

## **The Contingent Valuation Debate: Why Economists Should Care**

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**T**he contingent valuation method involves the use of sample surveys (questionnaires) to elicit the willingness of respondents to pay for (generally) hypothetical projects or programs. The name of the method refers to the fact that the values revealed by respondents are contingent upon the constructed or simulated market presented in the survey. A spirited (and occasionally mean-spirited) battle over such methods is currently being waged, involving competing factions within the federal government, economists and lawyers representing business and environmental groups, and interested academics as well. At issue is a seemingly quite specific question: should environmental regulations currently under development at both the Department of the Interior and the Department of Commerce sanction the use of the contingent valuation method in estimating the damage done by spills of oil, chemicals, or other substances covered by federal law? More generally, the debate raises broad questions about what economists have to say about the values that individuals place on public or private goods.

The two papers that follow this one make cases for and against the use of the contingent valuation method. My aim here is to provide an overview of the technique and the debate surrounding it. I also want to suggest why this debate should matter to economists, both professionally and in their roles as citizens and consumers.

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## **The Origins of the Contingent Valuation Method**

As is often the case, it is useful to start with a bit of history.<sup>1</sup>

The first published reference to the contingent valuation method apparently occurred in 1947, when Ciriacy-Wantrup wrote about the benefits of preventing soil erosion (Ciriacy-Wantrup, 1947). He observed that some of these favorable effects (like reduced siltation of streams) were public goods, and suggested that one way to obtain information on the demand for these goods would be to ask individuals directly how much they would be willing to pay for successive increments. However, he never attempted to implement this idea directly.

It wasn't until almost two decades later that the contingent valuation method began to be applied in academic research. In his efforts to determine the value to hunters and wilderness lovers of a particular recreational area, Davis (1963) designed and implemented the first contingent valuation survey that attempted to elicit these values directly.

As a test for the reasonableness of his findings, Davis compared them with an estimate of willingness-to-pay that was based on the "travel cost" approach. The notion here, first suggested by Hotelling in a letter to the National Park Service in 1947, is that the "price" for visiting a park or other recreational area (even one for which entry is free) will vary according to the travel costs of visitors coming from different places (see also Clawson, 1959). Thus, a natural experiment exists where one can measure the quantity of visits to the park demanded by people at a range of prices (that is, coming from different distances) and estimate a demand curve, consumer surplus, and so on. Davis found that the travel cost method of estimating willingness to pay for visits to a recreation area provided a quite similar answer to his contingent valuation survey.

Natural resource and environmental economics then took an enormous jump when John Krutilla published "Conservation Reconsidered," arguably the most influential paper ever written in that subdiscipline (Krutilla, 1967). In less than ten pages, Krutilla identified the importance of the essentially irreversible nature of the development of natural environments, suggested that the divergence between willingness-to-pay and willingness-to-accept compensation for what he called "grand scenic wonders" may be especially large,<sup>2</sup> pointed to the potentially large economic value of preserving genetic variation, and foreshadowed the apparently growing value of outdoor recreation and wilderness preservation relative to what he referred to as "fabricated goods." Most important for our purposes here, Krutilla raised the possibility in this paper of what is now known as "existence value." This is the value that individuals may attach to the mere knowledge that rare and diverse species, unique natural environ-

<sup>1</sup>For a more elegant and detailed history, see Hanemann (1992).

<sup>2</sup>Hanemann (1991) explores this question in a rigorous way.

ments, or other “goods” exist, even if these individuals do not contemplate ever making active use of or benefitting in a more direct way from them. Existence value is sometimes referred to as nonuse or passive use value to suggest that the utility derived does not depend on any direct or indirect interaction with the resource or good in question.

Since then, researchers in natural resource and environmental economics (and other branches of economics as well) have made increasing use of contingent valuation techniques to estimate existence values and many other things, as well.<sup>3</sup> For instance, surveys were used to elicit individuals’ willingness to pay for such things as a reduction in household soiling and cleaning (Ridker, 1967), the right to hunt waterfowl (Hammack and Brown, 1974), reduced congestion in wilderness areas (Cicchetti and Smith, 1973), improved visibility in the Southwest (Randall, Ives, and Eastman, 1974), and the value of duck hunting permits (Bishop and Heberlein, 1979), to name but a few. Moreover, contingent valuation methods have been used for the valuation of a large number of non-environmental policies or programs, such as reduced risk of death from heart attack (Acton, 1973), reduced risk of respiratory disease (Krupnick and Cropper, 1992), and improved information about grocery store prices (Devine and Marion, 1979).

But while such studies formed a sort of academic industry, none of them were designed or implemented with litigation in mind. It was not until the late 1980s that contingent valuation studies began to receive the kind of scrutiny routinely devoted to the evidence in high-stakes legal proceedings.

## **Describing the Methodology**

There is no standard approach to the design of a contingent valuation survey. Nevertheless, virtually every application consists of several well-defined elements.<sup>4</sup>

First, a survey must contain a scenario or description of the (hypothetical or real) policy or program the respondent is being asked to value or vote upon. Sticking to environmental issues, this might be a regulatory program that will reduce air pollution concentrations, a land acquisition program to protect wildlife habitats, or a program to reduce the likelihood of oil spills, to name but a few. In some cases, these scenarios are quite detailed, providing information on the expected effects of the program as well as the likely course of events should the program not be adopted. For instance, the scenario might contain an estimate of the reduction in annual mortality risk that would be expected to accompany an improvement in air quality; or it might explain the rate at which

<sup>3</sup>For an extraordinary bibliography of papers and studies related to the contingent valuation method, a bibliography that includes 1674 entries, see Carson et al. (1994).

<sup>4</sup>For a thorough description of the contingent valuation method, see Mitchell and Carson (1989).

an endangered species would be expected to recover if it was given additional protection. In other words, the scenario is intended to give the respondent a clear picture of the “good” that the respondent is being asked to value.

Next, the survey must contain a mechanism for eliciting value or a choice from the respondent. These mechanisms can take many forms, including such things as open-ended questions (“What is the maximum amount you would be willing to pay for . . . ?”), bidding games (“Would you pay \$5 for this program? Yes? Would you pay \$10? What about . . . ?”) or referendum formats (“The government is considering doing X. Your annual tax bill would go up by Y if this happens. How would you vote?”).

Finally, contingent valuation surveys usually elicit information on the socioeconomic characteristics of the respondents (age, race, sex, income, education, marital status, and so on), as well as information about their environmental attitudes and/or recreational behavior, usually with an eye toward estimating a willingness-to-pay function that includes these characteristics as possible explanatory variables. They may also include follow-up questions to see if the respondent both understood and believed the information in the scenario and took the hypothetical decision-making exercise seriously.

## **Moving to the Policy Arena**

When economists attempt to infer values, we prefer evidence based on actual market behavior, whether directly or indirectly revealed. Thus, a technique like the contingent valuation method—wherein values are inferred from individuals’ stated responses to hypothetical situations—could readily be expected to stir lively debate in academic seminars and in the pages of economics journals. But why has the controversy over the contingent valuation method spilled over into the “real world,” and why has it become so heated?

The answer lies in two federal laws and one very unfortunate accident. These three things have resulted in government agencies bringing lawsuits against a variety of parties in which the former are attempting to recover large sums of money from the latter for lost existence values (among other types of damages) resulting from damages to natural resources. Many regard the contingent valuation method as being the only technique currently capable of providing monetary estimates of the magnitudes of these losses.

The first law is the Comprehensive Environmental Response, Compensation and Liability Act of 1980, also referred to as CERCLA or, more commonly, as the Superfund law. Its primary purposes were to create a mechanism for identifying sites at which hazardous materials posed a threat to human health or the environment, and to establish procedures through which parties that were deemed responsible for the contamination could be identified and made to pay for the cleanup.

But the Superfund law also contains a sleeper provision: it gave government agencies the right to sue for damages to the natural resources for which they were trustees (including lakes, streams, forests, bays, bayous, marshes, land masses, and so on) resulting from discharges of hazardous substances. The Department of the Interior was subsequently directed to write regulations spelling out what kinds of damages were compensable under this section of Superfund and what kinds of techniques would be admissible for damage estimation. Thus did existence values and the contingent valuation method come to meet the real world.

In 1986, the Department of the Interior (DOI) issued these regulations.<sup>5</sup> Oversimplifying somewhat, the regulations specified that lost nonuse values (largely lost existence values) were recoverable under Superfund only if use values were not measurable, and—in a very qualified way—sanctioned the use of the contingent valuation technique to measure damages. In response to a number of legal challenges, in 1989 a federal court of appeals directed DOI to redraft its regulations, specifically instructing the department to give equal weight to use and nonuse values in damage assessments and to treat the contingent valuation method much more seriously as a valuation technique.<sup>6</sup>

To some extent, however, events overtook the Department of the Interior regulations. In March 1989, the supertanker Exxon Valdez ran aground on Bligh Reef in Prince William Sound, Alaska, spilling 11 million gallons of crude oil into the sea. Although a number of natural resource damage cases had been brought by individual states and the federal government up to that time, none of the incidents precipitating the suits had nearly the visibility and impact of that spill. Among other things, that accident dramatized the potential economic impact of the DOI regulations. Indeed, if in addition to the out-of-pocket losses suffered by fishermen, resort owners, tour guides, recreationists and others directly and indirectly harmed by the accident, Exxon would be forced to pay also for lost nonuse or existence values, the ante would be raised substantially. This possibility focused the attention of Exxon and many other companies on existence values and the contingent valuation method.

The Exxon Valdez spill also caught the attention of Congress. It promptly passed an altogether new law, the Oil Pollution Act of 1990, aimed at reducing the likelihood of future oil spills and providing for damage recovery for any spills that should occur. Under the new law, the Department of Commerce—acting through the National Oceanic and Atmospheric Administration, or NOAA—was directed to write its own regulations governing damage assessment. This became the next battlefield on which to fight about the legitimacy of existence values and the contingent valuation method.

<sup>5</sup>See 51 *Federal Register* 27674 (August 1, 1986).

<sup>6</sup>*State of Ohio v. United States Department of Interior*, 880 F. 2d 432 (D.C. Circuit 1989).

## The NOAA Panel

The Department of the Interior had worked in relative obscurity when drafting its damage assessment regulations under Superfund. By contrast, NOAA began its parallel task under a spotlight. Environmentalists insisted that the NOAA rules parallel those of Interior, embracing lost existence values as fully compensable damages and identifying the contingent valuation method as the appropriate way to measure them. Not surprisingly, those upon whom these assessments might one day fall—led by the oil companies—pushed hard to exclude existence values and the contingent valuation method from the regulations. Amidst these conflicting pressures, and in recognition of the technical economic nature of the questions at debate, the General Counsel of NOAA, Thomas Campbell, took an unusual step. He asked Nobel laureates Kenneth Arrow and Robert Solow if they would chair a panel of experts to provide advice to NOAA on the following question: is the contingent valuation method capable of providing estimates of lost nonuse or existence values that are reliable enough to be used in natural resource damage assessments?<sup>7</sup>

It is important to note that the panel was *not* asked its opinion on the legitimacy of existence values *per se*. This may have been because the court of appeals had earlier ruled, in the case of the Department of the Interior regulations, that lost existence values were to be treated the same as other economic losses in damage assessments; whatever the reason, the panel was asked to confine its attention solely to the potential reliability of the contingent valuation method.

The NOAA panel met eight times between June and November of 1992. This included an extraordinary all-day hearing in August during which it heard statements from 22 experts, including several of the most prominent names in the economics profession, who either extolled the virtues of the contingent valuation method or condemned it. The panel completed its deliberations in December and, on January 11, 1993, submitted its report to NOAA. The report was published in the *Federal Register* on January 15, 1993.<sup>8</sup>

The NOAA panel may have managed to upset everyone with its report. Those opposed to the use of the contingent valuation method were disappointed by what many took to be the “bottom line” of the panel report. This was the phrase, “. . . the Panel concludes that CV studies [applications of the contingent valuation method] can produce estimates reliable enough to be the starting point of a judicial process of damage assessment, including lost passive-use values.” Not surprisingly, this conclusion cheered those government agencies, academic researchers, and others wishing to make continued application of the contingent valuation method in their work.

<sup>7</sup>In addition to Arrow and Solow, the panel included Edward Leamer, Roy Radner, Howard Schuman (a professor of sociology and survey research expert), and myself.

<sup>8</sup>See 58 *Federal Register* 4601 (January 15, 1993).

Nevertheless, the panel reached this conclusion with some reluctance. I believe it fair to say that none of its members would have been comfortable with the use of any of the previous applications of the contingent valuation method as the basis for actual monetary damage awards. (To reiterate, none of these studies was intended for this purpose.) For this reason, the panel established a set of guidelines to which it felt future applications of the contingent valuation method should adhere, if the studies are to produce reliable estimates of lost existence values for the purposes of damage assessment or regulation. Although these guidelines are too numerous to reproduce in their entirety here, seven of the most important are summarized here.

First, applications of the contingent valuation method should rely upon personal interviews rather than telephone surveys where possible, and on the telephone surveys in preference to mail surveys.

Second, applications of the contingent valuation method should elicit willingness to pay to prevent a future incident rather than minimum compensation required for an incident that has already occurred. (Note that the latter would be the theoretically correct measure of damages for an accident that has already taken place.)

Third, applications of the contingent valuation method should utilize the referendum format; that is, the respondents should be asked how they would vote if faced with a program that would produce some kind of environmental benefit in exchange for higher taxes or product prices. The panel reasoned that because individuals are often asked to make such choices in the real world, their answers would be more likely to reflect actual valuations than if confronted with, say, open-ended questions eliciting maximum willingness to pay for the program.

Fourth, applications of the contingent valuation method must begin with a scenario that accurately and understandably describes the expected effects of the program under consideration.

Fifth, applications of the contingent valuation method must contain reminders to respondents that a willingness to pay for the program or policy in question would reduce the amount they would have available to spend on other things.

Sixth, applications of the contingent valuation method must include reminders to respondents of the substitutes for the "commodity" in question. For example, if respondents are being asked how they would vote on a measure to protect a wilderness area, they should be reminded of the other areas that already exist or are being created independent of the one in question.

Seventh, applications of the contingent valuation method should include one or more follow-up questions to ensure that respondents understood the choice they were being asked to make and to discover the reasons for their answer.

These guidelines made a number of proponents of the contingent valuation method quite unhappy. In their view, strict adherence to the panel's

guidelines—especially the suggestion that in-person interviews be used to elicit values—would make it very expensive to use the contingent valuation method for damage estimation or regulatory purposes. Moreover, a number of the guidelines seem intended to ensure that applications of the contingent valuation method result in “conservative” estimates of lost existence values—that is, estimates that were more likely to underestimate than to overestimate these values.

The NOAA panel created its long list of requirements because it felt strongly that casual applications of the contingent valuation method should not be used to justify large damage awards, especially in cases where the likelihood of significant lost existence values was quite small. By establishing a series of hurdles for contingent valuation studies to meet, the panel hoped to elevate considerably the quality of future studies and thereby increase the likelihood that these studies would produce estimates that could be relied on for policy purposes.

It should be noted in closing that the NOAA panel report had no special legal standing in NOAA’s deliberations. Instead, it was one of literally hundreds of submissions pertaining to the contingent valuation method that NOAA received during the time it was drafting its proposed regulations. Nevertheless, when NOAA published its long-awaited proposed rules on January 7, 1994, it said: “In proposing its standards for the use of CV [contingent valuation] in the damage assessment context, NOAA has relied heavily on the recommendations of the Panel.”<sup>9</sup> For instance, the proposed regulations encourage trustees conducting contingent valuation studies to consider using the referendum format, and in-person interviews, as the panel had suggested. In addition, the proposed regulations include a requirement that contingent valuation studies test for the sensitivity of responses to the scope of the damage described in the scenario. The NOAA panel had suggested that if respondents were not willing to pay more to prevent more serious accidents, say, other things being equal, the contingent valuation survey was unlikely to produce reliable results. Interestingly, when the Department of the Interior re-proposed its regulations pertaining to contingent valuation on May 4, 1994, it too included a requirement that contingent valuation studies test for sensitivity to scope.<sup>10</sup> The papers by Diamond and Hausman and also Hanemann in this issue discuss “scope tests” in some detail.

## **The Importance of the Contingent Valuation Debate**

Economists should have a strong interest in the debate surrounding the contingent valuation method. The most obvious reasons have to do with the economic stakes involved; but these are not the only reasons.

<sup>9</sup>See 59 *Federal Register* 1062 (January 7, 1994), p. 1143.

<sup>10</sup>See 59 *Federal Register* 2309 (May 4, 1994).



### **Natural Resource Damage Assessments**

Currently, the Department of Commerce (acting through NOAA) is involved in approximately 40 lawsuits in which it is seeking to recover damages for injury to the natural resources for which it is trustee. The Department of the Interior is involved in roughly another 20 cases. The contingent valuation method figures into no more than a dozen of these 60 or so cases, though it could prove to be quite influential in those cases.

To illustrate, consider the case of the Exxon Valdez. In late 1991, Exxon settled the natural resource damage suits brought against it by both the federal government and the State of Alaska for \$1.15 billion, payable over 11 years. Yet, a state-of-the-art study done for the State in Alaska in the wake of the accident—one using the contingent valuation method to estimate lost existence values nationally—concluded that these losses alone amounted to nearly \$3 billion (Carson et al., 1992). Because the case involving the Exxon Valdez was settled out of court, as have all cases involving the contingent valuation method to this point, it is impossible to know whether this study affected the size of the settlement.

It seems highly likely, however, that applications of the contingent valuation method will influence future damage awards or out-of-court settlements. Several of the most heavily regulated industries in the United States are among those affected by either Superfund or the Oil Pollution Act; the chemical and petroleum refining industries are potentially affected by both statutes. This in turn has implications for the amount of deterrence they and others will undertake. If existing state and federal environmental regulations, coupled with the specter of tort liability, already induce something close to the “right” amount of preventive activity by firms in these industries, the possibility of additional liability for lost existence values will push firms beyond the social optimum. On the other hand, if lost existence values are widely accepted as real economic losses that these firms have been ignoring heretofore, the imposition of liability for these losses may move firms closer to the optimum.

These cases alluded to earlier do not provide the only opportunity for damage recovery under Superfund. Currently, there are more than 1,200 sites on EPA’s National Priorities List—the list of sites which can be cleaned up using money from the trust fund created for that purpose. Once the appropriate remedy has been selected and implemented at each of these sites, and once liability for the cost of this cleanup has been affixed, the trustees for any damaged resources, such as contaminated groundwater, can bring natural resource damage suits against the responsible parties. In these cases, contingent valuation could be used to estimate possible lost existence values.

### **New Regulations**

Virtually all of the attention that the contingent valuation method has attracted in the policy world has been in the context of natural resource damage assessments under Superfund and the Oil Pollution Act. Nevertheless,

I believe that the most significant applications of the contingent valuation method will involve the estimation of the benefits and costs of proposed regulations under Superfund and particularly other environmental laws.

Regulated entities in the United States—private firms, agencies at the federal, state, and local levels, and individuals—currently spend an estimated \$130 billion annually to comply with federal environmental regulations alone (EPA, 1990). This is about 2.2 percent of GDP, a larger fraction than is devoted to environmental compliance expenditures anywhere else in the world. Much less is known about the annual compliance expenditures necessitated by other federal regulatory agencies. However, based on a comprehensive review of previous analyses, Hopkins (1992) cautiously estimated that annual compliance expenditures for all federal regulation, environmental and otherwise, were in the vicinity of \$400 billion.

Under Executive Order 12044 issued by President Carter, Executive Order 12291 issued by President Reagan, and Executive Order 12866 issued by President Clinton, all federal regulatory agencies must make an effort to quantify as many of the benefits and costs of their proposed actions as possible.<sup>11</sup> This is where applications of the contingent valuation method will likely become important.

Imagine, for example, a proposed regulation that would cost a great deal of money but would provide relatively little in the way of direct benefits in the areas where environmental quality would improve. In such a case, it may be tempting for the regulatory agency to justify its proposed action by alleging that individuals throughout the country derive a psychological benefit (an existence value) from knowing that environmental quality has been improved in the affected areas—even though there will be no environmental improvements in the areas in which they live. A contingent valuation study might be produced to support this assertion, and might make the difference as to whether the proposal passes a benefit-cost test.

There is no reason why existence values should be unique to environmental policy, either. For instance, I might derive utility from knowing that factories are safer as a result of Occupational Safety and Health Administration regulations, that pharmaceuticals carry less risk because of the oversight of the Food and Drug Administration, and that swimming pool slides are safer because of the vigilance of the Consumer Product Safety Commission. All this may be so even though I do not work in a factory, take prescription drugs, or have a swimming pool. In other words, individuals may have existence values for many different “goods,” and the inclusion of such values in a regulatory analysis could markedly alter the decision-making calculus.

<sup>11</sup>Strangely enough, this requirement holds true even when the agency is not allowed to engage in benefit-cost balancing in setting certain kinds of standards. For example, the key sections of many environmental statutes forbid balancing benefits and costs, although such trade-offs are permitted in other parts of these laws and are even required in some other laws (Portney, 1990).

Which leads me to what I believe has been an important and largely overlooked point in the debate about existence values and the contingent valuation method. To this point, proponents of the technique have envisioned its being used to estimate lost existence values and other *benefits* of proposed regulatory programs. Thus, the business community tends to oppose such methods because it believes the methods will only be used to support expansive regulation and large damage awards.

But sauce for the goose is surely sauce for the gander. Since costs are the duals of benefits, I see no reason why the contingent valuation method cannot or should not be used for the estimation of regulatory costs as well as benefits.

Consider a hypothetical regulation that would increase costs for a number of petroleum refineries and would force several others to shut down. For the purposes of the required benefit-cost analysis, the EPA would usually count as costs the annual capital cost of the equipment installed by the refineries that would remain in operation, plus any additional annual operating and maintenance costs they would incur. An unusually thorough analysis might occasionally include the (generally temporary) loss of or reduction in income of the workers whose jobs would be lost as a result of the regulation. But typically, the extent of the cost analysis is limited to out-of-pocket expenditures for new pollution control equipment or cleaner fuels.

With contingent valuation available to measure lost existence values, the matter is surely more complicated than this.<sup>12</sup> If I derive some utility from the mere existence of certain natural environments I never intend to see (which I do), might I not also derive some satisfaction from knowing that refineries provide well-paying jobs for hard-working people, even though neither I nor anyone I know will ever have such a job? I believe I do. Thus, any policy change that “destroys” those jobs imposes a cost on me—a cost that, in principle, could be estimated using the contingent valuation method.

Since regulatory programs will always impose costs on someone—taking the form of higher prices, job losses, or reduced shareholder earnings—lost existence values may figure every bit as prominently on the cost side of the analytic ledger as the benefit side. To my knowledge, however, no business organization has commissioned an application of the contingent valuation method to ascertain the empirical significance of these potential additional costs, nor has any academic independently undertaken one.

*If* the concept of existence value comes to be more broadly interpreted in economics, as I have suggested above that it should, and *if* the contingent valuation method comes to be regarded as a reliable way to measure these

<sup>12</sup>Even without the concerns raised by contingent valuation, a number of questions can be raised about the very straightforward cost analysis described here. For example, Hazilla and Kopp (1990) have shown that if one takes a general equilibrium approach to social cost estimation, very different results are obtained when compared to those from a traditional partial equilibrium analysis. This calls into question previous estimates of regulatory compliance costs (see also Jorgenson and Wilcoxon, 1990).

values, then applied benefit-cost analysis may be forever changed. It is already difficult to conduct such analyses for government programs that impose hard-to-value, non-pecuniary costs on individuals, that change the distribution of income (either at a point in time or between generations), that affect mortality or morbidity, and that involve the preservation of genetic resources.

Imagine now the difficulty of doing applied benefit-cost analysis when virtually every citizen in the United States is potentially benefitted or injured by virtually every possible program. In principle, at least, it will become extraordinarily difficult to draw bounds around those likely to gain and lose so as to facilitate valuation.

In practice, this problem may be somewhat less daunting. Perhaps it will turn out that existence values apply on the benefit side only in cases of truly unique natural environments like the Grand Canyon, irreplaceable "assets" like the Declaration of Independence, or programs that substantially improve the lives of many beneficiaries. On the other side of the ledger, perhaps only policy changes that inflict massive economic harm on certain groups of people or certain regions will generate losses among those not directly affected by the policy. If so, applied benefit-cost analysis may survive intact, but this empirical question is one that economists ought to be interested in answering.

### **Putting Theory Into Practice**

A final set of reasons for economists to care about the contingent valuation debate have less to do with policy consequences, and more to do with how contingent valuation is affecting economic theory and the practice of empirical economics.

Whatever its shortcomings, the contingent valuation method would appear to be the only method capable of shedding light on potentially important values. Some environmental benefits can be measured in indirect ways. For example, the benefits of air quality improvements can manifest themselves in residential property values; enhanced workplace health and safety may be reflected in wage rates; improvements in recreational opportunities may be revealed in reduced travel costs. But there is simply no behavioral trace through which economists can glean information about lost existence values.

The only likely candidate for such information that I am aware of is voluntary contributions to national or international conservation organizations. But these groups typically provide their contributions with a mixture of public and private goods (an attractive magazine or calendar, for example), which makes it almost impossible to determine how much of one's contribution represents a willingness to pay for the pure preservation of unique natural areas or genetic resources. In addition, many contributors to these organizations visit (make *active* use of) the protected areas, thus making it difficult to separate active from passive use values. Finally, the public good nature of the benefits of preservation means that there will be a tendency to underprovide on account of free riding.

According to proponents of the contingent valuation method, asking people directly has the potential to inform about the nature, depth, and economic significance of these values. Economists who hold this position readily admit that direct elicitation of these values will require the skills of other social scientists, including survey research specialists, cognitive psychologists, political scientists, marketing specialists, sociologists, and perhaps even philosophers. In fact, the critical scrutiny directed at the contingent valuation method has led some economists to think more deeply about cognitive processes, rationality, and the nature of preferences for *all* goods, public or private. We may, in other words, come out of this debate with an improved theory of preference and choice.

Another (and related) reason to care about the contingent valuation method debate has to do with the importance of encouraging the development of new analytical techniques. Here the parallels to experimental economics seem to me to be instructive. It was not so long ago that Vernon Smith, Charles Plott and a handful of other economists began to create artificial markets in “laboratory” settings. One purpose was to see whether hypotheses about market equilibration derived from theoretical models were borne out in laboratory settings. Since that time, experimental methods have been used to inform real-world policy-making, including, among other cases, the allocation of airport landing slots by the Civil Aeronautics Board, the auction of T-bills by the Department of Treasury, the sale of air pollution emission allowances by the Environmental Protection Agency, and the design of natural gas contracts by the Federal Energy Regulatory Commission.

Yet despite its increasing acceptance in the economics profession, and its apparent usefulness to decision makers, experimental economics has not had an easy go. Its early critics claimed that the “artificiality” of the laboratory setting rendered meaningless the findings of experimental studies. And it is my impression (but only that) that some journal editors have been reluctant to embrace papers based on experimental studies. To this day, some critics still have grave doubts about its utility.

This seems to me not unlike the state of play regarding the contingent valuation method today. Its detractors have argued that the technique is not only currently unable to provide reliable estimates of lost existence values, but also that it will never be able to do so. On the other hand, at least some proponents of the contingent valuation method appear to believe that even casual applications can produce results reliable enough to be used as the basis for potentially significant damage awards. Both views were rejected by the NOAA panel.

The present struggle is over whether some middle ground exists. There do exist quite careful and thorough applications of the contingent valuation method, with the work of Carson et al. (1992) on the Exxon Valdez oil spill being the best example. I am reluctant to assert that even this study is sufficient to justify monetary penalties. But the estimates from that study are convincing

enough to me to suggest that the contingent valuation method should be the object of further research and lively intellectual debate.

## Conclusion

Whether the economics profession likes it or not, it seems inevitable to me that contingent valuation methods are going to play a role in public policy formulation. Both regulatory agencies and governmental offices responsible for natural resource damage assessment are making increasing use of it in their work. This has now been reinforced by the Department of the Interior and NOAA-proposed regulations sanctioning the use of the contingent valuation method. Surely, it is better for economists to be involved at all stages of the debate about the contingent valuation method, than to stand by while others dictate the way this tool will be used.

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