The Provision Point Mechanism and Scenario Rejection in Contingent Valuation

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The provision point mechanism mitigates free-riding behavior in economic experiments. In two contingent valuation method surveys, we implement the provision point design. We ask respondents for their perceptions about the success of the provision point mechanism. We find that respondents who believe that the provision point would not be met are more likely to say *no* to a contingent valuation dichotomous choice question. The scenario rejection that arises may result in biased willingness-to-pay estimates.

Key Words: provision point mechanism, contingent valuation, willingness to pay, public goods

The contingent valuation method (CVM) elicits hypothetical statements of willingness to pay. Therein lies its greatest weakness and its greatest strength. Critics of CVM argue that its hypothetical nature leads to responses that do not measure the true valuation of a good in question, either through biases from construction of the questions (i.e., starting-point bias), strategic answering of questions (i.e., free-riding), or inability of respondents to understand or accept the hypothetical scenario and questions (i.e., scenario rejection). Yet the hypothetical nature of CVM is also its greatest strength. There are no direct markets and no revealed preference data that can be used to measure non-use values of environmental goods and assess the benefits of many policy proposals.

To help minimize the potential bias from the hypothetical nature of questions in CVM, Mitchell and Carson (1989, p. 30) state that a hypothetical scenario "must be informative; clearly understood; realistic by relying upon established patterns of behavior and legal institutions; have uniform application to all respondents; and, hopefully, leave the respondent with a feeling that the situation and his responses are not only credible but important." Carson and Groves (2007) show that when a survey question is consequential (i.e., a respondent finds that the question potentially influences an agent's action and the respondent cares about the action), standard economic theory applies. CVM researchers have taken these suggestions to heart and developed techniques to address hypothetical bias, the free-rider effect, starting-point bias, and other concerns. In the process, the resulting highly structured hypothetical scenarios that have become standard best-practice may not be perceived as plausible to all respondents.

When respondents find contingent valuation questions implausible, scenario rejection may arise. Scenario rejection may take the form of protest responses, where respondents with positive willingness to pay will reveal only a zero willingness-to-pay value in an open-ended willingness-to-pay question, or answer *no* to a dichotomous choice willingness-to-pay question even though their true willingness to pay is greater than the bid amount. Widespread scenario rejection will invalidate the results of a CVM survey. If more limited scenario rejection is dealt with by excluding cases, the reduction in sample

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The data used in this paper were collected with funding provided by the U.S. Environmental Protection Agency's Great Lakes National Program Office (via the National Fish and Wildlife Foundation as part of a grant to the Michigan Department of Environmental Quality, Environmental Science and Services Division, which was subsequently passed on via a Coastal Management Program grant to Ducks Unlimited, who provided matching funds), the North Carolina Department of Energy, and a Cahill Research Award from the University of North Carolina at Wilmington.

We would like to thank Rob Southwick and Todd Cherry for their contributions to the data collection efforts, participants in a seminar at the Department of Economics at Appalachian State University, and two anonymous referees for helpful comments.

size will potentially bias the sample and decrease the efficiency of willingness-to-pay estimates. Ignoring scenario rejection will increase the variance of willingness-to-pay estimates and is likely to bias willingness to pay downwards.

Little attention has been paid to protest bids resulting from scenario rejection in past CVM research. Desvousges, Smith, and Fisher (1983) first addressed the identification of protest bidders by using regression diagnostics to identify outliers based on income. Halstead, Luloff, and Stevens (1992) use follow-up debriefing questions in an attempt to identify protest bidders. They find that respondents may answer *no* to a dichotomous choice question due to protest of the payment vehicle. Clinch and Murphy (2001) pursue what has become the typical strategy in dealing with protest bids by asking respondents who are unwilling to pay for their primary reason. Protest bidders are identified as those who seem to be willing to pay for the good but indicate otherwise due to scenario rejection or other bias. Protest bidders are then discarded from the sample.

In this study we pursue a different strategy when dealing with protest bids. We use respondent perceptions about the feasibility of the hypothetical scenario to determine aspects of scenario design that lead to variation in willingness to pay. These perceptions can be used to explicitly test for the protest responses and assess the sensitivity of willingness to pay to the protest. In particular, we focus on protest responses that arise due to the provision point mechanism which has been used to mitigate free-riding with the voluntary contribution payment mechanism in laboratory (Rondeau, Schulze, and Poe 1999, Rose et al. 2002) and field experiments (Rose et al. 2002, Poe et al. 2002).

Provision Point Mechanism

In a provision point mechanism, individuals are asked to donate money to pay for a public good, but told that the donated funding will not be used for the public good unless some lower bound threshold is met. This threshold is defined as the provision point. If the threshold is not met then the donations will be refunded to the individuals. The provision point gives individuals an incentive to donate a positive amount because of the all-or-nothing construction. In this framework, only if sufficient donations are received will the public good be provided. Bagnoli and Lipman (1989) show that the provision point framework alters an individual dominant strategy in a non-cooperative game and that in some cases an efficient level of a public good is achieved through donation. Marks and Crosson (1998) show that a provision point mechanism with a money-back guarantee helps to avoid the perception that donations might flow to unrelated projects if the primary project is not funded.

Laboratory experimental evidence and field survey research have found that the provision point mechanism has lessened the free-rider effects found with the straight voluntary contribution mechanism (Bagnoli and McKee 1991, Cadsby and Maynes 1999, Rose et al. 2002, Rondeau, Poe, and Schulze 2005, and Messer, Kaiser, and Schmidt 2005). Bagnoli and McKee (1991) find that in a laboratory setting a provision point is met most of the time when a refund is used. Cadsby and Maynes (1999), also in a laboratory setting, find that a refund in a provision point design is effective when the provision point is a relatively high amount. Rondeau, Poe, and Schulze (2005) note that in a field setting, however, nonprofit organizations are reluctant to use the provision point mechanism with the money-back guarantee because of the probability that the response will not meet the threshold and the project will not be funded. Norwood et al. (2006) also suggest that a provision point introduces risk into the public provision process, particularly when the benefit-to-cost ratio is low and a full refund is required. Yet Poe et al. (2002) suggest that using the provision point mechanism in field contingent-valuation method surveys provides incentives to respondents to truthfully reveal their willingness to pay as in laboratory and field experiments.

Champ et al. (2002) implement the provision point with money-back guarantee mechanism in a contingent valuation survey and compare it to a voluntary contribution mechanism and a referendum on a tax payment. Contrary to past theoretical and empirical research, the willingness to pay from the provision point mechanism is not significantly different from that from the voluntary contribution mechanism. There is weak evidence that willingness to pay is greater for the referendum treatment. Champ et al. (2002) ask respon-

dents "how likely do you think it is that enough / at least 30% / a majority will agree to donate/vote yes?" More respondents thought that it would be very unlikely that the voluntary contribution and provision point mechanism would lead to enough payments. This result raises the question of whether the difference in willingness to pay across payment vehicles might be due to scenario rejection and not incentive incompatibility. We use a different interpretation than Champ et al. (2002) of respondents' perceived likelihood of funding success. We interpret the likelihood question as one of scenario acceptance and consider the extent to which the choice of the provision point mechanism payment vehicle leads to scenario rejection. We directly measure the effect of scenario rejection on willingness to pay with data from two surveys. The first is from a survey of willingness to pay for a green energy program in North Carolina in which the perceived-likelihood-of-success question is asked prior to the willingness-to-pay question. The second is from a survey of willingness to pay for wetlands preservation in Michigan in which the perceived-likelihood-of-success question is asked after the willingness-to-pay question.

Data

Green Energy Survey

The green energy survey was conducted by telephone in all 100 North Carolina counties in 2002 (Whitehead and Cherry 2007). The response rate was 61 percent. The public good generated by the hypothetical green energy program is improved air quality in the western North Carolina mountains, with three levels of program scope. The survey uses the same payment vehicle used by Champ and Bishop (2001) and Poe et al. (2002)—a voluntary surcharge to the monthly utility bill. The magnitude and rationale for the additional monthly fee is described below:

> In a voluntary Green Energy program, households that choose to participate for an extra fee of [$5, $15, $30, or $50] each month with their power bills. This fee would be fixed and not tax-deductible. The fee would cover the higher production costs of green energy.

The fee was randomly assigned to respondents and took on one of four values: A = 5, 15, 30, and 50. Respondents were then asked the amount of their average monthly power bill in order to get them to assess the impact the monthly fee would have. The average monthly power bill was over $100.

Payment mechanism and policy implementation rules are described and a dichotomous choice willingness-to-pay question is presented below:

> If 10 percent of all North Carolina utility customers sign up for the green energy program, air pollution would be reduced. Recreation, visibility, forest, and stream health and human health would improve. If you signed up and were not satisfied, you could cancel the program at any time. But if less than 10 percent signed up, the green energy program would not have enough customers to make it cost effective. The program would stop and you would owe no money. Suppose you were given the opportunity to participate in the green energy program for an extra fee of [$5, $15, $30, or $50] dollars each month. Would you sign up for the green energy program?
>
> ❒ Yes ❒ No ❒ Don't know

One problem that arises when coding dichotomous choice CVM questions is what to do with *don't know* responses. We follow the conservative approach and code all *don't know* responses as *no* responses (Groothuis and Whitehead 2002, Caudill and Groothuis 2005).

Another problem that arises with contingent valuation method surveys is hypothetical bias (Whitehead and Cherry 2007). Hypothetical bias exists if respondents are more likely to say they would pay a hypothetical sum of money than to actually pay if placed in the real situation. Since economic values are revealed by actual behavior, hypothetical bias leads to contingent economic values that are too high. One method that is used to mitigate hypothetical bias is the certainty rating (Champ and Bishop 2001). For those respondents who said that they were willing to pay, we asked: "On a scale of 1 to 10, where 1 is 'not sure at all' and 10 is 'definitely sure', how sure are you that you would make the one-time donation of [$5, $15, $30, or $50]?" We code all *yes* respondents who were very certain (7, 8, 9, or 10) as *yes* respondents, and all others as *no* respondents. Some respondents also receive a budget constraint reminder as part of a split sample design. We control for the split sample design with a dummy variable equal to one if the respondent received the budget constraint reminder. After this recoding, 35 percent of the green energy respondents are willing to pay the bid amount (Table 1).

Table 1. Data Summary

	Green Energy	Wetlands Preservation
Yes, willing to pay $*A* (=1)	0.35 (0.47)	0.32 (0.47)
Natural log of bid amount, $*A*	2.82 (0.86)	4.37 (0.69)
Income	$52,738 (29,395)	$52,201 (28,148)
Provision point most likely to be met	0.23 (.41)	0.07 (.15)
Provision point somewhat likely to be met	0.53 (.50)	0.42 (.49)
Provision point somewhat unlikely to be met	0.16 (.37)	0.36 (.48)
Provision point most unlikely to be met	0.08 (.27)	0.14 (.35)
Scope	9.96 (7.36)	2588 (1432)
Hypothetical bias treatment (=1)	0.33 (0.47)	
Sample size	318	293

Note: Standard deviation in parentheses.

Before the willingness-to-pay question, we asked about perceived aggregate participation in the hypothetical green energy program. Respondents were told the goal of the program.

> The goal of this program would be to get 10 percent of all North Carolina utility customers to sign up. In your opinion, how likely do you think it is that 10 percent of all North Carolina utility customers would sign up? Do you think it is very likely, somewhat likely, somewhat not likely, or not likely at all?

Twenty-three percent thought that the provision point was most likely to be met, and 53 percent thought it was somewhat likely to be met (Table 1). Almost three-quarters of the sample thought that it was very likely or somewhat likely that 10 percent would sign up. On the other hand, 16 percent believed that the provision point was somewhat unlikely to be met, and 8 percent thought it was most unlikely to be met. This result indicates that most respondents found this component of the scenario credible. Yet about a quarter may not have found the scenario plausible and might have protested the willingness-to-pay question with a *no* response.

Wetlands Preservation Scenario

The second application used to explore scenario rejection is to a wetlands preservation program in the Saginaw Bay area of Michigan (Whitehead, forthcoming). The survey was conducted by mail in the spring of 2005 to both a general population sample and a sample of hunting and fishing license holders who lived in the Saginaw Bay counties of Michigan. The response rate was 21 percent. In contrast to the green energy survey, the question about likelihood of success of the provision point was presented after the provision point mechanism willingness-to-pay question.

In the survey, the wetlands, as well as scope of preservation, were described. Survey respondents were told that 9,000 of 18,000 acres of Saginaw Bay coastal marshes are currently protected and that the remaining privately owned marshes could be purchased and protected. A hypothetical "Saginaw Bay Coastal Marsh Protection Program" was introduced:

> Voluntary contributions to a "Saginaw Bay Coastal Marsh Trust Fund" would be used to purchase and man-

> age [1, 125, 2,500, or 4,500] acres of Saginaw Bay coastal marshes. The Trust Fund would be administered by a board of directors that would include representatives from the federal, state, and local governments, conservation and environmental groups, and private landowners. Money would be refunded if the total amount is not enough to purchase and manage [1, 125, 2,500, or 4,500] acres. If the amount of donated money is greater than the amount required to purchase and manage [1, 125, 2,500, or 4,500] acres, the extra money would be used to provide public access and educational sites at Saginaw Bay coastal marshes.

The payment mechanism and policy implementation rules were described and the willingness-to-pay question was presented to the portion of the full sample that previously had indicated that they would be willing to make a one-time donation:

> If about 1 percent (1 in 100) of all households in Michigan made a one-time donation of $*A* [$25, $50, $75, $100, $150, or $200], the Trust Fund would have enough money to purchase and manage [1, 125, 2,500, or 4,500] acres of coastal marshes. Remember, if you made a one-time donation of $*A* into the Trust Fund, you would have $*A* less to spend on other things. Also remember that protected marsh would no longer be available for conversion to other uses. Under these conditions, would you make a one-time donation of $*A* to the Saginaw Bay Coastal Marsh Trust Fund within the next 12 months?
>
> ❒ Yes ❒ No ❒ Don't know

We follow the same recoding procedure as in the green energy model for *don't know* and uncertain *yes* responses. After recoding the uncertain *yes* respondents, 32 percent of the wetlands preservation respondents were willing to pay the bid amount (Table 1).

To test for scenario rejection and determine if respondents thought that the provision point would be met, we asked a follow-up question to the willingness-to-pay question: "How likely do you think it is that 1 percent of all households in Michigan would make a one-time donation of [$25, $50, $75, $100, $150, or $200] to the Trust Fund within the next 12 months?"

In Table 1, we report the portion of respondents who believe that the provision point will be met. We find that 7 percent believe that the provision point is most likely to be met, while 42 percent believe it is somewhat likely to be met. Thirty-six percent, however, believe that the provision point is somewhat unlikely to be met, and 14 percent think it is most unlikely that the provision point will be met. These proportions indicate that about half of the respondents find that the provision point scenario is plausible. Yet the other half to a quarter may not find the scenario plausible and might protest the willingness-to-pay question with a *no* response.

We also report the means and standard deviations of other variables from both surveys (Table 1). The average household income of the green energy sample is $52,000. The average income of the wetlands preservation sample is $52,000. The average dollar amounts are $17 and $79 in the green energy and wetlands preservation samples, respectively.

Results

In Table 2, we consider the relationship between acceptance of the provision point scenario and the likelihood of saying *yes* to the willingness-to-pay question. For the green energy program we find a positive relationship between beliefs that the provision point is going to be met and a *yes* response to the willingness-to-pay question. We find that 45 percent of respondents who believe the provision point will most likely be met would be willing to sign up for the green energy program. The proportion of *yes* responses falls to 34 percent for individuals who feel somewhat likely the provision point will be met, 24 percent for the respondents who thought it was somewhat unlikely the provision point would be met, and a low of 19 percent for those who thought the provision point was most unlikely to be met. The differences in proportions are statistically significant at the $p = .05$ level using a z-test for the comparison between those who believe the provision point will most likely be met (0.45) and those who thought it was (i) somewhat unlikely (0.24) and (ii) most unlikely (0.19) to be met. All other differences are not statistically significant.

We find the same basic pattern for the wetlands preservation study, with the exception of the last category. We find that the proportion who would say *yes* to donating starts at 52 percent for respondents who thought the provision point would most likely be met. The proportion then falls to 43 percent for the subset believing that the provision point was somewhat likely. The proportion falls to 17 percent for the individuals who thought the provision point was somewhat unlikely to be

Table 2. Willingness-to-Pay Responses by Provision Point Responses

	Green Energy WTP (Yes =1)	Wetlands Preservation WTP (Yes=1)
Provision point most likely to be met	0.45 (72)	0.52 (23)
Provision point somewhat likely to be met	0.34 (167)	0.43 (123)
Provision point somewhat unlikely to be met	0.24 (53)	0.17 (105)
Provision point most unlikely to be met	0.19 (26)	0.23 (42)

Note: Sample size in parentheses.

met, and then rises to 23 percent for the individuals who found it most unlikely that the provision point would be met. The differences in proportions are statistically significant at the p = .05 level using a z-test for the comparison between those who believe the provision point would (i) most likely be met (0.52) and (ii) somewhat likely be met (0.43), and those who thought it would (i) somewhat likely be met (0.17) and (ii) most unlikely (0.23) be met. All other differences are not statistically significant. These results suggest that individuals who are pessimistic and expect a refund from the provision point process are less willing to participate in the first place. This is consistent with the possibility of scenario rejection.

In Table 3, we estimate probit models of willingness to pay for each set of data to further explore this relationship. We use the natural log of the bid ($25, $50, $75, $100, $150, or $200) amount to improve the statistical fit. Considering first the green energy model, we find that the *yes* responses fall with increases in the log bid amount. Increases in income increase the likelihood of saying *yes*. Those who received the budget-constraint-reminder treatment to help mitigate hypothetical bias are less likely to say *yes* in the green energy program. Increases in the scope of the green energy program increase the likelihood of a *yes* response.

The reference category in both probit models is the dummy variable for individuals who believe it is most likely the provision point would be met. In the green energy model, we find that individuals who are less likely to believe that the provision point will be met have a lower probability of responding *yes* to the bid amount. The coefficients are all negative and increase in magnitude as individuals are less certain that the provision point will be met. The coefficients are all statistically significant, with the exception of the coefficient on the dummy of the individuals who find it somewhat likely that the provision point would pass, suggesting that we are unable to detect a difference between those who find the provision point most likely to be met and those who find it somewhat likely to be met.

We further test the equality of coefficients by constraining different pairs of dummy variable coefficients to be equal. We find that dummy variables next to each other in the likelihood scale have no statistically significant difference but that dummy variables separated by a scale category have statistically significant differences. Specifically, we find a chi-squared test statistic of 2.66, which is not statistically significant at the 95 percent level with one degree of freedom, when constraining the coefficient to be the same between those who thought the provision point was somewhat likely to be met and those who found the provision point somewhat unlikely to be met. The chi-squared test statistic is 0.72 when constraining the coefficients to be the same between the dummy on the category for those who found the provision point somewhat unlikely to be met and those who believed the provision point was most unlikely to be met. However, the chi-squared test statistic of 4.46 is statistically significant when constraining the coefficient on the dummy variables for those who found the provision point to be somewhat likely to be met and those who believed that the provision point was most unlikely to be met. These results suggest that the probability of agreeing to donate is influenced by the perception of others' donation rates.

Table 3. Probit Models of Willingness to Pay

	Green Energy		Wetlands Preservation	
	Coeff.	t-ratio	Coeff.	t-ratio
Intercept	.261	0.75	1.42	2.40
Natural log of $*A*	-.335	3.79	-.472	3.86
Provision point somewhat likely to be met	-.306	1.64	-.264	0.90
Provision point somewhat unlikely to be met	-.660	2.68	-1.02	3.30
Provision point most unlikely to be met	-.960	2.81	-.841	2.40
Hypothetical bias treatment	-.374	2.24		
Scope	.021	2.11	.00002	0.28
Income	.009	3.47	.009	3.07
$\chi 2$	44.74		57.46	
Cases	318		293	

Note: "Provision point very likely to be met" is the excluded category.

These results suggest that scenario rejection has an impact on willingness to pay. Individuals who do not accept the provision point scenario are more likely to say *no* to the bid amount. If these *no* responses reflect scenario rejection, then willingness to pay is biased downwards, as respondents do not reveal their true willingness to pay.

The results from the wetlands preservation model are similar. We find that the *yes* responses increase with decreases in the log of the bid amount and if the respondent is a conservation or environmental organization member (Table 3). Individuals who are less likely to believe that the provision point will be met are less willing to donate the bid amount. The coefficients on all dummy variables are negative with increasing magnitudes, with the exception of the last dummy variable category. We further test the equality of coefficients constraining the different dummy variable coefficients to be equal. Using the chi-squared test, we find a test statistic of 15.08, which is statistically significant at the 95 percent level, when constraining the coefficients between those who thought the provision point was somewhat likely to be met and those who found the provision point somewhat unlikely to be met. This result suggests that the crossover from optimism to pessimism in respondent perception that the provision point will be met has a significant effect on the likelihood of saying *yes* to the donation amount. The chi-squared test statistic is 0.25 when constraining the coefficients between the dummy on the category for those who found the provision point somewhat unlikely to be met and those who believed the provision point most unlikely to be met. The chi-squared test statistic is a statistically significant 4.68 when constraining the coefficient on the dummy variables for those who found the provision point to be somewhat likely to be met and those who believed that the provision point was most unlikely to be met. Again, these results suggest that the probability of agreeing to donate is influenced by the perception of others' donation rates.

These results further suggest that scenario rejection has a potential impact on the willingness to pay. Individuals who do not believe that the provision point will be met are more likely to say *no* to the bid amount. If these *no* responses reflect scenario rejection, then willingness to pay is biased downwards, as respondents do not reveal their true willingness to pay.

To understand how the perceived likelihood of meeting the provision point influences willingness to pay, we present five estimates where median willingness to pay is evaluated with all other independent variables at their mean (Cameron and James 1987, Cameron 1991). In the first column of Table 4 we report the willingness to pay of individuals for the green energy program and, in the second column, for the wetlands preservation program. In the first row, we report the more

Table 4. Willingness-to-Pay Estimates

	Green Energy	Wetlands Preservation
Means	$4.20 ($0.79, $7.61)	$24.59 ($8.38, $40.80)
Provision point most likely to be met	$11.90 ($0.10, $22.84)	$87.54 (-$10.26, $185.34)
Provision point somewhat likely to be met	$4.78 ($0.64, 8.92)	$48.50 ($22.55, $74.45)
Provision point somewhat unlikely to be met	$1.66 (-$1.01, $4.33)	$10.16 (-$2.29, $ 22.61)
Provision point most unlikely to be met	$0.68 (-$0.87, $2.23)	$15.31 (-$3.19, $33.81)

Note: 95 percent confidence intervals in parentheses.

standard willingness to pay evaluated at the means of all variables. This is the willingness-to-pay estimate that would correspond to a model where scenario rejection is not explicitly modeled. In the second row, we evaluate the willingness to pay using zero values inserted for all provision point dummy variables. This is the willingness-to-pay estimate associated with a scenario where all respondents feel it is most likely that the provision point would be met. The willingness-to-pay estimate in the third, fourth, and fifth rows is evaluated with the appropriate dummy valued at one and all others at zero.

The baseline median willingness-to-pay estimates from the green energy and wetlands preservation models are $4 and $25, respectively. In the green energy program the willingness to pay climbs to $12 if all respondents feel that the provision point is most likely to pass, and falls to only about $0.70 for respondents who feel that the provision point is most unlikely to pass. We find that in the wetlands preservation program scenario rejection also lowers willingness to pay. When the willingness to pay is evaluated for the category where respondents feel it is most likely to pass, the value is $88, which falls to $49 for the category where it is somewhat likely to pass. The willingness to pay then falls to $10 when evaluated at the somewhat unlikely to be met category, and climbs to $15 when evaluated at the most unlikely to be met category. The overall results of the willingness-to-pay exercise show that the differing beliefs in the likelihood that the provision point will be met influence the amount that individuals are willing to donate. The confidence intervals, however, overlap for all willingness-to-pay measures.

Conclusion

Although the provision point mechanism in voluntary contribution mechanisms to mitigate the free-rider problem has shown promise in the laboratory, it is not a familiar fundraising method. The potential lack of confidence in government agencies and nongovernmental organizations to successfully implement the provision point mechanism may lead to scenario rejection by respondents to CVM surveys.

Our results suggest that rejection of the provision point mechanism scenario may lead to reductions in the number of respondents who are willing to pay the bid amount. To the extent that the likelihood variable reflects scenario rejection and responses that do not reflect true willingness to pay, these results suggest that the provision point mechanism may lead to scenario rejection that biases willingness to pay downward. Our results run counter to the finding from experimental economics that the provision point mechanism reduces free-riding behavior by giving incentives to truthfully reveal preferences. In contrast, we find that respondents who feel that the provision point will not be met may answer with a protest *no* response. This runs counter to the Cadsby and Maynes (1999) result that found that high provision points led to more participation. It is also inconsistent with Norwood et al.

(2006), who find that in a hypothetical survey the provision point increases respondents' propensity to donate by a small amount.

Our results provide another interpretation of Champ et al. (2002), who compare willingness to pay in referendum tax, voluntary contribution, and voluntary contribution with a provision point mechanism payment vehicles in the context of the incentive compatibility of the willingness-to-pay questions. The additional number of respondents that reject the provision point scenario may bias willingness to pay downwards. If scenario rejection is controlled with a perceived likelihood variable, and willingness-to-pay estimates are adjusted to simulate scenario credibility, referendum tax and voluntary contribution with provision point mechanism payment vehicles may yield similar results. In other words, the differences found by Champ et al. (2002) may be due to scenario rejection and not incentive incompatibility.

Given that scenario rejection arises with the provision point mechanism in voluntary contribution willingness-to-pay surveys, the question becomes: What is the correct willingness-to-pay estimate? We offer one possible correction by calculating willingness to pay when all respondents believe that the provision point will be met. Another question that arises is: Do the benefits of using the provision point mechanism to mitigate the free-rider problem outweigh the cost of scenario rejection? Future research could address these issues. Future contingent valuation method applications should consider the use of follow-up and debriefing questions to (i) identify scenario features that cause respondent concern, and (ii) exploit these empirical relationships and adjust willingness-to-pay estimates accordingly. This is especially important in applications of the contingent valuation method that do not have the budgetary resources to pursue extensive focus groups and pre-tests.

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