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Is Existence Value Appropriate for Regulatory Benefit–Cost Analysis?

Abstract: Since its introduction to the field of environmental and natural resource economics in the late 1960s, existence value has faced several critiques from economists, psychologists, and philosophers. Critics have taken aim at the notion’s conceptual ambiguity and lack of connection to observable behavior, its incompatibility with cognitive processes and its sensitivity to cognitive biases, and ethical shortcomings in applying existence values to environmental decisionmaking. Unlike some critiques of existence value that draw on cognitive and ethical frameworks for decisionmaking fundamentally at odds with stated preference methods and benefit–cost analysis (BCA), this paper takes as given the use and adequacy of both. It focuses on challenges to existence value *per se*, with respect to the ability of existence value estimates to contribute to benefit–cost analyses in a way that is consistent with qualities of BCA that its proponents value: the objectivity, commensurability, and moral salience of the values analyzed. In light of the challenges, inclusion of existence value in benefit–cost analyses is found to inevitably compromise the quality of the BCA with respect to each criterion.

Keywords: benefit–cost analysis; non-use value; regulation; species preservation

1. Introduction

In his seminal 1967 article “Conservation Reconsidered,” John Krutilla argued that “[w]hen the existence of a grand scenic wonder or a unique and fragile ecosystem is involved, its preservation and continued availability are a significant part of the real income of many individuals ... to whom the loss of a species or the disfigurement of a scenic area causes acute distress and a sense of genuine relative impoverishment” (Krutilla, 1967, p. 779). Since that time, the economics profession has come to accept the notion of existence value as a type of economic value, falling within the broader category of non-use value, or the value of change in environmental quality that cannot be revealed with the use of a weak complement (Freeman *et al.*, 2014). Described in nearly every undergraduate environmental economics text, existence

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value appears firmly ensconced in the canon. Beyond the realm of academia, the U.S. federal government has legitimated the role of non-use value in environmental and natural resource policy. The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Oil Pollution Act (OPA) of 1990 appear to allow for the incorporation of non-use values in natural resource damage assessment, and the D.C. Circuit of Court Appeals has rejected the arbitrary exclusion of “passive use” (i.e., non-use) values in such assessment (*Ohio v. U.S. Department of Interior* 880 F.2d 432, 1989).

As Portney (1994) anticipated, attention has largely shifted from the use of existence value in damage assessment to use in benefit–cost analysis (BCA) to inform government rulemaking. Guidance from the United States Office of Management and Budget encourages the inclusion of non-use value estimates in benefit–cost analyses (OMB Circular A-4 2003). This is no small matter: Johansson (1992) finds that non-use values often make up 50–75 % of total willingness to pay (WTP) for preservation policies (c.f. Cummings & Harrison, 1995). Existence values could substantially affect the outcome of decisions made by the benefit–cost principle.

Yet, reliance on existence values has been, and continues to be, a controversial practice. It is at the heart of two ongoing scholarly debates. The first surrounds the validity and reliability of the stated preference (SP) methods required to capture non-use values. Critics take issue with a variety of biases and inconsistencies with consumer theory observed in the results of many SP studies (e.g., Hausman, 2012); proponents argue that good study design can avoid these problems (Carson, 2012). A second debate addresses the general role of BCA in environmental policy-making. Criticisms include bias in favor of those with greater ability to pay, the dubious moral content of preference satisfaction, and the privileging of welfarism over other ethical frameworks. Defenders argue that BCA is the least bad practicable alternative.

Although it may be controversial, BCA is here to stay (Sunstein, 2002), and so are SP methods. While by no means enshrined, the place of BCA in rulemaking appears secure. In the United States, BCA is required for all significant regulatory actions by Executive Order (EO) 12866, first issued by President Clinton in 1993 (though pre-dated by a similar requirement in Reagan’s 1981 EO 12291) and maintained in every successive administration. Meanwhile, SP methods have withstood enduring skepticism and withering criticism from prominent scholars within and outside the economics discipline. The methods have benefitted from substantial development and refinement (Johnston *et al.*, 2017) – especially with respect to consequentiality and incentive compatibility for the truthful revelation of WTP (Carson *et al.*, 2014) – and they remain widely used by academics and practitioners. Indeed, they are the only option for the estimation of WTP for environmental changes substantially outside the range of historical observation.

Often lost, or presupposed, in the debates about SP methods and BCA are the identifiability of existence value and its validity for BCA. This paper turns the literature on its head. It takes as given the general adequacy of SP methods and the use of BCA for environmental policy. It focuses on existence value *per se*, assessing its suitability for BCA according to criteria suggested by proponents of BCA.

2. The BCA criteria

2.1 Positive criteria

Proponents of BCA tout its ability to support “rational decision making” (Posner, 2004) and “intelligent priority setting” (Sunstein, 2005) and to promote bureaucratic accountability. Two qualities of BCA that underpin these features are the objectivity and commensurability of the value estimates that inform the analysis. That BCA is objective – that it utilizes verifiable data and well-established methods consistent with positive economics to characterize costs and benefits as individuals perceive them – helps guard against bias on the part of the analyst or decisionmaker. That the costs and benefits considered are commensurable enables a clear-cut, objective assessment (conditional, of course, on the normative choice to utilize the benefit–cost principle).

2.2 Normative criteria

For decisions guided by BCA to be not merely rational but also *good*, the object of quantification and maximization must have moral salience.¹ While some philosophers challenge the notion that preference satisfaction has moral salience (e.g., Sagoff, 1986, 1994), the key question for the present assessment is what makes preference satisfaction morally salient to those who see it as such. Proponents of BCA argue that policy alternatives should be evaluated based on their consequences for human welfare. They accept (often implicitly) that the satisfaction of economic preferences, as reflected in measures of compensating or equivalent variation, constitutes an increase in human welfare. They take as axiomatic that individuals seek to maximize their own welfare and that each is the best judge of how to manage his or her private affairs with that aim. Concern about antisocial preferences is mitigated so long as resources are allocated on a lawful and mutually voluntary basis.

¹ As Sagoff (2006) puts it, “Cost–benefit analysis remains a vacuous and meretricious exercise if it uses the same concept – willingness to pay or accept – to define as well as measure value.”

Thus, at a minimum, WTP estimates used in BCA must accurately reflect preferences; and the act of satisfying preference must plausibly lead to welfare gain. At another level, for BCA to be *perceived* as good, Zerbe *et al.* (2006a) suggest that “the information provided is thought useful by those who experience its effects.” The information used must be seen as legitimate and appropriate to the analysis.

There are several important challenges to the inclusion of existence value in BCA in a manner consistent with meeting the positive and normative criteria set out above. These challenges include a variety of interrelated aspects of human cognition and ethical reasoning as they apply to non-use goods. In the following sections, I summarize these challenges (see also Johansson-Stenman, 1998) and then spell out how they apply to the BCA criteria.

3. Challenges to estimating and utilizing existence value in BCA

3.1 Attitudes versus preferences

“Economists must recognize that the Chicago-man model does not apply universally, or even regularly, to choices made in non-market contexts. ... Nowhere has this been more evident than in economists’ attempts to value non-use public goods, such as endangered species or wilderness areas. (McFadden, 1999, p. 97)”

Departures from standard theory present several related challenges. The first challenge is the possibility that respondents to SP questions express the strength of their *attitudes* rather than *preferences* for environmental preservation (even if they communicate rational preferences for other goods). As explained by McFadden (1999), “[a]ttitudes are defined as stable psychological tendencies to evaluate particular entities (outcomes or activities) with favor or disfavor” (p. 74), while “[p]references are viewed as constructed from more stable attitudes by a context-dependent process that determines the prominence given to various attitudes and the tradeoffs between them” (p. 81). Kahneman, Ritov, and Schkade (KRS; 1999) argue that contingent valuation (CV) survey responses represent attitude expressions rather than expressions of preference. They note that responses vary with the elicitation method and are subject to insensitivity to scope: respondents’ stated WTP increases little or not at all with the extent of preservation (Kahneman & Knetsch, 1992).

Some economists dismiss these observations of scope-insensitivity as attributable to methodological defects (Carson, 2012; Kling, Phaneuf, & Zhao, 2012) or assert that they in fact may be compatible with standard consumer theory (Amiran &

Hagen, 2010). The potential compatibility of scope insensitivity with theory does not rule out that stated WTP for preservation reflects attitudes rather than preferences. KRS argue that CV responses exhibiting scope insensitivity are “inevitable manifestations of known characteristics of attitudes and attitude expressions” (p. 204), which Kahneman and Knetsch (1992) see as arising from the nature of the pure public good of preservation or “existence,” for which private purchase is not conceivable. The latter notion, which appears consistent with the nuanced scope study by Heberlein *et al.* (2005), allows for the possibility that improved SP study design could mitigate scope insensitivity for goods with use value, as suggested by more recent, favorable assessments of CV (Carson, 2012; Kling *et al.*, 2012), even if individuals have only attitudes and not preferences regarding “existence.”

It may be possible to avoid the attitude expression problem even for non-use public goods by employing alternative SP methods. KRS and Kahneman and Knetsch focus on CV; perhaps well-structured contingent choice methods with consequentiality could avoid attitude expression by eliminating the need for respondents to directly “assign a price.” As noted by Stevens *et al.* (2000, p. 64), “from a psychological perspective, the process of making choices in the [choice experiment] format may be quite different from that associated with making decisions about WTP ... [R]espondents may react differently when choosing among commodities that have an assigned price as compared to making dollar valuations of the same commodities,” especially if those choices are consequential. Evidence for this hypothesis is tied to a behavioral model of contingent voting,² in which a respondent votes in favor of the referendum if the expected value of her vote plus the immediate benefits of voting in the affirmative are positive:

$$P(V - T) + E \geq 0, \quad (1)$$

where P is the probability the vote is pivotal and acted on effectively by policy-makers, V is the WTP for the mooted change in environmental quality, T is the tax the respondent would have to pay if the policy is adopted, and E the inferred monetary value of her attitude expression or warm glow.

Under the (dubious) assumption that the value of the attitude expression is independent of the expected value of the vote, solving the equation for the T such that the left-hand side equals zero (voter indifference) yields

$$eWTP = T = V + E/P, \quad (2)$$

where $eWTP$ is the WTP inferred from the vote. It includes both “true” WTP and the value of the attitude expression. If attitude expressions are operative, $eWTP$ should

² Total Value Team. 2016. “Appendix 1.13; A Behavioral Model of Voting in Contingent Markets (Revised Draft)”, dated January 25, 2016, to Katherine Pease, NOAA, accessed February 3, 2020 at <https://www.fws.gov/doiddata/dwh-ar-documents/980/DWH-AR0299776.pdf>

fall as P rises, in contrast to the invariance expected under consequentiality in the absence of attitude expression. Experimental studies (e.g., Carson *et al.*, 2014) provide evidence in support of invariance (i.e. no attitude expression) for the referendum-based allocation of private goods. But the attitude expression problem is likely to be particularly acute for the provision of non-use, public goods. In a survey-based study, Herriges *et al.* (2010) find invariance of WTP for water quality improvement, the value of which may be dominated by use benefits. In contrast, a survey-based study of WTP for climate change mitigation, which is more likely dominated by non-use value, showed statistically significant correlation between WTP and an index measure that captured respondents' assessments of the probability that the referendum would influence policy and the probability that policy would be effective (Nepal *et al.*, 2009).

3.2 Constructed preferences

Even if survey respondents do express clearly defined preferences among alternatives (rather than attitudes), such preferences might not exist prior to the survey. While most economists assume that "preferences are there just to be uncovered" (Vatn, 2004), "an increasing number of researchers believe that the assumption of well-articulated preferences is tenable only when people are familiar and experienced with the preference object" (Payne *et al.*, 1999). In other cases, preferences are constructed at the time that individuals face a new choice situation. This constructive view of preferences may engender further skepticism that respondents express preferences, rather than attitudes, when faced with unfamiliar choices regarding non-use goods. More fundamentally, if preferences are only constructed at the time of the valuation exercise, then it is dubious that any WTP reported could be representative of the broader population or that preservation could make non-respondents better off in the economic sense of preference satisfaction.

3.3 Rule-based decisionmaking and lexicographic preferences

Another, related challenge is that unfamiliar choice situations may lead SP respondents to engage in rule-based decisionmaking rather than assess tradeoffs (McFadden, 1999). In this type of decisionmaking exercise, the individual seeks to identify analogous choice situations, studied or experienced, in which a single choice rule clearly applies. The apparent expression of preference in this context may not reflect a reasoned ordering of options in terms of their contribution to the individual's well-being.

Moreover, individuals may use rule-based decision criteria even in familiar or well-considered choice situations, as a matter of ethical commitment. For Sen (1977, p. 328), commitment entails “choosing an action that yields a lower expected welfare than an alternative available action.” Such behavior is consistent with a deontological ethics, based on which individuals act according to what they believe is right rather than what is good for them considering only the particular case. A representative sample of Swedes suggests approximately 17 % of the population ascribes to such ethics (Johansson-Stenman, 2012). This is not necessarily irrational: the benefits from honoring a commitment on the whole may be expected to exceed the sum of the welfare costs associated with following the rule in each case. Nevertheless, commitment “drives a wedge” between individual choice and individual welfare (Sen, 1977; Sagoff, 2006) as they relate to the options in a given choice instance.

There is also the possibility that deontological ethics motivate lexicographic or modified lexicographic preferences over income and environmental preservation (see Rekola, 2003, for a theoretical treatment). Rekola (2003) notes that the prevalence of lexicographic choices in SP studies varies widely and has been found to be as high as 79 %. However, lexicographic *choices* may reflect survey shortcomings – an insufficiently wide range of payment values or a degree of complexity that requires respondents to use simplified decision rules, for example – rather than actual lexicographic *preferences* (Sælensminde, 2006). Veisten *et al.* (2006) find very few survey respondents that consistently exhibit choices reflecting lexicographic preferences. Of course, it only takes one person with non-compensable preferences to undermine application of the Kaldor compensation test to the results of a BCA.

3.4 Warm glow

Assuming there does exist a well-defined, compensable preference for the non-use good, it must be somehow disentangled from the “warm glow” derived from contributing to its provision or sticking to one’s principles. For Kahneman and Knetsch (1992), that’s a big “if.” They hypothesize that, consistent with observed insensitivity to scope, stated WTP for non-use goods purely reflects the purchase of moral satisfaction. Hanemann (1994), in contrast, sees warm glow as a “red herring.” He argues that warm-glow effects seem unlikely if an appropriate payment vehicle is used: “I have seen no evidence that people get a warm glow from voting to raise their own taxes, whether in real life or in a contingent valuation study” (p. 33). It is not clear, however, why the proposed payment vehicle should affect the warm glow some respondents might experience from exercising their agency to choose what they see as a morally good option (Johansson-Stenman, 1998). While experimental studies have shown that “taxes” seem to remove warm glow motivation for charitable

giving (Eckel *et al.*, 2005), the study design does not give participants any agency regarding the question of whether or not there will be a tax, and thus their results provide limited insight regarding the question of warm glow in referendum-based SP studies using a tax payment vehicle.

3.5 Altruistic motivation

Finally, if all the foregoing challenges could be overcome to identify a meaningful economic preference for the non-use good, the analyst must still discern whether it is self-interested or altruistic: Do individuals benefit directly from the preservation of the non-use good, or do they benefit from the belief that preservation enhances others' welfare? It is not obvious that motivation should matter; it does not matter for the valuation of market goods. However, Milgrom (1993) shows that the BCA is invariant to pure altruism for non-use goods, implying that adding altruistically motivated non-use value to use-oriented WTP for preservation would bias the analysis. McConnell (1997) confirms Milgrom's conclusion regarding pure altruism but shows that it does not extend neatly to cases of paternal altruism. If some individuals care about others' consumer surplus from the preserved environmental good, or its availability to them, rather than caring for others' utility in general, the paternal altruists' WTP to satisfy those preferences could affect the BCA. This would happen, for example, if preservation did not otherwise pass the benefit–cost test, but paternal altruists' WTP was sufficient to cover the net costs to the “beneficiaries” and to the pure altruists who value the beneficiaries' overall utility. As McConnell (1997, p. 33) notes, “the problem of the extent of the market is severe [with two types of altruists]. Counting an altruist as paternalistic when he or she is really non-paternalistic means entering as negative a number that should be positive.”

The problem may run even deeper. It seems likely that pure altruism and paternal altruism are not competing motivations so much as they are the ideal and practicable versions, respectively, of the same motivation. Pure altruism as modeled in the literature requires that altruists are knowledgeable of the utility of beneficiaries. This is dubious even in the familial context and manifestly implausible when the beneficiaries could be anyone. Altruists' assessments of others' utility must be purely speculative prior to the economic valuation exercise. Precisely because they are incapable of the assessment necessary for pure altruism, pure altruists might behave like paternal altruists, using the quantity or quality of the resource as a proxy for what they really care about. They could be made better off with the knowledge that the resource is preserved (for others' sake) but worse off upon learning that the benefits to others do not actually compensate the costs.

4. Criteria considered

For a variety of related reasons, existence value compromises the very features of BCA that make it a valuable tool for regulatory decisionmaking.

4.1 Objectivity

“The scientific problem with [non-use value] is that there is no direct evidence for its magnitude that can be refuted with commonly accepted tests based on observable behavior” (McConnell, 1997, p. 35). Existence value is not objectively knowable; it cannot reliably be distinguished from respondents’ “warm glow” or arbitrary quantitative expression of environmental attitudes; and it may not even exist as an *economic* value for many citizens who have not yet “constructed” clear preferences regarding the relevant tradeoffs. Moreover, there is no obvious method for a benefit–cost practitioner to determine what proportion of the public has well established preferences for the non-use good *and* is likely to obtain knowledge of the satisfaction or thwarting of those preferences by the regulatory action under consideration.

“A second concern is that the range of possible existence values may well be limitless and certainly extends far beyond the current application of the concept. Because existence value refers to any non-use-related change in the state of the world that affects utility, anything that shapes perceptions of the world becomes potentially eligible for estimation as an existence value. This vastly increases the possible scope of economic analysis and the potential burden of analytical work. If no practical way of limiting the range of existence values can be developed – and none has been established to our knowledge – then there may be no closure to the analytical efforts required of economists and the very concept becomes infeasible” (Rosenthal & Nelson, 1992, p. 117). While not a sufficient justification to abandon non-use value in principle (Kopp, 1992), it is a possibly insurmountable challenge in practice for the analyst or agency seeking to maintain objectivity. The exercise of trying to determine which non-use goods merit inclusion would seem ripe for bias and political manipulation.

4.2 Commensurability

Stated WTP for the preservation of non-use goods is not necessarily commensurable with the value of typical economic goods. Lexicographic preferences, of course, would be a clear indication of incommensurability, though the mere fact that motivation matters so much for the incorporation of non-use value (but not for the value of other goods) in BCA is also suggestive of non-use benefits’ distinctiveness. They are

obviously unlike most goods and services, which are traded in markets, and differ categorically from other non-market goods in that they leave no behavioral evidence of their value. Non-use value is not even theoretically well-defined: Mathematically, the distinction between use and non-use values depends on the specification of the utility function (Freeman *et al.*, 2014).

There are also philosophical and legal considerations. Many would argue that the non-use cost of, say, driving a species to extinction is not an economic cost but a moral one. According to Nozick (1981, p. 489), “Moral cost differs from other costs – it is not appropriately plugged into maximization principles that focus only on the differences between costs and benefits.” Nevertheless, some proponents of BCA argue strongly for the inclusion of moral “sentiments” (Zerbe *et al.*, 2006b) or “commitments” (Posner & Sunstein, 2017). Consistent with Krutilla’s contention, Posner and Sunstein argue that there is a real psychic welfare cost associated with violating the moral commitment. They argue further that it may be arbitrary to omit WTP for commitments and thus a violation of the U.S. Administrative Procedure Act. But moral sensibilities are not legally protected interests: one does not have standing to sue simply because she finds an agency action morally objectionable (*Sierra Club v. Morton*, 405 U.S. 727, 1972). This legal distinction would seem not only to militate against the concern of Posner and Sunstein but to further set non-use values apart from other values included in BCA.

4.3 Connection to economic welfare

Many of the same issues with existence value that pose a challenge to objectivity and commensurability also pose a challenge to the normative salience of stated WTP for non-use goods. Because WTP is only meaningful insofar as it reflects a change in well-being, and because the objectivity of the analysis requires a consistent and exclusive application of economic theory to measure changes in well-being, the eye of the needle that existence value must thread is vanishingly small. The wellbeing – broadly understood – of those with pro-environmental attitudes may well diminish upon learning of the loss of a species or pristine landscape. They may experience negative “affect,” in the psychological jargon, or in Krutilla’s words “acute distress.” But psychological measures of attitudes or affect are not compatible with economic analysis, and stated WTP only dubiously corresponds to economic preference for species preservation or avoiding disutility due to species extinction. At the same time, stated WTP almost certainly does capture warm glow that does not relate to the actual welfare effect of the policy. The normative content of estimated existence values is thus at best ambiguous. An additional challenge arises in the case of lexicographic preferences, in which case the positive Kaldor compensation test no longer reliably indicates even the potential for a Pareto improvement.

4.4 Perceived legitimacy

Challenges to the perceived legitimacy of including existence values in BCA stem from its possible lack of commensurability with other economic values. These challenges may come from proponents and opponents of preservation alike. Individuals with ethical commitments to, or lexicographic preferences for, preservation might object to the use of stated WTP in BCA. While their primary objection might be to the use of BCA as a decision tool when preservation is at stake, they might specifically object to the inclusion existence values in the BCA. They might find objectionable in principle the inclusion of values they see as incommensurable, even if inclusion would tend to favor preservation, and would advocate for decisionmakers to consider environmental values outside of the BCA. To the extent that agency decisions turn on the outcome of a BCA, some citizens might object to the inclusion of possibly paternalistic values. While paternalistic preferences might motivate the purchase of private goods, they do not lead to an imposition on adult “beneficiaries,” who cannot be forced to consume the good or bear its cost. The same cannot be said of paternalistic preferences for non-use goods if they are determinative in the BCA. Thus, even as (or *because*) they embrace BCA as a guide to allocate resources in a way that is analogous to the market, some will see the inclusion of paternalistically motivated non-use values as illegitimate.

The problems highlighted above do not arise from general inadequacies of SP methods for the estimation of non-market goods, nor are they likely to be resolved by methodological improvements. Rather they are fundamental to the nature of existence value. As Quiggin (1993, p. 197–198) notes, “Benefit–cost analysis can provide useful information on the effects of policy proposals, insofar as these effects involve changes in individual consumption of goods and services.” However, “[t]he moral beliefs underlying existence value can be neither consistently incorporated within benefit–cost analysis nor legitimately excluded from consideration.”

5. Implications for regulatory BCA in practice

Fortunately, existence value need not be included in the BCA to be considered. Indeed, non-use values may be most appropriately considered at the legislative level, where elected officials translate values into laws that define the goals and parameters of agency rulemaking. Even at the regulatory level, non-use values can be considered outside of the BCA, either qualitatively or using “breakeven analysis” (Sunstein, 2014). After all, the quantified benefits of a rule need only “justify” its costs (EO 12866, 1993), not exceed them numerically.

If existence values are best considered at other points in the policymaking process, what are the implications for regulatory BCA? In short, they are much less radical in practice than in theory. The suggestion to exclude existence values from BCA is as much precautionary as corrective. Official benefit–cost analyses of air pollution and toxics regulations in the U.S. typically exclude non-use values even where a plausible case could be made for their inclusion. Perhaps most prominently, the U.S. Environmental Protection Agency’s 2011 report on “The Benefits and Costs of the Clean Air Act from 1990 to 2020” excludes non-use values. Yet there may be pressure to incorporate non-use value where quantified benefits would otherwise fall short of estimated costs. If inadequacies in BCAs are feared to bias assessments against achieving legislative goals, as in the case of many regulations promulgated under the Clean Water Act (Keiser, Kling, & Shapiro, 2019), efforts should be made to improve data and methods (e.g., Keiser, 2019). But it is no more acceptable to compromise the integrity of BCA (by including existence value) for the sake of environmental protection than it is to compromise the BCA (by, say, omitting co-benefits or excluding the best available science) to reduce the costs of regulation.

Where existence values are traditionally incorporated in regulatory BCA, as in the case of the Clean Water Act, practitioners have several options to avoid them. In some instances, it will be possible to rely on revealed preference (RP) methods exclusively. In other cases, best practice might dictate combining revealed and SP data to improve econometric efficiency and/or broaden the range of validity of use value estimates (Cameron, 1992; Whitehead *et al.*, 2008). Where the choice of SP method and the nature of the change in environmental quality are likely to induce expressions of non-use value, it may be important to pursue structurally consistent estimation of use and non-use values (Day *et al.*, 2019). This would allow the analyst to cleanly remove the residual, ostensibly non-use values. Finally, where it is not feasible to use RP data, it will be important to employ SP methods that induce respondents to express only their use values. There is some encouraging evidence from the recreation demand literature, for example, that contingent behavior surveys do not introduce upward bias in the estimation of the recreational benefits of environmental improvements, even if SP and RP methods do not achieve convergent validity in those estimates (Jeon & Herriges, 2010; Whitehead *et al.*, 2010).

A consequence of excluding existence values from BCA is that it could drive a wedge between BCA and damage assessment. I would contend that such a wedge is neither inevitable nor very problematic from a policymaking perspective. As to the first point, it should be noted that damage assessment need not include existence value. The court in *Ohio v. Interior* neither endorses nor strictly requires the use of existence values. Rather, it accords such value *prima facie* validity and rejects Interior’s arbitrary rule, based on the agency’s improper statutory construction, to exclude existence values except in cases where no market benefits can be estimated.

If it were determined that existence value is inappropriate for damage assessment, as it is for BCA, courts would likely defer to an agency's studied (i.e., non-arbitrary) exclusion. Of course, there may be reasons to retain existence value in damage assessment even if it is acknowledged as problematic for BCA. The greater damages estimated with existence value support the statutory objectives of CERCLA and OPA to protect human health and promote restoration while signaling the social (if not purely *economic*) value of preservation to firms weighing costly investments in risk mitigation. That damage assessment and BCA could produce divergent value estimates for the same environmental change might be vexing from the standpoint of economic theory, but it is fully in line with the respective purposes of those tools as articulated in statutes and EOs.

6. Conclusion

Given the serious challenges it poses to objectivity, commensurability, moral salience, and political legitimacy, the inclusion of existence values in BCA, far from guarding against "arbitrary and capricious" rulemaking, seems to be nothing short of regulatory malpractice. Especially in light of the viability of alternative means of consideration of environmental values in the policymaking process, and the feasibility of conducting BCA that excludes them, existence values are not appropriate for regulatory BCA.

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