

Do Reminders of Substitutes and Budget Constraints Influence Contingent Valuation Estimates? Comment

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I. INTRODUCTION

In their recent article Loomis, Gonzalez-Caban, and Gregory (1994; hereafter referred to as LGG), test the NOAA panel's (Arrow et al. 1993) recommendation that reminders of substitutes and budget constraints be included in contingent markets. LGG find that the additional information has no effect on willingness to pay (WTP). In prior research we found that information about related environmental goods did have significant effects on willingness to pay (Whitehead and Blomquist 1991). This comment is an attempt to reconcile the divergence of results.

The divergence could be related to the amount of information that respondents had about the issue. Boyle, Reiling, and Phillips (1990) found no response effects to substitute price information for a sample of on-site resource users. The LGG sample contains a large percentage of non-users but the authors suggest that much information about the resource allocation issue (old-growth forests) was swirling at the time of the survey (LGG, p. 503). In our study, only 57 percent of the respondents had prior information about the natural resource allocation issue: surface coal mining of wetland areas in western Kentucky.¹

Another possibility is that our statistical procedures were inadequate. The research was conducted before the literature on dichotomous choice WTP confidence intervals emerged (Cooper 1994). We conducted non-parametric tests with the series of individual point estimates of willingness to pay. Current standard practice is to construct either simulated or numerical confidence intervals for willingness-to-pay estimates.

In this comment we retest for information effects using our data (Whitehead and Blomquist 1991) and the method of LGG. If our original results are not replicated this

suggests that the statistical procedures in our original paper were inadequate. If our original results are replicated this suggests that the amount of prior information that respondents have may influence the effect that contingent market information has on respondent behavior.

II. THE REPLICATION

To summarize our original study, the topic was the trade-off between surface coal mining and wetlands preservation in western Kentucky. A wetlands area was described along with the threat of surface coal mining. One-third of the respondents received no information about related environmental goods (Version 1). One-third of the respondents were told that the mine would be reclaimed into a wetland lake area (Version 2). One-third of the respondents were told about a nearby, protected wetlands area (Version 3). The contingent market presented a dichotomous choice valuation question to respondents.²

We present logit results with specifications and confidence interval simulation

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¹ In recent work we have found that prior information about the resource is a determinant of the validity and reliability of WTP estimates (Whitehead et al., forthcoming).

² We employed standard mail survey techniques with a sample of Kentucky residents and obtained a response rate of 31 percent. Our response rate is too low for generalization to the population for benefit estimates but comparisons among the versions are valid if the demographic characteristics of respondents in each version are similar. Respondent characteristics between versions are not significantly different except for an education difference between two survey versions. This difference should not be a major factor due to the lack of a statistically significant relationship between WTP and education.

TABLE 1
MULTIVARIATE LOGIT EQUATIONS

| | Version 1 | Version 2 | Version 3 |
|-------------------------------|-------------------------------|--------------------|--------------------|
| Constant | 0.4581 (0.39) ^a | -0.5690 (0.48) | -1.2901 (0.95) |
| Bid | -0.0679* (2.71) | -0.0842* (2.29) | -0.0649* (2.44) |
| Recreation Participation(= 1) | 2.1202* (1.84) | 1.1962* (1.82) | 2.4686* (2.16) |
| Education (Years) | 0.0135 (0.15) | 0.0409 (0.48) | 0.1142 (1.27) |
| Conservation Member(= 1) | 0.5515 (0.62) | 1.1456 (1.44) | 3.9585* (2.91) |
| Sample Size | 63 | 80 | 72 |
| Log-Likelihood | -35.01 | -43.72 | -34.64 |
| Chi-Square | 17.17 | 16.16 | 30.31 |
| Mean WTP | \$13.83 | \$4.55 | \$24.42 |
| 90% Confidence Interval | \$6.29, \$24.32 | -\$9.92, \$9.61 | \$15.27, \$39.22 |

^a *t*-values in parentheses.

* Indicates significance at the .10 level or greater.

(Park, Loomis, and Creel 1991) similar to LGG in Table 1. For each version, the bid coefficient is negative and significantly different from zero and wetlands recreation participation has a positive effect on yes responses. Education has no effect on responses and membership in conservation organizations only has an effect in the Version 3 sample.

LGG find that WTP is equal with similar point estimates and confidence intervals that overlap. In our study, the two WTP estimates with information about related environmental goods (Versions 2 and 3) are equal to WTP with no information (Version 1) in pairwise comparisons (Table 1). That is, the WTP confidence intervals overlap for Versions 1 and 2 and Versions 1 and 3 which is a contradiction of our nonparametric test results. However, we find that WTP with information about the reclaimed lake (Version 2), a substitute, has a confidence interval that includes zero and is significantly different from WTP with information about the alternative wetland area (Version 3), a complement. The WTP confidence intervals do not overlap for Versions 2 and 3. With this result we do not replicate the results of LGG.³

LGG find that WTP coefficient vectors are equal with substitute and no substitute

information using the Likelihood Ratio test. Using the same test, we also find that there are no significant differences in the coefficient vectors for two pairwise comparisons between coefficient vectors of Versions 1 and 2 and Versions 1 and 3. With this result we replicate that of LGG. The coefficient vectors for Versions 2 and 3 are significantly different from zero at the .05 level ($\chi^2(5) = 13.73$). With this result we do not replicate the results of LGG.⁴

III. CONCLUSIONS

In their conclusions LGG state that "replication with less familiar public goods than old-growth forests are needed...." Our results show that contingent values for little known natural resources can be driven from a positive amount to a number not statistically different from zero with information about substitute environmental goods. We also find that information about related

³ We speculate that with larger subsamples we would find significant differences between WTP for Versions 1 and 2 and Versions 1 and 3. Nevertheless, even with our small subsamples we do not completely replicate the results of LGG.

⁴ These regression results are available upon request from the authors.

goods can lead to a complementary effect on WTP which can increase contingent valuations to an even greater positive amount. These results suggest that information about related environmental goods (substitutes or complements) is needed in contingent valuation research, especially for little known natural resources. The amount of prior information that respondents have may influence the effect that information has on their behavior in contingent markets.

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