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Cost-Benefit Default Principles

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COST-BENEFIT DEFAULT PRINCIPLES

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> Courts should be reluctant to apply the literal terms of a statute to mandate pointless expenditures of effort. . . . Unless Congress has been extraordinarily rigid, there is likely a basis for an implication of de minimis authority to provide exemption when the burdens of regulation yield a gain of trivial or no value.[1]

> It seems bizarre that a statute intended to improve human health would . . . lock the agency into looking at only one half of a substance's health effects in determining the maximum level for that substance.[2]

> [I]t is only where there is "clear congressional intent to preclude consideration of cost" that we find agencies barred from considering costs.[3]

> In order better to achieve regulatory goals — for example, to allocate resources so that they save more lives or produce a cleaner environment — regulators must often take account of all of a proposed regulation's adverse effects, at least where those effects clearly threaten serious and disproportionate public harm. Hence, I believe that, other things being equal, we should read silences or ambiguities in the language of regulatory statutes as permitting, not forbidding, this type of rational regulation.[4]

> The rule-implicit valuation of a life is high — about $4 million — but not so astronomical, certainly by regulatory standards, as to call the rationality of the rule seriously into question, especially when we consider that neither Hepatitis B nor AIDS is a disease of old people. These diseases are no respecters of youth; they cut off people in their working years, and thus in their prime, and it is natural to set a high value on the lost years.[5]

1. Ala. Power Co. v. Costle, 636 F.2d 323, 360-61 (D.C. Cir. 1979).

2. Am. Trucking Ass'n v. EPA, 175 F.3d 1027, 1052 (D.C. Cir. 1999).

3. Michigan v. EPA, 213 F.3d 663, 678 (D.C. Cir. 2000).

4. Whitman v. Am. Trucking Ass'n, 121 S. Ct. 903, 921 (2001) (Breyer, J., concurring in part and concurring in the judgment).

5. Am. Dental Ass'n v. Martin, 984 F.2d 823, 827 (7th Cir. 1993).

I. INTRODUCTION

Risks never exist in isolation. They are part of systems. For that reason, any effort to reduce a single risk will have a range of consequences, some of them likely unintended.

If the Federal Aviation Administration ("FAA") requires parents to purchase seats for children under three so as to make flying safer, it will also make flying less convenient and more expensive, and thus lead some people to drive instead.[6] Flying is much safer than driving, and hence the FAA's measures might ensure that more lives are lost on balance. If noise levels are reduced at the Grand Canyon, so that people can enjoy the area in peace and quiet, air tourism there will have to be dramatically reduced, so that fewer people can enjoy the area at all.[7] If the Environmental Protection Agency ("EPA") requires aggressive corrosion control technologies to reduce lead in water, it might thereby produce increases in other contaminants, because the very technologies that reduce lead can contribute to water pollution.[8] If the Occupational Safety and Health Administration ("OSHA") increases regulation of benzene, a carcinogenic substance, it might lead companies to use a less safe, or perhaps even an unsafe, substitute; it might also decrease the wages of affected workers, and decrease the number of jobs in the relevant industry. People who have less money, and who are unemployed, tend to live shorter lives — and hence occupational regulation might, under certain circumstances, sacrifice more lives than it saves.[9] Of course the unintended consequences of risk regulation might be desirable rather than undesirable — as, for example, when regulation spurs new pollution-control technologies.

Now consider the following cases:

1. The Clean Air Act requires the EPA to issue standards controlling any substance that "contributes significantly" to pollution problems in certain areas. EPA issues regulations governing relevant pollutants, but without considering the costs of compliance. Industries challenge the regulations on the ground that cost is a statutorily relevant factor.[10]

2. The National Highway Traffic Safety Administration ("NHTSA") is asked to promote fuel economy in automobiles through fuel economy standards. The Coalition for Automobile Safety, a public interest organization, contends that the effect of certain

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6. *See* Robert W. Hahn, *The Economics of Airline Safety and Security*, 20 HARV. J.L. & PUB. POL'Y 791, at 793 (1997).

7. Grand Canyon Air Tour Coalition v. FAA, 154 F.3d 455 (D.C. Cir. 1998).

8. Am. Water Works v. EPA, 40 F.3d 1266, 1271 (D.C. Cir. 1994).

9. *See* Symposium, *Risk-Risk Analysis*, 8 J. RISK & UNCERTAINTY 5 (1994).

10. *Compare* Michigan v. EPA, 213 F.3d 663, 678 (D.C. Cir. 2000) (finding cost a permissible factor for the agency to consider under a similar statute), *with* Lead Indus. Ass'n v. EPA, 647 F.2d 1130 (D.C. Cir. 1980) (finding cost an irrelevant factor under provisions governing national ambient air quality standards).

proposed standards will be to lead manufacturers to produce smaller and more dangerous cars. The Coalition contends that NHTSA acted unlawfully in failing to take this effect into account.[11]

3. A federal statute requires the Occupational Safety and Health Administration to regulate toxic substances "to the extent feasible."[12] OSHA interprets this language to require it to consider whether the regulation is technologically feasible and whether it is "practicable," economically speaking, for the industry to comply. OSHA imposes a regulation that is admittedly "feasible" under this test, but the regulation cannot pass a cost-benefit test because the benefits to workers are low, even trivial, and the costs are high. Insisting that costs must be compared with benefits and that high costs cannot be imposed for trivial gains, industries subject to the regulation complain that it is unlawful.[13]

In which of these cases has the agency acted unlawfully? The question is of immense importance, both for regulatory policy and for the relationship between courts and agencies. One of my main purposes here is to demonstrate that federal law has now built a novel set of rules for statutory construction: the *cost-benefit default principles*. In brief, these principles (1) allow de minimis exceptions to regulatory requirements; (2) authorize agencies to permit "acceptable" risks, departing from a requirement of "absolute" safety; (3) permit agencies to take account of both costs and feasibility; and (4) allow agencies to balance costs against benefits. Taken as a whole, the cost-benefit default principles are making a substantial difference to regulatory policy, both because of their effects in litigated cases and because of their systemic consequences for regulation.[14]

At the same time, the cost-benefit default principles remain mostly the creation of the U.S. Court of Appeals for the District of Columbia. Currently, it is not clear whether the Supreme Court will ultimately adopt them. I attempt to explain here why the principles make a good deal of sense and deserve general support.

Even if broadly accepted, however, the default principles raise many questions. For the most part, the cost-benefit default principles say what agencies are *permitted* to do. It is not clear whether the default principles also mean that when statutes are ambiguous, agencies will be *required* to do any of these things. Nor do the principles give much indication of how agencies permitting "acceptable" risks, or engaging in cost-benefit analysis, might be expected to proceed. What does it mean to say that agencies are permitted to "consider" costs? Would it be unlawful for an agency to

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11. *See* Competitive Enter. Inst. v. NHTSA, 956 F.2d 321 (D.C. Cir. 1992).

12. 29 U.S.C. § 655(b)(5) (1994).

13. Am. Textile Mfrs. Inst., Inc. v. Donovan, 452 U.S. 490 (1981).

14. *See* ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION 425 (3rd ed. 2000). I discuss below the important decision in *Whitman v. American Trucking Association*, 531 U.S. 457 (2001), forbidding the EPA from seeking costs in issuing noticed air quality standards.

say that even very high costs are worth incurring? In what way should the monetary valuation of human life be constrained? What counts as an acceptable or de minimis risk? How should agencies deal with the interests of future generations?

However these questions are resolved, there can be no doubt that the cost-benefit default principles have emerged as a central part of what amounts to the federal common law of regulatory policy. Of course most of that common law, including the incipient federal common law of cost-benefit analysis, will emerge, and is emerging, from regulatory agencies, which have to decide how much to regulate, and why.[15] Here agencies are the principal architects of what shall be seen as a form of nonjudicial common law. But courts will undoubtedly play an important role,[16] and it is in the interaction between agencies and judges that binding law will emerge. Among my largest purposes here is to understand the nature of the cost-benefit default principles, their legitimacy, and their future content.[17]

There is a still more general point in the background. The steady emergence of the cost-benefit default principles signals the impending conclusion, in all branches of government,[18] of a "first generation" debate over whether cost-benefit analysis is desirable.[19] That debate appears to be terminating with a general victory for the proponents of cost-benefit analysis, in the form of a presumption in favor of their view (signaled above all, perhaps, by President Clinton's substantial endorsement of cost-benefit balancing via Executive Order).[20] The "second generation" debates raise difficult questions about how (not

15. Hence, for example, different agencies have come up with different dollar figures by which to value statistical lives; this is a central part of agency-made common law of cost-benefit analysis. See the table in Matthew D. Adler & Eric A. Posner, *Implementing Cost-Benefit Analysis When Preferences Are Distorted*, 29 J. LEGAL STUD. 1105, 1146 (2000). There are also striking variations in agency selection of discount rate, that is, the treatment of costs and benefits (such as lives saved) in the future. *See* Comment, *Judicial Review of Discount Rates Used in Regulatory Cost-Benefit Analysis*, 65 U. CHI. L. REV. 1333, 1364-69 (1998) (documenting variations ranging from 2% to 10%). These issues are treated below.

16. *See, e.g.*, Corrosion Proof Fittings v. EPA, 947 F.2d 1201 (5th Cir. 1991) (striking down agency regulation of asbestos under statute calling for cost-benefit balancing).

17. It is important to see that many federal agencies do not comply with the apparent requirements of cost-benefit balancing in existing executive orders. Robert Hahn has shown that compliance is episodic and that a great deal needs to be done to systematize the process. *See* Robert W. Hahn et al., *Empirical Analysis: Assessing Regulatory Impact Analysis: The Failure of Agencies To Comply With Executive Order 12,866*, 23 HARV J.L. & PUB. POL'Y 859 (2000). Here, as elsewhere, there is a large difference between law on the books and law in the world. I do not attempt here to address the important issue of how to ensure compliance with principles that call for attention to costs and benefits. But judicial review of agency action can serve as a partial corrective, ensuring that in the egregious cases, agency action will be held invalid for failure to comply with the principles. This point is discussed at several places below.

18. Within Congress, see, for example, 5 U.S.C. § 1535 (1994); within the executive branch, see *infra* note 20.

19. For discussion, see Lisa Heinzerling, *Regulatory Costs of Mythic Proportions*, 107 YALE L.J. 1981 (1998); Symposium, *Cost-Benefit Analysis: Legal, Economic, and Philosophical Perspectives*, 29 J. LEGAL STUD. 837 (2000).

20. *See* Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Sept. 30, 1993).

whether) to engage in cost-benefit analysis — how to value life and health, how to deal with the interests of future generations, how to generate rules of thumb to simplify complex inquiries, how to ensure that agencies do what they are supposed to do, how and when to diverge from the conclusion recommended by cost-benefit analysis, how to determine the roles of agencies and courts in contested cases. My identification and assessment of the cost-benefit default principles is intended as a contribution to these "second generation" debates. An especially important "second generation" question is when, if ever, the presumption in favor of cost-benefit balancing is rebutted. I attempt to make a start in answering that complex question.

The Article is organized as follows. Part II traces the rise of cost-benefit default rules in federal law. It begins with the emergence of cost-benefit principles, outlines statutory formulations, and then elaborates the default rules. Part III explores the underlying considerations in some detail — what supports the use of default principles generally and these default principles in particular. In Part III, I address the general question of when the presumption in favor of the principles might be rebutted. Part IV turns to the question whether agencies should be required to do what the cost-benefit default principles permit them to do. Part V deals briefly with a set of issues that an agency must address if it is going to engage in cost-benefit balancing. Part VI is a brief conclusion.

II. CONSIDERING AND NOT CONSIDERING COSTS

A. *From 1970s Environmentalism to the Cost-Benefit State? A Prefatory Note*

This Article does not attempt to resolve the broad question whether cost-benefit analysis is a good idea, or whether the many recent initiatives in that direction should be approved or modified.[21] But as background to an understanding of the cost-benefit default principles, a brief overview of the debate is in order. The rise of interest in cost-benefit balancing signals a dramatic shift from the initial stages of national risk regulation. Those stages were undergirded by what might be called "1970s environmentalism," which placed a high premium on immediate responses to long-neglected problems, which emphasized the existence of problems rather than their magnitude, and which was often rooted in moral indignation directed at the behavior of those who created pollution and other risks to safety and health.[22] Defining aspects of 1970s environmentalism can be found in the apparently cost-blind national ambient air quality

21. For a range of perspectives, see Symposium, *supra* note 19.

22. *See* Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 13 COLUM. J. ENVTL. L. 171 (1988).

provisions of the Clean Air Act[23] and in statutory provisions requiring that standards be set on the basis of "standards of performance" for which costs are a secondary consideration.[24]

No one should deny that 1970s environmentalism has done an enormous amount of good, helping to produce dramatic improvements in many domains, above all in the context of air pollution, where ambient air quality has improved for all major pollutants.[25] Indeed, 1970s environmentalism appears, by most accounts, to survive cost-benefit balancing, producing aggregate benefits in the trillions of dollars, well in excess of the aggregate costs.[26] The EPA's own estimates suggest that, as a result of the Clean Air Act, there were 184,000 fewer premature deaths among people thirty years of age or older in 1990 — and also that there were 39,000 fewer cases of congestive heart failure, 89,000 fewer cases of hospital admissions for respiratory problems, 674,000 fewer cases of chronic bronchitis, and 850,000 fewer asthma attacks.[27] The EPA finds annual costs of air pollution control at $37 billion, hardly a trivial number, but less than 4% of the annual health and welfare benefits of $1.1 trillion.[28] Even if the EPA's own numbers show an implausibly high ratio, more conservative valuations of likely beneficial effects still reveal benefits far higher than costs.[29]

More generally, the Office of Management and Budget ("OMB") has, for the last several years, engaged in a full accounting of the costs and benefits of all regulation.[30] The report shows that regulatory benefits, in the aggregate, exceed regulatory costs. While the government's own numbers should be discounted — agency accounts may well be self-serving — at least they provide a good place to start.[31] In its 2000 report, OMB finds total regulatory benefits ranging from $254 billion to $1.8 trillion, with total costs ranging from $146 billion to $229 billion, for net benefits ranging from $25 billion to $1.65 trillion.[32]

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23. 42 U.S.C. § 7409(b) (1994).

24. *See, e.g.*, 33 U.S.C. § 1311(b)(1)(A); 42 U.S.C. §§ 7411(a)(1), 7412(d)(2), 7475(a)(4), 7502(c)(1) (1994).

25. *See* ECONOMIC ANALYSIS AT EPA 455-56 (Richard D. Morgenstern ed., 1997) [hereinafter ECONOMIC ANALYSIS]; Paul Portnoy, *Air Pollution Policy*, *in* PUBLIC POLICIES FOR ENVIRONMENTAL PROTECTION 77, 101-105 (Paul R. Portnoy & Robert Stavins eds., 2000).

26. *See* ECONOMIC ANALYSIS, *supra* note 25, at 455-56.

27. Portnoy, *supra* note 25, at 102-03.

28. *Id.* at 109.

29. *Id.* at 113 (showing a benefit-cost ratio of three to one).

30. Office of Management and Budget, Reports to Congress on the Costs and Benefits of Federal Regulations, *available at* http://www.whitehouse.gov/omb/inforeg/index.html (last visited Aug. 7, 2001) [hereinafter OMB Reports].

31. For a valuable overview, see Robert W. Hahn, *Regulatory Reform: What Do The Government's Own Numbers Tell Us?*, *in* RISKS, COSTS, AND LIVES SAVED (Robert W. Hahn ed., 1996).

32. Office of Management and Budget, Charts for Report to Congress on the Costs and Benefits of Federal Regulations (2000), *available at* http://www.whitehouse.gov/omb/inforeg/2000fedreg-report.pdf [hereinafter 2000 OMB Report Charts], tbl. 4.

A more disaggregated picture is also encouraging. In the transportation sector, the benefits range from $84 billion to $110 billion, with the costs from $15 billion to $18 billion, for net benefits of $66 billion to $95 billion.[33] In the net, benefits range from $9 billion to $12 billion. Much of the uncertainty stems from uncertainty about environmental benefits and costs, producing a possible range from $73 billion in net costs to over $1.5 trillion in net benefits.[34]

For most government action, however, the benefits do seem to exceed the costs.[35] As especially good examples, consider the following regulations, all from recent years:

TABLE 1: REGULATIONS YIELDING NET BENEFITS

Regulation	2000 (net benefits in millions of dollars)	2005	2010	2015
Head impact protection	310-370	1,210-1,510	1,210-1,510	1,210-1,510
Conservation reserve program	1100	1100	1100	1100
Restriction on sale and distribution of tobacco	9,020-9820	9,020-9820	9,020-10,220	9,020-9820
Acid rain controls	260-1900	260-1900	260-1900	260-1900
Energy conservation standards for refrigerators	330	330-360	510-580	440-500
New surface water treatment	50-1,200	50-1,200	50-1,200	50-1,200
Emission standards for new highway heavy-duty engines	0	110-1200	110-1200	110-1200
Disposal of PCBs	136-736	136-736	136-736	136-736
Particulates standard	0	0	12,000-113,000	-20,000-86,000

But even though the overall picture shows no cause for alarm, a closer look at federal regulatory policy shows a wide range of problems. Perhaps foremost is exceptionally poor priority setting, with substantial resources sometimes going to small problems, and with little attention to some serious problems.[36] There are also

33. *Id.*

34. *See id.*

35. *See id.*, tbl. 5.

36. This is the theme of STEPHEN BREYER, BREAKING THE VICIOUS CIRCLE (1993).

unnecessarily high costs, with no less than $400 billion being attributable to compliance costs each year,[37] including $130 billion on environmental protection alone.[38] OMB's own report shows some disturbing numbers. For the next fifteen years, OSHA's methylene chloride regulation will have annual costs of $100 million and annual benefits of $40 million;[39] a regulation calling for roadway worker protection has benefits of $30 million, but equivalent costs; the cost-benefit ratio for airbag technology innovations seems bad, though there is uncertainty in the data;[40] EPA's regulation for financial assurance for municipal solid waste landfills has monetized benefits of $0, but costs of $100 million, and this is expected for the next fifteen years.[41] By way of general illustration, consider the following table,[42] all drawn from recent regulations:

TABLE 2: REGULATIONS FAILING TO YIELD NET BENEFITS

Regulation	2000 (net benefits in millions of dollars)	2005	2010	2015
Exposure to methylene chloride	-60	-60	-60	-60
Roadway worker protection	0	0	0	0
Financial assurance for municipal solid waste landfills	-100	-100	-100	-100
Pulp and paper effluent guidelines	-150 to 0	-150 to 0	-150 to 0	-240 to 0
Ozone standards	0	-235 to 240	-840 to 1190	-9,200 to -1000
Child restraint system	-40 to 40	-40 to 40	-40 to 40	-40 to 40
Vessel response plans	-220	-220	-220	-220
Nitrogen oxide emission from new fossil fuel fired steam generating units	-57 to 29	-57 to 29	-57 to 29	-57 to 29

37. Thomas D. Hopkins, *The Costs of Federal Regulation*, 2 J. REG. AND SOC. COSTS 5, 25 tbl. 2 (1992).

38. Paul R. Portney & Robert N. Stavins, *Regulatory Review of Environmental Policy*, 8 J. RISK AND UNCERTAINTY 111, 119 n.1 (1994).

39. OMB 2000 Report Charts, *supra* note 32, tbl. 12.

40. *Id.*

41. *Id.*

42. *Id.*

These figures, based on the anticipated costs and benefits of each regulation adopted in a single year, show a less than coherent overall pattern,[43] especially when table 1 is put together with table 2. According to one study, better allocations of health expenditures could save, each year, 60,000 more lives at no additional cost — and such allocations could maintain the current level of lives saved with $31 billion in annual savings.[44] The point has been dramatized by repeated demonstrations that some regulations create significant substitute risks[45] — and that with cheaper, more effective tools, regulation could achieve its basic goals while saving billions of dollars.[46]

In these circumstances, the most attractive parts of the movement for cost-benefit analysis have been rooted not in especially controversial judgments about what government ought to be doing, but instead in a more mundane search for pragmatic instruments designed to reduce three central problems: poor priority setting, excessively costly tools, and inattention to the unfortunate side-effects of regulation. By drawing attention to costs and benefits, it should be possible to spur the most obviously desirable regulations, to deter the most obviously undesirable ones, to encourage a broader view of consequences, and to promote a search for least-cost methods of achieving regulatory goals.[47] Notice that, so defended, cost-benefit analysis functions not only as an obstacle to unjustified regulation but also as a spur to government as well, showing that it should attend to neglected problems. If cost-benefit balancing is supported on these highly pragmatic grounds, it might well attract support from many different people with diverse theoretical commitments.

In fact, the record of cost-benefit analysis, at least within the EPA, is generally encouraging.[48] Assessments of costs and benefits have, for example, helped produce more stringent and rapid regulation of lead in gasoline, promoted more stringent regulation of lead in drinking water, led to stronger controls on air pollution at the Grand Canyon and the Navaho Generating Station, and produced a reformulated gasoline rule that promotes stronger controls on air pollutants.[49] In these areas, cost-benefit analysis, far from being only a check on regulation, has indeed spurred governmental attention to serious problems.

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43. On the problem of incoherent regulation, see Cass R. Sunstein et al., *Predictably Incoherent Judgments*, STAN. L. REV. (forthcoming 2002).

44. Tammy O. Tengs et al., *Five Hundred Life-Saving Interventions and Their Cost-Effectiveness*, 15 RISK ANALYSIS 369 (1995).

45. *See* JOHN GRAHAM & JONATHAN WIENER, RISK VS. RISK (1995).

46. *See, e.g.*, A. DENNY ELLERMAN ET AL., MARKETS FOR CLEAN AIR (2000); Robert Stavins, *Market-Based Environmental Policies*, *in* PUBLIC POLICIES FOR ENVIRONMENTAL PROTECTION, *supra* note 25, at 31, 35-55.

47. For many examples, see ECONOMIC ANALYSIS, *supra* note 25.

48. *See id.*

49. *See id.* at 458.

Cost-benefit analysis has also led to regulations that accomplish statutory goals at lower cost, or that do not devote limited private and public resources to areas where they are unlikely to do much good. With respect to asbestos, for example, an analysis of benefits and costs led the EPA to tie the phase-down schedules to the costs of substitutes, and also to exempt certain products from a flat ban.[50] With respect to lead in gasoline and control of CFCs (destructive of the ozone layer), cost-benefit analysis helped promote the use of economic incentives rather than command-and-control regulation;[51] economic incentives are much cheaper and can make more stringent regulation possible in the first place. For regulation of sludge, protection of farm workers, water pollution regulation for the Great Lakes, and controls on organic chemicals, cost-benefit analysis helped regulators produce modifications that significantly reduced costs.[52] For modern government, one of the most serious problems appears to be not agency use of cost-benefit analysis, but frequent noncompliance with executive branch requirements that agencies engage in such analysis.[53]

Of course cost-benefit analysis is hardly uncontroversial.[54] Insofar as both costs and benefits are being measured by the economic criterion of "private willingness to pay," there are many problems. Poor people often have little ability, and hence little willingness, to pay, and some people will be inadequately informed and therefore show unwillingness to pay for benefits that would improve their lives.[55] In some circumstances, regulatory agencies should seek not private willingness to pay, but reflective public judgments as expressed in public arenas.[56] Society is not best taken as some maximizing machine, in which aggregate output is all that matters. Sometimes a regulation producing $5 million in benefits but $6 million in costs will be worthwhile, if those who bear the costs (perhaps representing dollar losses alone?) can do so easily, and if those who receive the benefits (perhaps representing lives and illnesses averted?) are especially needy. Sometimes public deliberation, with its own norms and constraints, will reveal that government should proceed even if the costs exceed the benefits, measured in terms of private willingness to pay.

In view of these problems, the strongest arguments for cost-benefit balancing are based not only on neoclassical economics, but also on an understanding of human cognition, on democratic considerations, and

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50. *Id.* at 458.

51. *Id.* at 49-86, 131-169.

52. *Id.* at 458.

53. *See* Hahn, *supra* note 17.

54. For a general challenge to quantification, see Heinzerling, *supra* note 19.

55. *See* Adler & Posner, *supra* note 15.

56. Many of these points are pressed in ELIZABETH ANDERSON, VALUE IN ETHICS AND ECONOMICS (1993).

on an assessment of the real-world record of such balancing.[57] Begin with cognition. People have a hard time understanding the systemic consequences of one-shot interventions.[58] Unless they are asked to seek a full accounting, they are likely to focus on small parts of problems, producing inadequate or even counterproductive solutions.[59] Cost-benefit analysis is a way of producing that full accounting. Ordinary people also have difficulty in calculating probabilities, and they tend to rely on rules of thumb, or heuristics, that can lead them to make systematic errors.[60] Cost-benefit analysis is a natural corrective here. Because of intense emotional reactions to particular incidents, people often make mistakes in thinking about the seriousness of certain risks.[61] Cost-benefit balancing should help government resist demands for regulation that are rooted in misperceptions of facts. The idea here is not that the numbers are all that matter, but that the numbers can inform public debate simply by providing relevant information.[62]

With respect to democracy, the case for cost-benefit analysis is strengthened by the fact that interest groups are often able to use these cognitive problems strategically, thus fending off regulation that is desirable or pressing for regulation when the argument on its behalf is fragile.[63] Here cost-benefit analysis, taken as an input into decisions, can protect democratic processes by exposing an account of consequences to public view. Of course, public deliberation might reveal that private willingness to pay greatly understates the actual benefits of the project at issue. Values will inevitably play a role in the characterization and assessment of costs and especially benefits,[64] but a review of the record suggests that cost-benefit balancing leads to improvements, not on any controversial view of how to value the goods at stake, but simply because such balancing leads to more stringent regulation of serious problems, less costly ways of achieving regulatory goals, and a reduction in expenditures for problems that are, by any account, relatively minor.[65]

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57. I attempt to develop this point in Cass R. Sunstein, *Cognition and Cost-Benefit Analysis*, 29 J. LEGAL STUD. 1059 (2000). In the same vein, see Allan Gibbard, *Risk and Value*, *in* VALUES AT RISK 94-112 (Douglas MacLean ed., 1986).

58. *See* DIETRICH DORNER, THE LOGIC OF FAILURE (1997).

59. *Id.*

60. Amos Tversky & Daniel Kahneman, *Judgment under Uncertainty: Heuristics and Biases*, *in* JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES 3, 11 (Daniel Kahneman, Paul Slovic, and Amos Tversky eds., 1982); Roger G. Noll & James E. Krier, *Some Implications of Cognitive Psychology for Risk Regulation*, 19 J. LEGAL STUD. 747 (1990).

61. *See* George F. Loewenstein et al., *Risk As Feelings*, 127 PSYCHOL. BULL. 267 (2001).

62. *See* Cass R. Sunstein, *The Arithmetic of Arsenic* (Aug. 2001) (unpublished manuscript), *available at* http://www.aei.brookings.org [hereinafter Sunstein, *Arsenic*].

63. *See* Timur Kuran & Cass R. Sunstein, *Availability Cascades and Risk Regulation*, 51 STAN. L. REV. 683 (1999).

64. *See id.*

65. *See* ECONOMIC ANALYSIS, *supra* note 25, at 455-76.

None of these points suggests that cost-benefit analysis is a panacea for the problems that I have identified. Everything depends on questions of implementation, and there are also hard questions about appropriate valuation, questions to which I shall return. It is possible that cost benefit balancing could provide a form of "paralysis by analysis," and thus prevent desirable regulations from going forward. I have emphasized that the numbers should not be decisive. Sometimes respect for rights, or concerns about irreversibility, justify a rejection of cost-benefit balancing.[66] Interest groups will undoubtedly portray both costs and benefits in a self-serving manner. The central point is that cost-benefit analysis can be seen, not as opposition to some abstraction called "regulation," and not as an endorsement of the economic approach to valuation, but as a real-world instrument designed to ensure that the consequences of regulation are placed before relevant officials and the public as a whole, and intended to spur attention to neglected problems while at the same time ensuring that limited resources will be devoted to areas where they will do the most good. Thus understood, cost-benefit analysis promises to attract support from a wide range of people with diverse perspectives on contested issues — a promise realized in the apparently growing bipartisan consensus on some form of cost-benefit balancing in many domains of regulatory policy.[67] An understanding of this consensus is an indispensable background for approaching the cost-benefit default principles.

B. *Statutory Terms*

My emphasis here will be on the relationship between these points and judge-made default rules for statutory interpretation. But judge-made rules have considerable overlap with approaches taken explicitly by Congress in statutes governing health, safety, and the environment. In fact there is undoubtedly an interaction effect between statutes and judge-made law, with default principles emerging from statutory formulations and vice-versa. Part of the argument for the cost-benefit default principles is that they do not reflect purely judicial policymaking; those principles fit well with explicit enactments in other areas of the law. In dealing with the role of benefits and costs, federal statutes tend to fall into the following categories. I order the statutes roughly in accordance with their treatment of cost-benefit balancing, beginning with those that most flatly reject it, and ending with those that unambiguously embrace it.

1. *Flat bans on consideration of costs.* Some statutes, exemplifying 1970s environmentalism, appear to forbid any consideration of cost. Perhaps the most famous example is the Delaney Clause, which for a long period prohibited food additives that "induce cancer in man or

66. Tenn. Valley Auth. v. Hill, 437 U.S. 153 (1978).

67. *See* Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Sept. 30, 1993).

animal."[68] In the face of that language, the government sought to permit additives that, while carcinogenic, created only the most miniscule risks of cancer — lower risks, in fact than those that would come from eating one peanut with the FDA-permitted level of aflatoxins every 250 days, and much lower risks than come from spending about seventeen hours every year in Denver (with its high elevation and radiation levels) rather than the District of Columbia.[69] Nonetheless, the Delaney Clause was taken to forbid any form of balancing.[70] But a far more important example comes from the most fundamental provisions of the Clean Air Act, governing national ambient air quality standards.[71] For a long time, the national ambient air quality standards set under that Act have been understood to be based on "public health" alone.[72] The EPA's judgment is to be grounded only in benefits; the cost of compliance is irrelevant.

2. *Significant risk requirements.* An alternative formulation is to require the agency to address only "significant" or "unacceptable" risks. On this view, risks that do not reach a certain level need not and perhaps may not be addressed. This is the prevailing interpretation of the Occupational Safety and Health Act, under both the toxic substance provisions and the more general provisions of the Act.[73] A requirement of a "significant risk" falls short of cost-benefit analysis in the sense that it is entirely *benefits-based*; costs are irrelevant as such. Once benefits fall below a certain threshold, regulation is not required and in fact is banned.[74] Once benefits rise above that threshold, regulation is permissible, even if the benefits seem low in comparison to the costs.

3. *Substitute risks and health-health tradeoffs.* Some statutes require agencies to consider whether a regulation controlling one risk would, in so doing, create a substitute risk. If so, agencies are permitted to decline to regulate, or to regulate to a different point. These are clear statutory recognition of *health-health tradeoffs*, which arise when there are health concerns on both sides of the equation, from both more and less regulation.[75] Many statutory "consideration"

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68. 21 U.S.C. § 376(b)(5)(B) (1994).

69. Public Citizen v. Young, 831 F.2d 1108 (D.C. Cir. 1987).

70. *Id.*

71. 42 U.S.C. § 7409(b) (1994).

72. Lead Indus. Ass'n v. EPA, 647 F.2d 1130 (D.C. Cir. 1980); *see also* Union Elec. Co. v. EPA, 427 U.S. 246 (1976) (holding that EPA may not consider economic and technological feasibility when approving or disapproving a state implementation plan). The Supreme Court vindicated the standard in *Whitman v. American Trucking Association,* 121 S. Ct. 503 (2001). *See infra* Part III.

73. Indus. Union Dep't, AFL-CIO v. Am. Petroleum Inst., 448 U.S. 607 (1980); Int'l Union, UAW v. OSHA, 37 F.3d 665 (D.C. Cir. 1994).

74. *American Trucking Association v. EPA*, 175 F.3d 1027 (D.C. Cir. 1999), appears to endorse this view for regulation of air pollutants, on the theory that an interpretation that would allow the EPA to pick any point it chooses would violate the nondelegation doctrine.

75. *See* GRAHAM & WIENER, *supra* note 45.

requirements[76] have an unambiguous feature of this sort, for example by requiring agencies entrusted with reducing air pollution problems to take account as well of "non-air quality health and environmental impact and energy requirements."[77] Here is an explicit recognition that the EPA is allowed to consider the danger that a regulation that decreases air pollution will also create water pollution or some other environmental problem.[78] The reformulated gasoline program takes this basic form,[79] as does the provision governing emissions standards for new vehicles, which authorizes the EPA to examine "safety factors" as well as cost and energy issues.[80] Thus the EPA is instructed to ask whether a program designed to reduce air pollution might thereby make cars more dangerous; if so, the EPA should reconsider the program. Under the fuel regulation program of the Clean Air Act, the EPA is not allowed to prohibit a fuel or fuel additive unless "he finds, and published such finding, that in his judgment such prohibition will not cause the use of any other fuel or fuel additive which will produce emissions which will endanger the public health or welfare to the same or greater degree than the prohibited item."[81] The Toxic Substances Control Act similarly requires the EPA to take account of substitute risks.[82]

4. *Feasibility requirements.* Some statutes require agencies to regulate "to the extent feasible" or "achievable."[83] These expressions are far from transparent. But as generally understood, such statutes put the focus not on benefits but solely on costs, and on costs in a particular way. They forbid an agency from regulating to a point that is neither (a) technically feasible, because the relevant control technology does not exist, nor (b) economically feasible, because the industry cannot bear the cost without significant or massive business failures.[84] The line between (a) and (b), usually treated as crisp and simple, is hardly that. Whether a requirement is technically feasible will usually depend on the level of resources that are devoted to it. In practice, (a) and (b) therefore overlap, with (b) serving as a separate category only on those occasions when even massive expenditure of

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76. 42 U.S.C. § 7429 (a)(2) (1994); 42 U.S.C. § 300g-1(b)(4)(B) (1994) (Safe Drinking Water Act).

77. 42 U.S.C. § 7411(a)(1) (1994).

78. *See* Am. Petroleum Inst. v. EPA, 52 F.3d 1113 (D.C. Cir. 1995) (recognizing this point but also holding that EPA had unlawfully elevated these "consideration" factors).

79. 42 U.S.C. § 7545(k)(1) (1994).

80. 42 U.S.C. § 7521(a)(3)(A) (1994).

81. 42 U.S.C. § 7545 (c)(2)(c) (1994).

82. Corrosion Proof Fittings v. EPA, 947 F.2d 1201 (5th Cir. 1991).

83. *See, e.g.*, 29 U.S.C. § 655(b)(5) (1994) ("feasible"); 42 U.S.C. § 7521 (a)(3)(A) (1994) ("will be available"); 42 U.S.C. § 7412(d)(2) (1994) ("achievable"); 42 U.S.C. § 7411(a)(1) (1994) ("has been adequately demonstrated").

84. *See* Nat'l Lime Ass'n v. EPA, 233 F.3d 625 (D.C. Cir. 2000); AFL-CIO v. OSHA, 965 F.2d 962, 980 (11th Cir. 1992); Am. Textile Mfrs. Inst., Inc. v. Donovan, 452 U.S. 490, 508-09 (1981).

existing resources cannot bring the technology into existence. Noteworthy here is the fact that, while a significant risk requirement is entirely benefits-based, a feasibility requirement looks exclusively at the cost side of the equation. Such a requirement is a "block" of excessively expensive regulation.

5. *"Consideration" requirements.* A large number of statutes ask agencies to "take into consideration" various factors, including cost, in addition to the principal factor to which the statute draws the agency's attention (such as clean air or water). The most common formulation, now standard, asks the agency to produce the "maximum degree of reduction" that is "achievable," after "taking into consideration [1] the cost of achieving such emission reduction, and [2] any [a] non-air quality health and environmental impacts and [b] energy requirements."[85] The basic idea here is that the agency is supposed to qualify the pursuit of the "maximum" achievable reduction by asking (a) whether the cost is excessive, (b) whether energy requirements would be adversely affected, and (c) whether the "maximum" requirement might create health and environmental harms by, for example, increasing water pollution though reducing air pollution.

6. *Cost-benefit requirements.* Several statutes ask agencies to balance costs against benefits, mostly through a prohibition of "unreasonable risks," alongside a definition of "unreasonable" that refers to both costs and benefits. The most prominent examples are the Toxic Substances Control Act[86] and the Federal Insecticide, Fungicide, and Rodenticide Act.[87] Under these statutes, the agency is required to calculate both costs and benefits and to compare them against each other. If the costs exceed the benefits, regulation is unacceptable. More recently, cost-benefit analysis has been mandated by the Safe Drinking Water Act Amendments.[88] Under the Act, the EPA is asked to conduct a careful risk-cost analysis and to back away from the maximum feasible level if the benefits of the stricter standard "would not justify the costs of complying the with the level."[89] While Congress has thus far resisted efforts to impose a cost-benefit "supermandate" calling for a general decision rule based on cost-benefit balancing,[90] Congress has enacted legislation requiring assessment, and public disclosure, of costs and benefits of major

85. 42 U.S.C. § 7429(a)(2) (1994); 42 U.S.C. § 300g-1(b)(4)(B) (1994) (Safe Drinking Water Act).

86. 15 U.S.C. § 2605 (a) (1994).

87. 7 U.S.C. § 136a(a) (1994).

88. 42 U.S.C. § 300g-1(b)(3) (1994).

89. 42 U.S.C. § 300g-1(b)(6) (1994).

90. *See* Cass R. Sunstein, *Congress, Constitutional Moments, and the Cost-Benefit State*, 48 STAN. L. REV. 247 (1996).

regulations.[91] OMB itself has been required to produce annual accounting of costs and benefits.[92]

In the abstract, the distinctions among these kinds of provisions should be clear enough. A statute that calls for consideration of substitute risks does not require cost-benefit balancing, because it is more narrowly concerned to ensure that risks (generally to health) do not increase on balance; under a statute calling for health-health tradeoffs, it is irrelevant that costs as such exceed benefits. A statute that requires that regulations be "feasible" is ordinarily taken to entail no comparison between costs and benefits, but a cost-focused inquiry into what industry is able to do. A statute that regulates "significant risks," by contrast, is ordinarily taken to entail no comparison between costs and benefits, but a benefit-centered inquiry into the magnitude of the risk to be addressed.

Of course many open questions remain, and I will return to those questions in Part IV. Let us simply take this menu of options as the background for understanding the nature of the cost-benefit default rules.

C. *The Default Rules Identified: An Overview*

To understand the cost-benefit default principles, some administrative law is in order. *Chevron v. Natural Resources Defense Council*,[93] the dominant case in the area, sets out the familiar two-step inquiry for judicial review of agency decisions. The first question ("Step One") is whether Congress has "directly decided the precise question at issue" — more simply, whether Congress has unambiguously either banned or required what the agency proposes to do.[94] Under *Chevron*, agencies are generally permitted to construe ambiguous statutes as they see fit. *Chevron* creates a kind of default principle in favor of agency discretion. It follows that even without a specific cost-benefit default principle, agencies should be permitted to consider costs so long as the statute is ambiguous on the point. When *Chevron* is combined with a specific default principle, the overall lesson is exceedingly straightforward: agencies are permitted to consider costs when Congress has not said that they may not.

Under *Chevron*, however, the issue is not finished upon a finding that Congress has not directly addressed the precise question at issue. It remains to ask whether the agency's interpretation of the statute is reasonable ("Step Two"). When the lower court in *American Trucking Association* held that the EPA was required to consider the benefits as well as the risks of a pollutant, it did so partly on the ground that the

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91. 5 U.S.C. § 1535 (1994).

92. *See, e.g.*, Treasury and General Government Appropriations Act, Pub. L. 105-61, § 625, 111 Stat. 1272 (1998); Omnibus Consolidated and Emergency Supplemental Appropriations Act, Pub. L. 105-277, § 638(a), 112 Stat. 2681 (1999).

93. 467 U.S. 837 (1994).

94. *Id.* at 842.

agency's interpretation to the contrary was not reasonable (because it was, in the court's view, "bizarre").[95] It is therefore possible that even if an agency's decision does not violate *Chevron* Step One (because the statute is ambiguous), it will nonetheless violate Step Two if the decision can be shown to be arbitrary or bizarre. But a decision to look at costs, or the health risks of regulation, would almost never fail Step Two.

Under *Chevron*, then, the legal issue is simple if Congress has been clear. But in the face of statutory uncertainty, cases provide support for each of the following principles. For some of the principles, the law is more developed than for others, but each of the principles is an identifiable part of contemporary public law.

— Unless Congress has clearly said otherwise, agencies will be permitted to make de minimis exceptions to statutory requirements by exempting small risks from regulatory controls.[96]

— Unless Congress has clearly said otherwise, agencies will be permitted to balance the health risks created by regulation against the health benefits created by regulation.[97]

— Unless Congress has clearly said otherwise, agencies will be permitted to take costs into account in issuing regulations. In its current form, this principle means that when statutes are ambiguous, agencies will have the authority to consider costs as well as benefits.[98]

— Unless Congress has clearly said otherwise, agencies will be permitted to decline to regulate past the point where regulation would be economically or technologically feasible.[99]

— Unless Congress has clearly said otherwise, agencies will be expected to balance costs against benefits in issuing regulations.[100]

Now let us explore some details.

D. *De Minimis Exceptions*

1. *The Basic Idea*

In a series of cases, the D.C. Circuit has developed a principle authorizing agencies to make de minimis exceptions to regulatory requirements. The first case to suggest the possibility of de minimis regulatory exceptions was *Monsanto Co. v. Kennedy*.[101] In that case, the agency banned acrylonitrile on the ground that it counts as a "food additive" because acrylonitrile migrates in small amounts from bottles

95. Am. Trucking Ass'n v. EPA, 175 F.3d 1027, 1052 (D.C. Cir. 1999); *see supra* text accompanying note 2 (quoting the lower court).

96. *See, e.g.*, Coalition on Sensible Transp., Inc. v. Dole, 826 F.2d 60 (D.C. Cir. 1987).

97. This principle appears to underlie *American Trucking*, 175 F.3d 1027.

98. *See* Michigan v. EPA, 213 F. 3d 663, 667-79 (D.C. Cir. 2000).

99. *See* Natural Res. Def. Council v. EPA, 824 F.2d 1146 (D.C. Cir. 1987).

100. *See* Competitive Enter. Inst. v. NHTSA, 956 F.2d 321 (D.C. Cir. 1992).

101. 613 F.2d 947 (D.C. Cir. 1979).

into the drinks they contain. The Food and Drug Administration ("FDA") concluded that the ban was justified on safety grounds, a conclusion that the court found inadequately justified. But what is more important in the case is the general language with which the court remanded the case to the FDA. The court stressed that the agency had discretion to exclude a chemical from the statutory definition of food additives if "the level of migration into food . . . is so negligible as to present no public health or safety concerns."[102]

A related case presented the question of whether the EPA was permitted to make categorical exemptions under the Prevention of Significant Deterioration program of the Clean Air Act.[103] Here the court spoke in more ambitious terms, showing considerable enthusiasm for de minimis exemptions. It announced that:

> Categorical exemptions may also be permissible as an exercise of agency power, inherent in most statutory schemes, to overlook circumstances that in context may fairly be considered de minimis. It is commonplace, of course, that the law does not concern itself with trifling matters, and this principle has often found application in the administrative context. Courts should be reluctant to apply the literal terms of a statute to mandate pointless expenditures.[104]

In fact the court expressly connected this principle with the idea that the court should "look beyond the words to the purpose of the act" to avoid "absurd or futile results."[105] In its broadest statement on the point, the court concluded that "most regulatory statutes, including the Clean Air Act, permit" de minimis exemptions upon an adequate factual showing.[106]

Here, then, is an explicit recognition of agency authority to exempt de minimis risks from regulatory controls. The authority operates as a clear statement principle — no less, but also no more. Where Congress has unambiguously banned such exceptions, agencies are bound, and may not create de minimis exemptions even in compelling circumstances.[107]

In the same vein, consider *Sierra Club v. Department of Transportation*.[108] At issue was a statutory requirement that the Secretary of Transportation refuse to approve the "use" of significant public park land unless "the program or project includes all possible planning to minimize the harm to the park . . . resulting from the use."[109] The statutory question was whether limited commercial jet landings in an airport in the Grand Teton National Park should qualify

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102. *Id.* at 955.

103. Ala. Power Co. v. Costle, 636 F.2d 323 (D.C. Cir. 1979).

104. *Id.* at 360.

105. *Id.* at 360 n.89.

106. *Id.* at 360.

107. Public Citizen v. Young, 831 F.2d 1108 (D.C. Cir. 1987).

108. 753 F.2d 120 (D.C. Cir. 1985).

109. 49 U.S.C. § 303(c) (1994).

as a "use," in the face of a reasonable agency finding that the increase in flights would not result in a "significant" change in noise. The court found that the term "use" should be understood to authorize de minimis exceptions.[110] There are many decisions in the same vein.[111]

2. *The OSHA Variation: Requiring De Minimis Exceptions*

A noteworthy variation on the basic idea of permitting de minimis exceptions can be found in the plurality opinion in *Industrial Union Department, AFL-CIO v. API*, known as the *Benzene Case*.[112] What the plurality said represents a variation on the basic idea for two reasons. First, the plurality *prohibited* the agency to regulate trivial risks; it went well beyond permitting the agency to create exemptions. Second, the plurality's substantive standard was phrased not in terms of de minimis exceptions to regulation, but of limiting regulation to "significant" risks, and hence prohibiting regulation of risks not shown to be "significant." The second difference might or might not be important, because it is not clear whether risks that do not qualify as "significant" should be treated as de minimis, though this does appear to be what the plurality had in mind.

The central issue in the case was whether OSHA had to show a "significant risk" in order to regulate a toxic substance (there, benzene). In arguing that it did not, the government pointed to the central provision, which says that in promulgating the relevant standards, the Secretary:

> [S]hall set the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity, even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life.[113]

The statute's general definition of occupational safety and health standards says that these are standards "reasonably necessary or appropriate to provide safe or healthful places of employment."[114]

The key statutory language is the "no employee will suffer" phrase, which indicates that even if a toxic substance places only one or a few workers in jeopardy, OSHA must act to provide protection. Whatever the meaning of the obscure general definitional clause ("reasonably necessary or appropriate"), the more specific provision, dealing with

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110. *Public Citizen*, 831 F.2d at 130. The case is expressly understood in this way in *Coalition on Sensible Transportation, Inc. v. Dole*, 826 F.2d 60, 63 (D.C. Cir. 1987).

111. *See, e.g.*, Envtl. Def. Fund, Inc. v. EPA, 82 F3d 451 (D.C. Cir. 1996); Sierra Club v. EPA, 992 F.2d 337, 343-45 (D.C. Cir. 1993); Ohio v. EPA, 997 F.2d 1520, 1535 (D.C. Cir. 1993) (suggesting that "the literal meaning of a statute need not be followed where the precise terms lead to absurd or futile results, or where failure to allow a *de minimis* exemption is contrary to the primary legislative goal"); Public Citizen v. FTC, 869 F.2d 1541, 1556-57 (D.C. Cir. 1989).

112. 448 U.S. 607 (1980).

113. 29 U.S.C. § 655(b)(5) (1994).

114. 29 U.S.C. § 652(8) (1994).

toxic substances, would appear to trump any contrary indications in the more general one. A straightforward interpretation of the statutory terms, urged by four justices on the Supreme Court, would seem to suggest that no significant risk need be shown.[115] Nonetheless, a plurality of the Court rejected OSHA's argument to this effect and hence rejected OSHA's interpretation of the statute.

In holding that a "significant risk" must be shown, the plurality contended that a contrary interpretation would defy common sense: "In light of the fact that there are literally thousands of substances used in the workplace that have been identified as carcinogens or suspected carcinogens, the Government's theory would give OSHA power to impose enormous costs that might produce little, if any, discernible benefits."[116] Though the plurality left undecided the question whether the agency must also show a reasonable proportion between costs and benefits, it is clear, from the passage just quoted, that the "significant risk" requirement was motivated partly by the desire to ensure some kind of proportionality between benefits and costs, on the theory that the requirement serves to protect against the most egregious disproportions.[117]

In *American Textile Manufacturers Institute v. Donovan*,[118] however, the Court emphasized what it saw as the ordinary meaning of the word "feasible" in order to hold that OSHA was not required to engage in cost-benefit balancing. In the Court's view, the agency's job is to ensure that all regulated risks are "significant." Once a significant risk is shown, the agency is required to regulate to the point where compliance would no longer be "feasible," in the sense of practicable.[119] The fact that a regulation violated a cost-benefit test is neither here nor there. This holding raises many questions, to which I will return.[120] For the moment the key point is that the Court's interpretation of OSHA builds on the idea that de minimis exceptions are permitted to reach a conclusion that insignificant risks may not be regulated at all.

3. *A Hazardous Waste Wrinkle: No Benefits, No Regulation*

In an important case involving hazardous wastes, the court of appeals aggressively interpreted the Clean Air Act so as to prohibit EPA from imposing regulation without a showing that the regulation would actually clean the air. *Chemical Manufacturers Association v. EPA*[121] involved an unusual rule requiring hazardous waste

115. *Benzene Case*, 448 U.S. at 688 (Marshall, J., dissenting).

116. *Benzene Case*, 448 U.S. at 617.

117. *Id.*

118. 452 U.S. 490 (1981).

119. *Id.* at 496.

120. *See infra* Part VI.A.

121. 217 F.3d 861 (D.C. Cir. 2000).

combustors to comply with new emissions standards. The EPA established a bifurcated compliance schedule: combustors would have three years to modify existing facilities and processes to come into compliance with the standards, but if they decided on "early cessation" and found that it was not cost-effective to make the required changes, they would be required to cease burning hazardous waste entirely within two years.

At first glance, the EPA's program seems to make a great deal of sense. Those attempting to make expensive changes should receive a longer period for compliance than those refusing to make such changes. But EPA itself acknowledged that those who chose "early cessation" would actually redirect hazardous waste to other "facilities to be burned under essentially the same conditions."[122] Thus, the early cessation rule would have no significant beneficial effects on hazardous waste or on hazardous waste pollution. "It will instead merely reallocate which combustion facilities process the same hazardous waste under the same conditions."[123] The court held that in these circumstances, the rule was unlawful, because it would not promote the purpose of the Act, which was to clean the air. In the court's view, it is simply unreasonable "to impose costly obligations on regulated entities" without showing that those obligations would help to promote the Act's environmental goals.[124] "Given the absence of environmental benefits — indeed, the possibility of environmental harm," the rule could not be valid.[125]

Chemical Manufacturers Association is a striking application of the principle that regulation should be expected to deliver significant benefits. The court seems to be urging that agencies will not be permitted to require expensive activity without a showing that the expense will produce nontrivial environmental gains. An issue involving interest-group pressure seems to lurk in the background here: commercial waste incinerators, intervenors in the case, stood to gain a great deal from the rule (because it would transfer business to them), and we may speculate that the court feared that the EPA was issuing a regulation, nominally based on environmental grounds, that would favor a well-organized private group with an economic stake in the outcome.[126]

E. *Substitute Risks*

Extensive attention has recently been given to the problem of "risk-risk" or "health-health" tradeoffs, which arise when regulation of

122. *Id.* at 865.

123. *Id.*

124. *Id.* at 867.

125. *Id.*

126. *Cf.* Bruce A. Ackerman & William T. Hassler, CLEAN COAL/DIRTY AIR (1981) (discussing alliance between environmentalists and eastern coal companies).

one health problem gives rise to another health problem.[127] Suppose that more stringent fuel economy standards for new cars, justified partly on environmental and thus health-related grounds, would have the effect of leading automobile manufacturers to produce smaller and more dangerous cars, thus resulting in a significant loss of life in accidents.[128] Is the agency entitled to take this effect into account? Or suppose that the FDA is asked to require genetically engineered foods to be labeled as such; if the labels would lead consumers to switch to less safe substitutes, such as certain kinds of organic foods,[129] may the FDA take that effect into account? Or suppose the FAA is asked to require children under the age of three to have their own seats in airplanes. The regulation might be urged on the ground that it would prevent a number of injuries in the air and also produce protection in the event of a crash. In the abstract, it is reasonable to think that children will be helped as a result. But suppose that a consequence of the mandatory purchase of a seat would be to lead many parents to drive rather than fly, on the ground that flying has suddenly become significantly more expensive. It is possible that the overall consequence of the proposed FAA rule would be that more children will die. Is the FAA permitted to take this effect into account?

Recent cases suggest an emerging principle of interpretation, in the form of a strong presumption in favor of permitting (and even requiring) agencies to take account of substitute risks, and hence to undertake health-health tradeoffs. In *American Trucking Association*, for example, it was argued that while ground-level ozone creates certain health risks, it also produces certain health benefits, above all because it provides protection against skin cancer and cataracts.[130] The EPA responded that it lacked authority to consider the risks created by regulation or, to put the point slightly differently, the health benefits of an air pollutant.[131]

Taken on its own, the statutory text might seem to support the EPA's view, or at least to make that view a reasonable interpretation of ambiguous terms. The statute provides that ambient standards must be based on "criteria" documents, which are supposed to include "the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of such pollutant in the ambient air, in varying quantities."[132] EPA urged, plausibly, that the phrase "identifiable effects" of "such pollutant" was meant to refer to the adverse effects of the "pollutant," not to its beneficial effects. But the *American Trucking* court concluded that the statute could not be

127. *See, e.g.*, Symposium, *supra* note 9.

128. *See supra* note 11.

129. *See* ALAN MCHUGHEN, PANDORA'S PICNIC BASKET 201-29, 232-237 (2000).

130. 175 F.3d 1027, 1051 (D.C. Cir. 1999).

131. *Id.* at 1051-52.

132. 42 U.S.C. § 7408(a)(2) (1994).

interpreted in that way.[133] In a passage that suggests a strong presumption in favor of health-health tradeoffs, the court said (not entirely convincingly) that the statute was unambiguous, and (far more convincingly) that the "EPA's interpretation fails even the reasonableness standard . . .: it seems bizarre that a statute intended to improve human health would . . . lock the agency into looking at only one half of a substance's health effects in determining the maximum level for that substance."[134] What is most striking about this suggestion is that the court seems to have gone beyond the view that the agency is permitted to engage in health-health tradeoffs if it chooses, and to require the EPA to do so even if it would choose otherwise.

Or consider *Competitive Enterprise Institute v. NHTSA*,[135] where the plaintiffs challenged fuel economy standards precisely on the ground that the agency had failed to take account of the adverse effects of such standards on automobile safety. In the face of an ambiguous statute, the court insisted that a full explanation was required for a decision that, in the abstract, would seem to create serious substitute risks.[136] As a result of this decision, it is now the law that NHTSA must take into account any evidence of adverse safety effects in the process of setting fuel economy standards. On remand, NHTSA confronted the evidence and concluded that the alleged effect could not be demonstrated — a conclusion that the court upheld on appeal.[137] What is important for present purposes is the clear holding that the agency is permitted and even obliged to consider health-health tradeoffs in setting fuel economy standards.

In some cases, judicial permission to consider substitute risks has done real violence to statutory language. Consider, for example, the EPA's approach to lead contamination in water. The Safe Drinking Water Act requires the EPA to produce maximum contaminant level goals ("MCLG") for water contaminants.[138] These goals are required to "be set at the level at which no known or anticipated adverse effects on the health of persons occur," with an adequate margin of safety.[139] For lead, the EPA's MCLG was zero, because no safe threshold had been established. Once an MCLG is established, EPA is required to set a maximum contaminant level ("MCL"), "as close to the maximum contaminant level goal as is feasible."[140] The EPA is authorized not to set a maximum contaminant level, and to require "the use of a treatment technique in lieu of establishing" that level, only if it finds

133. 175 F.3d at 1052.

134. *Id.*

135. 956 F.2d 321 (D.C. Cir. 1992).

136. *Id.* at 324.

137. Competitive Enter. Inst. v. NHTSA, 45 F.3d 481, 484-86 (D.C. Cir. 1995).

138. 42 U.S.C. § 300g-1(b) (1994).

139. 42 U.S.C. § 300g-1(b)(4) (1994).

140. 42 U.S.C. § 300g-1(b)(4) (1994).

"that is it not economically or technologically feasible to ascertain the level of the contaminant."[141]

At first glance, this set of provisions has a familiar structure. The EPA is required to set a standard of performance, and is barred from requiring a "technique" for achieving the desired performance, unless it is not feasible to monitor water quality. For lead, then, we would expect EPA to set its MCL as close as "feasible" (economically and technologically) to the MCLG of zero, except if it was not "feasible" to ascertain the level of lead contamination through monitoring. But this is not what EPA did, because of some distinctive features of the lead problem. Source water is basically lead-free; the real problem comes from corrosion of service lines and plumbing materials. With this point in mind, EPA refused to set any MCL for lead, on the ground that an MCL would require public water systems to use extremely aggressive corrosion control techniques that, while economically and technologically "feasible," would be counterproductive because they would increase the level of other contaminants in the water. What appeared to be the legally mandated solution would make the water *less* safe, not more so. The EPA therefore chose a more modest approach. Instead of issuing an MCL, it required all large water systems to institute certain corrosion control treatments and demanded that smaller systems do so if and only if representative sampling found significant lead contamination.

Did the EPA violate the Safe Water Drinking Act? At first glance, it seems that it did. The EPA did not contend that an MCL was not "feasible" to implement, nor did it argue that it was not "feasible," in the economic or technological sense, to monitor lead levels in water. Nonetheless, the court upheld the agency's decision.[142] The court accepted the EPA's suggestion that the word "feasible" could be construed to mean "capable of being accomplished in a manner consistent with the Act." The court said that "case law is replete with examples of statutes the ordinary meaning of which is not necessarily what the Congress intended," and it added that "where a literal meaning of a statutory term would lead to absurd results," that term "has no plain meaning."[143] Because an MCL would itself lead to more contamination, "it could lead to a result squarely at odds with the purpose of the Safe Drinking Water Act."[144] The court therefore accepted EPA's view "that requiring public water systems to design and implement custom corrosion control plans for lead will result in optimal treatment of drinking water overall, i.e. treatment that deals adequately with lead without causing public water systems to violate drinking water regulations for other contaminants."[145]

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141. 42 U.S.C. § 300g-1(b)(7)(A) (1994).

142. Am. Water Works Ass'n v. EPA, 40 F.3d 1266, 1271 (D.C. Cir. 1994).

143. *Id.* at 1270-71.

144. *Id.* at 1271.

145. *Id.*

It should be plain that the court permitted a quite surprising and even countertextual interpretation of the Act. The statutory terms seem to make no room for the EPA's refusal to issue an MCL. Nonetheless, the EPA's refusal made good pragmatic sense in light of the risks that would be introduced by any such regulation. The court's decision is probably the clearest example to date of an aggressive default rule allowing agencies to ensure that regulation does not introduce problems equivalent to those that it is attempted to solve.

F. *Consideration of Cost*

The presumption that agencies may "consider costs" has also emerged in a series of important cases within the D.C. Circuit. In a period in which environmental factors seem to compete with economic considerations, many related to the supply of energy, these decisions have particular importance. Consider three examples.

At issue in *Grand Canyon Air Tour Coalition v. FAA*[146] was an FAA regulation designed to reduce noise from airplanes over the Grand Canyon. The statute required "substantial restoration" of the "natural quiet," which the FAA understood to require that the Park achieve 50% of the natural quiet at least 75% of the day. In refusing to impose stricter controls, the FAA explained that it took into "consideration of the needs of the air tour industry."[147] From its ambiguous explanation, it appears that the FAA sought partly to protect the air tour industry as such, but mostly to protect tourists in their ability to see the Grand Canyon from the air. Not surprisingly, the FAA had been asked to impose both more strict and less strict regulation, and its decision was contested, by different parties, as both too strict and as excessively lenient.

Those challenging the rule said that the FAA's task was to ensure "substantial restoration" of the "natural quiet," and that protection of the air tour industry was a statutorily irrelevant factor.[148] The court responded by invoking something like a presumption in favor of considering cost, noting that nothing in the statute "forbids the government from considering the impact of its regulation on the air tour industry."[149] This passage is ambiguous, but the court appears to recognize that in the face of congressional silence, at least one kind of cost — that involving the air tour industry — will be within agency discretion to consider. The narrowest construction of the court's opinion is that statutes should not be taken to be self-defeating, so that the FAA is permitted to conclude that a statute designed to enable people to enjoy the Grand Canyon, by reducing noise, should not be implemented with regulation so strict as to disable people from

146. 154 F.3d 455 (D.C. Cir. 1998).

147. *Id.* at 475.

148. *Id.*

149. *Id.*

enjoying the Grand Canyon by air.[150] A broader reading is that under ambiguous statutes, agencies will be presumed able to take into account the costs of various implementation strategies.[151]

Support for the broader reading comes from *George E. Warren Corp. v. EPA*,[152] where domestic companies challenged the EPA's implementation of the reformulated gasoline provisions of the Clean Air Act. A central question for the EPA was how to treat foreign refiners and importers. In resolving that question, the EPA considered not only air quality benefits, but also the comments of the Department of Energy. That agency expressed concern that certain approaches could increase the price and decrease the quantity of gasoline by making it more difficult for foreign refiners to divert production to the United States in periods of increased demand.[153] The EPA took this point expressly into account in its rule. The result was an outcome more favorable to foreign refiners, and less favorable to environmental protection or domestic competitors, than EPA might otherwise have chosen. Nonetheless, the court upheld the agency's decision, emphasizing the absence of an explicit legislative ban on consideration of these economic factors.[154] The court appeared to suggest that an express congressional preclusion of economic factors would be necessary in order to make them irrelevant as a matter of law.

By far the most explicit statement on point, however, comes from *Michigan v. EPA*.[155] At issue there was an EPA decision to approve a state implementation plan ("SIP") for the regulation of ozone. The statutory term provided that SIPs must contain provisions adequately prohibiting "any source or other type of emissions activity within the state from emitting any air pollutants in amounts which will . . . contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard."[156] At first glance, this provision might well be read as a kind of absolute ban on "significantly contributing" pollutants. But the EPA did not understand it that way. Instead the EPA reached a more subtle, even creative conclusion. It would adopt a low threshold for deciding whether a contribution was "significant." But the "significant contributors" would be required to reduce their ozone only by the

150. Careful readers will notice that whether this conclusion is necessary to prevent the statute from being self-defeating depends on how the statute's purposes are characterized: if the purpose is to reduce noise for those visiting the Grand Canyon, an interpretation that would ignore the interests of the air tour industry would not be self-defeating at all. Unfortunately there is no simple purpose to be "found" behind this statute.

151. This is how the case is read in *Michigan v. EPA*, 213 F.3d 663 (D.C. Cir. 2000).

152. 159 F.3d 616 (D.C. Cir. 1998).

153. *Id.* at 623.

154. *Id.* at 619-20.

155. 213 F.3d 663 (D.C. Cir. 2000).

156. 42 U.S.C. § 7410(a)(2)(D)(i)(I) (1994).

amount achievable via "highly cost-effective controls,"[157] meaning those that could produce large reductions relatively cheaply. In states with high control costs, then, relatively low reductions would be required.

Apparently because of the clarity of the statutory language on the particular point, no one in the case argued that EPA was required to balance costs against benefits before issuing regulations. Challenging the EPA's interpretation, environmental groups urged that the statute banned any consideration of costs at all. In their view, "contribute significantly" made no room for an inquiry into the costs of compliance. The court rejected the argument, finding no "clear congressional intent to preclude consideration of costs."[158] But the court obviously had a difficult time with the statutory terms "contribute significantly," which seem to refer to environmental damage, not to environmental damage measured in light of cost. In upholding the EPA's decision, the court insisted that significance should not "be measured in only one dimension," that of "health alone." In fact in some settings, the term "begs a consideration of costs."[159] In the court's view, EPA would be unable to determine " 'significance' if it may consider only health," especially in light of the fact that ozone causes adverse health effects at any level. If adverse effects exist on all levels, how can EPA possibly choose a standard without giving some weight to cost?[160]

But there is a serious problem for this conclusion. Taken together, the OSHA cases seem to argue in the opposite direction. As we have seen, the requirement that OSHA show a "significant" risk (a requirement imposed in the *Benzene Case*) has not been taken to mean that OSHA must or even may consider costs (with cost-benefit balancing apparently banned by the *Cotton Dust Case*[161]). To this the court responded that in the aftermath of those cases, OSHA has itself attempted to ensure, and invariably claimed, that the costs of safety standards are "reasonably related to their benefits."[162] In any case "the most formidable obstacle" to a ban on consideration of cost "is the settled law of this circuit,"[163] which requires an explicit legislative statement to preclude consideration of cost. Here, then, is an express judicial endorsement of a cost-benefit default principle, permitting agencies to consider costs if they seek to do so.

We should see *Michigan v. EPA* as a close cousin to *American Water Works*.[164] In both cases, the court of appeals permitted the

157. 213 F.3d at 675.

158. *Id.* at 678.

159. *Id.* at 677.

160. *Id.* at 678.

161. Am. Textile Mfrs. Inst., Inc. v. Donovan, 452 U.S. 490 (1981).

162. *Id.* at 677.

163. *Id.* at 678.

164. *See supra* text accompanying notes 141-146.

agency to read the statutory text aggressively, on one view even to amend it, on the theory that the agency's approach was so much more sensible than the approach that would be required by textualism. It seems clear that the Congress that enacted the Safe Drinking Water Act could not foresee the special problems creating by removing lead from water, problems that the EPA plausibly argued would make a MCL counterproductive. So, too, for the nonattainment program. From every point of view, the EPA's effort to require only cost-effective controls seemed better than an effort to define "contribute significantly" in a cost-vacuum. It is not clear whether the Supreme Court would approve the lower court's rejection of textualism in either case. But if we focus on Congress's inability to foresee the many complexities that arise in the context of implementation, we might well have sympathy for both decisions.[165]

G. *Feasibility*

Many statutes expressly require regulation to be "feasible."[166] But what if the statute is silent or ambiguous on the question of whether agencies may impose regulations beyond the point of "feasibility"? Sometimes statutes are "technology-forcing," in the sense that they require companies to innovate, and thus to do more than what current technology permits.[167] Often, however, the technology that is 'forced" by statutory requirements is entirely feasible — indeed, that is part of the reason that Congress requires it. In fact, some technology-forcing can be justified by cost-benefit principles themselves — if the benefits of forcing technology outweigh the costs, as they sometimes do. Companies might fail to innovate with respect to pollution control simply because they do not internalize all of the benefits of the innovation. But technological innovation is sometimes neither feasible nor justified by cost-benefit principles. Because of large costs, regulation will sometimes raise serious questions from the standpoint of feasibility, in the sense that it will drive many companies out of business or require technologies that are not now and cannot soon be made available. In such cases, the question is how to handle legislative silence.

The question arose most prominently in *Natural Resources Defense Council v. EPA*,[168] involving the toxic substances provision of the Clean Air Act. That provision, since substantially revised,[169] required EPA to issue regulations that would provide "an ample margin of

165. *See* CASS R. SUNSTEIN, ONE CASE AT A TIME: JUDICIAL MINIMALISM ON THE SUPREME COURT, at 229-31 (1999) (discussing reasons for allowing agencies, but not courts, to depart from text in unanticipated cases).

166. *See supra* note 83; *see also supra* notes 99, 113, 140 and accompanying text.

167. For a general discussion, see D. Bruce La Pierre, *Technology-Forcing and Federal Environmental Protection Statutes*, 62 IOWA L. REV. 771 (1977).

168. 824 F.2d 1146 (D.C. Cir. 1987).

169. *See* 42 U.S.C. § 7412 (1994) (amending 42 U.S.C. § 7412 (1982)).

safety to protect the public health."[170] The principal question was whether cost was relevant to the EPA's judgment. On its face, the statute might seem to block any consideration of cost and, indeed, to require regulations that would reduce risks to zero, especially because for many toxic substances safe thresholds simply do not exist. Alert to this point, the EPA urged that it should be allowed to take feasibility into account in setting regulations. The court accepted this conclusion by suggesting that regulations could avoid "zero risk" in two ways. First, the EPA was required to make an initial, benefits-based, cost-blind determination of what is "safe"; but citing the *Benzene Case*, the court said that "safe" did not mean "risk-free."[171] Thus "the Administrator's decision must be based upon an expert judgment with regard to the level of emission that will result in an 'acceptable' risk to health."[172] Of course, there is a degree of arbitrariness in any particular judgment here, especially if the judgment is cost-blind. But the court apparently was attempting to guarantee a degree of visibility and consistency in agency decisions by ensuring that the "acceptable risk" judgment would be made publicly and would be followed in a range of cases.

Second, the court said that in deciding how far to go beyond "safety," in order to provide an "ample margin," the Administrator was permitted to consider both costs and feasibility.[173] It is clear that the court engrafted these ideas onto a statute that did not expressly include them. In this sense, the decision suggests an interpretive principle to the effect that a statute that is silent or ambiguous on the point will ordinarily be taken to permit the agency to take account of the feasibility of statutory commands.

H. *Costs and Benefits*

When will an agency be permitted to decide in accordance with cost-benefit balancing? In the face of statutory ambiguity, is an agency authorized to make such balancing the basis for decision?

1. *In General*

An affirmative answer was given in *Natural Resources Defense Council v. EPA*[174] (the same title, but not the same case, as that just discussed). At issue in that case was the EPA's decision whether to classify a source of fugitive emissions as "major" within the meaning of a statutory provision calling for regulation of "major emitting facilities."[175] The EPA concluded that it would not add certain

170. 42 U.S.C. § 7412(b)(1)(B) (1982), *amended by* 42 U.S.C. § 7412(f)(2)(A) (1994).

171. Natural Res. Def. Council v. EPA, 824 F.2d 1146, 1153 (D.C. Cir. 1987).

172. *Id.*

173. *Id.* at 1150-51.

174. 937 F.2d 641 (D.C. Cir. 1991).

175. 42 U.S.C. 7475 (1994).

industrial sources, including surface coal mines, on the ground that the social and economic costs of regulation would outweigh the environmental benefits.[176] The statutory language did not require cost-benefit analysis, and the court emphasized that an alternative construction was not barred by statutory language and legislative history.[177] Nonetheless, the court said that it would treat the agency's interpretation as permissible in the face of legislative silence.

Interpretation of OSHA has shown identical thinking. Outside of the area of toxic substances, the statute (with its opaque "reasonably necessary or appropriate" language) is ambiguous on whether cost-benefit analysis may be made the basis for decision. Here a court of appeals went out of its way to say that OSHA is permitted to decide on the basis of cost-benefit balancing if it wishes.[178] In a challenge to the agency's lockout/tagout rule, the court of appeals said that such balancing would be a permissible basis for agency decisions, and indeed seemed to suggest that this would be the court's preferred route.[179] On remand, the agency appeared to decline the court's invitation, choosing a test based largely on a mixture of the "significant risk" and "feasibility" requirements, a test that the court upheld.[180] But the story does not end there. The agency has continued to say — perhaps to insulate itself from a court challenge — that it finds a "reasonable relationship" between costs and benefits, and in its most recent pronouncement on the issue, the court treated this as an authoritative constructive of the statute.[181] It remains to be seen whether an OSHA regulation that is said not to show such a reasonable relationship might be challenged as unlawful.

2. *The TSCA Wrinkle*

A more aggressive ruling, with a statutory text more favorable to cost-benefit balancing, is *Corrosion Proof Fittings v. EPA*.[182] What makes this case a wrinkle is that, as in the *Benzene Case*, the court said not merely that the agency is permitted to follow an interpretive principle, but that it is required to do so. At the same time, the *Corrosion Proof Fitting* court's decision remains the most elaborate statement to date of the emerging federal common law of cost-benefit analysis.

At issue was the EPA's attempted ban on asbestos, an admittedly carcinogenic substance, under the Toxic Substances Control Act ("TSCA").[183] TSCA allows EPA to regulate "unreasonable

176. *Natural Res. Def. Council*, 937 F.2d at 643.

177. *Id.* at 645.

178. Int'l Union, UAW v. OSHA, 938 F.2d 1310 (D.C. Cir. 1991).

179. *Id.*

180. Int'l Union, UAW v. OSHA, 37 F.3d 665 (D.C. Cir. 1994).

181. *See* Michigan v. EPA, 213 F.3d 663 (D.C. Cir. 2000).

182. 947 F.2d 1201 (5th Cir. 1991).

183. 15 U.S.C. §§ 2601-2692 (1994).

risks,"[184] and it therefore invites some kind of cost-benefit balancing. But the court went far beyond what the statute unambiguously invited. In addition to allowing EPA to engage in cost-benefit balancing, the court required a high degree of quantification from EPA, including explicit comparisons of the cost-benefit ratios for different degrees of regulation, and also separate discussions of how regulation would affect different industries using asbestos.[185] The court thus insisted that the EPA go beyond a comparison of "a world with no further regulation" and "a world in which no manufacture of asbestos takes place" to include as well cost-benefit comparisons under different approaches to regulation.[186]

At the same time, the court objected not to the overall cost-benefit ratio, but to the cost-benefit ratios for some areas in which asbestos was to be banned:

> [T]he agency's analysis results in figures as high as $74 million per life saved. For example, the EPA states that its ban of asbestos pipe will save three lives over the next thirteen years, at a cost of $128-277 million ($43-76 million per life saved) . . .; that its ban of asbestos shingle will cost $23-34 million to save 0.32 statistical lives ($72-106 million per life saved); that its ban of asbestos coatings will cost $46-181 million to save 3.33 lives ($14-54 million per life saved) . . . .[187]

With evident incredulity, the court said that the "EPA would have this court believe that Congress . . . thought that spending $200-300 million to save approximately seven lives (approximately $30-40 million per life) over thirteen years is reasonable."[188] All in all, this is an aggressive use of the interpretive principle in favor of cost-benefit balancing. The court not only construes statutory text in a way that mandates such balancing, but also requires a demonstration that particular parts, and subparts, of the relevant regulation satisfy a cost-benefit inquiry.[189]

III. A NOTE ON *WHITMAN V. AMERICAN TRUCKING*

In a sense, the cost-benefit default principles were tested before the Supreme Court in *Whitman v. American Trucking Association*.[190]

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184. The term appears no less than thirty-five times in thirty-three pages of the statute. *See* William H. Rodgers, Jr., *The Lesson of the Owls and the Crows*, 4 J. LAND USE & ENVTL. L. 377, 379 (1989); *see, e.g.*, 15 U.S.C. §§ 2605(a) (1994); 15 U.S.C. 2605(e)(2)(B) (1994).

185. *Corrosion Proof Fitting*, 947 F.2d at 1205-07.

186. *Id.* at 1216.

187. *Id.* at 1222.

188. *Id.* at 1223.

189. *See also* Am. Dental Ass'n v. Martin, 984 F.2d 823, 825-26 (7th Cir. 1993) (upholding OSHA regulations designed to protect against hepatitis and AIDS, and noting that the "rule's implicit valuation of a life is high — about $4 million — but not so astronomical, certainly by regulatory standards, as to call the rationality of the rule seriously into question, especially when we consider that neither Hepatitis B nor AIDS is a disease of old people") (citation omitted).

190. 121 S. Ct. 903 (2001).

In that case, the Court was asked to say that the EPA could consider costs in setting national ambient air quality standards. The Court refused the invitation, concluding that such standards must be set without regard to cost. The Court emphasized the evident clarity of the statutory provision at issue, which defined national standards as those "requisite to protect the public health."[191] In context, the reference to "public health" seemed to require a cost-blind judgment, based on health alone.

Does *American Trucking* throw the cost-benefit default principles into doubt? The simple answer is that it does not. The Court concluded that the Clean Air Act was unambiguous; it did not by any means suggest that an ambiguous statute would be taken to disallow consideration of costs. Indeed, the Court itself referred, with evident approval, to several of the decisions discussed here, suggesting that none of those cases involved a section sharing the "prominence" of the "requisite to protect the public health" provision.[192] In his concurring opinion, Justice Breyer was careful to add that courts "should read silences or ambiguities in the language of regulatory statutes" to permit consideration of "all of a proposed regulation's adverse effects, at least where those effects would clearly be serious and disproportionate."[193] Justice Breyer was clearly concerned that the Court's approach would permit consideration of costs only when Congress had been explicit on the point. But at first glance, Justice Breyer's concern seems baseless. The Court was saying only that in view of the clarity of the main provision of the Clean Air Act, judges would be reluctant to find permission to consider costs elsewhere, since Congress "does not alter the fundamental details of a regulatory scheme in vague terms or ancillary provisions — it does not, one might say, hide elephants in mouseholes."[194] This is a standard approach to statutory interpretation. It does not suggest that, when a statute's "fundamental details" are vague, they will be interpreted to forbid consideration of cost.

But it is possible to read the Court's opinion a bit more broadly. Recall that in concluding that the EPA need not consider costs in issuing national standards, the Court emphasized that some provisions of the Clean Air Act explicitly refer to costs, and explicitly require them to be taken into account. Here the Court was using the canon of construction, *expressio unius est exclusio alterius*: the expression of one thing is the exclusion of another. In the particular context of environmental statutes, the *expressio unius* canon could have explosive implications. When Congress does not explicitly refer to costs, agencies may not consider them, and for one simple reason: Congress

191. 42 U.S.C. 7409(b)(1) (1994).

192. *Whitman*, 121 S. Ct. at 910.

193. *Id.* at 921.

194. *Id.* at 910.

often does explicitly refer to costs. If the canon is to govern the future, the cost-benefit default principles are in some trouble.

There is a further point. The Court seems to suggest that a statute should not be taken to confer broad discretionary authority on agencies: "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."[195] To support the view that *American Trucking* is best taken to prohibit agencies from interpreting ambiguous statutes to allow consideration of costs, it would be necessary to make a simple, two-step argument. First, statutes should be construed so as to give agencies less rather than more discretion. This idea would amount to a qualification of *Chevron*, one that would reduce agency power to interpret statutes.[196] Second, a construction of a statute that would allow agencies to decide whether to consider costs significantly increases agency discretion. The claim here is not that a statute requiring cost-benefit analysis is itself disfavored on delegation grounds. The claim is instead that whatever *Chevron* says, an interpretation should be disfavored if its consequence would be to authorize the agency to decide whether to engage in cost-benefit balancing. If this claim is accepted, then the default rule in favor of allowing agencies to consider costs stands as repudiated.

This concern may animate part of Justice Breyer's concurring opinion. Justice Breyer urges:

> In order better to achieve regulatory goals — for example, to allocate resources so that they save more lives or produce a cleaner environment — regulators must often take account of all of a proposed regulation's adverse effects, at least where those effects clearly threaten serious and disproportionate public harm. Hence, I believe that, other things being equal, we should read silences or ambiguities in the language of regulatory statutes as permitting, not forbidding, this type of rational regulation.[197]

Justice Breyer expressly endorses the default rule of *Michigan v. EPA*, saying that in the face of statutory ambiguity, agencies should be allowed to consider costs, if only because that approach would increase the likelihood of rational regulation.

But it is most unlikely that the Court would disagree with Justice Breyer. The *expressio unius* canon can be a useful guide to statutory construction, and the more natural, cost-blind reading of "public health" is certainly supported by the fact that some provisions of the Clean Air Act make explicit reference to costs. But here as elsewhere, the *expressio unius* idea should be taken with many grains of salt. If Congress has not, under some ambiguous statutory term, referred to costs, it will often be because Congress, as an institution, has not resolved the question whether costs should be considered. And if this

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195. *Id.*

196. *See also* FDA v. Brown & Williamson Tobacco Corp., 529 U.S. 120 (2000).

197. *Whitman*, 121 S. Ct. at 921.

is so, the agency is entitled to consider costs if it chooses.[198] The fact that Congress explicitly refers to costs under other provisions is not a good indication that, under an ambiguous text, costs are statutorily irrelevant. This would be an extravagant and therefore implausible inference. The use of the *expressio unius* approach in *American Trucking* is best taken as a sensible way of fortifying the most natural interpretation, and not at all as a way of urging that explicit references to cost, in some provisions, means that costs may not be considered under ambiguous provisions.

What about concerns about agency discretion? Agencies are typically allowed to interpret statutory ambiguities,[199] and in countless cases in which that principle is invoked, the agency exercises a great deal of discretion over basic issues of policy and principle.[200] To allow an agency to decide to consider costs is not to allow it to exercise more discretion than it does in numerous cases. But where the statute is unclear, agencies should be authorized to seek "rational regulation"; and nothing in *American Trucking* suggests otherwise. This is especially so in light of the fact, emphasized by both the Court[201] and Justice Breyer,[202] that the Clean Air Act allows EPA to consider costs at numerous stages in the implementation process. I conclude that *American Trucking* is best taken not to question the cost-benefit default principles, and indeed that the most reasonable reading of the opinion is that the Court has explicitly embraced that principle.

IV. UNDERLYING CONSIDERATIONS

What are the foundations of the cost-benefit default principles? What is their rationale? Though the various default principles should be evaluated separately, there are common concerns in the background. We begin with statutory interpretation in general.

A. *Ambiguity, Absurdity, and Excessive Generality*

1. *Three Kinds of Default Principles*

There is nothing new or unusual about default principles for statutory interpretation. They are ubiquitous. In fact, they are inevitable.[203] Language has no meaning without default principles of

198. *See* Chevron U.S.A., Inc. v. Natural Res. Def. Council, 467 U.S. 837 (1984).

199. *See id.*

200. *See, e.g., id.*; Babbitt v. Sweet Home, 515 U.S. 687 (1995); Young v. Cmty. Nutrition Inst., 476 U.S. 974 (1986).

201. *Whitman*, 121 S. Ct. at 908-909.

202. *Id.* at 921.

203. For discussion from different perspectives, see WILLIAM ESKRIDGE, DYNAMIC STATUTORY INTERPRETATION (1994); Cass R. Sunstein, *Interpreting Statutes in the Regulatory State*, 103 HARV. L. REV. 405, 420-135 (1989).

many kinds; everyone uses them every day. Generally such principles are agreed-upon, so much so that they do not seem to be principles at all. They are part of what it means to understand the relevant language. They need not even be identified, much less defended. We take them for granted. But sometimes the principles are contested, or at least contestable, and in such cases, they must certainly be identified and defended, and the fact that they are being used is obvious to all.

We might distinguish three circumstances here:

1. *The simplest cases involves genuine ambiguity, in the sense that without resort to an identifiable default principle, courts really do not know what the statutory term means.* Here the default principle will operate as a tiebreaker, authorizing an agency to act when the case is otherwise in equipoise. The use of default principles is uncontroversial in such cases; without some such principles, cases cannot be decided.

2. *Less simple cases involve texts that are most naturally or easily taken to forbid the agency action, but when there is nonetheless ambiguity.* Here the default principles serve as "clear statement" principles, suggesting that the statute will be understood to allow the agency to do what it seeks unless Congress expressly says otherwise. This is of course a more aggressive use of default principles, pushing statutes away from the disfavored terrain. It appears to be the law, for example, that agencies will be allowed to consider costs unless Congress expressly prohibits them from doing so.[204] This is a clear statement principle, used not only when courts are in equipoise.

3. *The third and most complex cases involve the sort of interpretive problem that might be understood to involve excessive generality or absurdity.* This is the kind of problem found when, for example, a statute saying "no vehicles in the park" is applied to a war memorial consisting of a tank used in World War II,[205] or when a nephew who has murdered his uncle seeks to inherit under a will that has not been revoked.[206] In many legal systems, courts will look behind the language of the statute to prevent an outcome that makes no sense and that could not possibly have been intended.[207] This was the court's suggestion about the de minimis exception in *Alabama Power*,[208] and the court's requirement that EPA consider health-health tradeoffs was clearly understood in similar terms, as an effort to prevent an outcome that would be "bizarre" and hence one that Congress could not have wanted.[209] In the environmental context, the Supreme Court itself has said that where a statute's literal meaning would produce absurdity, the term "has no plain meaning . . . and is the proper subject of construction by the EPA and the courts."[210] This idea has been

204. Michigan v. EPA, 213 F.3d 663, 678 (D.C. Cir. 2000).

205. *See* H.L.A. HART, THE CONCEPT OF LAW (1961).

206. *See* Riggs v. Palmer, 22 N.E. 188 (1889).

207. *See* INTERPRETING STATUTES (D. Neil MacCormick et al. eds., 1991).

208. Ala. Power Co. v. Costle, 636 F.2d 323, 360-61 (D.C. Cir. 1979).

209. Am. Trucking Ass'n v. EPA, 175 F.3d 1027, 1052 (D.C. Cir. 1999).

expressly invoked in favor of allowing the EPA to consider the substitute risks produced by aggressive regulation of lead in water.[211]

2. *Sense v. Nonsense*

These are the circumstances for using default principles.[212] But what is the appropriate content of such principles? This is a large question, and it makes sense to begin with established understandings.

Where meaning is not clear, many time-honored principles are designed to give sense and rationality the benefit of the doubt. An old interpretive principle, with roots in almost all legal systems,[213] counsels courts to avoid "absurdity"; sometimes this principle has been taken to override statutory language. More particular principles of considerable current importance disfavor retroactivity;[214] require Congress to speak clearly if it seeks to create exemptions from the antitrust law; give the benefit of the doubt to Native Americans; and say that agencies will not, on their own, be taken to have the authority to apply statutes outside the territorial boundaries of the United States.[215] It was probably inevitable that courts, confronted with a wide range of regulatory enactments, would eventually develop a set of analogues for the regulatory state — principles that give rationality and sense the benefit of the doubt in the particular context of contemporary regulatory law.[216]

The cost-benefit default principles are best defended on just this ground — that they do give sense and rationality the benefit of the doubt, and that Congress should not be taken to have mandated irrationality or absurdity.[217] On this count, some of the default

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210. Chem. Mfrs. Ass'n v. Natural Res. Def. Council, 470 U.S. 116, 126 (1985).

211. *See* Am. Water Works Ass'n v. EPA, 40 F.3d 1266, 1271 (D.C. Cir. 1994); *Am. Trucking Ass'n*, 175 F.3d at 1052.

212. I do not explore here the choice between "intention-mimicking" and "intention-eliciting" default rules, a choice well elaborated in the law of contract. *See* Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 YALE L.J. 87 (1989). In the area of statutory construction, it might be thought that courts should do what they think Congress would have done, if it had made provision on the point (a suggestion that supports the cost-benefit default rules) — and that if courts are unsure what Congress would have done, they should choose a rule that will encourage Congress to be more clear in the future (a suggestion that might argue against some of the default rules, on the ground that without them, Congress will be led to be clearer in the future). For detailed discussion, see Einer Elhauge (2000) (unpublished manuscripts, on file with author).

213. *See* INTERPRETING STATUTES, *supra* note 207.

214. Bowen v. Georgetown Univ. Hosp., 488 U.S. 204, 208-09 (1988).

215. *See* Cass R. Sunstein, *Nondelegation Canons*, 67 U. CHI. L. REV. 315 (2000).

216. Compare the controversial suggestion in RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW (5th ed. 1998), that the common law embodies principles of economic efficiency. I am suggesting a more modest point — not that courts are pursuing efficiency, economically defined, but that they are converging on a less sectarian, more modest set of ideas, allowing agencies to move in directions that can be seen as sensible from a wide variety of standpoints.

216. *See* Am. Water Works Ass'n v. EPA, 40 F.3d 1266, 1271 (D.C. Cir. 1994).

principles should be less controversial than others. At the very least, it seems sensible to say that agencies ought to be permitted to ignore trivial risks and to balance the health benefits of regulation against the health costs of regulation. Where Congress has left things unclear, agencies should have discretion to move statutes away from (what they reasonably consider to be) the domain of senselessness. Notice that defended in this modest way, the cost-benefit default principles combine substantive ideas about regulatory policy with institutional ones in the form of a posture of judicial deference, allowing agencies room to maneuver.[218] Because agencies are specialized in the topic at hand, and because they have a degree of political accountability, they are permitted to do what the cost-benefit default principles authorize. If agencies choose to do otherwise, there is, on the rationale as stated, nothing wrong with that.

But we should acknowledge here that it is possible to discern two different strands in the cases establishing the cost-benefit default principles. Call the first strand *antiregulatory* and the second *technocratic*. On the antiregulatory strand, the principles are best seen as an effort to block regulation,[219] perhaps on the theory that regulation is frequently illegitimate from the standpoint of liberty, perhaps on the ground that it usually does more harm than good. The antiregulatory strand links the principles with those prevailing in the discredited *Lochner* era,[220] where courts used both constitutional and interpretive principles to limit regulation.

By contrast, the technocratic strand embodies no animus against regulation as such. It is neutral on that question, assessing regulation only on the basis of what the data show. Indeed, it sees cost-benefit analysis as a frequent impetus to regulation, as in the phaseouts of lead and CFCs.[221] For technocrats, the impetus toward cost-benefit analysis is as much a check on insufficient regulation as it is a limitation on excessive controls.

To the extent that the cost-benefit principles are approved here, it is because and to the extent that they embody the technocratic strand, enlisting policy analysis in the service of better regulation. The antiregulatory motivation for the default principles is illegitimate, a

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218. For a powerful attack on unduly complex canons of construction and a plea for simplicity, see Adrian Vermeule, *Interpretive Choice*, 75 N.Y.U. L. REV. 74 (2000). I do not deal here with the objection that the cost-benefit default principles make statutory interpretation too unruly. As they operate in the cases, the principles seem reasonably straightforward and do not produce undue complexity. But it is easy to imagine a situation in which these default principles coexisted with a number of others, thus making decisions unnecessarily complex.

219. Of course there is no avoiding "regulation." What is ordinarily described as "opposition to regulation" is in reality no such thing, but approval of that form of regulation that is embodied in principles of contract, tort, and property law. Nonregulation is not a possibility, short of anarchy. I use the terminology of "regulation" and "antiregulation" to conform to common usage. The real opposition is to specific kinds and forms of regulation.

220. After *Lochner v. New York*, 198 U.S. 45 (1905).

221. *See* RICHARD ELLIOT BENEDICT, OZONE DIPLOMACY 63 (1991); COST-BENEFIT ANALYSIS AT EPA 77-83, 131-64 (Richard D. Morgenstern ed., 1997).

form of judicial hubris. But it should not be denied that both strands play a role in the cases. Let us now investigate some details.

B. *De Minimis Exceptions and Acceptable Risks*

The idea that agencies may make de minimis exceptions is an outgrowth of the old idea, *de minimis non curat lex*. If the risk at issue is tiny, the agency is not required to eliminate it. Much of the rationale here is a kind of implicit cost-benefit balancing. If regulation occurs, both private and public resources will have to be expended in order to ensure compliance. When the benefits of regulation are trivial, the agency is permitted to refuse to regulate, on the ground that the costs are likely to outweigh any benefits.[222] When the benefits of regulation are trivial, no one is likely to have anything to complain about if regulation is foregone. Those who complain are likely to be well-organized private groups with a self-interested agenda, unrelated to the purposes for which the statute was enacted.[223]

This understanding has the virtue of helping to account for the courts' otherwise puzzling refusal to allow EPA to make a de minimis exception under the color additive provisions of the Delaney Clause.[224] Perhaps these decisions are best attributed to the fact that the statutory terms seem unambiguous. But as one court emphasized, it is unclear if significant costs are actually created by a decision to ban color additives.[225] While the benefits of a ban are low, the costs are, in the particular circumstances, low as well. If the costs of regulation are trivial, perhaps a trivial gain from regulation is justified too. The general point is that, because trivial risks are unlikely to be worth private and public resources, they need not be controlled unless Congress has explicitly said that agencies must control them. The *Chemical Manufacturers* case[226] embodies this idea with the suggestion that costly regulations cannot be imposed unless there is a showing of environmental benefits.[227]

C. *Health-Health Tradeoffs*

In a way, the idea of "health-health tradeoffs" is the simplest of all. If agencies impose health risks at the same time that they protect health, they should, at the very least, be permitted to take this fact into account. What matters most, after all, is whether risks are being reduced on balance (though distributional and equitable concerns can

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222. Ala. Power Co. v. Costle, 636 F.2d 323, 360-61 (D.C. Cir. 1979).

223. As plausible examples, see *Monsanto Co. v. Kennedy*, 613 F.2d 947 (D.C. Cir. 1979); *Alabama Power*, 636 F.2d 323; *Chemical Manufacturers Association v. EPA*, 217 F.3d 861 (D.C. Cir. 2000), discussed *supra* Part II.D.3.

224. Public Citizen v. Young, 831 F.2d 1108 (D.C. Cir. 1987).

225. *Id.* at 1111.

226. *See supra* text accompanying notes 121-126.

227. *Chem. Mfrs. Ass'n*, 217 F.3d at 865-67.

complicate this claim, as discussed below). Other things being equal, it is hardly desirable for government to reduce the respiratory risks of ground-level ozone if ground-level ozone also provides significant protection against cancer and cataracts.[228] The agency should be permitted to ask whether this is what it should do, subject to review for reasonableness.

Now this does not mean that a sensible legislature will inevitably ask agencies to compare health risks with health benefits. Perhaps an institutional division of labor is desirable, so that some agencies deal with some risks, whereas other agencies attend to others.[229] It is imaginable, for example, that an agency entrusted with promoting fuel economy is not supposed to consider safety issues, which are the province of another institution. If the two agencies are not working at cross purposes, and are engaged in some effort at coordination, it is possible that this division of labor makes sense. My only claim is that when an agency is aggravating one health problem while it is resolving another, it ought to be permitted to take that factor into account unless Congress has said otherwise. In any case, permission to engage in health-health balancing helps counteract the constant risk of tunnel vision on the part of regulators.

At this stage one might ask why, to many people, health-health analysis seems so much less controversial than cost-benefit analysis. Many people seem skeptical of the idea that costs should be balanced against lives saved,[230] but few people are skeptical of the idea that lives saved should be balanced against lives lost. The simplest explanation is that people have a great deal of difficulty in trading off life against dollars, not only cognitively but also morally, and the very idea of ascribing an explicit monetary value to a (statistical) life remains controversial.[231] When people are asked to weigh health against health, the mental operation is far less troublesome. People generally agree that agencies should attempt to save more lives on balance, rather than fewer. Note that this is a descriptive point about how people tend to think, intended to help explain what might seem to be an anomaly; it is not a normative point at all.

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228. Am. Trucking Ass'n v. EPA, 175 F.3d 1027, 1052 (D.C. Cir. 1999).

229. *See* Cass R. Sunstein, *Health-Health Tradeoffs*, 63 U. CHI. L. REV. 1533 (1996).

230. *See, e.g.*, ELIZABETH ANDERSON, VALUE IN ETHICS AND ECONOMICS (1993).

231. For intriguing psychological evidence, see Philip Tetlock, *Taboo Tradeoffs* (2000) (unpublished manuscript, on file with author). It might well be that the refusal to balance costs and benefits is an overgeneralization of a sound moral posture in ordinary life. In deciding whether to break a promise, or to betray a friend, we do not ordinarily balance costs against benefits, at least not in any simple or direct sense. There is a general understanding that some tradeoffs are indeed "taboo," in the sense that certain reasons for action are blocked, not merely outweighed. I speculate that the opposition to cost-benefit analysis, in government policy, is an overgeneralization of moral commitments that work well in the private domain. *See* JONATHAN BARON, JUDGMENT MISGUIDED (1998).

D. *Costs, Feasibility, and Costs vs. Benefits*

Why should agencies be presumptively entitled to consider costs? The basic idea is that a "benefits only" approach also reflects a kind of tunnel vision, a myopic focus on only one of the variety of things that matter. Suppose, for example, that one approach to regulation would produce a certain level of air quality benefits, but at a cost of $800 million, and that a competing approach would produce a trivially lower level of air quality benefits, but at a cost of $150 million. If costs can be made relevant, the agency is permitted to do what seems quite sensible: save the $650 million, because the benefits would not be high enough to justify the expenditure.

Of course it would be necessary to know a great deal more to know how to evaluate the particular problem. If the $650 million would mean a significant loss of jobs, and if the lower air quality benefits would not result in significant mortality or morbidity effects, it seems most sensible not to expend the resources. But if the $650 million would mean slightly reduced profits for producers or slightly increased prices for a dispensable good, and if the air quality benefits would mean a real reduction in respiratory problems for tens of thousands of asthmatics, the case for more stringent regulation is far stronger. The point is not that a bare accounting of costs and benefits tells officials all of what they need to know.[232] It is only that a sensible agency is entitled to, and does, "consider" the costs of regulation. Congress should not be understood to have banned agencies from doing this. If Congress has a particular reason to require otherwise, it is permitted to do exactly that.

Ideas of this sort help support the closely related idea that agencies are presumptively permitted to compare costs against benefits, and also to consider whether compliance is feasible.[233] As we will see in more detail, the feasibility constraint is both ambiguous and, from the normative perspective, somewhat crude, because there is no identifiable point at which regulation becomes not feasible. But a feasibility constraint, crude though it is, can be defended in the same basic way as the presumption against mandatory control of insignificant risks. If compliance is not feasible, there is a good chance that regulation is not worthwhile. The least that can be said is that if regulation is so costly that it would force many companies to go out of business, with inevitable adverse effects for workers, the agency ought to have a very strong reason for imposing it.

V. AGENCY PERMISSION VS. AGENCY REQUIREMENTS

Thus far we have seen what agencies are *permitted* to do if Congress is silent on the point. But it is necessary to distinguish

232. *See* Matthew D. Adler & Eric A. Posner, *Rethinking Cost-Benefit Analysis*, 109 YALE L.J. 165 (1999) (arguing that cost-benefit analysis is only a decision procedure).

233. *See supra* Parts II F, II G.

between cases in which an agency attempts to do what cost-benefit principles permit and cases in which an agency refuses to do what courts are permitting. We know that, for the agency, no legal problem will arise in the first set of cases. What about the second? Might the default principles sometimes require agencies to follow a particular course? Of course, any judicial requirements to this effect would be more aggressive, and controversial, than the judicial permissions that I have been discussing thus far.

A. *Revisiting the Framework*

We have seen that the default principles operate to expand agency discretion. Alongside *Chevron*, they permit agencies to understand regulatory statutes in ways that seem to give sense and rationality the benefit of the doubt.

If agencies are to be required, and not merely permitted, to follow the default principles, it will be for one of two reasons. First, the statute might require them to do so under *Chevron* Step One. Second, an agency's decision not to follow the default rule might be unreasonable under *Chevron* Step Two. Let us now turn to more details.

B. *The Framework Applied*

Suppose that the agency has refused to allow a de minimis exemption, or to engage in health-health comparisons, or to consider costs when the statute allows it to do so. If the agency has refused to do what the cost-benefit principles permit it to do, the *Chevron* analysis would proceed in the following way.

1. *Under* Chevron *Step One, has the agency violated unambiguous congressional instructions, or transgressed some judgment made "directly" by Congress?* The answer, by hypothesis, will be no. The statute is ambiguous rather than clear.

The only possible response is that the cost-benefit default rule now operates as a kind of canon of construction, serving as part of the inquiry in *Chevron* Step One. This argument is adventurous, but not as much as it might appear. Many canons of construction operate at *Chevron* Step One and are indeed determinative of the Step One analysis.[234] Consider, for example, the following canons: statutes will not be understood to apply outside the territorial borders of the United States;[235] statutes will not be understood to apply retroactively;[236] statutes will not be taken to raise serious constitutional questions.[237] Agency interpretations that conflict with these canons of

234. *See* STEPHEN G. BREYER ET AL., ADMINISTRATIVE LAW AND REGULATORY POLICY (4th ed. 1999).

235. EEOC v Arabian Am. Oil Co., 499 U.S. 244, 248 (1991).

236. Bowen v. Georgetown Univ. Hosp., 488 U.S. 204, 208-09 (1988).

237. Edward J. DeBartolo Corp. v. Fla. Gulf Coast Bldg. & Constr. Trade Council, 485 U.S. 568 (1988).

construction do not prevail under *Chevron* Step One, not because Congress has clearly expressed its will, but because Congress is required to speak with clarity if it wishes agencies to act in the way that they seek. Perhaps the cost-benefit default principle should be understood in similar terms.

While possible, this application of the cost-benefit default principles would require a significant departure from existing law. The canons of construction discussed above have a degree of longevity, indeed a straightforward justification from longstanding traditions.[238] The cost-benefit default principles have not yet acquired the status of the canons of construction that operate as part of *Chevron* Step One. It is therefore exceedingly doubtful that an agency's refusal to proceed in the manner suggested by the cost-benefit default principles would be struck down under Step One.[239] At least it is doubtful at this relatively early stage; perhaps these default principles will coalesce before long into agreed-upon background rules, and at that stage they will indeed play a role under Step One.

2. *Under* Chevron *Step Two, is the agency's interpretation of the statute "reasonable"?* It could certainly be controversial for courts to insist that it is not. Here courts are narrowing agency discretion, not expanding it. And if agencies are, by virtue of their technical expertise and political accountability, in a good position to decide whether to follow one of the default rules, then courts should not impose mandates of their own. Nonetheless, the same reasons that justify the default rules in general might well be taken to suggest that agencies should be required generally to comply with the default rules. This compliance could be regulated through the judicial use of a rebuttable presumption. The agency's interpretation is to be presumed unreasonable under *Chevron* Step Two if it means that the agency will not be making health-health tradeoffs, exempting trivial risks, considering costs or feasibility, or engaging in cost-benefit balancing.[240] Of these various possibilities, the presumption of unreasonableness is strongest when the agency is attempting to regulate a de minimis risk[241] or refusing to consider health-health tradeoffs.[242] Why should expenditures be required for trivial risks? Why should the agency be permitted to increase overall risks? In such cases, the agency's decision

238. *See* ANTONIN SCALIA, A MATTER OF INTERPRETATION (1997) (defending canons if and only if they are vindicated by tradition).

239. Evidence to this effect comes from *International Union, UAW v. OSHA*, 37 F.3d 665 (D.C. Cir. 1994) (upholding agency decision not to make cost-benefit analysis the basis for decision under a statute that, in the court's view, would have allowed the agency to perform cost-benefit analysis).

240. Not that there was no challenge to the agency's decision under *Chevron* Step Two in *International Union, UAW v. OSHA*, 37 F.3d 665, though the court's reasoning suggests that the challenge would have failed.

241. This is the apparent holding of *Chemical Manufacturers Association v. EPA*, 217 F.3d 861, 866-67 (D.C. Cir. 2000), which held that the agency is not permitted, under Step Two, to impose a regulation that has no environmental benefits.

242. This appears to be the court's holding about the benefits of ground-level ozone in *American Trucking Association v. EPA*, 175 F.3d 1027 (D.C. Cir. 1999).

seems most obviously unreasonable. For this reason, courts might well require agencies to offer extremely good explanations for their seemingly arbitrary course of action.

The argument that agencies would be unreasonable to reject the other default principles is less clear. But even in such cases, any reasonable judgment will ordinarily be based on some kind of weighing of costs and benefits, not on an inquiry into benefits alone.[243] Return to *Michigan v. EPA* and suppose that in some states, the costs of reducing the "significant contribution" would be exceedingly high, whereas the benefits would be low in light of the fact that the risks associated with the relevant concentrations of ozone are not severe. If the costs would be high and the benefits low, on what rationale should be the EPA refuse even to consider the former? There appears to be no good answer. If there is not, the agency's interpretations should be declared unreasonable.

Notice that what is involved here is a presumption only, and it is rebuttable. Courts should give agencies the benefit of the doubt here. It is possible to imagine agency explanations that would show why its view — to reject one or another of the cost-benefit default principles — is reasonable. It is that question to which I now turn.

C. *Rebutting the Presumption*

In several contexts, Congress, as well as agencies and courts, could reasonably find the default principles inapplicable. The following catalogue is intended to identify circumstances in which agencies might sensibly decide not to go in the direction suggested by the default principles — and also in which a reasonable legislature might ban agencies from going in that direction.

1. *Regulating de minimis risks: the case of low benefits and administrative difficulties.* Suppose that an agency has discretion to interpret the relevant statute so as to allow exemptions of de minimis risks for carcinogenic color additives in food. Suppose that the agency refuses to interpret the statute this way because (a) the benefits of color food additives are generally low (noncarcinogenic color additives will do about as well); (b) as a matter of science, it is not always simple to distinguish between weak and strong carcinogens; and (c) a flat rule will be simpler to administer. This sort of explanation appears fully reasonable. It would distinguish the case from one in which the agency attempts to interpret the OSHA statute in such a way as to call for costly regulation of insignificant risks.

2. *Regulating risks that might or might not be de minimis: the case of scientific ignorance.* Suppose that the agency attempts to regulate risks that (it agrees) cannot be shown to be significant. Suppose that it contends not that it will understand the statute to cover demonstrably

243. *But see id.* (upholding a significant risk/feasibility reading of the Occupational Safety and Health Act, notwithstanding a previous decision suggesting that cost-benefit balancing would have been a permissible reading).

insignificant or demonstrably de minimis risks, but instead to cover instead risks that, in light of existing scientific information, might be small but might be large — a distinction that cannot be made with existing tools and in light of existing scientific understandings. In other words, the agency interprets the statute to allow regulation where the benefits might be significant, but cannot be shown to be significant given existing knowledge. This, in short, is a case where there is a wide range of expected benefits, from quite low to quite high, and where science cannot choose a probable "point" along the range (not an uncommon situation; see tables 1 and 2 for examples).

This does not seem to be an unreasonable interpretation of an ambiguous statute. Certainly the agency should be required to identify the range of potential benefits, so as to ensure that the possible gains, discounted by the probability that they will be realized, is sufficient to make regulation worthwhile. It is not hard to imagine cases of this kind; table 2 provides examples here as well. The basic point is that when scientific understanding is primitive, it can be perfectly reasonable to regulate risks that might be small but might be large. Indeed, such regulation might even survive cost-benefit balancing, notwithstanding the real possibility that when more is known, the risk will turn out to be de minimis.

3. *Disregarding costs at one stage of a multistage inquiry.* Might it be reasonable for an agency to interpret a statute not to allow consideration of costs? In some cases, this would indeed be reasonable. Recall that under the Clean Air Act, the EPA is supposed to set standards at the level that, with an "adequate margin of safety," are "requisite to protect the public health."[244] At first glance it might appear quite unreasonable for the agency not to consider costs if it has the discretion to do so. Whether it is worthwhile to produce a certain level of benefits would seem to depend, at least in part, on the cost of achieving those benefits. But suppose that the EPA urges (as it has for a number of years, and as the Supreme Court has approved[245]) that costs will be considered not in setting standards in the first instance (where health is the sole consideration), but at other, later stages, in the development of state implementation plans and in insistence on deadlines for compliance. In such a system, the EPA would say that national ambient air quality standards are based only on an inquiry into issues of health, that this is a benefits-based judgment, but that the decision how and when to meet those standards, made through complex procedures at the state and federal levels, will consider costs as well as benefits.

In fact this is how the Clean Air Act now operates.[246] National standards are issued in what is at least nominally a cost-blind manner, but costs emphatically and openly play a part at other stages of the

244. 42 U.S.C. § 7409(b) (1994).

245. Whitman v. Am. Trucking Ass'n, 121 S. Ct. 903 (2001).

246. *See* 42 U.S.C. § 7410 (1994); Portney, *supra* note 25.

process, in the design and enforcement of state implementation plans. Whether or not it is ultimately convincing, this kind of procedural defense of "health only" judgments seems at least plausible. From this defense, it follows that even if the relevant provisions of the Clean Air Act are taken to be ambiguous,[247] it would be reasonable, under *Chevron* Step Two, to understand national standard setting to be cost-blind, not because cost-blindness is itself reasonable (it isn't), but because costs are taken into account at later stages of a multistage inquiry.[248] Whether it would be better for costs to be considered throughout is an issue on which reasonable people can differ. This is a highly pragmatic question, on which general enthusiasm for cost-benefit balancing is not decisive.

4. *Disregarding particular costs as statutorily irrelevant.* There are other arenas in which at least some kinds of costs might reasonably be disregarded. Suppose, for example, that the FAA concluded that the needs of the air tour industry were entitled to no weight in issuing regulations controlling noise at the Grand Canyon. Under a different administration, the FAA might believe that the statute is best understood to ensure that those who enjoy the Grand Canyon can do so with a minimum of noise — and that the adverse effects on the air tour industry are irrelevant, even if this means that fewer people will be able to enjoy the Grand Canyon. At first glance, this is an entirely reasonable judgment. Where Congress has been unclear, administrations and administrators might make different decisions on that question.

5. *Disregarding feasibility as part of overall balancing.* Is it ever reasonable for an agency to ignore the question whether regulation is either economically or technologically feasible for the industry? Might the FAA choose to interpret an ambiguous statute so as to impose an air quality regulation that would not be economically feasible for the air tour industry over the Grand Canyon, so that the relevant companies could not stay in business? At first glance, economic feasibility seems relevant. But it is possible to imagine cases in which an agency might reasonably choose to interpret a statute to allow rules that are not economically feasible. The agency might believe that it is more important to reduce noise levels than to allow the continued operation of the air tour industry. When judgments of this kind are made, the agency effectively engages in a kind of cost-benefit balancing, one that justifies regulation that is not economically feasible. Of course an agency might engage in technology-forcing,

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247. I do not believe that they are, for reasons given in *Lead Industries Association v. EPA*, 647 F.2d 1130 (D.C. Cir. 1980), and followed in *American Trucking Association*, 175 F.3d 1027.

248. From this it follows that the Supreme Court properly rejected the plea for cost-consciousness in *American Trucking Association*, 175 F.3d 1027, not by rejecting cost-benefit default rules, but by invoking the clarity of the statutory text and the fact that taken as a whole, the system for implementing national ambient air quality standards is far from cost-blind. Of course this is not a claim that as a matter of policy, the current system is optimal. For discussion, see MARC K. LANDY ET AL., THE ENVIRONMENTAL PROTECTION AGENCY: ASKING THE WRONG QUESTIONS (2d ed. 1996).

though usually this approach depends on a prior judgment that regulation is indeed both economically and technologically feasible to develop.

6. *Rights and irreversibility.* Thus far the discussion has emphasized pragmatic or instrumental considerations. But are there contexts in which the cost-benefit default principles are inapplicable in principle? In many domains, of course, cost-benefit balancing fails to describe the operation of law; rights-based thinking often "blocks" resorts to costs, or at least costs of a certain kind.[249] Ordinarily ideas of this sort play a role in constitutional law,[250] where certain "costs" are off limits. For example, the costs undoubtedly associated with politically controversial speech are not a legitimate basis for regulating such speech. Those costs are entitled to no weight at all; it is not as if they count, but are insufficiently high.

Such thinking is not foreign to regulatory policy. The most vivid example is the Endangered Species Act,[251] which forbids an agency from engaging in action that would threaten members of endangered species even if a balancing test would appear to justify the action.[252] In holding that the statute disallows balancing, the Court relied on what it said was the unambiguous meaning of the text.[253] But as Justice Powell showed in dissent, the language was not so clear as to disallow invocation of a strong default principle, one that would justify a degree of balancing.[254] Can the outcome in the case be explained in a legal system pervaded by cost-benefit default principles?

Perhaps it cannot. Perhaps the Court's decision is an anachronism, inconsistent with the current judicial enthusiasm for balancing. But there is another explanation. The Endangered Species Act is concerned with preventing genuinely irreversible losses, and at least in the context of human activities that cause extinction, perhaps the statute is best taken to be rooted in a theory of rights, one that rebuts the presumption in favor of cost-benefit balancing. Now, it is possible that some kind of "meta-balancing" justifies a flat prohibition on actions that would destroy members of an endangered species. Perhaps that higher form of cost-benefit balancing calls for a refusal to engage in cost-benefit balancing in particular cases. The benefits might be thought to be so high, and the costs usually so low, as to support such a prohibition, disallowing balancing each time. But this way of understanding the statute seems to misconceive its foundations, which lie in a judgment that human beings should not knowingly bring about

249. *See* the discussion of exclusionary reasons in JOSEPH RAZ, THE MORALITY OF FREEDOM (1986).

250. *See* Richard H. Pildes, *Why Rights Are Not Trumps*, 27 J. LEGAL STUD. 725 (1999).

251. 16 U.S.C. §§ 1531-44 (1994).

252. Tenn. Valley Auth. v. Hill, 437 U.S. 153 (1978).

253. *Id.* at 162.

254. *Id.* at 166 (Powell, J., dissenting).

the extinction of other species,[255] at least in the absence of truly extraordinary circumstances.[256]

It is possible to generalize from this example. Where regulatory policy is designed to ensure against irreversible damage, or otherwise to protect constitutional rights, the cost-benefit default principles might well be displaced. In most domains of regulatory policy, however, what is involved is not the danger of irreversible loss, but instead issues of degree, and hence the presumption remains intact.

VI. UNSETTLED QUESTIONS: SPECIFYING THE PRINCIPLES

The cost-benefit default principles leave many open questions. They are abstract and general. Courts have done extremely little to particularize them. Agencies have done somewhat more, but they have made only a start.[257] OMB has set out "best practices" for agency use;[258] because of the importance and generally high quality of OMB's guidance, excerpts are included as an Appendix. It is here that a great deal of law will be made in the next decades. I offer a few remarks on the crucial issues.

A. *The Incipient Common Law of Acceptable Risks*

What makes a risk "significant" or "de minimis"? Here the law is extremely ill-developed. Perhaps we can find some agreed-upon standards for labeling a risk de minimis. If the risk is less than that created by eating a moderate number of peanuts with legally permitted aflotoxin levels, or from living in Denver rather than New York for a week every year, the case seems relatively easy. Risks of this little are the kind that people ignore each day. But how should we evaluate, say, a cancer risk of one in one million from lifetime exposure to a certain carcinogenic substance? One in 100,000? One in ten million? Does it matter if the exposed population is large or small?

These are the pivotal questions. For guidance, it might be noted that the International Commission on Radiological Protection recommends that environmental factors should not be allowed to cause an incremental cancer risk, for those exposed over a lifetime, of three in 1,000 or more.[259] But the practice of American agencies is

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255. *See* PERCIVAL ET AL., *supra* note 14, at 1085-1089.

256. In the wake of *Tennessee Valley Authority v. Hill*, 437 U.S. 153, Congress amended section 7 of the Act to establish a special committee, known as the "God Squad," to make exemptions, and thus to permit action to go forward under extraordinary circumstances. In the decades since the amendment, no wholesale exemption has ever been granted.

257. *See* Office of Management and Budget, Report to Congress on the Costs and Benefits of Federal Regulations (2000), *available at* http://www.whitehouse.gov/omb/inforeg/2000fedreg-report.pdf; *see also* Adler & Posner, *supra* note 15 (discussing agency practice).

258. Office of Management and Budget, Economic Analysis of Federal Regulations Under Executive Order 12,866 (Jan. 11, 1996), *available at* http://www.whitehouse.gov/omb/inforeg/riaguide.html.

259. March Sadowitz & John D. Graham, *A Survey of Residual Cancer Risks Permitted by Health, Safety and Environmental Policy*, 6 RISKS 17 (1995).

highly variable, with the EPA's acceptable range varying, under different programs, from one in 10,000 to one in 1,000,000.[260] In the *Benzene Case*, the plurality of the Supreme Court attempted to provide some clarification, making a distinction between two quantitatively different levels of risk. If the risk of getting cancer from drinking a glass of water is one in a billion, the plurality said, it could not possibly be considered significant.[261] By contrast, a fatality risk of 1/1,000 from regular inhalation of gasoline vapors "might well" be considered significant.[262] OSHA has built on this simple idea in issuing its own regulations. Thus the agency has said that a lifetime risk of 1.64/1,000 will be counted as significant, whereas a lifetime risk of 0.6 in 100,000 "may be approaching a level that can be viewed as safe."[263]

The effort to look at the statistical risk faced by members of the exposed population is certainly a start, and in light of the Supreme Court's statements, perhaps OSHA's approach is sufficient to survive judicial scrutiny, while the EPA's one-million standard might be questionable.[264] Certainly an effort at quantification is a helpful way of clarifying the basis for the agency's decision, especially laudable in light of the slipperiness of the idea of 'significance." But many questions might be asked. In deciding whether a risk is trivial or significant, it would seem important to ask not only about the level of the risk faced by each person, but also about the size of the exposed population.[265] If two people in the United States face a lifetime risk of 2/10,000, perhaps the risk should not be deemed significant in light of the fact that it is overwhelmingly likely that no fatalities will be suffered. We could easily imagine a challenge to a decision to treat such a risk as "significant" as a matter of law.[266] Certainly the agency should explain any failure to take account of the small number of exposed people — even though it would probably be reasonable, as a matter of law, for the agency to concern itself with probabilities faced by individuals, at least if it is not permitted to engage in cost-benefit balancing.

At the same time, a statistically small risk, if faced by large numbers of people, might well be deemed significant. If twenty million people face a lifetime risk of 1/200,000, one-hundred people are expected to die — far from a trivial number. If 200 million people face a risk of 1/1 million, 200 people are also expected to die. Is this

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260. *Id.*

261. *See* Indus. Union Dep't, AFL-CIO v. Am. Petroleum Inst., 448 U.S. 607, 665 (1980).

262. *See id.*

263. 52 Fed Reg 46,168, 46,234 (Dec. 4, 1987) (to be codified at 29 C.F.R. pts. 1910 & 1926).

264. *See* ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION 440 (3d ed. 2000).

265. Agency attention to the size of the exposed population is strongly urged in JAMES T. HAMILTON & W. KIP VISCUSI, CALCULATING RISKS (1999).

266. *Id.*

number insignificant merely because the statistical risk for each person is small? We could easily imagine a challenge to an agency decision to treat the latter risk as "insignificant"; indeed, that challenge might even be convincing. The point raises serious doubts about the Supreme Court plurality's confidence that a risk of one in a billion, from drinking a glass of water, could not be deemed significant. If each person drinks five glasses of water per day, and if there are 260 million Americans, the one-in-a-billion risk no longer seems so small, converted into expected annual fatalities (474.5, hardly an insignificant number). We should therefore conclude that it is at least reasonable for agencies to consider risks to be "significant," and not de minimis, if the probability is very low but the exposed population quite large. It is also reasonable to suggest that if the probability is very low but the exposed population sufficiently large, a high number of expected fatalities should require the agency to consider the risk "significant" as a matter of law.

There is an additional problem. Both OSHA and the Supreme Court seem to focus on the "lifetime" risk — that is, the risk that would come from being exposed to a substance for all of one's working life. Under OSHA, it does seem that this focus is required by the statute, at least for toxic substances, for which the relevant provision is expressly drawn in terms of lifetime exposure.[267] But in the abstract, and under other provisions, we should not be focussing on the risk, of fatality or anything else, that would come from a lifetime of exposure, *except to the extent that all, most, or many people actually have a lifetime of exposure.* Imagine, for example, that almost all workers in the relevant industry are exposed, not for their lifetimes, but for five years or less. What risk do they face? This is the crucial question. Perhaps the risk, for them, is a small fraction of the lifetime risk. Sensible policy requires the government to reduce the risks that people actually face, not the risk that people fancifully face. When an agency has discretion, the agency should look not at lifetime risk, but at actual risk.

What all this suggests is that when agencies are asking whether risks are significant, they ought to move in the direction of setting out a range of "expected benefits," in terms of mortality, morbidity, and other relevant variables.[268] These variables could be aggregated into some sort of total number, below which a risk would be treated as insignificant. Of course there will be a large degree of guesswork in generating the relevant numbers. Of course too there will be a degree of arbitrariness in choosing the precise point at which risks are no longer significant. But without movement in the direction of quantification, it will not be possible to produce informed, transparent,

267. *See* 29 U.S.C. § 655 (b) (5)

268. This is the direction suggested in *American Trucking Association v. EPA*, 175 F.3d 1027, 1039-1040 (D.C. Cir. 1999). On some of the complexities, see Sunstein, *Arsenic*, *supra* note 62.

and consistent policy.[269] Thus, an effort to quantify the level of risk that would be deemed acceptable would replace the current system, with its high degree of inconsistency and guesswork, with something like a common law of acceptable risks.[270]

B. *The Meaning of Feasibility: No "On-Off" Switch*

What does it mean to say that regulation must be "feasible"? In the abstract, a requirement that regulation be "feasible" might seem to invite cost-benefit balancing. In the private sector, a "feasibility study" is essentially an exercise in cost-benefit balancing. But as we have seen, a feasibility requirement involves no balancing of costs and benefits.[271] It requires instead a cost-only inquiry into whether achievement of the regulatory goal is "practicable."[272]

Assume, for example, that a regulation would cost $800 million, and that in the process it would save ten lives per year; assume also that the exposed population is relatively small, so that each of the exposed workers faces a lifetime risk of well over one in 1,000. It is easy to imagine that this regulation would be entirely feasible, in the sense that the industry would face no technical problems in meeting it, and also in the sense that it would be practicable for industry to bear the cost. But it is also easy to imagine that such a regulation would fail cost-benefit analysis, in the sense that $800 million expense would not be justified by the (relatively lower) monetized savings. If a statistical life is valued at $5 million, for example, the benefits ($50 million) would be only one-eighth the cost.

But it would be wrong to think that cost-benefit analysis is more "antiregulatory" than a feasibility constraint. We can easily imagine a regulation that might not be feasible, but that might satisfy a requirement of cost-benefit balancing. Suppose, for example, that a regulation would cost $2 billion, that industry could not bear that cost without many business failures, but that the regulation would save 5,000 lives. In some cases, the cost-benefit requirement is more protective, not less protective, of intended beneficiaries of regulatory programs.

So far, perhaps, things are clear enough. But there is a problem here as well. Most importantly, feasibility is not an on-off switch. Any significant increase in costs is likely to prove "not feasible" for at least some companies. As the costs increase, the number of companies for whom the regulation proves "not feasible" will increase, too. In these circumstances, it seems extremely artificial to say that at a certain point, regulation becomes "not feasible." Perhaps there is a set point at which regulation, by virtue of its stringency, establishes a sudden, large-scale increase in the number of companies who cannot bear the

269. *See* HAMILTON & VISCUSI, *supra* note 265.

270. *See* Sadowitz & Graham, *supra* note 259.

271. Am. Textile Mfrs. Inst., Inc. v. Donovan, 452 U.S. 490 (1981).

272. *Id.*

cost of regulatory controls while continuing in business. But it is more likely that as the costs grow, the number of companies who cannot bear the cost grows too, perhaps with several specific points at which that number spikes upwards. In these circumstances, what sense is made by a "feasibility" constraint? At first glance, very little. Just as safety is not an absolute, but a matter of degree, so too for feasibility. Law that says otherwise appears to substitute a comforting but misleading formula for a serious confrontation with the issues at stake.

Perhaps there is an intelligible answer here. Perhaps Congress wants to say that for most regulations, companies must comply unless a large number of them can show that they cannot comply and continue. Certainly this is a relatively simple inquiry in most cases. What makes little sense is the suggestion that agencies can pick a single point that is "feasible" and go to, but not beyond, that point.

In these circumstances, how can we account for the evident popularity of requirements that regulation be "feasible" or "achievable"? There are several possibilities, suggesting that the feasibility standard might be justified by reference to institutional considerations. From the standpoint of those concerned with safety and the environment, a cost-benefit standard might be thought to introduce undue opportunities for industry to stall the process, perhaps because of the prospect and actuality of judicial review.[273] A requirement that regulation must be "feasible" greatly improves the agency's chances in court. In fact this conclusion is well supported by the record of agencies on appeal; no agency has *ever* lost a challenge to the feasibility of its regulation, while cost-benefit requirements have proved troublesome for agencies in court.[274]

This is a point about the goals of supporters of environmental regulation. From the standpoint of Congress, there is a separate point. A statute that expressly refers to cost-benefit balancing seems to invite complaints about the decision to trade lives for dollars. For this reason, statutes that embody cost-benefit analysis ("CBA") are unpopular in many circles. (It is noteworthy here that *none* of the actual and seriously considered enactments involving cost-benefit balancing has *ever* set out numbers for valuing regulatory benefits.) Legislators who seek to avoid complaints about CBA, while also seeking to impose a constraint on excessive regulation, might naturally be drawn to feasibility requirements. From the standpoint of industry, perhaps "feasibility" statutes are not so troublesome if it is possible to maintain control over the agency's docket and over appropriations, so as to ensure that draconian statutes are, in practice, far less than that.

These points help explain the appeal of feasibility constraints. But they still do not tell us what such constraints mean. The best, though not entirely satisfactory, answer is that a regulation becomes infeasible

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273. For evidence, see *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201 (5th Cir. 1991) (invalidating asbestos ban).

274. *See, e.g., id.*; Aqua Slide N' Dive Corp. v. Consumer Prod. Comm'n, 569 F.2d 831 (5th Cir. 1978).

if it would result in significant dislocations in the industry, in the form of large numbers of business failures, substantial losses of jobs, or the equivalent.[275] Ideas of this sort are qualitative, rather than quantitative, and in implementation they leave a great deal of discretion to agencies. What might be expected in the future is a more quantitative account from agencies implementing regulations that are said to be feasible, or refusing to impose regulations said to be infeasible.

C. *Considering Costs*

What of principles (or statutes) that ask agencies to "take into consideration" costs (and other relevant factors)? Statutes of this kind typically include an "achievability" constraint as well, one that operates, in practice, in the same way as a feasibility requirement. What is added by the idea that agencies should also take costs into consideration?

The answer seems to be that such provisions give agencies the discretion not to go to the full extent of feasibility if the costs of doing so are disproportionately high. Suppose, for example, that a regulation would cost $800 million and that it would save ten lives annually. Suppose too that it is entirely feasible. If the agency is permitted to take costs into consideration, presumably it is permitted to impose a less intrusive regulation, or perhaps not to regulate at all. The foregoing sentence is qualified because the idea that costs must be taken "into consideration" does not say how much *weight* costs must have; it does not say, by itself, to what extent agencies must treat costs as relevant to the ultimate decision. Presumably it would be unlawful for an agency to ignore costs altogether. If the agency were permitted to do this, the "consideration" requirement would be empty. At a minimum, then, the agency must discuss cost and explain its decision in light of cost. Similarly, an agency that is allowed to "consider" costs, but need not take account of feasibility, is authorized to soften regulation by selecting less expensive and also less effective means.[276] Hard questions would arise if an agency authorized to "consider" costs chooses means that are much less expensive but also much less effective.

This is a procedural understanding of the "consideration" requirement, one that has precedent under other statutes.[277] But is there a substantive requirement as well? Must an agency give some kind of weight to costs, in addition to discussing them? The best answer is "yes" to both questions. An agency decision would be unlawful if it gave no weight whatsoever to costs, as, for example,

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275. *See, e.g.*, United Steelworkers of Am. v. Marshall, 647 F2d 1189 (5th Cir. 1980); Bldg. and Constr. Trades Dept. v. OSHA, 838 F.2d 1258 (D.C. Cir. 1988); Nat'l Cottonseed Prods. Ass'n v. Brock, 825 F.2d 482 (D.C. Cir. 1987).

276. Michigan v. EPA, 213 F.3d 663 (D.C. Cir. 2000).

277. Most notably the National Environmental Policy Act. *See* Stryker's Bay Neighborhood Council v. Karlen, 444 U.S. 223 (1980).

through the choice of a regulation that would do only trivially more good than one that would be 50% less costly. An agency decision would also be doubtful if it made costs an overriding factor as, for example, by choosing a regulation that is slightly less expensive (say, $1 million annually) but also much less effective (say, because it would leave thirty additional deaths annually).

On this view, a requirement that an agency take costs into consideration falls short of cost-benefit analysis, in the sense that the agency is expected to give principal weight to the initially identified factor, and from there to make adjustments because of costs.[278] An agency would run into difficulty if it transformed costs into the overriding statutory factor *or* if it gave costs no substantive consideration at all. These are the polar cases for administrative illegality. Cases that fall between the poles may present hard line-drawing questions, but no serious conceptual issues.

D. *Of Costs and Benefits*

It remains to discuss the largest problem of all. If cost-benefit balancing is required, what is an agency permitted to do? What is it prohibited from doing? Of course hard issues of valuation arise here. If an agency values a life at $10 million, it will produce outcomes very different from those that would follow if it valued a life at $500,000. Is an agency permitted to value a life at, say, $100 million, or at $50,000?[279]

1. *Basic Issues of Valuation: The Standard Approach*

For several decades, agencies have undertaken cost-benefit analysis of major regulations, even when cost-benefit analysis is not the basis for decision but is merely a matter of informing the public about the consequences of proposed courses of action.[280] But how are costs and benefits to be calculated? In principle, the issue is often easier to resolve on the cost side, though the practical problems here can be very serious, especially in light of industry's incentive to overestimate costs. With respect to benefits, the now-standard approach involves an effort to calculate people's "willingness to pay" for the various goods at stake.[281] Sophisticated (though still controversial[282]) methods are available for this purpose.[283]

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278. *See* Am. Petroleum Inst. v. EPA, 52 F.3d 1113, 1119-1120 (D.C. Cir. 1995) (holding that the factors that follow the "taking into consideration" language must be treated as secondary).

279. *See* Corrosion Proof Fittings v. EPA, 947 F.2d 1201 (5th Cir. 1991).

280. For an overview, see Richard Pildes & Cass R. Sunstein, *Reinventing the Regulatory State*, 62 U. CHI. L. REV. 1 (1995).

281. This approach is challenged in many places. *See, e.g.*, ELIZABETH ANDERSON, VALUE IN ETHICS AND ECONOMICS (1993).

282. *See* MARKETS, MORTALITY, AND WORK (1998).

283. *See* W. KIP VISCUSI, FATAL TRADEOFFS (1992).

There remains a good deal of variation across agencies, with statistical lives being valued at between $1.5 million and $6.1 million.[284] With respect to statistical lives, consider the following table[285]:

TABLE 3: VALUATIONS OF LIFE

AGENCY	REGULATION	CITATION	VALUE ($ mil.)
Department of Transportation — Federal Aviation Administration	Proposed Establishment of the Harlingen Airport Radar Service Area, TX	55 FR 32064 August 6, 1990	1.5
Department of Agriculture — Food Safety and Inspection Service	Pathogen Reduction: Hazard Analysis and Critical Control Point Systems	61 FR 38806 July 25, 1996	1.6
Department of Health and Human Services — Food and Drug Administration	Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents	61 FR 44396 August 28, 1996	2.5
Department of Transportation — Federal Aviation Administration	Aircraft Flight Simulator Use in Pilot Training, Testing, and Checking and at Training Centers	61 FR 34508 July 2, 1996	2.7
Environmental Protection Agency	Protection of Stratospheric Ozone	53 FR 30566 August 12, 1988	3.0
Department of Health and Human Services — Food and Drug Administration	Proposed Rules to Amend the Food Labeling Regulations	56 FR 60856 November 27, 1991	3.0
Department of Transportation — Federal Aviation Administration	Financial Responsibility Requirements for Licensed Launch Activities	61 FR 38992 July 25, 1996	3.0
Department of Agriculture — Food and Nutrition Service	Proposed National School Lunch Program and School Breakfast Program	59 FR 30218 June 10, 1994	1.5, 3.0
Environmental Protection Agency	National Ambient Air Quality Standards for Particulate Matter	62 FR 38652 July 18, 1997	4.8
Environmental Protection Agency	National Ambient Air Quality Standards for Ozone	62 FR 38856 July 18, 1996	4.8

284. *See* Adler & Posner, *supra* note 15. EPA is generally using a number of $4.8 million per statistical life saved. *See* SECTION 812 RETROSPECTIVE (1997).

285. I borrowed this from Matthew D. Adler and Eric A. Posner, *supra* note 15.

Department of Health and Human Services — Food and Drug Administration	Medical Devices: Current Good Manufacturing Practice	61 FR 52602 October 7, 1996	5.0
Department of Health and Human Services — Public Health Service, Food and Drug Administration	Quality Mammography Standards	62 FR 55852 October 28, 1997	5.0
Environmental Protection Agency	Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities	61 FR 45778 August 29, 1996	5.5
Environmental Protection Agency	National Primary Drinking Water Regulations: Disinfectants and Disinfection Byproducts	63 FR 69390 December 16, 1998	5.6
Environmental Protection Agency	Radon in Drinking Water Health Risk Reduction and Cost Analysis	64 FR 9560 February 26, 1999	5.8
Environmental Protection Agency	Arsenic in Drinking Water	66 FR 7014 (Jan. 22, 2001)	6.1
Environmental Protection Agency	Radon in Drinking Water Health Risk Reduction and Cost Analysis	64 FR 9560 (Feb. 26, 1999)	5.8

Notwithstanding these variations, willingness to pay is the general basis for undertaking calculations. In theory, willingness to pay is usually calculated by determining how much people do pay in actual market settings, to reduce statistically small risks of harm. It is on the basis of this sort of analysis that the EPA compiled the following table,[286] which can be taken as representative:

TABLE 4: WILLINGNESS-TO-PAY ("WTP") ESTIMATES (MEAN VALUES)

Health Endpoint	**Mean WTP Value Per Incident ($ amount in 1990)**
Mortality	
Life saved	$4.8 million
Life year extended	$120,000
Hospital Admissions:	
All Respiratory Illnesses, all ages	$12,700
Pneumonia, age < 65	$13,400
COPD, age > 65	$15,900

286. INNOVATIVE STRATEGIES GROUP, ENVIRONMENTAL PROTECTION AGENCY, REGULATORY IMPACT ANALYSIS, OZONE AND PARTICULATES (1998).

Ischemic Heart Disease, age < 65 Congestive Heart Failure, age > 65 Emergency Visits for Asthma	$ 20,600 $ 16,600 $9,000
Chronic Bronchitis	$260,000
Upper Respiratory Symptoms	$19
Lower Respiratory Symptoms	$12
Acute Bronchitis	$45
Acute Respiratory Symptoms (any of 19)	$18
Asthma	$32
Shortness of Breath	$5.30
Sinusitis and Hay Fever	Not monetized
Work Loss Days	$83
Restricted Activity Days (RAD) Minor RAD Respiratory RAD	 $38 not monetized
Worker Productivity	$1 per worker per 10% change in ozone
Visibility: Residential Recreational	$14 per unit decrease in deciview per household Range of $7.30 to $11 per unit decrease in deciview per household (see U.S. EPA, 1997a)
Household Soiling Damage	$2.50 per household per •g/m^3

To become intelligible, of course, these numbers must be combined with an assessment of the problems that would be averted with various approaches to regulation. As an example of such an assessment, consider the EPA's effort to specify the anticipated health benefits from its particulates standard.

TABLE 5: PROPOSED PM_{10} STANDARD (50/150 •G/M^3) 99TH PERCENTILE NATIONAL ANNUAL HEALTH INCIDENCE REDUCTIONS

Estimates are incremental to the current ozone and PM NAAQS: (year = 2010)

ENDPOINT		**Partial Attainment Scenario**
	Annual $PM_{2.5}$ (•g/m^3)	**50**
	Daily $PM_{2.5}$ (•g/m^3)	**150**
1. Mortality: Short-Term Exposure		360
Long-Term Exposure		340
2. Chronic Bronchitis		6,800
Hospital Admissions:		
3. All Respiratory (all ages)		190
All Respiratory (ages 65+)		470
Pneumonia (ages 65+)		170
COPD (ages 65+)		140
4. Congestive Heart Failure		130
5. Ischemic Heart Disease		140

6. Acute Bronchitis	1,100
7. Lower Respiratory Symptoms	10,400
8. Upper Respiratory Symptoms	5,300
Shortness of Breath	18,300
Asthma Attacks	8,800
9. Work Loss Days	106,000
10. Minor Restricted Activity Days (MRADs)	879,000

A simple exercise of multiplication, putting the two tables together, will generate monetized benefits, which can then be compared with monetized costs. Of course it is possible to challenge the numbers in both tables. Perhaps willingness to pay has not been properly calculated. Perhaps willingness to pay is not the proper basis for monetizing regulatory benefits, and some other method should be used instead. Those who accept the need for balancing need not also accept the willingness to pay criterion. Perhaps the agency has understated or overstated the number of lives saved or chronic bronchitis cases; perhaps the agency has overvalued or undervalued the dollar value of life or other health benefits. In fact, evidence suggests that prospective estimates are bound to contain serious errors. The Office of Technology Assessment, asked in 1992 to evaluate the accuracy of OSHA's prospective estimates, found many mistakes.[287] One reason is that the government must begin with the industry's own estimates, which will often be self-serving and even alarmist. But the basic method increasingly dominates administrative practice.

287. *See* OMB, 1999 REPORT TO CONGRESS, at 40-43. A table, *id.* at 41, contains an illuminating summary:

ESTIMATED COSTS AND BENEFITS OF OSHA RULES: PROSPECTIVE VS. RETROSPECTIVE

Regulation	Year Issued	Estimated Costs	Estimated Benefits
Vinyl Chloride (a)	1974	Overestimated by a factor of four	Not clear
Cotton Dust (a)	1978	Overestimated by a factor of three	Overestimated by more than a factor of two
Lead (Secondary Smelters)	1978	Capital costs significantly underestimated	Overestimated the importance of engineering controls in achieving benefits
Ethylene Oxide (Hospitals) (a)	1984	About right	Not clear
Formaldehyde (Metal Foundries)	1987	Over by a factor of two (although costs of engineering controls considerably underestimated)	Not clear
Grain Handling	1987	Not clear	Not clear
PSDI Power Presses (b)	1988	Underestimated costs, overestimated benefits, or both	
Powered Platforms (b)	1989	Underestimated costs, overestimated benefits, or both	

2. *Legal Floors and Ceilings*

When would a given cost-benefit ratio be held to be unlawful? The simplest answer is when the costs significantly exceed the benefits, properly measured. A reasonable agency might begin with numbers near the middle of both market valuations[288] and government valuations[289] — in the case of a statistical life, somewhere between $4 million and $8 million.[290] If an agency seeks to deviate from those numbers, it should explain why. The basic idea is that there should be a presumption in favor of adherence to the normal range, with an explanation of departures from the numbers thus indicated. And if the agency seeks to go forward with a regulation whose costs significantly exceed benefits, it should have to explain why it is doing that.

A legitimate risk in allowing departures is that the stated rationale will conceal an effort to placate powerful private groups not having a strong claim to governmental assistance.[291] Both the EPA and its Science Advisory Board have explored the possibility of adjusting the ordinary numbers because of equitable factors, including the involuntariness and uncontrollability of the risk.[292] Actually, there are many possible grounds for making adjustments. For example, an agency might make a reasonable upward adjustment if it believes that children are largely at risk — perhaps because more life-years are at stake, perhaps because children are unable to protect themselves and hence have a special equitable claim to government resources.[293] A downward adjustment would similarly be lawful if the agency finds that mostly old people are at risk, so that any extensions of lives would produce a low level of savings in terms of life-years. Or the agency might reasonably conclude that special attention should be given to risks faced by poor people or African Americans, on the ground that existing injustice is compounded in a situation in which health and environmental dangers are thus concentrated. Here values of various sorts can properly enter into the decision; the standard economic variables need not be decisive.

In its arsenic rule, the EPA offered an analysis of how the benefits would be reassessed if the involuntariness and uncontrollability of arsenic were considered, suggesting that this would produce a 7% increase in benefits.[294] In an important essay, Richard Revesz has

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288. *See* W. Kip Viscusi, *Risk Equity*, 29 J. LEGAL STUD. 843 (2000).

289. *See* STEPHEN G. BREYER ET AL., ADMINISTRATIVE LAW AND REGULATORY POLICY 30-31 (4th ed. 1999); Adler & Posner, *supra* note 15.

290. *But see* Robert H. Frank & Cass R. Sunstein, *Cost-Benefit Analysis and Relative Position*, 68 U. CHI. L. REV. 323 (2001) (urging inflation of these numbers).

291. *See* Viscusi, *supra* note 288 (documenting abuses of this kind).

292. *See* 66 Fed. Reg. 6976, at 7013-7017 (Jan. 22, 2001) (to be codified at 40 C.F.R. pts. 9, 141 & 142).

293. See the acknowledgement of the relevance of life-years in *American Dental Association v. Martin*, 984 F.2d 823, 827 (7th Cir. 1993).

294. *See* 66 Fed. Reg. 6976, at 7016 (Jan. 22, 2001) (to be codified at 40 C.F.R. pts. 9, 141 & 142).

urged that the government's failure to make upwards adjustments for uncontrollable, involuntary, and dread risks results in a substantial understatement of the monetized benefits of regulation.[295] We could easily imagine a creative legal challenge to rules as insufficiently stringent and insufficiently explained if adjustments are not made, at least if the agency fails to explain itself.

Agencies should also be permitted to take into account the fact that people care about relative economic position, not only absolute economic position, and thus to adjust market valuations upwards.[296] And the agency could reasonably employ "incidence analysis," involving consideration of who wins and who loses, to conclude that regulation should go forward notwithstanding the fact that costs exceed benefits (see the reference to distributional considerations in OMB's "best practices" document, in the appendix). If, for example, the benefits are $800 million, but enjoyed mostly by low-income workers, whereas the costs are $900 million, but faced mostly by consumers generally, it seems reasonable for the agency to go forward, at least if Congress has not expressly precluded that judgment.

There is a larger point here. In addition to knowing the benefits and costs of regulation, it is necessary to know *who* bears those costs and enjoys those benefits, and also the particular *nature* of those costs and benefits. Suppose, for example, that an occupational safety and health regulation would have a total cost of $600 million, and that the monetized benefits would be $400 million (including, say, forty lives saved per year, and hence $200 million in monetized savings from fatalities averted). Is it clear that this regulation should not go forward? For various reasons it is not. If the people who are saved are children or teenagers, the uniform lives saved number might undervalue the relevant benefits. Equally important: What does the $600 million mean, concretely? Does it mean that prices will increase by a little for many people? That cost might be worth incurring. So too if the consequence of the $600 million expenditure would be a reduction in annual profits for companies that already make billions. Or does the cost mean that poor people will lose their jobs? An ideal cost-benefit analysis would tell us something about the *incidence* of both costs and benefits. It makes sense to say that the "bottom line" numbers will not be decisive when an incidence analysis shows that those numbers should be adjusted to take account of the identify of the winners and losers. Of course it is possible to think that we lack the tools to engage in a good incidence analysis, or that an assessment of distributional issues will be subject to interest-group manipulation, and hence that the "bottom line" numbers should be used for pragmatic reasons.[297]

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295. Richard L. Revesz, *Environmental Regulation, Cost-Benefit Analysis, and the Discounting of Human Lives*, 99 COLUM. L. REV. 941 (1999).

296. *See* Frank & Sunstein, *supra* note 290.

297. *See* Viscusi, *Risk Equity*, *supra* note 288.

While these points give agencies a degree of flexibility, they do not give them carte blanche, because they operate in limited domains, and because they come with a duty of reasoned explanation. This duty is procedural, but it is far more than that. In the *Corrosion Proof Fittings* case, for example, it is hard to see how the agency could have justified the extreme cost-benefit ratios that applied to certain bans on asbestos.[298]

3. *The Discount Rate*

Perhaps the most difficult issue here, from the theoretical point of view, involves the selection of the appropriate discount rate. How should the agency value future gains and losses? In terms of ultimate outcomes, the choice matters a great deal. If an agency chooses a discount rate of 2%, the outcome will be very different from what it would be if an agency were to choose a discount rate of 10%; the benefits calculation will shift dramatically as a result. If a human life is valued at $8 million, and if an agency chooses a 10% discount rate, a life saved 100 years from now is worth only $581.[299] "At a discount rate of 5%, one death next year counts for more than a billion deaths in 500 years."[300] OMB suggests a 7% discount rate (see Appendix); but this is highly controversial. A key question is therefore: What legal constraints should be imposed on the agency's choice?[301]

My basic conclusion is that it is much harder to untangle the theoretical issue than to identify the appropriate posture of reviewing courts. In this highly technical area, courts should generally adopt a posture of deference, requiring agencies only to produce a reasonable explanation for their choice and to show a degree of consistency. One reason for deference is the extreme complexity of the underlying issues. Another reason is the risk that an aggressive judicial posture would contribute to the "ossification" of rulemaking[302] — a particular problem in this setting, because any particular discount rate will be easy to challenge with reasonable arguments that it is too low or too high.[303] To understand these points, some details are in order.

Usually statutes are silent on the question of appropriate discount rate. In fact, I have been unable to find *any* statute that specifies a discount rate for agencies to follow. On judicial review, the question will therefore involve a claim that the agency's choice is arbitrary.

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298. 947 F.2d 1201 (5th Cir. 1991).

299. *See* Michael B. Gerrard, *Demons and Angels in Hazardous Waste Regulation*, 92 NW. U. L. REV. 706, 742-43 (1998).

300. DEREK PARFIT, REASONS AND PERSONS 357 (1984).

301. Valuable treatments include Revesz, *supra* note 295; Comment, *Judicial Review of Discount Rates Used in Regulatory Cost-Benefit Analysis*, 65 U. CHI. L. REV. 1333 (1998).

302. Thomas O. McGarity, *Some Thoughts on "Deossifying" the Rulemaking Process*, 41 DUKE L.J. 1385 (1992).

303. I am therefore disagreeing with the endorsement of "hard look" review in the excellent Comment, *supra* note 15.

Here the national government shows strikingly (and inexplicably) variable practices. As noted, the Office of Management and Budget suggests a 7% discount rate,[304] departing from a 10% rate in the 1980s.[305] But agencies are not bound by OMB guidelines, and they have ranged from as low as 0% (EPA, latency period for cancer from arsenic) and 3% (Food and Drug Administration, Department of Housing and Urban development) to as high as 10% (EPA).[306] In fact the same agency sometimes endorses different discount rates for no apparent reason — with EPA, for example, selecting a 3% rate for regulation of lead-based paint as compared to 7% for regulation of drinking water, and 10% rates, respectively, for regulation of emissions from locomotives.[307] Here government practice seems extremely erratic.

From the purely economic standpoint, there are serious conundrums here.[308] The impetus for discounting future effects stems from the judgment that, in the context of money, discounting future benefits and losses is entirely rational, even simple: a dollar today is worth more than a dollar tomorrow. There are two reasons: investment value (or opportunity cost) and pure time preference.[309] A dollar today can be invested, and for this reason it is worth more than a dollar a year from now. An emphasis on the investment value of money yields a discount rate of roughly 5% – 7%. Quite apart from this point, people generally seem to have a preference for receiving money sooner rather than later. People value current consumption more than they value future consumption. An inquiry into pure time preference produces lower discount rates of 1% – 3%. Though they lead to different numbers, both points justify discounting future income gains and losses.

So far, so good. The problem is that, notwithstanding conventional wisdom among economists, these points are not easily taken to justify a discount rate for the nonmonetary benefits of regulation (see table 5 for an overview of such benefits). If a regulation will save ten lives this year and ten lives annually for the next ten years, it cannot plausibly be urged that the future savings are worth less than the current savings on the ground that a current life saved can be immediately "invested." The point about investment value, or the opportunity cost of using capital, seems utterly irrelevant here. With time preference, things are less clear. Perhaps people would rather save ten lives today than ten lives in a decade. But it is unclear that this is so. And even if it is, what moral status would such a time preference have? Almost certainly it makes sense to say that it would be worse for you to lose your limb

304. *See* OMB, Benefit-Cost Analysis of Federal Programs, 57 Fed Reg at 53,520 (1992).

305. *See* Appendix for details; *see also* Revesz, *supra* note 295, at 950.

306. *See* Comment, *supra* note 15, at 1336-37.

307. *Id.* at 1337.

308. *See id.* at 1341-1350; *see also* Appendix for excerpts from OMB's own account.

309. *Id.* at 1341-46.

now than to lose it in ten years; in the latter case, you will have ten years' use of the limb. And probably it makes sense to say that agencies should attend to life-years saved, not only lives saved. But holding all this constant, the death of a thirty-five-year-old in 2004 does not seem worth more than the death of a thirty-five-year-old in 2044. And since different people are involved, the moral problem is serious: the preference of the chooser in 2002 is certainly relevant to determining that chooser's own fate, and the timing of risks that might come to fruition for that chooser. But the chooser's preference cannot easily be used to determine the fate of someone not yet born.

These points suggest that, as Richard Revesz argues, it is important to distinguish two issues that go under the name of "discounting" and that have yet to be separated in administrative practice: (a) latent harms, in the form of exposures whose consequences will occur late in someone's lifetime; and (b) harms to future generations.[310] It is reasonable to say that latent harms should count for less than immediate ones, since they remove fewer years from people's lives and because people do seem to prefer, other things being equal, a harm in the future to a present harm. For latent harms, some kind of discount rate is sensible. Consider, for example, the case of arsenic. In its regulation, the EPA treated an arsenic death in the future as equivalent to an arsenic death in the present, even though an arsenic death is likely to come, if it does come, many years after exposure.[311] On this count, the EPA's judgment seems wrong, even arbitrary; some kind of discount rate is clearly appropriate here.[312] It would be easy to imagine a challenge to the failure to discount the latent harms here. On the other hand, OMB's 7% figure, based on the investment value of money is probably too high.[313] There is no reason to believe that the discount rate for future health harms is equal to the discount rate for future income effects, and considerable reason to believe otherwise.[314] Indeed, the use of a 7% discount rate, if it decisively affects the ultimate decision, would seem to be legally doubtful — arbitrary in its own way.

But the case of harms to future generations, or people not yet born, is altogether different, and in that case the usual grounds for discounting monetary benefits are quite inapplicable. For this reason some people think that no discounting is appropriate for the nonmonetary benefits of regulation.[315] On this view, a life-year saved is

310. As argued convincingly in Revesz, *supra* note 295.

311. *See* 66 Fed. Reg. 6976, at 7013 (Jan. 22, 2001) (to be codified at 40 C.F.R. pts. 9, 141 & 142).

312. *See* Revesz, *supra* 295; Jason Burnett & Robert W. Hahn, *EPA's Arsenic Rule: The Benefits of the Standard Do Not Justify the Costs* (2001) (unpublished manuscript, on file with author).

313. *See* Revesz, *supra* note 295, at 981-87.

314. *See id.*

315. *Id.* at 987-1009 (offering a qualified version of this view).

a life-year saved, and it does not matter, for purposes of valuation, when the saving occurs.

But there seems to be a major objection to this way of proceeding: it would appear to require truly extraordinary sacrifices from the present for the sake of the (infinite) future. Perhaps the "failure to discount would leave all generations at a subsistence level of existence, because benefits would be postponed perpetually for the future."[316] On the other hand, it is not clear that the assumption behind this objection is convincing. Technological and other advances made by the current generation benefit future generations as well, and hence impoverishment of the current generation would inevitably harm those who will come later.[317] In any case there is a hard ethical question here — how much the current generation should suffer for the benefit of the future — and a judgment against discounting would not answer that question unless we were sure that as a matter of policy, we should be engaging in maximizing some aggregate welfare function.[318] It is not at all clear that this form of maximization is the appropriate choice to make.

At this point it should be clear that these issues are exceedingly complex and that agencies asked to engage in cost-benefit analysis have no clear path to an appropriate choice of discount rate for future generations. My principal topic, however, is not regulatory policy, but the implementation of the cost-benefit default principles. In the face of the underlying conundrums, the most that a reviewing court can require is a rationale for the agency's choice that is both articulated and reasonable. There are several possibilities here,[319] suggesting what courts should and should not do:

- Courts should not require costs and benefits to have the same discount rate, at least not if costs are to be absorbed in terms of dollars, and benefits will come in terms of fatalities and illnesses averted. It follows that in *Corrosion Proof Fittings*, the court of appeals was quite wrong to tell EPA to produce an "apples-to-apples comparison, even if this entails discounting benefits of a non-monetary nature."[320]
- Courts should not simply defer to agency decisions as a "policy choice," as did one court in an unusually complex setting.[321] What is necessary is some kind of explanation for the choice.

316. *See* DAVID W. PEARCE & R. KERRY TURNER, ECONOMICS OF NATURAL RESOURCES AND THE ENVIRONMENT 223-24 (1990).

317. Revesz, *supra* note 295, at 994.

318. Tyler Cowen & Derek Perfit, *Against the Social Discount Rate*, *in* JUSTICE BETWEEN AGE GROUPS AND GENERATIONS 144, 149 (Peter Laslett & James S. Fishkin eds., 1992).

319. For a good discussion, see DANIEL A. FARBER, ECO-PRAGMATISM (1999).

320. Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1218 (5th Cir. 1991).

321. Ohio v. U.S. Dep't of the Interior, 880 F.2d 432, 465 (D.C. Cir. 1989).

- For latent harms, it is hard to justify a refusal to apply any discount rate at all. A discount rate of 2% – 3% seems to make the best sense. If the agency refuses to discount, it should be prepared to explain itself. At the same time, an agency's use of a 7% discount rate for latent harms would be hard to defend, because that figure comes from the investment value of money.
- In the case of future generations, courts should acknowledge that good explanations can be given for a wide range of choices — between, say, a discount rate of 0% (for future generations, not latent harms) and 7% (OMB's suggestion for future generations). So long as the agency gives a sensible rationale and departs from it only on the basis of articulated reasons, courts should respect the choice. The value judgments here can be reasonably disputed, and they should be made democratically, not judicially. It follows that in the context of discount rates, as elsewhere, the common law of cost-benefit analysis is to be developed at the administrative level, subject only to judicial review for reasonableness.

VII. CONCLUSION

In this Article I have attempted to identify the cost-benefit default principles, to defend their use, and to explore their meaning for the future. In the face of statutory ambiguity, courts now permit agencies to refuse to regulate when a significant risk is not shown or beyond the point where regulation is not feasible, to consider costs, and to engage in a form of cost-benefit balancing. At their least intrusive, the cost-benefit default rules *allow* the agency to go in the suggested direction when the statute is unclear. At their most intrusive, the principles *require* the agency to act in the way they suggest unless Congress has unambiguously said otherwise.

I have argued on behalf of the least intrusive version of the cost-benefit default rules, by suggesting that they are likely to give sense and rationality the benefit of the doubt. At the same time, I have urged that the argument on their behalf is presumptive only, and that in certain contexts, agencies have good reasons for embarking on a different course. The question is whether agencies have been able to offer a reasonable defense of their decisions. I have also suggested, though more tentatively, that mandatory use of the principles is often a good idea.

One of my major goals has been to set out some guidelines for the future, both under the cost-benefit default principles and under statutes that point in the same direction. Agencies should particularize the idea of "significant" and "de minimis" risks through quantitative guidelines. Of course, the statistical probability of harm is not all that matters; the size of the exposed population is important as well. "Feasibility" is not an off-on switch, and here, too, agencies should specify what they understand the term to mean, beginning with the admittedly vague notion that massive dislocations would be both

necessary and sufficient to show that regulation is not feasible. We have seen that, with respect to valuation of life and health, market measures can provide a good start, from which agencies are entitled to make reasonable adjustments. We have also seen that the most difficult issue involves selection of the appropriate discount rate. Reviewing courts should not require agencies to apply the same discount rate to life and health that they apply to money; with respect to discounting, there are good reasons to distinguish money from other goods. The most that courts can do is to impose ceilings and floors on agency judgments, by requiring a good rationale for whatever discount rate is chosen.

The most general conclusion, signaled by the rise of the cost-benefit default principles, is that the nation is nearing the end of a "first generation" debate about whether to adopt a presumption in favor of cost-benefit balancing, and rapidly moving into a "second generation" debate about when the presumption is rebutted, and about what cost-benefit analysis specifically entails. If cost-benefit analysis is to be defended, it is not because of especially controversial judgments of value, but because of a belief that regulatory action should be judged largely in terms of its effects.[322] Suitably specified and understood, the cost-benefit default principles should be regarded not as a technique for stalling desirable regulation, but as a pragmatic effort to ensure that regulation responds to serious problems rather than to trivial or imaginary ones. And if they are seen in these terms, the cost-benefit default principles operate not only as a foundation for deterring regulation that promises to do less good than harm, but also as a basis for producing regulatory action when an assessment of the consequences shows that regulation is desirable.[323]

322. Of course there is no way of assessing consequences, or even identifying them, that is entirely neutral on evaluative questions. What I mean to suggest is that agreed-upon understandings can do the necessary work here. See the outline of the track record of cost-benefit analysis at EPA, *supra* notes 48-54.

323. See the account, *supra* notes 48-49 and accompanying text, of instances in which cost-benefit balancing spurred regulatory action.

APPENDIX: EXCERPTS FROM OMB GUIDANCE ON COST-BENEFIT ANALYSIS

The following consists of excerpts from OMB's "best practices" guidelines for cost-benefit analysis. Because the understanding of cost-benefit analysis is so much better developed within OMB than within courts and the legal culture, it is worth attending, with some care, to OMB's suggestions. I have challenged some of OMB's claims — especially on the appropriate discount rate — but there is no question that OMB has offered a helpful and thoughtful treatment of many of the underlying problems.

January 11, 1996

Economic Analysis of Federal Regulations
Under Executive Order 12866

III. ANALYSIS OF BENEFITS AND COSTS

A. General Principles

. . .

3. *Discounting.* One of the problems that arises in developing a benefit-cost analysis is that the benefits and costs often occur in different time periods. When this occurs, it is not appropriate, when comparing benefits and costs, to simply add up the benefits and costs accruing over time. Discounting takes account of the fact that resources (goods or services) that are available in a given year are worth more than the identical resources available in a later year. One reason for this is that resources can be invested so as to return more resources later. In addition, people tend to be impatient and to prefer earlier consumption over later consumption.

(a) *Basic considerations.* Constant-dollar benefits and costs must be discounted to present values before benefits and costs in different years can be added together to determine overall net benefits. To obtain constant dollar estimates, benefit and cost streams in nominal dollars should be adjusted to correct for inflation. The basic guidance on discount rates for regulatory and other analyses is provided in OMB Circular A-94. The discount rate specified in that guidance is intended to be an approximation of the opportunity cost of capital, which is the before-tax rate of return to incremental private investment. The Circular A-94 rate, which was revised in 1992 based on an extensive review and public comment, reflects the rates of return on low yielding forms of capital, such as housing, as well as the higher rates of returns yielded by corporate capital. This average rate

currently is estimated to be 7 percent in real terms (i.e., after adjusting for inflation). . . .

Even those benefits and costs that are hard to quantify in monetary terms should be discounted. . . .

(b) *Additional considerations.* Modern research in economic theory has established a preferred model for discounting, sometimes referred to as the shadow price approach. The basic concept is that economic welfare is ultimately determined by consumption; investment affects welfare only to the extent that it affects current and future consumption. Thus, any effect that a government program has on public or private investment must be converted to an associated stream of effects on consumption before being discounted.

Converting investment-related benefits and costs to their consumption-equivalents as required by this approach involves calculating the "shadow price of capital." This shadow price reflects the present value of the future changes in consumption arising from a marginal change in investment, using the consumption rate of interest (also termed the rate of time preference) as the discount rate. . . .

4. *Treatment of Risk and Uncertainty.* . . . Often risks, benefits, and costs are measured imperfectly because key parameters are not known precisely; instead, the economic analysis must rely upon statistical probability distributions for the values of parameters. Both the inherent lack of certainty about the consequences of a potential hazard (for example, the odds of contracting cancer) and the lack of complete knowledge about parameter values that define risk relationships (for example, the relationship between presence of a carcinogen in the food supply and the rate of absorption of the carcinogen) should be considered.

. . .

(a) *Risk assessment.* . . . Data relating to effects that can be identified may be sketchy, incomplete, or subject to measurement error or statistical bias. Exposures and sensitivities to risks may vary considerably across the affected population. These difficulties can lead, for example, to a range of quantitative estimates of risk in health and ecological risk assessments that can span several orders of magnitude. Uncertainties in cost estimates also can be significant, in particular because of lack of experience with the adjustments that markets can make to reduce regulatory burdens, the difficulty of identifying and quantifying opportunity cost, and the potential for enhanced or retarded technical innovation. All of these concerns should be reflected in the uncertainties about outcomes that should be incorporated in the analysis.

The treatment of uncertainty in developing risk, benefit, and cost information also must be guided by the principles of full disclosure and transparency, as with other elements of an EA. Data, models, and their implications for risk assessment should be identified in the risk characterization. . . . .

In order for the EA to evaluate outcomes involving risks, risk assessments must provide some estimates of the probability distribution of risks with and without the regulation. Whenever it is possible to quantitatively characterize the probability distributions, some estimates of central tendency (e.g., mean and median) must be provided in addition to ranges, variances, specified low-end and high-end percentile estimates, and other characteristics of the distribution.

Overall risk estimates cannot be more precise than their most uncertain component. Thus, risk estimates should be reported in a way that reflects the degree of uncertainty present in order to prevent creating a false sense of precision. The accuracy with which quantitative estimates are reported must be supported by the quality of the data and models used. In all cases, the level of precision should be stated explicitly.

Overall uncertainty is typically a consequence of uncertainties about many different factors. Appropriate statistical techniques should be used to combine uncertainties about separate factors into an overall probability distribution for a risk. . . .

Uncertainty may arise from a variety of fundamentally different sources, including lack of data, variability in populations or natural conditions, limitations in fundamental scientific knowledge (both social and natural) resulting in lack of knowledge about key relationships, or fundamental unpredictability of various phenomena. The nature of these different sources may suggest different approaches. For example, when uncertainty is due to lack of information, one policy alternative may be to defer action pending further study. One factor that may help determine whether further study is justifiable as a policy alternative is an evaluation of the potential benefits of the information relative to the resources needed to acquire it and the potential costs of delaying action. When uncertainty is due largely to observable variability in populations or natural conditions, one policy alternative may be to refine targeting, that is, to differentiate policies across key subgroups. Analysis of such policies should consider the incremental benefits of improved efficiency from targeting, any incremental costs of monitoring and enforcement, and changes in the distribution of benefits and costs. . . .

7. *Nonmonetized Benefits and Costs.* Presentation of monetized benefits and costs is preferred where acceptable estimates are possible. However, monetization of some of the effects of regulations is often difficult if not impossible, and even the quantification of some effects may not be easy. Effects that cannot be fully monetized or otherwise quantified should be described. Those effects that can be quantified should be presented along with qualitative information to characterize effects that are not quantified.

Irrespective of the presentation of monetized benefits and costs, the EA should present available physical or other quantitative measures of the effects of the alternative actions to help decisionmakers understand the full effects of alternative actions.

These include the magnitude, timing, and likelihood of impacts, plus other relevant dimensions (e.g., irreversibility and uniqueness). For instance, assume the effects of a water quality regulation include increases in fish populations and habitat over the affected stream segments and that it is not possible to monetize such effects. It would then be appropriate to describe the benefits in terms of stream miles of habitat improvement and increases in fish population by species (as well as to describe the timing and likelihood of such effects, etc.). . . .

8. *Distributional Effects and Equity*. Those who bear the costs of a regulation and those who enjoy its benefits often are not the same people. The term "distributional effects" refers to the description of the net effects of a regulatory alternative across the population and economy, divided up in various ways (e.g., income groups, race, sex, industrial sector). Benefits and costs of a regulation may be distributed unevenly over time, perhaps spanning several generations. Distributional effects may also arise through "transfer payments" arising from a regulatory action. For example, the revenue collected through a fee, surcharge, or tax (in excess of the cost of any service provided) is a transfer payments.

Where distributive effects are thought to be important, the effects of various regulatory alternatives should be described quantitatively to the extent possible, including their magnitude, likelihood, and incidence of effects on particular groups. Agencies should be alert for situations in which regulatory alternatives result in significant changes in treatment or outcomes for different groups. Effects on the distribution of income that are transmitted through changes in market prices can be important, albeit sometimes difficult to assess. The EA should also present information on the streams of benefits and costs over time in order to provide a basis for judging intertemporal distributional consequences, particularly where intergenerational effects are concerned.

There are no generally accepted principles for determining when one distribution of net benefits is more equitable than another. Thus, the EA should be careful to describe distributional effects without judging their fairness. These descriptions should be broad, focusing on large groups with small effects per capita as well as on small groups experiencing large effects per capita. Equity issues not related to the distribution of policy effects should be noted when important and described quantitatively to the extent feasible.

B. *Benefit Estimates*

. . .

The calculation of benefits (including benefits of risk reductions) should reflect the full probability distribution of potential consequences. For example, extreme safety or health results should be weighted, along with other possible outcomes, by estimates of their probability of occurrence based on the available evidence to estimate

the expected result of a proposed regulation. To the extent possible, the probability distributions of benefits should be presented. Extreme estimates should be presented as complements to central tendency and other estimates. If fundamental scientific disagreement or lack of knowledge precludes construction of a scientifically defensible probability distribution, benefits should be described under plausible alternative assumptions, along with a characterization of the evidence underlying each alternative view. . . .

1. *General Considerations.* The concept of "opportunity cost" is the appropriate construct for valuing both benefits and costs. The principle of "willingness-to-pay" captures the notion of opportunity cost by providing an aggregate measure of what individuals are willing to forgo to enjoy a particular benefit. Market transactions provide the richest data base for estimating benefits based on willingness-to-pay, as long as the goods and services affected by a potential regulation are traded in markets. It is more difficult to estimate benefits where market transactions are difficult to monitor or markets do not exist. Regulatory analysts in these cases need to develop appropriate proxies that simulate market exchange. Indeed, the analytical process of deriving benefit estimates by simulating markets may suggest alternative regulatory strategies that create such markets.

Either willingness-to-pay (WTP) or willingness-to-accept (WTA) can provide an appropriate measure of benefits, depending on the allocation of property rights. The common preference for WTP over WTA measures is based on the empirical difficulties in estimating the latter. . . .

2. *Principles for Valuing Benefits Directly Traded in Markets.* Ordinarily, goods and services are to be valued at their market prices. However, in some instances, the market value of a good or service may not reflect its true value to society.

If a regulatory alternative involves changes in such a good or service, its monetary value for purposes of benefit-cost analysis should be derived using an estimate of its true value to society (often called its "shadow price"). For example, suppose a particular air pollutant damages crops. One of the benefits of controlling that pollutant will be the value of the crop saved as a result of the controls. That value would typically be determined by reference to the price of the crop. If, however, the price of that crop is held above the unregulated market equilibrium price by a government price-support program, an estimate based on the support price would overstate the value of the benefit of controlling the pollutant. . . .

In other cases, market prices could understate social values, for example where production of a particular good also provides opportunities for improving basic knowledge.

3. *Principles for Valuing Benefits That Are Indirectly Traded in Markets.* . . . A variety of methods have been developed for estimating indirectly traded benefits. Generally, these methods apply statistical

techniques to distill from observable market transactions the portion of willingness-to-pay that can be attributed to the benefit in question. Examples include estimates of the value of environmental amenities derived from travel-cost studies, hedonic price models that measure differences or changes in the value of land, and statistical studies of occupational-risk premiums in wage rates. For all these methods, care is needed in designing protocols for reliably estimating benefits or in adapting the results of previous studies to new applications. The use of occupational-risk premiums can be a source of bias because the risks, when recognized, may be voluntarily rather than involuntarily assumed, and the sample of individuals upon which premium estimates are based may be skewed toward more risk-tolerant people.

Contingent-valuation methods have become increasingly common for estimating indirectly traded benefits, but the reliance of these methods on hypothetical scenarios and the complexities of the goods being valued by this technique raise issues about its accuracy in estimating willingness to pay compared to methods based on (indirect) revealed preferences. Accordingly, value estimates derived from contingent-valuation studies require greater analytical care than studies based on observable behavior. For example, the contingent valuation instrument must portray a realistic choice situation for respondents — where the hypothetical choice situation corresponds closely with the policy context to which the estimates will be applied. The practice of contingent valuation is rapidly evolving, and agencies relying upon this tool for valuation should judge the reliability of their benefit estimates using this technique in light of advances in the state of the art.

4. *Principles and Methods for Valuing Goods That Are Not Traded Directly or Indirectly in Markets.* Some types of goods, such as preserving environmental or cultural amenities apart from their use and direct enjoyment by people, are not traded directly or indirectly in markets. The practical obstacles to accurate measurement are similar to (but generally more severe than) those arising with respect to indirect benefits, principally because there are few or no related market transactions to provide data for willingness-to-pay estimates.

For many of these goods, particularly goods providing "nonuse" values, contingent-valuation methods may provide the only analytical approaches currently available for estimating values. The absence of observable and replicable behavior with respect to the good in question, combined with the complex and often unfamiliar nature of the goods being valued, argues for great care in the design and execution of surveys, rigorous analysis of the results, and a full characterization of the uncertainties in the estimates to meet best practices in the use of this method.

(b) *Fatality risks.*... Reductions in fatality risks as a result of government action are best monetized according to the willingness-to-pay approach.... Another way of expressing reductions in fatality risks is in terms of the "value of statistical life-years extended"

(VSLY). For example, if a regulation protected individuals whose average remaining life expectancy was 40 years, then a risk reduction of one fatality would be expressed as 40 life-years extended. This approach allows distinctions in risk-reduction measures based on their effects on longevity. However, this does not automatically mean that regulations with greater numbers of life-years extended will be favored over regulations with fewer numbers of life-years extended. VSL and VSLY ultimately depend on the willingness to pay for various forms of mortality risk reduction, not just longevity considerations.

. . .

To value reductions in more voluntarily incurred risks (e.g., those related to motorcycling without a helmet) that are "high," agencies should consider using lower values than those applied to reductions in involuntary risk. When a higher-risk option is chosen voluntarily, those who assume the risk may be more risk-tolerant, i.e., they may place a relatively lower value on avoiding risks. Empirical studies of risk premiums in higher-risk occupations suggest that reductions in risks for voluntarily assumed high risk jobs (e.g., above 10-4 annually) are valued less than equal risk reductions for lower-risk jobs. However, when occupational choices are limited, the occupational risks incurred may be more involuntary in nature.

C. *Cost Estimates*

. . .

As with benefit estimates, the calculation of costs should reflect the full probability distribution of potential consequences. Extreme values should be weighted, along with other possible outcomes, by estimates of their probability of occurrence based on the available evidence to estimate the expected result of a proposed regulation. If fundamental scientific disagreement or lack of knowledge precludes construction of a scientifically defensible probability distribution, costs should be described under plausible alternative assumptions, along with a characterization of the evidence underlying each alternative view. . . .