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# Responsible Regulation: A Sensible Cost-Benefit, Risk Versus Risk Approach to Federal Health and Safety Regulation

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# RESPONSIBLE REGULATION: A SENSIBLE COST-BENEFIT, RISK VERSUS RISK APPROACH TO FEDERAL HEALTH AND SAFETY REGULATION

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## SYLLABUS

*Federal health and safety regulations have saved or improved the lives of thousands of Americans, but protecting our citizens from risk entails significant costs. In a world of limited resources, we must spend our regulatory dollars responsibly in order to do the most we can with the money we have. Given the infeasibility of creating a risk-free society, this paper argues that a sensible cost-benefit, risk versus risk approach be taken in the design of U.S. regulatory oversight policy. The goal should always be to further the best interests of the nation, rather than to satisfy the narrow agenda of powerful industry or political forces. This entails designing safety regulations efficiently to maximize society's welfare, choosing the point where their marginal benefits equal their marginal costs—rather than simply asking whether total benefits exceed total costs in the aggregate. Federal regulatory oversight policy should also ask that proposed regulations compare the risks they reduce to the new risks they unintentionally create (substitution risks). Additionally, our citizens should be educated regarding systematic risk misperceptions, and regulatory agencies should make their risk assessments objectively. Moreover, most-likely scenarios must be addressed by responsible regulatory solutions, rather than the current practice of focusing on worst-case estimates. Finally, agencies should publish and justify their regulatory triggers and perform ex-post evaluations of their programs in an attempt to continuously improve the quality of regulatory design.*

*Efforts by the executive branch, from Presidents Ford, Carter, Reagan and Clinton, have attempted to inject similar common sense into the regulatory oversight process. Unfortunately, the Congressional mandates given to government agencies are often silent on the subject of cost-benefit analysis, and recent Supreme Court cases have held that regulatory agencies are not obligated to even consider the costs of their proposals. I will explore several legislative reform bills that are aimed at overriding Congressional mandates, but to date, none have been successful.*

*Finally, this paper will address certain common criticisms to which a marginal cost benefit, risk-risk approach to responsible regulatory reform would be subject. Most notably, the measurement of costs and benefits is not an exact science, and using "willingness to pay" as a marker of individual and*

*social utility has its limitations. Regulatory reform also faces challenges on moral grounds, as scholars openly decry the explicit tradeoff between human lives and financial resources. While these criticisms contain merit, this paper concludes that to ignore a sensible cost-benefit analysis of federal safety regulations is to divert resources from their most beneficial uses and to settle for second best. In a world of scarcity, we must make regulatory tradeoffs as efficiently as possible in order to do the greatest good for the greatest number, and to save the most lives we can. It would be unethical to do anything less.*

## INTRODUCTION

"We live in a world of limited resources." "We can't place a dollar value on protecting human life or preserving our environment." Neither statement taken independently strikes the reader as particularly controversial—they both seem perfectly reasonable. Yet there is an inherent and unmistakable tension between the two, for no society has unlimited resources to devote to the protection of human health and the creation of a risk-free world.[1] The questions become: Is it possible to balance the common sense concept of scarce public resources with our deep moral aversion to placing a dollar value on saving human lives? And, more importantly, *how* do we do it?

We would like to be able to protect every citizen from every harm in our society, but most understand this is neither possible nor financially feasible. Federal environmental and safety regulations aimed at preventing harm have yielded tremendous benefits, but they carry staggering costs—on the order of half a trillion dollars annually![2] However, despite this reality, there is a startling disconnect between common sense notions of maximizing the effect

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[1] *See* W. Kip Viscusi, *Regulating the Regulators*, 63 U. Chi. L. Rev. 1423, 1424 (1996) (noting that if all our resources were allocated to preventing accidental deaths, there would be nothing left to promote other aspects of social welfare); Thomas O. McGarity, *A Cost-Benefit State*, 50 Admin. L. Rev. 7, 38 (1998) (citing to statement of Frederick L. Webber at the Hearings Before the Senate Comm. on Govt. Affairs, 104th Cong. (1995): "no society has unlimited resources to devote to protecting health and environmental quality").

[2] *See* Thomas D. Hopkins, *Costs of Regulation: Filling the Gaps*, Report prepared for Regulatory Information Service Center 2 (August 1992) (summarizing annual cost of federal regulation for 1977, 1988, 1991 and 2000); Robert W. Hahn et al., *Assessing Regulatory Impact Analyses: The Failure of Agencies to Comply With Executive Order 12866*, 23 Harv. J.L. & Pub. Policy 859 (2000) (noting that "regulations aimed at protecting health, safety, and the environment alone cost over two hundred billion dollars annually—about two-thirds as much as outlays for federal, non-defense discretionary programs. Yet the economic impacts of federal regulation receive much less scrutiny than the budget"). Viscusi et al. estimate that total annual regulatory costs in America are approximately $500 to $600 billion. W. Kip Viscusi, John M. Vernon & Joseph E. Harrington, Jr., *Economics of Regulation and Antitrust* 34 (2d ed., MIT Press 1995). More dramatically, the regulatory cost per household in 1994 was roughly $5,935, a far from trivial figure that when aggregated across America amounts to nearly 10% of the nation's gross domestic product. *Id.*

of scarce resources and of actually putting that notion into practice in carrying out U.S. regulatory programs.[3] Hypothetically, would it be worth tens of millions of dollars to save one person's life if President Bush were to tighten arsenic standards in drinking water to the level proposed by President Clinton in his last days in office?[4] Or would that same money be better spent if it could save thousands of lives by providing subsidized food and prenatal care to

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[3] Federal regulatory agencies have long resisted efforts to require a cost-benefit analysis of their proposed regulations, relying on the absence of such a requirement in the Congressional mandates establishing their mission. For instance, the Occupational Safety and Health Act of 1970 provides that the objective of the Occupational Safety and Health Administration ("OSHA") is "to assure so far as possible [that] every working man and woman in the Nation [have] safe and healthful working conditions." 29 U.S.C. § 651(b) (1994). The Act also requires that the tasks imposed by OSHA regulations be "feasible," but there is nothing establishing any relationship between the benefits derived from the regulation and the costs imposed on society. *See* Viscusi, *supra* n. 1, at 1427. Moreover, the Supreme Court has expressly held that OSHA is not required to use cost-benefit balancing as a decision criterion in promulgating occupational health standards. *See Am. Textile Mfg. Inst. v. Donovan*, 452 U.S. 490, 506-22 (1981) (holding that OSHA is not required to use cost-benefit balancing as a decision criterion in promulgating occupational health standards, but rather feasibility analysis, according to the text of the statute and the legislative history). The Court ruled the same way with respect to EPA regulations governing air quality standards, stating that cost considerations need not be considered under the Clean Air Act since the legislation itself imposes no such requirement. *See Whitman v. Am. Trucking Assns.*, 121 S. Ct. 903, 909-11 (2001) (interpreting the Clean Air Act as "unambiguously" barring cost considerations).

[4] Three days before leaving office in January of 2001, President Clinton proposed a change in maximum arsenic levels tolerated in public drinking water. The Clinton regulation would tighten the allowable arsenic level from 50 parts per billion (ppb) to 10 ppb. *See* John Heilprin, *Environmental Group Sues EPA*, Associated Press (June 28, 2001) (available in 2001 WL 24030069) (stating that President Clinton announced the 10 ppb standard three days before leaving the office in January). However, no cost-benefit analysis of this tightening was conducted, and President Bush suspended the standard until February 2002 in order to allow further study of the risks involved at various levels of arsenic exposure. At a minimum, one would think it sensible to engage in a calculation of the number of lives saved by requiring safer drinking water, compared to the costs of making our water that much cleaner. In addition to direct costs involved in purifying water, those costs should also include any injuries or deaths that could possibly occur in the construction of new, cleaner water wells, especially in western states where naturally occurring arsenic is present in higher levels. This reasoning is implicit in new EPA head Christine Todd Whitman's decision to ask the National Academy of Sciences to study the risk factors involved in setting the standard at anywhere from 3 ppb to 20 ppb. *See id.* (stating that Whitman announced that the EPA will set a new arsenic standard for communities to comply with starting five years from now and that she asked the National Academy of Sciences to study the risk factors involved with setting the standard anywhere from 3 ppb to 20 ppb). However, the Senate and House of Representatives recently voted to overturn the Bush administration decision to study the matter further, effectively instituting the 10 ppb standard. *Infra* n. 166 (discussing recent Senate and House vote).

low-income mothers and free vaccinations to their babies? If we allocated all our resources to preventing accidental deaths in one area, we would have nothing left over to spend to prevent cancer or to provide food, housing or medical care.[5]

To a large degree, the problem is one of public perception. No politician wants to admit that "we can't save that elderly person's life or institute a proposed environmental protection program, because it will simply cost us too much money to do so."[6] Yet, this cost-benefit rationale is inherent in countless personal decisions made everyday, from what career to pursue to what city in which to reside. Similarly, in the regulatory arena, fiscal balancing of the costs against the benefits should play a role in responsible decision-making. The tradeoff between costs and results is always present, but we are sometimes gripped by a fear that prevents us from acknowledging it openly. This reluctance limits us as a society because it diverts resources from where they are most needed. Even worse, this diversion is not based on a well-articulated reason, but rather on a fear of the repercussions experienced by those who voice such opinions. For instance, can you imagine a Presidential candidate who said on election-day eve, "I want to do the greatest good for the greatest number, and that means I choose not to help you." Not likely.

This paper proposes that given the reality of limited public resources, America must efficiently reformulate its environmental and health regulatory policies in order to save and improve the most lives possible given the accompanying costs. This is not always going to be politically correct. It entails making tough choices and preferencing certain programs and policies over others, which necessarily implies that some causes will be sacrificed for the greater good. But I urge that given our reality, society must consider carefully how *best* to structure federal regulatory oversight policy—not how to make it *perfect.* Perfection is dangerous precisely because it cannot ever be achieved. This paper therefore concentrates on how to efficiently formulate government regulations under the constraint of limited resources, in the hope that such an approach will maximize the overall benefits to our society.

In pursuit of optimal regulatory policy then, Part I of this paper will examine the framework of the problem that regulatory programs face in the United States. Congress is justly empowered to legislate and regulate to promote the health and safety of Americans where the unfettered market fails to do so.[7]

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[5] *See* Viscusi, *supra* n. 1, at 1424.

[6] In the healthcare arena, this dilemma is illustrated most vividly by the rise of managed care and the tension that HMOs create between providing medical care and saving financial resources. Although the goal of healthcare providers has traditionally been to save lives—at whatever expense—managed care has introduced financial incentives for physicians to limit care where the benefits are small compared to the costs. *See* Steve P. Calandrillo, *Corralling Kevorkian: Regulating Physician-Assisted Suicide in America,* 7 Va. J. Soc. Policy & L. 41, 72-80 (1999) (explaining that managed care has introduced financial incentives for physicians to limit care when benefits are small relative to the costs).

[7] *See* U.S. Const. art. I, § 8, clause 1 ("The Congress shall have Power To . . . provide for

Thus, the first line of inquiry when considering any safety regulation should be to ask: "What is the market failure or externality that justifies federal regulation in the first place, and how can government solve it?" Assuming that regulation is required, we must carefully consider what society's overall objective should be. Rather than serving powerful forces in industry or government, federal health and environmental regulation should always seek to promote our nation's and citizens' best interests.[8] We must also be mindful of the fact that even where the unregulated market fails to work efficiently, that does not necessarily mean we are going to witness a perfect form of intervention from the federal government.[9]

Part II takes up the abstract question of designing regulations efficiently, initially discussing the infeasibility of creating a risk-free society. It then details the various measures of economic efficiency that society might collectively pursue,[10] from narrow wealth-maximization (Kaldor-Hicks efficiency) to measures that concentrate far more on distributive justice concerns, such as Pareto efficiency, Rawlsianism, and equalitarianism.[11] I argue that in our pursuit of "efficient" regulatory solutions, overall wealth maximization should and will be balanced against equity considerations and

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the common Defence and general Welfare of the United States . . . ."). Congress does not usually draft specific regulations but instead defines broadly the legislative objectives of regulatory agencies. The agencies then implement these goals subject to deferential judicial review and the review process of the executive branch. Viscusi, *supra* n. 1, at 1426.

[8] *See* George J. Stigler, *The Theory of Economic Regulation*, 2 Bell J. Econ. & Mgt. Sci. 3 (1971) (warning against potential abuses stemming from industry or interest group "capture" of regulatory agencies and stating that "as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit"). *Cf.* Eric A. Posner, *Cost-Benefit Analysis as a Solution to a Principal-Agent Problem*, 53 Admin. L. Rev. 289 (2001) (casting American government as a principal-agent example, with agent subject to third party political pressures that can affect the agent's actions with respect to its responsibilities to the principal); Jefferson D.E. Smith & Steve P. Calandrillo, *Forward to Fundamental Alteration: Addressing ADA Title II Integration Lawsuits After Olmstead v. L.C.*, 24 Harv. J.L. & Pub. Policy 695, 716-18 (2000) (discussing public choice theory and the capture of state legislative bodies).

[9] *See* Charles Wolf, *Markets or Governments: Choosing Between Imperfect Alternatives* 171-77 (MIT Press 1993) (developing a framework for analyzing and anticipating the shortcomings of government. The framework—a theory of nonmarket failure—provides a basis for comparison and choice between markets and governments.).

[10] Economists have devised many ways to measure economic efficiency and social welfare. Generally, the term "economic efficiency" refers to the principle of wealth-maximization, also known as Kaldor-Hicks efficiency. *See* Richard A. Posner, *Economic Analysis of Law* 13-14 (4th ed., Little Brown 1992) (stating that many economists use the Kaldor-Hicks definition of efficiency). Many other forms of measuring social welfare exist, including Pareto efficiency, Rawlsianism, and equalitarianism. For a discussion, *see infra* Part II.B.

[11] *See* Joseph E. Stiglitz, *Economics of the Public Sector* 52-69 (1986).

"soft" variables such as concern for the well-being of our environment.[12] Utility calculations necessarily build in the value that people derive from these variables, and hence, society's taste for fairness, morality, and distributional equity are not omitted.

Part III of this paper outlines an alternative regulatory approach for America, proposing a sensible cost-benefit, risk versus risk approach to easing the tension between scarce public resources and the deontological value of protecting human lives. In analyzing this tradeoff, we as a caring, thoughtful society should require a cost-benefit analysis of all potential government regulation,[13] whether it is aimed at making our environment, air, water, food, or workplace safer.[14] I take this cost-benefit notion one step further than most

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[12] Harvard Law School Professor Christine Jolls, for example, has argued that society should and does care about more than just economic efficiency in the narrow sense, as distributive concerns matter as well. Christine Jolls, *Behavioral Economic Analysis of Redistributive Legal Rules*, 51 Vand. L. Rev. 1653, 1654 (1998) (analyzing distributive legal rules). For instance, it might maximize overall social wealth to choose to give an extra $1 billion to Bill Gates instead of giving $900 million to the poorest members of society. Certainly, however, most people's taste for distributive justice, fairness, and equity would lead them to derive greater utility from aiding the poor before the rich. Moreover, the marginal utility of $1 to a poor person is usually significantly greater than the marginal utility obtained from that same dollar in the hands of a wealthy individual. Posner, *supra* n. 11, at 458.

[13] Traditional cost-benefit analysis is generally defined as the "identification, measurement and comparison of the costs and benefits of a project in order to decide whether or not it should go ahead." *See* John Sloman, *Economics* 312 (4th ed., Pearson Educ. 2000).

[14] Existing regulations governing these areas include: the Clean Air Act of 1955, 42 U.S.C. §§ 7401-7671 (1994) (making the EPA's mission to "protect and enhance the quality of the Nation's air resources"); the Federal Water Pollution Control Act of 1948, 33 U.S.C. §§ 1251-1387 (1994) and the Safe Drinking Water Act of 1974, 42 U.S.C. §§ 300f to 300j-26 (1994) (addressing concerns about pollution of water resources and the quality of water used for human consumption); the Federal Food, Drug and Cosmetic Act of 1938, 21 U.S.C. §§ 301-395 (1994) (establishing the Food and Drug Administration to "promote the public health by promptly and efficiently reviewing clinical research and taking appropriate action on the marketing of regulated products"); and the Occupational Safety and Health Act of 1970, 29 U.S.C. §§ 651-678 (1994) (declaring Congress' goal to "assure so far as possible every working man and woman in the Nation safe and healthful working conditions").

Despite the fact that these legislative mandates make no mention of cost considerations, the executive branch has in fact attempted to institute sensible cost-benefit requirements for U.S. regulatory programs in the past. *See infra* Part IV.A (discussing executive oversight of U.S. regulations, as found, inter alia, in Reagan's Executive Order No. 12291, Clinton's Executive Order No. 12866, and the role that the Office of Management and Budget ("OMB") plays in evaluating federal regulatory policy). However, precisely because the legislative mandates are silent on the subject of cost-benefit analysis, our courts are often unable to enforce such a common sense approach to regulation and occasionally prohibit it outright. *See Am. Trucking Assns.*, 121 S. Ct. at 908-09 (declining to read consideration of costs into Clean Air Act authorization of enforcement by the EPA).

commentators by suggesting that not only should overall costs and benefits of potential programs be evaluated, but that government agencies must act to set the appropriate regulation at the level where *marginal* benefits equal *marginal* costs.[15] Setting our regulatory triggers at this point will have a far greater impact on improving overall social welfare than an absolute cost-benefit comparison would. Most everyone in society should favor a form of regulation that maximizes the benefits *minus* the costs, and not one that merely asks whether the benefits *exceed* the costs in the aggregate.[16]

Beyond marginal cost-benefit analysis, Part III articulates several additional proposals for improving the quality of U.S. regulatory programs. First, federal safety regulations should assess substitution risks created. This process, sometimes referred to as "risk-risk"[17] or "health-health"[18] analysis, simply means that the risks unintentionally *created* by the imposition of a new regulation should never outweigh the risks reduced or alleviated by that regulation.[19] Additionally, we must strive to eliminate the extreme risk

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[15] The difference between *simple* cost-benefit analysis and *marginal* cost-marginal benefit analysis will be outlined *infra* Part III.B.

[16] For example, it might make sense to limit arsenic levels in drinking water to 10 ppb instead of the current 50 ppb because it is economically feasible to do so, and the payoff in terms of human lives saved is significant despite the costs. But, it might also make sense *not* to continue tightening the arsenic standard from 10 ppb down to 3 ppb if the costs increase exponentially in that next interval with only a small benefit to human quality of life, even if *overall* benefits to society continue to be greater under a 3 ppb standard than under the current 50 ppb standard. This logic is implicit in EPA director Christie Todd Whitman's decision to ask the National Academy of Sciences to study the risk factors involved in setting the standard at anywhere from 3 ppb to 20 ppb. *See* Heilprin, *supra* n. 4.

[17] *See generally* Lester Lave, *The Strategy of Social Regulation: Decision Frameworks for Policy* 15-17 (Brookings 1981) (stating that the risk-risk framework allows consideration of beneficial health effects along with adverse health effects).

[18] *See* Cass R. Sunstein, *Health-Health Tradeoffs*, 63 U. Chi. L. Rev. 1533, 1535 (1996) (raising problem of diminishing one health risk but, as a result, increasing another health risk).

[19] Viscusi et al. note the hypothetical example of an automobile safety regulation that requires car owners to return to the dealer where they purchased their vehicle in order to receive a very minor, but government mandated, repair. Since all driving involves some degree of danger, if the admittedly small risk created by requiring owners to drive the distance to their dealer is greater than the minor safety benefits produced by the regulation, society would be better served not to impose it. Viscusi et al., *supra* n. 2, at 705. Additionally, in the context of regulating arsenic levels in drinking water, George Will notes that the proposed Clinton standard might increase costs so much that people will be forced to dig their own wells, thereby increasing their exposure to arsenic in the soil. The possibility of these unintended consequences must be considered before implementing any regulation. George Will, *Sacramento Bee, Sacbee Voices, The Costs of Moral Exhibitionism* <http://www.sacbee.com/voices/national/will/will_20010415.html> (Apr. 15, 2001) ("[T]here are unanticipated consequences. . . . [I]n rural jurisdictions with small tax bases, the Clinton standard might have increased water costs so much that people would have dug

conservatism that has plagued projections of the costs and benefits of safety regulations in the past. Such "worst-case scenario" estimates lead to grossly distorted outcome predictions and may cause regulations to fail to respond appropriately to the true risks presented.[20] The Environmental Protection Agency ("EPA"), for example, at one time assessed the risk posed by air pollution by defining the upper bound as the risk to a person who lived twenty-four hours a day for seventy years at the location expected to receive the heaviest concentration of the pollutant![21] Our risk assessment policies must instead seek to address *most-likely* scenarios, drawing upon independent, unbiased sources of scientific data.[22] Furthermore, the government must educate our citizens in order to correct societal risk misperceptions and biases, as people tend to systematically overestimate the risks of terrifying (but low probability) events[23] and underestimate the chances of relatively common (but very serious) risks.[24] Finally, government agencies should be required to publish and justify their regulatory triggers and to perform ex-post evaluations of their programs, in the hope that measurement of results provides a baseline for continuous quality improvement.[25]

Next, Part IV will discuss previous efforts of the executive and legislative branches designed to achieve some of the regulatory reform goals proposed above. Presidents Nixon, Ford, Carter, Reagan and Clinton have all introduced notable programs and executive orders designed to improve the quality and efficiency of U.S. health and safety regulations.[26] Reagan's Executive Order 12,291 was the first to require that agencies demonstrate that the benefits of

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their own wells, thereby increasing their exposure to arsenic.").

[20] *See* Stephen Breyer, *Breaking the Vicious Circle: Toward Effective Risk Regulation* 48-50 (Harvard U. Press 1993) (discussing the effects of worst-case risk analysis). *See also* Adam M. Finkel, *A Second Opinion on Environmental Misdiagnosis: The Risky Prescriptions of Breaking the Vicious Circle*, 3 N.Y.U. Envtl. L.J. 295, 334 (1994) ("The assertion that current modes of risk assessment routinely produce results that are wildly conservative, and the implicit message that such results are unscientific and undesirable, has been repeated so often in the last several years that it has become somewhat of a mantra.").

[21] McGarity, *supra* n. 1, at 22. This fictional person was called "Maximan," the man who endured the maximum level of risk exposure conceivable.

[22] *Cf.* W. Kip Viscusi, *Risk by Choice: Regulating Health and Safety in the Workplace* 160-61 (Harvard U. Press 1983) (articulating his argument for fostering market control of job risks because firms' self-assessments of their job risks will be the most accurate).

[23] Viscusi et al., *supra* n. 2, at 662. For example, Americans tend to overperceive the risk of tornadoes, floods and even contracting botulism. *Id.* at 662.

[24] *Id.* People underestimate the risks of relatively common tragedies, such as death from cancer, heart disease and stroke. *Id.*

[25] *See* Viscusi et al., *supra* n. 2, at 138-55 (discussing the country's past methods of regulatory review and other initiatives).

[26] *See infra* Part IV.A, for a discussion of Executive Orders No. 11821 (President Ford), No. 12044 (President Carter), No. 12291 (President Reagan), No. 12498 (President Reagan), and No. 12866 (President Clinton).

their regulations exceed their costs, provided that such a comparison was not explicitly prohibited by the governing statute.[27] The Clinton administration continued this policy in Executive Order 12,866, introducing more qualifying language to allow for the common sense notion that not all costs and benefits are easily quantifiable.[28]

While the achievements made possible by executive oversight have been notable, the success of regulatory reform proposals may also implicitly depend upon rewriting the existing legislative mandates given to government agencies by Congress. Often, the relevant statutory authority governing the mission of U.S. regulatory agencies is oblivious to marginal cost-benefit assessments, or it may even prohibit such comparisons outright.[29] For instance, the Occupational Safety and Health Administration ("OSHA") is charged with assuring "so far as possible [that] every working man and woman in the Nation [have] safe and healthful working conditions."[30] This mandate ignores the fact that nothing can ever be made 100% safe, and that extreme safety precautions necessarily entail extreme costs. Instead, the congressional mandates given to federal regulatory bodies should require, or at a minimum, permit cost-benefit and risk-risk tradeoffs to be made. Such an approach will empower courts to enforce common sense notions about how to best allocate scarce public resources in order to benefit a greater number of our citizens than we do today. Modifying legislative mandates will also force regulatory decision-makers to be accountable for the policy choices they make.

I will explore congressional proposals aimed at incorporating these

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[27] *See* Exec. Or. 12291, 3 C.F.R. 127, 128-29 (1981) (requiring that regulatory action not be undertaken, to the extent permitted by law, unless benefits outweigh costs).

[28] *See* Exec. Or. 12866, 3 C.F.R. 638, 639 (1993) (stating that regulatory agencies must consider both quantitative and qualitative measures of benefits and costs).

[29] For example, the language of the Clean Air Act has been interpreted by courts to prohibit consideration of economic feasibility in setting air quality standards. *See Lead Indus. Assn. v. EPA*, 647 F.2d 1130, 1151 (D.C. Cir. 1980) (holding that the "administrator was not required or allowed to consider economic or technological feasibility in setting the air quality standards"); *Whitman v. Am. Trucking Assns*, 121 S. Ct. at 911 (holding unanimously that the Clean Air Act allows the EPA to consider only public health in setting national ambient air quality standards, rather than the cost-benefit analysis proposed by industry challengers.)

[30] 29 U.S.C. § 651(b) (1994). The Act also requires that the tasks imposed by OSHA regulations be "feasible," but "nothing establishes any necessary relationship between the benefits derived from the regulation and the costs imposed on society." Viscusi, *supra* n. 1, at 1427. Moreover, the Supreme Court has expressly held that OSHA is not required to use cost-benefit balancing as a decision criterion in promulgating occupational health standards. *See Am. Textile Mfg. Inst.*, 452 U.S. at 509. *But cf. Indus. Union Dept., AFL-CIO v. Am. Petroleum Inst.*, 448 U.S. 607, 642-52 (1980) (holding that OSHA must show that the hazards regulated pose a "significant" risk to human health and are "reasonably necessary or appropriate to provide safe or healthful employment," but leaving unresolved the cost-benefit tradeoff issue).

concepts, including H.R. 1022, the Risk Assessment and Cost-Benefit Act of 1995.[31] H.R. 1022 would have overridden all legislative mandates to add a cost-benefit assessment provision.[32] It would have required that benefits be "reasonably identifiable" and "significant,"[33] and that risk calculations be scientifically objective and unbiased.[34] It also asked that agencies recognize and incorporate analyses of substitution risks in their assessments of regulatory policies.[35] In 1997, the Thompson-Levin regulatory reform bill took a step back from this proposal, and ironically, its moderation may have caused its downfall.[36] More recently, a number of regulatory reform bills have been proposed, including the OSHA Reform Act of 1999, the Regulatory Improvement Act of 2000, and the Air Quality Standard Improvement Act of 2000, which would have added a risk assessment and cost-benefit analysis section to the Clean Air Act.[37] However, none have succeeded yet in fundamentally changing the way regulatory agencies conduct their business. In addition to these efforts, Part IV will explore several other ideas discussed in recent American history to improve regulatory oversight programs. For example, Supreme Court Justice Stephen Breyer has proposed the creation of a "civil service elite" group which would gather expertise on regulatory policy,[38] while others have suggested the implementation of regulatory budgets to help control skyrocketing agency costs.[39]

The above proposals for improving federal regulatory oversight programs

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[31] H.R. 1022, 104th Cong. (1995).

[32] *Id.* at § 103 (stating applicability of bill).

[33] *Id.* at § 4(2) (defining "benefit").

[34] *Id.* at § 102(1) (stating that a purpose of the act is "to present the public and executive branch with the most scientifically objective and unbiased information concerning the nature of health, safety, and environmental risks in order to provide for sound regulatory decisions and public education").

[35] *Id.* at § 105(4) (listing as a requirement for every assessment and regulation promulgation a "significant risk characterization document").

[36] Allan Freedman, *Regulatory Bill's Moderation May Be Its Weakness*, 55 Cong. Q. 2075 (1997). Other mid-1990s attempts at legislative reforms included the Superfund Reform Act of 1995 and the Department of Energy Risk Management Act of 1995.

[37] OSHA Reform Act of 1999, H.R. 1192, 106th Cong. (1999); the Regulatory Improvement Act of 2000, H.R. 3311, 106th Cong. (1999); the Air Quality Standard Improvement Act, S. 2362, 106th Cong. (2000). The Air Quality Standard Improvement Act would have applied to seventeen different types of regulations authorized under the Clean Air Act, including national ambient air quality standards. Bass, Berry & Sims PLC, *Proposed Federal Bill Would Add Cost-Benefit Requirement*, 12 No. 3 Tenn. Envtl. L. Ltr. 4 (April 2000) (available in WL 12 No. 3 SMTNENVLL 4).

[38] *See* Breyer, *supra* n. 20, at 59-81 (proposing the creation of a group of elite civil service workers with experience in health and environmental agencies, Congress and OMB, and the creation of a small, centralized administrative group).

[39] *See* Viscusi et al., *supra* n. 2, at 41-42 (stating that "a frequent proposal has been to replace the oversight process through a system known as a regulatory budget").

have significant public support, for they are founded upon the utilitarian ideal of maximizing overall social welfare. However, Part V acknowledges the strong practical and moral resistance to explicitly considering the costs and limits of society's resources against the value of human lives when formulating public safety regulations.[40] First, accurately measuring the costs and benefits that stem from a given regulation is a tricky task. Even if we can measure how much a regulatory program costs per life saved, how do we convincingly assign a numerical value to a human being's life in the first place? This dilemma is complicated by the fact that regulatory programs must attempt to value extremely small changes in risk level, rather than their complete elimination.[41] Furthermore, can we assess a person's quality of life as opposed to merely measuring the quantity of lives saved? And, what about the problems of survey bias and of discounting these values for future effects?

Moreover, some have raised serious moral criticisms, openly deriding cost-benefit analysis as incurably insensitive to the intrinsic value of life.[42] As Professor Douglas McClean has observed, to "assign . . . value to such benefits is to treat them as commodities when they really have a different kind of value—a sacred value perhaps—and should be regarded as such."[43] He is not the first scholar to criticize those who could possibly be crass enough to place a dollar value on the saving of a human being's life. This moral resistance also surfaces in the rhetoric of our politicians and in the language of our existing federal regulatory legislation. Our policies often eschew cost-benefit analysis as irresponsible and insensitive to the ultimate goal at hand, and instead opt for

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[40] *See* Martha Nussbaum, *The Costs of Tragedy: Some Moral Limits of Cost-Benefit Analysis*, 29 J. Leg. Stud. 1005, 1032 (2000) (counseling against cost-benefit analysis on the ground that the results reached may be subject to "serious moral wrongdoing"); Henry S. Richardson, *The Stupidity of the Cost-Benefit Standard*, 29 J. Leg. Stud. 971, 984-85 (2000) (arguing that cost-benefit analysis is unable to provide a standard for public choice because it is unable to refashion aims in light of new information); Amartya Sen, *The Discipline of Cost-Benefit Analysis*, 29 J. Leg. Stud. 931, 945-46 (2000) (explaining that cost-benefit analysis is limited because of signaling issues, such as distributional valuations and values of externalities and interdependencies, and problems with valuing public goods); Lynn E. Blais, *Beyond Cost/Benefit: The Maturation of Economic Analysis of the Law and Its Consequences For Environmental Policymaking*, 2000 U. Ill. L. Rev. 237, 249-50 (2000) (arguing against overreliance on quantifying costs, benefits and risks because the value of environmental protection cannot be measured in economic terms).

[41] *See* Lewis A. Kornhauser, *On Justifying Cost-Benefit Analysis*, 29 J. Leg. Stud. 1037, 1050-51 (2000) (describing difficulties inherent in valuing changes for the survival prospects of human beings, rather than valuing a certain loss or saving of life). *See also* Viscusi et al., *supra* n. 2, at 686-88 (discussing society's willingness to pay for eliminating small probabilities of death or adverse health effects).

[42] *See* Curtis Moore, *The Impracticality and Immorality of Cost-Benefit Analysis in Setting Health-Related Standards*, 11 Tul. Envtl. L.J. 187, 208-10 (1998) (decrying the use of cost-benefit analysis as sole criterion in health regulation because, inter alia, the concept of monetizing life is antithetical to American values).

[43] McGarity, *supra* n. 1, at 63.

a world that should be made *as safe as possible—whatever the costs may be.*[44]

I am the first to agree that there are serious problems that would make any marginal cost-benefit standard subject to potential manipulation and abuse. But that does not mean we should not try to improve upon what we currently have. The difficulty of measuring these values does not undermine the principle that responsible regulatory programs should focus their efforts where they can save the most lives given limited resources. We as a country would be foolhardy to choose to ignore cost, benefit and risk tradeoffs merely because of the difficulty in their assessment, because we would then be consciously deciding to do something less than the best we can. Thus, despite the valid concerns raised by critics, we must strive to conquer these problems if our ultimate goal is the betterment of society and the maximization of scarce resources.

Finally, we should bear in mind in conducting the foregoing regulatory oversight analysis that it is a matter of common sense that people weigh costs and benefits in making life decisions all the time. American businesses make cost-benefit and cost-effectiveness calculations daily. While individuals are understandably upset by public health and safety decisions that explicitly trade off lives for dollars, no one really wants to spend everything on safety.[45] Policymakers should similarly be able to balance costs, benefits and risks openly in America's regulatory oversight policy. The choice is not between helping *all* of our citizens or helping *none*. Given limited resources, the government can only help *some*. This paper is therefore intended to provoke thought about how responsible, efficient regulatory policy can maximize the number and the value included within that "some."

## I. WHY REGULATE AT ALL?

It is undisputed that Congress has the power to regulate in order to promote the health of our citizens and safety of our environment.[46] It is with this noble

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[44] Only a few months ago, the United States Supreme Court again echoed this aversion to considering costs in its interpretation of the Clean Air Act, ruling that such expenses could not be considered in the establishment of air quality standards. *See Am. Trucking Assns.*, 121 S. Ct. at 911-12 (holding that Congress required EPA to conduct feasibility analysis, not cost-benefit analysis, in promulgating air quality regulations). While the principle of placing safety above money is unquestionably noble, ignoring the costs of regulations because we cannot face the reality of comparing them to the benefits created is not a responsible decision. Resources that are spent unwisely or excessively in one area are resources that are no longer available to benefit our country in numerous other more cost-effective ways.

[45] Mark Geistfeld, *Reconciling Cost-Benefit Analysis With the Principle That Safety Matters More Than Money*, 76 N.Y.U. L. Rev. 114, 116 (2001). *Cf.* Viscusi, *supra* n. 1, at 1424 (adding that "if we allocated all of our resources to preventing accidental death, we would have nothing left to spend to prevent cancer, or to provide food, housing, medical care, and so on").

[46] U.S. Const. art. I, § 8, clause 1 ("The Congress shall have Power To . . . provide for

and paternalistic mission that Congress has enacted groundbreaking legislation that has saved or improved the lives of thousands of Americans.[47] Before any argument can be made about *how* to formulate optimal U.S. regulatory policy, however, we must ask *why* any regulation is necessary in the first place.

### A. *Market Failures and Externalities*

The traditional economist's answer to the question of "Should we regulate?" might run along these lines: "Let the unencumbered market work to solve the problems that are out there in society. Government regulation is not nearly as efficient."[48] The basic idea is that if there is a problem with drinking water or air pollution or food safety, concerned citizens will demand that the market provide a solution. Consumers will be willing to pay higher prices in order to ensure that the safety level of the products they buy meets their needs and desires. Consequently, some might argue that there is no need for the government to regulate arsenic levels in tap water at all—rather, concerned consumers will ask for it, pay more money for it, and producers will deliver what their customers desire.

This response is imperfect and overly simplistic. In many areas of public life, market failures, negative externalities, and insurmountable transaction costs exist that justify and require government intervention for resolution.[49]

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the common Defence and general Welfare of the United States . . . .").

[47] *See e.g.* the Clean Air Act, 42 U.S.C. §§ 7401-7671 (1994); the Occupational Safety and Health Act, 29 U.S.C. §§ 651-678 (1994); the Federal Food, Drug and Cosmetic Act, 21 U.S.C. §§ 301-395 (1994); the Clean Water Act, 33 U.S.C. §§ 1251-1387 (1994). *See also* Environmental Protection Agency, *EPA Environmental Economics Report Inventory: The Benefits and Costs of the Clean Air Act 1990 to 2010*, EPA Report to Congress <http://www.epa.gov/air/sect812/copy99.html> (Nov. 15, 1999) (detailing effects of Clean Air Act legislation, and finding that benefits significantly outweighed costs of regulation entailed). Additionally, the National Highway Traffic Safety Administration—part of the Department of Transportation—estimates that Department of Transportation regulations requiring airbags in vehicles have saved 4,011 drivers and 747 passengers between the date of imposing the regulations and the end of 1999. National Highway Traffic Safety Administration, *Safety Fact Sheet* <http://www.nhtsa.dot.gov/airbags/factsheets/numbers.html> (Nov. 2, 1999). Moreover, 100 lives were saved in eighteen months as a result of Centers for Disease Control and Prevention ("CDC")-funded smoke alarm installation and fire-safety education programs in thirty high-risk communities in fourteen states. H.R. Subcomm. on Labor-Health and Human Services-Education Appropriations of the Comm. on Appropriations, *Hearing on Centers for Disease Control and Prevention Fiscal Year 2002 Presidential Budget Request*, 107th Cong. (May 3, 2001) (available in 2001 WL 2007624) (Testimony of Jeffrey P. Koplan, Director of CDC).

[48] *See e.g.* Sloman, *supra* n. 13, at 320-21 (explaining the arguments in favor of laissez-faire or non-market intervention). Sloman states that "government intervention in the market can itself lead to problems. . . . Although markets in the real world are not perfect, even imperfect markets can be argued to have positive advantages over government provision or even government regulation." *Id.* at 321.

[49] Viscusi notes that since the 1970s,

"Market failures" are problems that, by definition, free markets are unable to solve if left to their own devices.[50] Two of the most frequently discussed examples are the "tragedy of the commons" and the "free-rider problem" in the context of paying for public goods.

The prototypical tragedy of the commons dilemma involves a town commons where all of the locals may graze their sheep and farm animals.[51] There is no private ownership of the commons; rather, it is free for everyone to use as much as and as often as he or she likes. Unfortunately, given the unbeatable price users are asked to pay, everyone has an incentive to use the land as much as possible and as quickly as possible. This outcome would be acceptable if the commons could replenish itself in perpetuity, but of course that is not the case. Dramatic overuse inevitably results, stripping the land of its resources until it is left barren and worthless. The commons would have been far better utilized if sensible limitations were placed on the amount of grazing in which townspeople could engage, such that the land could renew itself and all could continue to benefit.

An economist might argue that private ownership would solve the overuse problem, because a single owner would have an incentive to maximize the life of and return from her land. Hence, she would charge a fee to users in order to restrict use to the optimal level, which in turn would extend the life of the land (and her profits) in the years to come. Alternatively, if public ownership continued, the government could either charge an admission fee in order to restrict use to the socially appropriate level, or it could set grazing limitations. This kind of government regulation would place citizens' private incentives and allowable actions in line with the greater public good. Hence, overall social welfare would improve: Townspeople would either be required to adhere to the grazing regulations, or if charged for admission, they would pay the fee only if the benefit to their livestock exceeded the cost of grazing on the

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there has been a tremendous growth in government regulation pertaining to risk and the environment. These efforts have emerged quite legitimately because market processes alone cannot fully address risk-related concerns. Without some kind of regulation or liability, for example, firms lack appropriate incentives to restrict their pollution. Similarly, when products or activities are extremely risky, if people are not cognizant of the risks they face, the firms generating the hazards may not have adequate incentives to issue warnings.

Viscusi, *supra* n. 1, at 1423.

[50] *See* Sloman, *supra* n. 13, at 297 (giving various reasons why "in the real world markets will fail to achieve social efficiency," and noting that, in any case, achieving social efficiency is not the government's only goal). *But cf.* Richard Zerbe, Jr., & Howard McCurdy, *The Failure of Market Failure,* 18 J. Policy Analysis & Mgt. 558 (1999) (noting the limitations of traditional market failure analysis, and explaining market failures from the perspective of transaction costs instead).

[51] For a general description of the tragedy of the commons, *see* Garrett J. Hardin, *The Tragedy of the Commons,* 162 Sci. 1243, 1243 (1968) (explaining the tragedy of the commons as a population problem with no technical solution).

common.[52]

While either government regulation or private ownership might solve the tragedy of the commons, the use of regulation is particularly compelling in the case of public goods and the free-rider problem.[53] "Public goods" are defined as those that benefit everyone, and for which it is impossible to exclude anyone from enjoying the benefits.[54] The paradigmatic example is the maintenance of a nation's military.[55] All citizens benefit, whether or not they believe in the merits of creating and maintaining a military force. There is no enforceable system in which one individual could "opt out" of military protection and receive a commensurate and proportional tax refund. If the country went to war, presumably that person would benefit from military protection just as any other tax-paying citizen would. The only difference is that the conscientious objector, unlike her neighbors, would enjoy the benefits without shouldering any of the costs.

It is not difficult to see that most market systems would collapse if free-riding were allowable. If one knows that all of one's neighbors are contributing to build a military force or to enhance environmental safety, one's incremental contribution—or lack thereof—will do very little to change whether or not the program gets funded and how good the program is. From each individual's perspective, nobody wants to pay, preferring instead to free-ride off everyone else's tax dollars (assuming there is no way of excluding the non-payers from receiving the benefit of military protection).[56] Since everyone has exactly the same incentive to refuse to pay, nothing gets accomplished—even though all would have been better off making their modest contributions and enjoying the security of knowing that their nation had adequate defenses or that they were living in a safer environment.

The free-rider dilemma, like the tragedy of the commons, is caused at its roots by a fundamental divergence between the private problem facing an

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[52] One should note that both private ownership or government intervention should prove successful in curing the tragedy of the commons. Private markets, however, have far more trouble solving the free-rider problem in the context of providing public goods; thus, government regulation may provide the only realistic solution. *See* Edward M. Gramlich, *A Guide to Benefit-Cost Analysis* 17-18 (2d ed., Prentice-Hall 1990) (discussing the problem of free-riding, and noting that private market mechanisms for achieving a social optimum theoretically exist but that a feasible system would be "very difficult to work out").

[53] *See* Sloman, *supra* n. 13, at 299 (discussing external benefits to individual actions).

[54] *Id.* at G-13 (defining public goods as "goods or services that have the features of non-rivalry and non-excludability and as a result would not be provided by the free market"). Gramlich, *supra* n. 52, at 17.

[55] The preservation of air quality and the environment, however, also fits well.

[56] *See* Sloman, *supra* n. 13, at 297 (describing externalities as side-effects of the actions of producers and consumers); Gramlich, *supra* n. 52, at 17. Non-excludability of a good or service simply means that it is impossible to provide it to one person without it then being freely available to all others. Non-excludability is thus a key characteristic of public goods, and it is a main reason why the market mechanism will not adequately provide for them.

individual and the overarching problem facing society as a whole. Thus, the key to solve it then is to align private incentives with optimal social incentives. Sometimes allowing private ownership can alleviate these problems—indeed, the tragedy of the commons is one of the foremost justifications for the advent of private property rights in the first place. But private ownership is not a universal panacea. Simply privatizing our military would not eliminate the free-rider problem because no feasible method exists for excluding non-payers from military protection. If we are going to have a military, *all* citizens will benefit regardless of whether or not an individual citizen pays her share. Likewise, there is no feasible manner of privatizing the environment in order to keep our air or water clean. This is where government regulation must step in and play a vital role. Taxes must be imposed on all citizens, forcing everyone to contribute to the maintenance of the public good or the purification of our environment, from which we all will benefit.

These simplistic economics examples are admittedly imperfect analogies to the problems that federal health and safety regulations are designed to solve, but they highlight the crucial point that market failures sometimes do occur that require government intervention to remedy. We must not, however, lose sight of the threshold issue: What is the market failure (or negative externality or insurmountable private transaction cost) that justifies government regulation in the first place? This question is critical because, if there is no market failure present, it is a needless diversion of scarce public resources to impose costly regulations on society.

Optimal regulatory policy must therefore focus on the principle that the very justification for government intervention is the presence of an *externality* that the market has failed to correct on its own.[57] In brief, "externalities" are any benefits or costs caused by one party but borne by others.[58] If a factory produces socially useful widgets but emits pollution that is not reflected in the cost of the product, a negative externality is imposed on all of the people living near the factory. The only way to reduce or eliminate such an externality—assuming the market cannot—is to shift the cost back to the polluter through government regulation. In turn, the producer will continue to churn out widgets, and customers will continue to buy them, only if their value outweighs their cost. Similarly, if citizens are uninformed about the risks of certain activities or systematically underestimate them so that the true costs are not reflected in the price charged, a negative externality exists.[59] It is when

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[57] *See* Gramlich, *supra* n. 52, at 18-20 (discussing the justification of government regulation based on the presence of externalities).

[58] Sloman, *supra* n. 13, at G-6 (defining externalities as "costs or benefits of production or consumption experienced by society but not by the producers or consumers themselves"). Externalities are sometimes referred to as "spillover" or "third-party" costs and benefits. *Id.*

[59] *See id.* at 331 (stating that "there have been many cases of people causing environmental damage without even realizing it, especially when the effects build up over a long time"). For example, scientists failed to connect aerosol use with ozone depletion until

markets fail because of these externalities that government regulation is justified and required in our society in order to improve the welfare of all.

Conversely, if the market can remedy the externality effectively, government regulation is not only unnecessary, but also imposes needless costs.[60] These costs are on the order of a half trillion dollars annually,[61] a far from trivial expenditure that necessarily diverts resources from other socially valuable programs. Furthermore, Charles Wolf notes that even where the market does not work efficiently, that does not automatically mean that we are going to witness a perfect form of intervention from the federal government.[62] Regulations are subject to numerous inefficiencies, just as private markets are.[63] Regulations are intended to change the behavior of people and industry, but any imposed change of behavior carries with it the risk of distorting preferences beyond what is socially optimal.[64] Furthermore, the introduction of regulation creates a bureaucracy that inevitably imposes transaction costs into whatever context is being regulated.

Thus, even in situations where markets indisputably do not work well, there is no assurance that government intervention will succeed. On balance, though, government regulation can and must play a vital role in society by correcting market failures and mitigating negative externalities in order to maximize our nation's overall welfare.

### B. *Regulatory Objectives: National Best Interest, Regulatory Capture, and Agency Discretion*

Keeping in mind these concerns, and assuming a market failure exists that justifies intervention, society must carefully consider the objectives that regulatory programs are designed to fulfill. The primary purpose of U.S.

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the 1980s. *Id.* Furthermore, "even when the problems are known to scientists, consumers may not appreciate the full environmental costs of their actions." *Id.*

[60] *See* Viscusi et al., *supra* n. 2, at 33 (noting sizable estimates of cost savings from deregulation of the airline, trucking, and rail industries).

[61] *Id.* at 34.

[62] *See* Wolf, *supra* n. 9, at 17 (contemplating market failures and government's inadequate responses to them). Wolf develops a framework for analyzing and anticipating the shortcomings of government efforts to remedy market deficiencies in order to provide a basis for comparison and choice between markets and governments. *See generally* Wolf, *supra* n. 9.

[63] These "dead weight efficiency losses" can disadvantage U.S. companies globally and have external costs such as slowed economic growth and less new jobs. *See* McGarity, *supra* n. 1, at 39 (noting that "proponents of cost-benefit analysis are fond of pointing out" regulation-induced efficiency losses, since the "primary virtue" of cost-benefit analysis is its ability to generate regulatory decisions that increase overall allocative efficiency).

[64] *See* Albert L. Nichols & Richard J. Zeckhauser, *The Perils of Prudence: How Conservative Risk Assessments Distort Regulation*, 10 Reg. 13, 17-19 (Nov./Dec. 1986) (describing the distortions in regulatory policy caused by the use of "conservative" risk assessments).

regulatory policies should always be to serve the nation's best interests by eliminating market failures. Such a mission stands in stark contrast to the perils presented by "regulatory capture" and the increasing judicial discretion granted to government agencies in charge of regulatory programs.[65]

First, a regulatory objective that seeks to maximize the country's best interests must necessarily be free of those who would use the regulatory arena to enhance their own political desires. Whether it is an industry group that seeks to lobby or influence an agency, or the President herself that desires to appease a constituency, promoting self-interest at the expense of the national interest must be avoided with vigilance. This is precisely the substance of George Stigler's admonition that we must be cautious that "regulatory capture" does not defeat our country's true objectives.[66] Regulatory capture occurs when the voices of a powerful few unduly and improperly influence the decisions made by the regulating agency.[67] Certain interest groups may alter optimal regulatory priorities through active resistance in the courts or in Congress. As a result, agencies risk being forced to take the path of least resistance instead of establishing socially sound policies.[68] Agencies captured by special interests are thus susceptible to introducing regulations that in reality represent the interests of the group lobbying for them rather than of our nation as a whole.[69]

Needless to say, if regulatory capture is a persistent problem, the fundamental purpose of government regulations is defeated. Rather than correcting a market failure to achieve socially optimal results, we find ourselves back in the same dilemma where private incentives dominate the overall social problem. Such inefficient regulation does not do anyone a service, except for the powerful causes that paid for it. Hence, American policymakers need to design regulations that build in safeguards to ensure that regulatory capture is not allowed to subvert the country's best interests through inefficient or unwise government regulation. Ideally, the implementation of cost-benefit and risk-risk analysis should help avoid such misallocation of resources based on inappropriate private pressure. This type of reform would promote the national interest by forcing regulatory decision-makers to precisely identify the actual risks and effects of regulation, as opposed to

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[65] In the most recent visitation to the subject of agency discretion, a unanimous Supreme Court held that the broad discretion that Congress gave the EPA did not amount to an unconstitutional delegation of legislative authority and that the EPA did not have to consider costs at all in setting its air quality standards. *Am. Trucking Assns.*, 121 S. Ct. at 912-14.

[66] *See* Stigler, *supra* n. 8, at 3-4 (warning against potential abuses stemming from industry or interest group capture of regulatory agencies).

[67] *See id.*

[68] *See* McGarity, *supra* n. 1, at 54 (acknowledging that cost-benefit analysis could reveal more socially sound policies than those implemented in a "captured" environment).

[69] *See* Stigler, *supra* n. 8, at 4 (discussing the impact that the oil industry has on government petroleum import quotas).

asking cynically, "which interest group cares more?"[70]

Another potential limitation on the ability of federal safety regulation to serve the nation's best interests is the increasing discretion granted to government agencies in carrying out their policies. The seminal case on the issue of agency discretion is *Chevron v. Natural Resources Defense Council* ("NRDC").[71] There, the NRDC challenged EPA "bubble policy" regulations stemming from the Clean Air Act.[72] The EPA construed the statute to allow states to permit large firms to choose the most efficient way of reducing total pollution output at their plants, rather than forcing each individual smokestack to meet a certain standard.[73] The EPA defended its policies, stating that they were a reasonable interpretation of the mandate given to the agency by Congress. The Supreme Court agreed, ruling that as long as agency regulations are rationally related to the directive that the governing legislation sets, courts will not second guess whether such regulation was warranted nor substitute their own construction of statutory provisions for that of the agency.[74]

The result in *Chevron*—that is, the sanctioning of EPA bubble policies—was undoubtedly sound from a law-and-economics efficiency standpoint.[75] Some have criticized the holding, however, as verging upon granting nearly unfettered discretion to regulatory agencies, leaving the judiciary with little leverage to reign in unwise policies.[76] While some leeway is due to agencies

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[70] *See* Cass R. Sunstein, *Cognition and Cost-Benefit Analysis*, 29 J. Leg. Stud. 1059, 1064-73 (2000). Sunstein states that cost-benefit analysis can be an effective tool in helping the public see more than just their small perspective on a large problem and that it allows people to take into account previously unperceived tradeoffs. Further, when individuals must evaluate their willingness to pay for a certain issue in conflict with other values, the resulting value is different (and more accurate) than that obtained in isolation. Using cost-benefit analysis early in the regulatory process would therefore help the public ascertain whether certain regulations were in their best interests. Sunstein concludes that "a government that could insulate itself from misinformed judgments could save tens of thousands of lives and tens of billions of dollars annually." *See id.* at 1063.

[71] *Chevron U.S.A. Inc. v. Nat. Resources Def. Council, Inc.*, 467 U.S. 837 (1984). *Chevron* is widely cited for the principle that an agency is entitled to broad deference in the regulatory policies it chooses to pursue. As long as the program is reasonably related to the mandate given to the agency by Congress, the courts will not strictly review its wisdom or appropriateness. *Id.* at 865-66.

[72] *Id.* at 842 n. 7.

[73] *Id.* at 840. For some historical context of EPA bubble policies, *see* Robert W. Crandall, *Controlling Industrial Pollution: The Economics and Politics of Clean Air* 83-84 (Brookings 1983) (describing EPA bubble policies).

[74] *Chevron U.S.A. Inc.*, 467 U.S. at 865-66.

[75] For some time, economists and policy hawks have embraced bubble policies as an effective way to reduce air pollution in society. *See id.*

[76] W. Kip Viscusi, Lecture (Harvard L. Sch., Cambridge, Mass., Feb. 3, 1998) (copy of transcript on file with Boston University Law Review).

because of their accumulated expertise in a given area, Congress and the courts must be cautious not to open up such discretion to abuse. We cannot let agencies hide behind the shield of administrative discretion if the policies they implement do not serve that goal in the best manner possible.

Finally, related to both the issues of regulatory capture and agency discretion, Eric Posner warns of the principal-agent problem inherent in the structure of American government and regulatory design.[77] He assumes the following scenario: The President as Principal (who chooses to maximize either (1) social welfare or (2) her chances of reelection), and agency as Agent (which chooses to maximize either (1) "mission-relevant" welfare or (2) the agency head's private interests).[78] Posner raises legitimate fears that both parties may suffer from tunnel vision in carrying out their duties in order to maximize private gain, resulting in a misallocation of resources.[79] Cost-benefit and risk-risk analysis, however, can serve as responsible monitoring mechanisms by highlighting more clearly whether the President's or the agency's actions maximize private interests as opposed to mission-related welfare.[80] Using these tools helps provide a better understanding of the actual tradeoffs created by agency regulatory programs, which can therefore make these decision-makers more accountable to Congress and the public.[81]

In the abstract then, it is clear that federal health and safety regulation will sometimes be needed to correct market failures and externalities in our society. This form of government intervention should always focus on our nation's best interests and guard carefully against the potential pitfalls posed by regulatory capture, unfettered agency discretion, and the principal-agent problem.

## II. DESIGNING REGULATIONS EFFICIENTLY

Most reasonable observers agree that U.S. regulatory oversight policy should serve the nation's best interests as a whole. The logical next step is to affirmatively design federal health and safety regulations both *efficiently* and

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[77] *See* Posner, *supra* n. 8, at 290 (detailing the principal-agent model and suggesting it as descriptive of American government).

[78] *Id.* Posner also suggests that Congress could be the principal, in which case the President would be an intermediary between agencies and Congress; or that the public could be the principal, in which case the whole government would act as agents. *Id.* at 295-96.

[79] *Id.* at 291-94 (describing various pitfalls by which both principal and agent may risk misallocating social resources).

[80] *See id.* at 296-297 (stating that cost-benefit analysis can help principals evaluate whether agents' performance is commensurate with principals' goals). Of course, cost-benefit analysis can have the effect of actually limiting the discretion of the principle. However, the clarification of policies and the assessment of related costs and benefits should expose projects that are more in line with re-election goals than with improving social welfare.

[81] *See* McGarity, *supra* n. 1, at 40 (listing as a virtue that cost-benefit analysis facilitates public dialogue and accountability).

responsibly to accomplish that purpose.[82]

There has been significant criticism of past government efforts to regulate safety risks for failing to meet this common sense goal. Regulatory agencies have come under increasing scrutiny in the past two decades for eschewing the principle of efficiency in favor of other objectives,[83] some of which border on the surreal. For example, an OSHA inspector in the 1970s penalized a firm for allowing its employees to work on a bridge spanning a riverbed without wearing life jackets. The only problem with that regulatory sanction was that the river below had long since dried up.[84] Somewhat more seriously, OSHA continued to make regulations concerning ethylene oxide exposures in hospitals more stringent, despite the fact that the last tightening had zero effect on reduction of cancer risk.[85] Similarly, OSHA continued to strengthen its controversial cotton dust standard despite challenges that it was unduly burdensome and failed to reflect an appropriate balance between benefits and costs.[86] Finally, arsenic regulations governing workers in the zinc, lead and copper smelting industries continued to be tightened by OSHA despite the fact that the final tightening cost three times as much as the first but had no appreciable health benefits.[87] Increasing costs without improving safety benefits is indisputably inefficient.[88] Society must instead design regulatory policies that efficiently minimize risk and maximize the amount by which their benefits exceed their costs.

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[82] *See* Viscusi, *supra* n. 1, at 1423 (noting that the "presence of market failure creates a potential role for government action, but this action must be well-conceived. A clearly misguided and unduly burdensome regulation certainly would not be in society's best interest even if it were intended to address a legitimate social problem").

[83] *See* Viscusi, *supra* n. 22, at 2 (declaring that the "federal government's effort to regulate job risks and other hazards has been fundamentally ill-conceived, in large part because these regulations have not been based on principles for efficient policies.").

[84] *Id.* at 11; Viscusi et al., *supra* n. 2, at 791-92.

[85] *See* Viscusi et al., *supra* n. 2, at 667-68.

[86] *See Am. Textile Mfg. Inst.*, 452 U.S. at 508-12 (holding that OSHA is not required to engage in cost-benefit analysis when promulgating standards dealing with toxic materials or harmful physical agents because the statute requires that such standards be set "to the extent feasible"). The Supreme Court rejected imposing any cost-benefit test upon OSHA, and asked only whether the regulation was "capable of being done." *Id.* Such an approach stands in stark contrast to a more rational interpretation of economic feasibility—i.e., one in which courts would ask whether an appropriate safety payoff was obtained from regulatory costs.

[87] *See* Viscusi, *supra* n. 22, at 124 (arguing that the cost of successive tightening of arsenic exposure regulations for workers in the zinc, lead and copper smelting industries "dwarfs any reasonable estimate of the value of life" and providing numerical data to support this proposition).

[88] *See id.* at 10 (stating that "the policies selected by OSHA only influence [the cost incentives to follow regulations]; they do not otherwise alter market outcomes").

A. *The Infeasibility of a Risk-Free Society*

As a preliminary matter, we must recognize that it is impossible to create a zero-risk society.[89] *Every* activity that people engage in poses some risk, despite best efforts to reduce the risk to negligible levels.[90] At a certain point, the further reduction of risk becomes practically impossible. More importantly, it almost invariably does not make sense for society to even attempt to reach this point because of the prohibitive expense entailed.

For example, one might ask the question, "Should automobiles be made as safe as possible?"[91] Many Americans might reflexively answer, "Certainly." But, as George Will notes, the indisputably correct answer is, "Certainly not!"[92] If Department of Transportation regulations required that cars be designed to be "as safe as possible," they would have a maximum speed of perhaps 10 or 15 miles per hour. They would be heavily protected and reinforced in fuel-inefficient ways, and they would contain no radios or other possible distractions. And, if safety were society's sovereign goal, "traffic laws would include a ban on (among many other things) left turns, which are risky."[93]

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[89] Viscusi et al., *supra* n. 2, at 658-60 (discussing the infeasibility of a risk free society). *Cf.* Will, *supra* n. 19 ("Reasonable people do not talk about subordinating all values to any single value, be it safety, health, freedom, virtue, even justice. 'Fiat justitia ruat coelum' (let justice be done, though heavens fall)? Heaven forbid.").

[90] For example, Viscusi details various activities, all of which increase one's annual death risk by one in one million:

| Activity | Cause of Death |
|---|---|
| Smoking 1.4 cigarettes | Cancer, heart disease |
| Drinking 0.5 liters of wine | Cirrhosis of the liver |
| Spending 1 hour in a coal mine | Black lung disease |
| Living 2 days in New York or Boston | Air pollution |
| Traveling 10 miles by bicycle | Accident |
| Traveling 150 miles by car | Accident |
| Flying 1000 miles by jet | Accident |
| Living 2 months in average stone or brick building | Cancer caused by natural radioactivity |
| Eating 40 tablespoons of peanut butter | Liver cancer caused by aflatoxin B |
| Drinking Miami water for 1 year | Cancer caused by chloroform |
| Drinking 30 12-oz. cans of diet soda | Cancer caused by saccharin |
| Living 150 years within 20 miles of nuclear power plant | Cancer caused by radiation |
| Eating 100 charcoal-broiled steaks | Cancer from benzopyrene |

Viscusi et al., *supra* n. 2, at 659.

[91] Will, *supra* n. 19.

[92] *Id.*

[93] *Id.*

Thus, when we regulate to decrease risk and increase safety in society, we are really striving to create solutions that minimize risk to the socially optimal, or efficient, level. We cannot regulate in a manner that would sacrifice all values to those of safety and risk elimination. Rather, balancing competing values efficiently is inevitable.[94]

### B. *Various Measures of Efficiency and Social Welfare*

A great debate rages, however, over the definition of "efficiency." There are many ways to measure it, many of which lead to varying results. If we desire efficient regulatory solutions as our ultimate goal, their pursuit should responsibly incorporate concerns for distributive justice and other "soft" variables in addition to narrow wealth-maximization.

As a threshold matter, we must ask, "What does it mean to design a regulation 'efficiently' such that it best serves our nation's overall interests?" First, it should be made clear that seeking economic efficiency generally does *not* mean that everyone will, or even should, be better off after a given regulatory response to a market failure. Rather, the idea is to expand society's overall "pie" so that more people are made better off and fewer people are made worse off.

Economics scholars have devised several tools in the attempt to measure economic efficiency and social welfare.[95] Among the most popular of the various concepts is that devised by Nicholas Kaldor and J.R. Hicks.[96] Kaldor-Hicks efficiency and the corresponding Hicks Compensation Principle acknowledge that there will be "winners" and "losers" resulting from any government regulation.[97] The relevant question is whether the gain to the winners outweighs the losses to the losers such that the winners could

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[94] *See* Viscusi, *supra* n. 1, at 1424 (discussing how limited resources require that we determine how far we should go in regulatory efforts as well as how we should choose among them).

[95] For a discussion of various efficiency and social welfare measurement tools, *see* Stiglitz, *supra* n. 11, at 52-62, 66-69.

[96] *See generally* Nicholas Kaldor, *Welfare Propositions of Economics and Interpersonal Comparisons of Utility*, 49 Econ. J. 549, 549-52 (1939) (describing Kaldor's efficiency-based method of measuring economic efficiency and social welfare); J. R. Hicks, *The Foundations of Welfare Economics*, 49 Econ. J. 696, 709-12 (1939) (describing Hicks' "compensation"-based method of measuring economic efficiency and social welfare).

[97] *See* Kaldor, *supra* n. 96, at 550 (noting that there "is no need for the economist to prove—as indeed he never could prove—that as a result of the adoption of a certain measure nobody in the community is going to suffer"); Hicks, *supra* n. 96, at 706.

> Under private enterprise, any ordinary change in economic policy involves a change in the price-system, and any change in the price benefits those one side of the market, and damages those on the other. Thus [every simple economic reform will] always inflicts a loss of some sort on some people.

*Id.*

potentially compensate the losers and still be better off.[98] If the answer to that inquiry is yes, the regulation is deemed to be Kaldor-Hicks efficient.[99] Most economists would say that society is "better off" with that regulation in place because the size of the nation's overall pie has been expanded, even though some people or groups are left worse off. When an economist refers to "efficiency" or the fact that overall "social welfare" has been improved in this manner, nine out of ten times they are referring to this concept of Kaldor-Hicks efficiency.[100]

Thus, in the regulatory context, striving for efficiency generally means that the overall social welfare created by a federal safety regulation should be greater than that existing before the government intervention.[101] There is always the problem, however, of how to measure the size of the pie in the first place. Economists are famous for their adherence to a person's (or society's) "utility level" to measure how well off they are. In turn, "willingness to pay" is usually utilized as the marker of utility.[102] Willingness to pay does serve this purpose in the abstract because, presumably, the greater a person's willingness to pay, the greater level of welfare they receive from the product (or the regulation in this case).

By all accounts, however, using willingness to pay as an efficiency-measurement criterion has serious drawbacks (many of which will be discussed *infra*, Part V(2)).[103] In the regulatory context, it simply asks, "What would a person be willing to pay to solve or reduce the risk of a given safety hazard?" Or, one might look at the question another way: "How much would someone pay in order to have (or avoid having) a government safety regulation in a certain area?" One of the problems that immediately jumps out is that individuals' initial positions in society (i.e., their income, their wealth, and

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[98] Stiglitz, *supra* n. 11, at 61.

[99] *See id.*

[100] Posner, *supra* n. 10, at 13-14.

[101] This expansion of social welfare occurs because the regulation presumably addresses previously uncorrected negative externalities and reduces risks that society faces.

[102] *See* Sen, *supra* n. 40, at 945 ("In mainstream cost-benefit analysis, the primary work of valuation is done by the use of willingness to pay.").

[103] Nussbaum derides the construct of "willingness to pay" for failing to make "the exclusionary moves that are by now common in the literature on social choice." Nussbaum, *supra* n. 40, at 1029. For example, it does not omit "preferences based on ignorance and haste, preferences deformed by malice, envy, resentment, or fear, and preferences that reflect adaptation to a bad state of affairs that is thought to be the only one possible." *Id.* Sen and Sunstein also question the concept. *See* Sen, *supra* n. 40, at 945-47 (discussing the "basic limitations" of relying on the willingness to pay); Sunstein, supra n. 70, at 1088-91 (discussing various problems with willingness to pay). *But cf.* Robert Frank, *Why is Cost-Benefit Analysis so Controversial?*, 29 J. Leg. Stud. 913, 925-27 (2000) (defending willingness to pay as the best and most practical utility-measurement tool available if conventional estimating procedures are amended.).

whether or not they are already "endowed" with a given right[104]) drastically influence how much they are willing to pay for certain goods. A poor person might highly value clean air and water but be unable (and therefore unwilling) to pay very much to protect it. Conversely, a wealthy individual might subjectively care far less, though she can afford to pay more with relative ease.[105]

Beyond the obvious problems introduced by willingness to pay and the endowment effect, there is far from uniform agreement that maximizing overall social welfare by seeking Kaldor-Hicks efficient regulatory solutions is the best measure of efficiency in the first place.[106] While the Hicks Compensation Principle is a compelling criterion if the winners actually pay out compensation to those made worse off, it loses some of its luster if we keep it as only the *potential* to pay compensation. Why should some groups be made better off at the expense of others and no compensation be made?

Thus, alternate measures of social welfare and efficiency have been proposed that care far more about distributive justice, including the concepts of Pareto efficiency, Rawlsianism, and equalitarianism.[107] The test of Pareto efficiency would ask of a proposed regulatory policy, "Can this regulation be designed in such a way that absolutely no one is made worse off, and at least one person is made better off?"[108] At first blush, this measurement tool seems much less objectionable than the Kaldor-Hicks idea of "hypothetical compensation" described above. Surely, no one could object to a regulation that required that at least one member of society be made better off and that no

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[104] The "endowment effect" refers to the divergence between the amount someone would pay to "buy" a right and the amount at which the same person would "sell" that right if it were already assigned to her. Often, an individual will ask for far more money in order to part with a right than they would be willing to pay in order to obtain that right, although this phenomenon seems somewhat irrational. *See* Robert Cooter & Thomas Ulen, *Law and Economics* 87 (Scott, Foresman and Co. 2000).

[105] *See e.g.* Ronald Dworkin, *Is Wealth a Value?*, 9 J. Leg. Stud. 191, 194-201 (1980). Dworkin considers the following hypothetical example: Derek has a book that Amartya desires. Derek is poor and sick and miserable, and the book is one of his few comforts. He is willing to sell it for $2 only because he needs medicine. Amartya, on the other hand, is wealthy and content. He is willing to spend $3 on the book, on the off chance that someday he might read it, although he knows that he probably will not. An economist, or a "tyrant" in Dworkin's example, might say that society is better off with the book in Amartya's hands because he is willing to pay more ($3) than Derek is ($2) for the same book. However, Dworkin and many others intuitively feel that such a world is not a better place in any respect. This point has merit, and it gets directly at the problems of equity and distributive justice under a narrow willingness to pay standard.

[106] *See* Stiglitz, *supra* n. 11, at 52-62, 66-69 (describing efficiency and distribution tradeoffs).

[107] *See id.*

[108] *See id.* at 54 (defining Pareto improvements as "changes that make some better off without making anyone worse off").

one be placed in a worse position. True, there would be no losers to speak of. However, it is almost impossible to imagine any regulatory program that would not make at least one person or group worse off. In order to provide the greatest good to the greatest number, it is virtually inevitable that someone is asked to sacrifice. Thus, while Pareto efficiency is so powerful in its requirement that no one be harmed in order to achieve an efficient solution, it is that very power that drastically limits its application.[109] In order for society to function and for regulations to serve our nation's best interests as a collective whole, it is inevitable that some industries or individuals will be made worse off in order to serve the greater good.

An alternative measure of social welfare that highly values distributive justice has been proposed by John Rawls.[110] Rawlsianism is interested not in the maximization of the nation's overall pie, but in the position of the worst-off member of society.[111] It asks, "If one did not know what her position in society would be—i.e., one might be among the best off, or the absolutely worst off member—what kind of a society would she choose to construct and live in?" This is known as the Rawlsian "veil of ignorance."[112] The implicit presumption is that because people justifiably care about fairness and equity, and are also risk averse, they would choose a society that maximizes the position of the worst-off member.[113] Hence, in the regulatory arena, Rawlsianism would ask how a proposed policy affected the most disadvantaged person or group, and not whether overall social welfare increased in the aggregate.

Finally, an even more extreme position taken in addressing social welfare is that of equalitarianism.[114] Equalitarianism seeks the truest form of equity between the worst-off and best-off members of society. It aims to minimize inequality between those two individuals or groups by asking only how a proposed change affects the divergence between them. For instance, if a

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[109] *See* Christopher Avery, Christine Jolls, Richard A. Posner & Alvin E. Roth, *The Market for Federal Judicial Law Clerks*, 68 U. Chi. L. Rev. 793, 800 (2000) (noting that the Pareto standard is "notoriously limited in its usefulness, for rarely can one make some people better off without making even a single person worse off"); Dworkin, *supra* n. 105, at 193 (discussing problems with the concept of Pareto efficiency).

[110] *See generally* John Rawls, *A Theory of Justice* (Harvard U. Press 1971).

[111] *Id.* at 14-15 (discussing the principle that "social and economic inequalities . . . are just only if they result in compensating benefits for everyone, and in particular for the least advantaged members of society").

[112] *See id.* at 136 (stating that in order to "nullify the effects of specific contingencies which put men at odds and tempt them to exploit social and natural circumstances to their own advantage . . . [we must] assume that the parties are situated behind a veil of ignorance"). *See generally id.* at 136-42 (discussing concept of veil of ignorance).

[113] *See id.* at 183-92 (discussing how, assuming a veil of ignorance, parties will choose a society that benefits its worst-off member because of the parties' aversion to risk and love of mankind).

[114] *See* Stiglitz, *supra* n. 11, at 69 (describing strong equalitarianism).

regulatory policy would have the effect of increasing the welfare of the richest members of society by one million "utils"[115] and would increase the welfare of the poorest members of society by 900,000 utils, the pure equalitarian would reject such a proposal. Note that this regulation would be Kaldor-Hicks efficient (because the overall pie increases), Pareto efficient (because no one is made worse off), and Rawlsian (worst-off person made better off). However, the mere fact that the divergence between the worst-off and the best-off member of society increases is grounds for the policy's rejection, despite the fact that both groups are made significantly better off.

Thus, in striving to design regulations efficiently, it is important to keep in mind that several different measures of social welfare and efficiency have been proposed and debated by economics scholars. I, like most, generally opt for the Kaldor-Hicks notion of wealth-maximization (with certain caveats) when I speak of efficiency. It is that concept of maximizing overall social welfare that regulatory policy should strive to achieve, for it intuitively feels closest to serving our nation's best interests by seeking the greatest good for the greatest number.

This is not at all to say that equitable, emotional and distributive justice concerns should be ignored in our design of efficient regulations. Quite to the contrary, these principles are a component of people's and society's utility levels, and have been rightly raised by regulatory agencies like the EPA[116] and scholars such as Christine Jolls.[117] These "softer" variables are a part of the inputs to our social welfare calculation and must be taken into account when formulating optimal U.S. regulatory policy.[118] Marginal cost-benefit tests,

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[115] A "util" is an imaginary unit of satisfaction derived by the consumption of a good, and it is often used generically as a measure of a person's utility level. Sloman, *supra* n. 14, at 92 (defining "util").

[116] *E.g. Lead Indus. Assn.*, 647 F.2d at 1153 (discussing the EPA's argument that air quality standards should protect people who are particularly sensitive to the effects of pollution and that the standards be set at a level at which there is "an absence of adverse effect" on these sensitive individuals).

[117] *See* Jolls, *supra* n. 12, at 1654-55 (describing the tradeoff between distributive objectives and efficiency).

[118] See Richard O. Zerbe, Jr., *Is Cost-Benefit Analysis Legal: Three Rules,* 17 J. Policy Analysis & Mgt. 419 (1998) ("The values considered in benefit-cost analysis are very broad and include those associated with income distribution . . . ."). The overall utility level that society obtains from federal safety regulations must therefore encompass not just "hard" monetary values for costs and benefits created, but it must place values on the utility that people obtain from emotional considerations and from creating a more equitable society. Valuing these "softer" benefits will prove difficult, but it must be done to give a fair and accurate assessment of the benefits of regulation. Moreover, the principle of the diminishing marginal value of wealth instructs us that there is less incremental benefit obtained from improving the position of wealthier segments of society than that obtained from the same magnitude improvement directed towards poorer segments of the population. *See* Posner, *supra* n. 10, at 458-59 (applying the principle of diminishing marginal utility to

risk-risk analysis and Kaldor-Hicks efficiency need not be oblivious to this reality, as the utility that people derive from knowing that they can breathe clean air, drink clean water, or create a fair and just world is a significant component of overall social welfare. Thus, the costs and benefits resulting from any regulation should factor in people's taste for these softer values. True, these concepts are even more difficult to measure than "hard" costs or benefits, but they are very real inputs into our calculus of what the country's best interests truly are.[119]

In summary, responsible regulatory programs should strive to ensure that regulations are designed efficiently—after all, who would argue that we should throw our resources away, or enact programs that do more harm than good?[120] The fact that there is certain to be continued debate on the definition of efficiency or its inputs does not render its pursuit an unworthy goal. Rather, most scholars and laymen generally agree that maximizing overall social welfare and attempting to provide the greatest good to the greatest number have merit.[121] The key then will be to design a U.S. regulatory oversight policy that addresses the valid concerns of critics by seeking to balance narrow economic efficiency with softer variables in making society's cost-benefit regulatory calculation.

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the notion that "a transfer from a more to a less affluent person is likely to increase the sum of the two persons' utilities"). *See also* Steven Shavell, *Principles of Economic Analysis of Law* (forthcoming text) (manuscript on file with author) (Shavell argues that "satisfying notions of morality affects social welfare by affecting individuals' utilities," but that this point should be "distinguished from the assumption that morality notions have independent importance, regardless of the degree to which they raise the utility of individuals.").

[119] In fact, these concerns were justly reflected in President Clinton's Executive Order No. 12866—while keeping the substance of the cost-benefit assessment process that his predecessors enacted, Clinton added language that provides for the inclusion of non-quantifiable regulatory benefit considerations. *See infra* Part IV.A.

[120] *See* Viscusi et al., *supra* n. 2, at 664 (arguing that once we step back from the debate over costs and benefits, all observers would agree that society does not need or want policies that are more harmful than beneficial).

[121] *See* Kornhauser, *supra* n. 41, at 1051-57 (pragmatically defending cost-benefit analysis in light of the other feasible alternatives); Viscusi et al., *supra* n. 2, at 664 (arguing that society should pursue policies that advance the nation's overall interests); Mathew D. Adler & Eric A. Posner, *Rethinking Cost-Benefit Analysis*, 109 Yale L.J. 165, 245 (1999) (arguing that cost-benefit analysis is a "useful decision procedure and it should [with certain exceptions] be routinely used by agencies); Sen, *supra* n. 40, at 950-52 (discussing the general value of cost-benefit analysis, despite the fact that it is often misused); Steve P. Calandrillo, *An Economic Analysis of Intellectual Property Rights*, 9 Fordham Intell. Prop., Media & Ent. L.J. 301, 336-41 (1998) (arguing for a government-run reward system in lieu of intellectual property rights in order to maximize overall social welfare and provide the greatest good to the greatest number).

## III. AN ALTERNATIVE APPROACH TO REGULATION

Assuming a general consensus that our government should attempt to design health and safety regulations efficiently, I urge that America adopt a different approach to regulatory oversight than that currently existing, in order to accomplish this goal and maximize social welfare.

While several risk-reducing government regulations have indeed passed sensible cost-benefit tests,[122] there are numerous examples of federal regulations that have failed to do so.[123] For example, a proposed OSHA

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[122] John F. Morall III has compiled data regarding regulations that have easily passed reasonable cost-benefit tests:

| Regulation | Year & Status (F = final, P = proposed) | Agency | Initial Annual Risk | Annual Lives Saved | Cost per Life Saved (millions of 1984 $) |
|---|---|---|---|---|---|
| Unvented space heaters | 1980 F | CPSC | 2.7 in $10^5$ | 63 | 0.1 |
| Oil and gas well service | 1983 P | OSHA-S | 1.1 in $10^3$ | 50 | 0.1 |
| Cabin fire protection | 1985 F | FAA | 6.5 in $10^8$ | 15 | 0.2 |
| Passive restraints/belts | 1984 F | NHTSA | 9.1 in $10^5$ | 1,850 | 0.3 |
| Underground construction | 1989 F | OSHA-S | 1.6 in $10^3$ | 8.1 | 0.3 |
| Alcohol and drug control | 1985 F | FRA | 1.8 in $10^6$ | 4.2 | 0.5 |
| Servicing wheel rims | 1984 F | OSHA-S | 1.4 in $10^5$ | 2.3 | 0.5 |
| Seat cushion flammability | 1984 F | FAA | 1.6 in $10^7$ | 37 | 0.6 |
| Floor emergency lighting | 1984 F | FAA | 2.2 in $10^8$ | 5 | 0.7 |
| Crane suspended personnel platform | 1988 F | OSHA-S | 1.8 in $10^3$ | 5 | 1.2 |
| Concrete & masonry construction | 1988 F | OSHA-S | 1.4 in $10^5$ | 6 | 1.4 |
| Hazard communication | 1983 F | OSHA-S | 4.0 in $10^5$ | 200 | 1.8 |
| Benzene/fugitive emissions | 1984 F | EPA | 2.1 in $10^5$ | 0.31 | 2.8 |

Viscusi et al., *supra* n. 2, at 700 (Table 20.4) (citing statistics of John F. Morall III, *A Review of the Record*, 10 Reg. 25, 30 (Nov./Dec. 1986), and updating statistics up to July 10, 1990).

[123] Numerous regulations have failed government regulatory agencies' own cost-benefit tests:

| Regulation | Year & Status (F = final, P = proposed) | Agency | Initial Annual Risk | Annual Lives Saved | Cost per Life Saved (millions of 1984 $) |
|---|---|---|---|---|---|
| Grain Dust | 1987 F | OSHA-S | 2.1 in $10^4$ | 4 | 5.3 |

regulation of formaldehyde exposure would have required an expenditure of $72 billion per expected life saved.[124] In addition, regulations governing exposure to cotton dust continued to be strengthened (at increasing cost) despite no marginal improvement in lives saved.[125] As Viscusi notes, the fundamental problem with these efforts is that they are dramatically out of line which what the beneficiaries of the regulation believe the value to be.[126] Instead of being permitted to ignore cost concerns and economic feasibility,[127]

| | | | | | |
|---|---|---|---|---|---|
| Radionuclides/uranium mines | 1984 F | EPA | 1.4 in $10^4$ | 1.1 | 6.9 |
| Benzene | 1987 F | OSHA-H | 8.8 in $10^4$ | 3.8 | 17.1 |
| Arsenic/glass plant | 1986 F | EPA | 8.0 in $10^4$ | 0.11 | 19.2 |
| Ethylene oxide | 1984 F | OSHA-H | 4.4 in $10^5$ | 2.8 | 25.6 |
| Arsenic/copper smelter | 1986 F | EPA | 9.0 in $10^4$ | 0.06 | 26.5 |
| Uranium mill tailings, inactive | 1983 F | EPA | 4.3 in $10^4$ | 2.1 | 27.6 |
| Uranium mill tailings, active | 1983 F | EPA | 4.3 in $10^4$ | 2.1 | 53 |
| Asbestos | 1986 F | OSHA-H | 6.7 in $10^5$ | 74.7 | 89.3 |
| Asbestos | 1989 F | EPA | 2.9 in $10^5$ | 10 | 104.2 |
| Arsenic, glass mfg. | 1986 R | EPA | 3.8 in $10^5$ | 0.25 | 142 |
| Benzene/storage | 1984 R | EPA | 6.0 in $10^7$ | 0.043 | 202 |
| Radionuclides/DOE facilities | 1984 R | EPA | 4.3 in $10^6$ | 0.001 | 210 |
| Radionuclides/elem. phosphorous | 1984 R | EPA | 1.4 in $10^5$ | 0.046 | 270 |
| Benzene/ethylbenzenol styrene | 1984 R | EPA | 2.0 in $10^6$ | 0.006 | 483 |
| Arsenic/low-arsenic copper | 1986 R | EPA | 2.6 in $10^4$ | 0.09 | 764 |
| Benzene/maleic anhydride | 1984 R | EPA | 1.1 in $10^6$ | 0.029 | 820 |
| Land Disposal | 1988 F | EPA | 2.3 in $10^8$ | 2.52 | 3,500 |
| EDB | 1989 R | OSHA-H | 2.5 in $10^4$ | 0.002 | 15,600 |
| Formaldehyde | 1987 F | OSHA-H | 6.8 in $10^7$ | 0.01 | 72,000 |

Viscusi et al., *supra* n. 2, at 700 (Table 20.4).

[124] *See id.* at 701 (referring to the formaldehyde regulation as "[o]ne of the all-time leaders in terms of the cost per life saved").

[125] *See* Paul W. Kolp & W. Kip Viscusi, *Uncertainty in Risk Analysis: A Retrospective Assessment of the OSHA Cotton Dust Standard*, 4 Advs. in Applied Microeconomics 105 (1986).

[126] *See* Viscusi et al., *supra* n. 2, at 701 (noting that if certain OSHA regulations save lives at a cost of $92.5 million per life, then "such efforts are out of line with what the beneficiaries of such an effort believe the value of such a regulation to be").

[127] *See Am. Trucking Assns.*, 121 S. Ct. at 908-12 (holding that the EPA is not required to

sound public policy dictates that federal safety regulations be designed sensibly, responsibly and efficiently. I propose that all regulations satisfy a marginal cost-benefit and risk-risk analysis, that risk-assessment be unbiased and based on "most-likely" estimates, that regulatory triggers be justified publicly, and that ex-post evaluations of the results be conducted.

### A. *At a Minimum, Regulatory Programs Should Compare Costs and Benefits*

The first and most important step in improving the efficiency of federal regulatory oversight policy is to require a sensible cost-benefit analysis before any regulation is implemented. Surely, no one would advocate for a regulatory "solution" to a market failure that imposed greater costs than the benefits yielded. Society would be better off sticking with the evil it knew rather than making the situation worse.

Cost-benefit analysis in its simplest form is a very familiar concept.[128] It requires a weighing of the total costs imposed by a new regulatory scheme versus the overall benefits to society as a result of its implementation.[129] One might think that such a concept would hardly be controversial and must already be a prerequisite to any government regulation. On the contrary, however, cost-benefit analysis has been assailed as immoral for explicitly trading dollars per lives saved[130] and as impractical in terms of its ability to accurately measure the costs incurred and benefits created (*see infra*, Part V).[131]

Many regulatory agencies therefore argue against employing cost-benefit analysis at all.[132] The EPA, for one, contends that cost-benefit analysis does

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consider costs of its policies under the broad discretion that Congress and the Clean Air Act delegated to the agency).

[128] *See* Gramlich, *supra* n. 52, at 1-8 (describing the common sense intuition behind cost-benefit analysis).

[129] *See id.*

[130] *E.g.* Moore, *supra* n. 42, at 208-09 (opining that "if all the practical obstacles to adopting cost-benefit analysis are overcome, what remains is the fundamental issue of whether it is moral for society to take the life of a citizen merely because of the cost"); Richardson, *supra* n. 40, at 973, 975-76 (noting that cost-benefit analysis "runs roughshod over important incommensurables" and arguing that willingness to pay is inappropriate as a normative standard for public choice).

[131] *E.g.* Nussbaum, *supra* n. 40, at 1029 (stating that "there are devastating objections to be made against willingness to pay" as a measurement tool); Sen, *supra* n. 40, at 945-46 (noting that the "basic limitations of this approach include those experienced also by market signaling").

[132] *E.g. Indus. Union Dept., AFL-CIO*, 448 U.S. at 630-38 (describing OSHA's use of methods other than cost-benefit analysis in promulgating a regulation); *Am. Textile Mfg. Inst.*, 452 U.S. at 506-22 (1981) (undercutting the role of cost-benefit analysis in the development of OSHA regulations); *Am. Trucking Assns.*, 121 S. Ct. at 910 (holding that the EPA is not required to consider costs of its policies under the broad discretion that Congress and the Clean Air Act delegated to the agency).

not serve society's ultimate goal (as reflected by Congress in the Clean Air Act), which is to "protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare. . . ."[133] However, such a goal is unquestionably not in our nation's best interests if it is unaccompanied by a common sense comparison of the regulatory benefits created to the costs imposed. If we were to attempt to make our air as safe as possible, we would be choosing to ignore the fact that there is declining marginal benefit to each dollar spent improving its purity.[134] At some point, the "bang per each buck spent" is no longer noticeable, and we should instead channel our remaining resources where the impact on improving quality of life is greater.

Despite the occasional aversion to reasonable cost-benefit comparisons, the concept is not nearly as marginalized as some would have it. Two recent D.C. Circuit Court of Appeals cases have effectively *implied* a form of cost-benefit analysis into EPA regulations by requiring "reasoned decisionmaking" in interpreting and enforcing regulations.[135] While this does not require the use of traditional cost-benefit analysis, Richard Stoll believes that it may "drive additional cost-benefit discipline into EPA decisionmaking. . . ."[136]

First, in *American Petroleum Institute v. EPA*, the D.C. Circuit faced the issue of whether oil reclaimed from primary processing of industrial wastewater was considered "discarded" under the Resource Conservation and Recovery Act.[137] The court held that the EPA did not sufficiently explain why its regulation for oil processing concentrated more on cleaning the water and less on recovering the oil for other possible industrial uses.[138] The EPA had not considered the industrial costs and benefits of this processing despite the fact that the record indicated that it might be cost-efficient for companies without any additional motivation from the Clean Water Act regulations.[139] In overturning the regulation, the D.C. Circuit was able to imply cost-benefit analysis into the "reasoned decision-making" that the EPA should have conducted.[140]

Similar analysis was applied in *Chemical Manufacturers Association v.*

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[133] 42 U.S.C. § 7401(b)(1) (1994).

[134] *See* Viscusi et al., *supra* n. 2, at 664-68 (demonstrating that "[a]s environmental quality improves, the cost of providing environmental quality rises . . . at an increasing rate because improvements in an environmental quality become increasingly costly to achieve").

[135] *Am. Petroleum Inst. v. EPA*, 216 F.3d 50, 57 (D.C. Cir. 2000); *Chem. Mfrs. Assn. v. EPA*, 217 F.3d 861, 867 (D.C. Cir. 2000). *But see Am. Trucking Assns.*, 121 S. Ct. at 910-12 (holding that the EPA cannot use cost-benefit analysis in formulating regulation).

[136] Richard G. Stoll, *Cost-Benefit Analysis Through the Back Door of "Reasoned Decisionmaking"?*, 31 Envtl. L. Rep. 10,228 (2001).

[137] 216 F.3d at 56-57.

[138] *Id.* at 58.

[139] *Id.*

[140] *Id.* at 59; Stoll, *supra* n. 136, at 10230 (reasoning that despite no mention of cost-benefit analysis in the relevant language, "EPA's failure to evaluate costs and benefits in this context resulted in judicial rejection of its rule").

*EPA*.[141] There, the EPA had established procedural requirements for compliance with hazardous waste burning regulations without making any findings regarding environmental benefits or the costs imposed. The D.C. Circuit vacated the regulation given the lack of "reasoned decision-making" exhibited.[142] The court elaborated on the Supreme Court's *State Farm* standard,[143] stating that the agency must articulate "a satisfactory explanation for its action including a rational connection between the facts found and the choice made."[144]

Thus, the notion of including cost-benefit analysis in agency decision-making is not unheard of in the judiciary. Both the *American Petroleum* and *Chemical Manufacturers* courts were willing to imply such a requirement by inquiring whether the agency engaged in "reasoned decision-making" in reaching its regulatory interpretation.[145] One should note that both of these cases shared two elements in common. First, the relevant statutory authority was silent regarding the use of cost-benefit analysis. Second, the agency rules were overturned because they did not adequately evaluate benefits in light of costs. In effect, a cost-benefit analysis was judicially implied.[146] Still, despite these examples of judicially imposed cost-benefit tests, courts have not routinely incorporated or imposed such analysis on agency regulations. At a minimum though, benefits and costs should at least be assessed to ensure that proposed regulations serve our national interest efficiently and responsibly without doing more harm than good.

### B. *One Step Beyond Cost-Benefit Analysis: Comparing* Marginal *Costs Versus* Marginal *Benefits*

In the abstract then, it is easy for all to agree that our government should not

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[141] 217 F.3d at 865-67.

[142] *Id.* at 867.

[143] *See Motor Vehicle Mfrs. Assn. of the U.S. v. State Farm Mut. Automobile Ins. Co.*, 463 U.S. 29 (1983) (holding that government agencies must use "reasoned decision-making" in promulgating their regulations).

[144] *Id.* at 865-66.

[145] *Am. Petroleum Inst.*, 216 F.3d at 57; *Chem. Mfrs. Assn.*, 217 F.3d at 867. The analysis in both cases first considered the familiar *Chevron* "two-step" test: (1) Did Congress directly address the matter? If yes, its unambiguous intent must be followed. If not, then the analysis reaches the second step: (2) Is the agency regulation a "permissible construction" of the statute? Once the agency interpretation passed the permissive *Chevron* test, the D.C. Circuit then applied the rule handed down in *State Farm*. There, the Court held that government agencies must use "reasoned decision-making" in promulgating their regulations. The D.C. Circuit elaborated upon this standard, stating that the agency must articulate "a satisfactory explanation for its action including a rational connection between the facts found and the choice made" and that the agency must consider any other "relevant factors." *Chem. Mfrs. Assn.*, 217 F.3d at 866.

[146] *See* Stoll, *supra* n. 136, at 10,230 (stating that the court vacated the EPA rule because "EPA's decisionmaking process did not adequately evaluate benefits in light of costs").

pursue regulatory policies that create greater costs than benefits. Few scholars, however, have suggested pushing the cost-benefit requirement one step further: to compare those costs and benefits on a *marginal* basis rather than on an absolute one.[147] It is this *marginal* comparison that would yield society the greatest net gain and do far more to serve our country's best interests than we currently have been able to do. Regulators should ask not merely whether the benefits created by a given program exceed the costs imposed, but rather, whether the regulation maximizes the benefits *minus* the costs.

Why is a marginal cost-benefit comparison so much better than a simple cost-benefit analysis? The answer relates to the concept of diminishing returns to money, as shown in Figures 1 and 2 below.[148] The initial dollars that the government spends regulating the clean-up of environmental hazards go a long way towards improving public safety. However, as our air and water and workplaces are made safer, it becomes increasingly more difficult to improve them further. Each additional dollar devoted to the effort has less of an impact. Eventually, each incremental resource has a barely noticeable effect on improving safety, though one dollar in U.S. currency spent at the beginning of the program is still equal to one dollar in U.S. currency expended towards the end. At some point, we must ask ourselves, "Is it worth it to continue trying to improve the safety of this situation given the fact that we already have 99% of the risk eliminated, and each dollar we add to the fire barely improves the situation at all?"[149]

The figures below illustrate what Supreme Court Justice Stephen Breyer has referred to as the problem of "Tunnel Vision," or "The Last 10 Percent."[150] At hazardous waste sites, for example, Breyer states that 90% or more of agency resources are spent to clean up the last 10% of the risk posed, whereas it takes only the first 10% of those resources to eliminate 90% of the total risk.[151] Viscusi argues that these numbers are even starker in the Superfund

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[147] Viscusi and his colleagues have suggested the marginal cost-benefit comparison. *See* Viscusi et al., *supra* n. 2, at 667 (urging comparison on a marginal basis).

[148] *Id.* at 665-66.

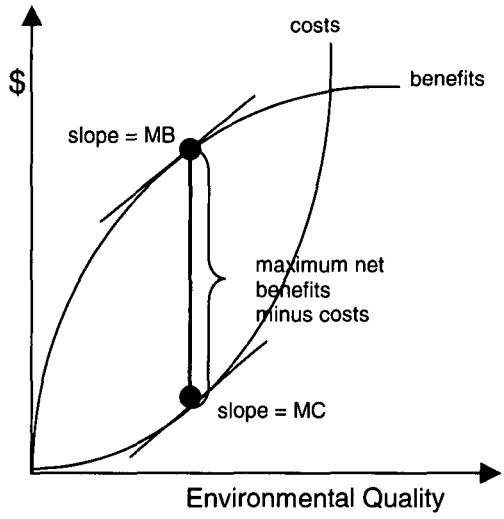
[149] Donald J. Calandrillo, former Pipe Stress/Support Engineer at Foster Wheeler Energy Corp., Telephone Interview (July 1, 2001) (discussing the problem of diminishing returns in the context of factory pollution-abatement equipment).

[150] Breyer, *supra* n. 20, at 11-12.

[151] *See id.* Breyer cites to a former EPA administrator, Leo Levenson, who noted that "about 95 percent of the toxic material could be removed from waste sites in a few months, but years are spent trying to remove the last little bit." (citing *Unnecessary Risks*, Graduate School of Public Policy, University of California, Berkeley (Dec. 6, 1989), quoted in Aaron Wildavsky, *If Claims of Harm from Technology Are False, Mostly False, or Unproven, What Does That Tell Us About Science?*, in *Health, Lifestyle, and Environment: Countering the Panic* 111, 115 n. 9 (Social Affairs Unit, Manhattan Institute, 1991)).

environmental cleanup context, opining that if the U.S. *cut* 99% of the money spent on clean-up (which could then be reallocated to other social programs), we would lose only 1% of the total effectiveness of the program.[152] For example, both Viscusi and Breyer recount the case of *United States v. Ottati & Goss, Inc.*,[153] which arose out of a ten-year litigation effort to force the clean-up of a toxic waste dump in southern New Hampshire. The land was already mostly cleaned up, and all but one of the private parties had settled.[154] Still, the remaining litigant pursued the cost of cleaning up the "last little bit," forcing an additional expenditure of $9.3 million in public resources to remove the remaining toxins by incinerating the dirt.[155] The extra safety provided by this $9.3 million outlay was negligible. By all accounts, the dirt was already safe enough for children playing on the site to eat it for up to seventy days a

Figure 1. Cost-Benefit Analysis of Environmental Safety Regulation




Benefits flatten out as the scale of the regulatory program increases and costs begin to skyrocket.

The slopes of the curves equal marginal benefit (MB) and marginal cost (MC), respectively.

[152] W. Kip Viscusi, Lecture (Harvard L. Sch., Cambridge, Mass., Apr. 20, 1998) (copy of transcript on file with Boston University Law Review).

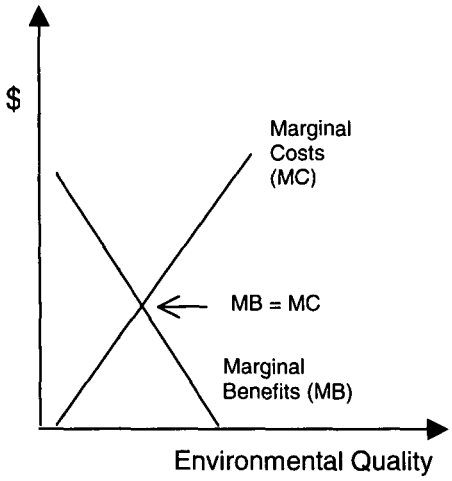
[153] 900 F.2d 429 (1st Cir. 1990).

[154] *See* Breyer, *supra* n. 20, at 12.

[155] *See id.*

year![156] Burning the soil made it safe enough for children to consume dirt for an astonishing 245 days without substantial harm.[157] If this were not bad enough, the problem was compounded by the fact that no children lived at the site (it was a swamp), that future construction therefore seemed unlikely, and that the parties agreed that at least half of the volatile organic chemicals would evaporate on their own by the year 2000.[158] To spend nearly $10 million in public resources to protect non-existent, "dirt-eating" children makes absolutely no sense. This example of the problem of "The Last 10 Percent" is not meant to suggest that there is no value to mitigating environmental hazards. Rather, it simply means that we need to allocate scarce public resources in a far more cost-effective manner to clean up the right sites to the right level of safety.[159]

Figure 2. Marginal Analysis of Environmental Safety Regulation




Marginal costs increase and marginal benefits decrease as we increase the scale of the regulatory policy.

Regulations should maximize benefits *minus* costs:

If MB > MC, then we should tighten the regulation because it would yield a bigger benefit to society than the amount we are giving up in increased costs.

However, if MB < MC, then we should decrease the scale of the regulatory program because incremental costs exceed incremental benefits.

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[156] *See id.*

[157] *See id.*

[158] *See id.*

[159] *See* Crandall, *supra* n. 73, at 110-30. Crandall believes that, contrary to what sensible cost-benefit considerations would dictate, congressional voting patterns are far more determinative of which environmental risks actually get addressed—or over-addressed.

The "Last 10 Percent" principle and the concept of diminishing returns highlight the value of instituting a marginal cost-benefit calculus into U.S. regulatory oversight policy. For any given program that society decides to undertake, the marginal benefit from each additional dollar spent declines as successive dollars continue to be spent, as shown above in Figure 2.[160] Conversely, marginal costs increase as the scale of the regulatory program expands, even though overall benefits still exceed overall costs. At a certain point, somewhere in the middle of Figures 1 and 2, marginal benefits from a given regulatory program equal the marginal costs. (This occurs where the slope of the total cost curve equals the slope of the benefits curve on Figure 1 and where the lines intersect on Figure 2.) If society continues to go further than this point with the stringency of its regulatory program, marginal costs exceed marginal benefits. This means that for every additional dollar spent, society gets less than a dollar back in benefits. If we take the scale of the regulation far enough, marginal costs can become so high and marginal benefits so low that even overall costs begin to outweigh total benefits.

Thus, it is easy to see from the above figures and analysis that regulatory oversight policy would most improve social welfare in America if we require that a given regulatory scheme choose the point at which its marginal benefits equaled its marginal costs. This is quite different than simply requiring that total benefits outweigh total costs. For instance, many regulatory programs pass the "total benefits exceed total costs" test, but that does not mean that we have successfully chosen the test and the scale of the program that would give us the greatest social value for the expenditure. If we merely compare total (or average) costs versus total benefits, regulatory tightenings that come towards the latter stages may have almost no effect on reducing risk, but they can cost substantial sums of money. The OSHA standard for ethylene oxide exposure (which mainly affects hospital workers involved in the cleaning of surgical equipment) is a prominent example.[161] The agency's regulatory analysis concentrated on the average cost per case of cancer prevented, even though the OSHA official who made the calculation acknowledged that the previous incremental tightening of the standard produced zero effect on reduction of cancer risk.[162] Similarly, Viscusi details three stringency levels of arsenic regulations that OSHA considered—loose, medium, and tight, as represented in Table 1.[163]

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[160] Although marginal benefits are constantly declining, overall benefits continue to increase, albeit more slowly as each dollar is spent.

[161] *See* Viscusi et al., *supra* n. 2, at 667-68 (discussing OSHA standards for ethylene oxide exposure).

[162] *See id.* (noting that OSHA's ethylene oxide exposure regulations did not take account of the fact that "the last incremental tightening of the standard produced no reduction in cancer cases whatsoever").

[163] *Id.*

Table 1. Stringency Levels of Possible OSHA Arsenic Regulations

| Stringency | Standard Level ($mg/m^3$) | Average Cost per Life Saved | Marginal Cost per Life Saved |
|---|---|---|---|
| Loose | 0.10 | $1.25 million | $1.25 million |
| Medium | 0.05 | $2.92 million | $11.5 million |
| Tight | 0.004 | $5.63 million | $68.1 million |

The average costs per life saved at these levels were $1.25 million, $2.92 million and $5.63 million respectively.[164] All appear to be relatively reasonable. However, the marginal costs per life saved at these different levels of regulatory strictness were $1.25 million, $11.5 million, and *$68.1 million* respectively.[165] When one looks at marginal values, it becomes clear that final regulatory tightenings may cost a great deal more money to society than the initial ones, without producing nearly the same benefits. Using total or average costs only serves to hide the prohibitive expenses associated with the strictest regulatory tightenings.

This type of marginal analysis reasoning was presumably behind President Bush's decision to withdraw President Clinton's proposed arsenic standards pending further study. The Clinton regulation would have tightened the maximum allowable arsenic level from 50 parts per billion (ppb) to 10 ppb.[166] No cost-benefit analysis was conducted, however, and EPA administrator Christine Todd Whitman therefore asked the National Academy of Sciences to study the risk factors involved in setting the standard at anywhere from 3 ppb to 20 ppb.[167] For example, it might make sense to limit arsenic levels in drinking water to 20 ppb instead of the current 50 ppb because it is economically feasible to do so, and because the payoff in terms of human lives saved is significant despite the costs. But, it might also make sense *not* to continue tightening the arsenic standard from 20 ppb down to 10 (or 3) ppb if the costs increase exponentially in that next interval with only a minimal benefit to human quality of life.[168] This is true even if *overall* benefits to society continue to be greater under a 10 ppb standard than under the current 50 ppb standard.[169] Hence, by using marginal analysis, decision-makers can

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[164] *Id.*

[165] *See id.*

[166] Heilprin, *supra* n. 4.

[167] *Id.*

[168] The principle of diminishing returns instructs us that the costs involved in making various hazards safer are rarely linear. For instance, while some assume that the cost of reducing arsenic levels from 30 ppb to 20 ppb should be the same as reducing it from 20 ppb to 10 ppb (since arsenic exposures have been cut by 10 ppb each time), the actual cost is likely to be significantly greater in the 20 ppb to 10 ppb interval.

[169] I note that as of August 1, 2001, the Senate and House voted to overturn the Bush administration's decision to study arsenic safety levels further, instead imposing the 10 ppb

most clearly see what level of regulation stringency is best for our country.

In sum, by choosing the point at which marginal costs equal marginal benefits, agencies would be designing regulations that maximize the benefits *minus* the costs. This is the optimal point with respect to increasing overall social welfare in America. Employing this approach will make the size of the pie the biggest it can possibly be, and it will allow for allocation of resources to achieve the greatest good for the greatest number.

### C. *Require a Risk-Risk Analysis—Evaluate Substitution Risks*

In addition to evaluating the marginal costs and benefits that federal regulatory programs create, responsible regulators should also be required to consider the substitution risks introduced. Lester Lave[170] and Judge Stephen Williams of the D.C. Circuit[171] have referred to this notion as "risk versus risk" analysis. The intuition behind it is that well-meaning regulations aimed at improving public safety by reducing certain risks sometimes unintentionally increase the probability of other risks.[172] Even if the direct financial costs of a regulation are lower than the benefits created, it does not make sense to introduce that regulation if it creates a sizeable new risk that previously did not exist.

There are two general categories of risk-risk analysis that merit examination.[173] First, there is a direct risk-risk tradeoff that is created by regulatory efforts.[174] For example, if the Federal Aviation Administration ("FAA") requires parents to buy separate seats for their infants accompanying them in airplanes so that babies will have their own seatbelts, then the cost of

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standard immediately. Some analysts have stated that it could cost communities (especially those in the West where naturally occurring arsenic levels are higher) up to $200 million annually to comply with the new rules. In order to meet the expense, Senator Pete Domenici, R-N.M., has proposed legislation requiring federal assistance to communities that must upgrade their water systems to lower their naturally occurring arsenic levels. Senator Conrad Burns of Montana observed: "I'll tell you one thing we don't have naturally, and that's enough money." *See* Alan Fram, *Senate Votes for Arsenic Standards*, Associated Press (August 1, 2001) (available in 2001 WL 25489246).

[170] *See* Lave, *supra* n. 17, at 15-17 (describing a "risk-risk" framework for regulation). For a discussion of the issues that arise when risks are traded off against one another, *see generally* John D. Graham & Jonathan Baert Wiener, *Confronting Risk Tradeoffs*, in *Risk Versus Risk: Tradeoffs in Protecting Health and the Environment* (John D. Graham & Jonathan Baert Wiener, eds., Harvard 1995).

[171] *See Intl. Union, UAW v. OSHA*, 938 F.2d 1310, 1326-27 (D.C. Cir. 1991) (Williams, concurring) (discussing risk-risk tradeoffs and noting that excessive regulatory expenditures make society poorer, potentially worsening individual health).

[172] *See e.g.* Lave, *supra* n. 17, at 16-17 (posing possibility that an increase in grain production unintentionally stimulated by regulating risk from administering growth hormones to cattle would increase occupational risks of the grain farmers).

[173] Viscusi et al., *supra* n. 2, at 705.

[174] *Id.*

an additional ticket might lead some parents to drive, which is a significantly riskier mode of travel.[175] Likewise, eliminating pesticides from our diet by eating organic produce would reduce the risk of cancer from those pesticides, but if the result is that we consume fewer fruits and vegetables in response, our overall cancer risk might increase.[176] A third example is that presented by the Consumer Product Safety Commission ("CPSC") original regulation requiring the coating of children's sleepwear with the flame retardant Tris.[177] The CPSC later discovered that this chemical was potentially carcinogenic.[178] If the incremental risk involved in wearing fire-resistant clothing coated in Tris is worse than the original danger presented by sleeping in unprotected pajamas, society should choose not to regulate. We never want to create a new risk that is worse than the old one.[179]

Second, when government agencies pass risk-reducing regulations, a certain amount of economic activity is generated, which presents indirect risks of its own.[180] For example, if an EPA regulation requires that factories emit only a certain level of pollution, energy and activity will be expended by producers of pollution-abatement equipment to make the necessary products to curb pollution to regulated levels.[181] All economic activity carries some degree of danger, be it from worker injuries or illnesses.[182] If the pollution-abatement equipment yields only a small benefit, but workers are exposed to extremely hazardous chemicals in order to produce or install it, we must query whether such a regulation is really in society's best interests. Thus, a responsible regulatory oversight scheme must consider these indirect risks created by well-intended regulatory efforts.

Furthermore, an additional form of risk-risk analysis has developed in recent years, focusing on the negative correlation between individual income and mortality.[183] Simply speaking, the wealthier that people are, the healthier they

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[175] Viscusi, *supra* n. 1, at 1449.

[176] *Id.* (citing Bruce N. Ames & Lois Swirsky Gold, *Environmental Pollution and Cancer: Some Misconceptions*, in *Phantom Risk: Scientific Inference and the Law* 153, 176-78 (Kenneth R. Foster et al. eds., MIT Press 1993)).

[177] W. Kip Viscusi, *Regulating Consumer Product Safety* 111 (Am. Enterprise Inst. 1984).

[178] *Id.*

[179] An analogy is sometimes made to rent control regulations in the landlord-tenant arena. Society's noble intention in promulgating rent-control ordinances is to ensure affordable housing for the poor and working class. However, it sometimes leads to housing shortages and dilapidated apartment buildings, as landlords lose their incentive to build new units or maintain existing ones.

[180] Viscusi, *supra* n. 1, at 1451.

[181] *See* Viscusi et al., *supra* n. 2, at 705.

[182] *Id.*

[183] Viscusi, *supra* n. 1, at 1452; *see generally Intl. Union, UAW v. OSHA*, 938 F.2d 1310, 1326-27 (D.C. Cir. 1991) (Williams, J., concurring) (discussing this type of risk-risk analysis).

tend to be.[184] Given the fact that all regulations impose some costs on individuals, they necessarily reduce people's wealth to some degree. At a certain point, when income is reduced by a large enough amount in the aggregate, it can be expected that somewhere someone will lose his or her life. The question becomes: "What amount of income loss is necessary before we can statistically expect one death to be caused in the United States?" Studies by Randall Lutter and John F. Morrall III have examined the link between individual income and mortality, and they concluded that a statistical life can be expected to be sacrificed for a societal income decrease approximating ten million dollars.[185] The study by the United States Joint Economic Committee on this matter placed the cost at three million dollars per statistical life,[186] whereas Viscusi's analysis has placed the value at approximately fifty million dollars in government expenditures before a life is lost.[187] Whatever the exact value may be, the overarching message is clear: bad regulations not only cost money unnecessarily; they also cost lives.[188]

Thus, if the combination of new direct and indirect risks created by a proposed federal regulation exceeds the risks eliminated by that well-meaning program, it does not make sense to promulgate it. All regulations should reduce current risks by a greater amount than the additional risks they impose on society.

### D. *Calculate Risks Objectively—Avoid Risk Manipulation*

Assuming that regulatory oversight policy adopts marginal cost-benefit and risk-risk analysis, we still must tackle the tricky issue of how to calculate risks. This dilemma is closely related to the most common criticism of cost-benefit analysis—that it is not possible to assign an accurate numerical value to all

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[184] Viscusi, *supra* n. 1, at 1452; *see generally* W. Kip Viscusi, *Mortality Effects of Regulatory Costs and Policy Evaluation Criteria*, 25 *RAND J. Econ.* 94, 96-108 (1994) [hereinafter *Mortality Effects*] (deriving this relationship). There are various reasons why wealthy individuals tend to lead longer lives than poorer people, including better education on the health risks of certain activities and better access to medical care. *See* Viscusi, *supra* n. 1, at 1452-54.

[185] Randall Lutter and John F. Morrall III, *Health-Health Analysis: A New Way to Evaluate Health and Safety Regulation*, 8 J. Risk & Uncertainty 1, 43-66 (1993).

[186] Viscusi, *supra* n. 1, at 1452 (stating that the United States Joint Economic Committee calculated that a 3% drop in real per capita income during the 1973 recession generated a 2.3% increase in mortality).

[187] Viscusi, *supra* n. 1, at 1454; *see generally* Viscusi, *Mortality Effects supra* n. 184 at 96-108 (detailing the calculations leading to this result). Because of the correlation between income and health, Viscusi has developed an alternative analysis that does not estimate the income-mortality relationship directly. Instead it links the amount of money people are willing to spend and the expenditures that will lead to the loss of a statistical life. Viscusi, *supra* n. 1, at 1454.

[188] Viscusi et al., *supra* n. 2, at 706 (asserting that there is a mortality cost to regulation because of the shift in funding to regulation and away from other areas such as healthcare).

costs and benefits of a given regulatory program.[189] True, cost-measurement and risk-assessment are difficult tasks because of some degree of "fuzziness" of the variables. Whenever a measurement is not clearly objective in nature, it offers an opportunity for people to manipulate the calculation to serve whatever interests they represent.[190]

Hence, I urge that responsible federal safety regulations be based on scientifically objective risks as much as they possibly can in order to guard against the problem of subjectivity. The problems caused by subjectivity are vividly evidenced by a recent example, referred to by the media as the "Doomsday Rock." In 1998, there was growing fear that an asteroid was on a collision course with earth and that our government might have to act quickly to "save the world." Dr. Brian Marsden of the Central Bureau for Astronomical Telegrams (the agency responsible for a nationwide asteroid warning system) estimated the probability of the asteroid hitting the planet at one in six thousand—quite a serious risk given the devastating consequences.[191] It set off a brief panic and was covered relentlessly by the media for several days.[192] However, Marsden and his team of astronomers made this calculation based on incomplete information and might have manipulated various probabilities in an effort to find an "exciting" result.[193] Fortunately, the true probability was approximately one in two million, and the earth has thus far survived.[194] Nevertheless, this extreme example demonstrates that if risks are not calculated objectively, the government might unnecessarily react or regulate to curb risks that were never very likely to materialize.[195]

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[189] *See* Robert Frank & Cass R. Sunstein, *Cost-Benefit Analysis and Relative Position*, 68 U. Chi. L. Rev. 323, 373-74 (2001) (concluding that in conducting cost-benefit analysis, estimates of people's willingness to pay for regulatory benefits may be systematically understated because conventional analysis assumes that economic decisions are based on absolute income acting in isolation rather than on "relative" position). The measurement difficulties inherent in cost-benefit analysis will be discussed in greater detail *infra,* Part V.A.

[190] *See generally* Stigler, *supra* n. 8, at 4-6 (warning against the potential of interest group "capture" of regulatory agencies).

[191] W. Kip Viscusi, Lecture (Harvard L. Sch., Cambridge, Mass., Apr. 6, 1998) (copy of transcript on file with Boston University Law Review).

[192] Kathy Sawyer, *After False Alarm, Astronomers Feud over Prophesying Threats*, Wash. Post A3 (Apr. 12, 1998).

[193] *Id.* Dr. Marsden admitted, "I had great trouble getting anybody to look for it. . . . So the announcement was designed to get more people to look for it. . . . I suppose I wanted to overcome a certain apathy among astronomers. That worked." *Id.* (second ellipsis in original). The astronomical community barraged Dr. Marsden with criticism for his inaccurate risk assessment, accusing him of "crying wolf." *Id.*

[194] W. Kip Viscusi, Lecture (Harvard L. Sch., Cambridge, Mass., Apr. 6, 1998) (copy of transcript on file with Boston University Law Review).

[195] Given the need to seek unbiased risk calculations, we should also heed George

Responsible and efficient regulatory policy must therefore address objective risks that actually threaten society, rather than risks that are politically or subjectively created. By requiring unbiased risk-assessment policies, society would be better able to focus its resources and regulatory efforts on significant problems that must be addressed, rather than on speculative or fabricated ones.

### E. *Correct Societal Risk Misperceptions*

Moreover, in focusing on objective risks, regulatory policy must address the serious problem of systematic risk misperception.[196] Some risks are clearly objective in nature—for instance, the percentage chance that a person will die of lung cancer from smoking cigarettes.[197] Although these risks can be calculated with reasonable certainty, the public's perception of their frequency and their severity is often highly inaccurate.[198] People tend to overestimate the risks of terrifying but, in actuality, extremely low-probability events, such as dying from a tornado, flood, or botulism.[199] More shocking is that the risk of death from eating four tablespoons of peanut butter per day is over ten times greater than the risk of death from drinking water containing the EPA limit of chloroform, and it is approximately five hundred times greater than drinking

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Stigler's warning about the potential for industry capture of regulatory agencies. *See* Stigler, *supra* n. 8, at 4-6. When money is allowed to influence decisionmakers, accurate risk assessment will inevitably suffer. *Cf.* Smith & Calandrillo, *supra* n. 8, at 716-19 (discussing the potential for regulatory capture of state legislatures, resulting in sub-optimal results from society's perspective).

[196] *See* Viscusi et al., *supra* n. 2, at 661-63 (arguing that public misperception of risk levels generates irrational market decisions and that public overestimation of risk levels diverts too many resources to risks that are not of great consequence).

[197] The annual risks posed by certain common events and activities are reproduced *infra* in note 200.

[198] *See* Viscusi et al., *supra* n. 2, at 661-63 (giving examples of the risks of various events and asserting that highly publicized events are often associated with substantial risk perceptions, even though the risks involved may not be great). I should note that the public's misperception of risk is not always a sign of individual irrationality. To the extent that tragic events themselves are highly publicized without any mention of frequency statistics for those events, individuals might rationally attribute a greater risk to those events occurring than the actual risk. *Id.* at 663. It is thus incumbent upon the media and government to try to educate citizens as to frequency of risks so that publicity does not distort public perception beyond reality. *See id.* (suggesting that a possible government response to this public misperception of risk is to attempt to educate the public about its overly alarmist reactions).

[199] *See* Baruch Fischhoff et al., *Acceptable Risk* 29 fig. 2.4 (Cambridge U. Press 1981) (reprinted in Viscusi et al., *supra* n. 2, at 662 fig. 19.2) (reporting the results of a study in which educated people overestimated the likelihood of causes of death that are unusually visible, sensational, and easy to imagine and that tend to be overreported in the news media); Viscusi, *supra* n. 2, at 662 (discussing the results of the study reported by Fischhoff).

water containing the EPA limit of trichloroethylene.[200] Conversely, people generally underestimate the risks of relatively common tragedies, such as cancer, heart disease, and stroke.[201]

There are several implications for society's systematic misperception of risk. First, it means that market decisions will often be less than optimal.[202] However, that alone does not imply that additional regulation will be necessary.[203] As Viscusi reasons, if risk perceptions are already excessive, the market-provided solution will attempt to offer safety levels that correspond to

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[200] *See* Richard Wilson & E. A.C. Crouch, *Risk Assessment and Comparisons: An Introduction*, 236 Sci. 267, 268 tbl. 2 (April 1987) (reprinted in Viscusi et al., *supra* n. 2, at 673 tbl. 19.6). The risks posed by some other common events and activities are as follows:

| Action | Annual Risk of Death | Uncertainty |
|---|---|---|
| Motor vehicle accident (total) | $2.4 \times 10^{-4}$ | 10% |
| Motor vehicle accident (pedestrian only) | $4.2 \times 10^{-5}$ | 10% |
| Home accidents | $1.1 \times 10^{-4}$ | 5% |
| Electrocution | $5.3 \times 10^{-6}$ | 5% |
| Air pollution, eastern U.S. | $2 \times 10^{-4}$ | Factor of 20, downward only |
| Cigarette smoking, one pack per day | $3.6 \times 10^{-3}$ | Factor of 3 |
| Sea-level background radiation (except radon) | $2 \times 10^{-5}$ | Factor of 3 |
| All cancers | $2.8 \times 10^{-3}$ | 10% |
| Four tablespoons of peanut butter per day | $8 \times 10^{-6}$ | Factor of 3 |
| Drinking water with EPA limit of chloroform | $6 \times 10^{-7}$ | Factor of 10 |
| Drinking water with EPA limit of trichloroethylene | $2 \times 10^{-9}$ | Factor of 10 |
| Alcohol, light drinker | $2 \times 10^{-5}$ | Factor of 10 |
| Police killed in line of duty (total) | $2.2 \times 10^{-4}$ | 20% |
| Police killed in line of duty (by felons) | $1.3 \times 10^{-4}$ | 10% |
| Frequent flying professor | $5 \times 10^{-5}$ | 50% |
| Mountaineering (mountaineers) | $6 \times 10^{-4}$ | 50% |

*Id.* The uncertainty value in the third column reflects the range of uncertainty of the actual mean risk value in the second column. For example, the "Factor of 10" notation in the third column means that the actual mean risk of the actions in the first column could be ten times greater or ten times less than the "Annual Risk of Death" value in the second column. Similarly, the "Factor of 20 downward only" notation in the third column for the annual risk of death from air pollution in the eastern United States means that the actual mean risk could be as much as twenty times less than the "Annual Risk of Death" value in the second column. *See* Viscusi et al., *supra* n. 2, at 673.

[201] *See* Viscusi et al., *supra* n. 2, at 662 (arguing that individuals tend to overestimate the risks associated with lower-probability events and underestimate the risks associated with higher-probability events, suggesting that market decisions will seldom be optimal).

[202] *Id.*

[203] *Id.*

exaggerated risk perceptions[204]—i.e., certain products may be made *too* safe because of misperceived risks, leading to greater costs than necessary to mitigate them.[205]

Second, the overestimation of low-probability events has significant ramifications for regulatory policy. If people overreact to very small risks and exert pressure on politicians to remedy them, the resulting regulatory policies may devote too many resources to minor risks and too few resources to more significant dangers.[206] For example, if citizens overestimate the risk caused by living near hazardous waste sites or nuclear power plants, society may spend more money to locate such facilities in remote areas even though the risks created by placing them in more populated areas are not appreciably greater.[207] The question becomes then: "Should government still try to institute policies that reflect the misperceptions held by its citizens in order to increase people's 'psychic' well-being?"[208] Or, should government responsibly try to educate society about the true risks in order to formulate regulations more optimally?[209] Obviously, the best solution would be for government to communicate information to the public, and to issue efficient regulations necessary to control and correct the "real" risks society faces.[210]

### F. *Focus on Average Risks, Not Worst Case Scenarios*

In addition to correcting systematic risk misperceptions, responsible regulatory policy should address average or most-common risks, rather than

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[204] *Id.*

[205] Conversely, if risk perceptions are consistently too low with respect to certain goods, the market solution will inadequately address the risk, and government regulation will be necessary even if the public disagrees. *See id.* at 663 (asserting that if the general public underestimates the risk, one presumably would not expect the government to remain idle and let citizens incur risks unknowingly).

[206] *See id.*

[207] One would have to live within five miles of a nuclear reactor for fifty years before one would incur a one-in-one-million chance of death caused by a radiation accident at the plant. *See id.* at 659 tbl. 19.2 (citing Richard Wilson, *Analyzing the Daily Risks of Life*, 81 Tech. Rev. 40, 40-46 (1979)). Likewise, the costs of placing hazardous waste dumps in more populated areas might be substantially less than regulating their placement to less populated areas, because the transportation costs might increase dramatically. One should balance these decreased costs against the relative risks and benefits of placement in both areas, however, to determine the more responsible option.

[208] *See id.* at 663 (asking rhetorically whether the government should respond to the public's overestimation of risk to reflect the interest of its citizenry).

[209] *See id.* (suggesting that a possible government response to this public misperception of risk is to attempt to educate the public about its overly alarmist reactions).

[210] *See id.* (stating that an important government function is to acquire more scientific information than is feasible for an individual to obtain, communicate this information effectively to the public, and issue regulations necessary to control real risks).

worst-case scenarios.[211] Even in the case of relatively common risks, the chances of such risks materializing are usually extremely small,[212] and the exact probabilities are often highly uncertain.[213] Hence, when estimating risk probabilities, government agencies often attempt to ascertain a range of uncertainty levels within which the risks fall.[214] Certain drinking water contaminants, for instance, could pose an actual mean risk of ten times greater or less than the annual risk calculated by the EPA.[215] The regulatory approach to this uncertainty has been to use the upper end of the ninety-five percent confidence level around a particular risk.[216] In other words, given uncertainty and the principle of risk aversion, agencies try to take into account the worst-case scenario when predicting risks, and shape their regulations accordingly. That way, the argument goes, the public can never be surprised or disappointed when risks turn out to be greater than originally thought.

By erring on the side of conservatism, however, government agencies actually distort the true risks posed, and they may impose more stringent regulations than if they had attempted to measure average risks in the first place.[217] As William Reilly notes, "[W]e have been regulating with a

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[211] The EPA, for example, at one time assessed risk posed by air pollution by defining the upper bound of risk as the risk to a person—sometimes referred to as "Maximan"—who lived twenty-four hours a day for seventy years at the location expected to receive the heaviest concentration of the pollutant. *See* Comm. on Risk Assessment of Hazardous Air Pollutants et al., *Science and Judgment in Risk Assessment* 46 (Natl. Acad. Press 1994) (describing various methods of calculating pollutant exposure, including the traditional EPA method, which reflects an unrealistic possibility of finding rare conditions occurring together).

[212] *See* Wilson & Crouch, *supra* n. 200, at 268 tbl. 2 (listing the annual risk and uncertainty values for certain actions). For instance, the annual risk of death is about one in five thousand from all motor vehicle accidents, one in ten thousand from all home accidents, and one in two hundred thousand from electrocution. The problem of assigning utility values to the reduction of such extremely small risks is discussed *infra*, Part V.C.

[213] *See id.* The uncertainty levels for various risks of death can range from a low of around ten percent—risk from motor vehicle accidents—to a high of a factor of twenty—risk from air pollution in the eastern United States. *See supra* n. 200 (listing the annual risk and uncertainty values for certain actions).

[214] *See supra* n. 200 (explaining the uncertainty ranges for the annual risk values).

[215] *See supra* n. 200 (listing the annual risk and uncertainty values for certain actions and explaining their uncertainty ranges) The annual risk of death from drinking water with the EPA limit of chloroform bacteria was calculated at six in ten million, but the actual mean risk could be ten times greater or less than this estimated annual risk.

[216] *See* Viscusi et al., *supra* n. 2, at 673.

[217] *See* Breyer, *supra* n. 20, at 10-29 (explaining how government regulation of small but significant risks often leads to tunnel vision, random agenda selection, and inconsistency instead of balanced and cost-effective regulation); Viscusi, *supra* n. 1, at 1437 (explaining how the uncertainty of measuring risk probabilities causes agencies to use conservative risk estimates, creating a bias in favor of regulating uncertain risks). *Cf.* Carnegie Commn. on Sci., Tech. & Govt., *Risk and the Environment: Improving Regulatory Decision Making* 75,

preposterous conservatism in terms both of unreasonable inferences from animal data and unrealistic human-exposure assumptions."[218] Furthermore, agencies typically base regulations on not one, but a series of conservative assumptions. These individual worst-case estimates can compound upon each other, making the final risk calculation highly inaccurate.[219] The cleanup of the New Hampshire toxic waste dump in *United States v. Ottati and Goss*[220] is a prime example: one would be forced to assume that children played at the site, which was a swamp; that they would eat dirt from the ground before the toxins evaporated; and that they would do so for up to 245 days per year.[221] The EPA spent over nine million dollars in public resources to prevent such a worst-case scenario because it used the highest bound for all risk variables in its calculus, resulting in risk assessment figures that were substantially greater than actual risk.[222]

Similarly, the Doomsday Rock example (described *supra* in Part III.D) highlights another case where focusing on worst-case scenarios yields highly unreliable results.[223] Rather than arrive at accurate estimates of risk probabilities—one in two million—the calculation became so distorted that it was off by a factor of several hundred.[224] Intelligent government responses to problematic situations are impossible if the risk estimates are so suspect.

Thus, by aiming to be "extra safe," government agencies avoid the problem of addressing most-likely risks. Instead, compounding successive conservative

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79, 81-82 (1993) (discussing the considerations in relative risk analysis and the assistance that it provides to agencies in making sound policy decisions).

[218] Robert Stavins, Carol M. Browner, William Ruckelshaus, Douglas Costle & William Reilly, *Environmental Protection: Is the Public Willing to Pay?*, EPA J. 11, 16 (Winter 1995).

[219] *See* Nichols & Zeckhauser, *supra* n. 64at 13-24 (describing the distortions in regulatory policy caused by the use of "conservative" risk assessments); *but see* James E. Krier, *Risk and Design*, 19 J. Leg. Stud. 781, 781-90 (1990) (defending the use of conservative risk values).

[220] 900 F.2d 429 (1st Cir. 1990).

[221] *See* Breyer, *supra* n. 20, at 11-12; *supra* nn. 153-158 and accompanying text (discussing *Ottati and Goss*).

[222] *See* McGarity, *supra* n. 1, at 22 (discussing regulatory reformers' criticism of the practice of basing risk assessment figures on "worst case" possibilities, which results in unnecessarily protective policies). The EPA now makes a slightly less conservative high-end exposure estimate, which is intended to constitute "a plausible estimate of the individual exposure for those persons at the upper end of an exposure distribution." 57 Fed. Reg. 22888, 22901 (May 29, 1992) (describing the concept of high-end exposure, which is supposed to give estimates of exposure in the upper range of the distribution but avoid estimates beyond the true distribution).

[223] *See* Malcom W. Browne, *Frantic Hunt Found Photos that Deflated Asteroid Fears*, 147 N.Y. Times A7, A7 (March 14, 1998).

[224] W. Kip Viscusi, Lecture (Harvard L. Sch., Cambridge, Mass., Apr. 6, 1998) (copy of transcript on file with Boston University Law Review).

risk estimates makes the problem exponentially worse. It causes regulatory efforts to focus inefficiently on solving worst-case scenarios that are extremely unlikely to occur.[225] This wastes public resources that certainly could be spent better elsewhere—i.e., on poor children who need vaccinations rather than on children who might eat contaminated dirt up to 245 days of the year.

So, what can be done to solve the problem? First, we should require that regulatory agencies disclose mean risk values, not just worst-case scenarios.[226] Next, they should tell the public more about the uncertainty regarding costs and benefits and provide information about the shape of the distribution of the risk curve. If there is only a small chance of a given risk materializing, but there is an unusually high degree of upward uncertainty, an appropriate regulatory response might guard against the risk more than one would otherwise think it should. Finally, regulatory agencies should be asked to disclose best-case scenarios in addition to the most dire ones.[227] In this manner, the resulting policies may be as informed and educated as possible.

### G. *Require Agencies to Publish and Justify Regulatory Triggers*

Requiring government agencies to publish and justify their "regulatory triggers" would also make sound policy sense. Regulatory triggers are those levels of activity that will cause government agency regulations to come into effect. For example, the Department of Justice ("DOJ") already publishes its "safe harbor" merger guidelines in an effort to inform industry whether a given combination of business entities could be deemed anti-competitive.[228] The DOJ must think carefully about how to set the regulations to foster maximum efficiency because it knows that by making them public, it is opening itself up to scrutiny. In addition, by viewing these regulatory triggers, the firms involved can ascertain ex-ante if they should fear a government investigation into their proposed merger. They can then proceed with the planned transaction or adjust their combination accordingly. Either way, they are fully informed of the risks presented and can respond more appropriately.

Similarly, opening up agency rulemaking to public scrutiny likely would enhance the quality of the reasoning behind regulatory decisions.[229] No

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[225] *See* Viscusi, *supra* n. 1, at 1437 (noting that agencies have responded to the uncertainty surrounding risk-probability values by using "conservative" risk assessments that focus on upper-bound values).

[226] *Cf.* Viscusi, *supra* n. 22, at 76 (explaining how workers and firms may systematically overestimate or underestimate risks and therefore the desirable properties imputed to market outcomes may not prevail).

[227] *Cf. id.* at 102-13 (explaining that individuals differ substantially in their value of life and willingness to incur risks).

[228] *See* Viscusi et al., *supra* n. 2, at 214 fig. 7.5 (illustrating the "safe harbors" for mergers under the Department of Justice 1992 guidelines).

[229] *See* Viscusi, *supra* n. 22, at 162-63 (arguing that publicizing regulators' views enhances public debate, encourages better regulatory standards, and legitimizes the

individual or agency wants to be exposed publicly as having not critically considered a regulatory response to a problem. Ideally, by asking agencies to publish and justify their triggers, they will give more careful thought to the regulatory solution that society receives.

Additionally, if a regulatory agency such as the EPA published the point at which it would require firms to curb certain pollutants or clean up certain hazardous waste, those firms would have greater information at their disposal to allow them to make educated determinations about how to allocate their resources between production and pollution abatement. There would be less need to issue sanctions in the first instance if "offenders" had knowledge regarding potential regulatory triggers, and could adjust their behavior accordingly. Society would also be better off because it would obtain the results it was seeking without incurring the costs of regulation.

Hence, requiring the publication and justification of agency regulatory triggers should improve the quality and efficiency of federal safety regulations and generate more optimal responses by those regulated groups.

### H. *Require Agencies to Perform Ex-Post Evaluations of Their Regulatory Efforts*

Finally, any effort aimed at improving the efficiency of regulatory design and increasing social welfare—whether it be an offshoot of the ideas contained in this paper or the meritorious ideas of any number of scholars[230]—runs the risk of going for naught if the results obtained are not measured and evaluated ex post.[231] Although all regulatory bodies are constantly striving to improve the ways in which they operate, actual improvement is almost impossible to achieve unless there is a baseline against which to measure it against.

In this effort, regulatory agencies should be required to perform ex-post evaluations of their policies, in the hope that the evaluation process itself would reveal which portions were successful and which were not.[232] In turn, the agencies could use that knowledge in a continuous quality improvement effort. They could restructure and reformulate future regulations to seek

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oversight process).

[230] Scholars have proposed numerous other valuable ideas for regulatory reform over the years. *See e.g.* Gary Becker, *A Comment on the Conference on Cost-Benefit Analysis*, 29 J. Leg. Stud. 1149, 1149 (2000) (suggesting that an interest-group competition model would be a better approach to cost-benefit analysis); Blais, *supra* n. 40, at 247, 250-53 (arguing against the neoclassical economic approach to environmental policymaking and for a new approach incorporating developing economic and behavioral theories); Geistfeld, *supra* n. 45, at 120-21 (proposing a modified cost-benefit analysis that values safety over money); Sunstein, *supra* n. 70, at 1060 (supporting cost-benefit analysis "on grounds associated with cognitive psychology and behavioral economics," not on economic grounds).

[231] *See* Viscusi, *supra* n. 22, at 162-63 (criticizing the absence of ex-post evaluation of cost estimates to discern whether they have systematic deficiencies).

[232] *See id.* (urging the establishment of a policy evaluation staff to make these ex-post assessments and provide support to analysts outside of the government).

greater efficiency and increased social welfare. Moreover, the evaluation process should continue at regular intervals, because we can all learn from ongoing reexaminations of our past successes and failures in order to improve upon future decisions.

### I. *Interim Observations*

The concepts outlined above are not intended as absolute mandates to successful regulatory oversight policy in the United States, but are suggested as ideas to help improve overarching regulatory design. Marginal cost-benefit analysis and risk-risk analysis, in the abstract, are simply tools aimed at preventing regulations from harming society more than it benefits. Requiring objective risk calculation would help prevent abuses by powerful forces in industry or government whose agendas diverge from our nation's best interests. Correcting systematic risk misperceptions is essential to educate the public about which regulations are needed and which may be less necessary than previously thought. Focusing on average risks rather than on worst-case scenarios will enhance the responsiveness of regulatory efforts to our most pressing problems. Publishing regulatory triggers and requiring ex-post evaluations of previously implemented policies should also improve the quality of regulatory design by exposing it to public scrutiny and continuous efficacy measurement.

None of these ideas are utopian solutions, however, and some of their criticisms will be considered *infra* in Part V. Of course, many of the above concepts, including the fundamental implementation of cost-benefit analysis, are far from foreign notions in the regulatory oversight arena. Both the executive and legislative branches of our government have long debated many of these ideas, and their attempts to implement sensible regulatory oversight policies are discussed below.

## IV. HISTORY OF REGULATORY REFORM ATTEMPTS

### A. *Executive Oversight of Agency Regulation*

Although the legislative mandates given to regulatory agencies generally have not imposed cost-benefit requirements, the executive branch has made several attempts over the years to introduce responsible cost-benefit analysis into the federal health and safety regulation process. President Richard Nixon was the first to recognize explicitly that government regulations cost money.[233] He established informal "quality of life" reviews, a process aimed at obtaining some sense of the economic implications of major new regulations passed in

[233] *See* Viscusi et al., *supra* n. 2, at 664 (noting that President Nixon instituted a "quality of life" review process to obtain a sense of the costs and economic implications of major new regulations).

the United States.[234] The Ford administration expanded upon this initiative by issuing Executive Order 11821.[235] Ford required that agencies prepare an inflationary impact statement for major regulations,[236] and pursuant to statute, his administration established the Council on Wage and Price Stability ("CWPS"),[237] which reviewed these inflationary impact statements.[238] The CWPS also conducted public hearings to provide public scrutiny of inflationary problems in various sectors of the economy.[239]

President Carter built upon these regulatory reforms by establishing the Regulatory Analysis Review Group ("RARG"), a body consisting of high-level Cabinet officials who advised the President on regulatory policy.[240] The

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[234] *Id.* For a description of the "quality of life" review process, see Leon Rodriguez, Student Author, *Constitutional and Statutory Limits for Cost-Benefit Analysis Pursuant to Executive Orders 12291 and 12498*, 15 B.C. Envtl. Aff. L. Rev. 505, 512 (1988). Rodriguez explains:

> "Quality of life" review enabled agencies and departments throughout the executive branch to comment on proposed regulations. . . . [The review applied] to regulatory actions that would "impose costs, or negative benefits, to nonfederal sectors" and "that would increase the demand for federal funds for programs or agencies which are beyond the funding levels provided for in the most recent budget requests submitted to the Congress."

*Id.* (footnotes and citation omitted).

[235] *See* Exec. Or. 11821, 3 C.F.R. 926, 926 (1974) ("Major proposals for . . . the promulgation of regulations or rules by any executive branch agency must be accompanied by a statement which certifies that the inflationary impact of the proposal has been evaluated.")

[236] *See id.*

[237] *See Council on Wage and Price Stability Act*, 12 U.S.C. § 1904 (expired 1981) (codifying Pub. L. No. 93-387, 88 Stat. 750 (1974) as amended).

[238] Murray Weidenbaum, *Regulatory Process Reform from Ford to Clinton*, 20 Regulation: The CATO Rev. of Bus. & Govt. 20, 20 (Winter 1997). The Review Group on Regulatory Reform, which was a subcommittee of the Domestic Council, provided the driving force behind this review process. The Review Group concentrated on legislative and process changes in the regulatory system, and the Domestic Council acted as a policy-coordinating mechanism in the Ford White House. *Id.*

[239] *See* 12 U.S.C. § 1904 (1976) (expired 1981).

[240] Senior officials in the Office of Management and Budget, the Council of Economic Advisers, and the White House formed the core of this group, with the Council of Economic Advisers and the CWPS providing the primary staff support for the group. However, the President was not bound by the group's advice, as evidenced by a famous case involving the OSHA cotton dust standard. The head of the Council of Economic Advisors, Charles Schultze, initially convinced President Carter that the cost of the cotton dust standard far outweighed the benefits—several hundred thousand dollars for each temporary disability prevented. Carter, however, came under pressure from labor unions and Secretary of Labor Donovan, which caused him to reverse his decision and issue the regulation despite its inefficiencies. This example demonstrates that even when leading economic officials present a cogent argument on the merit or lack of merit of a particular regulation, political factors and economic consequences other than costs and benefits can still trump that

collegial nature of this group served an educational function as well, as members from different agencies could sit in on debates held in other agencies and gather expertise transferable to their own work.[241] To formalize regulatory review, Carter issued Executive Order 12044, which replaced Ford's "Economic Impact Statement" with the "Regulatory Analysis."[242] In order to give the public adequate notice and thereby increase the opportunity for "early and meaningful public participation," this Order required agencies to "publish at least semiannually an agenda of significant regulations under development or review."[243] More notably, it required that government agencies *assess* the benefits and costs of their regulatory proposals but stopped short of mandating that benefits actually *exceed* costs.[244] Still, the introduction of this type of cost-effectiveness test was a large step in the right direction, leading to the popularizing of "performance standards" for industry sectors and "bubble policies" for pollution control.[245]

The election of Ronald Reagan in 1980 brought executive oversight of regulatory reform to the forefront, as Reagan made it one of the "four pillars" of his initial program for economic recovery.[246] He established the Task Force on Regulatory Relief, a high-level group to oversee the effort and appointed

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argument. Viscusi et al., *supra* n. 2, at 26-27.

[241] *See id.* at 26.

> For instance, EPA officials present during a discussion of a proposed National Highway Traffic Safety Administration regulation could engage in the debate over the merits of the regulation and the appropriate means for assessing these merits, where the same kinds of generic issues were pertinent to their own agency as well.

*Id.*

[242] *See* Exec. Or. 12044, 3 C.F.R. 152, 154-55 (1978) (describing the requirements governing "Regulatory Analysis").

[243] *Id.* at 153.

[244] *See id.* at 154. Executive Order 12044 required the following regulatory analysis in relevant part:

> Each regulatory analysis shall contain a succinct statement of the problem; a description of the major alternative ways of dealing with the problem that were considered by the agency; an analysis of the economic consequences of each of these alternatives and a detailed explanation of the reasons for choosing one alternative over the others.

*Id.* Thus, although Presidents Ford and Carter encouraged the a cost-benefit standard in promulgating regulations, the final authority for promulgating rules remained with the regulating agency. They did not require that an agency actually refrain from promulgating a regulation whose costs would exceed its benefits. This "advisory nature" of the cost-benefit standard provides a partial explanation of the limited success of early regulatory reform efforts as do the inherent limitations on the role of regulatory analyses in rule promulgation. Weidenbaum, *supra* n. 238, at 21-22.

[245] *See* Crandall, *supra* n. 73, at 83-84. "Bubble policies" allowed firms to choose the most efficient way of reducing total pollution output at their plants, rather than forcing each individual smokestack to meet a certain standard. *Id.*

[246] Weidenbaum, *supra* n. 238, at 22.

Vice President George Bush to chair the group.[247] Stemming from these priorities, Reagan issued Executive Order 12291 in 1981, the first of its kind to require that agencies affirmatively demonstrate that the benefits of regulations exceed their costs.[248] That Order stated starkly: "Regulatory action shall not be undertaken unless the potential benefits to society for the regulation outweigh the potential costs to society."[249] However, Executive Order 12291 qualified this bold effort with language exempting agencies from making the cost-benefit comparison where it was explicitly prohibited by the governing statute.[250]

Even where there was a contrary legislative mandate, however, the Reagan administration required that agencies at least calculate costs and benefits and submit the "Regulatory Impact Analysis" to the Office of Information and Regulatory Affairs ("OIRA") within the OMB for review.[251] The role of OMB became prominent, as it was charged with evaluating the effectiveness of agency programs, policies, and procedures; assessing competing funding demands among agencies; and setting funding priorities.[252] The Director of OMB would review and comment on rulemaking proposals and final rules—without public comment—before formal publication.[253] Executive Order 12498 further strengthened this review by extending the OMB's oversight role even earlier into the regulatory development process.[254]

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[247] *See id.*

[248] *See* Exec. Or. 12291, 3 C.F.R. 127, 128-29 (1981) (prescribing requirements for regulations, regulatory impact analyses, and the regulatory review process).

[249] *Id.* at 128.

[250] *See id.* (requiring that the regulation's potential benefits outweigh its potential costs "to the extent permitted by law"); Viscusi et al., *supra* n. 2, at 26 (reiterating that cost-benefit analysis is not binding where it conflicts with the agency's legislative mandate).

[251] *See* Exec. Or. 12291, 3 C.F.R. at 128-29 (requiring that the agency prepare such an analysis, including a description of the potential costs and benefits, in connection with each major rule, consider the analysis "to the extent permitted by law," and transmit the analysis and proposed rule to the Director of the Office of Management and Budget); Weidenbaum, *supra* n. 238, at 22 (describing the regulatory reviews conducted by the Office of Information and Regulatory Affairs in the Office of Management and Budget pursuant to Executive Order 12291).

[252] *See* Viscusi et al., *supra* n. 2, at 27 (asserting that the OMB's responsibility for setting budgets of regulatory agencies and its substantial authority over the agencies increased its institutional clout under the Reagan administration).

[253] *See* Exec. Or. 12291, 3 C.F.R. at 129-30 (authorizing the Director of OMB to review any Regulatory Impact Analysis, notice of proposed rulemaking, or final rule and requiring an agency to consult with the Director and delay publication of the notice or final rule upon the Director's request); Rodriguez, *supra* n. 234, at 506-07 (explaining that the OMB submits comments to agencies at critical points in the regulatory process, without those comments becoming part of the record, and that the OMB's recommendations are exempt from public comment).

[254] *See* Exec. Or. 12498, 3 C.F.R. 323, 323 (1985) (requiring that agencies submit a

Responsible executive oversight of federal safety regulations was continued by the Bush and Clinton presidencies with only minor changes. Clinton's Executive Order 12866 slightly softened the cost-benefit language of Reagan's executive order.[255] It expressly recognized that not all regulatory benefits and costs can be quantified easily into a precise number and that nonmonetary consequences should be influential as well.[256] Such a compromise position should assuage some of the criticism that cost-benefit analysis is inherently insensitive to morality concerns and difficult-to-quantify benefits. President George W. Bush has indicated that he cares about these softer variables as well,[257] and he has expressed a desire to follow the cost-benefit approach of his predecessors. Only time will tell what his regulatory oversight policy will become.

Thus, executive oversight of the regulatory process, from Ford to Carter to Reagan to Bush to Clinton, has allowed great strides to be taken to improve the quality and efficiency of federal safety regulations in the United States. However, full implementation of marginal cost-benefit analysis, risk-risk analysis (and the other recommendations detailed above) may implicitly depend upon the reformulation of current congressional mandates to allow for such responsible approaches to regulation.[258]

### B. *Proposals to Rewrite Congressional Mandates*

The directives that Congress hands down when promulgating federal safety

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statement of the goals and objectives of their regulatory policies and information about all significant regulatory actions underway or planned to the Director of OMB); Rodriguez, *supra* n. 234, at 506-07 (asserting that the OMB gained significant political power through this requirement, as it was able to comment on regulations at critical points in the regulatory process).

[255] *See* Exec. Or. 12866, 3 C.F.R. 638, 639 (1993) ("Each agency shall assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.")

[256] *See id.* ("Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify but nevertheless essential to consider."); Viscusi, *supra* n. 1, at 1430.

[257] George W. Bush has become well-known for his "compassionate conservatism" mantra. Bush has said that his administration would promulgate "good, balanced environmental policy, policy that understands you can have economic growth and at the same time protect the environment, policy that'll base decisions on science, not on some fad or, you know, politics." Edwin Chen, *Arsenic Issue Bungled, Bush Says*, L.A. Times A13 (Aug. 11, 2001). Despite Bush's espoused commitment to the environment, he has not convinced environmental groups, which have already challenged Bush's proposal on arsenic regulations in drinking water. *See supra* n. 4 (discussing the arsenic standard controversy).

[258] *See generally* Viscusi et al., *supra* n. 2, at 41 (concluding that congressional mandates have great long-run influence on regulatory policy).

legislation determine the mission that regulatory agencies must fulfill. These mandates are often silent on the subject of cost-benefit or risk-risk analysis, however, and in most instances there are specific provisions that give the agency the leeway to avoid such explicit balancing.[259] For example, the EPA was successful in defending against the imposition of a cost-benefit requirement this year in *Whitman v. American Trucking Associations* ("*American Trucking*"),[260] precisely because the legislative mandate given to the agency never required such a sensible analysis. In *American Trucking,* the Supreme Court unanimously held that absent express legislative intent to the contrary, it was not going to "read in" a requirement that the agency conduct a cost-benefit analysis.[261] Some of this concern is undoubtedly justified because agencies charged with protecting the environment should certainly focus the majority of their energy on that task rather than on controlling costs. That does not mean, however, that some element of cost-benefit analysis should not be included in, or at least permitted by, responsible legislative mandates.

Nonetheless, examples abound of regulatory legislation that is oblivious to cost-benefit concerns or risk tradeoffs.[262] OSHA's mandate states that the mission of the agency is "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions."[263] The Supreme Court elaborated upon this directive in *American Textile Manufacturing Institute v. Donovan*,[264] holding that OSHA has no duty to base its regulations on cost-benefit analysis.[265] Similarly, the Clean Air Act charges the EPA with "protect[ing] and enhanc[ing] the quality of the Nation's air resources so as to promote the public health and welfare."[266] Congress makes no mention of the cost or risk tradeoffs involved, and the Supreme Court has given no indication

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[259] *See Am. Trucking Assns.*, 121 S. Ct. 903, 908 (2001) (holding that the Clean Air Act prohibits consideration of economic feasibility in setting national ambient air quality standards); *Lead Indus. Assn. v. EPA*, 647 F.2d 1130, 1148-49 (D.C. Cir. 1980) (holding that the Clean Air Act prohibits consideration of economic and technological feasibility in setting national ambient air quality standards).

[260] 121 S. Ct. 903 (2001).

[261] *Am. Trucking Assns.*, 121 S. Ct. at 911; *but see Chem. Mfrs. Assn. v. EPA*, 217 F.3d 861, 867 (D.C. Cir. 2000) (implying a form of cost-benefit analysis through the rubric of "reasoned decisionmaking "); *Am. Petroleum Inst. v. EPA*, 216 F.3d 50, 57 (D.C. Cir. 2000) (requiring reasoned decisionmaking); Stoll, *supra* n. 136, at 10288 (arguing that "reasoned decisionmaking" is a back-door method of applying some semblance of a cost-benefit analysis to EPA regulations).

[262] *E.g. Occupational Safety and Health Act*, 29 U.S.C. §§ 651-678 (1994) (defining OSHA's purpose without requiring a cost-benefit analysis); *Clean Air Act*, 42 U.S.C. §§ 7401-7671 (1994) (establishing the EPA's mandate "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare").

[263] 29 U.S.C. § 651.

[264] 452 U.S. 490 (1981).

[265] *Id.* at 508-12 (1981).

[266] 42 U.S.C. § 7401.

that it will force such a comparison absent express legislative intent to do so.[267]

Because the current legislative mandates are often indifferent to the notion of cost-benefit analysis, the goal that government regulatory agencies are charged with attaining, although noble in intent, is entirely unrealistic. Nothing—not air, not water, not working conditions—can ever be made completely safe. Hypothetically, even if it could at some point, the prohibitive costs required to do so would make it unwise to try. Hence, if we are serious about efficiently reforming and improving health and safety regulations, Congress must consider reformulating the current legislative mandates to include the criteria outlined above.[268]

In this vein, several congressional proposals have been put forth in recent years to effectuate responsible and efficient regulatory oversight policy.[269] House Bill 1022, the Risk Assessment and Cost-Benefit Act of 1995, attempted to achieve this goal by overriding all existing legislative mandates to require cost-benefit analysis.[270] House Bill 1022 specified that benefits of regulations be "reasonably identifiable" and "significant."[271] With respect to costs, the bill provided that risk assessment should be "scientifically objective and unbiased,"[272] a provision aimed at avoiding the problem of wide variations in risk assessment due to political self-interest.[273] Moreover, regulators would

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[267] *See Am. Trucking Assns.*, 121 S.Ct. at 909 (holding that the text of the Clean Air Act provision authorizing the EPA to set national ambient air quality standards, interpreted in its statutory and historical context, unambiguously bars cost considerations from the regulatory process). However, the Court of Appeals for the D.C. Circuit has insisted that agencies engage in "reasoned decisionmaking," of which cost-benefit and risk-risk analysis is often an essential component. *See Chem. Mfrs. Assn.*, 217 F.3d at 867 ("[W]e do not question the EPA's authority under the Clean Air Act to implement [a certain regulation] if it determines through reasoned decisionmaking that the program produces environmental health benefits."); *Am. Petroleum Inst.*, 216 F.3d at 57-58 ("EPA makes no attempt to balance the costs and benefits of [the regulation], or otherwise to explain why the Clean Water Act requirements are the real motivation behind [the regulation].").

[268] *See supra* Part III.

[269] *E.g.* S. 981, 105th Cong. § 622 (1997) (requiring cost-benefit assessments for major regulations); H.R. 1022, 104th Cong. §§ 103-107 ( (1995) (requiring risk and substitute-risk assessments and reports); H.R. 228, 104th Cong. §§ 501-502 (1995) (requiring risk assessments in Superfund cleanups); S. 333, 104th Cong. § 4 (1995) (requiring risk assessments for Department of Energy regulations).

[270] H.R. 1022, 104th Cong. §§ 103-107. The attempt to override existing legislative mandates is referred to by some scholars as a "supermandate." Viscusi, *supra* n. 1, at 1456.

[271] H.R. 1022, 104th Cong. § 5(2). The requirement that risks be "significant" can be traced back to a well-known case about benzene regulations. *Indus. Union Dept., AFL-CIO v. Am. Petroleum Inst.*, 448 U.S. 607, 614-15 (1980) (holding that OSHA must show that a substance poses a significant risk to human health before regulating it). In other words, the regulation must be "*reasonably necessary* or appropriate to provide safe or healthful employment." Viscusi, *supra* n. 1, at 1427 (emphasis added).

[272] H.R. 1022, 104th Cong. § 102(1).

[273] This problem was most clearly evidenced by the "Doomsday Rock" calculation, in

use mean risks instead of the current practice of looking only at worst-case scenarios.[274] Finally, House Bill 1022 required an evaluation of substitution risks created by regulations.[275] This bill did not survive to reach the President's desk, however; it died in Congress in 1995.[276]

Despite House Bill 1022's attempt to improve the regulatory oversight process, it possessed serious drawbacks that threatened to undermine its effectiveness even had it become law. The bill would have implemented a "peer review program," under which panels of experts and representatives from government, industry, universities, labor, consumers, and public interest groups would evaluate proposed regulations.[277] Coupled with the bill's provision for judicial review,[278] such a process would inevitably expose any regulatory effort to a lengthy delay while the interest groups involved attempted to make their case. A more palatable alternative for optimal regulatory oversight legislation might be simply to *permit* agencies to compare costs, benefits, and risks. In turn, the agency and the President would be left with some discretion regarding exactly how far the cost-benefit and risk-risk comparison would reach. This approach is not perfect, but it at least solves the dilemma of placing endless regulations under strict peer and judicial scrutiny prior to their implementation.

Senators Thompson and Levin introduced a second attempt at regulatory reform in 1997 through Senate Bill 981.[279] Senate Bill 981 was not quite as strict as House Bill 1022 in its risk assessment requirement, as it dropped the provision overriding all legislative mandates in an effort to seek the political middle ground.[280] The Senate bill would have required that an analysis of costs and benefits accompany rules that cost the nation's economy more than one hundred million dollars annually.[281] It also would have mandated a study

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which Dr. Brian Marsden of the Central Bureau for Astronomical Telegrams grossly overestimated the risk of an asteroid collision with earth. *Supra* nn. 191-194 and accompanying text.

[274] H.R. 1022, 104th Cong. § 105(1)(B) (requiring "a statement of the reasonable range of scientific uncertainties"). Using the upper bound estimate of probability when making risk assessments does not yield accurate calculations, as detailed *supra*, Part III.F. *See* Elizabeth L. Anderson, *Scientific Developments in Risk Assessment: Legal Implications*, 14 Colum. J. Envtl. L. 411, 411-13 (1989) (arguing for greater accuracy in risk evaluation).

[275] H.R. 1022, 104th Cong. § 105(4) (requiring "a statement of any substitution risks to human health, where information on such risks as been provided to the agency").

[276] H.R. 1022 became part of H.R. 9 in 1995, but neither bill survived to become law. H.R. 9, 104th Cong. §§ 401-461 (1995).

[277] H.R. 1022, 104th Cong. at § 301.

[278] H.R. 1022, 104th Cong. at § 401 (granting jurisdiction to the appropriate court to review the "agency's compliance with the requirements of this Act").

[279] S. 981, 105th Cong. (1997).

[280] *Id.* at § 622 (limiting the requirement to proposed and final major rules); Freedman, *supra* n. 36, at 2075.

[281] *See* S. 981, 105th Cong. § 621(6)(A) (defining a major rule as one that is "likely to

of the risks addressed by all regulations focused on health, safety and environmental threats before their implementation.[282] Ironically, although these provisions seem relatively reasonable, this bill's more moderate position may have been its ultimate downfall. By attempting to appease everyone, it became too narrow to excite conservative proponents of comprehensive regulatory reform and too sweeping for environmental, labor and health groups.[283]

Congress has engaged in other recent attempts at regulatory reform, including, inter alia, the Regulatory Right to Know Act of 1999,[284] the OSHA Reform Act of 1999,[285] the Regulatory Improvement Act of 2000,[286] the Truth in Regulating Act of 2000,[287] and the Air Quality Standard Improvement Act,[288] the last of which would have added a risk assessment and cost-benefit analysis requirement to the Clean Air Act.[289] All of these bills start with the same fundamental premise that agencies should construct health and safety regulations responsibly and efficiently in order to avoid the pitfalls of the past. As we begin a new century, it is crucial to consider these reform efforts seriously and implement them responsibly to improve the quality and efficiency of federal safety regulations. It is common sense that well-meaning regulatory programs should always do more good than harm, and there is no reason to shy away from requiring this explicitly in our regulatory oversight legislation.

Thus, both the executive and legislative branches have made significant attempts to implement sensible cost-benefit and risk-risk analysis into responsible federal safety regulation. However, these efforts, while designed to seek greater efficiency and social welfare, are limited by the silence of current legislative mandates on cost-benefit analysis and other common sense principles. Writing these principles directly into the legislative mandates that Congress hands regulatory agencies may therefore be the key to the future success of regulatory reform proposals. If the relevant statutory authority were to require—or at least permit—agency regulators to perform marginal cost-

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have an annual effect on the economy of $100,000,000 or more in reasonably quantifiable costs").

[282] *Id.* at §§ 623, 624.

[283] Freedman, *supra* n. 36, at 2075.

[284] S. 59, 106th Cong. (1999).

[285] H.R. 1192, 106th Cong. (1999).

[286] H.R. 3311, 106th Cong. (1999).

[287] H.R. 4744, 106th Cong. (2000).

[288] S. 2362, 106th Cong. (2000).

[289] The proposals are too numerous to explore each one independently, but it will be interesting to track whether any of them dramatically improve the quality and efficiency of federal safety regulations. Senate Bill 2362, for example, was referred to the Senate Environment and Public Works Committee last year, but no further action was ever taken on it, and its sponsor, Senator Voinovich, has not reintroduced it.

benefit assessments and risk-risk analysis, courts could enforce these principles consistently. They would be empowered to hold regulatory decisionmakers accountable in their well-intended efforts to maximize society's overall welfare.

### C. *Other Attempts at Improving the Regulatory Process*

Aside from the executive oversight and legislative reforms discussed above, some have proposed other ideas to increase the overall social welfare created by regulatory efforts. These initiatives are worthy of consideration in formulating the kind of regulatory policy that would serve America best.

#### 1. Justice Breyer's "Civil Service Elite"

First, Justice Stephen Breyer has suggested that the United States create a "civil service elite" to address the nation's regulatory oversight problems.[290] In *Breaking the Vicious Circle: Toward Effective Risk Regulation*,[291] Justice Breyer presents an excellent review of the federal regulatory process, its problems, and its opportunities for improvement. After detailing the inefficiency of "the last 10 percent"[292] and the drawbacks of overly conservative risk assessment,[293] he proposes an interesting solution to the problem of regulatory oversight. Breyer suggests that the best approach would be to develop a group of "civil service elite" to travel from agency to agency, learning the workings of each.[294] The members of this civil service corps would possess and acquire expertise in regulatory analysis issues, including science and economics.[295] Additionally, this professional group would educate its members on what worked well versus what did not in each agency.[296] They could then apply those lessons learned in new efforts at regulatory reform. At a minimum, Justice Breyer argues that the civil service elite would be better positioned than courts—or than current agencies—to make regulatory policy judgments.[297]

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[290] Breyer, *supra* n. 20, at 59-81.

[291] Breyer, *supra* n. 20.

[292] *Id.* at 11-12 (describing the diminishing marginal returns involved in cleaning up the toxic waste dump in *United States v. Ottati and Goss*, 900 F.2d 429 (1st Cir. 1990) for nonexistent dirt-eating children); *supra* nn. 150, 151, 153-158, 220-222 and accompanying text (discussing Breyer's description of the problem of "the last 10 percent" and the dirt-eating children in *Ottati and Goss*).

[293] Breyer, *supra* n. 20, at 10-29 (explaining how government regulation of small but significant risks often leads to tunnel vision, random agenda selection, and inconsistency instead of balanced and cost-effective regulation).

[294] *Id.* at 59-81.

[295] *Id.* at 62.

[296] *Id.* at 66 (envisioning the development of regulatory models by the "civil service elite" based upon interagency experience).

[297] *Id.* at 59 ("Neither the courts nor Congress seem likely to provide real solutions to the

Breyer's proposal certainly has merit, and it bears some similarity to that of President Carter's RARG.[298] The educational function served and expertise gained by creating these groups certainly has value, but we already have something much like this today in OIRA within the OMB.[299] Many of the same individuals have occupied regulatory oversight positions there for decades and have presumably acquired the expertise to which Breyer refers. Breyer's "civil service elite" proposal is thus not a bad idea at all, but one should not view it as a substitute for the more formal reforms outlined above.[300]

2. Regulatory Budgets

Another frequently proposed response to the problem of excessively costly regulation has been to replace the oversight process with agency regulatory budgets.[301] The idea behind them is to constrain the skyrocketing costs of government regulation by limiting each agency to a total cost that it could impose on the American economy.[302] The agency task would then be to choose regulations that best serve the national interest, subject to this cost.[303]

Although regulatory budgets would impose some fiscal discipline, they raise serious problems. First, how would society set this cost number? An arbitrary budget line is not necessarily an efficient or responsible answer in the quest to maximize social welfare. One must remember that regulators should not mind if costs go beyond the level at which the initial budget is set, as long as marginal benefits continue to exceed marginal costs incurred.[304] In addition, a

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problems of risk regulation."), 75-77 (explaining the advantages of a centralized group of administrators over more local agencies in addressing regulatory policy problems).

[298] *See supra* nn. 240, 241 and accompanying text (describing President Carter's Regulatory Analysis Review Group).

[299] *See supra* nn. 251-254 and accompanying text (discussing the increased power over regulatory affairs enjoyed the Office of Information and Regulatory Affairs within the Office of Management and Budget beginning in the Reagan administration).

[300] *See supra* Part III.

[301] Viscusi et al., *supra* n. 2, at 41. *See generally* Julius W. Allen, *The Proposal for a Federal Regulatory Budget—An Overview*, Cong. Research Serv. Rpt. 79-197E 1-24 (1979) (explaining the regulatory budget concept ); Lance D. Wood, Elliott P. Laws & Barry Breen, *Restraining the Regulators: Legal Perspectives on a Regulatory Budget for Federal Agencies*, 18 Harv. J. on Legis. 1, 1-33 (1981) (describing possible forms of the regulatory budget, pointing out potential constitutional and statutory problems, and suggesting solutions to solve these problems); Christopher C. DeMuth, *Constraining Regulatory Costs—Part II: The Regulatory Budget*, 4 Regulation: AEI J. on Govt. and Socy. 29, 29-43 (Mar.-Apr. 1980) (examining the regulatory budget concept and pointing out its practical problems).

[302] DeMuth, *supra* n. 301, at 30.

[303] *Id.*

[304] *See supra* fig. 1, Part III.B. Where continued regulatory tightenings result in greater marginal benefits than costs, social welfare is increased by broadening the scope of the

regulatory budget would not provide any control over the mix of regulations that each agency proposes. Thus, a regulatory budget is not a complete solution, as it is simply an attempt to impose some financial discipline on regulatory bodies.

## V. CRITICISMS OF REGULATORY REFORM PROPOSALS

Having outlined above several suggestions for improving the efficiency and quality of federal regulatory oversight policy,[305] it would irresponsible not to address some common—and valid—criticisms faced by these proposals.

### A. *Difficulty of Measuring Costs and Benefits*

First and foremost, measuring the costs and benefits that result from federal regulations is not an exact science. The costs imposed and benefits created are both direct and indirect, and they are often difficult to quantify.[306] One must take into account numerous variables and make subjective assessments as to their relative worth.[307] Furthermore, attempts to assign numerical values to such "fuzzy" variables are susceptible to manipulation that could hinder or defeat the well-intended proposals for improvement detailed above.[308]

Although many observers assume that measuring the direct costs of regulation is the easier half of cost-benefit analysis, closer examination reveals that is not always the case. For example, Superfund cleanup costs have exceeded EPA's original estimates considerably,[309] and in the case of OSHA's controversial cotton dust regulation, the agency seriously misestimated both the costs and benefits of the regulation.[310] Measurement of these values becomes even more complex when the subject turns to indirect costs and substitution risks created,[311] both of which are difficult to quantify with precision. Additionally, the risk assessment process requires a great deal of

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regulatory program despite the accompanying costs.

[305] *Supra* Part III.

[306] *See* Blais, *supra* n. 40, at 246 (noting that natural resources and environmental amenities do not lend themselves well to trade in a market or measurement in price).

[307] *See* Kornhauser, *supra* n. 41, at 1040 (discussing the difficulty of valuing people's preferences and their relative intensities).

[308] *See* Stigler, *supra* n. 8, at 3-4 (discussing the possibility for interest group capture of regulatory agencies); *cf.* Smith & Calandrillo, *supra* n. 8, at 716-18 (explaining the effect of interest groups on the state mental health institution system).

[309] *See generally* Milton Russell, E. William Colglazier & Mary R. English, *Hazardous Waste Remediation: The Task Ahead* (Waste Mgt. & Educ. Inst. 1991).

[310] *See* W. Kip Viscusi, *Fatal Tradeoffs: Public and Private Responsibilities for Risk* 161-77 (Oxford U. Press 1992) (examining the effects of the OSHA cotton dust standard and concluding that OSHA misestimated its costs and benefits).

[311] *See* Lave, *supra* n. 17, at 22 (discussing the difficulties of estimating the costs and effects of regulations); Sunstein, *Health-Health Tradeoffs*, *supra* n. 18, at 1550-51 (discussing the difficulties of measuring health risks).

information, much of which may be in the control of the regulated industry itself, which usually has no incentive to aid regulators.[312] Thus, given the uncertainty inherent in cost and risk measurement, some scholars assert that the confident portrayal of risks in terms of dollars-per-death-avoided "do not so much inform decision-makers and the public as mislead them."[313]

Moreover, with respect to quantifying benefits from a given regulation, how does one measure the value of a human life saved? Is it ethical to even attempt to do so? Despite charges that any value-of-life calculation is inherently immoral, scholars and government agencies alike have indeed devised methods to make the calculation.[314] Interestingly, when disputes arise, they are generally not over the morality of making the value-of-life calculation in the first place,[315] but rather, over how large the valuation should be. For instance, the EPA has argued for a figure of $4.8 to $5.8 million, the Food and Drug Administration says $3 million, and the Department of Transportation says $1.5 to $2.7 million.[316] One should immediately note though that even if we take agency figures at face value, there are still numerous regulatory proposals that would fail the promulgating agency's own cost-benefit calculation.[317]

More importantly, the measurement of both costs and benefits may be either over- or under-inclusive based on one's view of social utility, and may be biased against hard-to-measure, large-scale projects such as the environment.[318] Thomas McGarity and Cass Sunstein independently argue

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[312] *See* McGarity, *supra* n. 1, at 26 (noting that cynical observers suggest that the ossification and delay inherent in risk assessment and rule making processes are precisely what regulatory reformers have in mind).

[313] *Id.* at 24. Moreover, attempts to derive best cost-per-life-saved estimates may "ignore varying susceptibilities among exposed humans, an omission that may lead risk assessors to underestimate actual risks." *Id.* at 27-28. For example, McGarity states that an assessment of the risks posed by photochemical oxidants should focus specifically upon asthmatics and not on averages of predicted responses among the general population. *Id.* at 28.

[314] *See* Viscusi et al., *supra* n. 2, at 686-89, 697-99 (detailing the various methods and formulas used to arrive at value-of-life figures).

[315] *But c.f.* Nussbaum, *supra* n. 40, at 1031. Nussbaum argues that to

> assign a monetary value to an option does not . . . imply that we have reduced the good so valued to nothing but the common coin of cash. The fact, for example, that most of us assign a certain monetary value to our intellectual labor does not mean that we believe that intellectual labor is just money and has no special qualities of its own.

*Id.*

[316] *See* Frank & Sunstein, *supra* n. 189, at 335-36 tbl. 2 (depicting values of life as calculated by various federal agencies).

[317] *See* Morall, *supra* n. 122 (suggesting that about half of the twenty-six regulations surveyed would pass such tests). For example, safety regulations aimed at reducing arsenic in glass manufacturing, benzene in storage facilities, and radionuclides in Department of Energy facilities all cost more than $142 million per life saved. *See* Viscusi et al., *supra* n. 2, at 700 tbl. 20.4 (depicting the cost per life saved for various regulations).

[318] Eric Posner, *supra* n. 8, at 292-93. David Driesen is also concerned about the use of cost-benefit analysis in environmental regulations, stating that it "exacerbates tendencies to

that economic models sometimes dwarf "soft variables" such as emotional distress and concern for the well-being of endangered species.[319] McGarity takes this one step further, asserting that "[w]hen information or values arise that cannot easily be factored into the benefit models, the modelers often simply ignore them."[320] Including "softer" factors in our social welfare calculus can help mitigate the under-inclusiveness problem, but then the discretion of the agency increases and accountability decreases.[321] In fact, some question whether the benefit gained by modifying cost-benefit analysis to include these factors is outweighed by the additional complication and uncertainty introduced.[322] I believe it is, for in order to maximize social welfare, our cost-benefit calculations must take into account the utility obtained from traditionally difficult-to-measure variables such as the well-being of our environment.[323]

With these measurement concerns in mind, even the most ardent supporter of cost-benefit analysis should acknowledge that quantification of all of the various values poses a difficult task. In response, Sunstein notes that including more variables in the equation should improve the accuracy of the measurement and address some of the critics' concerns.[324] More importantly, to give up the attempt to measure costs and benefits simply because of the difficulties presented is to resign society to doing less than its best. Even with measurement limitations, cost-benefit and risk-risk analysis still bring significant value and discipline to our search for responsible and efficient federal safety regulations.

### B. *Willingness to Pay Does Not Equal Value*

In making these cost-benefit measurement determinations, the traditional means for calculating benefits is that of on an individual or society's "willingness to pay" for them.[325] The simplified theory is that the more that

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focus myopically on short-term costs to regulated companies, even when imposition of costs upon them may economically benefit their workers and/or competitors in the short term and society in the long-term." David Driesen, *The Societal Cost of Environmental Regulation: Beyond Administrative Cost-Benefit Analysis*, 24 Ecology L.Q. 545, 550 (1997).

[319] McGarity, *supra* n. 1, at 58; Richard H. Pildes & Cass R. Sunstein, *Reinventing the Regulatory State*, 62 U. Chi. L. Rev. 1, 46 (1995).

[320] McGarity, *supra* n. 1, at 58.

[321] Eric Posner, *supra* n. 8, at 293-94.

[322] *E.g.* Richard Posner, *Cost-Benefit Analysis: Definition, Justification and Comment on Conference Papers*, 29 J. Leg. Stud. 1153, 1161 (2000) (critiquing Sunstein's argument that cost-benefit analysis undervalues "soft" variables).

[323] *See supra* pt. II(A) (discussing the various measures of social welfare and the inputs of the utility calculus).

[324] *See* Sunstein, *supra* n. 70, at 1093.

[325] *See generally* Richardson, *supra* n. 40, at 991 (criticizing the use of willingness to pay as a measurement standard).

people are willing to pay to protect against a risk, the more that they value the benefit received from that risk's reduction or elimination. However, as Sunstein elaborates, although willingness to pay can be a useful tool with practical advantages, it has notable flaws.[326] Willingness to pay is often based on cognitive and motivational distortions and is imperfectly correlated with utility.[327] Furthermore, people often make different choices as consumers than they do as public citizens, and it is itself an external value choice to decide which perspective to use.[328]

In addition, utilizing a willingness-to-pay standard raises serious distributional issues because it is quite different than examining people's *ability* to pay. It is intuitively disturbing that a wealthy person's willingness to pay might vary dramatically from a poor person's, despite a weak correlation with their respective utility levels attained.[329] On this topic, Amartya Sen points out that cost-benefit analysis is limited in that it attaches the same value to everyone's dollar regardless of economic class.[330] Furthermore, cost-benefit analysis in its most basic form does not positively or negatively weigh the value of distributional changes.[331] This omission is particularly serious to the extent that one cares about societal equity, and it is precisely the reason why I advocate a marginal cost-benefit standard that takes into account people's preferences for distributional justice and utility obtained from softer

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[326] *See* Sunstein, *supra* n. 70, at 1089-91.

[327] *See id.* at 1090 (describing the inequalities created by virtue of people's disparate initial levels of wealth); *cf.* Nussbaum, *supra* n. 40, at 1033 (discussing the problem of attaching a large cost to options that involve denying citizens rights to which they are legally entitled). For example, Nussbaum states that it is not always very costly to deprive citizens of a valuable right to which they are legally entitled. She adds that in terms of standard willingness-to-pay models, "most U.S. citizens would probably demand only a small amount of money to forfeit their right to vote at the next local election." *Id.* at 1033-34.

[328] *See* Sunstein, *supra* n. 70, at 1090-91 (asserting that it is not clear that choices people make as consumers should be preferred to choices they make as citizens). Sunstein recognizes that the

> context of citizenship may evoke other-regarding or altruistic values that are not reflected in private choices. This is partly because aggregating private willingness to pay can replicate various collective action problems faced in the private domain; people may be willing to pay more simply because they know that other people are contributing as well.

*Id.*

[329] Dworkin, *supra* n. 105, at 197-201 (highlighting the flaws of the willingness-to-pay standard as a measurement of society's overall welfare through a hypothetical); Sunstein, *supra* n. 70, at 1089-90 ("Poor people are willing to pay less than wealthy people simply by virtue of being poor, and their willingness to pay for something . . . is crudely connected with the utility they would gain from it.").

[330] Sen, *supra* n. 40, at 945-46 (explaining the limitations of the willingness to pay approach).

[331] *Id.*

variables.[332]

Moreover, as a matter of principle, Richardson argues that federal safety regulations should be governed by collective decisions, as opposed to reliance on individual preferences such as willingness to pay.[333] Richardson believes that cost-benefit analysis may have some use for after-the-fact checking by courts or oversight committees but argues that it should not be used to make policy decisions at the outset.[334] Kornhauser adds that one must account for factors other than individuals' willingness to pay when assessing and deriving a social value from individual preferences.[335] Moreover, he soundly argues that our cost-benefit calculation should consider not only the order of people's preferences, but also their relative intensity.[336] In this manner, one can assign corresponding values such that individual preferences can be added together in scaled equivalency.[337]

Finally, surveys aimed at calculating costs and benefits evidence a dramatic difference between what people would be willing to *pay* to buy out of a certain risk versus what they would be willing to *accept* in order to incur such an incremental risk.[338] Studies have shown that willingness to accept is often far

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[332] *See supra* Part II.B (discussing various measures of efficiency and social welfare, including Kaldor-Hicks efficiency, Pareto efficiency, Rawlsianism, and equalitarianism). People's utility levels are not limited to dollars in their pocket alone. To the extent that people achieve greater overall welfare levels by virtue of living in an equitable society, there is no reason for preventing those preferences from entering into the regulatory benefit and utility calculus. The utility obtained from living in a world where regulations seek to create a more fair and just society admittedly would be difficult to quantify, but economists can indeed take such variables into account in their cost-benefit calculus.

[333] Richardson, *supra* n. 40, at 994. Richardson urges us to think about government decisionmaking in terms of the intelligent formation of joint intentions. He states:

> [W]e should view this process as one in which we work together, exercising our practical intelligence in ways whereby individuals repeatedly adjust their aims and wants, and demands and concessions, by responding to those of the others with whom we are negotiating and deliberating, and thereby construct new joint intentions.

*Id.* On the topic of collective decisionmaking, I note that it is also difficult to obtain accurate willingness-to-pay numbers for public goods because these valuations are often skewed by the free rider effect. *See e.g.* Sen, *supra* n. 40, at 946.

[334] Richardson, *supra* n. 40, at 974 (asserting that cost-benefit analysis does not provide a sensible basis for public choice but that such analysis can assist in figuring out the likely effects of proposed policies).

[335] Kornhauser, *supra* n. 41, at 1040-44.

[336] *Id.* at 1040.

[337] *Id.* Furthermore, whether risks are of a known or unknown probability and whether the commodity in question is fungible or irreplaceable can also affect whether values should be assessed based on an ex-ante or ex-post perspective. *Id.* at 1040-44 (discussing additional variables affecting the accuracy of willingness-to-pay estimations).

[338] *E.g.* Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 Stan. L. Rev. 1471, 1483-84 (1998) (detailing the Cornell coffee mug study discussed *infra* in text accompanying notes 340-344).

larger than willingness to pay, though standard economic analysis would have predicted that rational people would assign the same value to both.[339] For example, in a famous experiment conducted in a Cornell economics class, half of the student subjects were given coffee mugs and allowed to trade them with their colleagues for cash at a later time.[340] Because the initial assignments were random, the Coase theorem would predict that half of those mugs would change hands in order to find their way to those who valued them most highly.[341] However, only fifteen percent of students actually traded their mugs.[342] More tellingly, those with a mug asked more than two times as much to give up their mug as those without a mug offered to pay to obtain one.[343] Thus, this "endowment effect" and "behavioral economics" reveal problems with survey methods that rely too highly on people's willingness to pay.[344]

These objections are all legitimate, but they only serve to raise the question of what would be a better alternative. The fact that willingness to pay is not a perfect tool does not imply that its elimination would be desirable.[345] Absent a better standard, willingness to pay is the best device for measuring people's utility levels derived from safety regulations or from any other social good. It is unlikely that critics of cost-benefit analysis would prefer that regulatory decisions be based upon interest group preferences or upon uninformed political judgments.[346] Moreover, as Frank argues, some of the distributional problems of the willingness-to-pay standard can be overcome by the fact that a decision *not* to use it as our measure of utility would necessarily lead to a loss in overall utility.[347] Frank suggests that the best way to serve the interests of the poor is to use willingness-to-pay analysis and then redistribute the increase in overall social welfare to meet society's taste for fairness and equity. Simply

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[339] *E.g. id.*

[340] *Id.* at 1483.

[341] *Id.*; *see* R.H. Coase, *The Problem of Social Cost*, 3 J. L. & Econ. 1, 15 (1960) (asserting that the initial assignments of entitlements will not affect the ultimate allocation of resources so long as transaction costs are zero).

[342] Jolls, *supra* n. 338, at 1484.

[343] *Id.*

[344] *See id.* (stating that behavioral economists have taught us that "people do not equate opportunity costs and out-of-pocket costs for goods whose values are not solely exogenously defined. . . . [so] those endowed with mugs should be reluctant to part with them even at prices they would not have considered paying to acquire a mug had they not received one").

[345] *See* Richard Posner, *supra* n. 322, at 1158 (pointing out that even critics of cost-benefit analysis have not suggested superior alternatives for evaluating public policies and concluding that cost-benefit analysis is inescapable in a wide range of policy decisions).

[346] *See id.* (expressing doubt that critics of cost-benefit analysis would favor uninformed policy judgments).

[347] Frank, *supra* n. 103, at 917 (arguing that abandoning cost-benefit analysis is a gratuitously wasteful way of trying to allocate additional political power to the poor).

put, if the pie is bigger, everyone can have a bigger slice.[348]

C. *Valuation of Extremely Small Changes in Risk-Exposure*

Another difficulty with cost-benefit and risk-assessment calculations is that government agencies are forced to evaluate extremely small probabilities of any single harm occurring. When one examines a given regulation's effects, one is analyzing the costs and benefits of creating a relatively minimal change in the risk to which society is exposed.[349] One should contrast such a calculation with an analysis of the complete elimination of a given risk. As Kornhauser asserts, this "change-in-risk" measurement is necessary because cost-benefit analysis actually evaluates policies that have consequences for the survival prospects of individuals and not for irreplaceable commodities such as life itself.[350]

Thus, when valuing extremely small changes in risk exposure, the question presented therefore is not: "How much is a person—or society—willing to pay to avoid certain death?" Rather, the dilemma posed is: "How much is society willing to pay to reduce the chance of death from a given carcinogen by one one-hundredth of one percent?" The answer to the first question would be: "All the money I have." The answer to the second question is far more difficult to determine, but this is the answer we need to know in the regulatory context. Regulators and citizens do not have a great deal of experience making such small-scale tradeoffs, and thus answers given are likely to be imperfect and inconsistent.[351] However, society has no choice but to attempt to evaluate these tradeoffs if it wants to channel its limited public resources into their most beneficial uses. As regulatory decisionmakers acquire more experience dealing with minute changes in risk, there is no reason to believe that their calculations will not improve.

The problem of valuing extremely minimal fluctuations in risks is directly related to what is sometimes called "survey bias." Contingent valuation surveys are often conducted to answer the kinds of questions posed above.[352]

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[348] *Id.* This point is the substance of Kaplow and Shavell's article arguing that society should choose the legal rule that maximizes efficiency and then use the tax system to achieve distributional justice goals. *See* Louis Kaplow & Steven Shavell, *Why the Legal System Is Less Efficient than the Income Tax in Redistributing Income*, 23 J. Leg. Stud. 667 (1994).

[349] *See* Morall, *supra* n. 122, at 30 (listing various annual risk probabilities that are often less than one in ten thousand).

[350] Kornhauser, *supra* n. 41, at 1050-51.

[351] *See id.* at 1048 (concluding that "[g]iven this contextual valuation of policies, there is no reason to expect consistency in the value of life nor to conclude that lives are treated as ordinary commodities"); Viscusi et al., *supra* n. 2, at 688 (explaining that value-of-life responses are inconsistent in part because people tend to think in terms of their immediate resources instead of their lifetime resources).

[352] *See generally* W. Michael Hanemann, *Valuing the Environment Through Contingent Valuation*, 8 J. Econ. Persp. 19 (Autumn 1994) (explaining how researchers conduct

However, as noted previously, assigning values to questions such as "how much would you pay to decrease your risk of death by one one-hundredth of one percent?" yields inconsistent results.[353] According to Kornhauser, variation in value-of-life data attributed to government policies ranges from roughly $100,000 to $5.7 billion.[354] Hence, these surveys indicate that it is difficult to accurately estimate the values and benefits obtained from reducing very small risks through federal safety and environmental regulation.

It is not clear that there is a simple solution to these survey problems and to the measurement of extremely small risk fluctuations. Nevertheless, to the extent that decision-makers recognize they exist, corresponding valuation mechanisms can attempt to take them into account. Our calculations can encompass more variables in order to more closely reflect all of the components of social welfare.[355] As the public and regulators become better educated in these areas, it is likely that the quality and accuracy of survey tools and estimation methods of very minimal risks will improve.

### D. *Discounting the Future*

Beyond the issues raised with respect to valuing regulatory costs and benefits accurately, there is the question of whether the future is worth as much as today is. Simply put, is an unborn person's life worth as much as a living person's? What if an environmental regulatory policy would yield a large impact fifty years from today but have a negligible effect in the short term? The extent to which we care about future generations has significant implications for the regulations we choose today.[356]

Although there has long been debate about whether regulatory policy should favor the mitigation of current ills over future ones, the cost-benefit, risk-risk calculus must account to some degree for the potential suffering of people in the future. As Frank asserts, failure to adopt more stringent air quality standards today means that respiratory illnesses will be more common a generation from now.[357] Cost-benefit analysis admittedly has problems accounting for future-subject utility, but nonetheless it should and does discount the benefits of regulation somewhat to reflect the time delay in their

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contingent valuation surveys to measure the value people place on environmental resources).

[353] *See e.g.* Kornhauser, *supra* n. 41, at 1047 (noting the widely varying values of life attributed to various government policies).

[354] *Id.*

[355] *See* Sunstein, *supra* n. 70, at 1077 (asserting that a qualitative description of the variables involved should supplement any bottom-line cost benefit-calculation).

[356] *See* Frank, *supra* n. 103, at 915-16 (addressing the problem of how to discount future subjective utility).

[357] *See id.* at 916 ("Having been born later should not mean that one's enjoyment and suffering receive less weight in public policy decisions.").

realization.[358]

This practice conforms with the behavior and choices that people make every day, as individuals generally do attribute a "discounted" rate of return for their future.[359] Individuals engage in risky behavior like drinking and smoking because they believe that the immediate benefits outweigh the costs that come further down the road.[360] Similarly, an immediate regulatory benefit to society is worth more than a benefit of the same magnitude occurring twenty years later. However, to the extent that we care about the preferences of our children and grandchildren, the discount rate might not be negative at all. The kind of world that they are forced to live in, by virtue of our choices, matters a great deal. At a certain point, a highly altruistic society might even value the future more than it does the present.

For example, consider a regulatory program that prevents one case of cancer today versus one case two decades from now. Assume that each cancer would cost one hundred thousand dollars to prevent. Under the typical regulatory cost-benefit analysis, society's discount rate should be zero. In other words, we should not discount deferred benefits at all and therefore, it does not matter which case of cancer we choose to avoid. However, from a societal standpoint, immediate benefits are worth choosing. Wealth levels and technology are likely to improve in the future, making it less costly to secure similar benefits than it would have been in years past. Thus, responsible regulatory policy should discount the future to some extent in its cost-benefit calculus, though the debate over the amount of discounting is not likely to be resolved soon.

From a practical perspective, however, this dilemma has not proven to be a significant source of controversy in regulatory decisions. The OMB requires that regulatory agencies assess all policy benefits and costs using a ten-percent interest rate, although agencies are allowed to estimate the present value of costs and benefits using other rates as well.[361] In practice, most opt to use alternative discount rates because ten percent is viewed as a fairly high inflation-adjusted rate of return.[362] Hence, discounting costs and benefits for deferred effects has become accepted regulatory policy.

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[358] *See id.* Frank asserts that the critics' position "does not argue against the use of cost-benefit analysis as a matter of principle. If analysts agree that future experiences should receive roughly the same weight as current ones, the costs and benefits associated with any policy change can simply be calculated on that basis." *Id.*

[359] *See id.* (stating that people put more weight on a present feeling than on a future one).

[360] Conversely, many of these same people "invest" in their future by spending resources on training and education that they hope will pay off down the road. Still, on net, resources have an opportunity cost, and one must take that opportunity cost into account when assessing the value of benefit and cost streams over time. *See* Viscusi et al., *supra* n. 2, at 670.

[361] *Id.*

[362] *See id.*

E. *Length of Life Versus Quality of Life*

The next problem to tackle in formulating responsible regulatory policy is the issue of how to value quantity versus quality of life. If EPA regulations succeed in making the air cleaner only to extend by two years the life of an elderly person with bad lungs, how much is that worth compared to extending by two years the life of a thirty year-old with a high quality of life? Two issues immediately become apparent. First, quantity of life remaining matters. People are generally willing to pay more to reduce a risk when they are younger than when they are older, because they have more life left to live. Second, quality of life remaining matters. A person should be willing to pay more to have a higher quality of life. These issues occasionally arise in tort law accident cases, where plaintiffs desire to use "hedonic" value-of-life calculations to assess their damages. In brief, the argument is that injured plaintiffs should receive increased damages to reflect the lower quality of life that they will experience for the rest of their lives.[363]

Analogizing to the regulatory oversight context, how does society accurately take into account the relative worth of saving lives on an absolute basis, versus the quality of the remaining portion of those lives saved? Is society really willing to spend the same amount on regulations to save lives regardless of people's future health, wealth, and living conditions? The Clean Air Act, for one, makes no distinctions based on these issues, and there has always been debate about whether it should. An additional problem presented on this topic is that, depending on the survey in question, studies have shown that it is subjectively worse to live a life characterized by low quality than it is to be dead.[364] The logical question becomes: "Would someone really pay more to be dead than to be alive but with a poor quality of life?" Perhaps the answer is yes, but that is a bit shocking.

Thus, regulatory decisionmakers must confront the problem of how to value length versus quality of life. Cost-benefit and risk-risk analysis is certainly not a panacea to cure the dilemma, but at least they highlight the issue that these concerns must be accounted for in responsible regulations. True, quality-of-life valuation raises a host of additional questions and is difficult to engage in with a high level of confidence. Ideally, however, decisionmakers should factor these concerns into any reform of the federal regulatory oversight process in order to better reflect society's preferences and increase overall

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[363] *See e.g. Smith v. Ingersoll-Rand Co.*, 214 F.3d 1235, 1244 (10th Cir. 2000) (agreeing with plaintiff's assertion that compensatory earnings based solely on lost earnings will undercompensate tort victims because life is worth more than the sum of economic productivity).

[364] *See generally e.g.* Kristen M. Coppola et al., *Elderly Adults' Preferences for Life-Sustaining Treatments: The Role of Impairment, Prognosis and Pain*, 23 Death Stud. 617 (1999) (finding an inverse relationship between patients' desire for life-sustaining treatment and the level of physical pain and cognitive impairment they would experience upon survival).

social welfare.

### F. *Cost-Benefit Analysis Does Not Help Society Channel Resources into More Deserving Social Programs*

Even if one assumes that a cost-benefit, risk-risk decision criterion would help eliminate waste and increase overall social welfare, some critics argue that no vehicle exists for channeling those savings into the most deserving social programs.[365] Richardson echoes this objection, stating that cost-benefit analysis does not generate new solutions, resolve conflicts with incommensurable values, or discriminate among closely related alternatives.[366] He claims that cost-benefit analysis is thus based on incomplete thinking and reliance on it prevents modifying options and preferences as new information comes to light.[367]

This criticism is crucial, for we have not advanced society's interest in a meaningful way if the only result of cost-benefit and risk-risk analysis is to eliminate certain regulatory programs without channeling resources saved into more productive uses. We must go one step further and affirmatively direct those resources saved into areas that will benefit more Americans. Low-cost healthcare and free vaccinations for impoverished children are often cited as examples of programs where just a little money would go a long way.[368] Thus, responsible regulatory policy should ensure that programs that offer a relatively large "bang for the buck" receive the resources that are saved in other areas. Regulators should not merely eliminate wasteful regulations but actively seek to direct our limited resources towards the most deserving social programs.

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[365] *See* McGarity, *supra* n. 1, at 34-35 (arguing that regulated entities are only concerned with how governmental intervention allocates resources to them). McGarity argues that absent some government vehicle for directing how regulated entities spend the resources saved by less stringent regulation, they will devote resources to things that make their shareholders happy. In defense of this proposition, he states that "in the real world the strongest advocates of cost-benefit analysis are large corporations, trade associations and associated think tanks, not exactly entities cut in the mold of Mother Teresa." *Id.* at 34.

[366] *See* Richardson, *supra* n. 40, at 987-90.

[367] Richardson goes so far as to label cost-benefit analysis "stupid" because, in his view, it replaces intelligent deliberation—and choice among alternatives—with mechanical efficiency that prevents the channeling of resources in a socially productive manner. *See id.* at 971-73.

[368] *Cf.* David M. Driesen, *Should Congress Direct the EPA to Allow Serious Harms to Public Health to Continue?: NAAQs under the Clean Air Act*, 11 Tul. Envtl. L.J. 217, 221 (1998) (describing the opportunity costs of allocating funds to pollution control). Driesen points out that money not spent on protecting the public from air pollution could, of course, be used to meet other needs, but that we must be careful that it does not merely lead to more profits for polluters or slightly cheaper consumer goods. *Id.*

G. *Philosophical and Moral Objections to Cost-Benefit Calculations*

Aside from the practical criticisms detailed above, some scholars have assailed the practice of making cost, benefit, and risk tradeoffs on moral grounds. Steve Kelman has asserted that the very attempt to place a value on human life devalues it.[369] David Copp further contends that cost-benefit analysis is objectionable because it depends on implausible moral theories about the importance or nature of well-being.[370] More fundamentally, Curtis Moore objects that "if all the practical obstacles to adopting cost-benefit analysis are overcome, what remains is the fundamental issue of whether it is moral for society to take the life of a citizen merely because of the cost."[371] He argues that the government's "seizure" of rights is not only immoral, unjust, and unethical, it is "antithetical to the core values of America" and "would lead inevitably to anarchy."[372]

This moral aversion to cost-benefit or risk-risk analysis reflects people's understandable uneasiness with any kind of explicit human life versus cost rationing. It is not a pleasant subject to discuss. Unfortunately, the reality is that if regulators choose to ignore costs, benefits, and risk tradeoffs, or if we refuse to measure the marginal cost of a human life on the grounds of immorality, many more lives will be lost. In this context, it is less ethical to eschew common sense cost and risk comparisons. Given limited resources, our regulatory policies must do all they can to save the most lives possible. It would be immoral to do anything less.

H. *Brief Response to the Criticisms of Cost-Benefit Analysis*

Thus, it is clear that cost-benefit analysis and the other regulatory oversight proposals outlined in this Article have inevitable drawbacks. It is crucial to remember, however, that no regulatory response will ever be perfect. Statistical tools designed to measure benefits and costs will continue to improve as they include more variables that people care about.[373] Admittedly, these values are difficult to calculate precisely, but using that as an excuse not to try is simply choosing to do less than the best we can. Moreover, even if it is impossible to quantify costs and benefits to everyone's satisfaction, we must

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[369] Steven Kelman, *Cost-Benefit Analysis: An Ethical Critique*, 5 Reg.: AEI J. on Govt. & Socy. 33, 38-40 (Jan.-Feb. 1981).

[370] *See* David Copp, *The Justice and Rationale of Cost Benefit Analysis*, 23 Theory & Dec. 65 (1987); *see generally* Daniel M. Hausman & Michael S. McPherson, *Economic Analysis and Moral Philosophy* 93-99 (Cambridge U. Press 1996); Donald C. Hubin, *The Moral Justification of Benefit/Cost Analysis*, 10 Econ. & Phil. 169 (1994).

[371] Moore, *supra* n. 42, at 205-09. Moore adds that "the very essence of cost-benefit analysis is not only a premise that rights can be alienated, but that they can be—*must* be—seized by the government if their monetary value is too slight." *Id.* at 205.

[372] *See id.*

[373] Sunstein, *supra* n. 70, at 1077 (asserting that the more variables included in the cost-benefit calculus, the more accurate the result).

still adhere to the abstract principle that benefits to society created by any federal safety regulation should always exceed harm caused. If we take that lesson learned and apply it to future regulatory oversight policy, our choices will better respond to our nation's best interests. Cost-benefit and risk-risk analysis unquestionably retain significant benefits in this regard despite their obvious limitations. We must remember that our pursuit is not of perfection but, rather, of improvement to our nation's overall social welfare.

## CONCLUSION

Whatever the future of regulatory reform holds, it is clear that federal health and safety regulations have yielded awesome benefits to society, but that these gains have come with staggering costs.[374] The thrust of this Article is to advocate a more sensible approach to regulatory oversight policy, with the hope that we can maximize the benefits and overall social welfare created. In that vein, we must recognize that scarcity is a simple fact of the human condition. To have more of a good thing, we must settle for less of another. Claiming that such tradeoffs are too difficult or too unethical to measure clouds clear thinking about the difficult choices faced by society.[375]

I therefore suggest the implementation of sensible cost-benefit analysis as a prerequisite to all federal health and safety regulations, and I urge that this cost-benefit analysis also take into account the utility that society derives from "softer" variables.[376] Regulatory policy should improve the lives of the most people possible and, at a bare minimum, ensure that no regulation harms society more than it benefits it. Furthermore, regulators should take this cost-benefit analysis concept one step further by employing a *marginal* cost-benefit analysis.[377] This comparison directly seeks to maximize the amount by which benefits *exceed* costs, rather than merely settling for policies that ask only whether total benefits are greater than total costs in the aggregate. If our goal is truly to serve our nation's best interests by maximizing overall social welfare, such a requirement makes sense.

Regulators should also conduct a risk-risk analysis of proposed regulations to evaluate substitution risks unintentionally created by well-meaning agency policies.[378] If an FAA directive requires that all toddlers have their own seats on airplanes—and that causes parents to choose to drive instead (a far riskier mode of travel)—our well-intended regulatory efforts will result in counterproductive "solutions." Thus, if the new risks created by a regulation exceed those eliminated by it, responsible regulation requires a different

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[374] *See* Hahn et al., *supra* n. 2, at 859 (estimating the costs and benefits of various regulations after the executive orders requiring regulatory impact analyses).

[375] *See* Frank, *supra* n. 103, at 914.

[376] *See supra*, Part II.B.

[377] *See supra* Part III.B (explaining marginal cost-benefit analysis in detail).

[378] *See supra* Part III.B.

approach to be taken.

Furthermore, responsible regulation requires objective risk assessments, absent the influence of regulatory capture. Regulators must work diligently to prevent abuses by those powerful forces in industry or government whose agendas diverge from the nation's best interests. In addition, government should attempt to correct societal risk misperceptions in order to educate the public as to which regulations are needed and which ones may be less necessary than previously thought. Moreover, regulatory agencies should focus on average risks rather than on worst-case scenarios to enhance the responsiveness of their efforts to solving the most pressing problems. Finally, requiring these agencies to publish and justify their regulatory triggers and to perform ex-post evaluations of policies already implemented, should serve to continuously improve the quality of regulatory design.

Many of these proposals have been suggested previously, and executive branch oversight of the regulatory process—from Ford to Carter to Reagan to Clinton—has injected some common sense into the design of federal safety regulations.[379] Their executive orders have taken the initial steps in implementing responsible cost, benefit, and risk assessments into regulatory policy. Problems persist however, in part because statutes governing our regulatory agencies are often silent on the subject of cost-benefit analysis. Courts have therefore been powerless to enforce a sensible comparison of costs and benefits,[380] resulting in regulations that fail to serve society's goals as well as they could. Thus, sensible regulatory design demands that government agencies at least consider costs, benefits, and risk tradeoffs in formulating regulations that efficiently and responsibly maximize society's welfare.

Of course, none of these suggestions for regulatory reform offers a utopian solution. Marginal cost-benefit analysis and the additional proposals detailed above have limitations.[381] Critics have attacked the cost-benefit concept from both a moral and practical measurement standpoint, and admittedly there are difficulties in its application. However, to ignore the lessons that economics and common sense teach us about cost, benefit, and risk tradeoffs simply because of these difficulties is to settle for second best. Society can and will save far more lives if it is willing to attempt to calculate the marginal cost of saving those lives.

To this end, we must change the tone of the current dialogue. Instead of decrying attempts to measure the marginal cost of a human life, we must speak in terms of maximizing the number of *saved lives*. The question then is not how many deaths are acceptable but how to best spend scarce resources to save

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[379] *See supra* Part IV.A (describing various executive orders aimed at introducing cost-benefit analysis to the regulatory process).

[380] *E.g. Whitman v. Am. Trucking Assns.*, 531 U.S. 457, 121 S. Ct. 903 (2001); *see supra* n. 267 and accompanying text (discussing *Whitman v. American Trucking Associations*).

[381] Several of the criticisms of marginal cost-benefit and risk-risk analysis are discussed *supra*, Part V.

lives that would otherwise be lost. From an ethical standpoint, no loss of life is ever acceptable in order to make money. But, the reality is that in our everyday economic pursuits, from building cars to manufacturing widgets, some lives will inevitably be sacrificed. Given this certainty, we must design responsible regulatory oversight policy in America to focus on how to maximize the quantity of saved lives that would otherwise be lost.

In this process, I wish to emphasize that a marginal cost-benefit, risk-risk approach to federal regulatory policy is based on the philosophical underpinning that doing the greatest good for the greatest number should be our government's foremost goal. Although cost-benefit analysis is controversial and sometimes perceived as right-wing ideology, I view it as an invaluable tool set in the liberal tradition of helping those whom power and industry too often exploit. Explicit evaluation of actual risks posed by environmental threats and analysis of how best to remedy them will prevent the strong from unfairly pushing their agenda on the weak by virtue of misinformation or political pressure. The reform of federal regulatory oversight policy seeks to help as many people as possible, rather than only those who can lobby for their own narrow interests. We must never forget that we live in a world of *limited* resources. If we focus regulatory policies inefficiently in certain areas because we refuse to employ marginal cost-benefit and risk-risk analysis, we are by definition diverting resources from areas where we could better help far more Americans. Even the skeptical reader would acknowledge that it would be worse to spend $20 million saving one person's life through a given environmental regulation than to spend that same $20 million helping thousands of poor women obtain free prenatal childcare and vaccinations for their newborns.

Thus, the purpose of this Article is to encourage careful thought about where our limited resources would do the most good when it comes to federal health and safety regulations. Cost-benefit and risk-risk analysis need not be the only decision criteria, but they are at least useful tools in identifying policies that maximize societal well-being more often or better than alternative procedures. They can and must incorporate social values that seek fairness, equity, and distributional justice in America. In the final analysis, our ultimate goal should be to allocate and reallocate our resources where they can do the greatest good for the greatest number, and we must never settle for regulatory policies that aspire to do less than that.