Chapter 15 Contingent Valuation: Using Surveys to Elicit Information about Costs and Benefits

Contingent Valuation (Method), CV or CVM

Questionnaires designed to elicit preferences (people's willingness-to-pay) for changes in quantities or qualities of goods.

e.g. Water quality of recreation sites, goose hunting, sports stadiums, outdoor recreation, wild life opportunities, and so on.

- Valuing the use or potential use: Relatively uncontroversial

- Valuing the passive use or nonuse: More controversial

General Approach

1. Sample of respondents from the population with standing is identified.
2. Respondents are asked questions about their valuations of some good.
3. Respondents provide information that enables analysts to estimate the respondents willingness-to-pay (WTP) for the goods.
4. WTP amount for the sample are extrapolated to the entire population.

Direct Elicitation (Nonreferendum) Methods

1. Open-Ended Willingness-to-Pay Method

Respondents are simply asked to state their maximum WTP for the good or policy.

2. Closed-Ended Iterative Bidding Method

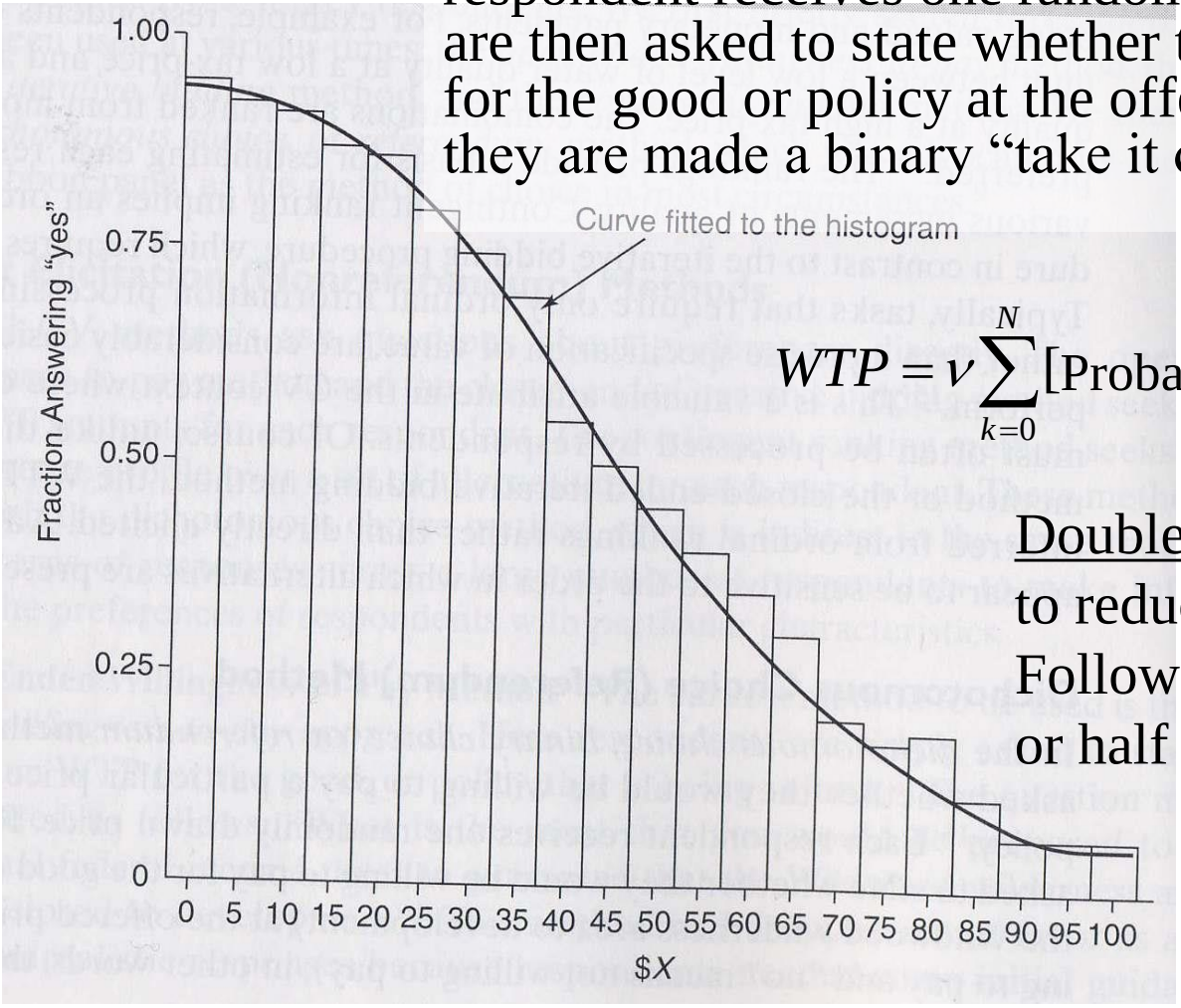
Respondents are asked to whether they would pay a specified amount for the good or policy. If respondents answer affirmatively, the amount is incrementally increased. The procedure continues until the respondent expresses unwillingness to pay the amount specified. *It is rarely used now.*

3. Contingent Ranking Method

Respondents are asked to rank specific feasible combinations of quantities of the good being valued and monetary payments. The combinations are ranked from most preferred to lease preferred. WTP must be inferred from ordinal rankings rather than directly elicited.

Dichotomous Choice or Binary Choice (Referendum) Methods

Respondents are asked whether they would be willing to pay a particular price to obtain a good or policy. Each respondent receives one randomly drawn price. Respondents are then asked to state whether they would be willing to pay for the good or policy at the offered price. In other words, they are made a binary "take it or leave it" offer.



$$WTP = \nu \sum_{k=0}^{N} [\text{Probability of acceptance at price kv}]$$

<u>Double dichotomous choice</u>:
to reduce the need for large samples.
Follow-up offer either double (if yes) or half (if no).

Payment Vehicle

Almost all CVM exercises specify a payment vehicle (way) for helping ensure that respondents perceive the questions as real economic choices.

e.g. taxes, increased bills, higher income, higher produce price, etc.

Sample

Sample design: Random Sample - Simple random samples & Stratified samples

The relevant target population is usually all individuals with standing who are *affected* by the policy. Who is affected?

1. “users”
2. Just for themselves or as a representative for their whole household
3. Concerning the inclusion of passive use benefits
4. Geographic spread

Non-response Biases

Following respondents should be excluded in estimating WTP.

They provide either zero or extremely high valuations (outliers).

1. Reject the whole notion of placing a value on the good
2. Refuse to take the exercise seriously
3. Demonstrate that they are incapable of understanding the survey

Survey Administration

	Cost per Completed Interview	*Ease of Identifying and Reaching Respondents*	*Risk of Interviewer Bias*	*Maximum Complexity of Provided Information*
In-Person	Very high—depends on questionnaire length and geographic spread	Medium—depends on availability of lists and access	High—personal presence, monitoring difficult	Very high—interactive communication and visual aids possible
Telephone	High—depends on questionnaire length and call-backs	Very high—random digit dialing	Medium—interviewer cues	Low—verbal communication limits complexity of content
Mail	Low—depends on number of follow-ups	High—depends on availability of appropriate lists	Low—uniform presentation	High—visual aids possible
Internet	Low—marginal costs very small	Low—"spamming" restrictions require panels of willing respondents	Low—uniform presentation	Very high—visual aids and interactive questions possible

Problems and Issues

Surveying opinions is an exact science?

1. Hypotheticality, Meaning and Context Problems
2. Neutrality
3. Decision Making and Judgment Biases

e.g. availability bias, representativeness bias, optimism bias, anchoring bias, hindsight bias, status quo bias, probability assessment bias

4. Noncommitment Bias
5. Order Effects
6. Embedding Effects
7. Starting Point Bias
8. Hypothetically Bias vs Judment Bias
9. WTP vs WTA

How Accurate?

1. Compare CV values by other indirect methods.
2. Compare between respondents' CV statements and their actual behavior in "experiment".

1. Hypotheticality, Meaning and Context Problems

Major concern in CV design: whether respondents are truly able to understand and place into context the questions they are being asked, and consequently, whether they can accurately value the good in question.

- When respondents are presented with questions about goods or projects that they do not understand, attitudes (and responses as expressed in the CV survey) are unlikely to correspond to the behavior that would occur if the project were actually implemented.

How to reduce hypotheticality and lack of realism:

- Clearly specifying the project and its impacts increases the likelihood of correspondence between attitudes and behavior. Visual aids such as photographs, maps, and diagrams often assist tin understanding.

- Only effective way to minimize hypotheticality 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.

2. Neutrality

Lack of neutrality is certain to pose a bias problem.

- One has to be especially cautious in interpreting the results of CV surveys that have been prepared by either parties to litigation or advocacy groups.

- Can be ensured by pretesting the survey instrument with substantive experts who have "no axe to grind" in terms of the specific project that is being considered.

4. Noncommitment Bias

Respondents tend to overstate their willingness to purchase a product that is described to them…because the respondent does not actually have to commit money.
"Hypothetical WTP I consistently and significantly higher than the WTP that reflects real economic commitments"

- To introduce elements to the survey that encourage respondents to think more carefully about their income and budget constraints.

5. Order Effects

Respondents' statements of the value of improved visibility are greatly affected by the order in which the issue was raised.

6. Embedding Effects

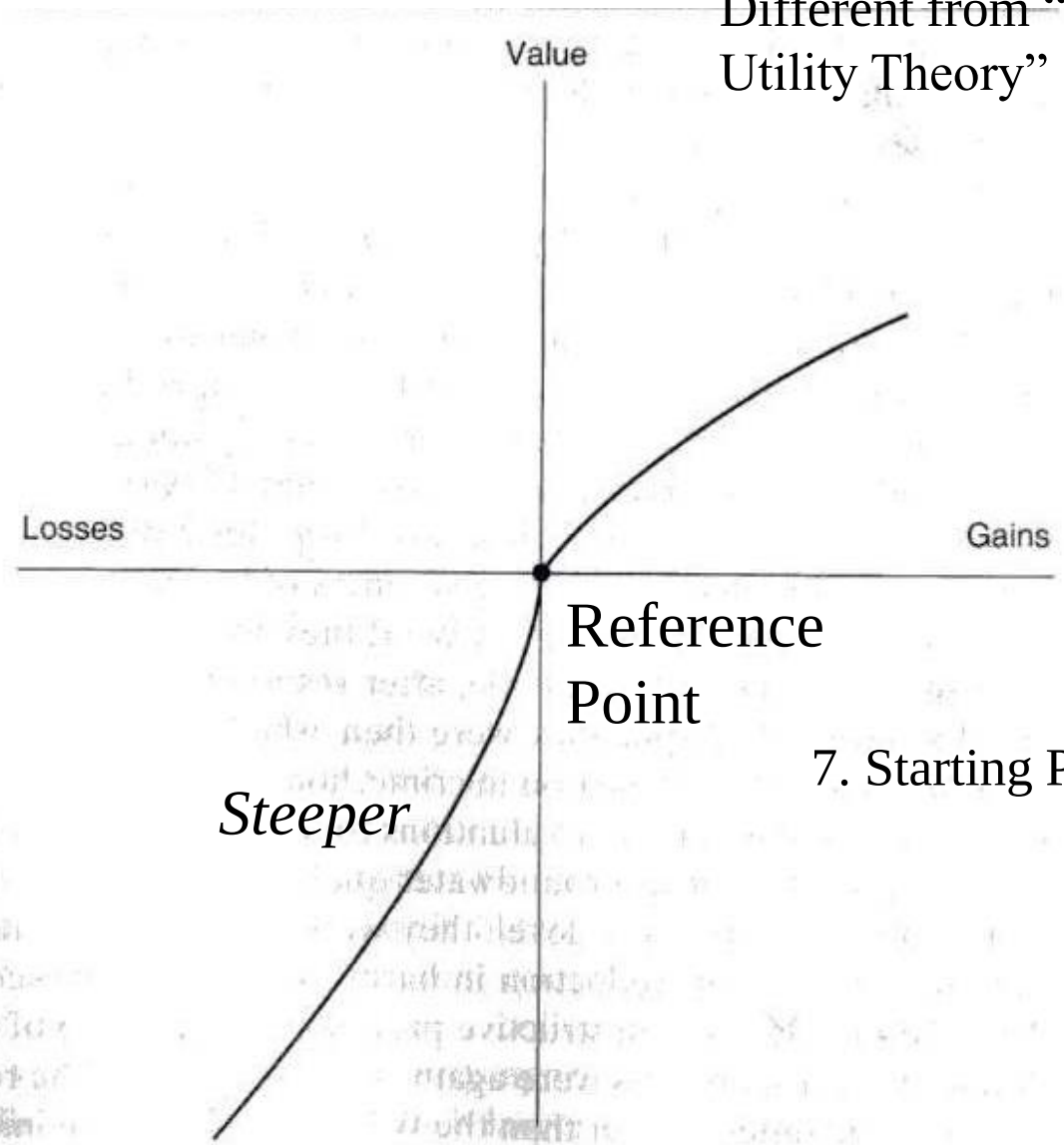
If CV respondents' valuations are only slightly higher for large changes in the amount of the good offered than for a small changes, then the validity of their responses becomes a concern. People do not really distinguish between small and large quantities in the valuations of a good…. embedded.

3. Decision Making and Judgment Biases

1. availability bias --- individuals estimate the probabilities of events by the ease with which occurrences can be recalled, e.g. TV, SNS
2. representativeness/ conjunctions bias --- individuals judge the probabilities of events on the basis of their plausibility.
3. optimism bias --- individuals believe that they can beat the objective odds.
4. anchoring bias --- individuals do not fully update their probability assessments as new information becomes available.
5. hindsight bias --- individuals believe, after an event occurs, that it was more predictable than it actually was.
6. status quo bias --- individuals stick with the status quo even when it is inexpensive to experiment or when the potential benefits from changing are large. > Prospect Theory
7. probability assessment bias --- individuals tend to overestimate small probabilities (e.g. explosion of nuclear power plant) and underestimate large probabilities (e.g. train delay).

Value Function - Prospect Theory

Different from "Expected Utility Theory"



7. Starting Point Bias

9. WTP vs WTA

Surveying a representative sample of society as to how much they value a particular non-market good. For example, residents may be asked how much they would be willing to pay (WTP) for a certain *improvement* in air quality, or willingness to acceptable (WTA) for minimal *compensation* for the loss of a recreational site.

Bias: People may be willing to pay a **$20 per month** (**WTP**) rent premium for a 20% reduction in noise impacts (perhaps by moving to a quieter street or installing sound insulation in their homes), but would demand **$100 per month** (**WTA**) in compensation for a 20% increase in residential noise.

Endowment Effect (Loss Aversion): People demand greater monetary compensation to give up things that they already possess, than they are willing to pay to acquire the same exact item.

Recommendation by authors: WTP formats rather than WTA formats should be used in CV in almost all cases.


Hai Phong
Port
Luang Prabang
Vientiane
Thanaleng/
Nong Khai
Lao Bao/
Dan Savan
Da Nang Port
Mukdahan/
Savannakhet
Laem Chabang
Port
m
2000
1500
1000
500
0
km
0
100
200
300

Choice of Shipment Route to Seaport

Choice of Stated Preference

Now, two routes are available for same origin and destination for inland freight transport. Please choose one route which maximizes your satisfaction. Two routes are differed in terms of shipment cost, average shipment time, variability of shipment time.

Please assume a situation below;

1. You are planning to transport your goods from **Vientiane to Seaport (until loading your goods onto vessel)**
2. Transported goods to seaport will be transported to Europe after the arrival at seaport
3. Your responsibility is transporting goods until loading onto vessel
4. Two routes (ROUTE A and ROUTE B) are available to seaport
5. There are possibilities to arrive early or late due to the unexpected waiting time at border or seaport
6. Transport mode is truck
7. Please choose your preferred ROUTE.

Case 2: Please choose **ROUTE A** or **ROUTE B**

ROUTE A

Average shipment time: **23 hours**

The shipment cost is **1,300 USD/TEU**

The shipment has an equal chance of arriving at seaport at any of the following times:

- **8 hours early**
- **6 hours early**
- **4 hours early**
- **2 hours early**
- **5 hours late**

A ☐

ROUTE B

Average shipment time: **17 hours**

The shipment cost is **1,500USD/TEU**

The shipment has an equal chance of arriving at seaport at any of the following times:

- **4 hours early**
- **2 hours early**
- **on time**
- **5 hours late**
- **8 hours late**

B ☒