

Contingent Valuation: Using Surveys to Elicit Information about Costs and Benefits

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BGVW Chapter 15

CVM: Basic references

- ▶ BGVW Chapter 15 " Contingent Valuation: Using Surveys to Elicit Information about Costs and Benefits"
- ▶ Kolstad, C.D., (1999), Environmental Economics, Oxford Univ. Press, Oxford, England.
 - ▶ Perhaps easier to read than BGVW.
- ▶ Journal of Economic Perspectives 1994 Fall
- ▶ Journal of Economic Perspectives 2012 Fall

Contingent Valuation (CVM)

▶ CVM

- ▶ Ask a sample of people questions about their valuations
- ▶ For some public goods, there are no obvious ways to determine preferences through observation of behaviors.
 - ▶ Non-use value: Endangered species like bald eagles and Steller sea lions



▶ Controversy

- ▶ Journal of Economic Perspectives 1994 Fall
 - ▶ Hanemann vs Diamond & Hausman



▶ NOAA Blue Ribbon Panel (Kenneth Arrow, Robert Solow, Paul R. Portney, Edward E. Leamer, Roy Radner, Howard Schuman)

- ▶ CVM can be used for non-use values if certain conditions are met.

Evidence against CVM

▶ Seip and Strand (1992)

- ▶ Asked if willing to donate 200 Norwegian Krone to NNV in order to save environmental resources in Norway: 63% Yes.
- ▶ Actual donation is less than 10%.
- ▶ Kolstad (2001), p.373

▶ Kahneman & Knetsch (1992) JEEM

- ▶ Embedding effects: No significant difference among the three cases.
 - ▶ All environmental services
 - ▶ Preparation against disasters among environmental services
 - ▶ Availability of relief goods and trained aid workers among preparation against disasters

Procedures of CVM

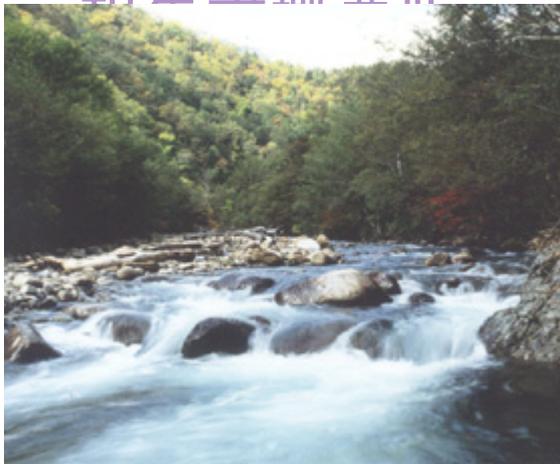
- ▶ Identify a sample of respondents from the population.
- ▶ Ask respondents questions about their valuations of a good.
- ▶ Estimate respondents' WTP for the good using information from the survey.
- ▶ Extrapolate the results to the entire population.

A CVM example: Satsunai River, Hokkaido

▶ WTP for clear stream

清流札内川に対して流域住民が感じている価値

1世帯年間当たり支払意思額	11,908円
5年間の総支払意思額(1世帯当たり)	53,883円
5年間の総支払意思額から見た20年間の清流の価値	
River area (流域住民全体) [19億2,000万円]	



Residents in the river area

Residents in Sapporo

WTP per household per year
平均支払意思額結果(単位:円/1世帯当たり/年)

地域	税金版平均支払意思額
札幌市	6,876
埼玉県日高市	5,952
東京都大田区	5,692
寄付版平均支払意思額	
4,660	
3,465	
3,947	

Saitama

Tokyo

Aggregate WTP per 5 years

清流札内川に対して流域外の住民が感じる価値(5年間の全世帯総支払意思額)

北海道民全体 Hokkaido	518億円
関東地方住民全体 Kanto	2,695億円

Survey design

▶ Direct elicitation method

- ▶ Open-ended willingness-to-pay method
 - ▶ State their maximum WTP
- ▶ Closed-ended iterative bidding method
 - ▶ Asked if they would pay a specified amount for the good or policy. If yes, then the amount is increased incrementally until there is a response of no. If no, then the amount is lowered.
- ▶ Contingent ranking method
 - ▶ Respondents are asked to rank specific feasible combinations of the good being valued and monetary payments. Example: low water quality and low taxes vs. high quality and high taxes.

▶ Dichotomous-choice (referendum) method

- ▶ Dichotomous-choice method
 - ▶ Asked if they are willing to pay a fixed amount for a good
- ▶ Double-dichotomous-choice method
 - ▶ Follow-up question depending on yes/no

Payment Vehicle

- ▶ **Payment vehicle**
 - ▶ Tax, Price, etc.
 - ▶ Choose a realistic one.
- ▶ **Is there a bias from the choice of a payment vehicle?**
 - ▶ No problem because respondents are asked to value all elements of a project including the method of payment (Arrow)
 - ▶ Possibility of “protest” valuations
 - ▶ Protest valuations are usually screened out .

Survey administration

- ▶ **In person:**
 - ▶ Can provide complex information,
 - ▶ Allows interviewer to clarify questions and use visual aids.
 - ▶ A high risk of interviewer bias; very expensive; sometimes difficult to obtain a random sample.
- ▶ **Telephone:**
 - ▶ most common method, much lower costs than the in-person method, has a better chance of obtaining a random sample through random digit dialing.
 - ▶ Information is limited to verbal communication, interviewer bias is still possible (voice cues). The prevalence of telemarketing may be causing more people to refuse to participate in phone surveys. Cell phones make it more difficult to sample geographically.
- ▶ **Mail:**
 - ▶ Low cost, allows the presentation of visual aids
 - ▶ Needs a good address list to get a random sample. Response rates are low. There is no chance of interviewer bias.
- ▶ **Internet:**
 - ▶ Very low cost, has no interviewer bias, allows presentation of complex information.
 - ▶ Not possible to draw random samples; spamming restrictions prevent random mailing.

Sample design

- ▶ Random sample
 - ▶ Simple random sample, Stratified random sample
- ▶ Sample size
 - ▶ If a sample is appropriately selected and administered, sample bias can be avoided. Samples of about 1000 people can be representative of the entire population of the U.S.
 - ▶ Because WTP in CV is skewed towards extreme values, CV samples should be larger than general opinion surveys.
- ▶ The population
 - ▶ All individuals with standing who are affected by the policy
 - ▶ Exclude
 - ▶ Those who reject the notion of placing a value on the good in question
 - ▶ Those who do not take the survey seriously
 - ▶ Those who cannot understand the survey

Problems of CVM

▶ Hypotheticality, Meaning and Context Problems

- ▶ The issues examined in CVs are complex and contextual.
- ▶ Problems arise in defining exactly what the good or policy is.
- ▶ A problem if perception of the good is not independent of the quality or quantity of information provided.
- ▶ The only effective way to minimize hypothetical and meaning problems in CV surveys is to devote extensive effort to developing detailed, clear, informative, and highly contextual materials, and to pretest these materials extensively on typical respondents.

▶ Neutrality

- ▶ Questions are not phrased accurately to elicit a neutral response.
- ▶ Neutrality can best be ensured by pre-testing the survey instruments with substantive experts who have “no axe to grind” in terms of the specific project that is being considered.

▶ Decision Making and Judgment Biases

- ▶ Noncommitment bias: High WTP because no need for actual payment
- ▶ Order effect: Answer depends on the order the questions are asked
- ▶ Embedding effects: Difference in quantity is not valued
- ▶ Starting point bias: The final valuation depends on the starting valuation.

Problems of CVM: Continued

▶ WTP vs. WTA

- ▶ WTP: How much to pay for an improvement in water quality?
- ▶ WTA: How much to be paid in compensation for deterioration of water quality?
- ▶ WTA is 4 to 15 times WTP
- ▶ In most cases WTP question formats should be used.

▶ Strategic response problem

- ▶ Mechanism design problem
- ▶ The strategic response problem has not been important in most of the cases.

How accurate is the CVM?

- ▶ **Accuracy evaluation of the CVM**
 - ▶ Compare CV values to those generated by other methods
 - ▶ Compare respondents' CV statements and their actual behavior
 - ▶ Comparisons of CV values over time.
- ▶ **CV seems valid in use contexts.**
- ▶ **The jury is still out with respect to its use in estimating non-use values.**
 - ▶ It is much more difficult to elicit WTP from observed behavior for non-use values than for use values.

Check Lists

- ▶ Do respondents understand the good being valued?
- ▶ Do respondents have experience in valuation and choice procedures?
- ▶ Is there clarity about the details of the project?
- ▶ Does the survey ask for WTP rather than WTA?
- ▶ Does the survey instrument avoid anchoring and starting point bias?

How to use estimates from past CV studies?

- ▶ Specify which studies and specific estimates are used.
- ▶ Specify assumptions made in the extrapolations.
- ▶ Specify any quality changes involved.
- ▶ Specify distinctions between use and nonuse components.
- ▶ Perform sensitivity analysis.
- ▶ Specify any potential remaining biases