TOWARD A POLITICAL ECONOMY OF COST-BENEFIT ANALYSIS

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ABSTRACT

This is a substantially revised, refocused, and updated version of an earlier draft paper, exploring the significant role Cost-Benefit Analysis (CBA) plays in facilitating or impeding legislative and regulatory policy decisions. The paper centers around three case studies of CBAs EPA prepared for: (1) Clinton Administration changes to Clean Air Act air quality standards for ozone and particulate matter; (2) President Obama's recent decision to suspend EPA's reconsideration of the Bush Administration's air quality standard for ozone; and (3) the George W. Bush Administration's "Clear Skies" legislative initiative. The first two case studies demonstrate, between them, how well-constructed CBAs can facilitate social welfare-enhancing and impede welfare-reducing rules, even in cases where explicit consideration of costs is legally prohibited. The third case study tells a more complex story of how CBAs can be manipulated either to promote welfare-reducing regulations or impede welfare-enhancing regulations. When that happens, however, the virtuous transparency of CBAs renders those efforts liable to discovery and disclosure, as in the case of the Bush Administration's failed "Clear Skies" initiative. The paper concludes with an assessment of implications of the case studies for our understanding of the role of CBA in political (both legislative and regulatory) processes, and with a call for more qualitative and quantitative empirical research on the use and abuse of CBA as a political tool.

INTRODUCTION

Governments at all levels have a legitimate, sometimes critical, role to play in resolving social cost problems, relating for example to the provision of public goods like clean air and water. Over time, governments and their agencies have developed various decision tools to assist those efforts. One such tool is cost-benefit analysis (CBA), which often is incorporated into larger documents known as regulatory impact analyses (RIAs).

Formal CBA has been around since the New Deal, emerging from studies commissioned by the National Planning Board that President Roosevelt established in 1934.[1] Congress first required CBA in the 1936 Flood Control Act, section 1 of which provided that, "the Federal Government should improve or participate in the improvement of navigable waters … for flood control purposes if the benefits … are in excess of the estimated costs…."[2] At that time, however, "the whole area of costs and benefits from flood control projects was poorly understood,"[3] and no uniform set of principles and standards existed for measuring costs and benefits of government policies.[4] In the 1940s and 1950s, despite significant efforts to impose a uniform set of best practices for CBAs of water resources projects,[5] individual agencies,

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[1] Maynard M. Hufschmidt, *Benefit-Cost Analysis: 1933-1985*, 116 WATER RESOURCES UPDATE 42, 42 (2000).

[2] Pub. L. 74-738.

[3] JOSEPH L. ARNOLD, THE EVOLUTION OF THE 1936 FLOOD CONTROL ACT 81 (1988).

[4] HUFSCHMIDT, *supra* note 1, at 42.

[5] In May 1950, the federal Inter-agency Committee on Water Resources (ICWR) proposed the first set of federal "best practice" standards for CBA, with specific application to river basin projects. U.S. Inter-Agency Committee on Water Resources, Subcommittee on Evaluation Standards, Proposed Practices for Economic Analysis of River Basin Projects (1950). But its "Green Book," as the document came to be known, was never formally adopted. HUFSCHMIDT, *supra* note 1, at 43. The ICWR's effort was closely followed, however, by the President's Bureau of the Budget–predecessor of today's Office of Management and Budget (OMB)–which prepared its own set of CBA standards and practices, culminating in the 1952 publication of Budget Circular A-47. The Bureau's document was more "conservative" than the 1950 "Green Book" in restricting the use of secondary benefits, requiring the use of the opportunity-cost approach to discounting future streams of costs and benefits, tied to the interest rate on long-term government bonds, and restricting to 50 years the time horizon for incorporating costs and benefits. Critics,

including the Bureau of Reclamation and the Army Corps of Engineers, continued to take their own, often inconsistent, approaches to CBA.[6] Only later, in the 1970s, did CBA expanded beyond water resources policy to encompass broader government programs, including pollution control. Since then, the discipline (really, multiple methodologies) has continued to develop and mature.

In theory, CBA is supposed to be a neutral decision tool that helps government decision-makers focus resources so as to maximize the social returns of public investments (or publicly mandated private investments) by (a) choosing social-cost problems worth resolving[7] and (b) selecting mechanisms by which to resolve them. It is viewed as a kind of filter designed to capture welfare-reducing proposals, while allowing welfare-enhancing proposals to pass through.

In reality, CBA inevitably requires value judgments that are inherently subjective, rendering the analyses potentially manipulable for political ends. The most important subjective elements of CBAs include (a) valuations of reductions in human mortality[8] and other non-market

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including water resource agencies and proponents of water resource projects in Congress, widely regarded Circular A-47 as a "severe restraint on water projects." *Id.* Perhaps to counter that effect, the ICWR issued a new version of its "Green Book" in 1958. U.S. Inter-Agency Committee on Water Resources, Subcommittee on Evaluation Standards, Proposed Practices for Economic Analysis of River Basin Projects (1958). This new edition of the "Green Book" did not differ greatly from the 1950 edition. Compared to Circular A-47, the 1958 "Green Book" supported longer time horizons, lower discount rates, and more extensive incorporation of secondary benefits, which served to justify more government action. HUFSCHMIDT, *supra* note 1, at 44. Between Circular A-47 and the 1958 "Green Book" we see the beginnings of politically-motivated wrangling over CBA methodology, which continues to the present.

[6] *Id*. *See also* Daniel H. Cole, *Best Practice in Benefit-Cost Analysis*, 23 RES. L.& ECON. 1, 4 (2007) (noting that, "before the 1970s government agencies only rarely attempted to quantify the costs and benefits of their burgeoning regulatory programs, let alone predict costs and benefits prior to policy implementation.").

[7] In practice, CBAs usually come into play only after a course of action already has been proposed. However, because non-action is always a policy option, every CBA inevitably involves an implicit or explicit determination of whether (de)regulatory action is warranted in the first place.

[8] Often, cost-benefit analysts are accused of placing economic values on human lives. That is not quite accurate, although it is of course possible to imply human life valuations from cost-estimates of measures designed to reduce

(*e.g.*, environmental) goods and (b) the values used to determine the social discount rate. In the literature, one finds a large range of acceptable values for discount rates and non-market goods, including human lives, large enough to permit the strategic manipulation of outcomes that would either support or oppose efforts to resolve large-scale social-cost problems.[9] Thus, CBAs are useful for both policy proponents and opponents.

Sometimes, competing CBAs even become focal points for substantive policy disputes, as in the case of climate change, where economists have split into two camps based on whether their cost-benefit models focus on the mean expected damages of climate change or incorporate low-probability, high-magnitude climate "catastrophes." Those who focus on mean expected damages generally prefer a gradual ramping-up of greenhouse gas regulations. Others, who incorporate more high-harm scenarios into their climate models, generally prefer more rapid and stringent regulations.[10]

The main purpose of this paper is not to assess whether CBAs more often impede or promote solutions to social-cost problems but simply to describe their influence in the context of specific cases, and to explain how and why they are politically useful tools for interest groups and agencies *even when those agencies are not required by law to prepare CBAs*. For better or worse, CBAs have influenced policies for dealing with, or not dealing with, social-cost problems ranging from airport enlargement to water pollution standards and global climate change.[11]

Part I of this paper describes, in relatively simple terms, the process of CBA. Part II consists in three case studies that examine the legitimate uses, as well as abuses, of CBAs by federal government agencies to either promote or impede regulatory policies. Those cases entail

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mortality. *See generally* Trudy Ann Cameron, *Euthanizing the Value of a Statistical Life*, 4 REV. ENVTL. ECON. &POL. 161 (2010).

[9] *See, e.g.*, Paul R. Portney and John P. Weyant, Introduction, in P.R. PORTNEY AND J.P. WEYANT (EDS), DISCOUNTING AND INTERGENERATIONAL EQUITY 1, 4 (1999).

[10] See *infra* Section III.

[11] *See, e.g.*, Robert Haveman, *The Chicago O'Hare Expansion: A Case Study of Administrative Manipulation of Benefit-Cost Principles*, 23 RES. L.& ECON. 183 (2007); WILLIAM D. NORDHAUS AND JOSEPH BOYER, WARMING THE WORLD: ECONOMIC MODELS OF GLOBAL WARMING (2000).

several important implications, including: (1) CBAs nearly always influence and can determine political outcomes, even when they are not supposed to under existing legal rules; (2) federal agencies, even when legally barred from considering cost, have incentives to produce and sometimes strategically manipulate CBAs to preempt or undermine political opposition to regulatory or deregulatory proposals; (3) because the assumptions of CBAs (including, for example, the social discount rate) are generally required to be made transparent, manipulation of CBAs for political ends is not always a successful strategy.

II. THE CBA PROCESS:
OBJECTIVE REPRESENTATION OF SUBJECTIVE CHOICE

At its simplest, CBA can be described as a six step process:

(1)   specify the social-cost problem to be resolved (sometimes, but not always, exogenous to the CBA);

(2)   identify policy alternatives for doing so, including no action;

(3)   determine foreseeable impacts, including non-market impacts, of each of the alternatives over their expected life-spans as against some baseline;

(4)   assign values to those impacts –
      (a)   favorable impacts = benefits,
      (b)   unfavorable impacts = costs;

(5)   discount future costs and benefits to present day dollars, and calculate the net present benefits or costs for each alternative;

(6)   finally, compare the net benefits/costs or all alternatives and choose the alternative with the greatest net benefits or lowest net costs.

The process appears straightforward enough, but appearances are deceiving. At virtually every step, subjective judgment calls are required,[12] which can bias the CBA either for or against

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[12] This assertion is not novel or even very controversial. *Compare, e.g.*, ARTHUR SMITHIES, THE BUDGETARY PROCESS IN THE UNITE D STATES 344-5 (1955); Martin S. Feldstein, *The Social Time Preference Discount Rate in*

proposed policies. In Step 1, the selection of the goal or even the way the goal is framed can influence the measurement of success or failure.[13] Step 2, which involves the identification of policy alternatives, inevitably requires more or less arbitrary line-drawing, as the number of conceivable alternatives inevitably outstrips the capacity of any single CBA or broader decision-making process. Likewise, as every first-year law student learns in Torts class, the determination of foreseeable impacts requires the drawing of lines that cannot legitimately be tied to neutral principles or presumed consensus among all potentially interested parties.[14]

Steps 4 and 5 in the CBA process provide more obvious and oft-debated problems. In Step 4, values must be assigned to non-market goods, such as human lives, scenic vistas, and endangered plant species, without the usually reliable measure of money (this is sometimes referred to as a problem of "missing markets"). Despite unarguable improvements in alternative valuation techniques, including contingent valuation, hedonic pricing, travel-cost methods, *etc.*, the range of "acceptable" valuations (as defined by editors and peer reviewers at academic journals) remains large, and the choice of any valuation within the "acceptable" range is

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Cost Benefit Analysis, 74 ECON. J. 360, 362 (1964); A.R. Priest and R. Turvey, *Cost-Benefit Analysis: A Survey*, 75 ECON. J. 683 (1965); E.J. MISHAN, COST-BENEFIT ANALYSIS: AN INTRODUCTION Chs. 24 & 47(1971); Christopher Nash, David Pearce and John Stanley, *An Evaluation of Cost-Benefit Analysis Criteria*, 22 SCOTTISH J.POL ECON. 121 (1975).

[13] As observed *supra* note 7, policy goals typically are decided upon prior to the preparation of CBAs. However, because CBAs judge welfare effects against a business-as-usual/no-action baseline, they can and do affect the threshold decision to act as well as the choice of mechanism for action. Thus, goal setting is not completely exogenous to the CBA process. Even if it were, goal-setting inevitably would involve its own CBA, however (in)formal.

[14] The classic case illustrating this point is *Palsgraf v. Long Island Railroad Co.*, 248 N.Y. 339, 162 N.E. 99 (N.Y. 1928). *Also see* H.L.A. HART AND TONY HONORÉ, CAUSATION IN THE LAW 256-7 (2d ed. 1985) (observing that "in one sense everything is foreseeable, in another sense nothing"); DAVID G. OWEN, PRODUCTS LIABILITY LAW § 13.5, at 890 (2d ed. 2008) (noting that "the innate vagueness of 'foreseeability'" renders it a poor metric for determining the scope of liability).

contestable.[15] Not only do analysts disagree about the values, they cannot even agree about the best *way* of measuring the values. In valuing various risks of death, is it best to measure statistical lives saved or lost, life *years* saved or lost, or quality-adjusted life years saved or lost? Are the lives of older statistical persons worth more or less than the lives of younger statistical persons? Are lives in some locales worth more than lives in others? If so, should valuations depend on *per capita* gross domestic product, wage levels, or living standards of the relevant country, county, or city?[16] The fact that these issues persist should not be taken to mean that valuations of threats to human lives (among other non-market goods) are subject to such profound uncertainty as to disable CBA from eliciting useful information for policy decisions. However, no single CBA can be objectively correct because the business of valuing non-market goods is inherently subjective and contestable.[17]

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[15] Bounding the "acceptable" range seems more a matter of convention than an objective determination that higher and lower valuations cannot be correct.

[16] The OMB's Circular A-4 includes a useful discussion of different approaches to valuing human lives. Circular A-4 (Sept. 17, 2003) < https://docs.google.com/viewer?url=http %3A%2F%2Fwww.whitehouse.gov%2Fsites% 2Fdefault%2Ffiles%2Fomb%2Fassets%2Fregulatory_matters_pdf%2Fa-4.pdf>, as it relates to discounting in RIAs.On the various issues raised by efforts to value human life, *see, e.g.*, Michael J. Moore and W. Kip Viscusi, *The Quantity-Adjusted Value of Life,* 26 ECON. INQUIRY 269 (1988); RICHARD L. REVESZ AND MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH 77-81 (2008); David A. Dana, *Valuing Foreign Lives and Settlements*, 1 J. BENEFIT-COST ANAL. Art. 4 (2010); Ted R. Miller, *Variations between Countries in Values of Statistical Life*, 34 J. TRANSPORT ECON. 169 (2000); James K. Hammit, *Valuing Changes in Mortality Risk: Lives Saved Versus Life Years Saved*, 1 REV. ENVTL. ECON. & POL. 228 (2007).

[17] Former OIRA chief John Graham argues that valuation problems have been reduced in recent years by improvements in CBA methodology. John D. Graham, *Saving Lives through Administrative Law and Economics*, 157 U.PENN. L. REV. 395, 483-516 (2008). But absent the metric of money (valuations obtained from actual market exchanges), the valuation of non-market goods, such as human lives and human health, must remain substantially uncertain and, therefore, contestable. CBAs can deal with uncertainty, but only imperfectly, *e.g.*, by running "Monte Carlo" simulations, which generate a probability distribution of outcomes (or values). *See, e.g.*, Judson Jaffe and Robert N. Stavins, *On the value of formal assessment of uncertainty in regulatory analysis*, 1 REG. & GOVERNANCE 154 (2007).

Aside from valuing death prevention, how do we measure morbidity effects, which reduce the quality of life, but do not kill? What, for example, is the value of a single asthma attack averted or a significantly reduced risk of a non-fatal cancer from a particular source? Beyond human life and health, how do we value ecosystem effects, for example all of the seabirds, sea mammals, and other wildlife killed in the Exxon *Valdez* oil spill of 1989?[18] Surely no one could claim with a straight face that answers to these questions are objectively discernible in a politically neutral way.[19] Values must be assigned, however, because otherwise those goods would receive a default value of zero in CBAs,[20] which is usually (though not inevitably[21]) worse than assigning an erroneous positive value.[22]

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[18] *See* DANIEL H. COLE AND PETER Z. GROSSMAN, PRINCIPLES OF LAW AND ECONOMICS 394-5 (2d ed. 2011).

[19] As in most other cases involving harm to non-market goods, such as wildlife, analysts used contingent valuation (CV) techniques in the Exxon *Valdez* case to determine the extent of damages. Some economists believe that CV surveys provide no useful insights as to value. *See, e.g.,* Peter A. Diamond and Jerry A. Hausman, *Contingent Valuation: Is Some Number Better than No Number?,* 8 J.ECON. PER. 45 (1994). Others defend the technique as consistent with economic theory and necessary to evaluate non-market goods. *See, e.g.,* W. Michael Hanemann, *Valuing the Environment through Contingent Valuation*, 8 J.ECON. PER. 19 (1994). A CV study of the Exxon Valdez disaster concluded that the damage to passive use values alone amounted to $2.8 billion. Richard T. Carson *et al.*, A Contingent Valuation Study of Lost Passive Use Values Resulting from the Exxon Valdez Oil Spill, A Report to the Attorney General of the State of Alaska 1-11 (Nov. 10, 1992) <http://www.evostc.state.ak.us/ pdf/econ5.pdf>. By contrast, the jury in the litigation that inevitably followed the oil spill held Exxon responsible for just $287 million in compensatory damages. *See Exxon Shipping Co. v. Baker*, 554 U.S. 471, 480-81 (2008). Even assuming no bias on the part of either the jury or the economists who undertook the contingent valuation study, no objective basis exists for concluding that one valuation was correct or, even, more accurate than the other.

[20] This stark fact places the onus on critics of CV, such as Diamond and Hausman, *supra* note 19, to offer a preferable substitute.

[21] Overestimating values can be just as a big a problem as underestimating them. For example, if the benefit of some good is $10, assigning it a value of $0 in a CBA would distort the analysis less than assigning it a value of $21.

[22] The problem is compounded in a Monte Carlo framework because the assumption of a zero value implies that the standard error is also zero. I am grateful to Dave Weimer for this observation.

Once more or less arbitrary values are assigned to non-market goods and bads (along with the market values of goods and bads that are regularly traded), any benefits or costs arising after the initial date of policy implementation must be discounted at some rate, including potentially a zero rate, to derive their net present value (that is, their value at the time of policy adoption). The need for discounting is intuitive from the perspective of the opportunity cost of investment. Because a dollar today can be invested at some positive rate of interest, it is worth more than a dollar tomorrow, next year, or in ten years' time. An alternative but equally prominent approach to discounting, based on the marginal rate of time preference rather than the opportunity cost of investment, stems from the works of Irving Fisher and Frank Ramsey.[23]

The marginal rate of time preference approach to discounting differs from the opportunity cost of investment approach mainly in that the former focuses on deferring (or not) one's own consumption of some good, while the later focuses not on personal consumption but on maximizing market returns from investments.[24] In the idealized micro-economy of neoclassical theory, the two approaches would lead to identical social discount rates.[25] But because of market imperfections and distortions (resulting for example from taxes), the two approaches usually specify different discount rates. Rates based on the opportunity cost of capital run significantly higher than those based on the pure rate of time preference.[26] Consequently, the very choice of discounting *method* can significantly affect the outcome of a CBA and thereby influence policy.

A third approach to discounting uses the so-called "shadow price of capital," which starts by converting all mandated private capital expenditures to annualized consumption equivalents, using an estimate of the pre-tax private rate of return to determine a cost-stream representing

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[23] *See* IRVING FISHER, THE NATURE OF CAPITAL AND INTEREST ([1906] 2006); Frank Ramsey, *A Mathematical Theory of Saving*, 38 ECON. J. 543 (1928).

[24] *See., e.g.,* M.S. Feldstein, *The Social Time Preference Discount Rate in Cost Benefit Analysis*, 74 ECON. J. 360, 361 (1964).

[25] *See, e.g.*, ANTHONY BOARDMAN *ET AL.*, COST-BENEFIT ANALYSIS 246 (4th ed. 2011).

[26] *See id*; David F. Burgess and Richard O. Zerbe, *Appropriate Discounting for Benefit-Cost Analysis*, 2 J. BENEFIT-COST ANAL. Art. 2, 4 (2011) <http://www.bepress.com/cgi/viewcontent.cgi?article=1065&context=jbca>.

foregone consumption. That foregone consumption is then converted to present value, along with all other costs and benefits, using the consumption rate of time preference.[27] But the shadow price of capital approach has not (yet) been widely adopted. The UK Treasury experiment with it, though only briefly, for government policies and projects with significant effects on carbon emissions.[28] Similarly, in the US, the OMB briefly experimented with the shadow price of capital approach to discounting. A 1992 rule established it as "the analytically preferred means of capturing the effects of government projects on resource allocation in the private sector," and even permitted its use, with "OMB concurrence," *instead* of the opportunity cost of capital approach, with its 7% constant discount rate.[29] But just a few years later, OMB cautioned that "[w]hile the shadow price approach is theoretically preferred, there are several practical challenges to its use. Agencies wishing to use this methodology should consult with OMB prior to doing so, and should clearly explain their solutions to the methodological and empirical

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[27] *See, e.g.*, Jeffrey A. Kolb and Joel D. Scheraga, *Discounting the Benefits and Costs of Environmental Regulations*, in COST-BENEFIT ANALYSIS AND PUBLIC POLICY (D.L. Weimar ed., 2008) <http://onlinelibrary.wiley.com/ doi/10.1002/ 9781444307177.ch9/pdf>.

[28] *See* Economics Group, Defra, The Social Cost of Carbon and the Shadow Price of Carbon: What They Are, and How to Use Them in Economic Appraisal in the UK (Dec. 2007) < https://docs.google.com/viewer?url=http%3 A%2F%2Fwww.decc.gov.uk%2Fassets%2Fdecc%2Fwhat%2520we%2520do%2Fa%2520low%2520carbon%2520 uk%2Fcarbon%2520valuation%2Fshadow_price%2Fbackground.pdf>. Just a couple of years after adopting the shadow price of capital approach to valuing carbon emissions, HM Treasury abandoned all efforts to price damages from carbon emissions to focus instead on the abatement costs of attaining exogenously determined emission-reduction goals. Climate Change Economics, Department of Energy and Climate Change, Carbon Valuation in UK Policy Appraisal: A Revised Approach 2 (July 2009) < https://docs.google.com/viewer?u l=http%3A%2 F%2F www.decc.gov.uk%2Fassets%2Fdecc%2Fwhat%2520we%2520do%2Fa%2520low%2520carbon%2520uk%2Fcarb on %2520valuation%2F1_20090715105804_e_%40%40_carbonvaluationinukpolicyappraisal.pdf>. Also see Department of Energy and Climate Change, A brief guide to the carbon valuation methodology for UK policy appraisal (Oct. 2011) < https://docs.google.com/viewer?url=http%3A%2F%2Fwww.decc.gov.uk%2Fassets%2Fdecc %2F11%2Fcutting-emissions%2Fcarbon-valuation%2F3136-guide-carbon-valuation-methodology.pdf>.

[29] Circular No. A-94 Revised (Oct. 29, 1992) < http://www.whitehouse.gov/omb/circulars_a094#8>.

challenges…."[30] In a similar vein, OMB's Circular A-4, adopted in 2003, cautioned agencies that "shadow prices are not well established for the United States. Furthermore, the distribution of impacts from regulations on capital and consumption are not always well known. Consequently, any agency that wishes to tackle this challenging analytical task should check with OMB before proceeding."[31] Since then, OMB rules have mandated use of both the opportunity cost of investment approach and the marginal rate of time preference approach to discounting, by requiring the use of alternative 7% and 3% discount rates.

But how are those values derived? The opportunity cost of capital approach simply estimates the before-tax rate of return to private capital in the U.S. economy over a number of years.[32] The OMB has pegged that rate at 7% since the early 1990s (when it was reduced from a higher rate of 10%). Under the marginal rate of time preference approach, which is not based on simple market observations, the discount rate is estimated according to the "Ramsey equation," $r = p + \eta g$, where: r is the social rate of discount; p is the pure rate of time preference, a measure of (im)patience; η is the elasticity of marginal utility, also known as the base case coefficient of relative risk aversion, which measures the amount of consumption society is willing to sacrifice today to insure against some expected future loss; and g represents the expected rate of growth in *per capita* consumption, a value economists typically presume to be positive because they expect

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[30] OMB, Economic Analysis of Federal Regulations under Executive Order 12866 (Jan. 11, 1996) < http://www. whitehouse.gov/omb/inforeg_riaguide#iii>.

[31] Circular A-4, *supra* note 15. It is worth noting that the OMB's changing attitude to the shadow price of capital approach to discounting has political overtones, which are consistent with the theme of this paper. That approach, which typically leads to lower discount rates than the opportunity cost of capital approach, thereby justifying more government action, was embraced shortly after a Democratic (Clinton) administration took office, but then pretty firmly abandoned shortly after a Republican (Bush II) administration took office, although support for the approach did wane during Clinton's second term. This history supports a more general thesis that debates over CBA methodology within the federal government reflect larger disputes about the size and scope of government intervention in the economy, and illustrates the extent to which CBA can be manipulated to preferred political ends.

[32] *See id.*

future generations to be better off than present generations.[33] The *g* could turn negative, however, should some large-scale disaster occur, such as a significant asteroid strike or catastrophic climate change.[34] Indeed, the conventional presumption of long-term growth stems from models that presume no resource or ecological constraints of any kind. Once such constraints are introduced, the consequences for future per capita consumption become more ambiguous (even in the absence of external shocks or discontinuities) and depend increasingly on factors including relative resource endowments, the elasticity of substitution between natural resources and other forms of capital, and the rate of technological change.[35]

None of the elements comprising the Ramsey equation can be specified objectively. They are all substantially subjective and subject to dispute, as illustrated by the controversy that followed the UK Treasury's 2006 publication of *The Stern Review on the Economics of Climate Change*.[36] The *Stern Review* derived an unusually low social discount rate of 1.4% based on a pure rate of time preference of 0.1%, an elasticity of marginal utility of 1, and an expected growth rate in *per capita* consumption of 1.3%. Many of the *Stern Review*'s numerous critics

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[33] On the presumptuousness of this expectation, *see, e.g.*, Robert M. Solow, *The Economics of Resources or the Resources of Economics*, 64 AMER. ECON. REV. 1, 9 (1974) ("We have actually done quite well at the hands of *our* ancestors. Given how poor they were and how rich we are, they might properly have saved less and consumed more. No doubt they never expected the rise in income per head that has made us so much richer than they ever dreamed was possible. But that only reinforces the point that the future may be too important to be left to the accident of mistaken expectations and the ups and downs of the Protestant ethic."). *Also see* DOUGLASS C. NORTH, STRUCTURE AND CHANGE IN ECONOMIC HISTORY (1982) (observing that long-run economic growth is not normal but exceptional in the history of human civilization).

[34] As North, *id.,* reminds us, low or negative growth situations can arise not just from large-scale exogenous shocks but endogenously from persistently bad institutions, which harm society overall while benefiting interest groups possessing sufficient political prowess to prevent social welfare-enhancing institutional change.

[35] *See, e.g.*, Solow, *supra* note 33, at 10-11; Joseph Stiglitz, *Growth with Exhaustible Natural Resources: Efficient and Optimal Growth Paths*, 41 REV. ECON. STUD. 123 (1974)

[36] NICHOLAS STERN, THE STERN REVIEW ON THE ECONOMICS OF CLIMATE CHANGE (2007). The analysis in this section is adapted from Daniel H. Cole, *The* Stern Review *and Its Critics: Implications for the Theory and Practice of Benefit-Cost Analysis*, 48 NAT. RES. J. 53 (2008).

objected to its social discount rate, but for various reasons. Some, including William Nordhaus and Richard S.J. Tol, strongly disagreed with the selection of 0.1% for the pure rate of time preference.[37] Others, such as Partha Dasgupta, had no complaint with the pure rate of time preference, but disagreed with the *Stern Review*'s elasticity of marginal utility of 1.[38] Dasgupta did not dispute Stern's choice of a growth rate for *per capita* consumption, even though he previously co-authored a paper noting how climate change, if sufficiently severe, could curtail economic growth and potentially justify a zero, or even negative, social discount rate.[39] Martin Weitzman, after heavily criticizing the *Stern Review*'s use of unconventional, paternalistic discount rates,[40] developed his own integrated assessment model–a complex form of CBA fusing scientific and economic analyses–that pays more attention to potential low or negative growth scenarios.[41]

Given the lack of agreement over the elements that comprise the social discount rate, it should not be surprising to find widespread disagreement about the social discount rate itself. Writing in 1999, Paul Portney and John Weyant observed that " [t]hose looking for guidance on the choice of discount rate could find justification [in the literature] for a rate at or near zero, as high as 20 percent, and any and all values in between."[42] This is troubling because even a

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[37] *See, e.g.*, William Nordhaus, *A Review of the* Stern Review on the Economics of Climate Change, 45 J. ECON. LIT. 686 (2007); Gary Yohe and Richard S.J. Tol, *The* Stern Review*: Implications for Climate Change*, 49 ENVT 36 (2007).

[38] *See* Partha Dasgupta, *Commentary: The Stern Review's Economics of Climate Change*, 199 NAT'L INST. ECON. REV. 4 (2006).

[39] Partha Dasgupta, Karl-Gören Mäler, and Scott Barrett, *Intergenerational Equity, Social Discount Rates, and Global Warming*, *in* P.R. Portney and J.P. Weyant (Eds.), Discounting and Intergenerational Equity 51 (1999).

[40] Martin Weitzman, *A Review of the* Stern Review on the Economics of Climate Change, 45 J. Econ. Lit. 703, 717 (2007).

[41] Martin Weitzman, *Gamma Discounting*, 9 AMER. ECON. REV. 260 (2000).

[42] Portney and Weyant, *supra* note 9, at 4. *See also* Feldstein, *supra* note 22, at 362 (observing that "the search for a 'perfect' formula to specify the social time preference rate is futile." A social time preference

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seemingly small difference in the discount rate can alter the outcome–in technical terms, change the sign–of a CBA.

A little more than a decade ago, Martin Weitzman tried to get a better handle on what constituted an "appropriate" discount rate for long-run environmental policies by surveying 2,000 of his fellow economists for their "professionally considered gut feeling" about the appropriate discount rates to apply to climate change policy. In the aggregate, they preferred a schedule of declining discount rates, starting from around 4 percent for near-term effects and falling to 2 percent after 25 years, then to 1 percent after 75 years. Weitzman's project has been criticized on various grounds, including for example that there is no reason to believe that most economists have special expertise on discounting.[43] However, his findings (summarized in Table 1 below) are remarkably consistent with the UK Treasury's "Green Book" of discount rates for central government policies, presented in Table 2. The UK Treasury rates presumably are based on the shadow price of capital (presuming risk-free rate of returns) or on the pure rate of time preference, rather than the opportunity cost of capital. By contrast, the US President's Office of Management and Budget continues to prefer the opportunity cost of capital approach for calculating social discount rate. Its 7 percent base rate remains mandatory for all federal agency CBAs, even for cases where the proposed government action does not primarily affect capital markets.[44] In 2003, the OMB instructed agencies to use both 7 percent and 3 percent discount rates (*see* Table 3), thereby splitting the difference between the opportunity cost of capital approach and the time preference of consumption approach to discounting (although, in practice, the OMB sometimes seems to give greater weight to calculations using the 7% rate). Moreover, the OMB permits the use of even lower discount rates, ranging from 1 percent to 3 percent, in

function "must reflect public policy and social ethics, as well as judgment about future economic conditions.").

[43] *See, e.g.*, Burgess and Zerbe, *supra* note 26, at 12.

[44] Circular A-94, *supra* note 29, subsequently superceded by Circular A-4, *supra* note 15, as it relates to discounting in RIAs.

Table 1. Aggregation of Economists' Recommended Discount Rates for Climate Change Policy	
Time from present	*Discount Rate (%)*
1-5 years	4
6-25 years	3
26-75 years	2
76-300 years	1
More than 300 years	0
Source: Martin Weitzman, *Gamma Discounting*, 9 AMER. ECON. REV. 260, 261 (2000).	

Table 2. UK Treasury's Schedule of Declining Long-Term Discount Rates	
Period of years	*Discount rate (%)*
0-30	3.5
31-75	3
76-125	2.5
126-200	2
201-300	1.5
300+	1
Source: Her Majesty's Treasury, Greenbook: Appraisal and Evaluation in Central Government, Annex 6, Table 6.1	

Table 3. The OMB's Discount Rates for Federal Agencies			
Time period	*Discount rate (%)*		
	Should be used in all RIAs	*Should be used in all RIAs*	*Permitted for sensitivity analysis in RIAs with intergenerational effects*
1+ years	7	3	--
Intergenerational (more than 20 years)	7	3	1-3
Source: Office of Management and Budget, Circular A-4, *in* Informing Regulatory Decisions: 2003 Report to Congress on the Costs and Benefits of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities (2003).			

RIAs with intergenerational effects for purposes of "sensitivity analysis" (along with mandatory 7 percent and 3 percent rates).[45] Thus, OMB rules countenance the use of alternative discount

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[45] "Sensitivity analysis" denotes a test carried out to determine the extent to which the outcome of a CBA is an artifact of the analyst's assumptions. The goal (not always attainable) is to prevent analysts' subjective choices from determining CBA results. A policy that is "insensitive" to the choice of a 3 percent or 7 percent discount rate–net social benefits are derived using either rate–is more certain to enhance net social welfare than a policy that provides net social benefits under the lower, but not the higher, discount rate. It would be a mistake, however, to conclude that only policies that provide net social benefits under discount rates of both 3 percent and 7 percent should be implemented; that would be tantamount to using a single discount rate of 7 percent. Arguably, for policies that do not primarily and substantially affect capital markets, the use of 7 percent discount rate in the CBA is unwarranted, even as part of a sensitivity analysis.

rates, based on different presumptions, for regulatory analysis. Policy-makers who say to economists, "just give me a number,"[46] instead receive two or more numbers, which cannot simply be averaged or otherwise combined into a single number, thereby complicating the decision-making process. Indeed, it is by no means clear that legislators or high-ranking political appointees in the agencies understand or appreciate the important nuances of discounting and discount-rate choice. This is not to argue that analysts should necessarily cater to the desires of politicians and other policy makers for simple calculations. Sometimes, at least, they need to be seriously confronted with reasonable and potentially irreducible uncertainties. But introducing additional complexity into CBA calculations does come at a cost.

To appreciate how using multiple discount rates within a single CBA can confuse decision makers, imagine a policy that upon implementation would impose costs on polluters and administrators amounting to \$1 million, but would produce estimated social benefits of \$2 million in exactly 15 years. For the sake of simplicity, assume no costs or benefits are created during the intervening years. While this example is highly stylized, it captures a chief characteristic of certain public policies, such as environmental protection measures: costs tend to be front-loaded, while benefits tend to be back-loaded. The costs that are borne in year 1 are not subject to discounting, but the subsequent benefits are discounted. The standard discounting equation is $PV = FV/(1+i)^t$, where PV is present value, FV is future value, i is the annual interest rate, and t is the time. The algebraic "discount factor," $1/(1 + i)^t$, can be used to generate a table of numerical discount factors for different time periods. The discount factor for a 3 percent discount rate in 15 years is 0.642; the discount factor for a 7 percent discount rate in 15 years is 0.362. Applying these discount factors to the current hypothetical, using the OMB's mandatory 7 percent discount rate the present value (that is, the value in year 1) of \$2 million in benefits accrued in year 15 is \$724,000 (2,000,000 x 0.362). Because that product is less than the costs incurred in year 1 (1,000,000), the policy would not pass the cost-benefit test, and should not be implemented. But using the alternative 3 percent discount rate, the present value of the benefits earned in year 15 is \$1,284,000 (2,000,000 x 0.642), which exceeds the cost, and therefore

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[46] Mark A. Moore *et al.., "Just Give Me a Number! Practical Values for the Social Discount Rate*," 23 J. POLICY ANAL. & MGMT. 789 (2004).

passes the cost-benefit test. What should the government to do with this information? If it relies on the 3 percent discount rate, it should implement the policy; but if it uses the 7 percent discount rate, it should not. One way or the other, the inherently subjective choice of a discount rate alone determines the CBA's outcome and drives the policy decision.[47]

Given the various subjective and manipulable elements of CBA, why does government increasingly rely on it as a tool in policy making? The reasons are several: (1) despite the subjective elements described above, CBAs have an aura of neutrality and *appear* more scientific than other decision tools; (2) decision makers like CBAs because they can boil down fundamental questions of regulatory policy to a single number (or a set of numbers, reflecting a clearly delineated variation in parameter values or a probability distribution of outcomes if a Monte Carlo simulation is run), which creates the impression (or misimpression) that the policy choice is (at least relatively speaking) clear;[48] (3) even if CBAs are subjective and manipulable, other decision tools are no less subjective and manipulable; and (4) because formal CBAs specify assumptions, valuations, discount rates and other variables, they are relatively transparent and capable of replication or challenge.[49]

The last two reasons are probably sufficient to warrant CBAs for most, if not all, major regulatory decisions (but perhaps not for minor decisions where the costs of performing the CBA may not be worth the benefits). Problems of subjectivity and manipulability affect all decision tools, but in the absence of a formalized process such as CBA, assumptions and valuations are likely to remain unspecified and opaque, preventing policy analysts, the media, and interest groups from reviewing, challenging, replicating, or even simply understanding why a particular

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[47] *Accord* Aaron Wildavsky, *The Political Economy of Efficiency: Cost-Benefit Analysis, Systems Analysis, and Program Budgeting*, 26 PUB. ADMIN. REV. 292, 297 (1966).

[48] It should be noted that many (if not all) economists who advocate the use of CBA in regulatory decision-making do so not as a decision-rule but as one source of information among others. *See* Kenneth J. Arrow *et al.*, *Is There a Role for Benefit-Cost Analysis in Environmental, Health, and Safety Regulation?*, 272 *Sci.* 221 (Apr. 12, 1996).

[49] *See* Wildavsky, *supra* note 47, at 297 ("The great advantage of cost-benefit analysis, when pursued with integrity, is that some implicit judgments are made explicit and subject to analysis.")

decision was taken, rather than some other decision.[50] Indeed, decision makers sometimes have strategic incentives to prefer the relative opacity of informal decision making procedures. Particularly in such circumstances, the transparency offered by formal CBAs is a great virtue, which should not be underestimated.[51] It can, and has, served to check abuses in agency decision-making processes, as the next section illustrates.

III. THE USE AND ABUSE OF CBA IN PUBLIC POLICY DECISIONS

This section offers three case studies that, together, describe legitimate uses as well as abuses of CBA to either resolve or impede the resolution of social-cost problems. The first case study concerns CBAs prepared by EPA in the late 1990s in support of revised national ambient air quality standards for ozone and particulate matter. The main lesson of that case study is that it makes sense for EPA to support its rules with CBAs *even when it is legally barred from considering them in rule-making* because they help to undercut political opposition to new rules.

The second case study concerns the Obama Administration's more recent but unsuccessful effort to replace the George W. Bush Administration's air quality standard for

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[50] One group that seems immune (or, at least, resistant) to the information provided by CBAs is the general public. As Cass Sunstein has observed in the context of the Bush Administration's reconsideration of Clinton Administration drinking water standards for arsenic, "Ordinary people seem to be 'intuitive toxicologists, with a set of simple rules for thinking about environmental risks." Cass R. Sunstein, *The Arithmetic of Arsenic*, 90 GEO. L.J. 2255, 2262 (2002). Sunstein goes on to argue that such intuitive approaches to policy are likely to lead to mistaken judgments and socially-inefficient outcomes, strengthening the case for CBA as a corrective. *Id. at 2266.* The controversy over the arsenic rule is discussed further *infra* notes 98 and 113.

[51] Lisa Heinzerling argues that the transparency of CBA is illusory because agency *explanations* of policies based on CBAs are not obviously more transparent than agency explanations of policies not based on CBAs. *See* Lisa Heinzerling, *Markets for Arsenic*, 90 GEO. L.J. 2311, 2335-6 (2002). However, her argument conflates two distinct issues: (1) the transparency of CBAs and (2) the transparency of decisions based, in whole or in part, on CBAs. Nothing in CBAs guarantees that agency decisions, or explanations of decisions, will be any more transparent. But the CBAs themselves must be transparent and replicable – in terms of articulating assumptions, including valuations of non-market goods and discount rates – to quality as legitimate CBAs. And their transparency has, in fact, contributed positively to policy-making, as shown by the third case study in Section III, *infra*.

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ozone with a more stringent standard. Relenting in the face of political opposition based partly on the state of the economy, the Obama Administration was disabled from defending its proposed standards on economic grounds because the agency's own Regulatory Impact Analysis showed that the Bush standard yielded (on central estimates) higher net social benefits.

The third case study focuses on EPA's efforts to support the Bush Administration's "Clear Skies" program–a deceptively named legislative package designed mainly to avoid imposing tougher restrictions on polluters–by manipulating the economic analysis to make "Clear Skies" appear superior to alternative, more stringent policies.[52] While this case demonstrates the manipulability of CBAs, it also highlights the value of their transparency for determining best policies for providing public goods or resolving CAPs.

These three case studies are not intended to present a comprehensive picture of the myriad uses and abuses of CBA in political/regulatory processes; many more case studies would be needed to accomplish that goal. The few presented here should be sufficient, however, to accomplish the more modest aim of this paper, which is to describe *some* of the more important ways in which CBAs have in fact been: (1) used to (a) support social welfare-enhancing regulations and (b) impede regulations that would likely reduce social-welfare; and (2) abused to mislead policy-makers, and the public, about the social-welfare consequences of favored or disfavored regulatory or legislative proposals. The case studies presented here do not describe the full range of uses and abuses of CBA but suggest some implications and conclusions about the overall utility of the method as a decision-tool.

Case Study 1: CBA Can Facilitate Collective Action by Disarming Political Opposition

In 1997, EPA proposed amendments to national ambient air quality standards (NAAQSs) for ozone and particulate matter under the Clean Air Act. The proposed regulations, which EPA ultimately adopted, were significantly more stringent than the previous standards, and entailed

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[52] *See* James E. McCarthy and Larry B. Parker, L.B., CRS Report for Congress: Costs and Benefits of Clear Skies: EPA's Analysis of Multi-Pollutant Clean Air Bills. Congressional Research Service, Washington, D.C. (Nov. 23, 2005).

substantial costs for both regulated industries and cities that could not immediately attain the new standards.[53] In setting the revised standards, however, EPA was legally barred from considering those costs. Section 109 of the Clean Air Act requires the agency to set primary NAAQSs to "protect public health…with an adequate margin of safety."[54] Since its inception, the EPA has consistently interpreted that language to prohibit considerations of cost in setting or revising NAAQSs.[55] That interpretation is based in part on the fact that other provisions in the Clean Air Act expressly permit or even require consideration of costs,[56] suggesting that Congress's failure include any reference to costs in §109 was both deliberate and legally significant (if, perhaps, economically imprudent).

Although EPA is statutorily barred from *considering* costs in setting revised NAAQSs, the agency nevertheless *prepares* CBAs in setting or revising those standards because it is legally obligated to do so by a different statute and an executive order. The 1995 Unfunded Mandates Reform Act requires federal agencies to conduct cost-benefit analyses of all regulations entailing annual economic costs of $100 million or more. The Act also requires the agencies to adopt the economically least burdensome regulatory alternative that accomplishes the regulatory purpose, or to explain why it chose a different option.[57] Executive Order 12,866, issued in 1993 by

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[53] See 40 C.F.R. §50.7 (1999) (particulate matter standard); 40 C.F.R. §§50.9 & 50.10 (1999) (ozone standard).

[54] 42 U.S.C. § 7409.

[55] *See Lead Industries Assn. v. EPA,* 647 F.2d 1130, 1148 (D.C. Cir., 1980) (upholding EPA's interpretation of § 109 of the Clean Air Act to prohibit cost considerations in setting or revising NAAQSs); *Whitman v. American Trucking Assc.,* 531 US 457 (2001) (confirming EPA's interpretation that costs cannot be considered in setting NAAQSs).

[56] *See, e.g.*, §111 of the Clean Air Act, 42 USC § 7411 (expressly requiring the EPA to consider costs in establishing technology-based standards of performance for new stationary sources of pollution emissions).

[57] 2 USC §§ 658, 658a-g, 1501-1507.

President Clinton,[58] required executive branch agencies, including the EPA, to prepare cost-benefit analyses for any "significant" regulatory proposals, that is, proposals having annual economic effects of $100 million or more. Unlike the Reagan era E.O. it superseded,[59] however, the Clinton E.O. did not require that the benefits of proposed regulations exceed the costs. It did, however, require EPA to prepare CBAs, even when it could not legally consider them in making regulatory decisions, as when setting national ambient air quality standards under the Clean Air Act.

EPA complied with both the Unfunded Mandates Reform Act and E.O. 12,866 by duly preparing CBAs for its proposed revisions to the NAAQSs for ozone and particulate matter. The CBA for the ozone standard failed a strict cost-benefit test, with estimated benefits ranging from $0.1-1.5 billion (net present value) and estimated costs of $2.5 billion. By contrast, the CBA for the revised particulate matter NAAQS had estimated benefits of $58-110 billion, which exceeded by at least a factor of 10 the estimated cost of $6 billion.[60] But was this exercise in CBA simply a waste of time and resources? Perhaps, if one is prepared to believe that EPA *actually* refrained from considering costs in deciding whether or not to change the standards. The fact that EPA has only rarely changed NAAQSs, even though the Clean Air Act requires it to considering doing so at least every five years,[61] suggests that cost does play an important, if informal, role in EPA's decision making. But even if EPA set the revised NAAQSs for ozone and particulate matter without regard to its own CBAs, those CBAs came in very handy when the agency was forced to defend its revised standards against political opposition in Congress.

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[58] 58 Fed.Reg. 51735 (Oct. 4, 1993). The Clinton E.O. has since been amended by E.O.s promulgated by Presidents George W. Bush and Barak Obama. *See*, E.O. 13,258, 67 Fed. Reg. 9385 (Feb. 28, 2002); E.O. 13,422, 72 Fed. Reg. 2763 (Jan. 23, 2007); E.O. 13,563, 76 Fed. Reg. 3821 (Jan. 21, 2011).

[59] *See* E.O. 12,291, 46 Fed. Reg. 13193 (Feb. 19, 1981); E.O. 12,498, 50 Fed. Reg. 1036 (Jan. 8, 1985).

[60] *See* Lester B. Lave, *EPA's Proposed Air Quality Standards: Clean Air Sense*, The Brookings Institution, Summer 1997 < http://www.brookings.edu/articles/1997/summer_environment_lave.aspx>. All figures are in 1997 dollars.

[61] §109(d)(2)(B), 42 USC § 7409(d)(2)(B).

As Jason Scott Johnston has observed, "When agencies pursue policies or programs that are opposed by party leaders, they risk triggering congressional reaction, not only in the form of costly oversight hearings, at which they will be grilled for hours by hostile committee members, but also in the form of reduced future appropriations."[62] Congress may also attempt to nullify or overturn regulatory policies through legislation, as the EPA discovered when it revised the NAAQSs for ozone and particulate matter in 1997. The regulations provoke a great hue and cry from cities and industries that would bear significant new costs under the regulations.[63] The Republican controlled House and Senate held oversight hearings on the new standards,[64] and proposals were made in Congress to undo them.[65] But those efforts went nowhere. That in itself is not unusual; exceedingly few legislative proposals ever become law.[66] In this case, however, it is worth considering whether the CBAs the EPA prepared for its revised ozone and particulate

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[62] Jason Scott Johnston, *A Game-Theoretic Analysis of Alternative Institutions for Regulatory Cost-Benefit Analysis*, 150 U.PENN. L.REV. 1343, 1362 (2002). Johnston's game theoretic model of agency behavior relative to CBA focuses litigation/judicial review rather than legislative/regulatory oversight.

[63] *See, e.g.*, US Sen. Jim Inhofe, *Congress Must Act to Block Unjustified Air Regulations*, The Daily Oklahoman, Sept. 12, 1997, at 4; Vicki Torres, *Firms Push for Some Breathing Room*, Los Angeles Times, Oct. 22, 1997, at Part D., Page 9; *Cleaner Air? Tougher standards pose a headache for cities and states*, Houston Chronicle, July 14, 1997, at 20; James M. Lents, *A Review of National Ozone and Particulate Matter Air Quality Standards in Light of Long-Standing California Air Quality Standards*, 11 TULANE ENVTL. L.REV. 415, 415-16 (1998).

[64] *See, e.g.*, Clean Air Act: Ozone and Particulate Matter Standards, Hearings Before the Senate Subcommittee on on Clean Air, Wetlands, Private Property and Nuclear Safety and the Committee on Environment and Public Works, 105th Cong., 1st Sess., S. Hrg. 105-50, Pt. 1 < http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?Dbname =105 _senate_hearings&docid=f:45560.pdf>.

[65] *See, e.g.*, S. 1084, 105th Cong., 1st Sess. (July 29, 1997) (bill to reinstate original ozone and particular matter standards) < http://thomas.loc.gov/cgi-bin/query/D?c105:4:./temp/~c1053SYhpc::>; H.R. 1984, 105th Cong., 1st Sess (July 19, 1997) (bill to impose four year moratorium on new ozone and particulate matter standards) < http://thomas. loc.gov/cgi-bin/query/D?c105:6:./temp/~c1053i5kOc::>.

[66] In the 109th Congress, according to the Library of Congress's Thomas.gov website < http://thomas.loc.gov/home/ thomas.php>, the Senate and House considered a total of 10,558 legislative proposals, of which only 482 (4.5%) became laws.

matter standards might have helped at least to quell the opposition. The net benefits of the particulate matter standard were so immense as to be robust to any reasonable sensitivity analyses (*e.g.*, altering of the discount rate), and so could well have pulled the rug out from under the EPA's opponents.

That EPA's CBAs affected the outcome of the policy dispute in Congress is, of course, speculative. But a cursory review of the Senate's hearings on the NAAQSs indicates that they may have had an effect, as Senators who opposed the standards expressly denied that the issue was economic (in stark contrast to arguments raised about the Obama Administration's proposed changes in the ozone standards, addressed in the next case study). Instead, Senators focused their attacks on the scientific basis for the standards, which was, in fact, quite strong.[67] Apparently, they realized that even if they amended §109 of the Clean Air Act to require that NAAQSs be based on a cost-benefit analysis, such a provision would not avail them, at least in the case of the revised particulate matter standard. [68]

This case study shows that, even in cases where CBAs are not legally required or cannot be legally considered, they may play the valuable political role of muting political opposition that otherwise might succeed in overturning welfare-enhancing regulations.[69] By the same token, a carefully prepared CBA indicating that a proposed regulatory change would create significant net social costs can negate political support for such a change, as the next case study illustrates.

Case Study II: CBA Exposes and Impedes Inefficient Regulation

If CBA proved politically beneficial to the EPA's efforts to strengthen ozone standards in the late 1990s, it probably contributed to the downfall of a similar Obama Administration effort

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[67] *See* Clean Air Act: Ozone and Particulate Matter Standards, *supra* note 64.

[68] Both rules were upheld on judicial review. *See Whitman v. American Trucking Assc.*, *supra* note 40. However, litigation on technical issues did succeed in delaying implementation of the 1997 ozone standard. *See, e.g.,* Allison D. Wood, *Implementing EPA's 8-hour Ozone Standard, Round Two,* 18 NAT. RES. &ENVT. 16 (Winter 2004).

[69] This assumes, of course, that the agency's CBA was accurate at least with respect to the "sign" of net benefits or costs.

in 2011. The story begins in 2008, when, pursuant to a mandatory five-year review of the national ambient air quality standards for ozone, the George W. Bush Administration announced that it would amend the standard set in 1997 (by the Clinton Administration) from 84 parts per billion (ppb) to 75 ppb.[70] Oddly for a proposal to strengthen environmental standards —a rare enough event during the Bush Administration—environmentalists and even EPA's own scientists were outraged. EPA's scientific advisory committee (SAC) had unanimously recommended setting the new standard no higher (and preferably lower) than 70 ppb.[71] After EPA Administrator Stephen Johnson published the new 75 ppb standard, in a rule that expressly referred to the SAC's findings but ignored its recommendations, the SAC took the highly unusual step of sending Administrator Johnson a unanimous follow-up letter expressing its disappointment and disagreement with the new standard.[72]

Why did the Bush EPA select a new ozone standard significantly higher (*i.e.,* less stringent) than its own SAC recommended? The final rule referred to "uncertainties" about health effects at lower ambient concentration levels of ozone.[73] In the press, Administrator Johnson explained that he took the SAC's recommendations into account, but simply disagreed with them.[74] But why did he disagree with them? The RIA for the rule suggests the answer. It compared the costs and benefits of various standards, including 65 ppb, 70 ppb, 75 ppb, and 79 ppb (using alternative three percent and seven percent discount rates). The net benefits of the selected standard of 75 ppb, based on the median value of all point estimates, amounted to $0.8

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[70] *See* National Ambient Air Quality Standards for Ozone; Final Rule, 40 CFR Parts 50 and 58 (Mar. 27, 2008) <http://www.epa.gov/fedrgstr/EPA-AIR/2008/March/Day-27/a5645.pdf>.

[71] *See* Letter from Dr. Rogene Henderson, Chair, Clean Air Scientific Advisory Committee to Stephen L. Johnson, Administrator, U.S. Environmental Protection Agency, Oct. 24, 2006 <http://envirohealth.berkeley.edu/ 271E/2007/S5/CASACtoEPAOct2006Ozone.pdf.pdf>.

[72] *See id.*

[73] *See* 40 CFR Parts 50 and 58 (Mar. 27, 2008).

[74] "States, activists sue EPA over ozone rules," Associated Press, May 28, 2008 <http://www.msnbc.msn.com/ id/24846273/ns/us_news-environment/t/states-activists-sue-epa-over-new-smog-rules/>.

billion.[75] The 79 ppb alternative had a similar cost-benefit profile, but would have been even harder for the Bush Administration to defend on scientific grounds. The more stringent standards preferred by the SAC would have entailed significantly lower net social benefits or even net social costs (on central estimates) according to the Bush EPA's calculations.[76] Of course, Administrator Johnson could not have publicly defended his decision revising the standard to 75 ppb, instead of a more stringent standard, based on that CBA. To do so would have been to confess a deliberate violation of the Clean Air Act.

EPA scientists, environmental groups, and state officials were unconvinced by Administrator Johnson's facile defense of the new 75 ppb ozone standard. On May 27, 2008, the American Lung Association, Environmental Defense Fund, Earth Justice, the Natural Resources Defense Council and other non-governmental plaintiffs filed a notice of intent to sue.[77] The same day, 14 state attorneys general filed suit in the D.C. Circuit, claiming that EPA's ozone standard was arbitrary and capricious because it ignored the recommendations of its own scientific advisory committee without reasonable explanation.[78]

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[75] *See* U.S. Environmental Protection Agency, Final Ozone NAAQS Regulatory Impact Analysis, EPA-452/R-08-003, 7-5 (March 2008) <http://www.epa.gov/ttn/ecas/regdata/RIAs/452_R_08_003.pdf>.

[76] *See id.* at 7-6, Fig. 7.1. It is instructive to compare the Bush Administration's RIA for its 2008 ozone rule with the RIA prepared by the Obama Administration pursuant to its reconsideration of that rule. See Table 4, *infra.* Apparently, the few minor methodological changes introduced by the Obama EPA yielded higher net social benefits for each alternative standard considered, without any changes in the social discount rate. Those methodological changes included: (1) removal of the Bush Administration's assumption (as recommended by the National Academy of Sciences) of no causality for ozone mortality; (2) the inclusion of two additional ozone multi-city studies (again, as recommended by the NAS); and (3) upward revision of the value of a statistical life to make it consistent with the value used in other EPA analyses. *See* EPA, Summary of the updated Regulation Impact Analysis (RIA) for the Reconsideration of the 2008 Ozone Natinal Ambient Air Quality Standard (NAAQS) <http://www.epa.gov/ttn/ecas/regdata/RIAs/s1-supplemental_analysis_summary11-5-09.pdf>.

[77] *See* <http://earthjustice.org/sites/default/files/library/legal_docs/petition-for-review.pdf>.

[78] "States sue EPA over ozone pollution standards," Reuters, May 28, 2008, <://www.reuters.com/article/2008/05/28/us-ozone-suit-states-idUSN2843108220080528>.

Before the case could be heard, the Bush Administration left office and the Obama Administration came in. In short order, the Obama EPA announced its intention of settling the states' lawsuit by reconsidering its predecessor's ozone standard.[79] On November 1, 2010, EPA Administrator Lisa Jackson filed a motion in the D.C. Circuit requesting abeyance of the lawsuit, while her agency proceeded with a promised reconsideration of the Bush Administration's 75 ppb standard for ozone. The plaintiffs asked the court to hold EPA's feet to the fire by requiring an expedited rulemaking for reconsidering the standards. The EPA responded with a revised motion for abeyance on December 8, 2010, stipulating an August 12, 2011 deadline for final action, to which the court agreed.[80] As we shall see, the Obama EPA's decision to voluntarily reconsider the Bush Administration's ozone standard, rather than wait for a court order that probably would have vacated the rule, was politically short-sighted.

While the Obama Administration held hearings and reviewed the science upon which the Bush rule had been based, electric utilities and other industries that would bear the brunt of costly emissions reductions necessary to meet a more stringent standard vocally opposed any change in the rule. When a new Republican majority took over in the US House of Representatives following the 2010 midterm elections, they started referring to the EPA as a "job-killing" agency that was obstructing a return to economic growth in the US.[81] Unfortunately, in the case of the ozone standard, their generally baseless arguments correlating job increases or losses to social welfare received a modicum of support from the Obama EPA's

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[79] Brent Kendall, "EPA to Reconsider Bush-Era Smog Rules," Wall Street Journal, Sept. 16, 2009

[80] *See* <http://www.epa.gov/air/ozonepollution/pdfs/20101208motion.pdf>.

[81] *See* Ben German, "Upton's agenda: Kill the House climate change committee, battle 'job killing' EPA rules," The Hill, E[2] Wire, Oct. 19, 2010 <http://thehill.com/blogs/e2-wire/677-e2-wire/124795-uptons-agenda-kill-the-house-climate-change-committee-battle-job-killing-epa-rules>; Erica Martinson, "EPA to be GOP target in 2012," Politico (Nov. 13, 2011)< http://www.politico.com/news/stories/1111/68265.html>. The casual presumption correlating social welfare with the number of jobs in the economy is, of course, fallacious. A policy that maximizes a social welfare function may reduce, increase, or leave unchanged the overall rate of (un)employment. For this reason, employment effects of regulatory policies are not part of agency CBAs, although they are often included separately in RIAs.

revised RIA, as described in Table 1 below. The proposed rule passed a cost-benefit test (on median estimates), but the Bush Administration's 0.075 ppm standard was found to yield higher (median) net social benefits than the alternative Obama standards of 0.070 ppm or 0.065 ppm (using either a 7% or 3% discount rate).

Table 4. **EPA's Estimated Median Net Social Benefits of Alternative Ozone Standards in 2008 and 2010** (aggregating point estimates under both 7% and 3% discount rates)			
Standard	0.075 ppm*	0.070 ppm	0.065 ppm
Bush RIA	$0.9 billion	$-4.0 billion	$-9.0 billion
Obama RIA	$3.1 billion	$1.4 billion	$0.7 billion
* Bush standard Source: Summary of the updated Regulatory Impact Analysis (RIA) for the Reconsideration of the 2008 Ozone National Ambient Air Quality Standard (NAAQS), S3-19, Figure S3.6, <https://docs.google.com/ viewer?url=http%3A%2F%2 Fwww.epa.gov%2Fttn %2Fecas%2Fregdata%2FRIAs%2Fs1supplemental_ analysis_full.pdf>.			

As the deadline loomed for EPA's final decision on reconsideration of the Bush ozone standard, the economic recovery stagnated and the national unemployment rate hovered stubbornly around nine percent.[82] President Obama's job-approval rating fell to a low of 43.5 percent,[83] just as he was preparing to launch his re-election campaign. In the circumstances, he could scarce afford to squander precious political capital on new or revised environmental rules that would not clearly and demonstrably improve net social welfare relative to existing standards. Notwithstanding strong scientific support for tougher standards and the Clean Air Act's blanket prohibition on cost-considerations in the setting or revising of national ambient air quality standards, the perceived *political* costs of ignoring the economic costs of EPA's rule-making were simply too high. Consequently, on September 2, 2011 President Obama told EPA

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[82] Board of Labor Statistics, Economic News Release, Employment Situation Summary, Sept. 2, 2011 <http://www. bls.gov/news.release/empsit.nr0.htm>.

[83] *See* <http://www.realclearpolitics.com/epolls/other/president_obama_job_approval-1044.html>.

Administrator Jackson to abandon reconsideration of the Bush Administration's ozone standard.[84]

The president and other administration officials offered several, not entirely consistent or convincing, reasons for withdrawing the new ozone proposal. Cass Sunstein, head of the Office of Information and Regulatory Affairs within OMB, provided a straightforward economic justification for the decision: "'We're committed to protecting public health and welfare, but in a way that's attuned to the economic situation.'"[85] While that was an accurate statement of OIRA's mission within the OMB, it directly conflicts with section 109 of the Clean Air Act, which requires EPA to set national ambient air quality standards based *only* on the best available science concerning health effects.[86] No doubt for that reason, the official "return letter" Sunstein sent to the EPA Administrator on September 2, under President Obama's instruction, did not mention cost, but focused instead on regulatory "uncertainty" the proposed rule would create for affected industries and municipalities, especially given the statutory requirement that the rule be reconsidered yet again in 2013.[87] The president, himself, focused on the issue of timing:

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[84] *See* John M. Broder, "Obama Administration Abandons Stricter Air-Quality Rules," New York Times, Sept. 2, 2011 <http://www.nytimes.com/2011/09/03/science/earth/03air.html?pagewanted=all>.

[85] Juliet Eilperin and Peter Wallsten, "Obama's decision on smog rule offers hints on regulation strategy," Washington Post, Sept. 3, 2011. According to a *New York Times* exposé about the ozone decision, Sunstein had been "'itching to send a return letter'" to "make his mark" as OIRA chief. John M. Broder, "Policy and Politics Collide as Obama Enters Campaign Mode," New York Times, Nov. 16, 2011, at A-1. Whether or not that is true, he could not have issued a "return letter" based on cost considerations, as the article suggests, because of the plain language of the statute forbidding consideration of costs in setting NAAQSs.

[86] *See supra* notes 54-56 and accompanying text.

[87] Letter from Cass R. Sunstein, Administrator, Office of Information and Regulatory Affairs, Office of Management and Budget, Executive Office of the President to EPA Administrator Lisa Jackson, Sept. 2, 2011 < https://docs.google.com/viewer?url=http%3A%2F%2Fwww.whitehouse.gov%2Fsites%2Fdefault%2Ffiles%2Fozon e _national_ambient_air_quality_standards_letter.pdf>.

"'Ultimately, I did not support asking state and local governments to begin implementing a new standard that will soon be reconsidered.'"[88]

The President's assertion was technically accurate but misleading. The Clean Air Act requires reconsideration of national ambient air quality standards for each regulated ("criteria") pollutant every five years.[89] The ozone standard is, as noted, scheduled for statutory review again in 2013; it must be reviewed then regardless of what EPA did in 2011 (with potential judicial review of a 2011 EPA rule stretching into 2012 or even 2013).The president's expressed concern with asking state and local governments to implement a new standard that would soon be reconsidered is itself a cost consideration, and reflects his political calculation that new, more stringent ozone standards, established prior to the 2012 presidential election, were not worth defending.[90]

Political and economic cost calculations aside, the president's expressed concern with the mandatory 2013 review of the ozone standard was misleading because five-year reviews of NAAQSs only rarely result in actual changes to the standards. New standards set in 2011 would not necessarily have to be changed again in 2013. Moreover, the Administration must have known about the mandatory five-year review at the time it asked the D.C. Circuit for an abeyance from filed lawsuits to reconsider the Bush standards.[91] If timing was not an issue in late 2010, why was it suddenly an issue in mid-2011? Perhaps the president was simply signaling his base of his intention to resurrect the revised ozone standards in 2013, should he be reelected

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[88] Quoted in Amy Harder, "Sizing up Obama's Ozone Standard Delay," National Journal Expert Blogs, Energy & Environment, Sept. 6, 2011 <http://energy.nationaljournal.com/2011/09/sizing-up-obamas-ozone-standar.php>. *But see* Broder, *supra* note 85, claiming that, in addition to the timing issue, the president was concerned with the "cost and uncertainty it would impose on industry and local governments."

[89] 42 U.S.C. §7409(d)(1).

[90] *See* Broder, *supra* note 84.

[91] *See supra* notes 79-80 and accompanying text.

in 2012.[92] It is clear, in any case, that his decision not to reset the ozone standards in 2011 was not based solely on science, as the Clean Air Act expressly requires.

To what extent did the RIA contribute to President Obama's decision to abandon reconsideration of the ozone standards? According to a *New York Times* story, it played a significant (though not the only) part.[93] Moreover, we can observe that the Administration has not similarly retreated from other proposed environmental regulations, including new rules for mercury emissions from power plants.[94] As it happens, the RIA for the mercury proposal indicates sizeable *net* social benefits ranging from $37 billion to $90 billion (using a 3% discount rate), and those net benefits are relatively insensitive to the choice of a 3% or 7% discount rate.[95] The mercury rule was finalized on December 16, 2011.[96] Time will tell whether the highly positive CBA successfully insulates it from a threatened roll-back by Congress.[97] If the first case study of this article is any indication, Congress should find it more difficult to do so because the regulation provides clear, demonstrable, and defensible net social benefits. In any case, the Obama Administration is not back-tracking from its proposed mercury rule despite attacks from

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[92] This is not to say that President Obama was either right or wrong to abandon reconsideration of the Bush ozone standards. The analysis here is positive, not normative. However, the decision evidently was based on considerations of cost–both economic and political–despite the plain language of the Clean Air Act.

[93] Broder, *supra* note 84.

[94] *See* Eilperin and Wallsten, *supra* note 85.

[95] Using a 7% discount rate, the range of net social benefits is $33 billion to $81 billion. EPA, Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards, EPA-452/R-11-011 (Dec. 2, 2011). <http://www.epa.gov/ttn/atw/utility/mats_final_ria_v2.pdf>.

[96] National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR Part 63

<http://www.epa.gov/mats/pdfs/20111216MATSfinal.pdf>

[97] *See* Lee Bergquist, "Congress likely to challenge EPA's proposed mercury-emission rules," Milwaukee Journal Sentinal, Mar. 16, 2011 < http://www.jsonline.com/business/118140259.html>.

the right on costly and "job-killing" EPA regulations. The question arises, would President Obama have stood by the mercury rule had its CBA been negative, as with the reconsidered ozone standard? And would he have abandoned reconsideration of the ozone standard, had its CBA shown greater social benefits?

The take-away lesson from this case study is that costs, both economic and political, appear to matter, even when the law says they cannot. However, while costs always matter, they are not always decisive. In the past, EPA has promulgated regulations, including national air quality standards, which have failed to provide (on EPA's own estimates) significant net social benefits.[98] For example, the EPA's RIA for its 1997 revisions of the ozone NAAQs derived a range of net benefits from $-0.7 billion to $1.0 billion, which yields a central estimate little better than break even.[99] Just how much of a role CBA will play in the success or failure of any regulation is difficult to predict before the fact. Costs always matter, but so too do other important, sometimes countervailing, considerations and circumstances.[100] Cost apparently has

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[98] Arguably, it is becoming more difficult for agencies to do so, given the increased regulatory oversight exercised by the OMB, not to mention congressional committees.

[99] U.S. Environmental Protection Agency, Regulatory Impact Analyses for the Particulate Matter and Ozone National Ambient Air Quality Standards and Proposed Regional Haze Rule, ES-20 (July 17, 1997) <http://www. epa.gov/ttn/oarpg/naaqsfin/ria/ria-exec.pdf>. In that case, it was politically helpful that the ozone rule was packaged together with a new PM standard, which had very high net social benefits, so that the *combined* net benefits from both rules were quite high. Had the ozone standard been issued by itself, the somewhat negative cost-benefit balance might have made it more susceptible to political reversal.

[100] Shortly after President George W. Bush took office, the EPA announced that it was suspending and reconsidering the Clinton Administration's lately-adopted drinking water standard for arsenic under the Safe Drinking Water Act, 42 U.S.C. §300f. That effort was abandoned in the face of strong public opposition to weakening drinking water standards for known carcinogens. *See* Sunstein, *supra* note 50, at 2262. The Clinton rule had reset the standard from 50 parts per billion (ppb) to 10 ppb. The CBA for the standard strongly supported a tightening of the standard from the pre-existing 50 parts per billion, but was ambiguous as to whether social welfare would be maximized with the standard at 10 ppb or 20 ppb. In reconsidering the Clinton rule, the Bush Administration did not propose returning to the *status quo ante*, but instead wanted to raise the standard from 10 ppb to 20 ppb. The real stakes at issue got lost in the political battle, which ultimately forced the Bush Administration to reinstate the Clinton rule of 10 ppb. The outcome of that battle was not significantly affected by the EPA's CBA, but it did spur an interesting colloquy on

been no object, for example, in the promulgation of new and very costly "homeland security" regulations since "9/11."[101]

Case Study III: Blatant Abuse of CBA, and the Vital Check of Transparency[102]

In the mid-2000s, the George W. Bush Administration promoted a group of bills known collectively as "Clear Skies," which together would have required a 70 percent reduction in SO_2 and NO_X emissions by 2018, although actual attainment probably would have been delayed until 2026 or later because of the legislation's expansive "banking" provisions. The ostensible goal of "Clear Skies" was to deal comprehensively with air pollution from the electric power industry. In 2003, that industry was responsible for 72 percent of all sulfur dioxide emissions, 24 percent of nitrogen oxide emissions, and 41 percent of carbon dioxide emissions, and more than 40 percent of all mercury emissions in the United States. Power plant emissions of some pollutants–notably sulfur dioxide and nitrogen oxides–had been trending downwards thanks mainly to the acid rain program of the 1990 Clean Air Act Amendments. However, utilities had long complained about the "complexity" of the "multilayered and interlocking patchwork of controls" applied to them.[103]

A more simplified and uniform approach to power-plant regulation had been evolving for several years, pursuant to existing statutory mandates, within the EPA. But the Bush

the legitimacy of CBA in the regulatory process, published in the *Georgetown Law Review. See* Sunstein, *supra* note 50; Lisa Heinzerling, *supra* note 51; Thomas O. McGarity, *Professor Sunstein's Fuzzy Math*, 90 GEO. L.J. 2341 (2002); Cass R. Sunstein, *In Praise of Numbers: A Reply*, 90 GEO. L.J. 2379 (2002).

[101] *See generally* JOHN E. MUELLER, OVERBLOWN: HOW POLITICIANS AND THE TERRORISM INDUSTRY INFLATE NATIONAL SECURITY THREATS, AND WHY WE BELIEVE THEM (2006); JOHN MUELLER AND MARK G. STEWART, TERROR, SECURITY, AND MONEY: BALANCING THE RISKS, BENEFITS, AND COSTS OF HOMELAND SECURITY (2011).

[102] This case study is adapted, in revised form, from Daniel H. Cole, *'Best Practice' Standards for Regulatory Benefit-Cost Analysis*, 23 RES. L.& ECON. 1, 16-18 (2007).

[103] McCarthy and Parker, *supra* note 52.

Administration and Congress offered several legislative proposals that would have regulated utility emissions of major air pollutants in a more comprehensive and integrated way. Competing with "Clear Skies" were two legislative proposals, one sponsored by Senator James M. Jeffords (I-Vt.) and the other by Senator Thomas R. Carper (D-Del.). Like the Bush Administration bill, those proposals would have permitted banking and trading of allowances, but unlike "Clear Skies," they would have required greater overall emissions reductions on shorter deadlines. In addition, the Jeffords and Carper bills, but not "Clear Skies," would have imposed regulatory controls to reduce utility emissions of carbon dioxide to mitigate climate change.

On October 27, 2005, EPA published a CBA, comprised of 45 separate documents,[104] comparing the various legislative proposals to control air pollution emissions from power plants. Note that this CBA differed from those discussed in the preceding case studies in one vital respect: it is an agency CBA prepared in support of a *legislative* proposal, rather than an agency CBA prepared in support of its own *regulatory* proposal. As such, it is not subject to the same intensive OMB review that accompanies CBAs agencies prepare in support of their own regulations, although whether it should be remains an open question.[105] The lack of explicit

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[104] This fact is itself problematic from the point of view of those concerned with the transparency, clarity, and replicability of CBAs.

[105] Executive Orders on regulatory review, such as EO 12,866, *supra* note 30, expressly require review of agency proposals of regulations; they do not speak to OMB review of agency CBAs prepared in support of a president's legislative proposals. Former OIRA chief John Graham provides several rationales for why we might reasonably expect agency CBAs prepared in support of legislation to be more lax than those prepared in support of the agency's own regulations: (1) legislative CBAs, unlike regulatory CBAs, are not informed by a notice and comment process; (2) the technical inputs to legislative CBAs are not subject to the kind of independent, external peer-review that scientific advisory boards provide in the case of agency CBAs for regulations; (3) legislative CBAs are not prepared with an eye on potential judicial review, while agency CBAs for regulations are subject to arbitrary and capricious review under the Administrative Procedures Act, 5 USC §500 *et seq.*; and (4) legislative CBAs are inherently political in nature – they are inevitably skewed to favor the administrations preferred policies; and (5) legislative deliberations, which focus on non-technical considerations such as values and political ramifications, are fundamentally different from executive-branch agency deliberations, which are informed by greater technical expertise. Communication from John D. Graham, Oct. 17, 2001, on file with the author.

standards and searching review of legislative CBAs means that they are more prone to political manipulation.

In this case, the EPA's economic analysis concluded that "Clear Skies" was preferable to the Jeffords and Carper proposals because it produced greater net social benefits than either of the alternatives. However, because the CBA was based on dubious assumptions that were vital to its outcome, including a highly controversial "senior death discount," which imposed a lower value on the lives of (statistical) elderly Americans, and because those assumptions had to be explicitly specified in the CBA, other analysts and the media could review and critique the CBA and its findings.[106] Less than a month after EPA published its CBA comparing "Clear Skies" with the Jeffords and Carper proposals, the Congressional Research Service (CRS) – a nonpartisan research and analysis agency of Congress – published a report heavily criticizing the EPA's assumptions and analysis. What follows is a brief synopsis of the CRS report.

EPA's CBA accurately concluded that "Clear Skies" would cost less than the alternative legislative proposals. That conclusion was unsurprising because "Clear Skies" was far less ambitious than the other two proposals. It required fewer emissions reductions over a longer period of time. But what matters is not gross costs or benefits, but the *net*. And, according to the EPA's own estimates, the "Clear Skies" bill would have provided $6 billion in annual net benefits in 2010, compared to $51 billion in annual net benefits for Senator Carper's bill and $83 billion in annual net benefits under Senator Jeffords' bill.

The incremental benefits of the "Clear Skies" bill would have been even lower but for dubious assumptions in the CBA about the regulatory baseline. Specifically, the EPA assumed

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Dean Graham's reasons certainly help to explain why legislative CBAs are more likely to be (a) of lower quality and (b) manipulated for political ends than regulatory CBAs (although it might be argued, for example in opposition to his first reason that Congress can and does hold hearings to inform its economic analyses), but they do not provide a sufficient normative argument against imposing a consistent set of technical obligations and standards on executive branch agencies for *all* CBAs. For a normative argument favoring consistent standards across legislative and regulatory CBAs, *see infra* note 115 and accompanying text.

[106] McCarthy and Parker, *supra* note 52.

that in the absence of new legislation neither EPA nor the states would impose additional regulatory controls on power plant emissions. This assumption was contradicted by three newly minted EPA rules regulating power plant emissions of sulfur dioxide, nitrogen oxides, and mercury. EPA's final CBA for "Clear Skies" failed to mention those new rules. Had they been incorporated into the CBA, the incremental benefits of Clear Skies would have been much lower; and the *net* benefits of Senator Jeffords' bill would have "far exceed[ed] those of Clear Skies" (as well as Senator Carper's bill).

In addition to its unrealistic baseline assumptions, EPA's CBA for "Clear Skies" made no attempt to monetize environmental benefits, which significantly disadvantaged the Jeffords and Carper proposals because they were designed and predicted to generate greater environmental benefits than the Bush Administration's "Clear Skies" initiative. Moreover, the CBA did not model the health effects of regulating mercury emissions. According to a different CRS Report to Congress,[107] health benefits from EPA's mercury regulations ranged from "a few million dollars per year to several billion dollars per year." Omitting these benefits, which are relatively easy to estimate, from the "Clear Skies" CBA favored the Bush Administration's proposal over the alternatives, either of which would have more quickly imposed more stringent caps on mercury emissions. Similarly, the EPA's CBA for "Clear Skies" did not attempt to monetize the benefits of reductions in carbon dioxide emissions. Indeed, the CRS found that "EPA's benefit analysis is limited and incomplete, which works to the disadvantage of alternatives to Clear Skies that include more stringent standards."[108]

The CRS Report also found that EPA's "Clear Skies" CBA unreasonably assumed that the price elasticity for electricity and natural gas would be zero and that power plants were subject to short-term construction constraints. Each of these dubious assumptions served to make the Bush Administration's "Clear Skies" initiative more attractive and the other proposals,

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[107]   James E. McCarthy, CRS Report for Congress: Mercury Emissions from Electric Power Plants: An Analysis of EPA's Cap-and-Trade Regulations. Congressional Research Service, Washington, D.C. (April 15, 2005).

[108] McCarthy and Parker, *supra* note 52, at 16.

particularly Senator Jeffords' bill, less attractive because they would have entailed greater compliance costs for the utility industry.

The CRS Report did not, in so many words, accuse the Bush Administration of manipulation and deception in preparing the CBA for "Clear Skies," but that was the implication, which subsequent media reports made explicit. As a Washington Post reporter expressed it, "The Bush Administration skewed its analysis of pending legislation on air pollution to favor its bill over two competing proposals."[109] The EPA argued in response, but without any specifics, that the CRS analysis "ignores and misinterprets our analysis."[110] Meanwhile, the government's economic watchdog, the OMB, which is charged with reviewing the quality of agency CBAs, neither raised issues with nor returned the analysis to the EPA for improvement.[111] By way of contrast, consider the case of a CBA for a regulation designed to protect endangered bull trout in Montana, which the Bush Administration opposed. In that case, the OMB required the US Fish and Wildlife Service (F&WS) to eliminate from its RIA 55 pages detailing the expected benefits of the rule *because* the agency used a methodology similar to that employed by the Bush Administration to derive the benefits for its "Clear Skies" initiative.[112]

The chief difference between EPA's CBA for "Clear Skies" and its CBA for protecting the endangered fish species is that the former was an agency CBA prepared in support of White House legislation, while the later was a CBA prepared in support of its own regulation. As noted

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[109] Julie Eilperin, *Report Accuses EPA of Slanting Analysis; Hill Researchers Say Agency Fixed Pollution Study to Favor Bush's 'Clear Skies'*, Washington Post, Dec. 3, 2005, at A08.

[110] *Id.*

[111] To the contrary, former OIRA chief John Graham has asserted that "The OIRA assisted the EPA in preparing the benefit-cost analysis for Clear Skies." John D. Graham, *The Evolving Regulatory Role of the U.S. Office of Management and Budget*, 1 REV. ENVTL. ECON. &POL. 171, 182 (2007). This does not mean OIRA was complicit in the EPA's manipulation of the CBA for "Clear Skies," however. The bulk of the CBA for "Clear Skies" was completed years before the Jeffords and Carper bills were offered in the Senate; and there is no evidence that OIRA assisted EPA in preparing portions of the CBA comparing the three legislative proposals.

[112] *See id.*

earlier, OIRA is not under any general obligation to review CBAs prepared in support of *legislative*, as opposed to regulatory, proposals.[113] Still, the differential treatment of similar accounting methods across two different agency CBAs underscores persistent questions about whether OMB review in the Bush Administration was designed to maximize regulatory efficiency or to minimize regulatory burdens on industry.[114]

This case study of the "Clear Skies" CBA suggests three important lessons. First, CBAs can be, and have been, strategically manipulated towards certain preferred outcomes.[115] In the

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[113] *See supra* note 105 and accompanying text.

[114] Despite John Graham's laudable introduction of "prompt" letters, which OMB issues to promote regulatory as well as deregulatory initiatives, when he headed OIRA in the George W. Bush Administration, evidence exists to support the widespread belief among environmentalists that the Bush OMB possessed an anti-regulatory bias. A Government Accounting Office study of hundreds of cases of regulatory review between 2001 and 2002 found that the vast majority of proposed regulations changed following OMB review were weakened; virtually none were strengthened. General Accounting Office, RULEMAKING: OMB's Role in Reviews of Agencies' Draft Rules and the Transparency of Those Reviews, GAO-03-929 (Sept. 2003). *Also see* David Driesen, *Is Cost-Benefit Analysis Neutral?*, 77 U. COLO. L.REV. 335 (2006). The GAO's findings are not necessarily evidence of bias at OMB. After all, if overregulation were endemic and under-regulation exceedingly rare, as many conservative politicians and regulated industries would have us believe, the GAO's findings would be expected. However, as Richard Revesz and Michael Livermore recently concluded, "there is no persuasive reason to believe that agencies pervasively tend to overregulate, rather than underregulate." REVESZ AND. LIVERMORE, *supra note* 13, at 165. Thus, the GAO's findings are more difficult to explain absent OMB bias. What's more, prior to the Clinton Administration *de*regulatory decisions were not subject to OMB review, regardless of their often significant social costs. Although the George W. Bush Administration did not rescind the Clinton Administration rule requiring OMB review of deregulatory proposals, it displayed a "relative indifference" toward such proposals. *Id.* at 154. *But see* John Graham, Paul R. Noe, and Elizabeth L. Branch, *Managing the Regulatory State: The Experience of the Bush Administration,* 33 FORDHAM URB. L.J. 953 (2006) (defending the George W. Bush OMB's record on regulatory review).

[115] Importantly, CBAs are as prone to manipulation by (nominally) independent scholars and interest groups as by government agencies. Consider the case of standards for arsenic in drinking water established by the Clinton Administration and subsequently reconsidered by the George W. Bush Administration, first discussed *supra* note 49. After the Clinton Administration lowered the ceiling from 50 parts per billion (ppb) to 10 ppb, legitimate concerns were raised about the quality of the agency's CBA. Those allegations did not rise to the level of fraud or even

case of "Clear Skies," the EPA deliberately structured its CBA to support the Bush Administration's preferred legislation against alternative proposals that would have increased costs for industry, but provided greater net social benefits. Second, and more reassuring, the manipulated CBA failed – "Clear Skies" was not enacted – at least in part because the manipulation was uncovered and exposed.[116] It was uncovered because CBA methodology requires the explicit specification of assumptions and valuations. Thus, this case exemplifies Justice Brandeis's famous aphorism, "sunlight is the best of disinfectants."[117]

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manipulation; the agency's assumptions (including of linear, as opposed to sub-linear, dose-response rates) were all defensible, if contestable. The EPA's CBA was in fact contested in a critique published by the AEI-Brookings Joint Center for Regulatory Studies. Jason K. Burnett and Robert W. Hahn, American Enterprise Institute-Brookings Joint Center for Regulatory Studies, EPA's Arsenic Rule: The Benefits of the Standard Do Not Justify the Costs (2001). In that study, Burnett and Hahn redid EPA's cost-benefit analysis using different assumptions including sub-linear dose-response and lower values of human lives based on the presumption that arsenic's long latency period tends to cause cancer in older, rather than younger, people. They concluded that EPA's new standard for arsenic would, if implemented, cost lives on net. *Id.* at 2. However, Burnett and Hahn's assumptions were, if anything, more dubious and less justifiable than EPA's, and their analysis was subjected to withering critiques by other scholars. *See, e.g.*, McGarity, *supra* note 100, at 2356-65 (arguing, among other things, that Burnett and Hahn's analysis was ideologically motivated, not properly based on the available science as determined by the National Academy of Sciences, and so did not really constitute a "peer review" of the EPA's CBA in any legitimate sense of that phrase). It is difficult to read the Burnett and Hahn CBA as an even-handed effort to fairly and realistically assess costs and benefits. Their analysis favored nothing less than a return to the pre-existing 50 ppb standard for arsenic in drinking water, which not even the Bush Administration supported (as noted above, the Bush EPA merely sought to raise the standard from the Clinton EPA's 10 ppb to 20 ppb). Nevertheless, conservative groups found Burnett and Hahn's analysis useful in their ultimately unsuccessful political campaign against the Clinton standard. *See Special Report: The Arsenic Controversy*, Regulation 42 (Fall 2001).

[116] John Graham suggests that the demise of "Clear Skies" in the Senate had more to do with the election cycle and President Bush's "limited leadership" on climate change. JOHN D. GRAHAM, BUSH ON THE HOME FRONT: DOMESTIC POLICY TRIUMPHS AND SETBACKS 200-201 (2010).

[117] LOUIS D. BRANDEIS, OTHER PEOPLES' MONEY (1913). Arguably, even more transparency, not in the CBA itself, but in agency processes relating to the preparation and publication of CBAs, would make the tool even more useful, and less subject to abuse, in policy-making. Aidan Vining and David Weimer have proposed a rule (for the Canadian government) according to which any federal government agency, provincial government, or local

Ultimately, however, the demise of "Clear Skies" cannot be accounted a victory for regulatory rationality because Congress did not enact either the Jeffords bill or the Carper bill. Instead, Congress did nothing, which was the worst outcome from a social welfare perspective. The Bush Administration was for its bill or no bill at all; if it could not get collective action on its terms, it did not want collective action. Congress, meanwhile, is under no constitutional obligation to enact economically efficient legislation or avoid enacting economically inefficient legislation. In the final analysis, CBA merely provides (usually useful, though sometimes skewed or biased) information for decision making. It does not, and cannot, take the politics out of politics.

The third and final lesson from the "Clear Skies" case study concerns the differential treatment of agency CBAs prepared in support of legislative proposals as opposed to agency regulations. Whatever the rationale(s) for such differential treatment,[118] the failure to impose and enforce design standards on agency CBAs in support of legislative proposals creates opportunities for political manipulation that potentially discredit CBA in general. If a certain approach to benefit accounting is inappropriate for regulatory CBAs, then it should be equally inappropriate for legislative CBAs. The lack of methodological consistency across regulatory and legislative domains inevitably casts a shadow over CBA generally as a policy-informing tool.

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government seeking federal financial support for infrastructure "must file for the public record … a cost- benefit analysis . . . with the Treasury Board and the Public Accounts Committee of the House of Commons." The CBA would be posted on an internet site to which any interested person could post comments. Aidan R. Vining and David L. Weimer, "Criteria for Infrastructure Investment: Normative, Positive, and Prudential Perspectives 28-29 (April 8, 2000) (working paper on file with the author). The purpose is to make the process of preparing CBAs more transparent, so as to "discourage the wildest claims of benefits" (and costs). *Id.* at 30.

[118] *See supra* notes 105 and 113.

IMPLICATIONS AND CONCLUSION

Read together, the three case studies from the preceding section illustrate three basic characteristics of the politics of CBA: (1) it is a useful tool for both protecting against welfare-reducing regulations and protecting welfare-enhancing regulations from political attack and roll-back; (2) inherently subjective elements of CBAs make them liable to manipulation and abuse to make regulatory proposals appear welfare-maximizing when they are not, and *vice versa*; but (3) the transparency of formal CBA allows for exposure and correction of manipulations and flaws. Taken together, these points tell an overall, but not entirely, positive story about the role of CBA in politics and in the substantive resolution of social dilemmas.

The three case studies also suggest two less obvious implications for CBA's role in the resolution of collective-action problems. First, CBAs have substantial utility for decision-making on social-cost problems even when the law does not permit their use. As the first case study suggests, even if the EPA were no longer required by statute and executive order of the president to prepare CBAs, agency staff might well choose to prepare them anyway in order to (a) inform themselves of economic sources of potential political backlash and (b) defuse political opposition in cases where the CBA is positive. Second, because the constitution does not compel Congress to enact only welfare-enhancing legislation, CBA necessarily remains subordinate to other political goals and motivations. This was the case, for example, with the "Clear Skies" program, where the Bush Administration was not intent on maximizing a social-welfare function but in implementing its own preferred policy (or no policy at all). The virtuous transparency of CBA allowed the Congressional Research Service to expose the flaws in EPA's CBA for "Clear Skies," showing that other, more stringent legislative proposals would generate greater net social benefits. The CRS critique helped to kill "Clear Skies," but it could not ensure the enactment of the other, more socially efficient proposals.

We must be careful, however, not to draw too many or too firm conclusions about political uses and abuses of CBA from these three case studies because they are merely a convenience sample and are not necessarily representative of the wide range of circumstances in which CBAs are prepared and used in the federal government (not to mention state and local

governments). For one thing, all three of the case studies involve the EPA, which is just one of many federal, executive branch agencies, albeit one with an unusually high level of experience and expertise in preparing CBAs. Second, two of the three case studies concern proposed changes to National Ambient Air Quality Standards (NAAQSs) under the Clean Air Act, which is an unusual circumstance precisely because, as a matter of law, the standards must be set regardless of cost. Third, and finally, none of the three case studies directly concerns the social discount rate, which, as noted in Section II, is a major factor in political, economic, and philosophical disputes over CBA. In each of the three case studies, the outcome of the CBA was fairly insensitive to the choice of a discount rate. However, in many other cases, especially those with effects extending into the distant future (that is, intergenerational effects), the social discount rate almost invariably becomes a focal point of contention and disagreement.[119]

Finally, those who write about social-cost problems and legislation/regulatory solutions should not neglect the significant *political* role CBAs, among other decision-making tools, play in policy arenas. This paper has merely described how CBAs do so. More research is needed to determine the extent to which CBAs actually influence outcomes, and to delineate more precisely strategic behavior in the design and application of CBAs.

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[119] *See supra* note 47 and accompanying text.