COMMENTARIES

THE POSITIVE POLITICAL THEORY OF COST-BENEFIT ANALYSIS: A COMMENT ON JOHNSTON

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The legal institution of cost-benefit analysis (CBA) may end up producing outcomes with lower social welfare (overall well-being), relative to the outcomes that would have been produced had the institution not been in place. This is easy to see, in a general way. What are much harder to understand are the various and potentially interacting mechanisms that generate slippage between the internal aim of CBA and its actual outcome, and to determine which institution—CBA, risk-risk analysis, benefits-only analysis, benefits-only analysis constrained by technological feasibility, or some other institution¹—in fact maximizes social welfare within a given regulatory domain. Jason Johnston's article, *A Game Theoretic Analysis of Alternative Institutions for Regulatory Cost-Benefit Analysis*,² sheds much light on these issues. More generally, the article constitutes a substantial contribution to the positive political theory of regulation. My brief Commentary, however, will focus on what Professor Johnston's article says or implies about the welfare effect of CBA and its alternatives.

CBA might reduce welfare because: (1) CBA has direct procedural costs. Time and money need to be expended to perform a cost-benefit analysis.³ (2) Agencies are epistemically imperfect. They might make frequent mistakes in performing CBA and fewer mistakes in applying some other test that is reasonably well correlated with

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¹ See generally LESTER B. LAVE, *THE STRATEGY OF SOCIAL REGULATION: DECISION FRAMEWORKS FOR POLICY* 8-28 (1981) (describing possible regulatory decision procedures in the area of social regulation).

² Jason Scott Johnston, *A Game Theoretic Analysis of Alternative Institutions for Regulatory Cost-Benefit Analysis*, 150 U. PA. L. REV. 1343 (2002).

³ Matthew D. Adler & Eric A. Posner, *Rethinking Cost-Benefit Analysis*, 109 YALE L.J. 165, 217-18 (1999).

overall well-being.⁴ (3) Agencies may seek to maximize goals other than the goals specified by statute, and it may be harder for political principals—namely Congress and the President—to monitor agency compliance with CBA than with other, clearer goals that are reasonably well correlated with overall well-being.⁵ (4) Even an epistemically perfect and faithful agency that could perform CBA with zero direct costs would not necessarily produce welfare-maximizing outcomes, given “wealth effects.” CBA evaluates outcomes by aggregating the amounts that individuals are willing to pay or accept, in dollars, for the outcomes. One person, however, could be willing to pay more for an outcome than another would require to accept it, even though the outcome harms the second more than it benefits the first.⁶

Eric Posner and I describe these sources of slippage between CBA and social welfare in our article, *Rethinking Cost-Benefit Analysis*.⁷ Johnston identifies a very different mechanism that bears on the welfare comparison of CBA and alternatives, namely *firm lobbying and litigation*, which is in turn driven by—and potentially revealing of—firms’ compliance costs. At the heart of Johnston’s article is a formal game-theoretic model with roughly the following structure. An agency decides whether or not to issue a firm-specific regulatory directive. If the agency issues the directive, the regulated firm can lobby for Congress or the President to impose political sanctions on the agency and, later, can litigate to overturn the directive. The agency can drop the regulation after the lobbying stage or finalize the regulation and defend it in court if the firm challenges it there. Both the firm and the agency can expend varying amounts on lobbying and litigation, which will in turn influence the size of the political sanction imposed on the agency and the probability of success in court.⁸ Johnston analyzes firm and agency behavior under two scenarios: first, under a “benefits statute,” where the agency is instructed to maximize some statutory benefit (such as health or environmental purity), and the regulated firm cannot judicially challenge the directive on cost-benefit grounds;⁹ and

⁴ *Id.* at 217.

⁵ *Id.* at 218.

⁶ *Id.* at 191-94; Matthew D. Adler, *Incommensurability and Cost-Benefit Analysis*, 146 U. PA. L. REV. 1371, 1398-1401 (1998); Matthew D. Adler & Eric A. Posner, *Implementing Cost-Benefit Analysis When Preferences Are Distorted*, 29 J. LEGAL STUD. 1105, 1122-24, 1136-41 (2000).

⁷ Adler & Posner, *supra* note 3.

⁸ Johnston, *supra* note 2, at pt. I.A.

⁹ *Id.* at pt. I.B. Johnston’s model includes the possibility of a statutory benefits threshold, such that directives with benefits below the threshold are subject to judicial

second, under a substantive "cost-benefit statute,"¹⁰ which includes a judicially enforceable requirement that the costs of agency regulation not exceed the benefits, so that the regulated firm will prevail at the litigation stage for certain, or at least probabilistically, if the firm's costs of complying with the regulatory directive are greater than the directive's benefits.

Crucially, this model does *not* presuppose any of the sources of slippage between CBA and social welfare that Eric Posner and I described. The agency can costlessly calculate the benefits of the directive. In addition, at least under certain conditions, the agency is able to determine costlessly the firm's compliance costs.¹¹ Thus, at least under certain conditions, agency CBA has zero direct costs and the agency is epistemically perfect. Further, and interestingly, the agency is public spirited and does not "shirk" from statutory goals in a radical way. The agency genuinely seeks to maximize the statutory benefit, rather than seeking to maximize its budget, its power, or its own view of good policy.

Under the "benefits statute" scenario, the agency does not shirk at all: the statute instructs the agency to maximize some benefit type, which is exactly what the agency prefers to do. Under the "substantive cost-benefit statute," the agency shirks insofar as it fails to internalize the statutory cost constraint, but remains genuinely committed to the primary goal of the statute, namely to advance health, environmental purity, safety, or whatever other benefit type is specified by the statute. Finally, "wealth effects" have no essential role in Johnston's model. It is quite consistent with the model to assume that the numerical magnitudes that figure therein, and that drive agency and firm behavior—the benefit from the regulation (B), the political sanction (D), the lobbying costs (e_f and e_a), the litigation costs (L_f and L_a), and the compliance cost (c)—are measured on a scale of interpersonal utility rather than a dollar scale.¹² If so, the proposition that B is greater than c for a given regulatory directive entails that the issuance of the directive—leaving aside lobbying and litigation costs—increases social

invalidation. In my Commentary, I ignore this feature of the model and assume that the threshold is set at zero.

¹⁰ *Id.* at pt. I.C.1. Johnston also models "procedural" CBA. *Id.* at pt. I.C.2. In this Commentary, given space limitations, I do not consider what Johnston says about procedural rather than substantive CBA.

¹¹ This will occur if I is zero up front. *Infra* text accompanying notes 14-15.

¹² See generally ROBIN BOADWAY & NEIL BRUCE, WELFARE ECONOMICS 137-69 (1984) (discussing interpersonal welfare comparisons and describing various scales for measuring outcomes with respect to welfare).

welfare.

Notwithstanding the absence of wealth effects and the existence of epistemically perfect, faithful agencies that can costlessly calculate the benefits and (under some conditions) the costs of regulation, CBA can produce outcomes that are no better than, and perhaps even worse than, the outcomes produced by alternative institutions. How? Let me describe and comment on the dynamics of Johnston's model relevant for my purposes.

(1) *A benefits statute can "sort" between welfare-enhancing and welfare-reducing directives by inducing the agency to promulgate regulatory directives against low-compliance-cost firms but not against high-compliance-cost firms.*

Consider the case of a benefits statute. In this scenario, the parameters of Johnston's model are: B , the benefit from regulating; $D(e_a, e_f)$, a lobbying function that gives the political sanction (D) as a function of agency and firm lobbying effort (e_a and e_f); $r(L_a, L_f)$, a litigation function that gives the probability of judicial reversal of the agency (r) as a function of agency and firm litigation effort (L_a and L_f); and I , the cost to the agency of learning the firm's compliance cost up front. If I is zero, then the agency is epistemically perfect because it already knows B and the model parameters and can (by assumption) costlessly learn the firm's costs. There are two kinds of firms: firms with low compliance costs (c_l), where $c_l < B$, and firms with high compliance costs (c_h), where $B < c_h$.¹³

Assume for now that I is in fact zero; the agency knows the firm's compliance costs up front.¹⁴ Then, given certain values of B , D , and r , the agency will promulgate the directive regardless of whether the firm at hand is low cost or high cost. Given other values of B , D , and r , the agency will *fail* to promulgate the directive regardless of whether the firm at hand is low cost or high cost. But there are some values of B , D , and r such that the agency will promulgate the directive if and only if the firm at hand is a low-cost firm. In this last scenario, the agency is induced to "sort" between cost-benefit-justified and cost-

¹³ Johnston, *supra* note 2, at pts. I.A-B.

¹⁴ In the discussion that follows, I assume that in the limiting case where $I = 0$ and the agency can costlessly learn up front what the firm's compliance costs are, it knows whether the firm is high or low cost prior to issuing the directive. Formally, where $I = 0$ and it would be costless for the agency to learn about compliance costs, then the agency's prior probability that the high-cost firm is indeed high cost is 1, and its prior probability that the low-cost firm is indeed low cost is 1. In effect, where $I = 0$, the agency has perfect information from the very beginning. This assumption simplifies my discussion and, in particular, permits me to separate the effects of lobbying and litigation within Johnston's model from the effect of asymmetric information.

benefit-unjustified directives—to promulgate the former but not the latter—notwithstanding the absence of a CBA requirement in the underlying statute.¹⁵

Why does the “sorting” scenario occur? It occurs because of the effect that firm lobbying and litigation have on the agency’s expected net benefit from enacting the directive, and because high-cost firms have a greater incentive to lobby and litigate than do low-cost firms. Consider the final, litigation stage of the game. An incremental increase in the probability of reversal benefits the high-cost firm more than it benefits the low-cost firm because it generates an incremental reduction in expected cost (the change in probability times the cost of compliance) that is greater for the high-cost firm. As a result, the high-cost firm would spend more at the litigation stage than the low-cost firm. This produces a lower expected benefit for the agency from finalizing and litigating the directive, as Johnston explains:

[T]he 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 regulations¹⁶

Thus the agency, considering whether or not to finalize and litigate the regulation, might determine that the expected benefits of doing so in the case of a low-cost firm are positive, but the expected benefits of doing so in the case of a high-cost firm are negative. Of course, the agency’s expectations about its choice at the finalization stage feed back to its choice at the initial, promulgation stage. Specifically, an agency that expected not to finalize a directive would have no reason to promulgate the directive in the first place.

What about lobbying? Cost differentials generate differential incentives to lobby, just as they generate differential incentives to litigate. The maximum amount the firm is willing to spend at the lobby-

¹⁵ The reader might wonder whether, under a benefits or cost-benefit statute, there is a difference between “sorting” at the promulgation stage and the finalization stage. For example, could an agency be induced to promulgate directives against both low-cost and high-cost firms, but then to refrain from finalizing a directive against the high-cost firm but not the low-cost firm? Given Johnston’s model, at least where $I = 0$ and the agency knows prior to issuing the directive what the firm’s costs are, the finalization/promulgation distinction raised here is not important. Where $I = 0$, the agency finalizes a directive whenever it promulgates it. *Supra* note 14.

¹⁶ Johnston, *supra* note 2, at 1364.

ing stage is its compliance cost since the firm can assure itself of losing no more than that by spending zero on lobbying and litigation. Assume that, by spending its entire compliance cost on lobbying, the low-cost firm would still fail to generate a political penalty sufficiently large to create an expected negative benefit for the agency at the litigation stage. However, if the high-cost firm spends e_h , where $c_l < e_h < c_h$, the sanction thereby generated would deter the agency from finalizing the regulation. The agency, expecting all this at the initial stage, would promulgate a regulation against the low-cost firm but would not promulgate a regulation against the high-cost firm.

Although the effect of lobbying and litigation on agency incentives within Johnston's model are complex—even with the simplifying assumption that the agency is epistemically perfect—the basic point that firm compliance costs affect lobbying and litigation incentives, and thereby might prompt the agency to “sort” between welfare-enhancing and welfare-reducing directives, is intuitive, very important, and quite general.¹⁷ This sorting function of lobbying and litigation would occur across a range of models formalizing agency behavior under a “benefits” statute. For example, imagine an incredibly simple model where the agency decides whether or not to promulgate a directive that realizes some nonzero benefit (B); there is no lobbying stage; if the directive is promulgated and judicially challenged, the firm and the agency must pay a fixed litigation cost (L); and the court reverses the directive with probability r , which is a decreasing function of B . Then if $B(1 - r) < L$ and $r \times c_l < L < r \times c_h$, the agency will promulgate the directive against the low-cost firm but not against the high-cost firm.

Or, imagine a different incredibly simple model where (once again) the agency decides whether to promulgate a directive that realizes some nonzero benefit (B); if the agency promulgates, the firm can lobby at a specified cost (E) and, by doing so, overturn the direc-

¹⁷ Here and below, in discussing whether the benefits statute and the cost-benefit statute do or do not “sort” between welfare-enhancing and welfare-reducing directives, I generally focus on the costs and benefits of the directive itself and—for the sake of simplicity—ignore the additional social costs of lobbying, litigation, and information gathering. Conceivably, an agency might issue and finalize a directive the benefits of which exceed compliance costs, but the benefits of which are exceeded by the sum of compliance costs and agency and firm litigation and lobbying costs. Reciprocally, a statutory framework might induce an agency to refrain from finalizing a directive with negative net benefits, but only by producing lobbying costs greater than the direct cost of enacting the directive. A full social-welfare analysis of the costs and benefits of benefits statutes and cost-benefit statutes would certainly need to consider such possibilities.

tive and trigger the imposition of some sanction on the agency; litigation costs are zero and the epistemically perfect court always upholds the directive. Then if $c_h > E > c_p$, the agency will promulgate the low-cost directive but not the high-cost directive.

(2) *A cost-benefit statute can fail to sort between welfare-enhancing and welfare-reducing directives.*

Consider the case of a cost-benefit statute.¹⁸ In this scenario, the parameters of Johnston's model are B , D , and I as before. Again, there are two types of firms: low-compliance-cost and high-compliance-cost with $c_l < B < c_h$. Assume, as before, that the agency is epistemically perfect ($I = 0$). In the simplest case considered by Johnston, the court is also epistemically perfect and judicial review is costless;¹⁹ in such a case, the court will with certainty uphold the directive against a low-cost firm, and will with certainty overturn the directive against a high-cost firm. Thus, in this simplest case, the agency will never have an incentive to issue a directive against the high-cost firm and will always issue a directive against the low-cost firm (at least assuming that $B - D_{max} > 0$, where D_{max} is the maximum value of the political sanction that might be imposed on the agency). If the agency issues the directive against the high-cost firm, the court will inevitably reverse the directive, regardless of agency or firm litigation or lobbying effort; and so the expected benefit from regulation cannot be greater than zero. If the agency issues the directive against the low-cost firm, then the court will inevitably uphold the directive, regardless of agency or firm lobbying or litigation effort; and so the expected benefit from regulation is no less than $B - D_{max}$.

However, the assumption that judicial review under the cost-benefit statute is perfect and costless is not only "unrealistic,"²⁰ as Johnston notes, but also creates an asymmetry with the benefits scenario, where the court has a nonzero probability of making a mistake, and where this probability is responsive to litigation effort by the firm and agency. Johnston drops this assumption in the course of his analysis, and instead assumes that the probability of judicial reversal of the directive is given by $r(L_a, L_f, B/c)$, where—as in the benefits scenario—an increase in agency effort increases the probability that the court will uphold the directive, an increase in firm effort decreases that probability, and an increase in the benefit/cost ratio increases

¹⁸ See Johnston, *supra* note 2, at pt. I.C.1 (describing the structure and dynamics of his model in the case of a cost-benefit statute).

¹⁹ *Id.* at 1371-73.

²⁰ *Id.* at 1373.

the probability that the court will uphold the directive.²¹ With the model thus specified, all the outcomes possible under the “benefits” statute also are possible here: with some values of B , D , and r , the agency will promulgate directives against low-cost firms but not against high-cost firms. However, with different values of B , D , and r , the agency will promulgate directives against both kinds of firms, and with yet different values of B , D , and r , the agency will fail to promulgate directives against either kind of firm. Because of firm lobbying and litigation, a statute that not only instructs the agency to apply a cost-benefit test, but also makes CBA judicially reviewable, might nonetheless fail to induce the agency to sort between welfare-enhancing and welfare-reducing litigation.

How is *this* possible? The firm, whether low cost or high cost, as under the benefits statute, can increase the probability of reversal at the litigation stage by spending more on litigation. Depending on the “productivity” of firm litigation effort, it could be that the agency’s expected net benefit of finalizing and litigating the directive is negative—even in the case of the low-cost firm. An agency, expecting negative net benefits at the litigation stage, would not promulgate the directive in the first place. Similarly, lobbying might be sufficiently productive of political sanctions that the firm (whether low- or high-cost) could reduce the agency’s expected net benefit at the litigation stage to below zero. The reciprocal situation is also possible. If the reviewing court is sufficiently inaccurate, and Congress and the President are unwilling to impose substantial sanctions on the agency, then the agency might expect to reap positive net benefits from finalizing and litigating a directive against both the high-cost and the low-cost firm, regardless of firm lobbying and litigation effort.

Once more, the point that firm lobbying and litigation could induce the agency to act in ways inconsistent with the underlying statutory standard is intuitive, very important, and very general. It is easy enough to imagine a range of models of agency regulation under a cost-benefit statute—even by epistemically perfect, nonshirking agencies—that would prompt the agency to promulgate, or fail to promulgate, both welfare-enhancing and welfare-reducing regulations.²²

²¹ *Id.* at 1374-75.

²² An important example is Eric A. Posner, *Controlling Agencies with Cost-Benefit Analysis: A Positive Political Theory Perspective*, 68 U. CHI. L. REV. 1137, 1179 (2001), which presents a formal model of regulation where “the introduction of cost-benefit analysis results in . . . more projects being implemented, including projects that fail cost-benefit analysis.”

(3) *Asymmetric information bears upon the institutional analysis: whether "sorting" between welfare-enhancing and welfare-reducing directives occurs under a "benefits" statute or a "cost-benefit statute" may depend upon whether the firm possesses information that the agency lacks.*

Much of the literature on cost-benefit analysis focuses on the implications of generalized uncertainty—for example, on the prediction and monetization of the nonmarket benefits that would flow from environmental, health, or safety regulation.²³ Johnston rightly emphasizes that asymmetric information, rather than symmetric ignorance, may obtain for some categories of costs or benefits. In particular, within his model, the firm knows its compliance costs, but the agency does not initially unless it pays *I* to learn the firm's costs.²⁴ The agency is, to this extent, epistemically imperfect. To see the implications of asymmetric information, assume that *I* is quite large—sufficiently large that the agency would never pay it. Thus, prior to the lobbying stage, the agency does not know the firm's compliance costs. Even so, the level of firm lobbying might reveal whether the firm has high or low costs. If it does not, then the agency, in calculating its expected net benefit from finalizing and litigating the regulation, will need to factor in the possibility that the firm might be high cost. Given this possibility, the expected benefit is lower than it would be (*ceteris paribus*) were the agency sure that the firm was low cost. So, the agency could end up declining to finalize a regulation that it would have finalized (and initially promulgated), had it known the regulated firm was low cost. To put the point a bit more generally, increasing *I* from zero to a high level—under both the benefits statute and the cost-benefit statute—can shift the model from an equilibrium where the agency promulgates and finalizes regulations against only low-cost firms to an equilibrium where it fails to promulgate and finalize regulations against either kind of firm.

Johnston is correct that informational asymmetries must be considered in predicting regulatory outcomes under cost-benefit regimes and alternatives, and that informational asymmetry may have a different effect on these outcomes than symmetric ignorance. Asymmetric

²³ See, e.g., Adler & Posner, *supra* note 3, at 216-38 (discussing the implications of generalized uncertainty for CBA); see also A. MYRICK FREEMAN, THE MEASUREMENT OF ENVIRONMENTAL AND RESOURCE VALUES: THEORY AND METHODS 219-72 (1993) (same); Steven Kelman, *Cost-Benefit Analysis: An Ethical Critique*, REGULATION, Jan.-Feb. 1981, at 33, 36-40 (same); Lester B. Lave, *Benefit-Cost Analysis: Do the Benefits Exceed the Costs*, in RISKS, COSTS, AND LIVES SAVED: GETTING BETTER RESULTS FROM REGULATION 104, 114 (Robert W. Hahn ed., 1996) (same).

²⁴ Johnston, *supra* note 2, at pts. I.A, I.B.2.

information and generalized uncertainty should not be conflated. On the other hand, the importance of asymmetric information for CBA should not be exaggerated. Consider environmental regulation—Johnston's paradigm. Regulatory directives requiring firms to reduce pollution might be specified in general technological terms ("best available technology"), specific technological terms (specifying different technologies for different types of firms and pollutants), performance terms focused on physical compounds (firm emissions of a given compound must not exceed x ppm), or performance terms focused on human risk (firm activities must not impose an incremental fatality risk exceeding x in 1 million).²⁵ Only in the first case would firms plausibly possess private information about the benefits of proposed regulation.²⁶

Indeed, Johnston focuses on asymmetric information with respect to regulatory costs, not benefits.²⁷ Firms plausibly do have asymmetric information with respect to the *direct financial costs* of regulatory directives formulated in technological terms. It is less clear whether firms typically will have asymmetric information with respect to the direct financial costs of regulatory directives formulated in performance terms.²⁸ For example, if the agency requires that firms' emissions of substance S must be reduced to x ppm by year Y , and this requirement is "technology forcing" in the sense that the best technology currently

²⁵ These are hardly the only alternatives. See, e.g., Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21, 21-37, 94-127 (2001) (describing traditional, technology-based environmental regulation and alternatives).

²⁶ Plausibly, at the time of the rulemaking, the proposed regulatees would know the best available technology for controlling the targeted process, while the agency might not.

²⁷ In an extension of his model, Johnston does discuss the possibility that the agency might have better information about benefits than the firm. Johnston, *supra* note 2, at pt. II.B.

²⁸ Cf. WINSTON HARRINGTON ET AL., ON THE ACCURACY OF REGULATORY COST ESTIMATES 5-7, 15, 20-23 (Res. for the Future, Discussion Paper No. 99-18, 1999) (studying empirically the accuracy of governmental estimates of regulatory compliance costs and finding that governmental bodies overestimated compliance costs because they failed to predict the full effect of new technology), available at http://www.rff.org/disc_papers/PDF_files/9918.pdf; Eban Goodstein & Hart Hodges, *Polluted Data: Overestimating Environmental Costs*, AM. PROSPECT, Nov.-Dec. 1997, at 64, 67-69 (discussing how the EPA overestimated compliance costs for its acid rain program because it failed to account for the flexibility of markets to develop cheaper and more efficient cleanup technologies); James K. Hammitt, *Are The Costs of Proposed Environmental Regulations Overestimated? Evidence from the CFC Phaseout*, 16 ENVTL. & RESOURCE ECON. 281, 282-84, 293-97 (2000) (explaining that unpredictability regarding firms' responses to changing legal conditions makes cost estimation uncertain and analyzing specifically the EPA's overestimation of the costs of CFC regulations).

available does not suffice to reduce S emissions to a level of x ppm, then the agency and the firm may be symmetrically ignorant of the direct financial cost of this regulation. Or, if the agency puts in place a performance-based, marketable permit scheme requiring each firm to either (1) reduce its emissions to a given level, or (2) purchase the right to pollute from other firms that have reduced their emissions below that level, then once again no individual firm will have asymmetric information about its compliance cost. That cost will depend on the market price for pollution rights, which in turn depends in large part upon the willingness of *other* firms to supply such rights and on their demand for such rights.²⁹

Finally, it bears emphasis that the direct financial costs of a regulatory directive are only a subset of its total costs. Consider the following taxonomy of costs of environmental regulation, taken from Harrington, Morgenstern, and Nelson.

²⁹ Johnston recognizes that the firm's informational advantage with respect to compliance costs depends on how the agency frames its directive. Johnston, *supra* note 2, at 1411.

Table 1: A Taxonomy of Costs of Environmental Regulation³⁰

DIRECT COSTS
Private Sector Compliance Expenditures
Capital
Operating and Maintenance
Public Sector Compliance Expenditures
Capital
Operating and Maintenance
Government Administration of Environmental Studies and Regulations
Monitoring
Enforcement
Other Direct Costs (Including Negative Costs)
Legal and Other Transactional
Shifted Management Focus
Disrupted Production
Waiting Time
Intermedia Pollutant Effects
Other Natural Resource Effects
Changes in Maintenance Requirements of Other Equipment
Worker Health
Stimulation of Innovation in Clean Technologies
INDIRECT COSTS
General Equilibrium Effects
Product Substitution
Discouraged Investment
Retarded Innovation
Transition Costs
Unemployment
Plant Closures

Public sector compliance expenditures, government administration costs, intermedia and other natural resource effects, effects on worker health, and general equilibrium effects are all cost categories where firms seem unlikely to have better information than agencies.

I do not mean to deny the role of asymmetric information in shap-

³⁰ This table is derived from HARRINGTON ET AL., *supra* note 28, at 8 tbl.1.

ing the outcomes of regulatory institutions, particularly CBA, but rather to caution against overemphasizing that role. A natural refinement to Johnston's model, responsive to this concern, would be the following: make the total costs (c) of a regulatory directive equal to compliance costs plus other costs; assume that firms and agencies both know, or are symmetrically ignorant, with respect to these other costs; assume that firms themselves care about compliance costs, not other costs; make the likelihood of reversal (r) in the cost-benefit scenario a function of the ratio of benefits to total costs, not compliance costs; and evaluate the success of the benefits statute and the cost-benefit statute in sorting between directives that are cost-benefit justified and unjustified in light of their total costs.³¹

(4) *The level of firm lobbying effort may reveal private information, specifically the firm's compliance costs, to the agency.*

One of the great insights of game theory is that actors may find it strategically rational to act in ways that reveal facts which the actors, or some of them, might prefer to conceal. Paradigmatically, this occurs in a "signaling" model through a "separating equilibrium."³² In Johnston's model, it is the low-compliance-cost firm that prefers to conceal its costs from the agency. Under some conditions, the agency does not learn up front what the firm's costs are, but *does* learn these costs at the lobbying stage. More precisely, as Johnston explains:

Suppose that the agency will drop the regulation if and only if it learns that the firm has high compliance cost [and has not learned that up front by spending I]. . . . In this case, the unique . . . 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 . . . 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 . . . than if the low-cost firm were to match the high-cost firm's lobbying expenditure.³³

This is a wonderful formal result, but it is unclear whether the features of the model that produce it are replicated in the real world. There must be some activity, costly to firms, such that (1) high-

³¹ See Johnston, *supra* note 2, at pt. II.B (discussing how mutual agency and firm uncertainty about costs and benefits might be incorporated into Johnston's model).

³² See, e.g., ERIC RASMUSEN, *GAMES AND INFORMATION: AN INTRODUCTION TO GAME THEORY* 205-22 (2d prtg. 1990) (discussing signaling models).

³³ Johnston, *supra* note 2, at 1369.

compliance-cost firms have an incentive to engage in the activity more intensely than low-compliance-cost firms on the assumption that (2) the intensity with which the firm engages in the activity would be known to the agency which (3) would rationally and correctly infer from that the firm's compliance-cost type. The suspect premise here, and a crucial one, is the second: agencies can observe the firm's activity level (in Johnston's model, the firm's lobbying effort), notwithstanding the agency's ignorance of the firm's compliance-cost structure.

But why wouldn't the level of firm lobbying be just as much "private information" to the firm as its compliance-cost level? Agencies do not observe how much firms pay their lobbyists or how much internal staff time is spent on lobbying, and the total level of firm contributions that directly or indirectly benefit an agency's political principals is information which is not available at low cost to environmental and other such regulatory agencies. To be sure, regulatory agencies conceivably could issue subpoenas to firms, requiring firms to disclose their lobbying effort,³⁴ but if this avenue for revealing private firm information is open to the agency, then the agency—at a similar cost, presumably—could issue a subpoena requiring the firm to disclose its compliance cost. Nor of course could a firm, credibly, simply tell the agency what its lobbying expenses are; low-compliance-cost and, therefore, low-lobbying-effort firms would have an incentive to make inflated claims about lobbying effort, which would render all firms' claims incredible.

Finally, there might be some activity, other than lobbying, the intensity level of which is observable (at zero or low cost) by the agency and reveals to the agency the firm's compliance costs (either indirectly, by revealing lobbying effort, or directly). However, I am not sure what that activity would be. More precisely, I doubt whether there is an activity, *internal* to the regulatory process, whose intensity is observable (at zero or low cost) by the agency, and which high-cost firms, in order to communicate their cost structures to the agency, might engage in more intensely than low-cost firms. Firm expenditures on the lobbying of political principals, on litigation, and for that matter on the lobbying of the agency itself during the notice-and-comment process, are not (I would guess) observable by agencies at substantially lower cost than the cost of investigating compliance costs

³⁴ See generally 1 KENNETH CULP DAVIS & RICHARD J. PIERCE, JR., ADMINISTRATIVE LAW TREATISE § 4, at 133-84 (3d ed. 1994) (reviewing agency subpoena power).

directly.³⁵ To be sure, this is an empirical issue—one that bears investigation. Johnston does not cite any empirical literature on the costliness to agencies of observing firms' lobbying and regulatory process activities; there could be empirical work of which I am not aware that bears out his assumption that lobbying and the like is closer to public than private information.

Note that, even if the intensity with which the firm engages in lobbying and other activities internal to the regulatory process is not cheaply observable by agencies, there might be *extrinsic* activities that are cheaply observable and that theoretically could give rise to a separating equilibrium informative of firm compliance costs. Why wouldn't a high-cost firm, seeking to avoid regulation, burn a pile of \$100 bills outside the agency's windows after allowing the agency to count the bills and verify that they are not counterfeit? Whether firms actually would engage in these sorts of extrinsic, observable activities to signal their regulatory costs to agencies is an important issue for the institutional designer. It bears on the welfare comparison of CBA versus alternatives, assuming that there is asymmetric information about compliance costs. If, under the conditions propitious for a separating equilibrium, high-cost firms would in fact engage in these extrinsic activities to signal their costs to agencies, then agencies would learn that information under those conditions, and agency regulatory choices would be influenced by the information. More regulatory sorting between high- and low-cost firms likely would occur. Once more, the issue is really empirical: for the high-cost firm to burn the observable dollars and thereby influence agency choice, the firm must be sufficiently rational to realize it can signal costs by doing so, the agency must be sufficiently rational to infer the firm's cost structure from its pyrotechnics, and the firm must be reasonably confident that the agency is sufficiently rational to draw this inference.

(5) *Perversely, requiring the agency to engage in cost-benefit analysis may reduce social welfare. Shifting from a "benefits" statute to a "cost-benefit" statute may shift the regulatory equilibrium from a "sorting" equilibrium, where the agency issues directives only against low-cost firms, to a "nonsorting" equilibrium, where the agency issues or fails to issue directives against both low-cost and high-cost firms.*

³⁵ For example, consider the comment submitted to the agency during the notice-and-comment period. Neither its length nor the names of the law firms, economic consulting firms, etc., that prepared the comment would indicate reliably how expensive it was for the firm to prepare the comment. The quality of the data and analysis might do that, but it is not necessarily cheap for the agency to determine quality level.

Pick B , D , and I . Assume, as throughout, that there are two types of firms, low and high cost, with the $c_l < B < c_h$. Consider first the regulatory equilibrium under the "benefits" statute; and then shift to the "cost-benefit" statute, holding constant B , D , I , c_p , c_h , and the proportion of low- and high-cost firms in the universe of regulated firms. One of the remarkable results of Johnston's model is that given certain values of B , D , I , c_p and c_h , we might shift from a "sorting" equilibrium under the benefits statute to a "nonsorting" equilibrium under the cost-benefit statute. The agency, statutorily permitted to ignore costs, issues directives only against low-cost firms; but the mere inclusion of a cost-benefit requirement in the statute actually leads the agency to issue or refrain from issuing directives against *both* low-cost and high-cost firms. This is completely perverse, of course, and quite startling. A CBA requirement not only fails to increase welfare, it actually can reduce welfare³⁶—despite the fact that CBA is costless and that agencies do not shirk and are epistemically perfect (except perhaps for their ignorance of firm compliance cost).

What drives the result? First, assume that courts are very "deferential" to agencies' cost-benefit analyses; courts are very hesitant to determine that costs outweigh benefits when B itself is sufficiently greater than zero. Then, under a cost-benefit statute, the chance of either low-cost or high-cost firms prevailing at the litigation stage is low. If, further, lobbying effort is relatively unproductive, and if the probability of agency reversal is responsive to firm effort under a benefits statute, then it is clear that shifting from a benefits statute to the hypothesized cost-benefit statute can shift us from a sorting equilibrium to one where agencies issue directives against both types of firms. Less intuitive is the converse result, namely that the shift might induce the agency to *decline* to issue directives against both types of firms. As Johnston explains, because the low-cost firm under a cost-benefit statute has a lower probability of winning at the litigation stage, it has a greater incentive to engage in type-concealing lobbying expenditures. Thus the shift from a benefits statute to a cost-benefit statute could increase firm lobbying to a level sufficient to induce the agency not to finalize and litigate any regulations.

[S]ince 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

³⁶ Ignore here firm and agency litigation and lobbying costs as part of the welfare calculus. *Supra* note 17.

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.³⁷

The crucial assumption in all this is that firms—low-cost firms, or all firms—might have a lower probability of prevailing at the litigation stage under the cost-benefit statute than under the benefits statute, at a given level of firm and agency litigation effort. Formally, $r(L_o, L_f) > r(L_o, L_f, B/C)$. I find this assumption quite puzzling. Why does a firm have *any* chance of prevailing under a benefits statute where the benefits of the properly enacted regulatory directive (B) are nonzero? The answer is that the firm can raise various statutory or constitutional challenges to the directive—that the directive is outside the agency's jurisdiction; that the procedures employed by the agency to enact the directive were unconstitutional or in violation of the Administrative Procedure Act; that the regulatory benefits are zero or negative (for example, a putatively health-related directive actually produces more illness); or that the structure of the agency that issued the directive is unconstitutional—and the court might, erroneously, sustain the challenge. *But presumably all of these legal challenges also would be available to regulated firms under a cost-benefit statute.* Proponents of cost-benefit analysis do not propose eliminating all the other legal claims that firms and other regulated parties might use to challenge agency regulation. Rather, they propose to give regulated parties an *additional* challenge, namely that the regulation's costs outweigh its benefits.³⁸

³⁷ Johnston, *supra* note 2, at 1374.

³⁸ Perhaps this statement is too strong. Although the defender of cost-benefit analysis presumably would not propose eliminating all the other legal claims that challengers to agency action might advance (constitutional claims, jurisdictional claims, procedural claims, etc.), she plausibly might propose eliminating existing statutory *decision criteria* and replacing those with the cost-benefit criterion. Specifically, as Johnston points out, one might imagine shifting from a benefits statute with a significant threshold to a cost-benefit regime without a threshold. A directive with below-threshold benefits, but costs lower than benefits, would violate the benefits statute but not the cost-benefit statute. Johnston, *supra* note 2, at 1372 n.62. Note, however, that a benefits threshold is really a rough-and-ready way to incorporate cost sensitivity into the statutory framework. Below-threshold directives are directives whose costs are likely to be larger than their benefits. Otherwise, why have a threshold? So the shift from a benefits statute with a high threshold to a cost-benefit statute is best seen as a shift between types of cost-sensitive statutory regimes, rather than as a shift from a truly

But if firms are strictly better equipped, legally speaking, under the cost-benefit statute as compared to the benefits statute, it is hard to see how the probability of reversal under the cost-benefit statute could be *lower* than under the benefits statute at a given level of firm and agency litigation effort.

What I am suggesting is that an additional constraint be placed on the permissible values of $r(L_a, L_p, B/c)$, the litigation function in the cost-benefit model, namely: $r(L_a, L_p, B/c) \geq r(L_a, L_p)$, for a given L_a and L_p where $r(L_a, L_p)$ is the litigation function under the benefits statute. If this constraint is observed, is it *still* possible that shifting from the benefits statute to the cost-benefit statute (holding constant B, D, I, c_p, c_b , and the proportion of low- and high-cost firms in the universe of regulated firms) can shift the regulatory equilibrium from a sorting to a nonsorting equilibrium? Can the shift to cost-benefit analysis, *per-versely*, induce agencies to cease discriminating between welfare-increasing and welfare-decreasing regulation, even if agencies are epistemically perfect (except, perhaps, about firm compliance costs) and nonshirking, even if CBA is costless, *and* even if the statutory CBA requirement comes into play (realistically) as an additional legal challenge available to firms rather than a wholly new legal framework that displaces all previously available challenges? An affirmative answer to this question would indeed be startling.

* * *

Let me close with some suggestions for further research, which represent extensions of Johnston's article with respect to the issue I have discussed here: the welfare comparison of CBA and alternatives. These are not, necessarily, the items that Johnston ought to take as his top priority since, as I noted at the outset, the article illuminates many

cost-insensitive regime (that is, a benefits statute without a threshold) to a cost-sensitive regime.

Nor is it clear that current defenders of a statutory cost-benefit requirement would, indeed, favor converting existing benefits statutes with thresholds into straight cost-benefit statutes, rather than converting them into hybrid statutes that would require *both* (1) above-threshold benefits and (2) benefits greater than costs. For example, it does not appear that the main House and Senate bills considered by the 104th Congress—which came close to enacting a cost-benefit “supermandate”—would have superseded existing benefits thresholds. See Cass R. Sunstein, *Congress, Constitutional Moments, and the Cost-Benefit State*, 48 STAN. L. REV. 247, 274-82 (1996) (describing cost-benefit legislation considered by the 104th Congress, in particular House bills H.R. 1022, 104th Cong. (1995), and H.R. 9, 104th Cong. (1995); and Senate bill S. 343, 104th Cong. (1995)).

political principals the option of reversing the regulation outright, in lieu of, or in addition to, the option of sanctioning the agency. Finally, beneficiaries might be added to the picture. What happens if beneficiaries are allowed to lobby the political principals or to intervene in the litigation assuming a regulation is finalized, where each beneficiary realizes some percentage of the gross benefits of the regulation?

Fourth, it would be interesting to model variations in the legal structure of CBA and to compare these variants of CBA to agency action under a "benefits" statute. Johnston in fact has pursued this tack already. He models *two* variants of CBA: judicially enforceable *substantive* CBA (where a directive with costs greater than benefits is subject to judicial invalidation) and judicially enforceable *procedural* CBA (where the agency is required to engage in CBA, but is not bound by its results). A third variant is a requirement to engage in substantive CBA that is enforceable by some executive branch oversight body (such as the Office of Management and Budget (OMB)), but not by the courts.⁴¹ Cost-benefit analysis in the federal government usually takes this third form. It is in fact unusual for statutes to require CBA with sufficient explicitness that an agency's failure to engage in CBA would directly trigger judicial invalidation. Many more statutes permit but do not require CBA.⁴² Since 1981, executive orders have imposed a substantive CBA requirement covering this scenario. The requirement is applicable except where CBA is prohibited by statute, and it is policed by OMB but is not justiciable. A fourth variant, logically, would be a procedural rather than substantive CBA requirement that is enforceable by an executive branch oversight body but not by the courts.

Why could a CBA requirement imposed by the President trigger different outcomes from a statutory, judicially enforceable requirement? CBA policed by OMB or some such body could be more responsive to presidential preferences; it could be less, or at least differently, responsive to firm and agency effort; and it could be less, or more, accurate. The possible differences between judicially enforceable and unenforceable CBA are worth investigating since one recur-

respect to the influence of Congress and the President on regulation).

⁴¹ Eric Posner's recent formal work on CBA focuses on the President/agency interaction and does not assume judicial enforcement. Posner, *supra* note 22.

⁴² See generally Cass R. Sunstein, *Cost-Benefit Default Principles*, 99 MICH. L. REV. 1651 (2000) (surveying health, safety, and environmental statutes for inclusion of cost-benefit requirements and other forms of cost-sensitivity).

rent proposal on Congress's "reinventing government" agenda is to shift away from the executive order framework and give CBA a statutory grounding.⁴³ How, if it all, would that change firm and agency behavior?

Fifth, it would be worth modeling, and comparing, a wider array of institutional possibilities than CBA (in all its variants) and the "benefits" regime. Costs are, in effect, one kind of statutory constraint on the choices of an agency that is given a certain type of benefit as its statutory maximand. But environmental statutes, in practice, impose a variety of different types of constraints on benefit maximization. Some require that regulation be "technologically feasible." Others require that the level of benefits be sufficiently high (the benefits must be "substantial" or at least not "de minimis"). Still others require that the benefit be realized in a particular way—for example, that the agency aim at reducing death from cancer, even at the cost of increasing death from other causes.⁴⁴ It would be instructive to compare agency and firm behavior under a naked benefits statute, or straight CBA, to agency and firm behavior under statutes incorporating one or more non-cost constraints on benefit maximization, or under statutes incorporating some such constraints along with a cost constraint.⁴⁵

Finally, it would be worth testing Johnston's model, and variations, empirically. There is a small but growing body of econometric scholarship that looks at the effects of CBA on agency outcomes.⁴⁶ How can

⁴³ See, e.g., Fred Anderson et al., *Regulatory Improvement Legislation: Risk Assessment, Cost-Benefit Analysis, and Judicial Review*, 11 DUKE ENVTL. L. & POL'Y F. 89 (2000) (surveying recent proposed statutes requiring CBA or similar analytic tools); Jeff Gimpel, *The Risk Assessment and Cost Benefit Act of 1995: Regulatory Reform and the Legislation of Science*, 23 J. LEGIS. 61, 79-89 (1997) (examining how congressional proposals in the Comprehensive Risk Assessment and Cost Benefit Act of 1995 would affect regulatory decision making); Sunstein, *supra* note 38, at 274-82 (discussing regulatory reform proposals considered by the 104th Congress); W. Kip Viscusi, *Economic Foundations of the Current Regulatory Reform Efforts*, 10 J. ECON. PERSP. 119, 127-28 (1996) (explaining different ways in which CBA can be incorporated into legislation).

⁴⁴ See LAVE, *supra* note 1, at 8-28 (describing the range of statutory frameworks for environmental regulation and other types of social regulation); Sunstein, *supra* note 42, at 1663-67 (same).

⁴⁵ Johnston's model in its current form includes a benefits threshold, Johnston, *supra* note 2, at app., and thus could be used to test the effect on agency decisions of moving from a benefits statute with the threshold set at zero to one where the threshold is higher, or of moving from CBA to a benefits statute with a nonzero threshold.

⁴⁶ Good examples include ROBERT W. HAHN, *REGULATORY REFORM: ASSESSING THE GOVERNMENT'S NUMBERS* (AEI-Brookings Joint Ctr. for Regulatory Stud., Working Paper No. 99-6, 1999), available at http://www.aei.brookings.org/publications/working/working_99_06.pdf; Maureen L. Cropper et al., *The Determinants of Pesticide Regulation: A Statistical Analysis of EPA Decision Making*, in *THE POLITICAL ECONOMY OF*

this be done systematically? How can a CBA requirement be captured as an independent variable in a quantitative, empirical analysis where the dependent variable is, for example, the net costs or benefits of agency regulation? One possibility is intertextual; another is intertemporal; another is interjurisdictional. In other words, we might compare federal agency action under statutes with a CBA requirement to federal agency action under statutes without such a requirement. We might compare action by federal "executive" agencies (subject to the executive order requiring CBA) to action by federal "independent" agencies (largely exempt from that order). We might compare action by federal agencies before and after 1981, the date of the first general CBA order. Finally, we might compare action by state agencies in states with CBA requirements to action by state agencies in other states.⁴⁷

Most empirical work on CBA to date, even quantitative work, has not been grounded in a formal model. One of the many contributions of Johnston's article is that it has given us a rigorous basis for econometric studies concerning the welfare effects of CBA.

ENVIRONMENTAL PROTECTION: ANALYSIS AND EVIDENCE 123 (Roger Congleton ed., 1996); Scott Farrow, *Does Analysis Matter? Economics and Planning in the Department of the Interior*, 73 REV. ECON. & STAT. 172 (1991); John A. Hird, *The Political Economy of Pork: Project Selection at the U.S. Army Corps of Engineers*, 85 AM. POL. SCI. REV. 429 (1991); and Scott Farrow, *Improving Regulatory Performance: Does Executive Office Oversight Matter?* (July 26, 2000) (unpublished manuscript, on file with author).

For other empirical work on the effect of CBA, see, for example, ECONOMIC ANALYSES AT EPA: ASSESSING REGULATORY IMPACT (Richard Morgenstern ed., 1997); EPA, EPA'S USE OF BENEFIT-COST ANALYSIS: 1981-1986 (1987); THOMAS O. MCGARITY, REINVENTING RATIONALITY: THE ROLE OF REGULATORY ANALYSIS IN THE FEDERAL BUREAUCRACY (1991); Arthur Fraas, *The Role of Economic Analysis in Shaping Economic Policy*, 54 LAW & CONTEMP. PROBS. 113 (1991); and Robert W. Hahn et al., *Assessing Regulatory Impact Analyses: The Failure of Agencies to Comply with Executive Order 12,866*, 23 HARV. J.L. & PUB. POL'Y 859 (2000).

⁴⁷ See Robert W. Hahn, *State and Federal Regulatory Reform: A Comparative Analysis*, 29 J. LEGAL STUD. 873 (2000) (describing regulatory review structures, including cost-benefit analysis, in state governments).