# Contingent Valuation Methods

- *See Boardman et al., Chapter 14*
- Interview individuals to elicit their preferences for different states of the world.
- Based on individuals' stated preferences to different **hypothetical conditions** or ***"contingencies"***
- Measures Willingness to Pay (WTP) or Willingness to Accept (WTA) for these hypothetical conditions

# Contingent Valuation Methods (CVM)

- Compensating Variation
  - how much would individuals need to pay or be paid to leave them just as well of as before the project was implemented
- Equivalent variation
  - How much would individuals need to pay or be paid to be as well of as if the project were implemented.

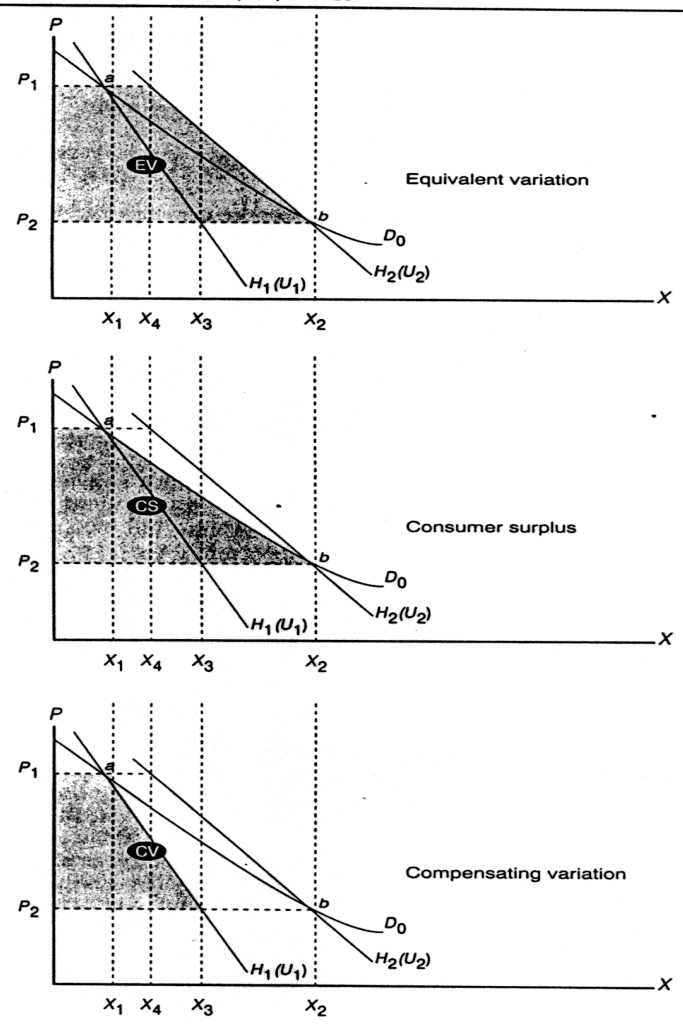
# Contingent Valuation Methods

| | Equivalent Variation | Compensating Variation |
|---|---|---|
| Negative impact of project | WTP to avoid project implementation | WTA to have project implementation |
| Positive impact of project | WTA to avoid project implementation | WTP to have project implementation |

# WTP and WTA

- WTP and WTA are not identical
  - Maintaining initial utility level vs. moving to new utility level
  - Different Income effects
    - WTP is constrained by income level
    - WTA is not constrained
  - *WTP to have a life-saving operation vs. WTA to not receive the operation!*

**FIGURE 5.10** Relation between EV, CV, and CS.



# WTP and WTA

- Bias toward *status quo*
  - Possible construction of new airport
    - Residents' WTA for accepting the noise pollution may be too high for the project to be undertaken
    - So if no airport, none will be built
  - If airport already exists
    - Residents' WTP to close airport and eliminate noise pollution not sufficient to compensate the airlines for closure.
    - So if airport exists, will not be closed

# Bias toward Status Quo

- Diminishing marginal utility of income
- The increase in utility from gaining an additional $100 is less than the loss in utility from giving up $100 from current income.


Utility
$U_{+100}$
$U_{sq}$
$U_{-100}$
- $100
+ $100
Income ($)
Status quo

# Bias toward Status Quo

- If outcomes from project are uncertain, consumers will prefer certainty of status quo to a project with same level of expected income.


Utility
Status quo
Income , Expected Income ($)

# Criticisms of CVM

- Individuals make assessments of hypothetical situations
- To not face real budget constraints
- May state very high WTP for positive impacts
  - Do not fully assess the opportunity cost of the foregone income

# Criticisms of CVM

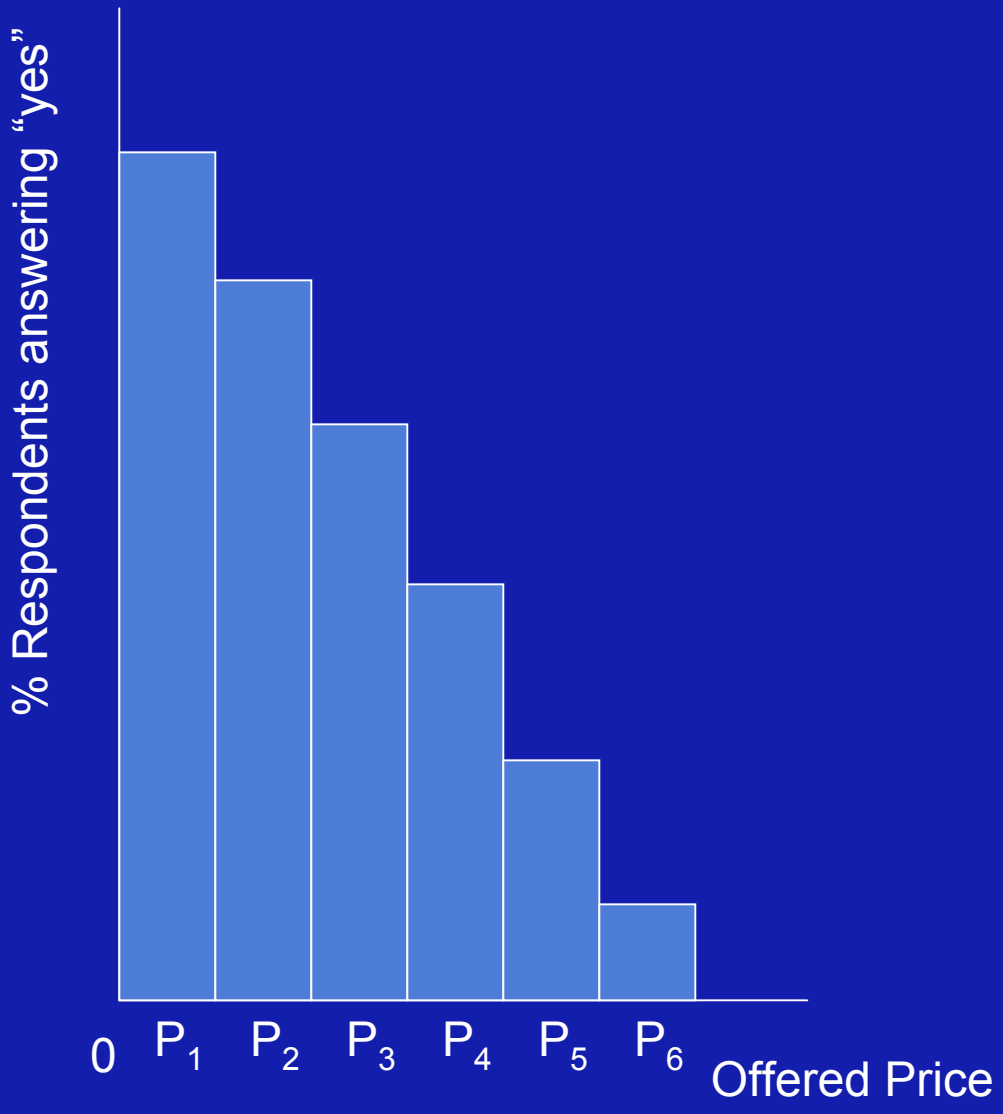
- Proponents of project may overstate WTP
- Opponents state accurate WTP (0).
- So:
  - Upward bias in aggregate measure across individuals

# Criticisms of CVM

- Critical importance of how information is provided to respondents and how questions are formed.
- Alternative methods of questioning:
  - Open-ended questioning
    - *How much would you be willing to pay for X?*
  - Close-ended questioning (bidding)
    - *Willing to pay x? If yes, raise the bid. Continue until answer is no.*
    - *Found to be highly sensitive to starting value*

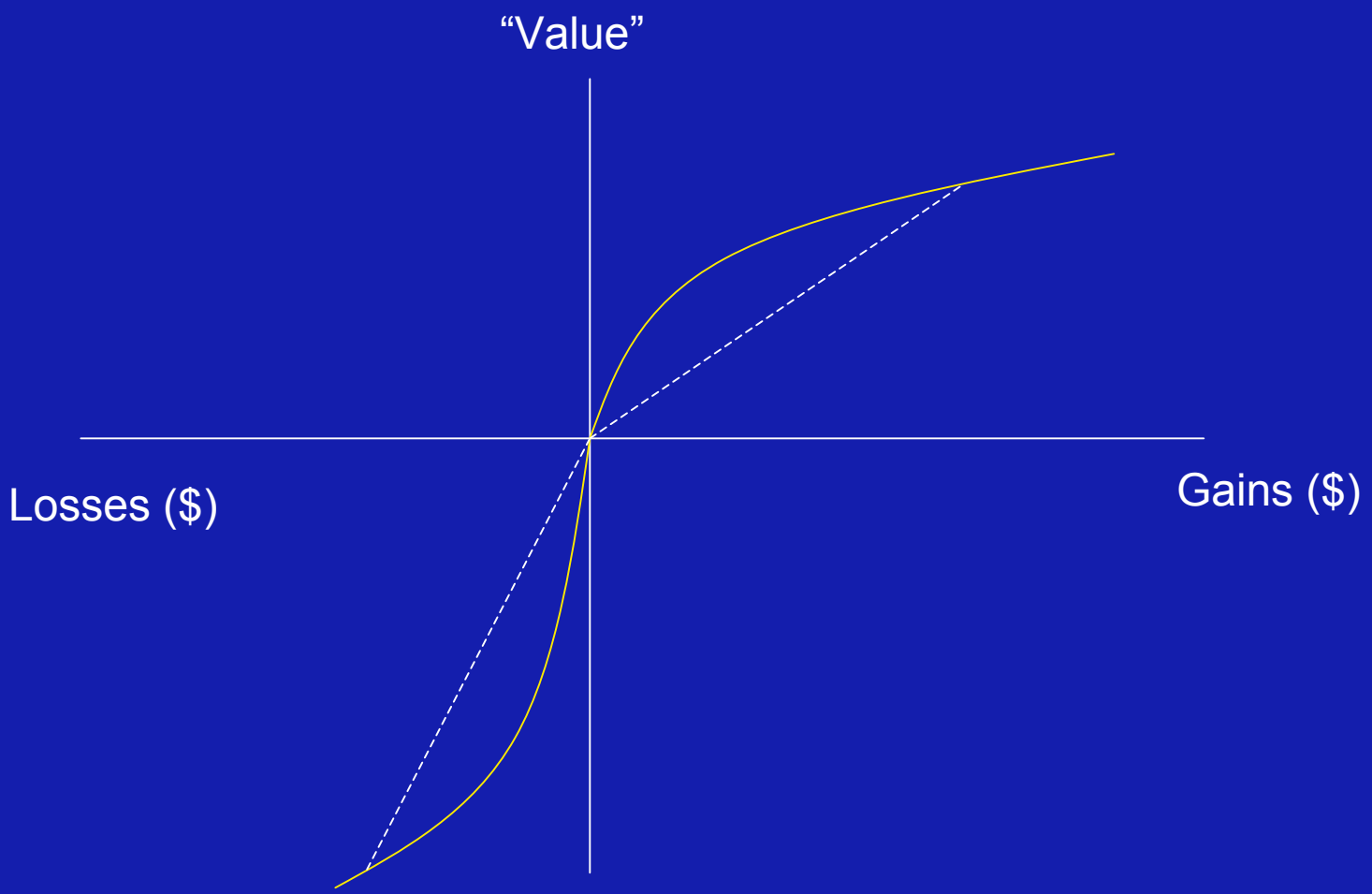
# Criticisms of CVM

- Dichotomous choice (Referendum)
- Sample of respondents asked if they would be willing to pay a randomly selected amount.
- Measure the percentage that responded yes to each amount.


% Respondents answering "yes"
0
$P_1$
$P_2$
$P_3$
$P_4$
$P_5$
$P_6$
Offered Price

# Criticisms of CVM

- Sensitive to how the choice problem is framed
- Prospect theory:
  - Individuals concerned with the “value” of alternatives (changes in utility relative to current position or “reference point”)
  - Risk averse toward gains from current position, risk living toward losses from reference point
  - Losses weigh more heavily than gains


“Value”
Losses ($)
Gains ($)

# Criticisms of CVM

- Relevance of prospect theory to CVM
  - Importance of the reference point
    - If subjects told that they have just won $30 and now may take a bet that they have 50% chance of winning $9 and 50% chance of losing $9, a high proportion say they would take the bet.
    - If subjects told that they may chose between a certain payment of $30, *vs* a bet where they have a 50% chance of receiving $21 and a 50% chance of receiving $39, most choose for the certain payment.

# Sampling Issues

- Who should be included in the sample?
  - All individuals potentially affected by the project.
  - How to determine all individuals potentially affected.

# Existence Value

- *(Boardman et al. Chapter 9)*
  - Much work on projects with recreational and environmental impacts points to the fact that individuals may value the existence of such resources, even though they themselves never expect to "use" the resource.
  - How to define use *(active vs. passive)*?
    - Personal visits
    - View films of locations
    - Discuss location with others
    - Reflect on the existence of the location

# Sampling Issues

- If consider existence value, then who should be sampled? Entire population?
- Non-response bias
  - How to treat “outliers”
  - Non-response of mail, telephone surveys

# Need for clarity in presenting the problem to respondents

- Appropriate reference point (starting point)
- Order of presentation of options (prices)
- Describe the means of payment
- Avoid bias in presenting information