Factors for "No Answer" Responses in Contingent Valuation

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Joonghyun Hwang

- M.S. Degree Candidate in Agricultural Economics at Mississippi State University

- A Thesis about Nonmarket valuation for wetlands in coastal Louisiana
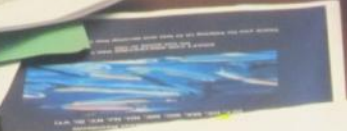
Mentor

- Dr. Daniel R. Petrolia
- Associate Professor in the Department of Agricultural Economics, Mississippi State University
- Environmental Economics
  - Nonmarket Valuation

Background

- Exxon Oil Spill in 1989
- Caused a lot of damage
  - Oily birds
  - Sea life harmed
  - Odor reached miles away
  - Harmed enjoyment of this pristine environment
- Exxon was going to pay for damages

- No clean-up is perfect

- Even after the clean-up, there are still animals lost, and they don't come back immediately

- Clean-up is not instantaneous
  - Losses suffered in the meantime

How much????

To understand the "full" value of damages, we have to understand two types of value in economics

Two Types of Economic Value

- Use Value
  - associated with the consumption of an environmental good including current use, expected use, and possible use

- Nonuse Value
  - not associated with the consumption of an environmental good but somehow it increases an individual's utility

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Contingent Valuation

- The only valuation method for "nonuse value"

- Expected to estimate the "full" value of the damages

- Exxon and its lawyers raised a question about the legitimacy of contingent valuation

NOAA Blue Ribbon Panel

- NOAA appointed a panel to decide the legitimacy of contingent valuation in 1992

- Arrow et al. (1993) – *Report of the NOAA Panel on Contingent Valuation*

    – Identify components to a successful contingent valuation

'No Answer Option'

- Referendum Question: The core of contingent valuation

- Respondents are asked to answer between 'yes/no' in the question that asks their preferences

- Arrow et al. (1993) – *Report of the NOAA Panel on Contingent Valuation*

  - In addition to 'yes/no', 'No-answer' option such as 'don't know / prefer not to vote' should be explicitly provided

Research Question

What factors cause 'no-answer' responses?

Data

- Petrolia et al. (2012) - National survey to get estimates of WTP of coastal restoration in Louisiana in 2011

- Sample Size: 1,397

- Target population: non-institutionalized adults age 18 and over residing in the United States

	With Project: 50% of lost land restored	Without Project (No Action): Land loss expected to continue at 4,500 to 7,100 acres per year
Wildlife habitat	50% of restored land suitable as habitat	No additional habitat and current habitat expected to decline
Storm surge protection	Improved protection for 30% of residents	No improvement and current protection expected to decline
Commercial fish harvest	15% higher harvest levels	No improvement and current harvest levels expected to decline
Share of total cost to your household (one-time tax)	$X	$0
I prefer:	☐	☐

☐ I prefer not to vote

378 out of 1,397 respondents (27%) chose 'I prefer not to vote' option

Table X. CV Logit regression results	
Dependent variable	PNV
Intercept*	0.6394811
	(0.35571)
Bid*	0.0001552
	(0.000084)
Not familiar**	0.3697003
	(0.1559845)
New Orleans**	-0.3382313
	(0.1639321)
Outcome Consequentiality***	-0.6305254
	(0.152527)
Policy Consequentiality***	-0.5866583
	(0.1566457)
Oil Spill***	-0.8166061
	(0.173255)
Green Preference	-0.193423
	(0.1581692)
Tax return**	-0.3803739
	(0.1937002)
Age***	0.0180385
	(0.0043251)
Education**	-0.413403
	(0.1684752)
White***	-0.5823564
	(0.1523377)
Male*	-0.258207
	(0.1360838)
Income***	-0.0500283
	(0.0180787)
Married	0.0154506
	(0.1484267)
Gulf Resident	0.2905493
	(0.1841622)
N	1397
R-sq	0.1502

Notes: Standard errors are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, and PNV stands for 'I prefer not to vote'.

Variable Name	Type	Description
PNV (Dependent Variable)	Binary	CV referendum; =1 if voted "I prefer not to vote", =0 otherwise
Bid	Continuous	offered project bid in CV, in dollars
Not familiar	Binary	=1 if not at all familiar with wetland and barrier island loss in coastal Louisiana, =0 otherwise
New Orleans	Binary	=1 if visited New Orleans or another part of coastal Louisiana
Outcome Consequentiality	Binary	=1 if thought their votes were very important / somewhat important in determining which option received the most votes, =0 otherwise
Policy Consequentiality	Binary	=1 if thought the survey will very likely / somewhat likely to shape the direction of future policy, =0 otherwise
Oil Spill	Binary	=1 if very closely / somewhat closely followed the BP oil spill accident, =0 otherwise
Green Preference	Binary	=1 if made major changes / minor changes to help protect the environment over last five years, =0 otherwise
Tax return	Binary	=1 if filed 2010 Federal tax return, =0 otherwise
Age	Continuous	respondent's age in years
Education	Binary	=1 if has bachelor's degree or higher, =0 otherwise
White	Binary	=1 if white, =0 otherwise
Male	Binary	=1 if male, =0 if female
Income	Ordered Cat.	Household income; 19 categories, ranging from = 1 (Less than $5,000) to 19 ($175,000 or more)
Married	Binary	=1 if married, =0 otherwise
Gulf Resident	Binary	=1 if lives in MS, AL, FL, TX, and LA, =0 otherwise

Remarkable Point 1

There has been no study that tests the impact of the bid level on 'no-answer'.

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Remarkable Point 2

- There has been no study that tests the relationship between consequentiality and 'no-answer'.

- What's consequentiality?

Consequentiality

- Belief of a respondent that
  - 1) His vote will affect the outcome
    - This is called the outcome consequentiality

  - 2) The program will be implemented
    - This is called the policy consequentiality

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Conclusion

- Respondents who believe the survey is consequential are less likely to give 'no-answer' vote.

- In future surveys, we can reduce the number of 'no-answer' responses by putting more efforts on designing surveys to be more consequential so we can improve the efficiency and accuracy of estimates of environmental goods.

Through NOAA-NGI Internship Program

- I've learned a lot about the research work
- I've got the certificate of metadata manager
- I've met awesome people from different places
- I've learned how to apply skills and knowledge that I've learned from master's program to the research
- I feel so lucky to develop connections with great organizations like NOAA and NGI

NOAA as a Career

- NOAA Blue Ribbon Panel for Exxon oil spill
- Even though they recommended to provide 'no-answer' option in contingent valuation surveys, they did not give any guidelines for a treatment / interpretation of such responses.
- It would be an honor if I had a chance to continue this work.

Acknowledgments

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- Other interns

Thank you!