that the Bush administration justified the withdrawal of arsenic maximum contaminant levels promul-

§ 346a(b)(2)(A)(ii) (Supp. V 1999). Although not a cost-benefit standard, the new health-based standard in fact represented a relative victory for the pesticide industry, which was facing the threat that EPA would actually begin to enforce (under court order) the "zero tolerance" standard for carcinogenic residues under the so-called Delaney Clause. See James Smart, *All the Stars in the Heavens Were in the Right Places: The Passage of the Food Quality Protection Act of 1996*, 17 STAN. ENVTL. L.J. 273, 336-39 (1998) ("The lack of a bright-line [zero-tolerance] standard in the statute was a solid win for the industry, which had always favored a discretionary, narrative standard.").

¹⁰⁷ Safe Drinking Water Amendments of 1996, Pub. L. No. 104-182, 110 Stat. 1613 (codified as amended at 42 U.S.C. §§ 300f to 300j-25 (Supp. V 1999)).

¹⁰⁸ For a similar view of the amended SDWA, see SUNSTEIN, ARITHMETIC OF ARSENIC, *supra* note 12, at 14 ("The SDWA is an intriguing hybrid, combining an analysis of public health and feasibility with reference to [cost-benefit analysis] as well.").

¹⁰⁹ 42 U.S.C. § 300g-1(b)(4)(A) (Supp. V 1999).

¹¹⁰ 42 U.S.C. § 300g-1(b)(5) (1994).

¹¹¹ 42 U.S.C. § 300g-1(b)(6)(A) (Supp. V 1999).

¹¹² Compare this with the very similar language from section 701a of the Flood Control Act of 1936. See 33 U.S.C. § 701a (1994) (stating that the federal government should fund flood control improvements "if the benefits to whomsoever they may accrue are in excess of the estimated costs").

gated in the latter days of the Clinton administration.¹¹³ Public reaction to these steps was furious, as was reaction to the subsequent decision to finalize the rule.¹¹⁴ For purposes of this Article, it is irrelevant whether the intensity of the public reaction to the arsenic rule or some other factor accounted for its ultimate finalization.¹¹⁵ What is important about the recent arsenic controversy is that it displays vividly what has always been true of the SDWA: intense lobbying by high-cost regulatory targets. The passage of the 1996 amendments marked the culmination of a furious campaign by certain clearly identified industrial and municipal regulatory targets to prevent tougher standards for arsenic and other contaminants.¹¹⁶ These targets succeeded in adding a substantive cost-benefit requirement to the statute, and they have continued to lobby against tougher standards by publicizing the exceptionally high costs of meeting anticipated new standards. According to the target groups, because the costs of compliance are so high, the new standards cannot be met by local water suppliers without substantial federal subsidies. Since the passage of the SDWA, EPA has examined (via two surveys) the costs of complying with the SDWA (for example, improving systems to better protect water from microbiological contamination). They are now estimated to run over \$31 billion,¹¹⁷ but regulatory targets, such as the Association of Metropoli-

¹¹³ See 66 Fed. Reg. 16,134, 16,135 (Mar. 23, 2001) (to be codified at 40 C.F.R. pt. 141) (suspending implementation of the arsenic rule until May 22, 2001); see also National Primary Drinking Water Regulations, 66 Fed. Reg. 20,580, 20,581-82 (proposed Apr. 23, 2001) (setting out process by which rule would be reviewed).

¹¹⁴ See SUNSTEIN, ARITHMETIC OF ARSENIC, *supra* note 12, at 7-10, for a discussion of controversy surrounding the Bush administration's decision to suspend the arsenic rule.

¹¹⁵ My own view, which I cannot elaborate here, is that the key to understanding the arsenic controversy is not the way the public reacted to the idea of arsenic—a widely perceived poison—in drinking water, but rather the fact that the costs of the tougher arsenic standard are concentrated regionally, falling primarily in particular cities and towns in Arizona, New Mexico, Colorado, and Montana. Because the arsenic rule cost most Americans nothing, while marginally deterring economic growth in only a few states, it was a political winner. See Johnston, Democracy, Distribution and Development: A New Positive Political Theory of Regulatory Federalization (Jan. 2002) (unpublished manuscript, on file with author). But see SUNSTEIN, ARITHMETIC OF ARSENIC, *supra* note 12, at 8 (arguing that the arsenic controversy occurred because arsenic, a well-known poison, was involved).

¹¹⁶ See MARK R. POWELL, THE 1991 LEAD/COPPER DRINKING WATER RULE AND THE 1995 DECISION NOT TO REVISE THE ARSENIC DRINKING WATER RULE: TWO CASE STUDIES IN EPA'S USE OF SCIENCE 34-35 (Res. for the Future Discussion Paper No. 97-05, Mar. 1997).

¹¹⁷ Meredith Preston, *Drinking Water: EPA Estimates Infrastructure Needs Will Cost \$150 Billion over Next 20 Years*, 32 ENV'T REP. 443, 443 (2001).

tan Water Agencies, have declared that EPA's numbers are a gross underestimate, representing only one-third of the total cost of water infrastructure costs facing the 55,000 water suppliers nationwide.¹¹⁸ A coalition of public water utilities, waste-water treatment facilities, municipal organizations, and engineers (the "Water Infrastructure Network") has asked Congress to authorize \$57 billion in grants over the next five years for infrastructure improvements.¹¹⁹

My formal model does not attempt to incorporate lobbying by regulatory targets to persuade the government into paying their compliance costs. Interestingly, this is precisely what FIFRA provides pesticide manufacturers whose registrations are not renewed,¹²⁰ and it is what public water suppliers targeted by the Safe Drinking Water Act Amendments currently seek. Albeit indirectly, the formal model developed here does in fact predict such a pattern. The model demonstrates how the adoption of a substantive cost-benefit statute puts low compliance cost targets at risk. Rationally anticipating that they are relatively disadvantaged at the judicial review stage under such a statute, regulatory targets have an enhanced incentive not only to lobby against regulation once the cost-benefit statute is adopted, but also to lobby for indemnification of their costs both in the text of the law and, failing there, after the law is passed.

B. *The Structure and Interpretation of Benefits Statutes*

In the landscape of federal regulatory statutes, cost-benefit statutes are the exception; most federal regulatory statutes are benefits statutes. Yet, as noted in the Introduction, benefits statutes, as interpreted by the courts, permit the implementing agency to consider compliance costs unless the statute clearly forbids any consideration of costs.¹²¹ A reasonably careful reading of these statutes confirms the interpretive soundness of the judicially-fashioned default rule allowing agencies to consider compliance costs. This Section explains why the default is also correct from a positive political point of view. It also uses the formal model to explain why Congress would have crafted benefits statutes in ways that rationally anticipate and encourage, but

¹¹⁸ *Id.*

¹¹⁹ *Id.*

¹²⁰ Section 15 of FIFRA provides for the indemnification of pesticide dealers and others harmed by a deregistration decision. 7 U.S.C. § 136m (2000).

¹²¹ See *supra* note 34 (interpreting caselaw to conclude that an agency may consider costs unless statutory language clearly precludes such consideration).

do not require, regulators to consider compliance costs during the lobbying stage.

On my model, the crucial distinction between benefits and cost-benefit statutes from a congressional point of view is that, under a benefits statute, an agency's consideration and balancing of regulatory costs is not reviewable by the courts. That is, Congress often intends for judicially unreviewable regulatory consideration of costs. One might argue that this is simply an artifact of the model; just because I have presumed a particular structure does not mean that it is the structure that Congress wanted. The real question is why Congress might want the agency to have this much unreviewable discretion in considering costs. Here, I begin an answer to this question by sketching a theory of congressional interests in regulatory legislation.

Before sketching the theory, it is important to summarize briefly what the courts have said about benefits statutes. In the health and environmental area, virtually all statutory language pertaining to regulatory standards must be read in the light of the Supreme Court's decision in *Industrial Union Department v. American Petroleum Institute (Benzene)*.¹²² *Benzene* involved a challenge to the Occupational Safety and Health Administration's determination that a level of one part per million of air was the lowest feasible level of occupational workplace exposure to benzene that could be achieved.¹²³ In the view of the Court's majority, the key statutory provisions defined "occupational safety and health standard" as a set of practices "reasonably necessary [or] appropriate to provide safe or healthful employment," which "most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity."¹²⁴ In interpreting this language, the *Benzene* majority's opinion established two baseline meanings. First, "safe" is not the equivalent of "risk-free."¹²⁵ Second, a standard based on a statutory command to ensure "safety" can be justified only if the agency first makes a threshold finding "that significant risks are present and can be eliminated or lessened by a change in practices."¹²⁶

¹²² 448 U.S. 607 (1980).

¹²³ *Id.* at 623-25.

¹²⁴ *Id.* at 639 (quoting 29 U.S.C. §§ 652(8), 655(b)(5) (1976)).

¹²⁵ *Id.* at 642.

¹²⁶ *Id.* This understanding (that OSHA's standards set under § 655(b)(5), mandating that "no employee will suffer material impairment of health," must be shown to provide a "significant benefit" by eliminating a "significant risk") was reaffirmed by the

Benzene thus established the interpretive rule that, for health and environmental regulations implementing a congressional command to ensure a "safe" environment for withstanding judicial review, the agency must present evidence that those regulations will do something to reduce a "significant risk" of harm. This rule was applied by the District of Columbia Circuit in *Natural Resources Defense Council, Inc. v. EPA (Vinyl Chloride)*.¹²⁷ In *Vinyl Chloride*, the court interpreted language in section 112 of the Clean Air Act requiring the EPA to provide an "ample margin of safety to protect the public health" in setting hazardous air pollutant standards.¹²⁸ In reaffirming the *Benzene* interpretive rule that "'safe' does not mean 'risk-free,'"¹²⁹ the District of Columbia Circuit clearly stated that under such a "safety"-based statute, the regulator's determination of an "'acceptable' risk to health . . . must be based solely upon the risk to health."¹³⁰

The statutory provisions at issue in both the *Benzene* and *Vinyl Chloride* decisions exemplify benefits-type provisions. From the prior discussion of those decisions, one might conclude that the courts affirmatively have precluded agencies from considering costs under benefits statutes. That is not in fact the case. Having stated that "safety" does not mean "no risk,"¹³¹ the second part of the majority's opinion in *Vinyl Chloride* held that an agency may consider economic cost and technological feasibility in determining how far to go beyond mere "safety" to ensure an "ample margin" of safety.¹³² Similarly, in *Benzene* the Court read a provision of OSHA requiring the regulator to give "due regard to the urgency of the need for mandatory safety and health standards for particular industries"¹³³ as requiring the regulator to find a "significant risk of harm and therefore a probability of significant benefits before establishing a new standard" and to undertake "some cost-benefit analysis" in deciding which workplace hazards to

Court in *American Textile Manufacturers Institute, Inc. v. Donovan*, 452 U.S. 490, 506-13 (1981), and continues to be the interpretation followed by lower courts, as in *American Dental Ass'n v. Martin*, 984 F.2d 823, 825 (7th Cir. 1993) (Posner, J.).

¹²⁷ 824 F.2d 1146 (D.C. Cir. 1987) (en banc).

¹²⁸ 42 U.S.C. § 7412(b)(1)(B) (1982) (amended 1990).

¹²⁹ *Vinyl Chloride*, 824 F.2d at 1153 (quoting *Benzene*, 448 U.S. at 642).

¹³⁰ *Id.* at 1165 (quoting *Env'tl. Def. Fund v. EPA*, 598 F.2d 62, 84 (D.C. Cir. 1978)).

¹³¹ *Id.* at 1153.

¹³² *Id.* at 1164-65; see also PERCIVAL ET AL., *supra* note 30, at 498 (characterizing EPA's determination as a two-step process, the second of which considers economic cost and technological feasibility).

¹³³ OSHA § 6(g), 29 U.S.C. § 655(g) (1994).

eliminate first.¹³⁴

Benzene and *Vinyl Chloride* complicate judicial review of a benefits statute mandating standards to ensure a "safe" environment. On the one hand, "safe" does not mean "risk-free." On the other hand, the agency must consider only health or environmental effects in determining what is minimally "safe." In ensuring "safety" by an "ample margin," however, the agency must be prepared to show that it has not gone too far. Any particular standard must be justified on the ground that it eliminates a "significant" risk of harm, and the agency must develop a methodology for determining the line between "acceptable" and "unacceptable" risks. In drawing this line, it may consider both technological feasibility and economic cost.

On this reading, while benefits statutes do not impose either a substantive or procedural cost-benefit requirement, neither do they preclude the agency from considering costs in setting the final standard. Correctly read, the decision in *Whitman v. American Trucking Ass'n*¹³⁵ does not upset this established understanding. That decision interpreted language in section 109(b)(1) of the Clean Air Act, directing EPA to set national primary ambient air quality standards (NAAQs) "requisite to protect the public health" with an "adequate margin of safety,"¹³⁶ as absolutely precluding EPA from considering compliance costs in setting those standards.¹³⁷ As the Court indicated, however, its interpretation of "adequate margin of safety" is limited to the meaning of that phrase as used in section 109(b)(1), which authorizes EPA to set NAAQs. Under the Clean Air Act's structure, setting NAAQs is one thing, but achieving them is another. In section 110(a)(1) of the Clean Air Act, Congress delegated to the states the job of adopting a plan to implement the NAAQs. Section 110(a)(2) imposes a long list of detailed requirements on such state implementation plans (SIPs),¹³⁸ and section 110(a)(3) requires each state to get EPA's approval for its SIP.¹³⁹ From its date of passage, however, the courts have held that these provisions assign to state environmental agencies the task of deciding where and how to achieve emissions re-

¹³⁴ See *Benzene*, 448 U.S. at 644.

¹³⁵ 531 U.S. 457, 486 (2001) (reaffirming an interpretation of the Clean Air Act set forth in *Lead Industries Ass'n v. EPA*, 647 F.2d 1130, 1148 (D.C. Cir. 1980), and subsequent decisions).

¹³⁶ Clean Air Act § 109(b)(1), 42 U.S.C. § 7409(b)(1) (1994).

¹³⁷ *Am. Trucking Ass'n*, 531 U.S. at 464-71.

¹³⁸ 42 U.S.C. § 7410(a)(2) (1994).

¹³⁹ § 7410(a)(3).

ductions. As the Court reaffirmed in *American Trucking Ass'ns*:

It would be impossible [for the states] to perform that task intelligently without considering which abatement technologies are most efficient, and most economically feasible—which is why we have said that “the most important forum for consideration of claims of economic and technological infeasibility is before the state agency formulating the implementation plan.”¹⁴⁰

As the Court noted, a number of provisions in the Clean Air Act authorize the consideration of regulatory compliance costs, but they are directed to state rather than federal regulators.¹⁴¹ Thus, unlike the workplace hazardous air pollutant statutory provisions at issue in *Benzene* and *Vinyl Chloride*—where the federal agencies both set basic health standards and determine how they are to be implemented—the NAAQs at issue in *American Trucking Ass'ns* are only set, but not implemented, by the federal regulator. They are implemented by the states, and, under the Court's decision in *American Trucking Ass'ns*, only state regulators properly can consider compliance costs.

Thus every one of the benefits statutes I have discussed makes it quite clear that some regulator (albeit state regulators in the Clean Air Act scheme) may consider compliance costs when determining how to *implement* health or environmental benefits-based standards. The puzzle is why Congress would permit, but not legally require, regulatory consideration of compliance costs. The sequential, game-theoretic model developed above suggests several related answers.

First, high-compliance-cost regulatory targets have little risk of actually being regulated under a substantive cost-benefit statute but are very much at risk under a benefits statute. The benefits statute creates a very strong incentive for such targets to invest huge amounts of funds at the lobbying stage, amounts that should dwarf their litigation expenses. Lobbying is directed at all nonjudicial branches of government: the Executive, the Congress, and the agencies. By incentivizing regulatory targets to concentrate on the lobbying stage, members of Congress benefit in a number of ways. Most directly, since the agency is not charged legally with expert balancing of costs and benefits, costs as communicated to the agency by members of Congress are of pri-

¹⁴⁰ *Am. Trucking Ass'ns*, 531 U.S. at 470 (quoting *Union Elec. Co. v. EPA*, 427 U.S. 246, 266 (1976)).

¹⁴¹ See 42 U.S.C. § 7408(b)(1) (authorizing the EPA administrator to give states information on compliance costs); 42 U.S.C. § 7409(d)(2)(C) (requiring the Clean Air Act's scientific review committee to advise the EPA administrator of any adverse economic effects from particular strategies for attainment).

mary importance. Especially when regulatory compliance costs may be concentrated geographically—because the industries likely to be targeted are also concentrated geographically—a legislature based on geographic representation will be very interested in retaining some control over the imposition of such costs. Legislators do not want to have to tell politically dominant constituent industries that they have given away to the agency their power to forestall costly regulation.

Of course, from the point of view of a politically dominant industry that knows it will be a regulatory target, a cost-benefit statute may be even better (if the target has high cost and is likely to win at the judicial review stage). When such a regulatory target knows that it will be targeted, it has every incentive to lobby for a cost-benefit statute. But the world of health and environmental regulation is one of constant change and uncertainty. An entire new class of risks or harms may be identified after the passage of legislation, a class unforeseen by Congress.¹⁴² Benefits statutes provide a form of political insurance to Congress; knowing the incentives for regulatory agencies to expand constantly the scope of their activities, legislators will rationally prefer to retain a very strong control right over such future regulatory initiatives.¹⁴³

It must be emphasized that a future regulatory target would still

¹⁴² For example, passage of the Food Quality Protection Act of 1996, Pub. L. No. 104-170, 110 Stat. 1489 (codified in scattered sections of 7 U.S.C. and 21 U.S.C.) [hereinafter FQPA], reflected vastly enhanced knowledge of the risks that pesticide exposure may pose both to human reproduction and early childhood development. For more information on the FQPA and the changes it makes in both FIFRA and the Federal Food, Drug, and Cosmetic Act, see Thomas O. McGarity, *Politics by Other Means: Law, Science and Policy in EPA's Implementation of the Food Quality Protection Act*, 53 ADMIN. L. REV. 103 (2001); and Smart, *supra* note 106.

¹⁴³ My model, and its predicted congressional preference for benefits statutes, is similar to the general theory outlined by Terry M. Moe, *The Politics of Structural Choice: Toward a Theory of Public Bureaucracy*, in ORGANIZATION THEORY: FROM CHESTER BARNARD TO THE PRESENT AND BEYOND 116 (Oliver E. Williamson ed., 1990). As Moe argues, legislators "value 'particularized' control: they want to be able to intervene quickly, inexpensively, and in ad hoc ways to protect or advance the interests of particular clients in particular matters." *Id.* at 140 (citation omitted). The best way for legislators to obtain such control is to tell agencies to focus on regulatory benefits, but to tightly constrain the agency by imposing complex procedural requirements that ensure that there will be plenty of time for legislative intervention when (ex ante) regulatory costs to key constituents turn out to be high. It is worth noting that this account—which stresses Congress' interest in retaining options to intervene—is distinct from the idea that legislators like vague legislation and agency delegation because this allows them to shift the blame for costly regulation to the regulator. For a statement of this alternative (and complementary) view, see GLEN O. ROBINSON, AMERICAN BUREAUCRACY 76-77 (1991).

generally be better off under a cost-benefit statute. From Congress's point of view, however, the benefits statute is always to be preferred.¹⁴⁴ By channeling lobbying by future unforeseen regulatory targets to Congress, legislators increase both their own control and their own ability to raise campaign funds. The empirical literature on the effect of campaign contributions shows that what such contributions buy is not outcomes, but access.¹⁴⁵ Under a cost-benefit statute—either procedural, such as NEPA, or substantive, such as FIFRA—regulatory targets (in the NEPA case, this means environmentalist cost-bearers) can cause virtually interminable regulatory delay merely by contesting the agency's own cost-benefit calculation. Under a benefits statute, the agency has the discretion to virtually ignore costs, and so targets must make their case to Congress as well. To make their case effectively, targets must pony up some campaign time.

C. OMB Review and the Role of Regulatory Beneficiaries

My model can be used to explicate and evaluate criticisms of OMB review.¹⁴⁶ To do so, we take the critics' factual allegations as true by assuming that OMB review essentially provides a closed forum for regulatory targets to argue to the Executive that regulatory costs are so large that no regulation should be formally proposed. Within the terms of the formal model developed earlier, such a preliminary lobbying stage does not alter the analysis, provided that both the agency and the target are unconstrained in the effort levels they may expend in lobbying the Executive at this stage. However, one of the ways that

¹⁴⁴ Congress's recent record in cost-benefit legislating strongly supports this prediction. The cost-benefit bills that have actually become law, such as the Congressional Review Act of 1996, Pub. L. No. 104-121, 110 Stat. 868 (codified at 5 U.S.C. §§ 801-08 (2000)), and the Truth in Regulating Act of 2000, Pub. L. No. 106-312, 114 Stat. 1248, require agencies to do cost-benefit analysis and to disclose that analysis to Congress, but are quite explicit in excluding such cost-benefit analysis from the judicial review stage. See, e.g., 5 U.S.C. § 805 (2000) ("No determination, finding, action, or omission under this chapter shall be subject to judicial review.").

¹⁴⁵ See, e.g., Tim Groseclose, *An Examination of the Market for Favors and Votes in Congress*, 34 ECON. INQUIRY 320, 328-36 (1996) (examining strategies used for favor trading in passing legislation and developing a model to test for trading of political favors); James M. Snyder, Jr., *On Buying Legislatures*, 3 ECON. & POL. 93, 99 (1991) (arguing that contributions have a negligible impact on election outcomes); Gregory Wawro, *A Panel Probit Analysis of Campaign Contributions and Roll-Call Votes*, 45 AM. J. POL. SCI. 563, 576 (2001) (finding that campaign contributions do not "consistently affect the behavior of members of Congress on votes that those interests deem important").

¹⁴⁶ See *supra* notes 21-22 and accompanying text (providing criticisms of OMB review and proposals to reform it).

my formal model simplifies things is by assuming away lobbying by regulatory beneficiaries. In fact, in many regulatory fields, lobbying by regulatory beneficiaries is very significant in determining the agency's political penalty function $D()$; beneficiary lobbying is often much more important than lobbying by the agency itself. This admittedly unrealistic assumption does not matter for the earlier analysis, but it does matter for the analysis of OMB review.

The essence of the criticism of closed OMB review is that it gives regulatory targets an opportunity to lobby at a stage where regulatory beneficiaries cannot be heard.¹⁴⁷ Formally, this amounts to saying that, at the OMB review stage, regulatory beneficiaries are constrained to a lobbying effort level of zero while the regulatory target is allowed to choose its lobbying effort level optimally. Under my maintained assumption about the lobbying game (as summarized in the penalty function $D()$), this means that lobbying by regulatory targets at the OMB review stage is likely to be very productive, in the sense that the target may not need to invest very much to generate a large political penalty (by imposing a lot of political pressure on the agency to drop the regulation). Unlike congressional opponents, who will typically impose a penalty on the agency only if it goes ahead and finalizes the regulation, the President is likely to penalize the agency simply for proceeding to formally propose a regulation. The reason is that regulatory targets who take advantage of the opportunity to lobby at the OMB review stage have thereby revealed that they view even a proposed regulation as a potentially costly matter. To the extent that the President, through OMB, is sympathetic to the arguments made by such targets at the OMB review stage, the President is likely to penalize the agency for proceeding ahead with a regulatory game that the target has already credibly signaled will be very costly for it.

Thus the OMB review stage gives regulatory targets the opportunity to impose a potentially large political penalty on the agency at a relatively low cost. Because this penalty attaches even as soon as the agency decides to formally propose a regulation, it reduces the agency's perceived net benefit from regulating all the way through the

¹⁴⁷ See Morrison, *supra* note 21, at 1068 ("[B]ecause this process operates in secret, there is no way for the public, the Congress, or the courts to know precisely what OMB has done and what the real basis is for decisions issued under the nominal signature of the agency head."); see also Pildes & Sunstein, *supra* note 22, at 19 ("Many people alleged that private communications had occurred and that [the Office of Information and Regulatory Affairs, an institution within the OMB] was basing its decisions on pressure from business groups with self-interested stakes in the outcome.").

regulatory game. The agency will devote less effort to lobbying for, and litigating to uphold, its regulation. On the margin, the preliminary OMB review stage will clearly reduce the volume of both proposed and finalized regulation.

By the same logic, requiring that OMB review be opened up so that regulatory beneficiaries can also participate fully at that stage would probably weaken significantly the impact of OMB review of agency behavior, but probably not by as much as its proponents believe. Regulatory beneficiaries who rationally understand the regulation game would indeed seize the opportunity to lobby the Executive to lessen the political cost to the relevant agency of proposing a regulation they favor. Especially when Congress and the Executive are controlled by different parties, the executive branch political penalty function is likely to be very different than the congressional political penalty function. When the Executive is committed to a general program of deregulation, for instance, regulatory beneficiaries may be relatively ineffective in persuading the Executive to allow any particular regulation to go forward. Notably, as an historical matter, OMB review has been active and important in curtailing the volume of regulation under Republican presidents while either actively opposed or neglected by Democratic presidents.¹⁴⁸ It is unlikely that procedural changes making the OMB review process more open to regulatory beneficiaries would either change this overall partisan pattern or

¹⁴⁸ During the Carter administration, the Regulatory Analysis Review Group (an interagency committee directed primarily by the President's Council of Economic Advisors) conducted cost-benefit analyses of regulations and had substantial impact on regulatory policy. See EDWARD PAUL FUCHS, *PRESIDENTS, MANAGEMENT AND REGULATION* 53-57 (1988) (stating the Regulatory Analysis Review Group's goal of making "certain the costs of each proposed [OMB] rule had been fully considered so that the least costly means might be identified"). However, this committee's role prompted a strong reaction by the targeted regulatory agencies, who succeeded in taking back much of the authority for regulatory review through the Regulatory Council. This, in turn, prompted an increasingly antiregulation 96th Congress to propose legislation requiring agencies to conduct cost-benefit analysis and requiring the President to certify that any new regulatory costs would be offset by the reduction of some other regulatory burden. *Id.* at 70-78. Through Executive Order 12,291, 3 C.F.R. 127 (1982), the Reagan administration made OMB regulatory cost-benefit analysis a cornerstone of Republican presidential regulatory policy. As Hahn, Cavanagh, and Stavins succinctly put it, during the Clinton administration, economic analysis "had to fight harder for its place at the table" in EPA regulatory proceedings. CAVANAGH ET AL., *supra* note 56, at 9. When it was employed, economic analysis was used not for cost-benefit analysis but to identify cost effective regulatory alternatives. For a case study, see Albert L. Nichols, *Lead in Gasoline*, in *ECONOMIC ANALYSES AT EPA: ASSESSING REGULATORY IMPACT* 49 (Richard D. Morgenstern ed., 1997). OMB played a very limited role in regulatory review during the Clinton administration. See Dudley & Antonelli, *supra* note 19.

make OMB review significantly less effective in Republican administrations.

D. Political Parties and the Centralization of Regulatory Review

In a world in which political party affiliation does not constrain the positions taken by federal legislators, those legislators are free to serve local constituent interests. When it comes to overseeing the activities of federal regulatory agencies, one would expect that federal legislators are quick to intervene to stop or weaken regulations that would impose large costs on important constituents. Industries that are very important sources of jobs and taxes in a particular state or legislative district should expect to see their senators and representative actively working to prevent regulators from imposing large costs on them. In other words, because Congress is based on a geographic principle of representation, regulators will face a potentially large political penalty (the formal $D()$ function set out in Part I) when they impose regulatory costs on industries or other regulatory targets that are important to particular, identifiable local economies. Regulatory agencies that seek to maximize net regulatory benefits will tend to eschew such targets, and to prefer to regulate targets who can shift and spread the cost of regulation over a large, geographically diffuse population. The paradigmatic target of this sort is an oligopolistic industry with relatively diffuse nationwide operations. Even though the industry may have great national economic significance, because its operations are diffuse, it is unlikely to be a key constituent in any state or legislative district. For this reason, its marginal productivity in lobbying before Congress is likely to be very low.

It is the Executive, and not Congress, that provides the natural place for such an industry to direct its lobbying efforts. Only the President wages a national electoral campaign, and even if an employer is nowhere a local mainstay, if it has a significant national presence, then a presidential candidate will court its employees' votes when no senator or representative would. There are, moreover, likely to be economies of scale in political campaign contributions. Rather than spreading its contribution across a number of potentially key Senators and Representatives—with no assurance that even the most influential legislator will succeed in deflecting regulation—a national regulatory target can concentrate its contribution on the officeholder

with actual constitutional authority over regulatory management.¹⁴⁹

Like the earlier, more formal analysis, this argument assumes away the influence of political parties. By the late 1980s, the decline of American political parties was being blamed for a variety of ills allegedly besetting the American political system.¹⁵⁰ In recent years, however, parties have reemerged as potent political institutions, with party leaders in the House and Senate exercising a high degree of control over the legislative agenda and the composition and leadership of key committees, such as appropriations.¹⁵¹ Both major parties have taken up federal health, safety and environmental regulation as a defining or "name brand" issue. Their enhanced role modifies some of the conclusions that I have reached about how the regulatory game is played.

Party affiliation acts as a label or political brand name—a commitment to support certain political positions.¹⁵² The commitment is made credible by the financial strength of the party, its ability to sponsor and financially support its own candidate if a particular legislator deviates from the party line. This is not to say that the party insists upon mindless uniformity. To the extent that there are local variations in voter preferences, it is in the party's interest to tolerate some deviation from the party line to enable its candidates to win. There are, however, limits. Too much deviation by too many candidates significantly dilutes the party brand name.

National political parties generate both efficiencies and inefficiencies. By making a particular legislator's commitment to a party

¹⁴⁹ For a related analysis, see James C. Miller III et al., *A Note on Centralized Regulatory Review*, 43 PUB. CHOICE 83 (1984).

¹⁵⁰ See, e.g., MARTIN P. WATTENBERG, *THE DECLINE OF AMERICAN POLITICAL PARTIES, 1952-1992*, at 132 (enlarged ed. 1994) (blaming decline of parties for the absence of issue debates and predominance of personal mud-slinging in the 1988 presidential campaign).

¹⁵¹ See COX & MCCUBBINS, *supra* note 49, at 2 (describing parties in the House of Representatives as "species of 'legislative cartel'"). Strong evidence for the dominant influence of party affiliation over congressional voting on certain issues is provided by James M. Snyder, Jr. & Tim Groseclose, *Estimating Party Influence in Congressional Roll-Call Voting*, 44 AM. J. POL. SCI. 193 (2000).

¹⁵² This model of party affiliation as a credible signal of a legislator's voting behavior is attributable to Mathew D. McCubbins, *Party Governance and U.S. Budget Deficits: Divided Government and Fiscal Stalemate*, in *POLITICS AND ECONOMICS IN THE EIGHTIES* 83 (Alberto Alesina & Geoffrey Carliner eds., 1991); and James M. Snyder, Jr., *Safe Seats, Marginal Seats, and Party Platforms: The Logic of Platform Differentiation*, 6 ECON. & POL. 201 (1994). The model of parties as producers of political brand names has recently been formalized by James M. Snyder, Jr. and Michael M. Ting in *An Informational Rationale for Political Parties*, 46 AM. J. POL. SCI. 90 (2002).

position credible, political parties increase the amount of information that is available to voters. Voters do not need to discount candidate commitments that have been made credible by the national party's sanctioning apparatus. Voters have more information about what candidates will do if elected, and once in office, parties ameliorate the principal-agent problem that confronts voters who wish to ensure that the candidate does what she promised to do.

For this very same reason, parties inevitably weaken the ability of legislators to faithfully represent constituent preferences over policy outcomes. Party interest in, and control over, general regulatory programs constrains the ability of individual legislators to effectively represent constituent preferences in conducting regulatory oversight. For instance, even if every single constituent would enjoy a large net benefit from a particular regulation, when the legislator's party opposes the regulation, the legislator may face party pressure to inefficiently (from the point of view of her district) oppose the regulation.

Party influences thus alter the regulation game model developed above by making individual legislators less responsive to the district or state-specific costs and benefits of a particular regulation. Rather, there is a tendency for parties to group regulations into categories—some favored, some disfavored—and then enforce uniform support or opposition among members for all proposals within the category. Issues such as regulatory reform are not ideological in some metaphysical sense; rather, ideological issues are those which are packaged together so as to create party brand names. By selling a uniform position on an issue package, the party generates economies for interest groups. Rather than incurring the potentially very high transaction costs of discerning where particular Republicans stand on particular regulatory programs, regulatory cost bearers can simply make their case to party leaders, who can promise a particular legislative result that does not depend upon constituent preferences. Similarly, regulatory beneficiaries can turn to Democratic party leaders, who are able credibly to promise action that may well override the constituent interests of many Democratic legislators.

The political polarization of environmental regulatory issues has occurred not only at the legislative level¹⁵³ but at the executive level as well. Even a generally environmentally unconcerned President such as Clinton was pushed by his party to support a variety of environ-

¹⁵³ William Lowry & Charles Shipan, *Environmental Policy and Party Divergence in Congress*, 54 POL. RES. Q. 245 (2001).

mental regulatory initiatives, just as Republicans slowed Bush's relatively activist EPA regulatory agenda by pushing for the creation of the White House Council on Competitiveness. The political polarization of environmental regulation has altered the regulatory review process. Republican congressional leaders are attuned to all types of environmental regulatory costs, even those that can be effectively shifted and spread and that do not translate into political costs for individual legislators. Democratic party leaders advocate the benefits of environmental regulation. Party brand identification is not everything: regionally concentrated regulatory costs—such as those entailed by the EPA's recent move to reduce emissions by midwestern and southern coalburning electric power plants—still provoke opposition from legislators of both parties who represent cost-bearing districts and states. Still, the Democratic party's brand identification with federal environmental regulation has led to a reversal in the regulatory review process. As observed earlier, in the Clinton administration, OMB regulatory review of regulatory costs was significantly shortened; indeed, by executive order, the environmental impacts of proposed regulations were to be given as much weight in regulatory review as were economic impacts.¹⁵⁴ Under President Clinton, regulatory review—that is, cost-benefit analysis—within the EPA was downplayed dramatically as the agency increasingly became a benefits advocate rather than a cost-benefit balancer.¹⁵⁵ Democratically controlled Congresses pressured Reagan- and Bush-era federal environmental regulators to take action. By contrast, since the 104th Congress, Republican legislative leaders have both attempted to rewrite particular regulatory statutes to require cost-benefit-based standards,¹⁵⁶ and, failing that, have succeeded in requiring regulatory agencies to do cost-benefit analysis of “major” rules and to disclose that analysis to Congress.¹⁵⁷ The Republican party has become identified with regulatory reform and has aligned itself as a party with the issues and concerns of regulatory targets. The political party “brand-naming” of health, envi-

¹⁵⁴ See *supra* note 19 (noting that President Clinton's Executive Order 12,866 stated that “agencies should select those approaches that maximize net benefits (including potential economic, environmental and public health-safety”).

¹⁵⁵ See CAVANAGH ET AL., *supra* note 56, at 9 (“[W]hen [economics] did have a place at the table, economic analysis was more likely to be focused on increasing the cost-effectiveness of regulations than on weighing benefits against costs.” (citation omitted)).

¹⁵⁶ See *supra* note 7 (listing congressional attempts to require regulatory standards to be justified by cost-benefit analysis).

¹⁵⁷ See *supra* note 6 (listing statutes that require such a procedure).

ronmental, and safety regulation has changed the congressional political penalty function. Most importantly, the national or aggregate regulatory cost borne by a target is now much more significant in determining the congressional political penalty that the target can inflict. When regulation was not a core political party issue, even a nationally significant target might have a hard time garnering congressional intervention and support. In particular, targets that were capable of passing on most of the costs of regulation to a geographically diffuse group such as consumers, or whose operations were widespread geographically—so that the target was not a really significant employer or taxpayer in any locality—often had a difficult time getting congressional leaders to intervene to lobby against proposed regulation. Now, however, through national political parties and their fundraising capabilities, a nationally significant regulatory target group can exert influence even on legislators in whose districts or states the target has no presence. Recent federal legislation requiring cost-benefit analysis for “major” regulations confirms this prediction. Because “major” regulations are defined by reference to their aggregate cost (of \$100 million or more), such legislation benefits only those regulatory targets who operate in fairly large, nationally significant industrial sectors or whose own operations are of similar significance standing alone.

Another effect of political parties is less intuitive. By making opposition to environmental regulation an ideological, party-level issue, the Republican leadership lowered the marginal political cost of politically difficult regulatory programs. Regulating the mining industry—which is a significant employer in certain clearly identifiable districts and states—has not become appreciably more costly by the advent of a Republican Congress. But regulating local land use and development through federal wetlands and endangered species programs has become much more costly. Thus the *marginal* political cost to federal regulators of traditionally politically tough regulation has actually decreased as a consequence of partisan ideologizing of environmental regulation.

CONCLUSION: SOME CAUTIONARY NOTES ON COST-BENEFIT STATUTES AND REGULATORY REFORM

By examining how statutory structure and other institutional interactions (such as OMB review) affect an agency's incentives to investigate and balance regulatory costs and benefits, my focus has been primarily positive or predictive. The many non-intuitive predictions

about agency incentives to consider both costs and benefits that emerge from my sequential, game theoretic model of the regulatory process are only a sample of the sort of behavioral hypotheses that such a modeling approach may generate. One can use the model to explore a wide range of additional issues in administrative law, such as the choice among alternative standards for substantive judicial review of agency rulemaking and the legislative veto.

My purpose in this Article has not been to fashion and defend detailed normative regulatory critique and proposals for reform, but the model developed above does have some general normative implications that are worth highlighting by way of conclusion. One of the model's most important normative implications is that legally requiring agencies to set standards according to substantive cost-benefit tests is unlikely to produce the sort of dramatic changes in actual regulatory behavior that some may hope. As an historical matter, this should not be overly surprising. After all, the Flood Control Act of 1936—that paradigmatic instance of a substantive cost-benefit statute—is precisely the statute under which the Army Corps of Engineers conducted its twentieth-century construction boom. The Corps has always been able to find economic benefits (typically highly speculative future recreational benefits) that justify the costs its projects have imposed.¹⁵⁸ The game theoretic approach developed above, however, clearly identifies the general underlying cause of the relative failure of the Flood Control Act of 1936 to discipline agency behavior. It thus provides insight into when, if ever, a substantive cost-benefit statute might do a better job of changing agency behavior.

The underlying source of the Corps' power under the Flood Control Act of 1936 is not, my model suggests, so much the fact that Corps' projects are congressionally beloved pork, but rather the costs and benefits of those projects are not judicially verifiable. If courts actually observed true project costs and benefits, then the (credible) threat of judicial review under an express statutory cost-benefit edict could be a powerful deterrent to inefficient projects. On my model, the lobbying game determines Corps behavior precisely *because* courts have so little information about project costs and benefits and judicial review is (for this and other statutory reasons) so inefficacious.

¹⁵⁸ Sadly, this remains true today. See Michael Grunwald, *Engineers of Power: Inside the Army Corps* (pts. 1-5), WASH. POST, Sept. 10-14, 2000 (describing the questionable cost-benefit analysis the Army Corps frequently undergoes in various projects and arguing that the integrity of such analysis is often undermined by the desire of the Corps to increase their budget because it receives project per project).

The same underlying strategic problem—limited observability of regulatory cost and benefit variables—may severely limit the effectiveness of substantive cost-benefit statutes as tools of regulatory reform in other areas of the law as well. Consider, for instance, federal environmental regulation of air and water pollution. The greatest perceived inefficiency of federal regulation in these areas may be EPA's strong tendency to prefer technology-based pollution control standards: to base the required level of pollution reduction on what can technologically be done, rather than what is efficient in cost-benefit terms for a particular kind of factory in a particular place. But the choice of this particular regulatory instrument—technology-based standards—is, on my model, a virtual strategic inevitability. Suppose that federal environmental regulators had simply adopted total permissible pollution loads on a watershed by watershed basis, allocated watershed-wide permits, and then allowed polluters in the watershed to take whatever steps they wanted to comply, including trading the permits to each other for dollars. Under this strategy, federal regulators would have conceded all strategic advantages to the regulated community. Under a benefits-based statute, the regulator would have needed to go through notice-and-comment rulemaking before adopting any particular pollution load for the watershed. The load would have to have been justified on the basis of its benefits in improving watershed quality. But this is a scientific question, and regulators enjoyed (in the early stages at least) no particular advantage over industry with respect to scientific knowledge of the effects of reduced loads of various pollutants on environmental quality. On the benefits side, regulators would have faced a high probability of failure on judicial review.

Even worse from a regulator's strategic point of view, regulatory targets would surely have made the argument to both the executive and legislative branches that the load reductions were impossible to achieve without massive decreases in industry output, decreases that would cost jobs and thereby inflict large localized harms. Regulators would have been at an extreme informational disadvantage in trying to rebut these claims. On the cost side, regulators would have been at a huge disadvantage in the *ex ante* regulatory lobbying game.

Consider now the alternative regulatory strategy of technology-forcing, requiring that particular industries adopt particular pollution abatement technologies. Typically developed with funding from environmental agencies themselves, the agency gains knowledge of these technologies before regulatory targets. Moreover, by directing re-

search into technologies that are add-ons to existing production processes—end of the pipe waste reductions (or more realistically, transformations)—rather than requiring modifications in production processes to reduce the amount of waste generated, the agency deprives regulated industry of its natural informational advantage with respect to its ability to modify production processes. In order to gain a strategic advantage in implementing the benefits statute, the agency may even require inefficient or ineffective abatement technologies. There may be a whole universe of ways to reduce pollution and improve environmental quality more cheaply and effectively, but there is no incentive for the agency to allow regulated entities the discretion to adopt such measures.

This roughly describes the sorry state of media-specific, technology-based federal environmental regulation today. It might seem, and has seemed to many in Congress, that the solution is to require environmental agencies to do detailed analyses of the costs as well as the benefits of their proposed regulations:¹⁵⁹ one might call this NEPA inverted. When instrument choice is endogenous, agency behavior under the cost-benefit statute may be rather different than what cost-benefits advocates expect. Under a cost-benefit approach, the agency will have an even stronger incentive to propose compliance strategies that lessen its informational disadvantage than under a benefits statute. NEPA transformed federal project agency behavior by forcing the agencies to publicize the collective environmental costs of projects that delivered concentrated benefits. The costs of environmental regulations, by contrast, are generally concentrated in a few areas and therefore already well-communicated through the lobbying process. Even when the costs are diffuse—partly borne by consumers, and partly by shareholders—the costs are, if anything, better known to regulated entities than to the regulator. The need to survive judicial scrutiny under a cost-benefit statute may well incentivize federal environmental agencies to tinker with existing abatement technologies whose costs and benefits are well understood rather than to propose novel and potentially more effective, but also more uncertain and potentially more costly, approaches.

¹⁵⁹ This is evidenced by the attempt to enact the Comprehensive Regulatory Reform Act of 1995, the successful enactment of the Unfunded Mandates Reform Act of 1995, and other legislation discussed *supra* note 5.

APPENDIX: ANALYTICS OF THE REGULATION GAME

I. THE REGULATION GAME

This Appendix formally describes the model underlying the analysis in the text, and provides proofs for the less straightforward claims I have made there.

A. *General Features*

1. The Regulator

For the risk-neutral case that forms the baseline for my analysis, the regulator's objective is:

$$\text{Max}_{e_a, L_a} \{0, \max_{L_p} [1 - r(L_a, L_p, B/\underline{B})] (B - D(e_a, e_f)) - e_a - L_a\}, \quad (1)$$

where the objective reflects the assumption that the regulator has the option of not regulating and getting the reservation payoff of 0. The variables in problem (1) are defined as follows:

B = regulator's gross utility from a particular regulation; assumed initially to be common knowledge to the regulator and the firm;

$\underline{B}$ = level of benefits required to regulate under the statute;

$D(e_a, e_f)$ = decrease in regulator's utility brought about by lobbying Congress and/or the executive branch with $D_1 < 0$, $D_2 > 0$, $D_{11} > 0$, $D_{22} < 0$. (Cross partials are discussed in the analysis below.) This function is throughout assumed to be common knowledge to the regulator and the firm;

e_a, e_f = lobbying effort levels of the agency and firm, respectively;

$r(L_a, L_p, B/\underline{B})$ = probability that a promulgated regulation is vacated on judicial review under a benefits statute, with $r_1 < 0$, $r_2 > 0$, $r_3 < 0$, $r_{11} > 0$, $r_{22} < 0$ and $r_{33} > 0$. I also assume that $r_{13} < 0$, and $r_{23} < 0$ —that is, the higher is the ratio of the agency's perceived benefit to the level required by the statute, the bigger (smaller) is the marginal productivity of agency (firm) litigation effort. This function varies with the form of the statutory command—benefits, substantive cost-benefit, procedural cost-benefit. The version given here is for the benefits statute (versions for the latter two statutory regimes are defined in the later analysis). My analysis of the benefits statute does not focus on the level of required benefits, and so in the analysis I simply write the benefits function as $r(L_a, L_p)$; and

L_o, L_f = litigation efforts of the agency and firm, respectively.

Lobbying and litigation efforts are both assumed to be perfectly observable when incurred.

The function $D(e_o, e_f)$ gives the equilibrium penalty inflicted by political opponents of the regulation, and is itself the result of current and future actions by Congress and the Executive. I do not model the process by which such sanctions are determined, and so in this sense $D()$ is a reduced form specification.

2. The Regulated Firm

I assume throughout that the regulated entity is a risk-neutral firm with the objective:

$$\text{Min } \{c_v, \min_{e_f, L_f} [(1 - r(L_o, L_f))c_i + e_f + L_f]\}, \quad (2)$$

where the firm's objective reflects the fact that it can choose to refrain from either lobbying or litigating against regulation and simply comply, incurring the compliance cost c_i for $i = l, h$ with $c_h > B > c_l$. The firm knows its compliance cost. The regulator has incomplete information regarding the firm's compliance cost, with prior probabilities p_l ($0 < p_l < 1$) and $p_h = 1 - p_l$ that the firm has, respectively, low versus high compliance cost.

3. The Sequential Structure

The key choice variables in the regulation game—the level of lobbying effort e_i and the level of litigation effort L_i —are not chosen simultaneously. Rather they are sequentially chosen at different stage of the regulation game. That game has the following stages:

1. The regulator chooses between regulating and not regulating, and, if it decides to regulate simultaneously, chooses a level of investment in assessing the economic costs of regulation. The level of investment in learning the firm's compliance cost can take one of two values: $I = 0$, in which case the regulator gains no additional knowledge beyond its priors given above, and $I > 0$, in which case the regulator perfectly observes firm compliance cost. Once proposed, the regulation cannot be modified in response to actions taken at later stages of the game.

2. If the regulator chooses to regulate and drafts a regulation, then it must provide public notice of the proposed regulation. Whatever is contained in the public notice is assumed to become common

knowledge. After public notice is given, the firm chooses between complying with the regulation and initiating a political contest over the regulation. In this contest, the regulated firm chooses an effort level e_f making an argument to the regulator, Congress and/or the Executive, that the regulation is too costly, both to the firm and to the communities in which it operates, and ought not to be finalized. The agency expends an effort level e_a in an attempt to offset the firm's arguments and persuade both Congress and the Executive that the regulation generates positive net benefits for the society. These effort levels are determined simultaneously by the agency and firm.

3. After the agency and firm have made their contest expenditures, the agency must decide whether to finalize, or drop, the regulation. If and only if the regulation is finalized, then the agency's perceived benefit from the regulation is decreased by an amount $D(e_a, e_f)$ specified above. The notion here is that insofar as the firm is successful, it persuades members of Congress or the Executive to take present and future actions that effectively lower the agency's utility from finalizing the regulation. For reasons that will become clear in the next Section, the assumption that the sanction D is committed to and cannot be withdrawn based on the outcome of any subsequent legal challenge is important.

4. If the regulation is finalized, then the firm has the option of challenging the regulation in court (seeking judicial review) or complying. If the firm challenges the regulation in the courts, then the firm and agency simultaneously choose their judicial review litigation effort levels L_f and L_a respectively. As is known from the more general economic theory of litigation and conflict, equilibrium levels of litigation expenditures depend upon the cross partials r_{ij} for $i, j = 1, 2, 3$. Both cases, substitutes and complements, will be considered below. When the court vacates the regulation, the agency gets 0 benefit from the regulation and the firm does not comply. When the regulation is upheld, the firm complies immediately. (Although I rule out non-compliance with a judicially upheld regulation, as I explain below, noncompliance is in many ways functionally similar to the legal challenge choice that I do explicitly model).

Figure 1 from the text depicts the extensive form of the game just described.

4. Solution Concept and Method

In identifying equilibria in the regulation game just outlined, I restrict attention to Bayesian Perfect equilibria ("BPE"). This concept

isolates strategies that are individually payoff maximizing given rational revision according to Bayes' Rule of a player's knowledge about the opponent's type (high or low cost of compliance firm, for instance). It also requires that at any given stage of the game, moves are payoff maximizing. The strategic-perfection requirement eliminates incredible threats by requiring that any action taken be optimal for the stage of the game at which it is taken. The game breaks down into two parts: the final litigation, judicial review stage, and the earlier lobbying stage. Equilibria are obtained working by backward induction from the final stage

B. Analysis: Equilibrium Behavior Under a Benefits Statute

I assume that under a benefits statute, the agency's regulation is upheld provided that the court finds that the regulation is rationally related to the statutory goal of reducing "significant" risks to the environment or health and safety. The analysis proceeds first by assuming that the agency cannot learn the firm's compliance cost.

1. Equilibria in the Final, Legal Challenge Stage

We work by backward induction from the final, judicial review stage of the game. The decision whether or not to bring a legal challenge is made by the firm, which possesses complete information. The firm's decision whether or not to bring such a challenge may or may not inform that agency as to the firm's actual cost of compliance (high or low). The first result is immediate.

Proposition 1. *The firm's litigation effort increases in compliance cost c , while the agency's litigation effort falls in the size of the political sanction D . For sufficiently low compliance cost, the firm will comply rather than bring a legal challenge; similarly, for sufficiently high political penalty, the agency will drop the regulation (fail to finalize).*

Remark. Proposition 1 says that three types of equilibria are possible: 1) an interior solution, in which the agency finalizes the regulation, the firm seeks judicial review, and both the agency and the firm spend a positive amount on a court battle; 2) a corner solution in which the firm's cost is so low (relative to the cost of litigation) that it would rather comply than fight; and 3) a corner solution in which the lobbying stage has so reduced the agency's net benefit $B - D$ that the agency is better off simply withdrawing the regulation than finalizing it and facing costly judicial review.

Proof. To establish these points, note that the firm's objective in the final, legal challenge stage is given by:

$$\min_{L_f} [(1 - r(L_a, L_f))c + L_f], \quad (3)$$

where we recall that $r()$ is the probability that the court vacates the regulation. The first order condition for problem (3) is given by $r_2c = 1$, which by the assumed differentiability (and hence continuity) of $r()$ immediately shows that for sufficiently low c , the corner solution $L_f = 0$ will obtain. The implicit function theorem and the assumption that $r_{22} < 0$ establish the monotonicity of firm litigation effort with respect to compliance cost.

Whenever having a high-compliance cost brings the firm a strategic advantage in the litigation game (in a sense made more precise by the proof of the next proposition), there are only two equilibria at the stage at which the firm decides whether to litigate: either both a low- and high-cost firm challenge, or only the high-cost firm challenges. In other words, the only separating equilibrium involves only a high-cost firm challenging.

The second part of the claim follows from the agency's final stage objective, which is to:

$$\max_{L_a} (B - D)(1 - r(L_a, L_f)) - L_a, \quad (4)$$

The effect of increasing the sanction on the agency for pursuing a politically costly regulation bears emphasis. By the monotonicity of the function $L_a(D)$ defined implicitly by problem (4)'s first order condition, a sufficiently large sanction on the agency for finalizing an unpopular regulation will deter the agency from mounting any defense in court. Let this deterrent sanction be denoted by $\hat{D}(r(), B)$. That is, the litigation-conflict function along with the prepolitical benefit to the agency from the regulation determines how large a sanction is required to kill the agency's incentive to defend the regulation in court. Note that the earlier assumption that the political sanction is committed to prior to the outcome of litigation is of only marginal significance. Even if the sanction were only carried out when the agency succeeded in defending against a legal challenge (so the regulation became final and was not vacated by the court), it would still cut the agency's expected return from legal conflict and there would still be a

value of the sanction (albeit larger) such that the agency would not mount a defense if the regulation were challenged.

Proposition 2. *When firm litigation effort reduces the marginal productivity of agency litigation effort, there must exist some level of compliance cost $c_{\max}$ such that for any given agency benefit B , the agency will choose the regulatory option that realizes that benefit at cost $\underline{c} = \min \{c \geq c_{\max}\}$.*

Proof. To establish the Proposition, note that the slope of the agency's reaction function is given by $dL_a / dL_f = -r_{12} / r_{11}$. By the assumption that $r_{11} > 0$, $dL_a / dL_f > 0$ as $r_{12} < 0$. Thus if firm litigation effort reduces the marginal effectiveness of agency litigation effort—in the precise sense that $r_{12} > 0$ —then as the firm's effort increases, the agency's effort level falls. Since the first order condition for problem (3) implies that $\partial L_f / \partial c > 0$, imposing a very high compliance cost on the firm—which quite intuitively increases the firm's optimal level of litigation effort—it may have the perverse effect of lowering the equilibrium level of agency litigation effort and hence also the equilibrium probability that the regulation is upheld rather than vacated by the court. That is, whenever $r_{12} > 0$, it will be the case that $r(c_l) < r(c_h)$, so that the regulation has a better chance of being upheld by the court when firm compliance cost is low versus high.

It is not necessarily reasonable to think that for all litigation effort levels $r_{12} > 0$. Since the firm is in the position of a plaintiff attacking the promulgation process or substance (about this distinction, more later) of the regulation, the marginal productivity of agency litigation effort may bear a rather complex stepwise relationship to firm effort levels. To see this, observe that if the firm does very little other than file the case, then the first little bit of agency effort brings a large return, with further effort levels having 0 marginal product. If the firm does a bit more, then agency effort will be increasingly productive even longer, although marginal productivity still will fall to 0 beyond some point (after which all the firm's arguments have been addressed and refuted). In this very plausible model of the interaction effects of litigation effort, for low levels of firm effort, there is a discontinuity in the marginal productivity of agency effort. For higher levels of firm effort, the marginal productivity of low levels of agency effort will fall even though the marginal productivity of higher levels of effort increases (that is, $r_{12} < 0$ for sufficiently high L_f and L_a).

Even under this more plausible construction (that r_{12} is not monotone in L_a), although high levels of firm effort indeed would increase the marginal productivity of relatively high levels of agency effort (above the level of 0 that they would otherwise have), high firm effort

would so lower the marginal productivity of agency effort at lower levels that the equilibrium agency effort level will fall as firm effort increases. Thus even if we were to allow this more complex interaction between firm and agency litigation effort levels, it would remain true that beyond some point, increasing regulatory toughness—the compliance cost c —would induce the firm to expend so much effort in seeking judicial reversal of the regulation that the agency's probability of surviving judicial review would fall. Putting aside the intermediate, political contest stage of the game for the moment, this would imply that the agency might well be better off choosing a regulatory option with a lower net benefit to it, but lower compliance cost, because the expected net benefit to the agency—the benefit discounted by the probability that the regulation will survive judicial review—will be higher. In this way, the possibility of judicial review itself forces an agency to indirectly internalize the cost it imposes on the firm.

This analysis holds regardless of whether or not the agency has gained precise knowledge of the firm's compliance cost from firm behavior at the earlier, political contest stage of the game. In the case of imperfect information by the agency, one may simply think of the agency as choosing between regulatory alternatives with non-overlapping cost distributions. It remains true that in choosing between these distributions, the agency must take into account the possibility that a higher cost, albeit higher benefit distribution, will provoke the firm to spend more on litigation, which may lower the agency's expected net return from regulating.

2. Equilibria in the Lobbying Contest and Promulgation Decision

Because I have assumed away the possibility that the regulation is modified by the agency as a response to political challenge, the political contest directly affects only the agency's payoff, lowering the net benefit to the agency by $D(e_a, e_f)$. Under the assumption that $D_l < 0$, agency lobbying directly benefits the agency by decreasing the political penalty and hence increasing the agency's net benefit $B - D$. For the firm, by contrast, spending a positive amount on lobbying is valuable only through its indirect effects in either causing the agency to drop the regulation (the corner solution) or spend less effort in defending it.

As with the final stage, there are a variety of potential equilibria. The first, the fully interior solution, arises when the agency will finalize regardless of firm lobbying expenditure (because the gross benefit B is very large relative to the maximum potential penalty D , and the

other issues in positive political theory besides this one.

A first step would be to analyze, more systematically, the dependence of the equilibria in the benefits and cost-benefit scenarios on the values of B , D , r , and I . What combinations of parameters prompt the agency to sort between welfare-increasing and welfare-decreasing directives in the two scenarios? Johnston's model shows that it is *possible* for an agency, operating under a benefits statute, to issue those and only those regulations that are cost-benefit justified. The model also demonstrates that it is *possible* for an agency, operating under a cost-benefit statute, to fail thus to distinguish between regulations. But it would be nice to know whether these results are relatively common or relatively rare given the possible combinations of model parameters.

Second, it would be interesting to know whether the implications of Johnston's analysis are robust across relatively small-scale changes in the model. One change, already suggested, is to model the total costs of regulation as a sum of compliance costs plus other costs, such that courts engaged in CBA care about total costs, but firms care only about compliance costs and have asymmetric information only with respect to these. Another relatively small-scale change is to vary the mechanics of the political sanction. The political sanction (D), as currently modeled, is contingent on the agency's finalizing its directive, but not contingent on the directive being upheld by the court. This is a plausible representation of how political sanctions work. However, it is no less plausible to think that sanctions are inflicted noncontingently on agencies that propose regulations costly to firms and no less plausible to think that sanctions are inflicted only if the regulation is both finalized and upheld. In other words, the political sanctioning process plausibly could be *cruder* than Johnston imagines, or more *refined*. Political principals lobbied by irate firms might sanction agencies for even *proposing* costly regulations (perhaps because it is too costly for the principals to monitor agency behavior, and the practice of principals is therefore to impose sanctions noncontingently, with the amount of the sanction dependent on firm and agency lobbying effort).³⁹ Alternatively, political principals could sanction agencies

³⁹ Johnston briefly considers and rejects this possibility. As he puts it: "Congress loses a substantial amount in controlling agency rulemaking if its sanctions are triggered by proposed as well as finalized rulemaking." Johnston, *supra* note 2, at 1385. But noncontingent sanctions still could be beneficial to Congress—for example, Congress could use the threat of noncontingent sanctions to deter the initial promulgation of rules that frustrate congressional preferences or to deter the promulgation of rules that prompt pre-promulgation lobbying by firms—and it is not obvious that the marginal benefit of contingent sanctions (to Congress) would justify the marginal cost (to

only for making choices that actually *cause* an increase in a firm's compliance costs; judicial invalidation prevents an agency's regulatory choice from having this causal impact.

It would be interesting to know how effective the benefits and cost-benefit statutes are in sorting between welfare-increasing and welfare-decreasing directives, given the small-scale modeling changes just described. Note that the change in the contingency of the sanction leads to substantial changes in the parties' incentive structure and behavior. If the sanction is noncontingent, then—once the regulation is adopted—the firm would have no noninformational incentive to expend resources on lobbying, since an increase in the firm's lobbying effort would have no effect on the agency's expected benefit from finalizing as opposed to withdrawing the regulation. If firms will not lobby at the lobbying stage, they cannot credibly threaten to lobby at the initial stage. In short, assuming I is zero or small enough so that the agency knows up front whether the firm is low or high cost, firms and agencies will engage in no lobbying at all; litigation then becomes the only mechanism by which to “sort” between low-cost and high-cost firms. If I is large, but the sanction is noncontingent, then firms might lobby to communicate their cost structure to the agency. Lobbying in this case is like burning dollars—although with the difference that informational lobbying, unlike informational dollar-burning, imposes costs on the agency and thus the prospect of informational lobbying could deter the agency from issuing the regulation in the first place.

Third, it would be interesting to vary Johnston's model in larger ways. The firm and the agency might be uncertain, either symmetrically or asymmetrically, about other model parameters and variables beside compliance cost—for example, about the size of the benefit (B) produced by the regulation, or about the amount of lobbying that the parties engage in. The political principals could have their own preferences; rather than mechanistically imposing a sanction whose magnitude depends solely on the amount of firm and agency lobbying, political principals might be seen either to be pro-regulatory “Democrats” who aim (like the agency) at maximizing gross benefits or more measured “Republicans” who aim at maximizing net benefits, subject to the political constraint that they respond in some way to firm or agency lobbying.⁴⁰ The model might be amended to give the

Congress). The issue merits more analysis.

⁴⁰ See, e.g., Daniel B. Rodriguez, *The Positive Political Dimensions of Regulatory Reform*, 72 WASH. U. L.Q. 1, 52-91 (1994) (surveying positive political theory scholarship with

$$E_f < G(c_l) + e_f^l(G(c_l)), \quad (5)$$

where $G(c_l) = [1 - r(L_a(c_l), L_f(c_l))]c_l + L_f(c_l)$ gives the firm's optimal expected litigation cost (expenditure plus expected compliance cost) given its known actual compliance cost and e_f the pooling level of lobbying effort. Now if there exists an e_f such that inequality (5) holds, then the high-compliance-cost firm must also be better off in the pooling equilibrium than were it to separate and reveal its type (for this reason, the pooling equilibrium is stable in the sense of the Perfect Sequential Equilibrium stability notion).² The reason is that by construction, the hypothesized equilibrium induces the agency to drop the regulation, which is the best outcome. Now observe that both types of firm are better off in any such pooling equilibrium, the lower is the level of lobbying effort that they each choose, e_p , the lobbying expenditure is bounded from below only by the constraint that the political sanction it generates, $D(e_p)$, be sufficiently high to cause the agency to drop the regulation when it does not learn that compliance cost is low. Hence we have established the following:

Proposition 3. *Whenever the agency will drop the regulation if lobbying fails to identify the firm's actual compliance cost, the unique BPE involves both types of firms making the minimal lobbying expenditure necessary to generate a political sanction that will induce the agency to drop the regulation.*

Proof. The countersituation obtains when the agency will finalize the regulation if it fails to learn firm type through the lobbying expenditures. In this event, the high-compliance-cost firm—which generates a lower expected payout to the agency from the post-regulation litigation game—has an incentive to reveal its type to induce the agency to drop the regulation. Such a high-cost firm is better off with such a separating strategy for any lobbying expenditure e_f^h with the property that:

$$e_f^h < e_f(G(c_h)) + G(c_h), \quad (6)$$

But for the low-cost firm to be better off allowing its type to be revealed, it must be that

$$e_f^h > e_f(G(c_l)) + G(c_l).$$

² A concept due to Sanford Grossman & Motty Perry, *Perfect Sequential Equilibrium*, 39 J. ECON. THEORY 97 (1986).

firm will challenge when the agency finalizes (c is large)). In this case, the equilibrium lobbying effort levels are given by:

$$e_a^* = \operatorname{argmax} \{ [1 - r(L_a^*, L_f^*)][B - D(e_a^*, e_f^*)] - e_a - L_a^* \}, \text{ and} \\ e_f^* = \operatorname{argmin} [1 - r(L_a^*(D(e_a^*, e_f^*)), L_f^*)c_i + e_f + L_f^*,$$

where I have written the firm's objective function to clarify that the firm chooses its lobbying effort level knowing that through $D(e_a, e_f)$, its lobbying effort influences the agency's optimal litigation expenditure in the next stage of the game, and where L_f^* and L_a^* respectively solve problems (3) and (4) above,¹ and where e_f^i denotes the effort level chosen by a firm with compliance cost i , for $i = l, h$.

The agency comes to the lobbying stage with incomplete information as to firm cost and hence as to whether or not the firm will challenge or comply if the regulation is finalized. The agency's type—the maximum penalty D consistent with finalization—is common knowledge. If the agency knows that the firm will not challenge the regulation, then whenever $B - D > 0$, the agency will proceed to promulgate or finalize the regulation. Thus even a low cost of compliance firm may have an incentive to pool with the high cost of compliance firm in choosing a lobbying effort e_f that conceals its type, if such concealment forestalls the agency from finalizing the regulation.

To outline when such a pooling equilibrium might obtain, observe that from the previous Section, we know that if $r_{12} > 0$ (so that firm litigation expenditure reduces the marginal effectiveness of agency litigation expenditure) then there must exist some value of expected firm compliance cost such that the agency will concede the litigation for any level of expected compliance cost above this level, and, anticipating this, drop the regulation at the lobbying stage. A low-compliance-cost firm will be better off with such a mimicking strategy whenever:

¹ The possibility of corner solutions at the final, legal challenge stage makes lobbying important as a way to convey, or conceal, information. Pooling incentives at the lobbying stage may arise even when there is an interior solution to the final stage. Because the fact that $\partial L_f / \partial c > 0$ is common knowledge, when $\partial L_a / \partial L_f > (<) 0$, it is possible that a high- (low-) compliance-cost firm will have an incentive to mimic the low (high) lobbying expenditures of a low- (high-) compliance-cost type to trick the agency into making suboptimally low litigation effort at the final, legal challenge stage. Without any particular assumption on sign $\partial L_a / \partial L_f$, I focus on incentives in the corner solution case.

By monotonicity, it must be that $G(c_h) > G(c_l)$ and $e_f(G(c_h)) > e_f(G(c_l))$.

This establishes the following:

Corollary. If the agency will drop the regulation if it learns that the firm is a high-compliance-cost type, then the unique BPE involves a separating lobbying expenditure of $e_f(G(c_l)) + G(c_l) + \varepsilon$ by the high-cost firm and $e_f(G(c_l)) + G(c_l)$ by the low-cost firm.

In other words, the regulation-detering lobbying expenditure by the high-compliance-cost firm is equal to the expected total cost, including lobbying expenditure, to the low-cost firm that will be regulated in equilibrium. As a rough guide, the total cost of regulation is equal to the number of proposed regulations (whether or not finalized) multiplied by the total cost of finalized regulations to covered firms.

The agency's lobbying expenditure does not reveal information, for under my assumptions the agency does not have any information to reveal. Rather, since $\partial D / \partial e_a < 0$ and $\partial D / \partial e_f > 0$, if the agency does not make a sufficiently large expenditure on lobbying, then it may incur such a large political sanction that finalization of the regulation, given expected legal challenge, is not credible. By increasing its own expenditure, the agency makes the pooling equilibrium much more costly, and should at least be able to deter the low-cost firm from pursuing this. The agency is better off because it gets information and then uses it to cut its costs of wasted regulation.

C. *Strategic Incentives for Agency Cost-Benefit Analysis Under a Benefits Statute*

Now suppose that at cost $I > 0$, the agency can gain perfect information as to the firm's actual compliance cost. There are several possible ways that the agency can benefit from acquiring such information:

1. In the final, legal challenge stage, the firm's optimal litigation expenditure is given by $L_f(c, L_a)$, so learning c allows the agency to make a full-information, expected-payoff-maximizing litigation expenditure in this final stage. The magnitude of the agency's benefit from learning c depends upon the sensitivity of the firm's optimal litigation effort to the firm's compliance cost. By the argument made earlier, it is quite likely that the function $\partial L_a^* / \partial L_f^*$ will take an S-shaped form, with both a convex and a concave portion. Since L_f^* is monotonically increasing in c , it is possible that by spending $I > 0$ and learning the actual magnitude of the firm's compliance costs, the agency's expected litigation expenditure will fall. This occurs when

the possible realizations of the firm's cost are high enough to put the agency in the concave portion of its response function. Rather than spending the certain amount $L_a^*(L_f^*)$ —the expenditure that is optimal given the firm's expected expenditure $L_f^* = P_l L_f^{l*} + P_h L_f^{h*}$ —the agency spends either $L_a(L_f(c_l))$, or $L_a(L_f(c_h))$, and by concavity its expected expenditure falls. Hence the litigation stage benefit to the agency from learning the firm's compliance cost depends on the magnitude of the compliance cost: the higher the possible realizations of firm compliance cost, the more likely it is that the agency will actually realize a net cost savings by spending I to learn the firm's compliance cost.

2. The preceding implicitly assumes that the agency will defend the regulation if challenged even if it does not know the firm's compliance cost. By learning the firm's compliance cost before the lobbying stage of the game, the agency effectively eliminates the informational value of lobbying expenditures. That is, the firm's incentive to use lobbying expenditure as a way respectively to conceal (if low) or reveal (if high) its compliance-cost type vanishes when the agency already has this information. The only function of lobbying expenditures is to increase the cost D to the agency of finalizing the regulation. The benefit to the firm from so doing is likely to exhibit a discontinuity. For each compliance-cost type, $i = l, h$, there is a regulatory penalty D_i^* such that the agency will drop the regulation for any $D > D_i^*$ with $D_h^* < D_l^*$. Below this threshold, increases in the agency's political penalty D indirectly benefit the firm because reductions in the agency's net benefit from regulating reduce its optimal litigation expenditure, reducing the firm's expected litigation stage cost (litigation cost plus expected compliance cost). Because, however, the agency knows the firm's actual compliance cost, the low-cost firm's level of regulation-killing lobbying expenditure increases, while the high-cost firm's level falls. The low-cost firm can no longer free-ride off the expected high litigation expenditures of the high-cost firm. Conversely, the high-cost firm is no longer effectively subsidizing the low-cost firm.

To be more precise, when the agency would drop the regulation in the absence of precise knowledge of the firm's compliance cost, it must drop the regulation when it learns that the firm is high cost. In this case, the agency drops the regulation as soon as it learns that the firm is high cost and lobbying never occurs. The low-cost firm is left to lobby on its own and is strictly worse off than it was under agency ignorance. A direct implication is that in industries where there are

both high- and low-compliance-cost firms, the low-compliance-cost firms have an incentive to prevent the agency from acquiring verifiable information as to firm cost, even if this means obstructing disclosure of costs by high-cost firms.

If the agency would drop the regulation only if it learns that the firm has high compliance cost, then the high-compliance-cost firm again benefits greatly by agency information acquisition. It does not need to lobby at all to deter regulation. In the separating equilibrium, the low-cost firm cannot kill regulation in any event, and so that firm already was choosing its lobbying expenditures solely for its indirect benefit in weakening the agency's effort level at the judicial review stage. In this case agency information acquisition leaves the low-cost firm's payoff unchanged.

D. *The Regulation Game Under a Substantive Cost-Benefit Statute*

Under a substantive cost-benefit statute, the probability that the regulation is vacated by the court on judicial review is given by $r(L_a, L_f, B/c)$ with $r_1 < 0$, $r_{11} > 0$, $r_2 > 0$, $r_{22} < 0$, $r_3 < 0$, $r_{33} > 0$, $r_{13} < 0$, and $r_{23} < 0$. That is, under a substantive cost-benefit statute, as the probability of judicial reversal falls, the higher is the ratio of actual regulatory benefits to regulatory costs. Moreover, my assumptions about the cross partials mean that the higher is the ratio of benefits to costs, the bigger (smaller) is the marginal productivity of agency (firm) litigation effort. Now in general courts are imperfect verifiers of both costs and benefits, and so it is reasonable for this general case to believe that $r(\cdot)$ is continuous. When the court perfectly and costlessly observes both costs and benefits, however, $r(\cdot)$ is a simple step function, with $r = 0$ for $c < B$ and $r = 1$ for $c > B$. This case provides a benchmark for further analysis, and I begin with a significant fact about behavior under such a regime.

1. Perfect and Costless Judicial Review

The first thing to notice is that the high cost of compliance, c_h type firm will win with probability one at the final judicial review stage, and when this stage is costless, there is no reason for such a firm to spend anything on lobbying. Conversely, the low cost of compliance firm always loses on judicial review. Hence if that stage is ever reached, its costs are given by c_l . For this reason, at the prior, lobbying stage, the agency's problem becomes:

$$\text{Max } \{0, \max_{e_i} (B - D(e_i, e_j))p_i\}, \quad (7)$$

where we recall that p_i is the agency's prior probability that the firm has low compliance cost (and will thus actually be regulated). Under my maintained assumption that the regulation cannot be modified in response to lobbying, the only reason for the low-cost firm to spend any positive amount on lobbying is if the lobbying process is so responsive to the firm's efforts that the firm can drive $B - D$ to 0. The firm chooses this regulation-killing lobbying strategy if and only if the regulation-killing lobbying level (which we will denote by $\hat{e}_f$) is such that $\hat{e}_f < c_i$ (that is, it is cheaper for the firm to lobby and kill the regulation than to comply). If, conversely, the firm cannot drive the net regulatory benefit to 0 via lobbying, it will spend nothing on lobbying and from (7), the agency's payoff is given by $p_i B$. In this case, since judicial review is a costless way for the agency to screen regulatory targets by their compliance costs, there is no reason for the agency to undertake any positive investment I to do such screening before it promulgates the regulation. This establishes the following:

Proposition 4. *Under perfect and costless judicial review of a substantive cost-benefit statute, the agency proceeds with regulation whenever there is any positive probability that the regulation is cost-benefit justified, unless firm lobbying is so cheap and effective that a low-compliance-cost firm is better off lobbying to kill the regulation than it would be by complying.*

2. Costly and Imperfect Judicial Review

Under costly and imperfect judicial review, the $r()$ function takes the more general form specified at the beginning of this Section. Observe that $B/c \in [0, \infty]$. For comparative purposes, I take the function $r(L_a, L_p, B/\underline{B})$ —the reversal probability under a benefits statute—as equal to $r(L_a, L_p, B/c)$ for all values of B such that $B/c < B/\underline{B}$, where, as defined above, $\underline{B}$ is the judicially defined level of “significant” or “substantial” benefits required by a benefits statute. To avoid generating results on benefits versus cost-benefits statutes that are merely a tautological consequence of this assumption, I presume that $B/c_i > B/\underline{B}$ but consider both $B/c_h < B/\underline{B}$ and $B/c_h > B/\underline{B}$.

The most important consequence of costly and imperfect judicial review of a substantive cost-benefit statute is that both types of firm are at risk in the final, judicial review stage. By my assumptions on r_3 and r_{23} , the low-compliance-cost firm is more at risk but also sees the marginal productivity of its litigation efforts fall (that is, when B/c increases, the $r(L_p)$ function shifts down and its slope decreases). Since

the stakes are the firm's compliance costs, we can unambiguously say that the low compliance cost firm will always have a lower optimal litigation effort than the high-compliance-cost firm. It is not possible, however, to say which type of firm will have higher total expected costs at the litigation stage. In general, the more accurate is the process of judicial review—in the precise sense that $|r_j|$ is large—the more likely it is that the high-compliance-cost firm will have lower expected equilibrium costs at the judicial review stage than will the low compliance cost firm, and the more likely that the low compliance cost firm will simply comply rather than seek judicial review.

Because the impact of the actual benefit/cost ratio on the firm's expected total cost at the judicial review stage is ambiguous, so too are the relative lobbying efforts that low versus high-compliance-cost-type firms make in anticipation of the judicial review stage. The one clear result is that unlike the perfect and costless cost-benefit judicial review—where only the low-cost firm has an incentive to lobby—in the general case of costly and imperfect judicial review of a substantive cost-benefit statute, both types of firms will in general have an incentive to lobby. Whether lobbying is informative depends upon precisely the same variables considered above in analyzing the benefits statute.

It is possible to compare results under a cost-benefit statute with those under a benefits statute only if we make specific assumptions about how the magnitude of gross benefits affects judicial review under a benefits statute and how the magnitude of net benefits affects judicial review under a cost-benefit statute. I consider only one case: where the substantive standard $\underline{B}$ that courts use in considering gross benefits under the benefits statute is also the same substantive standard employed in considering net benefits under a cost-benefits statute.⁵ The interesting cases arise when $B/c < \underline{B}$ but $B > \underline{B}$. This is most likely to arise, of course, when c is high, so I consider the situation in my two type model where $B/c_i > \underline{B}$, and $B > \underline{B}$, but $B/c_h < \underline{B}$. Given the assumptions on the judicial review function, $r(\cdot)$, that I have made above, the move from a benefits statute to a cost benefits statute has, *ceteris paribus*, increased the expected total cost at the judicial review stage for the low-compliance-cost firm and decreased it for the high-compliance-cost firm. Hence, optimal lobbying expenditures increase for the low-compliance-cost firm and fall for the high-compliance-cost

⁵ It may be more customary to think of the cost-benefit standard not as some value $\underline{B} > 1$, but simply as requiring $B/c \geq 1$, which implies $\underline{B} = 1$. The results obtained here carry over directly to this special case.

firm. In fact, the firms may now effectively reverse type at the lobbying stage: the cost-benefit statute may make the expected total costs at the judicial review stage higher for the low-compliance-cost firm than for the high-compliance-cost firm, so that the low-compliance-cost firm lobbies more than does the high-compliance-cost firm. Short of such a reversal, by referring back to inequality (5), we can see that if there exists a level of type-concealing lobbying expenditure that causes the agency to withdraw the regulation (by reducing its expected benefit to 0), then moving from a benefits to cost-benefit statute has increased the low-compliance-cost firm's incentive to make such a type-concealing lobbying effort. Hence if the cost-benefit regime cannot be accurately reviewed by courts, then it may simply increase the incentive for uninformative, regulation-killing lobbying by low-compliance-cost targets.

E. *The Regulation Game Under Procedural Cost-Benefit Statutes*

Under a procedural cost-benefits statute, the reversal probability is given by $r(L_o, L_p, I)$ with $r_3 < 0$, $r_{33} > 0$, $r_{13} < 0$, and $r_{23} < 0$. That is, by spending a positive amount I to learn the firm's compliance cost before officially promulgating the regulation, the agency increases the marginal productivity of its litigation effort at the judicial review stage and reduces the marginal productivity of the firm's litigation effort at that stage.

1. Perfect Ex Post Judicial Verification of Ex Ante Agency Balancing

In this first, benchmark case, the court can costlessly and perfectly verify in ex post judicial review whether or not the agency has invested the time and effort ex ante to learn about compliance cost and balance compliance cost against its perceived benefit. If $I > 0$, then the agency wins on judicial review with probability 1 (that is, $r = 0$); if $I = 0$, then the agency certainly loses at that stage ($r = 1$). It provides a benchmark to then consider the effect of increasingly imperfect and costly ex post verification of ex ante agency balancing.

It is immediate that the agency will never regulate if it does not invest in learning firm type ($I = 0$) since both types of firm are sure to win on judicial review and the agency is sure to lose. When $I > 0$, the agency is sure to win and the firm, regardless of its type, is sure to lose. These certain outcomes at the judicial review stage create a sharp discontinuity in incentives at the lobbying stage, as summarized in the following:

Proposition 5. (1) Under a perfect and costless procedural cost-benefit statute, when $I \geq B$, the agency does not regulate. When $I < B$, the agency regulates whenever it is cheaper for the firm to comply than to kill the regulation through lobbying; and, (2) the perfect procedural cost-benefit statute maximizes the productivity of agency lobbying and minimizes the productivity of firm lobbying.

Proof. Let e_f^h and e_f^l denote the optimal lobbying effort by the high- and low-cost type firm, and e_a^* the optimal lobbying effort by the agency. For the firm and agency, we have that:

$$\begin{aligned} e_f^i &= 0 \text{ if } B - D(e_f^{i*}, e_a^*) > 0, \text{ and} \\ e_f^i &= e_f^{i*} \text{ if } B - D(e_f^{i*}, e_a^*) < 0 \text{ and } e_f^{i*} < c_p, \text{ where} \\ e_f^{i*} &= \min_{e_f^i} \{e_f^i \ni [B - D(e_f^i, e_a^*) < 0]\} \\ e_a^* &= \min_{e_a} \{e_a \ni [B - D(e_f^*, e_a) - I > 0]\}, \text{ and} \\ e_f^* &= p e_f^{l*} + p_h e_f^{h*}, \end{aligned} \quad (8)$$

Because I have assumed that the regulation cannot be modified in response to firm lobbying, if the firm cannot kill the regulation—given the agency's optimal lobbying effort e_a^* —then there is no reason for the firm to spend any amount lobbying, and so the firm simply complies whenever the agency regulates. Even when it can kill the regulation, the firm complies when the agency regulates if complying is cheaper than killing the regulation. The agency regulates only if it expects a net positive return from regulating given optimal firm behavior and given also the cost I of the ex ante balancing it needs to do to ensure success at the judicial review stage.

To see the second part of the proposition, recall that given that it has proposed the regulation and that lobbying cannot kill the regulation (the corner solution is ruled out) the agency chooses its lobbying effort under a benefits statute to solve:

$$\max_{e_a} (1 - r(L_a, L_f))(B - D(e_a, e_f)), \quad (9)$$

Since $0 < r < 1$, the interior solution to (9), e_a^* is at its maximum when $r = 0$. That is, certain success at the judicial review stage maximizes the agency's incentive to lobby. The procedural cost-benefit statute thus maximizes the agency's incentive to lobby for regulation

(relative to a benefits statute).

To see the comparison for the firm, let the regulation killing corner solution e_f^{ic} for a firm under the benefits statute be defined by:

$$\min_{e_f^i} \{e_f^i \ni [(1 - r(L_a(D(e_a, e_f^i), L_f) (B - D(e_a, e_f^i))))] = 0\}, \quad (10)$$

Expression (10) has been written to make explicit the fact that by influencing $D(e_a, e_f)$, the firm's lobbying effort indirectly benefits the firm by lowering the agency's optimal litigation effort (with $\partial L_a / \partial D < 0$ and $\partial D / \partial e_f$, we have $\partial L_a / \partial e_f < 0$). Under the perfect and costless procedural cost-benefits statute, by contrast, $L_a = L_f = r = 0$. The solution must be higher—more costly—under a procedural cost-benefit statute than under a benefits statute.

2. Costly and Imperfect Ex Post Judicial Verification of Ex Ante Agency Process

In the more general case, by investing $I > 0$ the agency does not guarantee success at the judicial review stage, but increases the chances that the regulation will be upheld and also increases the marginal productivity of agency litigation effort at that stage. The first best result occurs when the agency invests I but regulates if and only if the firm's compliance cost is low. The problem with a purely procedural cost-benefit statute is that the firm's compliance cost c_i is not legally relevant to whether the agency action is upheld. Whether the agency made the investment I in learning compliance cost is relevant under this statutory regime, but there are conflicting effects: the bigger in absolute value are the cross partials r_{13} and r_{23} and the partial r_3 given above, the bigger is the incentive for the agency to invest I , but also the greater its incentive to regulate no matter what the firm's compliance cost. Hence the only general result is the following:

Proposition 6. *The socially optimal procedural cost-benefit regime is the one that attaches the most weight to agency process while still being sufficiently sensitive to litigation effort at the judicial review stage that the agency will not regulate if it learns that compliance cost is high.*