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# Cost-Benefit Analysis and the Judicial Role

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# COST-BENEFIT ANALYSIS AND THE JUDICIAL ROLE

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*Abstract*. The two most vilified cases in administrative law are *Business Roundtable v. SEC* and *Corrosion Proof Fittings v. EPA*. In *Business Roundtable*, the D.C. Circuit struck down the SEC's proxy access rule because the agency's cost-benefit analysis of the regulation, in the court's view, was defective. In *Corrosion Proof Fittings*, the Fifth Circuit struck down an EPA regulation of asbestos products on the same grounds. Nearly all scholars who have written about these cases have condemned them. We argue that the courts acted properly. The regulators' cost-benefit analyses were defective, seriously so; and the courts were right to require the agencies to show that their regulations passed an adequate cost-benefit analysis. We further argue that the trajectory of law and policy is consistent with our view. *Corrosion Proof Fittings* and *Business Roundtable* are harbingers rather than errors—harbingers of an era of enhanced judicial review of CBA.

## INTRODUCTION

Consider the following scenario. A pro-regulatory president serves two terms, during which his administration issues a significant number of regulations. Most of these regulations are cost-benefit justified, in the sense that they produce greater benefits to well-being than costs.[1] Then, after

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[1] During the eight years of the Obama Administration, the regulations promulgated by administrative agencies produced benefits in excess of costs. Shaun Donovan, *Exit Memo: Office of Management and Budget*, The White House Archives (Jan. 5, 2017), https://obamawhitehouse.archives.gov/administration/cabinet/exit-memos/office-management-and-budget; *see also* Jonathan S. Masur & Eric A. Posner, *Unquantified Benefits and the Problem of Regulation under Uncertainty*, 102 CORNELL L. REV. 87

eight years, a new anti-regulatory president[2] assumes office and vows to dismantle many of his predecessor's regulations, beginning with regulation meant to curb the emission of greenhouse gases.[3] A president who wishes to deregulate must promulgate a new regulation that repeals the existing one, just as Congress must pass a new statute to repeal an existing statute. So the president issues a regulation canceling the greenhouse gas rule. But this new deregulatory regulation is not cost-benefit justified. It repeals an earlier regulation that produced more benefits than costs, and thus itself generates costs in excess of benefits.[4] If the new regulation is challenged, how should a court respond? Should it permit a regulation—here, a regulation that dismantles earlier regulations—that would do more harm than good?

This scenario is of course not hypothetical. But the problem is general and spans the entirety of the regulatory state. When courts are asked to review regulations issued by government agencies, how closely should they scrutinize the agency's reasons for regulating? At one extreme, courts could examine the regulations de novo, in effect delegating to the agency the task of collecting evidence and providing an initial assessment, but then replacing the agency's judgment with their own. Call this level of review "high." At the other extreme, courts could rubberstamp any regulation as long as the agency provides reasons for it that are prima facie plausible, or even no reasons at all—call this level of review "low." High and low are ends of a spectrum: one could endorse any intermediate level as well. The courts have struggled to articulate the proper level, leading scholars to suspect that they do not review regulations in a consistent way.[5] Scholars themselves offer a multitude of interpretations, often unhelpful restatements

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(2016) (finding that most regulations produced benefits in excess of costs, even when they failed to fully quantify those benefits).

[2] Presidential Executive Order on Reducing Regulation and Controlling Regulatory Costs, January 30, 2017, https://www.whitehouse.gov/the-press-office/2017/01/30/presidential-executive-order-reducing-regulation-and-controlling (ordering that two regulations be repealed for every new regulation that is promulgated).

[3] Kyle Feldscher, *Trump Would Repeal Clean Power Plan, Other Big EPA Regs*, WASH. EXAMINER, September 15, 2016, http://www.washingtonexaminer.com/trump-would-repeal-clean-power-plan-other-big-epa-regs/article/2601931.

[4] *See* EPA, Regulatory Impact Analysis for the Clean Power Plan Final Rule (2015), https://www.epa.gov/sites/production/files/2015-08/documents/cpp-final-rule-ria.pdf (analyzing the Clean Power Plan and finding that it produces significantly greater benefits than costs).

[5] *See* Kevin M. Stack, *Interpreting Regulations*, 111 MICH. L. REV. 355, 360 (2012) (stating that when interpreting regulations "[c]ourts not only lack a consistent approach, but also generally invoke one interpretative tool or another without stating reasons for doing so"); Thomas J. Miles & Cass R. Sunstein, *The Real World of Arbitrariness Review*, 75 U. CHI. L. REV. 761 (2008) (providing evidence that Supreme Court justices apply the arbitrary and capricious standard in a way that reflects their ideological biases).

of the "arbitrary and capricious" standard in the Administrative Procedure Act (APA) using different but equally ambiguous words.[6] More than 70 years after the APA placed the question of judicial review at the center of administrative law, no one agrees how it should operate.

Scholars do agree on one thing: that the courts went too far in two notorious cases—*Corrosion Proof Fittings v. EPA*[7] and *Business Roundtable v. SEC*.[8] The interesting thing about these cases is that they both involved cost-benefit analysis (CBA), a decision procedure that most agencies use to evaluate major regulations but that rarely provides the basis for rigorous judicial scrutiny. The EPA used a CBA to justify regulations that limited the use of asbestos products, while the SEC used a CBA to justify a regulation that required corporations to place certain shareholder nominees to board positions on proxy ballots. The courts struck down both regulations because the CBAs were, in the courts' view, defective. Almost all scholars who have written about these cases agree that the courts acted wrongly by requiring the agencies to justify their regulations with valid CBAs.[9]

In this Essay, we seek to refute this conventional wisdom, and also to shed light on the controversy over levels of review. We argue that both cases were correctly decided. The CBAs really were inadequate, and the courts were right to strike down the regulations. Our larger point concerns the relationship between judicial review of regulations and quantitative methods of evaluating policy, of which CBA is the leading (but not only) example.[10] We argue that when quantitative methods are appropriate for evaluating regulations, a "high" level of judicial review is justified.

To understand why, we begin with the basic tradeoff involved in judicial review of regulations, which has been repeated ad infinitum in the literature but is accurate as far as it goes.[11] The major difference between

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[6] *See* R. George Wright, *Arbitrariness: Why the Most Important Idea in Administrative Law Can't be Defined, and What This Means for Law in General*, 44 U. RICH. L. REV. 839, 851 (2010).

[7] 947 F.2d 1201 (5th Cir. 1991).

[8] 647 F.3d 1144 (D.C. Cir. 2015).

[9] *See infra* Part II.

[10] There are other quantitative methods, including reliance on subjective well-being surveys. *See* John Bronsteen, Christopher Buccafusco, & Jonathan S. Masur, *Well-Being Analysis v. Cost-Benefit Analysis*, 62 DUKE L.J.1603 (2013). In principle, feasibility analysis could be quantified though it never is. See Jonathan S. Masur & Eric A. Posner, *Against Feasibility Analysis*, 77 U. CHI. L. REV. 657 (2010) (describing examples of feasibility analysis and the lack of quantification).

[11] For a lucid recent statement, see Cass Sunstein, *Cost-Benefit Analysis and Arbitrariness Review* (Harvard Public Law Working Paper No. 16-12 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2752068; see also ADRIAN VERMEULE, LAW'S ABNEGATION (2016).

judges and agency officials is that judges are generalists and agency officials are experts. Because experts know more about their field than generalists do, generalists should defer to the judgment of experts, all else equal. This is the major argument for a low level of review. But all else is not equal. Agency officials may make mistakes and, more important, they may be biased—consciously or unconsciously—and their biases may influence how they evaluate regulations. Their biases could be ideological, of course; but they could also reflect other inclinations—for example, to act rather than to remain passive under public pressure;[12] or to advance the partisan interests of political masters such as the president or members of Congress.[13] High-level judicial review is most clearly justified when agencies are biased.

To be sure, bias is complicated, and judges can be biased too.[14] But the posture of the debate is one of offering advice to the judiciary, which assumes that the judiciary is unbiased enough to accept this advice in good faith. (If not, claims on both sides of the argument are idle.) There is also reason to think that the federal judiciary on the whole is less biased than agency leaders—just because the federal judiciary is normally bipartisan while agency leadership is rarely so, and judges cannot be fired while agency leaders can be. That said, the relative level of bias and open-mindedness as between judiciary and bureaucracy is an empirical question, and no doubt different intuitions about the empirics help explain why scholars disagree about the proper level of review. Nonetheless, the expertise-neutrality tradeoff remains a useful device for exploring arguments about judicial review, and we employ it here.

Our major claim is that quantification—reflected in CBA and other methods—changes the terms of the debate. The unique feature of quantification is that it facilitates review. When regulators eschew quantification in their explanations for regulations, they typically put forth boilerplate that is difficult to evaluate. It is tempting, for example, for a regulator to say that a pollution regulation is justified because pollution causes harm, and less harm is good. Such a justification can be applied to any regulation, so if it were accepted by courts, regulators would be immunized from review as long as they satisfy procedural requirements and avoid making any provably false statements of fact. If regulators are biased

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[12] *See* CASS R. SUNSTEIN, RISK AND REASON 76-81 (2002).

[13] Matthew Stephenson, *Optimal Political Control of the Bureaucracy*, 107 MICH. L. REV. 53 (2008) (describing how the executive branch and Congress can attempt to control the bureaucracy); Elena Kagan, *Presidential Administration*, 114 HARV. L. REV. 2245 (2001) (describing how the executive uses federal regulation to accomplish objectives that are blocked by Congress).

[14] For evidence, *see* Miles & Sunstein, *supra* note 5, at 782 (providing evidence that judges decide administrative law cases at least partially in line with their political preferences).

or sometimes biased, they would be free to regulate in a biased fashioned rather than for the public good. Courts would be unable to stop them.

By contrast, quantification forces regulators to put their decision-making into a format that can be evaluated by generalist superiors. This process is hardly unfamiliar: it is the way that (for example) the heads of corporations evaluate the work of their subordinates. A CEO must contend with the claims of the division heads who seek approval for their projects. The CEO is a generalist; the division heads are specialists. Rather than throw up their hands and approve any project that a division head proposes as long as the division head gives "reasons," CEOs demand that the reasons take a particular quantified form. The division head must perform a net present value (NPV) analysis, which is an estimate of the benefits and costs of the project for the firm. As in the case of agency regulations, some benefits and costs are easier to quantify than others. Money pouring in from future sales can be easily quantified, but the effect of a project on the brand and legal risk are often conjectural.

Imagine that the division head of a pharmaceutical company proposes a drug that may produce side effects that give rise to litigation and harm the reputation of the company as a whole. The division head will need to use judgment to evaluate these complex risks, but in the end the risks will be quantified and folded into an overall NPV analysis of the project that acknowledges the uncertainty of certain estimates but relies on them nonetheless. The value of this exercise—even when certain predictions are not much better than guesswork—is that it isolates the risks, allowing for careful consideration of them, and that it preserves the predictions for later review, allowing executives to learn from past mistakes and to evaluate the predictive abilities of their staffs. With the NPV in hand, the CEO can approve or disapprove the project based on firm-wide considerations that the division head may be unaware of or inclined to ignore.

Quantification occurs in many other contexts as well. Firms are required to follow accounting rules, which help shareholders, creditors, governments, and other interested parties to evaluate the business. The grading of students is another form of quantification that facilitates evaluation by hiring committees; so is the evaluation of teachers with ratings systems. Cars, books, kitchen utensils, and other consumer goods are given quantified ratings. Universities are ranked; borrowers are assigned credit scores; banks are given CAMELS ratings. Quantified evaluation is ubiquitous because quantification enables generalists—frequently superiors, but also consumers—to evaluate the claims of specialists. Given the ubiquity of quantified evaluation in daily life, the claim that government regulations and projects cannot be subject to similar forms of quantified evaluation is bizarre.

Courts should ensure that regulatory agencies perform the quantified evaluation of their regulations adequately, just as they do when they evaluate the accounting statements of businesses accused of fraud and citizens accused of failing to pay taxes. But what does "adequate" mean? This is a tricky question, and we suspect there is no general answer to it. Courts should insist that regulators quantify benefits and costs, but courts should also take seriously arguments that certain estimates require judgment calls that the regulator is in the better position to make than a court is. In some cases, the regulator must reconcile conflicting academic studies, and a court may properly conclude that the regulator's judgment is reasonable even if the court does not share it. In other cases, quantification may be impossible or pointless, as we discuss below. But the key thing to understand is that at the current moment in the development of the regulatory state, cost-benefit analyses tend to be low quality rather than high quality, suggesting that greater judicial involvement will cause more good than harm.[15] At some future time, this may no longer be true, but we are a long way from that happy condition.

Critics of judicial CBA mandates of the sort introduced in *Corrosion Proof Fittings* and *Business Roundtable* argue that courts are not qualified to evaluate the expert determinations of agencies.[16] They draw on an old distinction between procedure and substance. Courts are capable of forcing regulators to comply with procedural rules—notice requirements, for example. But they are in a weak position to second-guess substantive determinations like valuations. However, CBA is foremost a decision *procedure*.[17] If courts can review agencies for procedural violations, then it can review agencies for their compliance with the rules of CBA. The genius of CBA, in common with other quantitative decision procedures, is that it cabins the decision-maker's discretion by forcing it to comply with certain rules. The courts in *Corrosion Proof Fittings* and *Business Roundtable* correctly pointed out that the regulators violated the rules of CBA. There does remain a residuum of substantive discretion that the rules of CBA do not eliminate. With respect to these substantive judgments, courts do need tread carefully, for all the conventional reasons, which we discuss below.

We start in Part I with a brief reprisal of the normative case for CBA and then argue that judges are as capable of evaluating CBAs as they are of evaluating any other decision or action that comes before them. In Part II

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[15] *See* Jonathan S. Masur & Eric A. Posner, *Unquantified Benefits and the Problem of Regulation Under Uncertainty*, 102 Cornell L. Rev. 87, 90-92 (2016) (criticizing the quality of current CBAs and their failure to fully account for benefits and costs).
[16] *See infra* Part II.A.
[17] MATTHEW D. ADLER & ERIC A. POSNER, NEW FOUNDATIONS OF COST-BENEFIT ANALYSIS (2006).

we discuss *Corrosion-Proof Fittings* and *Business Roundtable*. We argue that the agencies performed CBA badly and the courts properly struck down the regulations. Part III turns to the law. We argue that that there is a strong legal trajectory in favor of CBA, reflected in judicial decisions, executive orders, and even the regulators' independent judgments. This trajectory is bipartisan or even nonpartisan, a long overdue form of bureaucratic rationalization that addresses the question of what agencies should attempt to accomplish when they regulate. The answer that has emerged over decades of debate and reform is: produce benefits that exceed costs.

While many scholars have claimed that CBA is ideologically biased toward anti-regulatory outcomes, we show that this claim is mistaken. This point is of particular importance at the current time as we move from a presidential administration that was friendly to regulation to one that has committed itself to deregulation. In order to deregulate, agencies must formally issue new regulations that eliminate or relax earlier regulations. If they are required to conduct a CBA, then the CBA will need to show that the benefits from deregulation exceed the costs. If the agency fails to take this step, or if the CBA is inadequate, a reviewing court should strike down the deregulation and leave the existing regulation in place. CBA is not a one-way ticket to the night watchman state.

## I. COST-BENEFIT ANALYSIS AND JUDICIAL REVIEW

### A. A Primer on CBA

CBA is a decision-procedure whose normative basis is what Matthew Adler and one of us has called *weak welfarism*.[18] Welfarism is the principle that the well-being of people is morally important. The word "weak" in "weak welfarism" acknowledges that other considerations, such as deontological principles, also may have moral importance. But while agencies might take account of those principles when deciding whether to regulate, they are not accounted for in a CBA. Thus, CBA does not commit an agency to utilitarianism or other strong welfarist philosophy, but, because it does not address deontological constraints, its *scope* will be determined by the type of behavior that the government regulates.[19]

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[18] *Id*. The other one of us subscribes to this normative foundation for CBA as well. *See* John Bronsteen, Christopher Buccafusco & Jonathan S. Masur, *Well-Being Analysis v. Cost-Benefit Analysis*, 62 DUKE L.J. 1603 (2013).

[19] We will not discuss here whether agencies should take account of moral considerations other than those embodied in the CBA. Our view is that agencies should very rarely do so, but in some circumstances it may be appropriate.

Not everyone believes that the government should advance social welfare.[20] But most people do, and this premise is unquestioned in debates about how regulatory agencies should behave.[21] The trickier question is how to define and measure welfare. Most economists believe that welfare increases whenever people are better able to satisfy their preferences, as measured by willingness-to-pay. Most philosophers reject this view, as do we. People's preferences, especially when ill-informed or distorted by social influences, do not necessarily reflect their welfare; and the reliance on the money metric introduces further distortions because of the diminishing marginal utility of money.[22] However, CBA, based on willingness-to-pay, will *typically* approximate welfare for a range of plausible definitions, to a greater degree than competing approaches such as feasibility analysis.[23] This is the justification for using CBA as a decision procedure. The analogy to net present value is useful here: no one thinks that a NPV calculation settles the question whether a commercial project is wise. A decision procedure like CBA and NPV formalizes the process of decision-making so as to maximize the probability that a correct decision will be made. It does so by helping agents remember to consider all relevant factors, and, by requiring a common metric, facilitating comparison of those factors.

Regulatory statutes direct agencies to advance the public good in their area of expertise—the environment, health and safety, financial regulation, and so on. While statutes usually do not explicitly direct regulators to use CBA, they almost always direct regulators to consider the costs as well as the benefits of a regulation, as we describe in more detail below. Because CBA is the most natural way to consider costs and benefits, the White House has directed regulators to use CBA.[24]

Many commentators have criticized CBA. The criticisms in the law and policy literature reach back to the 1980s.[25] The criticisms in the welfare economics literature reach back even farther.[26] None of these criticisms has carried the day. CBA is more entrenched in government than ever.

We will not rehearse all the criticisms and responses here. We discuss just two of the criticisms pertinent to the current discussion. The first criticism is that for many, possibly most regulations, the costs and

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[20] *See, e.g.*, ROBERT NOZICK, ANARCHY, STATE, UTOPIA (1974).
[21] *See* Sunstein, *Cost-Benefit Analysis & Arbitrariness Review*, *supra* note 11, at 7-9.
[22] For a discussion, *see* ADLER & POSNER, *supra* note 14.
[23] Masur & Posner, *Against Feasibility Analysis*, *supra* note 11, at 672-73.
[24] *See* Exec. Order No. 13563, 3 C.F.R. 13563 (2012).
[25] *See* ADLER & POSNER, *supra* note 17, for a discussion.
[26] *Id.*

(especially) benefits are largely guesswork.[27] Quantification is arbitrary and adds nothing to the decision-making process. The SEC's proxy access rule, for example, might reduce the cost of capital by subjecting corporate management to outside discipline, or it might not affect the cost of capital at all—because the dissident nominee will nearly always lose the election, or corporate managers will formulate new ways to minimize the influence of shareholders.[28] The benefits are unknowable. In the case of the asbestos rule, we do not know whether the reduction in the availability of asbestos products will save lives or be offset by the use of more dangerous substitute materials.[29] Regulators should not be required to quantify benefits when the benefits are unknowable; this is an arbitrary exercise.

Our view is that if regulators cannot determine whether a regulation will generate net benefits, then they should usually not issue the regulation. But there may be close cases where the regulator, based on hard-to-articulate staff expertise,[30] reasonably believes that the benefits are positive but cannot settle on a precise estimate because of the absence of hard data and of the high cost of obtaining additional evidence through surveys and other methods. In that case, the regulator should go ahead and regulate but also be required to publish an estimate so that its claim to tacit expertise can be evaluated retrospectively, along with an explanation as to why an estimate cannot be derived from empirical evidence.[31] The D.C. Circuit took just this view, complaining that the SEC "failed adequately to quantify the [sic] certain costs or to explain why those costs could not be quantified,"[32] implying that the regulation might have passed muster if the

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[27] *See* FRANK ACKERMAN & LISA HEINZERLING, PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING (2005); *see also* John C. Coates, *Cost-Benefit Analysis of Financial Regulation: Case Studies and* Implications, 124 YALE L.J. 882 (2015), who advocates "nonquantified" CBA. We think it is best to avoid confusion by not referring to Coates' approach as a style of CBA, which in its essence requires quantification. ADLER & POSNER, *supra* note 8, called this approach "intuitive balancing."
[28] *See infra* Part II.B.
[29] *See infra* Part II.A.
[30] *See* Jacob Gersen & Adrian Vermeule, *Thin Rationality Review*, 114 MICH. L. REV. 1355, 1396 (2016).
[31] *See* Masur & Posner, *Unquantified Benefits*, *supra* note 15 (arguing that agencies should be required to estimate costs and benefits and justify those estimates). We find ourselves in agreement with the otherwise critical account of Gersen & Vermeule, *supra* note 30, at 1401, who argue that agencies cannot credibly appeal to tacit knowledge to rationalize bad regulations in the long term: "the pretext problem is self-limiting, because agencies that constantly base their decisions on (putatively) nontransmissible tacit expertise will encounter increasing skepticism from reviewing courts over time." However, this argument does not support their thesis: if judges were required to approve regulations based on non-quantitative balancing of benefits and costs, as they argue, then agencies would never need to appeal to tacit knowledge in the first place.
[32] Business Roundtable, 647 F.3d at 1149.

SEC could make the case that quantification was impossible or inappropriate. In our view, once the regulator goes on record with its estimate of hard-to-quantify benefits, and adds them to the empirically verified benefits and costs, the regulator may issue the regulation if the aggregate benefits, including the estimates in question, exceed the costs.

The second criticism is that CBA is a politically biased decision procedure—and biased in favor of ideologically conservative outcomes.[33] This view is partly based on CBA's association with the Reagan administration. Ronald Reagan campaigned for office promising deregulation, and one of his first acts was to sign an executive order that requires regulators to conduct CBA. Pro-regulation forces argued that the CBA requirement was intended as a bureaucratic hurdle that would delay or block needed regulations.[34] But CBA is foremost a tool of good government and falls into a long tradition of using quantitative methods to persuade the government and public to accept progressive change.[35] The rejection of quantitative methods—and of science and statistics—is more closely associated with the right (as well as the extreme left), as a matter of history. Whatever the intentions of Reagan administration officials, the *effect* of the CBA requirement, if conscientiously carried through, need not be any more ideological than a requirement that the government budget office follow the rules of accounting.

One version of the criticism is that because CBA discounts unquantified (or unquantifiable) benefits, it must lead to under-regulation, which is an outcome favored by conservatives.[36] This view seriously misunderstands CBA. One source of error is the tendency to confuse the

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[33] This argument has been made for decades, but for a recent version, *see* Gregory C. Keating, *Is Cost-Benefit Analysis the Only Game in Town?* (2016) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2880697. Keating claims that cost-benefit analysis is conservative because CBA is welfarist and conservatives are welfarist, while liberals are deontologists who reject welfarism. There are many problems with this view, but to take just one example: welfarists going back to Bentham usually endorse radical redistribution of wealth because of the declining utility of the dollar. Deontologists sometimes do, but many—such as philosophical libertarians like Nozick—do not.

[34] The major exceptions are STEPHEN BREYER, REGULATION AND ITS REFORM (1982) and CASS SUNSTEIN, THE COST-BENEFIT STATE (2002).

[35] *See* William Davies, *How Statistics Lost Their Power – and Why We Should Fear What Comes Next*, The Guardian (January 19, 2017), https://www.theguardian.com/politics/2017/jan/19/crisis-of-statistics-big-data-democracy; RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH (2008).

[36] ACKERMAN & HEINZERLING, *supra* note 27; David M. Driesen, Douglas A. Kysar & Amy Sinden, *Cost-Benefit Analysis: New Foundations on Shifting Sand*, 3 Reg. & Governance 48 (2009).

"market" and the status quo. If the status quo is an unregulated market, and regulation must pass a CBA, then the CBA requirement might slow down regulation relative to a procedure that allows regulators to disregard evidence that does not support regulation. But the status quo almost always involves a regulated market; CBA can slow down *de*regulation (which is actually a form of regulation that strips away restrictions on market behavior) as well as regulation because CBA requires deregulation to be based on quantified evidence as well. Moreover, if the argument were taken seriously, it would suggest that any type of government decision-making that rested on analysis and evidence is inherently conservative in an ideological sense. Such an argument would sweep in procedural requirements such as those in the APA, and indeed the normal rules for legislation of all kinds.

Another source of error is the view that real but difficult-to-quantify benefits are benefits that liberals value more than conservatives, as a result of which CBA is biased toward conservative outcomes. For example, liberal critics of CBA have complained that CBA disregards many of the hard-to-value benefits of environmental regulation.[37] When a regulator performs a CBA of an environmental regulation, it can easily gather data about costs from industry, while it can only with difficulty place valuations on the health and recreation benefits of a cleaner environment. If regulators must comply with CBA, then they will produce environmental regulations that are weaker than optimal, according to these critics.

There are serious problems with this argument. First, the premise of the argument—that measurement problems tend to result in weak regulation because benefits are harder to measure than costs—is incorrect. Retrospective reviews of regulations show that CBA typically undercounts both costs and benefits in roughly equal measure.[38] Even if it is more difficult for regulators to quantify benefits than costs, the remedy is for regulators to invest additional resources in quantifying benefits. If regulators have undercounted benefits in the past, that is a failing of those regulators, not a general problem with CBA. If a regulator cannot quantify a particular benefit or cost with precision, the regulator should offer its best estimate.[39]

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[37] ACKERMAN & HEINZERLING, *supra* note 27 (arguing that CBA does not account well for non-market goods such as health or environmental harms); Driesen et al., *supra* note 36 (same).

[38] *See, e.g.*, United States Government Accountability Office, *Reexamining Regulations: Opportunities Exist to Improve Effectiveness and Transparency of Retrospective Reviews* (2007) (surveying and summarizing approximately 1300 retrospective reviews conducted by multiple agencies).

[39] Masur & Posner, *Unquantified Benefits*, *supra* note 15, at 832.

In addition, the mandate to avoid doubtful valuations is just a standard of proof: it applies with equal force to the claims made by pro-regulation and anti-regulation forces. Business interests, for example, often complain that regulations generate economic uncertainty that interferes with planning and thus increases costs. In recent years, they have made this argument about regulations issued under the Affordable Care Act and the Dodd-Frank Act.[40] The argument is not crazy; maybe it is even true. And if it is true, then a CBA of a regulation should take account of the uncertainty costs that it creates in addition to the costs of compliance. But regulators have refused to take account of uncertainty costs of this sort, no doubt because the evidence of such costs remains slim.[41]

Another mistake is the assumption that regulation always advances the interests of liberals. Consider President Trump's plan to build a wall along the Mexican border in order to block illegal entry into the United States. Trump's major argument is that the wall would reduce crime and terrorism. However, the evidence that the wall would have any effect on crime or terrorism is nil. If the Department of Homeland Security were required to perform a CBA before building the wall,[42] it would be required to concede that the evidence indicates that illegal immigrants commit crimes at about the same rate as U.S. citizens, which is very little. Because the wall itself would cost billions of dollars while generating trivial benefits in terms of crime reduction, it would fail a CBA. We suspect that similar types of analysis would indicate that many harsh forms of law enforcement are not cost-justified.[43]

As a final example, consider the case of capital regulations, which limit the amount of debt that banks can use to fund their investments and loans.[44] Nearly everyone agrees that capital regulations make sense; the ideological divide concerns how high they should be. When capital regulations were very low, CBA would have required that they be increased—a "liberal" outcome. Now that they are much higher, it is

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[40] Carter Wood, *Dodd-Frank, Whence Uncertainty Springs*, THE BRT BLOG (2012), http://businessroundtable.org/media/blog/dodd-frank-whence-uncertainty-springs.

[41] Scott R. Baker, Nicholas Bloom, & Steven J. Davis, *Measuring Economic Policy Uncertainty*, 131 Q. J. ECON. 1593 (2016); Scott R. Baker, Nicholas Bloom, & Steven J. Davis, *Has Economic Policy Uncertainty Hampered the Economy?* (Becker Friedman Institute for Research in Economics Working Paper No. 2012-003, February 2012).

[42] As it would likely be required to do if Trump relied on the Secure Fence Act of 2006 rather than a new statute, as suggested by news reports. See Daniel Hemel, Jonathan Masur, & Eric Posner, *How Antonin Scalia's Ghost Could Block Donald Trump's Wall*, NY TIMES, Jan. 25, 2017, https://www.nytimes.com/2017/01/25/opinion/how-antonin-scalias-ghost-could-block-donald-trumps-wall.html?_r=0.

[43] Darryl K. Brown, *Cost-Benefit Analysis in Criminal Law*, 92 CAL. L. REV. 323 (2004).

[44] *See* Eric A. Posner, *How Do Bank Regulators Determine Capital-Adequacy Requirements?*, 82 U. CHICAGO L. REV. 1853 (2015).

possible that CBA could require that they be reduced—a "conservative" outcome. The apparent ideological valence of CBA is an illusion generated by the location of the status quo regulation in ideological space; CBA does not itself have an inherent ideological valence.

B. Are Judges Capable of Evaluating CBAs?

It is possible to hold the view that regulators should conduct CBAs but that when judges review regulations, they should not evaluate the regulation on the basis of the quality of the CBA. It would be left for the White House or Congress to discipline regulators who issue regulations that fail CBAs. The argument is based on traditional notions of judicial review: judges, as generalists, are in a weak position to evaluate the work of experts.[45] We see this argument in many different contexts: for example, the business judgment rule and notions that judges should defer to legislative fact-finding or executive-branch judgments in the field of foreign relations.

While we sympathize with this view,[46] the argument overlooks the ways that CBA facilitates judicial review. Judicial review of CBA can be divided into two components, one procedural and the other substantive. In reviewing procedure, the court verifies that the regulator has quantified all the costs and benefits of the regulation and translated them into comparable units (dollars), and that the quantified benefits exceed the quantified costs. If the regulator fails to quantify any benefits, then the regulation cannot be approved on the basis of those alleged benefits, though it may be approved if the quantified benefits exceed the quantified costs. Judicial review is an accounting procedure that any judge can undertake. It is no harder than verifying that the deadlines for notice-and-comment rulemaking have been obeyed.

The SEC in *Business Roundtable* and the EPA in *Corrosion Proof Fittings* both failed to comply with the procedural elements of CBA: they both failed to report estimates of the monetary benefits and the overall cost-benefit comparison. Many other regulators routinely fail to quantify costs and benefits in the full and rigorous way that is required by CBA.[47] Even if courts were to enforce only the procedural requirements of CBA, they would improve the performance of agencies.

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45 Gersen & Vermeule, *supra* note 30; *see also* Sunstein, *supra* note 11, at 8-10, 17 (suggesting that courts should play a minimal role in reviewing cost-benefit analysis, rather than zero role).

46 One of us once (tentatively) held this view. *See* Eric A. Posner & E. Glen Weyl, *Cost-Benefit Analysis of Financial Regulations: A Response to Criticisms*, 124 YALE L.J. FORUM 246, 247 (2015) (mea culpa).

47 Masur & Posner, *Unquantified Benefits*, *supra* note 15.

But enforcement of CBA procedure may not be sufficient. Regulators may be tempted to comply formally with the rules but invent valuations or put insufficient effort into calculating valuations. To review valuations on substantive grounds, courts will need to second-guess judgments that lie at the heart of the agencies' expertise. But while substantive review may often be challenging, it need not be. Regulators often make easily identifiable substantive errors, including: using inconsistent numbers for the same cost or benefit;[48] failing to consider the tradeoffs that regulation would require, including the cost of substitutes, as the EPA did in banning asbestos;[49] failing to discount over time or discounting inconsistently (for example, discounting costs but not benefits);[50] and failing to cite or discuss relevant peer-reviewed studies.[51] If courts did no more than demand that agencies comply with these basic forms of good practice, CBAs would be considerably better than they have been.[52]

But there are also harder cases. What should courts do when the regulator cites conflicting studies and concludes that one study is more plausible than the other, as in the case of the proxy access rule?[53] We think that regulators should not regulate when the empirical evidence for regulation is thin, but can imagine situations where courts should defer to the regulator's judgment on the quality of academic studies because of the complexity of the issues involved. As is so frequently the case in litigation, the right answer will depend on the circumstances. But courts deal with expert studies in private litigation all the time.[54] Because both sides typically submit expert reports with different conclusions, the court must evaluate both of them, even though the reports may involve statistical,

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[48] *See* EPA, Asbestos; Manufacture, Importation, Processing, and Distribution in Commerce Prohibitions, 54 Fed. Reg. 29,460, 29,461-62 (1989) (codified at 40 C.F.R. Pt. 763).

[49] See *id.*

[50] *See* Corrosion Proof Fittings, 947 F.2d at 1218 (discussing EPA inconsistencies in discounting).

[51] *See* National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, 77 Fed. Reg. 9304, 9304 (Feb. 16, 2012) (codified at 40 C.F.R. pts. 60 & 63). (EPA Mercury Rule).

[52] *See* Masur & Posner, *Unquantified Benefits*, *supra* note 15. Sunstein offers a more limited list of errors that should lead a court to overturn a regulation, nearly all of which involve errors more egregious than the ones we describe above. Sunstein, *Cost-Benefit Analysis and Arbitrariness Review*, *supra* note 10, at 17.

[53] *See infra* Part II.B.

[54] Kelli M. Hinson et al., *Civil Evidence*, 59 SMU L. Rev. 965, 965 (2006) ("This survey period found the courts reviewing expert cases more than any other topic.").

scientific, and other technical reasoning. It cannot "defer" to two inconsistent reports. In the case of judicial review of agency regulation, courts should draw on the same skills that they use in private litigation.

In a recent paper, Gersen and Vermeule criticize strict judicial review of agency action. Although their major point is that "rationality review" does not imply searching inquiry of agency rulemaking, many of their criticisms apply to judicial review of CBA as well, as they note.[55] Among other things, they point out that regulators often legitimately rely on "tacit knowledge" that they cannot document for the benefit of courts;[56] that regulators must make tradeoffs between speed and accuracy that cannot be quantified;[57] that they face subtle questions about how to value risk;[58] and, most of all, that regulators must make decisions in the face of extreme uncertainty where the risks cannot be reliably quantified.[59]

While all these problems create challenges for regulators and courts, they are not insurmountable. The tacit knowledge problem is just a restatement of the problem of valuation: often valuations are difficult to determine. As we have argued, that problem is best addressed institutionally, with a requirement that agencies go on record with estimates and then evaluate the accuracy of those estimates at a future time.[60] We agree that agencies that face deadlines or have good reason to act quickly may need to be excused from a CBA requirement. There is a subtle question as to how much time an agency should spend gathering information before it conducts a CBA, one that can be answered only with common sense and in light of experience, and here again judicial review should be deferential. But this is more a problem of theory than of practice. We doubt that CEOs are flummoxed when subordinates turn over sloppy NPVs and plead the pressure of time.

Risks can usually be quantified and valued. Where they cannot be, the problem is not for judicial review but for regulation itself. When uncertainty makes it impossible to know whether a regulation will improve welfare, the agency should not regulate. As we have argued elsewhere, when regulators believe that they have strong reasons to value regulatory benefits but lack statistical evidence that permits for a valuation, they should make estimates and provide for retrospective review at a future date, when the uncertainty has been resolved.[61]

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[55] Gersen & Vermeule, *supra* note 30, at 1370-71.
[56] *Id.* at 1396.
[57] *Id.* at 1394-95.
[58] *Id.* at 1387-88.
[59] *Id.* at 1359.
[60] Masur & Posner, *Unquantified Benefits*, *supra* note 15, at 132.
[61] Most such examples are straightforward: for example, a pollutant is known to produce headaches in the exposed population but the regulator does not how to value a headache.

The ability of courts to review the substantive determinations of agencies is in the end an empirical question. Little can be said now about this question because courts have so rarely reviewed the CBAs of agencies. That has not stopped critics of CBA from pointing to *Corrosion Proof Fittings* and *Business Roundtable* as evidence that courts are incapable of reviewing the substance of CBAs. In the next Part, we evaluate their argument.

## II. REGULATION AND COST-BENEFIT ANALYSIS IN THE COURTS

If there is an "anti-canon" in administrative law,[62] it includes *Corrosion Proof Fittings v. EPA* and *Business Roundtable v. SEC*. Those cases are regularly held up as examples of judicial review run amok—of courts substituting their (less informed) judgments for those of the expert agencies they were reviewing, with disastrous consequences. According to this line of thinking, forcing agencies to conduct cost-benefit analyses, and allowing courts to review those cost-benefit analyses and reject them if they are inadequate, is sure to lead to rampant invalidations of regulations that should be allowed to stand. The academic consensus against *Corrosion Proof Fittings* and *Business Roundtable* is nearly complete.

But the critics do not come to grips with a significant fact about the cases: the cost-benefit analyses that supported the EPA and SEC regulations at issue in those two cases were defective. The agencies failed to quantify important costs and benefits, and where they did, their analyses suggested that at least parts of the regulations were producing more costs than benefits. Moreover, the Fifth Circuit in *Corrosion Proof Fittings* and the D.C. Circuit in *Business Roundtable* proved themselves capable of evaluating the agencies' CBAs and pinpointing their errors. The judicial opinions are not perfect, but the agencies' work was far from perfect as well, as the courts aptly demonstrated. The two cases are examples of cogent judicial reasoning in the face of agency error.

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There are standard methods for making reasonable estimates in such circumstances. In other cases, the exposed population is not known, and without an expensive epidemiological studies can only be guessed at. In both cases, the agency should be allowed to make estimates subject to a subsequent review. See *id*.

[62] *Cf.* Jamal Greene, *The Anticanon*, 125 HARV. L. REV. 379 (2011).

## A. *Corrosion Proof Fittings*

### 1. *The Regulation, the Court Decision, and the Academic Response*

In 1989, the EPA promulgated a rule under the Toxic Substances Control Act (TSCA) that banned the manufacture, importation, and sale of nearly every product containing asbestos—twenty-seven products in all.[63] TSCA gives the EPA the authority to regulate any chemical substance that presents an "unreasonable risk" to health or the environment, and it directed the agency to select the "least burdensome requirements" that would alleviate the risk.[64] By the time the EPA set out to regulate asbestos, it had accumulated evidence to indicate that it was a "highly potent carcinogen" and could cause other diseases as well, including mesothelioma (sometimes referred to as "black lung disease").[65] The EPA imposed a near-complete ban on asbestos, believing that there were no acceptably safe uses, rather than banning its use in particular products, imposing labeling requirements, or opting for some other less stringent regulatory response.

Two years later, in *Corrosion Proof Fittings v. EPA*,[66] the Fifth Circuit struck down the EPA's asbestos regulation. It held that the agency had failed to demonstrate that this was the least burdensome means of regulating the health hazards posed by asbestos. The court performed a detailed examination of the EPA's CBA and concluded that the agency had made numerous errors in selecting its level of regulation. These included banning products when costs were likely to exceed benefits and failing to account for risk-risk tradeoffs. Rather than reconsider and re-promulgate the regulation after the Fifth Circuit's decision, the EPA largely abandoned its attempts to regulate asbestos under TSCA and relied instead on a constellation of other statutes (and other agencies).

The scholarly response to the Fifth Circuit opinion was scathing and uniformly negative, and it has remained so in the 25 years since the case was decided. Shortly after it was handed down, one commentator described *Corrosion-Proof Fittings* as a "tragedy;"[67] nearly twenty years later it was still being characterized as a "bête noire" of environmentalists.[68] In between, academic commentary regarding the decision has remained

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63 EPA, Asbestos; Manufacture, Importation, Processing, and Distribution in Commerce Prohibitions, 54 Fed. Reg. 29,460, 29,461-62 (1989) (codified at 40 C.F.R. Pt. 763).
64 15 U.S.C. § 2605(a) (2016).
65 EPA, 54 Fed. Reg. at 29,467.
66 947 F.2d 1201 (1991).
67 Linda Stadler, *Corrosion Proof Fittings v. EPA: Asbestos in the Fifth Circuit--A Battle of Unreasonableness*, 6 TUL. ENVTL. L.J. 423, 433 (1993).
68 Daniel A. Farber, *Rethinking the Role of Cost-Benefit Analysis*, 76 U. CHI. L. REV. 1355, 1380 (2009) (referring to *Corrosion-Proof Fittings* as a "bete noire" of environmentalists).

negative, even from scholars who otherwise tend to support CBA.[69] Most of the criticism has centered around the argument that the court substituted its own views regarding environmental regulation for the (more expert) EPA's in contravention of the proper role of courts in administrative review.[70]

Scholars have been wrong to treat *Corrosion Proof Fittings* as an administrative law bugbear. The *Corrosion Proof Fittings* court wasn't perfect, but it got more right than it got wrong, and it exposed serious flaws in the EPA's CBA. *Corrosion Proof Fittings* should be celebrated as a high water mark of judicial rationality, not treated as an administrative law pariah, as we will demonstrate.

### *2. The EPA's Cost-Benefit Analysis*

The EPA's cost-benefit was based upon a comparison between two states of the world: one in which the agency took no action to regulate asbestos, and one in which it regulated by banning a wide range of different products. For each of the twenty-seven products to be regulated, the EPA calculated the reduction in fatal cases of cancer among workers who would otherwise have come into contact with products made from asbestos.[71] On

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[69] Cass R. Sunstein, *Is the Clean Air Act Unconstitutional?*, 98 MICH. L. REV. 303, 363 n. 272 (1999); Thomas O. McGarity, *Some Thoughts on "Deossifying" the Rulemaking Process*, 41 DUKE L.J. 1385 (1992); David M. Driesen, *Regulatory Reform: The New Lochnerism?*, 36 ENVTL. L. 603 (2006); Robert B. Haemer, *Reform of the Toxic Substances Control Act: Achieving Balance in the Regulation of Toxic Substances*, 6 ENVTL. LAW. 99 (1999); Thomas O. McGarity, *The Courts and the Ossification of Rulemaking: A Response to Professor Seidenfeld*, 75 TEX. L. REV. 525 (1997). *But see* Eric A. Posner, *Controlling Agencies with Cost-Benefit Analysis: A Positive Political Theory Perspective*, 68 U. CHI. L. REV. 1137, 1195-96 (2001) (enumerating the many problems with the EPA's cost-benefit analysis).

[70] McGarrity, *The Courts and the Ossification of Rulemaking*, *supra* note 69, at 546; *see also* McGarrity, *Deossifying*, *supra* note 69, at 1423 (describing the opinion as "virtually indistinguishable from the documents that OMB prepares in connection with its oversight of EPA rulemaking," as if to highlight how out of place such an analysis was in a judicial opinion).

[71] EPA, 54 Fed. Reg. at 29,486. Among the many grounds on which the Fifth Circuit criticized the EPA was the fact that it only only calculated costs and benefits through the year 2000. *Id.* In addition, the fact that the EPA only evaluated the mortality risks of asbestos means that the agency left unquantified a variety of other regulatory benefits, including non-fatal diseases caused by asbestos (emphysema, bronchitis, or even non-fatal cancers), reduced medical costs, reduced asbestos exposure in the general population (as opposed to employees who worked with asbestos), and cancer cases that might occur after the year 2000. This continues a trend we have observed of agencies quantifying only mortality-related benefits and not morbidity-related ones. Masur & Posner, *Against Feasibility Analysis*, *supra* note. Extending the analysis to capture these overlooked costs and benefits would have ambiguous effects; we do not know whether the CBA would have appeared more or less favorable to the regulation had it been more comprehensive.

the cost side of the ledger, the agency quantified the costs to consumers of purchasing more expensive asbestos-free products and the costs to manufacturers (lost profits).[72]

The EPA's first misstep was its failure to consider any less stringent alternatives to a complete asbestos ban, such as permitting the use of asbestos so long as it was labeled with appropriate warnings,[73] or permitting its use but requiring protective equipment, such as respirators, for anyone working with the substance.[74] The agency did not conduct a CBA of any of these alternatives, and from the regulation it does not appear that it even considered them in any systematic way.[75]

This oversight was significant for two reasons. First, the statute explicitly directs the agency to select the "least burdensome" type of regulation that would ameliorate the risks from asbestos. Without having examined the regulatory alternatives, the agency cannot establish that it has done so. This is the primary basis on which the court rejected the regulation, and it might have determined the outcome even had the agency made no other errors.[76] Many commentators have criticized the Fifth Circuit for this aspect of its decision and argued that the statute does not in fact require the agency to choose the least burdensome mode of regulation, the plain language of the statute notwithstanding.[77] We agree that it is asking a lot of an agency—too much, in all likelihood—to require it to select the optimal regulation, as opposed to choosing the best regulation from among a finite set of options or simply settling on a regulation that produces more benefits than costs. The problem here was that the EPA did not consider *a single alternative* in its CBA. It is difficult to see how the agency fulfilled its statutory mandate without considering even one alternative mode of regulation.

Second, the EPA's decision to ignore alternatives such as requiring workers to use protective equipment affected the CBA's "zero regulation" baseline. In calculating the costs and benefits of regulating, the agency assumed that, in the absence of regulation, workers who came into contact with asbestos would not use available protective equipment. This had the

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[72] EPA, 54 Fed. Reg. at 29,468. It also did not quantify the costs of lost jobs for workers who were employed in asbestos-related industries, which we have similarly observed to be typical of administrative agencies. Masur & Posner, *Unemployment and Cost-Benefit Analysis*, *supra* note 18, at 593.
[73] 15 U.S.C. § 2605(a)(3) (2016).
[74] 15 U.S.C. § 2605(a)(5) (2016) (permitting the agency to regulate "any manner or method of commercial use of such substance or mixture").
[75] EPA, 54 Fed. Reg. at 29,462.
[76] Corrosion Proof Fittings, 947 F.2d at 1217.
[77] *See, e.g.*, McGarrity, *The Courts and the Ossification of Rulemaking*, *supra* note 69, at 545-47.

effect of maximizing the apparent benefits of complete regulation, as compared with the baseline of zero regulation and zero workplace safety protections.[78]

And yet despite the EPA's having stacked the deck in its favor, the costs of banning many asbestos-related products well outweighed their benefits, even by the EPA's own calculations. For instance, the EPA estimated that it would cost $128.03 million to eliminate asbestos pipe, but doing so would only save 4.38 lives, for a cost of $29.23 million per life saved.[79] The EPA does not use or report a value of a statistical life (VSL) anywhere within the regulation. The Fifth Circuit did not focus on this oversight, but it is unquestionably an error—how can the agency know whether the benefits of the regulation exceed the costs without converting the two quantities into the same unit? Regardless, the $29.23 million figure is far greater than any value that the EPA has ever used. In 1984, five years before the asbestos regulation, the EPA used a VSL of $4.5 million;[80] in 1997, it used a value of $5.75 million;[81] and the current EPA VSL is $7.4

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[78] EPA, 54 Fed. Reg. at 29,474. The Fifth Circuit declared that the agency had thus "artificially inflated" the benefits of the regulation. *Corrosion Proof Fittings*, 947 F.2d at 1216-17.

[79] EPA, 54 Fed. Reg. at 29,484-85. As with many regulations, the benefits—fatal cases of cancer avoided—would only have been realized years into the future. The EPA reported its estimates of lives both undiscounted (that is, a discount rate of 0%) and discounted at 3%. *Id.* at 29,485. The Fifth Circuit criticized this sharply and argued that if the EPA discounted costs, it must discount benefits as well. *Corrosion Proof Fittings*, 947 F.2d at 1218. In turn, academic commentators have harshly criticized the court for requiring that the number of lives saved be discounted. This is a highly complex and technical issue, with no obvious resolution. *See* Richard Revesz, *Environmental Regulation, Cost-Benefit Analysis, and the Discounting of Human Lives*, 99 COLUM. L. REV. 941, 977–81 (1999); Cass R. Sunstein & Arden Rowell, *On Discounting Regulatory Benefits: Risk, Money, and Intergenerational Equity*, 74 U. CHI. L. REV. 171 (2007). For our purposes, resolving this disagreement is unnecessary. Deciding whether or not to discount benefits affects the cost-benefit calculus with respect to several of the twenty-seven products at issue, but there are still multiple products that fail a cost-benefit test even under the most generous interpretation. Here and elsewhere within the text we report the EPA's undiscounted estimate of the number of lives that would be saved in order to provide the agency with the greatest possible benefit of the doubt.

[80] EPA, Mortality Risk Valuation, https://www.epa.gov/environmental-economics/mortality-risk-valuation. The EPA reports this value in 2001 dollars. We report it here undiscounted again in order to provide the EPA with the benefit of the doubt.

[81] EPA, Economic Analysis for the National Emission Standards for Hazardous Air Pollutants for Source Category: Pulp and Paper Production; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards: Pulp, Paper, and Paperboard Category—Phase 1 (1997), at 8-12, Table 8-6. Here, the EPA utilized a range of $2.5 million to $9.0 million in 1995 dollars. We report the median figure, again undiscounted.

million.[82] If the EPA had used a VSL of $5.75 million, it would have found that the ban on asbestos pipe produced benefits of only $25.19 million, and thus costs that were more than $100 million greater than the benefits.

Similarly, the EPA estimated that its ban on asbestos shingles would save 0.32 lives at a cost of $23.57 million, or $73.66 million per life.[83] At a VSL of $5.75 million, this product ban would produce costs that exceed benefits by more than $20 million. The EPA also estimated that its ban on asbestos coatings (for roofs and other surfaces) would save 3.33 lives at a cost of $46.29 million, or $13.3 million per life.[84] With the VSL set at $5.75 million, this part of the regulation was expected to produce costs that exceeded benefits by roughly $27 million. It is difficult to imagine the modern EPA, which incorporates VSL figures into its cost-benefit analyses, making such mistakes.[85]

The Fifth Circuit, drawing upon case law from the D.C. Circuit and the Supreme Court, held that the statute's requirement that a risk be "unreasonable" explicitly called for cost-benefit balancing: a risk was only "unreasonable" and thus subject to regulation if the benefits of eliminating that risk exceeded its costs.[86] The court thus concluded that the EPA had acted outside of its statutory authority by regulating products that did not pose unreasonable harms.

Academic commentators who are otherwise hostile to CBA have criticized the court on this point, arguing that it improperly substituted its judgment for the agency's. As a matter of policy, that criticism is misplaced—the Fifth Circuit was right to reject the parts of the regulation that did not pass a cost-benefit test. As a matter of law, it is certainly possible to quarrel with the Fifth Circuit's interpretation of "unreasonable" even though that word is often understood in other legal contexts, such as tort law, to require balancing the benefits and costs of precautions. But this is unimportant to our ultimate point, which is the court's evaluation of the EPA's CBA. The Fifth Circuit may have been tougher on the EPA than the statute required, but it hardly lacked the capacity to check the agency's work.

The EPA's final mistake was its failure to account for the fact that substitute non-asbestos products might carry their own risks to health and

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[82] EPA, Mortality Risk Valuation, https://www.epa.gov/environmental-economics/mortality-risk-valuation. The EPA reports this value in 2006 dollars.

[83] EPA, Asbestos; Manufacture, Importation, Processing, and Distribution in Commerce Prohibition, 54 Fed. Reg. 29,460, 29,484-85 (July 12, 1989) (to be codified at 40 C.F.R. pt. 763).

[84] *Id.*

[85] *See, e.g.*, EPA, *supra* note 81, at 3-22 (employing a VSL figure to calculate the benefits of regulating pulp and paper producers).

[86] Corrosion Proof Fittings, 947 F.2d at 1222.

safety. If substitutes for asbestos will also lead to loss of life, those lives should be offset from the benefits (in lives saved) of the asbestos ban. Yet the EPA failed to perform this necessary step for several products where the substitutes presented non-trivial risks to life. For instance, the EPA had "credible evidence 'that a ban on asbestos use in the aftermarket for brake systems designed for asbestos friction products will compromise the performance of braking systems designed for asbestos brakes'" yet failed to account for the possible additional lives lost if brakes failed.[87] Similarly, the EPA acknowledged that PVC pipe, the most widely used substitute for asbestos pipe, *also* caused cancer among the workers who manufactured it, perhaps even to the same extent as asbestos pipe.[88] Nonetheless, it maintained (against evidence) that this cancer threat was likely overstated and did not factor it into the CBA.[89] Here, again, critics have faulted the Fifth Circuit for its "overly" searching review. But even on the EPA's own terms, it makes no sense to replace one unreasonable risk with another. The agency was wrong to regulate without evaluating the full effects of its regulation, not merely the benefits of eliminating one type of product in isolation.

To be sure, many of the asbestos product bans would likely have produced benefits in excess of costs—though it is difficult to be certain without a full evaluation of the benefits and costs of substitutes. For instance, the agency found that the ban on asbestos brakes for new automobiles would save 19.68 lives at a cost of $12.97 million, or roughly $660,000 per life saved.[90] On the whole, the EPA calculated that its regulation would save 202 lives at a cost of $458.89 million, or $2.27 million per life saved.[91] Nevertheless, the fact that some of the product bans were reasonable did not and should not insulate the others from review, particularly given that it was fully within the EPA's control to decide which products to regulate. The agency originally considered regulating 37 possible products and eventually selected 27 of them.[92] It should have selected fewer.

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[87] *Id.* at 1225 (citing 54 Fed. Reg. at 29,494).
[88] EPA, 54 Fed. Reg. at 29,497.
[89] Asbestos; Manufacture, Importation, Processing, and Distribution in Commerce Prohibition, 54 Fed. Reg. 29,460, 29,498 (July 12, 1989) (to be codified at 40 C.F.R. pt. 763).
[90] *Id.* at 29,484-85.
[91] *Id.* at 29,468. Of course, the Fifth Circuit did not criticize these aspects of the regulation—about the ban on brakes, it wrote that "the EPA did the most impressive job in this area, both in conducting its studies and in supporting its contention that banning asbestos products would save" many lives. *Corrosion Proof Fittings*, 947 F.2d at 1224.
[92] EPA, Regulatory Impact Analysis of Controls on Asbestos and Asbestos Products, at ES-3, Table ES-1 (1989).

*3. Lessons*

*Corrosion Proof Fittings* does not support the argument of its critics that generalist courts lack the capacity to review the work of technocratic agencies. On most technical points, the court got it right and the agency got it wrong. The court did not second-guess the agency's economic models or the peer-reviewed research it relied upon, nor should it have. It relied instead upon simple logic and even simpler arithmetic, which are hardly foreign to even the most generalist judges. No specialized training in science or economics was required.

If the Fifth Circuit went too far, it was in demanding formal CBA where the law (as best understood in 1990) did not obviously require it. In this respect, the Fifth Circuit might have been prescient, as we will explain in Part III. But even if the court was not, these were errors of law, not errors in evaluating the agency's CBA. In a similar vein, some commentators have criticized the Fifth Circuit's choice of remedy, arguing (for instance) that the court should have remanded the regulation to the EPA but let it remain in force in the interim, rather than vacating it.[93] The court did not have the authority to strike down some aspects of the regulation while letting others stand, as courts sometimes do with statutes. Here, it was all or nothing. Perhaps the court would have been better advised to allow the regulation to stand while the EPA improved it on remand. But the choice of remedy again has nothing to do with the court's competence to review the EPA's CBA, which is the issue that concerns us. On that score, the Fifth Circuit's much-maligned opinion in *Corrosion Proof Fittings* is grounds for confidence.

B. *Business Roundtable*

*1. The Regulation, the Court Decision, and the Academic Response*

Corporate voting takes place at shareholder meetings, but because few shareholders attend the meetings, they are allowed to vote "by proxy." The corporation sends a proxy ballot to the mailing addresses of all shareholders. Shareholders who wish to vote fill out the ballot and mail it back to the corporation. (Proxy voting can also occur via the internet.) Their votes are then registered during the shareholder meeting. Because the corporation designs the proxy ballot (subject to various legal constraints, including disclosure requirements), the corporation can decide whose names

[93] *See, e.g.*, SUNSTEIN, *supra* note 34, at 56-57.

are placed on the ballot for director positions. Corporations typically include only the names of incumbents or replacements who are endorsed by the incumbents. When the SEC began considering the proxy access rule, corporations were not required to include the names of "dissidents" nominated by shareholders, and rarely did. In order to elect dissidents, shareholders who supported them were required to prepare their own proxy ballots and mail them directly to shareholders. This was an expensive and time-consuming process that only the largest and most sophisticated shareholders could afford. Critics of the system argued that that corporations should be required to give "proxy access" to shareholders, or some of them, so that dissident would be placed on the proxy ballot mailed by the corporation to shareholders.[94]

The SEC undertook notice-and comment rulemaking and ultimately issued Rule 14a-11, in 2010.[95] The rule was intended to improve corporate governance, and hence the value of the corporate form, by reducing the cost of electing "dissident" directors who were not supported by the leaders of a corporation. The final rule provided that a corporation must include information about a shareholder nominee in the proxy materials and put the nominee's name on the proxy ballot if the nominee is nominated by a shareholder or group of shareholders who have held at least 3% of the voting power of the corporation for at least three years. If more than one shareholder or group of shareholders is eligible, than only the person or group with the largest voting power may take advantage of the proxy access rule. Various other limits and procedural requirements were also imposed.

The D.C. Circuit struck down Rule 14a-11 in *Business Roundtable*.[96] The legal bases for its holding were the Administrative Procedure Act, which bars "arbitrary and capricious" rulemaking, and the Exchange Act and the Investment Company Act of 1940, which require the SEC to take account of "efficiency, competition, and capital formation" when issuing a new rule. The Court interpreted these provisions as requiring the SEC to show that Rule 14a-11 passed a cost-benefit test, and held that the SEC's CBA was defective.

The court found numerous errors in the SEC's CBA. First, the SEC failed to "estimate and quantify" the costs that result when companies oppose shareholder nominees in election contests, and failed to state in the

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[94] See, e.g, Lucian A. Bebchuk & Scott Hirst, *Private Ordering and the Proxy Access Database*, 65 THE BUSINESS LAWYER 329 (2010); Bo Becker, Daniel Bergstresser & Guhan Subramanian, *Does Shareholder Proxy Access Improve Firm Value? Evidence from the Business Roundtable's Challenge*, 56 J.L. & ECON. 127 (2013).

[95] SEC, Facilitator Shareholder Director Nominations, 75 Fed. Reg. 16,668, 56,670 (Sept. 16, 2010) (codified at 17 CFR 240.14a-11)

[96] 647 F.3d 1144, 1156 (5th Cir. 2011).

alternative that these costs could not be estimated.[97] Second, the SEC relied on "insufficient empirical data" for its conclusion that Rule 14a-11 would, by increasing the likelihood that dissidents would sit on corporate boards, improve the performance of corporations. The studies on which the SEC relied provided only "mixed" support.[98] Third, the SEC discounted the costs of the rule by improperly assuming that the board and management would not be distracted by election contests because they were required by state law to allow them in any event, ignoring the fact that Rule 14a-11 may make these battles more common.[99] Fourth, the SEC disregarded the risk that Rule 14a-11 would enable "shareholders with special interests"—unions and pension funds—to use their voting power to achieve goals unrelated to shareholder value, like higher wages.[100] Fifth, the SEC failed to properly estimate the incremental effect of Rule 14a-11 on the number of election contests and frequency of nominations relative to the status quo.[101] Finally, the SEC ignored the special circumstances of investment companies, which are subject to independent regulatory requirements that may reduce the benefits of shareholder nominations.[102]

The academic response was swift and furious. Scholars argued that the court disregarded the law, which had never required the SEC to show that its regulations passed a formal CBA.[103] Many earlier judicial opinions had deferred to the SEC on a range of issues—including its evaluation of empirical studies. Administrative law imposes numerous procedural requirements on agencies like the SEC—requirements that they give notice, that they explain their decisions, and so on—and the court did not identify a significant failure to comply with any of these requirements. Moreover, scholars argued that the court mishandled the studies—giving weight to a literature survey conducted by experts hired by the petitioners while

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[97] *Id.* at 1150.
[98] *Id.* at 1150-51.
[99] *Id.* at 1151.
[100] *Id.* at 1151-52.
[101] *Id.* at 1153-54.
[102] *Id.* at 1154.
[103] The critical literature on *Business Roundtable* is too large to cite. We counted 25 articles that explicitly attack the opinion in the text; dozens others make critical comments in footnotes. The articles make similar arguments. For a few examples, see, e.g., Grant M. Hayden & Matthew T. Bodie, The Bizarre Law & Economics of Business Roundtable v. SEC, 38 J. Corp. L. 101 (2012); James D. Cox & Benjamin J.C. Baucom, The Emperor Has No Clothes: Confronting the DC Circuit's Usurpation of SEC Rulemaking Authority, 90 *Texas Law Review* 1811 (2012); Michael E. Murphy, The SEC and the District of Columbia Circuit: The Emergency of a Distinct Standard of Judicial Review, 7 Va. L. & Bus. Rev. 125 (2012). For a rare defense, see Garrett F. Bishop & Michael A. Coffee, *A Tale of Two Commissions; A Compendium of the Cost-Benefit Analysis Requirements Faced by the SEC & CFTC*, 32 REV. OF BANKING & FIN. L. 585 (2012-2013)

dismissing high-quality peer-reviewed articles that lent support to the SEC's position.[104]

### 2. *The CBA and Its Problems*

The SEC reported a CBA in the materials accompanying the proposed rule, and then updated it in light of comments. The latter document, which we focus on, accompanies the final rule. The CBA is seriously deficient. It does not adequately quantify either the benefits or the costs of the rule.

In the CBA, the SEC identifies four categories of benefit: (1) facilitating shareholders' ability to nominate and elect directors; (2) creating a "minimum uniform procedure" for voting; (3) "potentially" improving board and company performance; and (4) creating more informed voting. However, the only benefit the SEC quantifies is the cost savings for shareholders, who on average save $18,000 per election contest in avoided printing and postage costs.[105]

Moreover, as the SEC seems to acknowledge, the key question is not the (de minimis) postage and printing cost savings, but the effect of the rule on corporate performance. To evaluate this question, the SEC would need to quantify three key variables: the rule's effect on the probability that shareholders will nominate dissidents; its effect on the probability that the dissidents will be elected; and the effect of the dissident's occupation of a board seat on the corporation's behavior and ultimately its profits. It quantifies none of these variables.

For the first, the SEC argues that the proxy rule increases the probability that dissidents will be nominated because the cost savings encourage shareholders to nominate directors in the first place.[106] But while simple economics suggests that if the cost of nomination declines, the frequency of nomination will increase, the minimal cost savings mean that the change in frequency will also be minimal. For the rule to have beneficial effects, the dissident nominee must also be elected—and presumably that will occur less than 100% of the time because other shareholders may prefer to vote for management nominees.

With respect to the second, the SEC does not estimate the probability that dissident nominees will be elected. A typical large shareholder of a large public corporation will rarely own more than 5-7% of the firm. The shareholder will be outvoted unless it can convince other shareholders to join it. This probability might be small, even tiny.

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[104] *See, e.g.*, Hayden & Bodie, *supra* note 103, at 109.
[105] SEC, 75 Fed. Reg. at 56,757.
[106] *Id.*

The third question is whether a corporation that includes a dissident on its board will make higher profits than a corporation that lacks such a dissident. An initial concern is that the dissident will always be outvoted by the incumbents, and will otherwise not exert much influence on corporate decisions. However, it is also possible that incumbent directors will work harder and display greater loyalty to shareholders because they fear the greater chance of being replaced by dissidents. The SEC cites academic papers that it says support this position, but the two major studies it relies on provide no real evidence in support. One study, by Cernich et al., claims that firms with hybrid boards outperform those that do not but does not include a statistical test of the data it relies on.[107] The other, by Mulherin and Poulsen, is statistically rigorous but focused on a different question. The authors show that firms that face proxy contests gain more value than a control group of firms that do not, but their study does not test the relevant hypothesis that lowering the cost of proxy contests increases the value of corporations.[108] Moreover because proxy contests are most likely to occur at the most poorly managed corporations, the positive effect they find reflects variation in management and so does not reflect the benefits (or costs) for firms with better management.[109] In any event, the SEC does not estimate the effect of Rule 14a-11 on corporate performance; it merely says that it is positive.

The SEC examines three categories of potential costs: possible adverse effects on company performance; additional complexity; and the costs of preparing, printing, and mailing additional proxy materials. It acknowledges all of these possible costs but addresses only the third

[107] Chris Cernich, Scott Fenn, Michael Anderson & Shirley Westcott, *Effectiveness of Hybrid Boards* (Proxy Governance Working Paper, Nov. 2009).

[108] Annette B. Poulsen & Harold J. Mulherin, *Proxy Contests and Corporate Change: Implications for Shareholder Wealth*, 47 J. FIN. ECON. 279 (2013).

[109] As the SEC acknowledges, see Final Rule, note 921. The empirical literature on corporate governance provides mixed evidence that extending the "shareholder franchise," that is, making it easier for shareholders to vote, increases the value of corporations. Compare David Yermack, *Shareholder Voting and Corporate Governance, Annual Review of Financial Economics*, 2 ANN. REV. FIN. ECON. 1 (2010); Jonathan Karpoff, Paul Malatesta, & Ralph A. Walking, *Corporate Governance and Shareholder Initiatives: Empirical Evidence*, 42 J. FIN. ECON. 365 (1996); John G. Matsusaka, *Why Do Managers Fight Shareholder Proposals? Evidence from No-Action Letter Decisions*, HARVARD LAW SCHOOL FORUM ON CORPORATE GOVERNANCE AND FINANCIAL REGULATION (Jan. 20, 2017) https://corpgov.law.harvard.edu/2017/01/20/why-do-managers-fight-shareholder-proposals-evidence-from-no-action-letter-decisions/; *and* Vicente Cuñat, Mireia Gine, & Maria Guadalupe, The Vote Is Cast: The Effect of Corporate Governance on Shareholder Value (NBER Working Paper No. 16574, Dec. 2010); Vicente Cuñat, Mireia Gine, & Maria Guadalupe, *Corporate Governance and Value: Evidence from "Close Calls" On Shareholder Governance Proposals*, 25 J. APPLIED CORP. FIN. 44 (2013).

category in quantitative terms. In a confusing passage, the SEC makes various estimates of the costs in time and money for companies (and in some cases, shareholders) to make relevant disclosures, evaluate proposals for their legal compliance, print and mail proxy materials, and fight against a shareholder nominee.[110] However, in some cases it is unclear whether the SEC agreed with commentators' estimates, and, in any event, it does not conclude with a formal aggregate estimate.

The SEC's CBA was plainly inadequate. Because it did not include estimates of (quantified) aggregate costs and benefits, it did not provide a basis for the conclusion that the rule was efficient. The court properly struck down the rule on cost-benefit grounds.

What should the SEC have done? The major question is whether Rule 14a-11 would improve the value of corporations by more than the cost of compliance. On the benefit side, proxy access will improve the value of a corporation if, by improving corporate governance, it reduces the cost of capital. To evaluate the prospect for such improvement, two questions must be answered. First, how many firms—and what kind of firms—are likely to add dissident directors as a result of the proxy access rule? Second, to what extent will dissident directors affect the performance of a firm?

We suspect that the major obstacle to the rule is that it is implausible that, by reducing the cost of nominating a director by $18,000, the rule would produce more than a trivial likelihood that dissidents will be nominated and elected over the baseline. This amount of money is pocket change for shareholders who own 3% of a large firm. If they expect to gain financially from the election of a dissident, this amount of money will not show up on the radar screen. And if the increased likelihood of election of a dissident director is trivial, then the overall effect of the rule will be trivial as well. While the SEC cited a study that suggested that proxy contests (but not necessarily contests involving dissident nominees) increase firm value, it did not derive an estimate of this benefit for use as an input in the CBA of the proxy access rule.[111] It matters to the CBA whether the improvement in corporate performance is great or small. Finally, the academic literature does not provide much support for the claim that large shareholders will cause firms to maximize profits rather than serve those shareholders' private interests. Theory suggests that the shareholder has a weak incentive to maximize profits because most of the gains accrue to other shareholders.[112]

The best argument for the SEC is that the cost of complying with the rule is likely small. The only clearly identifiable costs are the printing and

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[110] SEC, 75 Fed. Reg. at 56,669-770
[111] *Id.* at 56,762.
[112] *Id.* at 56,770.

mailing costs, which are very small. Indeed, they are likely to be zero or even negative in aggregate given that the rule transfers the burden from the shareholder to the corporation, which must merely augment the proxy materials, unlike the shareholder who must produce a separate mailing.

A more difficult question is how to estimate the cost of proxy battles that erupt when the corporation takes steps to fight the dissident nominee. We think that the best approach would have been to survey corporations and ask how much they have spent in these cases. Some commentators claimed costs as high as $14 million.[113] While the SEC may have been justified in disregarding these numbers—which may have been unrepresentative or self-serving—it should have used a rigorous method to estimate costs.

Finally, the SEC should have addressed the argument that the proxy access rule would have been exploited by labor unions and pension plans to push through dissident directors uninterested in maximizing corporate profits. Here, we suspect that SEC was right to reject this argument, though it should have explained why. If, as we suggest above, the incremental savings of $18,000 will increase the probability of a dissident election by only a trivial amount, and if a dissident director will normally be outvoted, especially if it is true that he or she will try to transfer corporate resources to a favored constituency, then the harm done would be insignificant. But this argument implies the benefits of the rule are low as well, and so if it is sound, the rule would probably still fail a CBA.

### *3. Lessons*

The reason that the court in *Business Roundtable* acted rightly in striking down the proxy access rule is not that the rule was obviously a bad one but that the SEC failed to supply an adequate CBA. The SEC's CBA was inadequate because it did not calculate aggregate benefits and costs in quantified form. If the court had upheld the rule, the SEC would have been given no incentive to take CBA seriously. There is also strong evidence that, as a result of Business Roundtable, the SEC has significantly improved its CBAs.[114]

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[113] *Id.* at 56,770.

[114] Jerry Ellig, *Improvements in SEC Economic Analysis since Business Roundtable: A Structured Assessment*, Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, December 2016. ("Although substantial room for improvement still exists, the court decisions appear to have motivated the SEC, in just a few years, to close the gap between the quality of its economic analysis and the average quality of economic analysis produced by executive branch agencies.").

The case would have been a great deal more difficult if the SEC had supplied estimates of the benefits and the costs derived from the studies that it cited. If it had conducted the surveys that we suggest, the petitioners would have attacked the quality of those surveys, and the court would have been required to evaluate them. We believe that the regulator should be given the benefit of the doubt when it interprets ambiguous survey results or must reconcile inconsistent findings of high-quality studies performed by academics or government researchers. It is possible, as some commentators argue, that the D.C. Circuit signaled that the SEC would be required to satisfy unrealistic standards, and, if so, it should be criticized. But because the SEC omitted the relevant cost and benefit estimates, the court's ruling was correct, and we are left without information as to whether the court would have approved a higher quality CBA.

C. A Broader Perspective

The critics of *Corrosion Proof Fittings* and *Business Roundtable* have much to say about law and precedent but do not come to grips with the real driver of the cases: that the CBAs of the EPA and SEC were shoddy. The courts were right to insist that if the EPA and SEC use CBA, then they should use it properly. The most significant errors of the EPA were its failure to monetize benefits, its insistence on banning products where the costs exceeded the benefits, and its failure to consider the costs of alternatives. In the case of the SEC, the failure to quantify the major benefits and costs of the regulation was decisive. As a result of the cases, both agencies have improved the quality of their CBAs.[115]

What accounts for the criticism of these cases? Both judicial opinions included some questionable reasoning. The Fifth Circuit seemed to imply that it would keep striking down EPA regulations until the EPA chose the single socially optimal regulation. We can see why commentators might worry that the EPA would never be able to satisfy this standard, and so if the Court were taken literally, regulation would become impossible or enormously difficult. However, the commentators read too much into the opinion. Once the Court satisfied itself that the CBA was inadequate, it was obviously tempted—perhaps reasonably so—to identify all the problems that it saw with the EPA's reasoning so that the EPA would not repeat these mistakes the next time around. The Court did not say that any one of these

[115] On the SEC, see *id.*; Masur & Posner, *Unquantified Benefits*, *supra* note 15, at 5-15. In the latter paper, we examine the cost-benefit analyses accompanying every major regulation promulgated from 2010-13. We criticize them for omitting relevant benefits (and sometimes costs), but we did not observe a single cost-benefit analysis that was as poorly executed as the CBA in *Corrosion Proof Fittings.*

problems, taken on its own, would have been fatal to the regulation. Moreover, whether or not the Fifth Circuit erred in demanding too much of the agency, it demonstrated that it was capable of reviewing the EPA's analysis.

The D.C. Circuit also said more than it needed to in *Business Roundtable*. Commentators leapt on a brief passage in which the Court appeared to rely on a report prepared by the petitioners' experts while disregarding a peer-reviewed study.[116] We agree that the Court should have given more attention to the academic study and less attention to the expert report. That said, the study did not support the regulation, while the expert report seems to have adequately summarized the literature. Given that the SEC did not quantify the relevant benefits and costs, the Court's error was of no significance.

Commentators also argued that both courts disregarded precedents and misinterpreted statutes. Their argument boils down to the claim that the APA commands courts to be "deferential" and the two panels did not defer to the judgments of the regulators. The problem with this argument is that the APA makes no such command: it is entirely ambiguous. The Supreme Court and the lower courts have from time to time in dicta announced that courts should "defer" to the judgments of agencies, but this requirement has always been empty.[117] It at most rules out the extreme end of the spectrum—the "high" or de novo level of review. In the cases themselves, the rulings are all over the place: sometimes courts strike down regulations based on seemingly minor disagreements with regulators, at other times they uphold regulations even after expressing doubts about major determinations by the regulators.[118] We are firmly of the view that there is no way to derive a "rule" from this riot of case outcomes. But you can't prove a negative. Maybe there is, and it is invisible or has not yet been discovered.

We think that CBA offers a way out. Courts really can scrutinize CBAs in a consistent way, just as they can scrutinize whether agencies follow procedural requirements like notice-and-comment. While judgment calls cannot be eliminated, they can be confined to a small portion of the decision space. The courts in *Corrosion Proof Fittings* and *Business Roundtable* were the first to understand this point.

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[116] Business Roundtable, 647 F.3d at 1150-51.

[117] *Compare* Miles & Sunstein, *supra* note 5 (describing the many cases in which courts strike down regulations for surprising reasons) *with* Gersen & Vermeule, *supra* note 30 (arguing that judicial review has largely been deferential, but nonetheless highlighting multiple cases in which it has not).

[118] *See supra* note 117.

## III. CBA AND THE LAW

We see *Corrosion Proof Fittings* and *Business Roundtable* as harbingers rather than errors—harbingers of an era of enhanced judicial review of CBA. This conviction is fortified by developments in the Supreme Court. While the Supreme Court has not gone as far as the Fifth and D.C. Circuits, it has laid out a path in this direction.

### A. CBA in the Supreme Court

The story begins inauspiciously for CBA. In the 2001 case *American Trucking v. Whitman*,[119] the Supreme Court addressed national ambient air quality standards promulgated by the EPA under Section 109 of the Clean Air Act.[120] That statute directs the EPA to establish "ambient air quality standards the attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health."[121] Trade groups challenging EPA standards for ozone and particulate matter argued that the agency should have taken costs into account when setting air quality standards.[122] But the Court held that this part of the Clean Air Act did not permit the EPA to use CBA when regulating. Justice Scalia, writing for the majority, explained: "we find it implausible that Congress would give to the EPA through these modest words the power to determine whether implementation costs should moderate national air quality standards."[123] "The language," the Court said, "is absolute."[124]

Eight years later, however, the Court took a very different approach to CBA. Section 316(b) of the Clean Water Act, which governs thermal discharge and cooling water intake, directs the EPA administrator to promulgate regulations that "reflect the best technology available for minimizing adverse environmental impact."[125] The EPA balanced costs against benefits in determining the appropriate level of regulation.[126] In

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[119] 531 U.S. 457 (2001).
[120] 42 U.S.C. § 7409(b) (2012).
[121] *Id.*
[122] *Whitman*, 531 U.S. at 464-69.
[123] *Id.* at 468.
[124] *Id.* at 465 (citing DAVID CURRIE, AIR POLLUTION: FEDERAL LAW AND ANALYSIS 4-15 (1981)).
[125] 33 U.S.C. § 1326(b) (2012).
[126] EPA, National Pollutant Discharge Elimination System—Final Regulations to Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. 41,576 (July 9, 2004) (to be codified at 40 C.F.R. pts. 9, 122, 123, 124 & 125).

*Entergy Corp. v. Riverkeeper*,[127] the Court upheld the EPA regulation as a valid exercise of agency discretion under *Chevron* against challengers who argued that the agency should not have been permitted to use CBA.[128] As the Court explained,

> "[B]est technology" may also describe the technology that *most efficiently* produces some good. In common parlance one could certainly use the phrase "best technology" to refer to that which produces a good at the lowest per-unit cost, even if it produces a lesser quantity of that good than other available technologies.[129]

While the Court did not hold that CBA was required—an issue that was not before the Court—the holding was of great significance. Section 316(b) instructs the EPA to minimize adverse environmental impact without regard to costs or any other economic side constraint. Language which could have been interpreted to ban CBA—especially after *Whitman*—was instead interpreted as permissive. After *Entergy*, it seems that courts will not block an agency from using CBA, except perhaps if there is an explicit statutory prohibition.[130] Because the White House requires most agencies to use CBA for most regulations where statutes allow them,[131] *Entergy* means that CBA is more entrenched than ever.

Why did the Court undergo an about-face after *Whitman*? We do not know the answer, but a possible explanation is that it has realized that CBA is a routine rather than exceptional practice for agencies, and a good one at that. This recognition seems to be shared by all of the ideological positions on the court. The dissenters in *Entergy* said that another provision of the Clean Water Act—Section 301(b), which requires that the EPA mandate "the best practicable control technology"[132] and directs the agency to consider "the total cost of application of technology in relation to the effluent reduction benefits to be achieved"[133]—*required* (rather than merely permitted) the agency to use CBA despite the ambiguity of the language.[134]

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[127] 556 U.S. 208 (2009).
[128] Chevron v. Natural Resources Defense Counsel, 467 U.S. 837 (1984).
[129] *Id.* at 218.
[130] *See* John D. Graham & Paul R. Noe, *A Paradigm Shift in the Cost-Benefit State*, REGBLOG, April 26, 2016, https://www.regblog.org/2016/04/26/graham-noe-shift-in-the-cost-benefit-state/ (describing *Entergy* as having "nullified" the "presumption against cost-benefit balancing").
[131] Exec. Order 12,866; Office of Management and Budget Circular A-4.
[132] 33 U.S.C. § 1311(b)(1)(A) (2012).
[133] 33 U.S.C. § 1314(b)(1)(B) (2012).
[134] *Entergy*, 556 U.S. at 242.

In 2015, the Supreme Court took one step further. Section 112 of the Clean Air Act, which governs regulation of certain hazardous air pollutants, instructs the EPA to regulate airborne emissions from power plants if it believes that regulation is "appropriate and necessary."[135] In the course of defending a regulation governing mercury emissions, the EPA argued that it need not take costs into account when deciding whether the regulation was "appropriate and necessary."[136] The Supreme Court rejected that view, *Chevron* notwithstanding. The Court held:

> The Agency must consider cost—including, most importantly, cost of compliance—before deciding whether regulation is appropriate and necessary. We need not and do not hold that the law unambiguously required the Agency, when making this preliminary estimate, to conduct a formal cost-benefit analysis in which each advantage and disadvantage is assigned a monetary value.[137]

What does it mean to require an agency to take into account "cost" but not to conduct a "formal" CBA? It is not clear, but there is reason to believe that the Court thinks—or will soon think—that a formal CBA is required as well.[138] The Court did not reach the question of whether a full CBA was mandated only because the EPA had taken the extreme position that it need not consider costs at all. In addition, the Court not only said that the agency must "consider" costs, but added that "[n]o regulation is 'appropriate' if it does significantly more harm than good."[139]

Adrian Vermeule has suggested that the Court required only that agencies "consider" costs (in some fashion) and stopped short of requiring that they quantify or monetize those costs.[140] But determining whether a regulation "does significantly more harm than good," as the Court demands, necessarily requires comparing the magnitudes of costs and benefits.[141] The

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[135] 42 U.S.C. § 7412(n)(1)(A).
[136] Michigan v. EPA, 135 S. Ct. 2699 (2015).
[137] *Id.* at 2711.
[138] *Contra* Amy Sinden, *A 'Cost-Benefit State'? Reports of Its Birth Have Been Greatly Exaggerated*, 49 ENVTL. L. REP. 10933 (2016).
[139] *Id.* at 2707.
[140] Adrian Vermeule, *Does Michigan v. EPA Require Cost-Benefit Analysis?*, Yale J. on Reg.: Notice & Comment (Feb. 6, 2017), http://yalejreg.com/nc/does-michigan-v-epa-require-cost-benefit-analysis-by-adrian-vermeule/.
[141] Vermeule also seems to suggest that the Court did not require that the EPA always consider costs, only that it consider costs any time it chose to consider benefits. *Id.* ("The Court's main point, then, was simply that the agency would have to consider both benefits and costs, assuming it considered either."). This argument would similarly seem to founder in the face of the Court's insistence that "no regulation is 'appropriate' if it does

only way for an agency (or court) to compare costs and benefits is to quantify them and translate them into comparable units—in effect, to monetize them. Thus, even though it does not say so explicitly, the Supreme Court has for all practical purposes created a rule that agencies must quantify and monetize costs and benefits.

Even if we are wrong and Vermeule is right, the other problem with his argument is that agencies (other than independent agencies) *are* required to conduct CBA—by the White House. And the White House normally requires that the CBA involve both quantified benefits and quantified costs.[142] When a challenge to a regulation reaches a court, then as a practical matter—even if not as a legal matter if Vermeule is correct—the Court will be in a position to review the agency's assessment of costs and benefits. That leaves the question whether a court will give the agency a pass if the agency says that costs or benefits exist without quantifying them. The logic of *Michigan v. EPA* suggests that the answer is no. After all, in that case the EPA did not deny that there would be costs, only that it need not quantify or consider them at the initial stage of regulation. This was unacceptable to the Court.

In principle the EPA could comply with *Michigan v. EPA* by issuing a regulation that, it explicitly admits, generates benefits of $1 billion and costs of, say, $1.1 billion. But we expect that a regulator would be reluctant to make such an admission; indeed, that such an admission could be politically and legally fatal. It is not hard to imagine an oversight hearing where a member of Congress screams at the agency head: "you admit the regulation will cause more costs than benefits and you issued it *anyway*?" Moreover, a judge, no matter how inclined to be deferential, could strike down a regulation for the same reason. Agencies know this. In all of our research, we have found only a handful of regulatory impact analyses in which an agency admits that the costs of a regulation exceed the benefits, and in all of those instances the agency noted that it was obligated to promulgate the regulation by statute, regardless of cost.[143] Otherwise, when agencies report quantified costs that exceed the benefits, the agencies *always* insist that unquantified benefits justify the regulation.[144] This critical bit of wiggle room now appears to be foreclosed by the Supreme Court as a practical (if not legal) matter.

It is important to note that the Court in *Michigan v. EPA* concluded that the EPA must balance costs and benefits in the face of highly

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significantly more harm than good," Michigan v. EPA, 135 S. Ct. at 2711, which necessarily demands that the agency consider both benefits and harms.

[142] Executive Order 12,866; Office of Management and Budget Circular A-4.

[143] Masur & Posner, *Unquantified Benefits*, *supra* note 15, at 133-42.

[144] *Id.*

ambiguous statutory text. "Appropriate and necessary" is amenable to a broad range of statutory meanings, and it invokes cost-benefit balancing much less directly than many other regulatory statutes, such as the "best practicable control technology" provision from the Clean Water Act. For the Supreme Court to hold that a statute that nowhere mentions costs nonetheless *requires* consideration of costs—and requires that costs not significantly exceed benefits—represents a significant evolution from its position in *Whitman v. American Trucking*. There are a wide variety of regulatory statutes that use ambiguous language similar to "appropriate and necessary." There are also many other statutes that use language that seems to invoke cost-benefit analysis even more directly. We survey and catalog some of these statutes in the Appendix.

As in the case of *Entergy*, the Court's enthusiasm for CBA crossed partisan lines. On the issue at the stake in the case, the dissenters agreed that the EPA must consider costs when regulating under § 112 of the EPA. The dissenters departed from the majority because they believed that the agency had in fact done so in the course of regulating.[145] Writing for the four dissenters, Justice Kagan even took the opportunity to offer a ringing endorsement of the importance of considering costs:

> Cost is almost always a relevant—and usually, a highly important—factor in regulation. Unless Congress provides otherwise, an agency acts unreasonably in establishing "a standard-setting process that ignore[s] economic considerations." At a minimum, that is because such a process would "threaten[ ] to impose massive costs far in excess of any benefit." And accounting for costs is particularly important "in an age of limited resources available to deal with grave environmental problems, where too much wasteful expenditure devoted to one problem may well mean considerably fewer resources available to deal effectively with other (perhaps more serious) problems."[146]

Justice Kagan's dissent suggests a default rule: agencies must weigh costs and benefits, at least in some fashion, absent an explicit statement to the contrary.[147] This position is not yet law; the *Michigan v. EPA* majority does

[145] Michigan v. EPA, 135 S. Ct. at 2714 (Kagan, J., dissenting). Although we have criticized the EPA's approach to the regulation, *see* Masur & Posner, *Unquantified Benefits*, *supra* note 15, at 131-33, we tend to agree with Justice Kagan on this point. However, it is immaterial to our broader argument regarding the Court's endorsement of CBA.
[146] *Id.* at 2716-17 (internal citations omitted).
[147] *See* Sunstein, *Cost-Benefit Analysis and Arbitrariness Review*, *supra* note 11, at 11-12 (describing Justice Kagan's opinion in similar terms).

not comment on it one way or the other. But the fact that even the *Michigan v. EPA* dissenters—presumably the justices who are least favorably inclined toward CBA—are willing to make such a statement is an obvious indication of the degree to which the Court now favors CBA.

## B. The Federal Common Law of the Administrative State

If we are right that CBA is becoming a generic, judicially-imposed requirement for regulation, what is the source of law? We see three possibilities.

*The Organic Statutes*. *Entergy* and *Michigan v. EPA* tie CBA (or consideration of costs, in the latter case) to the text of the regulatory statutes at issue. This raises the inference that if a general CBA mandate exists, as we have argued, then it must be because Congress has ordered agencies to use CBA in hundreds of regulatory statutes.

If such a position were taken, then a CBA mandate would be nearly universal. Nearly all organic statutes—as far as we have been able to survey—use language that is at least as general as that in *Michigan v. EPA*, and a huge number of them use language that requires considerations of cost, like the statute in *Entergy*. We provide numerous examples, with the accompanying language, in the Appendix.

Still, any claim that Congress intended for agencies to use CBA across the board is a fiction. Many statues, such as the "appropriate and necessary" provision at issue in *Michigan v. EPA*, do not mention CBA; the general language they use is best interpreted as exhortation to the agency that it take seriously the risks that they are required to regulate, not that it regulate those risks in any particular way.

*The Administrative Procedure Act*. Section 706 of the APA authorizes courts to strike down regulations that are "arbitrary and capricious."[148] Most scholars think that this level of review is highly deferential, based on the language itself, the practical limitations on generalist review of expert agencies, and the case law.[149] By contrast, Cass

[148] *Id.* at 4 ("[W]henever the governing statute authorizes an agency to quantify costs and benefits and to weigh them against each other, its failure to do so requires a non-arbitrary justification.").
[149] Gersen & Vermeule, *supra* note 30 (arguing that arbitrary and capricious review has traditionally been lax).

Sunstein interprets this provision to require agencies to conduct CBA absent explicit statutory language to the contrary.[150]

Sunstein's argument would make sense of a general trend in the case law that transcends the particular statutes under which agencies regulate. The APA applies to all agency regulation; if the APA requires CBA, then all agencies must conduct CBA. Sunstein also thinks the cases—including *Michigan v. EPA*—support his view.[151]

The problem is that none of the opinions in *Michigan v. EPA* mentions the APA, or even uses the words "arbitrary" or "capricious." *Entergy* similarly lacks even a single mention of the APA, or a single appearance of the words "arbitrary" or "capricious." Even *Whitman v. American Trucking* mentions the APA only in relation to whether the agency action in that case is final and reviewable. There is no mention of section 706, and the words "arbitrary" or "capricious" do not appear.[152] It is of course possible to construct a reasonable argument that it would be arbitrary and capricious to promulgate a regulation that does not pass a cost-benefit test.[153] But it is hard to see the APA as the source of the judicial momentum behind CBA without so much as a single mention of the statute.

Sunstein places significant weight on Justice Kagan's dissent in *Michigan v. EPA*, which we described above. He observes that Justice Kagan's position on CBA does not appear tethered to the Clean Air Act or any other regulatory statute—Kagan is making broad claims about the role of CBA in administrative regulation more generally.[154] Sunstein then argues that this background principle must derive from the APA.[155] But, like the author of the majority opinion, Justice Kagan does not cite the APA or

[150] Sunstein, *Cost-Benefit Analysis and Arbitrariness Review*, *supra* note 11, at 2 ("Whenever an agency fails to calculate costs and benefits and to show that the latter justify the former, a litigant might contend that it has acted arbitrarily."); Cass R. Sunstein & Adrian Vermeule, *Libertarian Administrative Law*, 82 U. Chi. L. Rev. 393, 440-42 ("Indeed, it would generally seem arbitrary for an agency to issue a rule that has net costs (or no net benefits), at least unless a statute requires it to do so.") (2015); SUNSTEIN, *supra* note 34, at 54-57.

[151] Sunstein, *Cost-Benefit Analysis and Arbitrariness Review*, *supra* note 11, at 11 ("In an important decision involving mercury regulation, all nine members of the Supreme Court seemed to converge on a simple principle: *Under the APA, it is arbitrary for an agency to refuse to consider costs*.").

[152] In *Corrosion Proof Fittings*, the Fifth Circuit was at pains to explain that APA § 706 did not even apply to that case because Congress had mandated a different standard of review under the Toxic Substances Control Act. 947 F.2d at 1213-1214. Among the critical cases we discuss, only *Business Roundtable* mentions the APA, and there it is largely boilerplate recitation. Business Roundtable, 647 F.3d at 1148.

[153] Sunstein, *Cost-Benefit Analysis and Arbitrariness Review*, *supra* note 11, at 10-15.

[154] *Id.* at 12.

[155] *Id.* at 11-12.

mention the words arbitrary and capricious. Instead, she cites prior Supreme Court opinions, particularly Justice Breyer's concurrence in *Entergy*, that also do not cite or mention the APA. There is no textual hook that connects these cases to the APA.

*Federal Common Law*. While courts like to tie their decisions to statutes, we think a better explanation of the development of CBA is as a kind of (federal) common law. The courts have awoken to the value of CBA and have increasingly mandated it because they believe that CBA should play a role in regulation. Seen in this perspective, we can reframe Sunstein's APA argument by interpreting the APA as a general authorization to courts to develop a common law of the administrative state, just as the Sherman Act is today understood as an authorization of courts to develop a common law of antitrust.[156] The two statutes are equally ambiguous: they all but insist that courts develop their own standards.[157] Just as the courts groped around blindly for decades before settling on economic principles for guiding antitrust litigation, so have they finally, after much meandering, begun to settle on CBA for regulatory review. Why? It seems likely that courts have come to recognize that the technical advantages of CBA make it a good practice, not much different from keeping records, announcing deadlines, using data rather than anecdotes, using science rather than astrology, explaining decisions, and listening to criticism. The White House's support for CBA over many decades and the increasing sophistication of agencies' CBAs have probably also played a role.[158]

Taking a wide view and relying on hindsight, one can see CBA as the second stage of the rationalization of American government. The first stage was the New Deal, which transferred authority from state legislatures and common-law courts to federal agencies. The agencies were staffed with

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[156] Leegin Creative Leather Prods., Inc. v. PSKS, Inc., 127 S. Ct. 2705, 2720 (2007) ("From the beginning the Court has treated the Sherman Act as a common-law statute.").

[157] Adrian Vermeule has argued that courts cannot require cost-benefit analysis without a direct statutory mandate because doing so would run afoul of *Vermont Yankee*. Sunstein & Vermeule, *supra* note 150; Vermeule, , *supra* note 140. *Vermont Yankee* prohibits courts from devising procedural requirements beyond those outlined in the APA. But as we have argued, it is possible to view the APA itself as having authorized courts to create federal administrative common law, including requiring CBA. Cass Sunstein has made a similar point. Sunstein, *Cost-Benefit Analysis and Arbitrariness Review*, *supra* note 11, at 12. Yet even if this is wrong, and Vermeule's reading is correct, the Supreme Court does not seem to have noticed. The Supreme Court is well on its way to requiring that agencies balance costs and benefits absent explicit statutory language to the contrary. If *Vermont Yankee* prohibits this, the Court does not appear to care.

[158] *See* Jonathan S. Masur, *CBA at the PTO*, 65 Duke L.J. 1701, 1705 (2016) (noting that every president from Reagan to Obama has supported CBA).

experts and given broad authority to regulate in the public interest. But from an early stage the New Deal was opposed by people who feared that federal regulators would abuse their discretion. Congress grappled with this problem by imposing procedural requirements on agencies and providing for an ambiguous level of judicial review in the APA.[159] By the 1970s, however, it was clear that the system was unsustainable. Much regulation turned out to be ill-conceived and ideologically motivated. A bipartisan deregulatory movement corrected many of the worst errors, but by the 1980s the deregulatory movement splintered into a faction that sought to turn the clock back to 1932 and a faction that sought technocratic rationalization. CBA was born amid these controversies, and was initially considered a "conservative" decision-procedure because of its association with President Reagan. Its survival across Democratic administrations has put that myth to rest.

The natural interpretation of this legal trajectory is that the three branches of government are converging on the view that regulatory agencies should normally comply with CBA. As a technical matter, the courts have mostly relied on organic statutes rather than on the APA. At the level of legal theory, we think it best to describe this development as one of federal common law. But the end result is the same: cost-justified administrative law.

## CONCLUSION

*Corrosion Proof Fittings* and *Business Roundtable* have long been criticized as egregious examples of judicial overreaching into areas of agency discretion. But the courts should be celebrated for their insight rather than condemned for their hubris. As the Supreme Court has gradually come to recognize, regulatory agencies should use CBA and courts are capable of forcing them to. CBA is a decision *procedure*: requiring agencies to comply with this procedure is no more difficult than forcing them to comply with the procedural elements of the APA. And while CBA also requires substantive judgments—estimates of valuations—that are more difficult for courts to review, courts can nonetheless contribute to administrative rationality by correcting valuation errors that regulatory agencies frequently commit and demanding that agencies offer explanations for their valuations that go beyond boilerplate. This point applies just as

[159] It may also have been intended to empower judges appointed by Democratic presidents to block deregulation by administrators appointed by Republican presidents, as argued by Matthew D. McCubbins, Roger G. Noll & Barry R. Weingast, *Administrative Procedures as Instruments of Political Control*, 3 J. L. ECON. & ORG. 243, 246 (1987), but this amounts to the same thing.

strongly to deregulation as to regulation. If a president seeks to impose new environmental or safety regulations, he must demonstrate that they will create greater benefits than costs. And if a president wishes to dismantle existing regulations, no less is required.

## APPENDIX

| **Statutes that explicitly reference costs** | | |
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| Statute | Section | Text |
| America Invents Act | 35 U.S.C. § 316(b) | "shall consider the effect of any such regulation on the economy" |
| America Invents Act | 125 Stat. 284 § 10(e)(1)(B) | "the specific rationale and purpose for the proposal, including the possible expectations or benefits resulting from the proposed change." |
| Clean Air Act | 42 U.S.C. § 7412(d)(2) | "require the maximum degree of reduction in emissions of the hazardous air pollutants . . . that the Administrator, taking into consideration the cost of achieving such emission reduction . . . determines is achievable." |
| Clean Air Act | 42 U.S.C. § 7475(a)(4), 42 U.S.C. § 7479(3) | "best available control technology" defined as "the maximum degree of reduction . . . which the [EPA] . . . taking into account energy, environmental, and economic impacts and other costs, determines is achievable." |
| Clean Air Act | 42 U.S.C. § 7411(a)(1) | "best system of emission reduction which (taking into account the cost of achieving such reduction . . .) the Administrator determines has been adequately demonstrated"[160] |
| Clean Water Act | 33 U.S.C. § 1316(a)(1), 33 U.S.C. § 1316(b)(1)(B) | "best available demonstrated control technology" . . . "tak[ing] into consideration the cost of achieving such effluent reduction" |
| Clean Water Act | 33 U.S.C. § 1311(b)(2)(A)(i), 33 U.S.C. § 1311(b)(2)(A)(i) | "best available technology economically achievable" while considering "the cost of achieving such effluent reduction." |
| Clean Water Act | 33 U.S.C. § 1311(b)(2)(E), 33 U.S.C. § 1314(b)(4)(B) | "best conventional pollutant control technology" considering "the reasonableness of the relationship between the costs of attaining a reduction in effluents and the effluent reduction benefits derived." |

[160] This is the section of the statute under which the Obama Administration promulgated the Clean Power Plan, which regulates the emission of greenhouse gases, https://www.epa.gov/cleanpowerplan/what-epa-doing, and it is the statute under which the next administration will be attempting to repeal the Clean Power Plan by regulation. http://www.reuters.com/article/us-usa-election-trump-energy-idUSKCN0YH2D9.

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| Clean Water Act | 33 U.S.C. § 1311(b)(1)(A), 33 U.S.C. § 1314(b)(1)(B) | "best practicable control technology" considering "the total cost of application of technology in relation to the effluent reduction benefits to be achieved"[161] |
| Commodity Exchange Act | 7 U.S.C. § 19(a) | "the Commission shall consider the costs and benefits of the action of the Commission" |
| Consumer Product Safety Act | 15 U.S.C §2058(f) | "A description of the potential benefits and potential costs of the rule, including costs and benefits that cannot be quantified in monetary terms, and the identification of those likely to receive the benefits and bear the costs" |
| Dodd-Frank Act | 12 U.S.C. §5512(b)(2) | "In prescribing a rule . . . the Bureau shall consider the potential benefits and costs to consumers and covered persons" |
| Investment Advisers Act | 15 U.S.C. § 80b-2(c) | "the Commission shall also consider . . . whether the action will promote efficiency, competition, and capital formation" |
| Prison Rape Elimination Act of 2003 | 42 U.S.C. § 15607(a)(1)-(3) | "The Attorney General shall not establish a national standard under this section that would impose substantial additional costs compared to the costs presently expended by Federal, State, and local prison authorities." |
| Community Development and Regulatory Improvement Act | 12 U.S.C. §4802(a) | "each Federal banking agency shall consider . . . any administrative burdens that such regulations would place on depository institutions . . . and the benefits of such regulations" |
| **Statutes with ambiguous language** | | |
| Statute | Section | Text |
| Agricultural Marketing Act | 7 U.S.C. § 1624(b) | "The Secretary of Agriculture shall promulgate such orders, rules, and regulations as he deems necessary" |
| Clean Air Act | 42 U.S.C. § 7409(b) | "requisite to protect the public health"[162] |
| Clean Air Act | 42 U.S.C. § 7412(n)(1)(A) | "appropriate and necessary"[163] |
| Clean Air Act | 42 U.S.C. § 7502(c)(1) | "reasonably available control technology" |
| FAA Extension, Safety, and Security Act | 49 U.S.C. § 106(f)(3)(A) | "the Administrator is authorized to issue, rescind, and revise such regulations as are necessary" |

[161] This is the section of the Clean Water Act that the dissenting justices in *Entergy*—Stevens, Souter, and Ginsburg—agreed "specified that the EPA was to conduct a cost-benefit analysis." Entergy, 556 U.S. at 241-43 (Stevens, J., dissenting).
[162] This is the statutory section at issue in *Whitman v. American Trucking*.
[163] This is the statutory section at issue in *Michigan v. EPA*.

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| Fair Credit Reporting Act | 15 U.S.C. §1681s | "necessary or appropriate" |
| Federal Food, Drug, and Cosmetic Act | 21 U.S.C. § 360j(e) | "shall bear such appropriate statements of the restrictions required . . . as the Secretary may in such regulation prescribe" |
| Food Safety Modernization Act | 21 U.S.C § 350g(o) | "those risk-based, reasonably appropriate procedures, practices, and processes . . . to significantly minimize or prevent the hazards identified" |
| Healthy, Hunger-Free Kids Act | 42 U.S.C. § 1779(a) | "shall prescribe such regulations as the Secretary may deem necessary" |
| International Lending Supervision Act | 12 U.S.C. § 3907(a)(2) | "necessary or appropriate" |
| Investment Advisers Act | 15 U.S.C. § 80b-2(c) | "necessary or appropriate in the public interest [including] whether the action will promote efficiency, competition, and capital formation"[164] |
| Marine Mammal Protection Act | 16 U.S.C. § 1373(a) | "necessary and appropriate" |
| Occupational Safety and Health Act | 29 U.S.C. § 655(b)(5) | "which most adequately assure[], to the extent feasible . . . that no employee will suffer material impairment of health" and are "reasonably necessary or appropriate to provide safe or healthful employment and places of employment" |
| Privacy Act | 15 U.S.C. §6801(b) | **"**shall establish appropriate standards" |
| Secure Fence Act | 120 Stat. 2638 | "necessary and appropriate"[165] |
| Securities Exchange of 1934 | 15 U.S.C. §78w(a)(2) | "shall not adopt any such rule or regulation which would impose a burden on competition not necessary or appropriate" |
| Telecommunications Act of 1996 | 47 U.S.C. §1302(a) | "in a manner consistent with the public interest" |
| **Statutes that reference maximal regulation** | | |
| Statute | Section | Text |
| Clean Water Act | 33 U.S.C. § 1326(b) | "best technology available for minimizing adverse environmental impact"[166] |
| Federal Mine Health and Safety Act | 30 U.S.C. § 811(a)(6)(A) | "standards which most adequately assure on the basis of the best available evidence that no miner will suffer material impairment" |

[164] This is the statutory section at issue in *Business Roundtable*.
[165] This is the statutory section under which President Trump proposes to build a wall at the Mexican border. Executive Order: Border Security and Immigration Enforcement Improvements, https://www.whitehouse.gov/the-press-office/2017/01/25/executive-order-border-security-and-immigration-enforcement-improvements.
[166] This is the statutory section at issue in *Entergy*.

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| Surface Mining Control and Reclamation Act | 30 U.S.C. § 1265(b)(24) | "minimize disturbances and adverse impacts" of surface mining "to the extent possible using the best technology currently available" |