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**Authors**

Farber, DA  
O'Connell, AJ

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# Breaking Bad? The Uneasy Case for Regulatory Breakeven Analysis

Daniel A. Farber\*

*Often regulatory benefits can be hard to quantify because they deal with harms that are not traded in markets or because the probability of harm is not well understood. Breakeven analysis offers one plausible way of addressing the problem. But it is no panacea. It may fail to improve the rationality of decisions, especially in hard cases. Alternative approaches may have greater advantages. Thus, the argument for breakeven analysis remains unproven.*

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\* Sho Sato Professor of Law, University of California, Berkeley, School of Law. I benefited from discussion of these issues with Robert Bartlett, Lisa Heinzerling, and Anne Joseph O’Connell, none of whom bear any responsibility for the contents of this response to Professor Cass R. Sunstein’s lecture at the Brennan Center Jorde Symposium.

## INTRODUCTION

For over thirty years, regulatory agencies like the Environmental Protection Agency (EPA) have been required to perform cost-benefit analyses that are subject to review by the Office of Information and Regulatory Affairs (OIRA), a division of the Office of Management and Budget (OMB).<sup>1</sup> Professor Cass R. Sunstein has vigorously championed the use of cost-benefit analysis, first as one of the nation's most prominent legal scholars, then as head of OIRA during President Obama's first term, and now once again as a preeminent legal scholar. In his Jorde lecture,<sup>2</sup> Professor Sunstein addresses one of the biggest difficulties relating to cost-benefit analysis: how to address harms that are difficult to quantify, either because the type of injury is difficult to convert into monetary terms or because its probability is uncertain. As Professor Sunstein agrees, values such as human dignity can deserve substantial weight in agency decisions.<sup>3</sup> However, giving them this weight clearly poses difficulties for believers in quantitative regulatory analysis.

Professor Sunstein advocates use of a particular type of cost-benefit analysis—breakeven analysis—to resolve this issue. Agency use of breakeven analysis is widespread.<sup>4</sup> As Professor Sunstein explains, breakeven analysis is a kind of conditional cost-benefit analysis that asks, “How high would the benefits have to be for the regulation to be justified?”<sup>5</sup>

In Professor Sunstein's view, “breakeven analysis is most helpful when agencies are able to identify a lower or upper bound for regulatory benefits, with the identification taking the form of either point estimates or estimates of expected value.”<sup>6</sup> For instance, both bounds may be greater than (or less than) regulatory costs, making the decision easy. When it is not possible to specify

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1. Regulatory review takes place within OIRA. For a description of the development of OMB's role in regulatory oversight, along with some useful suggestions for improving cost-benefit analysis, see Daniel H. Cole, “Best Practice” Standards for Regulatory Benefit-Cost Analysis, in RESEARCH IN LAW & ECONOMICS VOL. 23, at 1 (Richard O. Zerbe ed., 2007), and COST-BENEFIT ANALYSIS: LEGAL, ECONOMIC, AND PHILOSOPHICAL PERSPECTIVES (Matthew D. Adler & Eric A. Posner eds., 2000), a collection of papers reflecting the spectrum of views about cost-benefit analysis and its validity. A description of the rise of attention to cost-benefit analysis in the legal academy can be found in Don Bradford Hardin, Jr., *Why Cost-Benefit Analysis? A Question (and Some Answers) About the Legal Academy*, 59 ALA. L. REV. 1135, 1135–36 (2008). OMB's guidelines for agencies in preparing cost-benefit analysis can be found in OFFICE OF MGMT. & BUDGET, CIRCULAR A-4 (Sept. 17, 2003), available at [http://www.whitehouse.gov/omb/circulars\\_a004\\_a-4#e](http://www.whitehouse.gov/omb/circulars_a004_a-4#e). For an overview of the development of OMB's role, disputes about its utility, and issues in cost-benefit analysis, see RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH (2011).

2. Cass R. Sunstein, *The Limits of Quantification*, 102 CALIF. L. REV. 1369 (2014). The lecture expands on a brief discussion in his recent book, CASS R. SUNSTEIN, SIMPLER: THE FUTURE OF GOVERNMENT (2013) [hereinafter SUNSTEIN, SIMPLER].

3. See SUNSTEIN, SIMPLER, *supra* note 2, at 184–88.

4. In Appendix A, Professor Sunstein collects numerous examples of agency use of breakeven analysis. See Sunstein, *supra* note 2, at Appendix A.

5. Sunstein, *supra* note 2, at 1372.

6. *Id.* at 1391.

such bounds, Professor Sunstein suggests using other regulatory benefits as benchmarks. For example, the value of a statistical life (currently valued at \$9 million) “might provide an upper bound for an assortment of regulatory benefits (including harms that fall short of death).”<sup>7</sup>

Professor Sunstein’s approach is rooted in formal OMB policy statements, but he goes beyond current policy in his enthusiasm for breakeven analysis. OMB strongly recommends that agencies provide information about breakeven values (under the rubric of threshold analysis).<sup>8</sup> But OMB officially portrays this approach as only one source of assistance in assessing a policy and does not suggest (at least explicitly) that agencies should consider this approach dispositive. Thus, Professor Sunstein seems to go beyond OMB’s official stance, advocating breakeven analysis as the controlling test in nearly all situations where uncertainties prevent complete quantification of costs and benefits.

Cost-benefit analysis has many critics, even in cases where valuations and risk estimates are less problematic.<sup>9</sup> This Essay does not seek to reopen that debate. Instead, it will focus squarely on Professor Sunstein’s prescription for breakeven analysis as a method for dealing with nonquantifiability. Thus, for present purposes, I will not question Professor Sunstein’s assumption that cost-benefit analysis is generally straightforward except in a subcategory of cases where quantification is particularly problematic.

Breakeven analysis may well be useful in some cases, but the more difficult question is how broadly OMB should require its use. In this regard, it is important to understand OMB’s role in the regulatory process. OMB functions as a kind of meta-agency exercising command-and-control regulation over other agencies, which themselves regulate the public. Just as an agency like the EPA issues general rules for businesses and issues permits for individual projects, OMB issues general rules regarding agency conduct of cost-benefit analysis and engages in a kind of “permitting” by approving or disapproving of agency proposals. Its guidelines about how to conduct cost-benefit analysis are akin to EPA rules designating “best available technology.”<sup>10</sup> Whether in the hands of the OIRA (applied against agencies) or

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7. *Id.* at 167.

8. “[Y]ou should also consider conducting a threshold analysis to help decision makers and other users of the analysis to understand the potential significance of these factors to the overall analysis.” CIRCULAR A-4, *supra* note 1, § D, under the heading “Benefit-Cost Analysis.”

9. See, e.g., SIDNEY A. SHAPIRO & ROBERT L. GLICKSMAN, *RISK REGULATION AT RISK: RESTORING A PRAGMATIC APPROACH* (2003); Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless Cost-Benefit Analysis of Environmental Protection*, 150 U. PA. L. REV. 1553 (2002).

10. For examples of such requirements, see *infra* notes 42–44 and accompanying text. Indeed, the EPA is less direct in its regulation of businesses than OIRA is in regulating the EPA. In a best technology standard, the EPA determines the best pollution control technology for a particular industry, just as OIRA determines the best decision-making technology for the EPA. The difference is that OIRA requires that the subject of its regulation use the designated technology, whereas the EPA

of the EPA (applied against industry), command-and-control regulation has well-known strengths (uniformity, clear notice, improved use technology) and drawbacks (limited innovation, “locked in” inferior technologies, difficulties and expense in updating requirements).

Given its own quasi-regulatory role, we should hold proposals about OMB policies to the same requirements of cost-benefit analysis to which OMB holds regulatory agencies. Professor Sunstein explains some of the potential benefits of this approach. But we should also consider its pitfalls and how it compares with other alternatives, just as OMB would do in reviewing an agency’s proposed rule. The focus should be on the real-world consequences of using breakeven analysis as a decision rule, not on whether it seems intellectually satisfying.

In Professor Sunstein’s view, “[t]he great advantage of quantitative cost-benefit analysis is that it focuses attention on the likely consequences of regulation, and thus helps to avoid the risk that judgments will be based on anecdotes, intuitions, dogmas, impressions, or the power of self-interested private groups.”<sup>11</sup> Accepting this view for present purposes, there are two questions we should ask: First, to what extent will breakeven analysis actually promote well-considered, public interest decisions when valuations or probabilities are uncertain? Second, how well does breakeven analysis stack up against other methods of pursuing that goal?

Answering these questions in a satisfactory way would require a detailed analysis of how breakeven analysis has been practiced by agencies and of alternative methods of dealing with quantification issues. Today I offer only some preliminary observations. While tentative, my conclusion is that the argument for breakeven analysis as an administrative practice remains in doubt. In developing this argument, I will follow OMB’s own guidance on evaluating proposals of other agencies, which calls for consideration of “all appropriate alternatives for the key attributes or provisions of the rule.”<sup>12</sup> How well does breakeven analysis score in these terms?

Part I of this Essay considers ways that breakeven analysis might turn out to function poorly in practice. Some of these problems parallel well-known hurdles to making good decisions by individuals, such as various cognitive biases that cost-benefit analysis is supposed to counter. Professor Sunstein is aware of how these biases operate in other contexts but does not consider how they might warp breakeven analysis. Part II separately examines potential

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merely requires that industry obtain pollution reductions equivalent to that of the best technology. Thus, OIRA’s regulatory approach is more akin to “command and control” than the EPA’s.

11. Sunstein, *supra* note 2, at 1403–04. This view is obviously controversial. For a staunch defense of the contrary position, see FRANK ACKERMAN & LISA HEINZERLING, PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING (2004).

12. CIRCULAR A-4, *supra* note 1, § E(3).

issues relating to nonquantifiable probabilities and to values that resist quantification, such as human dignity.

Part III then turns to alternative approaches for dealing with uncertainty. When risks are harder to quantify or benefits are not easily monetized—the cases in which Professor Sunstein commends the use of breakeven analysis—breakeven analysis may turn out to be less useful than some types of formal decision theory. On the other hand, breakeven analysis is also arguably less useful than approaches that eschew rigorous methodology in favor of more holistic analysis. Thus, breakeven analysis might be criticized from both sides—either for not being rigorous enough, or for attempting to apply a rigorous standard in a context where it is not appropriate. Since the purpose of this Essay is simply to scope the issues, I will not attempt to decide which of those two possibilities is more plausible. Indeed, it may turn out that greater quantitative rigor than breakeven analysis is appropriate in some cases, while more qualitative approaches are better than breakeven analysis in others. The point is that it would be a mistake to prescribe breakeven analysis without deeper examination of both kinds of alternatives.

## I.

### POSSIBLE PITFALLS IN THE USE OF BREAKEVEN ANALYSIS

In this Section, I will focus on some of the problems that could be associated with the use of breakeven analysis by agencies (or by OIRA as a regulator of agency procedures). Ideally, this would involve in-depth investigation of each of the cases listed by Professor Sunstein in the appendix of his article, but here I will only attempt to identify some possible pitfalls. First, I will discuss multiple human cognitive biases that can negatively impact risk assessment. Second, I will discuss another possible, less easily pinpointed difficulty arising from relying on incomparable valuation benchmarks. Breakeven analysis is attractive partly because it provides such a seemingly simple way of dealing with quantification issues. But this simplicity may mislead users into underestimating the severity of quantification problems, making the benchmarks seem much sturdier than they really are. In situations that involve the most moral perplexity—situations with unknown risks of catastrophic outcomes or intangible values like human indignity—the worst mistake of all may be to think that there is an easy route to finding the solution.

#### *A. Problems Relating to the Formation of Probability Benchmarks*

Being able to provide brackets around possibilities and probabilities, or to make judgments about whether a breakeven cutoff has been exceeded, is less demanding than providing a point estimate. We might not be able to make a precise estimate that a risk is, say, 15 percent, but we might be able to say that it is at least 10 percent, less than 20 percent, or somewhere between 10 and 20 percent. Where that information is available, breakeven analysis should be

more reliable than in a case where we can only say that a risk may or may not be serious.

However, formulating precise upper or lower bounds on the magnitude of a risk may be too much to expect. Agencies only resort to breakeven analysis in cases when uncertainty is too great to allow a point estimate, making judgments less reliable. It may be overly optimistic to assume that, although we are unable to make a reliable judgment about the expected value of a parameter, we will nonetheless be able to make a reliable judgment of high and low values. This is because a variety of psychological and cognitive biases may negatively impact risk assessments.

Risk assessments may be unreliable if agencies devise a statistical distribution of risks and truncate the distribution too quickly, cutting off consideration of less probable, but more serious risks. One particular issue may involve tail risks—the possibility that although the most probable level of harm is likely to be well below the breakeven point, there is also a small but significant possibility that the harm might exceed the breakeven point by a large margin. In this situation, it is a mistake to base a decision solely on whether the harm is more likely than not to exceed the breakeven point. Unfortunately, left to their own devices, agencies can do quite badly at determining the plausibility of unlikely but disastrous outcomes. Familiar examples include the failure to anticipate that terrorists might use jet planes as weapons against fixed structures; that deep-water oilrigs might suffer massive blowouts; that tsunamis might lead to meltdowns of nuclear reactors; or that low-income residents might have difficulty evacuating from New Orleans. These anecdotes suggest that we should be wary of relying too much on the ability of agencies to determine the plausible range of outcomes, especially dealing with low probability but very negative events.

The same psychological mechanisms that lead ordinary individuals to dismiss potential catastrophic risks rather than take them seriously may affect personnel both at regulatory agencies and at OIRA. First, consider the mechanism sometimes called groupthink—the “tendency of groups, especially highly homogenous groups, to develop strongly held, extreme positions even in the face of contrary data.”<sup>13</sup> Although this phenomenon is still the subject of ongoing research, there is some evidence linking it with disregard for potential severe outcomes. For instance, groupthink has been observed “in the failure of corporate boards to conduct meaningful oversight in the wake of the Enron debacle, the stifling of dissent by administrative agencies, environmental regulation in general, and the conduct of the Army Corps of Engineers before Hurricane Katrina in particular.”<sup>14</sup> The dangers of groupthink are accentuated when the agency culture discourages discussion of risks and when individuals

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13. Michael Barsa & David A. Dana, *Reconceptualizing NEPA to Avoid the Next Preventable Disasters*, 38 B.C. ENVTL. AFF. L. REV. 219, 220 (2011).

14. *Id.* at 227–28.



with contrary views are denied promotion or sanctioned, as appeared to be the case before the Deepwater Horizon BP oil spill.<sup>15</sup>

Second, consider a related phenomenon involving confirmation bias, in which people focus on information that favors their preconceived views, a problem that can be amplified in groups that may disregard dissenting views from group members.<sup>16</sup> Thus, decisions makers who are inclined toward a particular view—whether it is because they favor more regulation or because they are skeptical of regulatory initiatives—may find support for their views in the evidence, even while ignoring contrary evidence.

Moreover, because catastrophic outcomes are rare events, the agency may have the experience of approving similar projects and observing for a number of years that no risk has materialized, reinforcing the agency's bias toward disregarding such risks as insignificant. As Professor Sunstein notes, agency officials (presumably including those at OIRA) are also subject to heuristics such as equating small risks with zero risk.<sup>17</sup>

Third, consider aspects of individual psychology that may lead individuals to downplay risks. One is optimism bias, which Professor Sunstein has discussed extensively.<sup>18</sup> Another relates to loss aversion, which simply means that people are willing to gamble on a larger but uncertain loss rather than to pay to avoid the risk.<sup>19</sup> Both of these phenomena could skew breakeven analysis, leading decision makers to reject risk reduction measures because they focus more on the cost of the action while giving too little weight to the benefits of avoiding risks.

Fourth, consider a related issue known as myopia, which can combine all of these biases. The empirical evidence shows that people heavily discount large future losses, even a short time in the future, as compared with smaller but more immediate losses.<sup>20</sup> As a result, agencies may tend to undervalue longer-term risks as compared with prevention costs. Along with the other potential biases, this could warp intuitions about whether avoiding a future harm is worth an immediate cost, which is the question that breakeven analysis poses to decision makers.

The same factors that operate at the agency level may also operate at OIRA. Since much of OIRA's activity consists of reining in what may be considered overly zealous agencies,<sup>21</sup> groupthink within OIRA plus myopia effects could lead to underestimation of poorly quantified risks by OIRA.

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15. *Id.* at 228–29.

16. *Id.* at 231–32.

17. SUNSTEIN, SIMPLER, *supra* note 2, at 151–52.

18. *Id.* at 68–69.

19. David A. Dana, *A Behavioral Economic Defense of the Precautionary Principle*, 97 NW. U. L. REV. 1315, 1323 (2003).

20. *Id.* at 1324–25.

21. See REVESZ & LIVERMORE, *supra* note 1, at 153, 230 n.430.

These factors could all contribute to badly chosen benchmarks for the upper or lower limits of a risk, distorting the breakeven analysis and rendering it suspect. These distortions may be especially serious when they lead to disregard for tail risks. To some extent, such distortions in the decision-making process may simply be the inevitable consequences of the fact that decision makers are human beings. But breakeven analysis might play into this human failing or create undue confidence in what may be highly subjective decisions. We will later discuss alternative approaches to uncertainty that might be more useful in nudging agencies to consider tail risks.

### *B. Problems Relating to Valuation Benchmarks*

Even when the odds are known, it may be difficult to determine how much society should invest in preventing a harm. For example, in a cost-benefit analysis of the regulations regarding prison rape, a “forcible rape of an adult prisoner was assigned a monetary value of -\$310,000 or -\$480,000, while ‘contacts with a staff member that only involved touching of the inmate’s buttocks, thigh, penis, breasts, or vagina in a sexual way’ were assigned a value of -\$600 per incident.”<sup>22</sup>

Even on their own terms, these estimates reflect considerable uncertainty: the upper figure for forcible rape is 50 percent higher than the lower one.<sup>23</sup> The actual range of uncertainty is probably larger. These figures imply, for instance, that a person would take a job with an extra annual chance of one in a hundred of being forcibly raped in return for a pay increase of about \$4,000. There is no particular reason to have confidence in this estimate.

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22. Melissa J. Luttrell, *Bentham at the OMB: A Response to Professor Rowell*, 64 ADMIN. L. REV. 1013, 1029 (2012).

23. The prison rape regulations also illustrate a subtler problem, the potential that breakeven analysis may encourage agencies to think of decisions in binary terms. Prison rape regulations provide a recent example. Several commentators urged the Department of Justice (DOJ) to strengthen its proposed national standards, given that the proposed standards so easily passed the breakeven analysis. National Standards to Prevent, Detect, and Respond to Prison Rape Under the Prison Rape Elimination Act (PREA), 28 C.F.R. Part 115 (2012), available at [http://www.ojp.usdoj.gov/programs/pdfs/prea\\_ria.pdf](http://www.ojp.usdoj.gov/programs/pdfs/prea_ria.pdf). The agency declined to do so on dubious grounds, claiming that states might not fully implement more stringent standards because of cost. It is true that those states might not obtain the full benefits of the standards, but this is irrelevant to cost-benefit analysis since by the same token they would not experience the corresponding costs. The agency also speculated, without any apparent evidentiary basis, that some states would make an all-or-nothing decision, either adopting the standards verbatim if they were cheap enough or ignoring them completely, rather than adopting scaled-down requirements—or that states would divert funds from other vital missions to achieve the standards, again without any evidentiary basis. Of course, regardless of the method of analysis, an agency determined to do so can always come up with some explanation for failing to do so—but breakeven analysis makes this easier by framing the agency’s decision as binary—either adopt the proposal as is, provided that it cleared the hurdle, or engage in no regulation. The DOJ’s approach seems inconsistent with Executive Order 13563, which requires agencies “to select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity).” Exec. Order No. 13563, 76 Fed. Reg. 3821 (Jan. 18, 2011).

As an aid to assessing valuations, Professor Sunstein makes an intuitive case for using known values in order to place bounds on others:

For example, it would be hard to defend an approach that would value a modest improvement in water quality at the same level as a human life (at least if many water bodies are not involved). It would also be hard to defend an approach that would value the life of a sea otter at the same level as a human life. An agency might not know the monetary value of protection of human dignity through wheelchair accessibility, but it would seem extravagant to assign a value in excess of the value of human life.<sup>24</sup>

As Professor Sunstein puts them, these conclusions may seem obvious and intuitive. But that reaction is partly a tribute to the power of framing.<sup>25</sup> Our intuitive response is that of course the monetary valuation placed on a human life should be higher than the valuation of a “modest improvement in water quality.” Yet, this is really no more reliable a judgment than the common error of assuming that airplanes must be more dangerous than cars because we can visualize a plane crash with multiple casualties so easily.

In reality, there is no particular reason to think that a “modest improvement in water quality” would be worth either more or less than \$9 million. It is easy to imagine, for example, that even a modest increase in water quality in a large water body could provide more than \$9 million in benefits to a commercial fishery—that this might be only a small percentage of the catch. Or that a small improvement might make a big difference in terms of water clarity, which might well be valued at over \$9 million by residents, tourists, and others.

Next consider the value of marine mammals such as sea otters. Sea otters seem small and insignificant (though admittedly cute). The conclusion might have seemed slightly less intuitive if Professor Sunstein had used something larger and rarer, such as a blue whale. But even in the case of otters, it is important to be careful about the nature of the comparison.

If we were using the same methodology to determine both values, we would probably be surprised if a sea otter’s value came out higher than a person’s, since most people consider humans to have a higher intrinsic value. But neither valuation relates to inherent moral worth, and they actually measure very different attributes. The \$9 million figure measures the amount workers demand as compensation for taking riskier jobs; it is improper to equate this

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24. Sunstein, *supra* note 2, at 1396.

25. Another issue with the kind of benchmarking proposed by Professor Sunstein is that errors in one estimate (the value of a statistical life) would have proliferating effects on other, unrelated rulemaking. For instance, if new studies of the labor market led to higher estimates of the wages demanded in return for increased risk, other regulations on topics such as marine mammals might need to be revisited. A key question, then, is how confident we are in the validity of the benchmark values.

with the value that would be paid to avoid certain death.<sup>26</sup> When we are considering assigning a monetary value to a sea otter, there clearly is no comparable measure of value: sea otters do not participate in labor markets. To the extent that we could figure out the tradeoffs otters make between risks and other benefits—for example, by determining how much incremental risk of attack by sharks a sea otter would be willing to exchange for more abalone or better mating opportunities—the result would be completely irrelevant to our decisions about protecting them from fishing operations or pollution.

Instead, protection of sea otters is based on a host of other factors that are not in play in the studies setting the value of a statistical human life. Consider the following as a partial list. First, sea otters may be linked with economic benefits such as ecotourism, or increased housing values where they are visible by residents. Second, they may have beneficial ecological effects, which would have to be valued. Third, some people may be willing to make sacrifices to prevent suffering by sea otters; indeed, some might be willing to undertake at least modestly risky activities to help protect them. It is likely, although still uncertain, that these benefits would turn out to be lower than \$9 million per sea otter. However to the extent that we could determine such values at all, I would not be surprised if the numbers came out the other way around for blue whales.

In other words, the comparison that Professor Sunstein poses is between wage-risk tradeoffs made by workers versus the ecosystem and aesthetic values of animals. This is not just comparing apples and oranges; it is comparing the weight of an apple with the color of an orange, and trying to intuit which magnitude is larger.

Professor Sunstein's third example is a comparison between wheelchair access and the statistical value of a human life. Again, it is a bit misleading to frame this in terms of the value of a human life. The correct comparison is between willingness to pay for small reductions in mortality risks and willingness to pay for small increases in mobility. This is an empirical question, and there is little reason to assume that our intuitions will turn out to be accurate. In any event, this comparison would be apt only if society's reason for regulation was a belief that market failures prevented people in wheelchairs from being able to purchase greater wheelchair access. Perhaps there is some identifiable market failure that blocks the existence of a competitive market in wheelchair access. In that case, the basis for valuation should be the amount the disabled would pay for access. It might be surprising if that valuation came out higher than estimates for the value of human life, although it is not completely inconceivable that this might occur. But reasons for regulating may have as much to do with the value that the entire population places on equalizing access as a matter of fairness. If that is the key value underlying the regulation, it is

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26. See John D. Graham, *Saving Lives Through Administrative Law and Economics*, 157 U. PA. L. REV. 395, 497–503 (2008).

hard to formulate any intuition about the relative magnitude of society's willingness to pay for fairness and an individual worker's willingness to sacrifice wages for greater safety.

Thus, the intuitive appeal of Professor Sunstein's comparisons with the "value of a human life" might not withstand analysis. It is at least clear that the comparisons are much more difficult and problematic than he seems to assume. Moreover, it is also plausible that other ways of framing the problem might lead to opposite but equally intuitive conclusions. For instance, we might ask whether society spends more annually for videogames than it spends to uphold the equality and human dignity of the disabled. Or we might ask whether we should each be willing to pay some small amount—let's say the cost of a single cigarette—to stop the discharge of a gallon of some nasty pollutant into a lake, which could well result in a valuation of \$9 million for a very modest increase in water quality.<sup>27</sup> In these situations, breakeven analysis may be a useful heuristic. But like all heuristics, it needs to be used with care, lest our intuitions lead us astray. The risk is that we will make off-the-cuff comparisons that seem intuitively appealing but that actually have no logical basis because they compare magnitudes along entirely different dimensions.

As we have seen, although breakeven analysis may sometimes be a useful gauge, it also poses some significant risks. Setting upper and lower bounds on a risk may seem unproblematic, but in reality the risks may leak past these edges, and even small risks of large damage can warrant attention. Once we have set bounds on the risk, we are inviting ourselves to disregard any possibility outside of those bounds, and the bounds themselves may greatly underestimate the degree of uncertainty about a risk. People may reach too much of a consensus about the magnitude of a risk due to groupthink, or they may underestimate the risk due to various cognitive shortcomings. Similarly, we may be tempted to make simplistic comparisons between different kinds of injuries, leading us to assume that the valuation for one injury should be lower than the valuation of another. But in fact those valuations may be incomparable—one may be based on self-evaluation of risks by individual workers, while the other is based on fairness values shared by millions. Before rushing to embrace breakeven analysis, we need to be wary of the possibility that it may simply exacerbate these tendencies toward sloppy or biased thinking, rather than leading to self-critical analysis and better deliberation.

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27. If the cost of a pack of cigarettes is roughly \$5.00, then a cigarette is about \$0.25. If each of 10 sources discharges 12,000 gallons per day, that amounts to \$30,000 per day, which over the course of a year exceeds the \$9 million value of a statistical life.

II.  
ALTERNATIVES

Even if we were to conclude that breakeven analysis works reasonably well, it might be a mistake to settle for the technique just because it seems relatively adequate. We should also consider whether other ways of making a decision would do a better job of producing well-considered judgments or screening out special-interest influences.

We can imagine a simple matrix of alternative decision tools:

	<b>Difficulties in Determining Risk Levels</b>	<b>Difficulties in Determining Valuations</b>
<b>Formalized Decision Methods</b>	Expert elicitation, safe minimum standards, $\alpha$ -maxmin models	Stated preference methods
<b>Nonformalized, Pragmatic Methods</b>	Scenario analysis, disclosure of qualitative analysis of uncertainties	Democracy-based presumptions and tiebreakers

In this Section, we will begin with the first row of the matrix, considering formalized techniques that produce more defensible results than breakeven analysis. We will then consider nonformalized alternatives to breakeven analysis. As we will see, it is possible that breakeven analysis falls between two stools—not rigorous enough to satisfy those who favor sophisticated methodologies for making decisions, while too reductionist to satisfy those who want a richer, more accessible decision-making process.

*A. Formal Decision Tools as Alternatives to Breakeven Analysis*

We begin by considering some alternative techniques that, like breakeven analysis, use quantitative techniques to deal with valuations and uncertainty issues. In terms of regulatory benefits, the main alternative is the use of stated preference methods (also called contingent valuation). In terms of uncertainties about the probability of harm, decision theorists have developed several promising alternative methodologies.

*1. Stated Preference Methods for Resolving Valuation Difficulties*

There are special difficulties associated with measuring the value of some environmental benefits—so-called option and existence values. An example of

an option value might be posed by someone who has no particular plans to go to a pristine lake, but who would be willing to pay something in order to keep open the option of seeing the lake again if he or she chooses to do so. Existence values are even more ethereal—for example, the amount of money one would be willing to pay to save rain forests without having any prospect of ever going to see them. Unlike use values, nonuse values do not flow from some direct physical interaction with a natural resource.<sup>28</sup> Existence values might also be involved in other situations: for instance, the positive value that some people might place on the existence of disability access, or the negative value that others might place on the existence of prison rape.

Some economists advocate the use of stated preference methods (SPM)—also known as “contingent valuation”—to measure how much people are willing to pay for nonuse values.<sup>29</sup> Contingent valuation is essentially a survey technique. People are given information about a policy issue and then asked if they would be willing to pay a certain amount to solve the problem. There is a great deal of dispute about whether contingent valuation, even if done carefully, provides a genuine measure of preferences.

Professor Sunstein, for example, has expressed qualms about contingent valuation studies. He stresses what he describes as the “astonishing and devastating fact” that willingness to pay seems constant regardless of the scale of the environmental problem.<sup>30</sup> In responding to surveys, he contends, “[P]eople may be purchasing moral satisfaction rather than stating their real valuation,” merely proclaiming their unwillingness to feel responsible for environmental harm.<sup>31</sup> Economists critical of contingent valuation view the resulting numbers as mostly reflecting the warm glow that people get by announcing their support for the environment.<sup>32</sup> These critics doubt that people actually have preferences about specific environmental sites or that their responses reflect considered efforts to assess such preferences.<sup>33</sup>

But this view is by no means universal among economists. Advocates of contingent valuation argue that the critics have exaggerated its problems, that many problems can be limited through careful survey design, and that contingent valuation can be validated against other measures of environmental

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28. For introductions to these concepts, see Christopher D. Stone, *What to do About Biodiversity: Property Rights, Public Goods, and the Earth's Biological Riches*, 68 S. CAL. L. REV. 577, 580–88 (1995).

29. For a review of the literature, see L. Venkatachalam, *The Contingent Valuation Method: A Review*, 24 ENVTL. IMPACT ASSESSMENT REV. 89 (2004).

30. CASS R. SUNSTEIN, FREE MARKETS AND SOCIAL JUSTICE 142–43 (1997).

31. *Id.*

32. See, e.g., Brian Binger et al., *Contingent Valuation Methodology in the Natural Resource Damage Regulatory Process: Choice Theory and the Embedding Phenomenon*, 35 NAT. RESOURCES J. 443 (1995); Peter A. Diamond & Jerry A. Hausman, *Contingent Valuation: Is Some Number Better Than No Number?*, 8 J. ECON. PERSP. 45, 56, 63 (1994); Jerry Hausman, *Contingent Valuation: From Dubious to Hopeless*, 26 J. ECON. PERSP. 43 (2012).

33. See *supra* note 32.

benefits.<sup>34</sup> OMB allows the use of stated preference methods, while saying they are less preferred than methods based on market behavior.<sup>35</sup>

Even if the criticisms of SPM are valid, the judgment must be comparative. Professor Sunstein calls for government officials to make intuitive judgments about the value of avoiding risks, anchored by figures derived from other valuation exercises. But there is no reason to think that officials have any comparative advantage over members of the general public in this task. Indeed, members of the general public are less likely to be subject to lobbying by special interests, and they are a more representative group. Why would a government official's intuition about the relative value of a sea otter and a human being be entitled to any more weight than a bus driver's or a schoolteacher's? Intuitive comparisons to other valuations essentially amount to contingent valuation using a small sample of government officials, an approach that seem questionable. The off-the-cuff views of government officials may be unrepresentative of the population, or they may simply reflect sloppy framing of the problem. SPM provides a more sophisticated method for estimating valuations for existence and option values. If we are going to engage in breakeven analysis, it might be better to use more rigorous methods to conduct the relevant comparisons with representative members of the public.

## 2. *Formal Approaches to Uncertainty*

Putting aside the problem of placing values on possible outcomes, there is also the problem of estimating the probability of each outcome. Executive Order 13563 calls upon agencies "to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible."<sup>36</sup> Agencies may sometimes find qualitative analysis preferable to breakeven analysis, as discussed below. When the agency (or OIRA) does opt for more quantification, however, it should consider alternative methods of analysis that are more rigorous than breakeven analysis.

One approach to uncertainty in situations where breakeven analysis is applicable would be expert elicitation—essentially, carefully surveying experts to determine their views of the probability distribution of the harm. Rather than just having agency experts make judgments about whether the expected harm exceeds some threshold, expert elicitation involves a broader pool of experts in the process. This confers the advantage of countering the potential for groupthink at the agency or at OIRA itself.

Other approaches provide structured methods of decision making in the absence of quantified risks. One option is the safe minimum standards (SMS)

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34. For a discussion of improvements to the methodology, see Robert Sugden, *Anomalies and Stated Preference Techniques: A Framework for a Discussion of Coping Strategies*, 32 ENVTL. & RESOURCE ECON. 1 (2005) (introducing a symposium on the subject).

35. CIRCULAR A-4, *supra* note 1, § E, "Developing Benefit and Cost Estimates," point 4.

36. Exec. Order No. 13563, 76 Fed. Reg. 3821 (Jan. 18, 2011).



approach, which discards strategies known to be dangerous.<sup>37</sup> This approach may apply in situations where there are discontinuities or threshold effects, but the location of the discontinuity or threshold is not known. A related variant is the imposition of a reliability constraint, requiring that the odds of specified bad outcomes be kept below a set level.<sup>38</sup>

Sometimes more than one theory of a situation is considered plausible, but the theories have different policy implications, creating difficulties. There are a number of different approaches to addressing ambiguity, as decision theorists call this situation of conflicting theories.<sup>39</sup> One is the Klibanoff-Marinacci-Mukerji model.<sup>40</sup> This approach assumes that decision makers have several different possible probability distribution functions (PDFs) in front of them, and that they evaluate decisions based on a function  $\phi$ . This function in turn is based on (1) the likelihood that the decision maker attaches to different PDFs, (2) the degree to which the decision maker is averse to taking chances about which PDF is right, and (3) the expected utility of a decision under each of the PDFs. In simpler terms, the  $\phi$ -function combines the expected outcome under each PDF according to the decision maker's beliefs about the PDFs and his or her willingness to run risks.<sup>41</sup>

Other methods of dealing with ambiguity attempt to balance favorable and unfavorable outcomes. When a decision maker does not know which of several possible probability distributions is correct, one solution is for the decision

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37. Michael Margolis & Eric Naevdal, *Safe Minimum Standards in Dynamic Resource Problems—Conditions for Living at the Edge of Risk* (Resources for the Future, Discussion Paper No. 04-03, 2004), available at [www.rff.org/RFF/Documents/RFF-DP-04-03.pdf](http://www.rff.org/RFF/Documents/RFF-DP-04-03.pdf). Margolis and Naevdal show that “SMS is optimal policy if managers can put lower bounds on two parameters: the seriousness of the catastrophe and a parameter that determines how the magnitude of risk varies with the state-variable’s position in state space.” *Id.* at 3.

For discussion and critique of SMS, see Michael C. Farmer & Alan Randall, *The Rationality of a Safe Minimum Standard*, 74 *LAND ECON.* 287 (1998) (arguing in favor of a “hard” version of SMS where a consensus exists that a resource is a human necessity); J.C. Rolfe, *Ulysses Revisited—A Closer Look at the Safe Minimum Standard Rule*, 39 *AUSTL. J. AG. ECON.* 55 (1995) (arguing for a softer version in which SMS is understood as merely a switching rule triggering more intensive scrutiny of costs and benefits).

38. See, e.g., David McInerney & Klaus Keller, *Economically Optimal Risk Reduction Strategies in the Face of Uncertain Climate Thresholds*, 91 *CLIMATIC CHANGE* 29 (2008), available at <http://dx.doi.org/10.1007/s10584-006-9137-z> (explaining and applying the method discussed in text).

39. A good summary can be found in Alessandro Vercelli, *Hard Uncertainty and Environmental Policy*, in *SUSTAINABILITY: DYNAMICS AND UNCERTAINTY* 191, 196–205 (Graciela Chichilnisky et al. eds., 1998).

40. Peter Klibanoff et al., *A Smooth Model of Decision Making Under Ambiguity*, 73 *ECONOMETRICA* 1849 (2005).

41. *Id.* at 1869–70. The model has been extended into dynamic choice situations where the decision maker receives additional information over time. See Peter Klibanoff et al., *Recursive Smooth Ambiguity Preferences*, 144 *J. ECON. THEORY* 930 (2008). The Klibanoff-Marinacci-Mukerji model has an appealing degree of generality (and is actually less formidable mathematically than some alternatives). But this model is not easily applied, since we need to know  $\phi$  and the decision maker needs to be able to attach numerical weights to the likelihood of specific PDFs, which may not be possible in cases of deep uncertainty.

maker to maximize a weighted average of the worst expected utility and the best expected utility.<sup>42</sup> The weighting factor is clearly crucial in this averaging process, and is associated with “concern about the magnitude of associated threats, or pessimism, and possibly any hunch about which probability might be more or less plausible.”<sup>43</sup> These models are sometimes called  $\alpha$ -maxmin models, with  $\alpha$  representing the weighting factor between best and worst-case scenarios.<sup>44</sup> One way to understand these models is that we might want to minimize our regret if we make a wrong decision that either leads to the worst-case scenario or creates a missed opportunity for achieving the best-case scenario.

These approaches lead to the same results as breakeven analysis when the plausible outcomes are all on one side of the breakeven point. However, they have several advantages over breakeven analysis. They provide more explicit and transparent treatment of the cases where the range of outcomes straddles the breakeven point. Moreover, because outcomes involve a weighted combination of the possible outcomes, the results are less sensitive to variation in the size of the range. Consequently, they may somewhat decrease the importance of potential errors in estimating the possible variance in outcomes. Finally, the use of the best-case and worst-case scenarios nudges decision makers to consider a broader range of possibilities rather than truncating the range, as breakeven analysis may invite.

Thus, even if breakeven analysis is considered reasonably workable, it may be inferior to other decision-making techniques. When the uncertainty involves the value placed on intangible benefits, using more rigorous techniques such as stated preference studies may be better. When the uncertainty involves the probability of future events, formal models of ambiguity may provide a more rigorous alternative to breakeven analysis. In either event, we may be able to do better than breakeven analysis if we are trying to find useful methodologies in decision theory for dealing with quantification difficulties.

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42. NICHOLAS STERN, *THE ECONOMICS OF CLIMATE CHANGE* 39 (2007). For discussion of the so-called  $\alpha$ -maxmin model in the context of a more general theory, see Paolo Ghirardato et al., *Differentiating Ambiguity and Ambiguity Attitude*, 118 J. ECON. THEORY, Oct. 2004, at 133, 153–55 (the crucial result is proposition 19(ii) on page 154).  $\alpha$ -Maxmin can be derived from the assumption that decision makers are indifferent between acts that result in the same range of expected utilities over the set of scenarios. See Paolo Ghirardato et al., *Ambiguity from the Differential Viewpoint* 6 (Cal. Inst. of Tech., Soc. Sci., Working Paper No. 1130, 2002). If decision makers care only about the utility associated with outcomes, the assumption seems plausible if we also assume that the decision maker has no ability or willingness to evaluate the likelihood of different scenarios, so outcomes across scenarios only reflect the range of possibilities.

43. STERN, *supra* note 42, at 39.

44. A key point in applying these models is identifying the best- and worst-case scenarios. Use of these models might encourage interest groups to put forward exaggerated scenarios (although this is probably already an incentive for other reasons).

*B. Qualitative Alternatives: Qualitative Disclosure*

The approaches discussed above are more formalized and technical than breakeven analysis. But we should also consider alternatives in the opposite direction. Opponents of cost-benefit analysis often argue for more qualitative approaches to decision making that may be more understandable to the public. Even if these arguments are rejected as applied to more typical regulatory problems, they may have additional force in situations where uncertainties admittedly loom large.

As Professor Sunstein observes, one function of regulatory impact analysis is disclosure, and that is its *only* lawful function in cases where a statute prescribes a decision-making standard other than cost-benefit analysis. Unlike Professor Sunstein, formal OMB guidance seems to endorse a qualitative description of uncertainties when greater precision is impossible.<sup>45</sup> In assessing how regulatory impact analysis should address disclosure of uncertainties, it is helpful to look at other disclosure regimes.

Qualitative treatment of unquantifiable uncertainties is typical of other disclosure statutes. For instance, annual financial reports of companies must include a discussion of material risks to “enhance a reader’s understanding of its financial condition, changes in financial condition and results of operations.”<sup>46</sup> Clarifying this requirement, the Securities and Exchange Commission (SEC) has gone into some detail about the necessary discussion, but nevertheless requires only a qualitative analysis of potential issues.<sup>47</sup> The

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45. Circular A-4 provides:

If you are not able to quantify the effects, you should present any relevant quantitative information along with a description of the unquantified effects, such as ecological gains, improvements in quality of life, and aesthetic beauty. You should provide a discussion of the strengths and limitations of the qualitative information. This should include information on the key reason(s) why they cannot be quantified. In one instance, you may know with certainty the magnitude of a risk to which a substantial, but unknown, number of individuals are exposed. In another instance, the existence of a risk may be based on highly speculative assumptions, and the magnitude of the risk may be unknown.

For cases in which the unquantified benefits or costs affect a policy choice, you should provide a clear explanation of the rationale behind the choice. Such an explanation could include detailed information on the nature, timing, likelihood, location, and distribution of the unquantified benefits and costs.

CIRCULAR A-4, *supra* note 1, § E, “Developing Benefit and Cost Estimates,” point 7.

46. 17 C.F.R. § 229.303 (2012), Instruction 1 to paragraph 303(a). Specifically, Item 303 of Regulation S-K states:

The discussion and analysis shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition. This would include descriptions and amounts of (A) matters that would have an impact on future operations and have not had impact in the past, and (B) matters that have had an impact on reported operations and are not expected to have an impact upon future operations.

*Id.*, Instruction 3. In contrast, market risks relating to financial instruments call for more quantitative treatment.

47. For example, registrants must identify and disclose known trends, events, demands, commitments and uncertainties that are reasonably likely to have a material effect on financial condition or operating performance. This disclosure should highlight issues that are reasonably likely

required evaluations will often include assessment of whether a known uncertainty or event is “reasonably likely” to come to fruition, and if management cannot make such determination, “it must evaluate objectively the consequences of the known trend, demand, commitment, event or uncertainty, on the assumption that it will come to fruition,” and management must disclose the condition unless it can then affirmatively find that “a material effect on the registrant’s financial condition or results of operations is not reasonably likely to occur.” In this context, the SEC says “[r]easonably likely” is a lower disclosure standard than “more likely than not.”<sup>48</sup>

Uncertainties are also important topics in environmental impact statements. Under the applicable guidelines from the Council on Environmental Quality (CEQ), when important information is not available at a reasonable cost, agencies must summarize the available evidence about reasonably foreseeable impacts and discuss “the agency’s evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.”<sup>49</sup> The regulations define “reasonably foreseeable” to include impacts that “have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.”<sup>50</sup> The Supreme Court upheld this regulation in *Robertson v. Methow Valley Citizens Council*.<sup>51</sup>

Requiring a qualitative discussion may seem like an open-ended and easily manipulated demand, but courts have shown some ability to police agency compliance, and presumably OIRA could do so as well. For instance, the Eighth Circuit vacated the Surface Transportation Board’s final decision approving a project to construct railroad lines to coal mines in *Mid States Coalition for Progress v. Surface Transportation Board*, in part because the Board failed to discuss an adverse impact due to incomplete information.<sup>52</sup> The corporation undertaking the project argued that the impact on air quality caused by the rail lines’ supply of coal to power plants was too speculative to require consideration, but the court clarified that “when the *nature* of the effect is

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to cause reported financial information not to be necessarily indicative of future operating performance or of future financial condition. Disclosure decisions concerning trends, demands, commitments, events, and uncertainties generally should involve the:

- Consideration of financial, operational, and other information known to the registrant;
- Identification, based on this information, of known trends and uncertainties; and
- Assessment of whether these trends and uncertainties will have, or are reasonably likely to have, a material impact on the registrant’s liquidity, capital resources, or results of operations.

Commission Guidance Regarding Disclosure Related to Climate Change, 75 Fed. Reg. 6290 (Feb. 2010) (to be codified at 17 C.F.R. pts. 211, 231, 241).

48. *Id.* at 6294, n.54.

49. 40 C.F.R. § 1502.22(b) (1986).

50. *Id.*

51. 490 U.S. 332 (1989).

52. 345 F.3d 520, 549–50 (8th Cir. 2003).

reasonably foreseeable but its *extent* is not,” the agency’s environmental impact statement (EIS) must supply such a discussion.<sup>53</sup> OIRA could exercise similar quality control over qualitative discussions of uncertainties in regulatory impact analyses.

The CEQ’s approach deserves special consideration because of its statutory role in dealing with environmental uncertainties. Section 102(2)(B) of the National Environmental Policy Act (NEPA) calls on “all agencies of the Federal Government” to “identify and develop methods and procedures, in consultation with the Council on Environmental Quality . . . , which will ensure that presently un-quantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations.”<sup>54</sup> Note that CEQ, not OMB, is given the lead in coordinating government policy regarding unquantified environmental values. The existence of the statutory mandate and the choice of agencies itself suggests a desire for sympathetic treatment of environmental values in the decision-making process. In any event, the requirement of agency consultation with CEQ in § 102(2)(B) suggests that the CEQ’s views regarding the proper consideration of environmental uncertainties have special standing with agencies.

Notably, neither the SEC regulations nor the CEQ regulations require that the agency attempt to instruct the reader about how to factor the uncertainty into a judgment about the overall desirability of the project. Instead, the assumption is that readers will make their own judgments in this regard. Given the widespread use of qualitative analysis as a way for decision makers to deal with uncertainty, the burden is on those who prefer quantitative analysis to show that their alternative is superior. It is particularly notable that the SEC regulations do not require breakeven analysis to deal with uncertainty, since quantitative analysis is obviously widespread in the finance arena.<sup>55</sup> Qualitative analysis seems especially suited to the complexity and varied meanings of values such as human dignity.<sup>56</sup>

Although Professor Sunstein is dismissive of the idea of professional judgment based on qualitative analysis,<sup>57</sup> it is notable that all of the

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53. Likewise, in *Cabinet Resource Group v. United States Fish & Wildlife Service*, the court set aside the Forest Service’s final EIS because it failed to address gaps in a key study it relied on in assessing a motorized access plan’s impact on grizzly bears. 465 F. Supp. 2d 1067, 1099–100 (D. Mont. 2006). The court found that the missing information was “essential to a reasoned choice among alternatives” based on statements from the study’s authors and other scientists in the field, and interpreted section 1502.22 to require agencies to explicitly “acknowledge and discuss any flaws,” in studies relied on in an EIS. *Id.* at 1100.

54. 42 U.S.C. § 4332(B) (1975).

55. See *supra* notes 46 and 47.

56. See Rachel Bayefsky, Comment, *Dignity as a Value in Agency Cost-Benefit Analysis*, 123 YALE L.J. 1732, 1771 (2014).

57. See Cass R. Sunstein, *Financial Regulation and Cost Benefit Analysis: A Comment*, YALE L.J. F. (forthcoming), available at [http://papers.ssm.com/sol3/papers.cfm?abstract\\_id=2429340](http://papers.ssm.com/sol3/papers.cfm?abstract_id=2429340).

justifications given in his article are themselves qualitative and appeal to the reader's judgment for acceptance. For instance, he provides no empirical evidence of whether breakeven analysis improves decision making over qualitative analysis. Although he does provide examples of agency use of breakeven analysis, he does not provide evidence that the conclusions were more accurate than intuitive judgments by the same officials would have been, or retrospective studies showing that benefits in fact fell in the breakeven zone. Nor does he cite to experiments in which subjects used different decision techniques—including breakeven analysis—in situations of uncertainty, so that the relative effectiveness of the techniques and their susceptibility to bias could be observed. Instead, he makes plausible, but qualitative, assertions about the benefits of the technique, relying on the judgment of the reader to assess their strength. If, in the absence of such forms of quantitative information, qualitative analysis is sufficient as a basis for OIRA's mandates to agencies regarding decision-making methods, it is unclear why it is not also appropriate as a basis for EPA's mandates to industry.

If qualitative analysis is used, the question is how to make it the most meaningful. One way of qualitatively exploring the implication of uncertainties is scenario analysis. Scenario analysis can help push decision makers outside of their comfort zones by making them contemplate situations in which their own assumptions might fail.<sup>58</sup> Thus, compared with breakeven analysis, it may have more potential for overcoming myopia and other biases of decision makers. As Robert Verchick explains,<sup>59</sup> scenario analysis can avoid the pitfall of projecting a single probable future when vastly different outcomes are possible; broaden knowledge by requiring more holistic projections; and most importantly, “force[] decision-makers to use their imaginations.”<sup>60</sup> Verchick contends that the “very process of constructing scenarios stimulates creativity among planners, helping them to break out of established assumptions and patterns of thinking.”<sup>61</sup> In situations where it is impossible to give confident odds on the outcomes, scenario planning may be the most fruitful approach. Indeed, OMB itself has endorsed the use of scenario analysis: “If fundamental scientific disagreement or lack of knowledge prevents construction of a scientifically defensible probability distribution, you should describe benefits or costs under plausible scenarios and characterize the evidence and assumptions underlying each alternative scenario.”<sup>62</sup>

Professor Sunstein endorsed the value of qualitative discussions of project cost and benefits in an earlier phase of his career. At that time, he argued that

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58. For information about implementing scenario planning, see ALFRED MARCUS, STRATEGIC FORESIGHT: A NEW LOOK AT SCENARIOS (2009).

59. ROBERT R.M. VERCHICK, FACING CATASTROPHE: ENVIRONMENTAL ACTION FOR A POST-KATRINA WORLD 239–49 (2010).

60. *Id.* at 224–43.

61. *Id.* at 243.

62. CIRCULAR A-4, *supra* note 1, § E, “Developing Benefit and Cost Estimates,” point 1.

“[a]ny cost-benefit analysis should be accompanied by a disaggregated, qualitative description of the consequences of government action, so that Congress and the public can obtain a fuller picture than the crude and misleadingly precise ‘bottom line’ of the cost-benefit analysis.”<sup>63</sup> The question, then, is whether a breakeven analysis provides additional enlightenment beyond what a qualitative disclosure would offer, or whether it overcomes biases and faulty heuristics better than scenario analysis. As we saw in Part I, there is reason to worry that at least in some contexts the breakeven analysis might mislead as much as it may inform.

### *C. Democracy-Based Presumptions and Tiebreakers*

Qualitative disclosure may be paired with reliance on politically accountable actors to make decisions when valuations or probabilities are unclear. The first option is to use earlier political decisions as a source of guidance in these situations. The second option is to leave the ultimate qualitative judgment to politically accountable officials. Major provisions of important statutes, as well as the decisions of Presidents or heads of agencies on major public issues, are likely to reflect considerable deliberations, and public visibility provides some limits to the role of special interest lobbying. OIRA itself does not score well on transparency and accountability, giving rise to concerns about influence by special interests.<sup>64</sup> Thus, when the Occupational Safety and Health Administration’s (OSHA) special expertise in cost-benefit analysis falters in the face of uncertainties about risks or valuations, it might be best to turn to statutes and presidential policies as sources of presumptions or tiebreakers.

Giving credence to preferences expressed through the political process seems somewhat in tension with Professor Sunstein’s emphasis on placing authority in experts who will be less swayed than the public by heuristics or biases. But for those who regard democracy as intrinsically valuable, it may seem less questionable to give weight to the views of Congress or the President over basic issues of public policy.

#### *1. Statutory Guidance*

It is not uncommon for statutes to provide some guidance on how Congress views uncertainties regarding regulatory benefits. This guidance may

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63. Cass R. Sunstein, *Congress, Constitutional Moments, and the Cost-Benefit State*, 48 STAN. L. REV. 247, 293–94 (1996). More recently, he has also spoken favorably of qualitative assessments of uncertainty at least as a transparency measure. See SUNSTEIN, SIMPLER, *supra* note 2, at 171.

64. See RENA STEINZOR ET AL., CTR. FOR PROGRESSIVE REG., BEHIND CLOSED DOORS AT THE WHITE HOUSE: HOW POLITICS TRUMPS PROTECTION OF PUBLIC HEALTH, WORKER SAFETY, AND THE ENVIRONMENT 14–27 (2011); William D. Araiza, *Judicial and Legislative Checks on Ex Parte OMB Influence Over Rulemaking*, 54 ADMIN. L. REV. 611 (2002); Steven Croley, *White House Review of Agency Rulemaking: An Empirical Investigation*, 70 U. CHI. L. REV. 821, 855–59 (2003).

be particularly useful in cases where uncertainties are high. For instance, the Clean Air Act requires the EPA to use a margin of safety in setting air quality levels,<sup>65</sup> while also directing the EPA to regulate chemicals that “present, or may present . . . a threat of adverse health effects . . . (including, but not limited to, substances which are known to be, or may reasonably be anticipated to be, carcinogenic. . .).”<sup>66</sup> The statute additionally contains numerous sections giving priority to environmental quality over cost in setting levels of pollution control. For instance, the Clean Air Act calls for the use of Best Available Control Technology for new sources in areas that exceed required air quality standards, based on the maximum feasible pollution reductions, and it calls for Maximum Achievable Control Technology for major sources of hazardous air pollutants, requiring existing sources to match the best 12 percent of the industry and requiring new sources to match the best controlled existing source.<sup>67</sup> The statute also requires use of the Lowest Achievable Emissions Reduction for new or modified stationary sources in nonattainment areas, demanding the most stringent existing emissions limits achieved in practice by the industry or included in any state implementation plan, even if not achieved in practice.<sup>68</sup> Arguably, these provisions preclude the agency from making decisions on the basis of cost-benefit analysis. Even if that is not the case, they at least suggest a preference for emissions control as a tiebreaker when the balance between costs and benefits is uncertain.<sup>69</sup>

Other statutes also contain language suggestive of an environmental tiebreaker in the presence of uncertainty. Section 101(a) of the Clean Water Act states that the statute’s objective is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”<sup>70</sup> In terms of hazardous waste, Congress has called for such standards “as may be necessary to protect human health and the environment.”<sup>71</sup> These provisions strongly suggest that, at least when the balance between costs and benefits is uncertain, Congress intended to prioritize achievement of environmental benefits.

Statutes can also provide guidance about how to handle uncertainty outside of the environmental area. For instance, Professor Sunstein discusses regulations to deal with prison rape and efforts to quantify the benefits of the

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65. Clean Air Act § 109(b)(1), 42 U.S.C. § 7409(b)(1) (1977).

66. Clean Air Act § 112(b)(2), 42 U.S.C. § 7412(b)(1) (1999).

67. The EPA views this provision as excluding consideration of risk levels, with apparent support from the courts. See Patricia Ross McCubbin, *The Risk in Technology-Based Standards*, 16 DUKE ENVTL. L. & POL’Y F. 1, 42–44 (2005) (although the author suggests that the EPA covertly does consider risk).

68. This summary is derived from DANIEL A. FARBER ET AL., *CASES AND MATERIALS ON ENVIRONMENTAL LAW* 551 (8th ed. 2010). For a listing of the similar set of standards under the Clean Water Act, see *id.* at 706–07.

69. Cf. Hausman, *supra* note 32, at 54 (suggesting that relying on Congress’s assessment of benefits is superior to using stated preference methods).

70. 33 U.S.C. § 1251(a) (2006).

71. Resource Conservation and Recovery Act § 3002(a), 42 U.S.C. 6922(a) (1988).



regulations. In assessing the uncertainties, the agency might well find guidance in the governing statute, the Prison Rape Elimination Act of 2003.<sup>72</sup> Among its purposes, the statute is intended to “establish a zero-tolerance standard for the incidence of prison rape in prisons in the United States” and “make the prevention of prison rape a top priority in each prison system.”<sup>73</sup> The statute also speaks in unusually forceful terms of the “day-to-day horror experienced by victimized inmates,” as well as listing other harmful impacts such as HIV/AIDS transmission, heightened racial tensions, increases in recidivism, and mental health costs.<sup>74</sup> Congress clearly wanted to limit the impact of national standards on overall prison costs.<sup>75</sup> But Congress also felt strong action was warranted notwithstanding its awareness of some quantitative uncertainties.<sup>76</sup> This statutory stance should inform agency decisions about how to regulate when uncertainties make it difficult to quantify the tradeoffs between costs and benefits. In particular, it suggests that uncertainties should be resolved in favor of creating protections against prison rape rather than against regulation.

## 2. Administration Policy and Political Accountability

Perhaps the ultimate responsibility for resolving conflicting values rests with politically accountable officials. Administrations differ in terms of their regulatory philosophies. One may stress the burdens of regulations and their impacts on liberty. Another may favor a precautionary approach or fairness toward disadvantaged groups. These views are highly visible to the public. Using these governing philosophies as a basis for resolving uncertainties and value judgments could promote democratic accountability. And because these philosophies are broad and general, they may decrease the amount of traction for special interests that seek to sway policy decisions. Indeed in the *Chevron* case, the Supreme Court emphasized the value of relying on this political accountability mechanism: “While agencies are not directly accountable to the people, the Chief Executive is, and it is entirely appropriate for this political branch of the Government to make such policy choices—resolving the competing interests which Congress itself either inadvertently did not resolve, or intentionally left to be resolved by the agency charged with the administration of the statute in light of everyday realities.”<sup>77</sup>

Statutes may also be ambiguous about how precautionary or libertarian a stance should inform agency decisions under uncertainty. Under *Chevron*, the

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72. Prison Rape Elimination Act, Pub. L. No. 108-79, 117 Stat. 972 (2003).

73. *Id.* §§ 3(1)–3(2).

74. *Id.* § 2.

75. *Id.* § 8(3).

76. Section 2(2) recognizes that “[i]nsufficient research has been conducted and insufficient data reported on the extent of prison rape.” *Id.* § 2(2).

77. *Chevron U.S.A., Inc. v. NRDC*, 467 U.S. 837, 865–66 (1984).

agency has considerable leeway in deciding what the statute signals. In some situations, the courts have added their own glosses to statutes, such as the requirement that OSHA identify a quantifiable, significant risk as a basis for regulating toxic substances in the workplace.<sup>78</sup>

Some Presidents—perhaps including the current occupant of the Oval Office—may be quantitatively minded and find breakeven analysis helpful. Some Presidents, but not others, may believe in cost-benefit analysis as a decision-making technique strongly enough to favor its use to make decisions even when there are serious issues of nonquantifiability. Others may give greater weight to tiebreakers such as environmentalism on the one hand, or libertarian concerns about big government on the other.

It seems reasonable that, within the bounds of their statutory mandates, agencies (and OIRA) should take those policies into account. Indeed, it seems almost inevitable that this will happen, particularly in situations where there are major uncertainties. Breakeven analysis may provide a misleading sense of quantitative objectivity in situations where the decision is actually shaped by larger regulatory philosophies. In doing so, it could undermine political accountability.<sup>79</sup>

#### CONCLUSION

Cost-benefit analysis, whatever its merits in other situations, runs into problems when valuation of regulatory benefits is difficult or risk levels are uncertain. Although breakeven analysis is frequently used by agencies in such situations, there are reasons to be cautious of its embrace. Even if it is workable in principle, it may encounter difficulties in practical implementation. Judgments about valuation may be prone to distortions due to framing effects, while determinations about the range of potential risks may be driven by group dynamics or institutional incentives.

Moreover, there are other possible approaches to uncertainty that are well worth considering. On the technical side, more sophisticated techniques are available, using expert elucidation to obtain better estimates of risk, ambiguity models to deal with unquantifiable risks, and stated preference methods to better determine how society should spend money to achieve certain values. On the other hand, qualitative discussion of uncertainties and value issues could turn out to be just as good in combating biases and heuristics as breakeven analysis. It might also make sense to say that once quantification has gone as far as it can, ultimate decisions about uncertainties and intangible values should be primarily guided by the views of elected officials.

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78. *See Indus. Union Dep't v. Am. Petroleum Inst.*, 448 U.S. 607 (1980) (plurality opinion).

79. For further discussion of the difficulties raised by OIRA's role and other recent developments in terms of transparency and accountability, see Daniel A. Farber & Anne Joseph O'Connell, *The Lost World of Administrative Law*, 92 TEX. L. REV. 1137 (2014).

Thus, any case for breakeven analysis must be tentative. The kinds of comparisons involved in breakeven analysis can undoubtedly be helpful on occasion when making decisions involving difficult value judgments or a high degree of uncertainty. The question is the degree to which we should rely on this technique in making regulatory decisions. The considerations involved are complex, and Professor Sunstein scores some points in favor of breakeven analysis as a method of making decisions. But it seems premature to award the victory. Embracing current agency use of breakeven analysis too quickly may discourage the use of better methods of decision making.

It is always tempting to embrace seemingly simple methods for dealing with intractable problems. To be sure, we can use whatever help we can get in making decisions involving grave uncertainties. But we may also prematurely fasten on intellectual shortcuts instead of seriously struggling with complexities of regulatory issues.

