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Conservative dichotomous choice responses in the active policy setting: DC rejections below WTP

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Abstract An important feature of a Contingent Value (CV) study is that researchers design a survey that guides respondents to answer dichotomous choice (DC) questions as if they represent once-and-for-all choices. Researchers frequently construct hypothetical markets to satisfy this condition; yet detractors assert that 'hypotheticality' leads inevitably to inflated DC responses. For active policy questions, however, some respondents may suspect that a CV informs an *actual* policy issue; so to reject a DC might induce the policy-maker to reintroduce the policy with a price reduction or a program improvement. With potential incentives to *deflate* a DC response when policies are active, we locate two types of respondents that represent two different incentives. One class is expected to be able to risk permanent rejection of a waiver from one automobile emissions inspection. This class more frequently rejects a DC value known to improve existing conditions. Another respondent class is expected to be risk averse to defeat of the program or to excessive delay. Predictably, these respondents more frequently accept a DC value that represents a known gain. Conservative DC responses have implications for the use of CV in active policy contexts, opening a role for theory to assist practitioners in these circumstances.

Keywords Contingent valuation · Referendum incentives · Multinomial logit

JEL classification C25, D78, Q58

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1 Introduction

Traditional game-theoretic notions for truthful preference revelation via referenda are well established (Zeckhauser 1973). The key incentive property driving the theory is the once-and-for-all decision condition that induces a voter to either accept or reject a proposal in accordance to their actual preferences. If researchers can make the once-and-for-all decision environment credible for a respondent in a contingent valuation (CV) exercise, however achieved, the same incentive property is expected to hold for the initial dichotomous choice (DC) question in a CV survey (Hoehn and Randall 1987). Efforts to establish the conditions under which the so-called take-it-or-leave-it (TILI) incentive holds for a CV survey have been the subject of on-going work. In contrast to notable concerns that survey conditions tend to favor *inflated* DC responses, this work introduces an important condition where DC responses are *deflated*, or conservative, and where respondents reject DC prices below their willingness to pay. Particularly, we consider the situation where a policy enjoys great public visibility and political currency. Respondents may suspect there is a real chance that the CV will influence the final outcome, which, we argue, can induce some respondents to reject Bids below their willingness to pay in CV surveys.

We find that respondents able to risk permanent defeat of a CV proposal or tolerate a long delay are much more likely to *reject a clearly advantageous Bid that reduces an existing user fee*. They do this presumably to induce a favorable revision of the proposal, even though the question appears *prima facie* as a credible TILI proposition asking the respondent to accept or reject the adoption of a real world policy that faces an imminent decision timetable. Local authorities must act right away or forego the opportunity, possibly forever or at least for a long time. We find that indicators consistent with risk-aversion correspond to those respondents who tend to avoid rejecting Bids that represent clear gains, presumably as they are less willing to risk permanent defeat or long delay while the less risk averse respondents more often reject clear gains.

In this work, we draw on the public choice and CV literatures. From public choice, real world referenda, presumably immune from strategic responses, frequently devolve into signaling games, bargaining games, or some variant under seemingly credible TILI conditions. In particular, Fort (1988) sharpens the findings of Romer and Rosenthal (1979b, 1982), all of whom debriefed voters and found that they assumed an issue could be revisited *even in the presence of a non-repeated bond issue*. Fort's 1988 hospital bond issue, for instance, failed and never returned.

As researchers frame CV surveys, evidence underscores the growing importance to keep in mind the real world conditions of the survey population to preserve the TILI property. The referendum frame, valued as a device to approximate TILI incentives by many, may not be the most robust vehicle in *every* political setting to establish this incentive within the survey, especially for active policy issues.

In the CV literature, concerns for *inflated* responses revolve around the initial dichotomous choice question whereas concerns for *conservative* responses revolve around follow-up questions, in both DC and continuous forms. We draw from studies on follow-up questions which suggest that follow-up CV questions betray the once-and-for-all nature of the exercise with the appearance of a second question, and thereby induce a conservative value response. We argue that the same influence can penetrate the initial DC response since policies tend to be cyclical and citizens robustly expect issues to be revisited, even when choices appear to be

once-and-for-all. If respondents conjecture that a CV survey could impact a real policy result (which might be revisited if rejected), this is sufficient to induce conservative responses to the initial DC question.

The now voluminous CV literature concerned with *inflated* value responses emerges from the hypothetical nature of the exercise—so-called hypothetical or non-zero background bias (Cummings et al. 1995; Schkade and Payne 1994). Efforts to de-bias numerical survey responses trace at least to Fischhoff (1982), who proposed to present respondents with a script that directly petitions them to be aware of certain response effects and then to avoid them in their answers. Cummings and Taylor (1999) applied this strategy to a CV experiment to deter hypothetical bias and found that their script lowered willingness to pay (WTP) estimates. Important to our study, Bulte et al. (2005) obtained the same result with an abbreviated script that simply suggests that the CV result might influence policy.

We interpret Bulte et al. (2005) and Cummings and Taylor (1999) in the context of Brown et al. (2003), who showed through Bid-by-Bid comparisons that scripts tend to curb inflated acceptances for the higher Bids. They found little measurable influence on acceptance rates to other Bids, suggesting that hypothetical bias is often a manifestation of range bias. This implied link between hypothetical bias and range bias for very high bids is not new (Ash et al. 2004), especially when respondents are knowledgeable consumers (Lusk 2003), a condition more likely to hold for active public questions.

Consistent with these results, then, the function of a script for those influenced by hypothetical *cum* range bias may be a simple alert that directs those facing high bids to revert back to their baseline expectations, expectations in place before receiving that Bid. Taken together, one interpretation of the works of Ash et al. (2004), Brown et al. (2003), Bulte et al. (2005), Cummings and Taylor (1999), and Lusk (2003) is to suggest that the plausible baseline expectation of respondents is to presume that the CV informs a real decision with some non-zero probability. If respondents also believe that a defeated proposal might be reconsidered with a non-zero probability, the two conditions together are enough to generate conservative DC responses, even if those subjective probabilities are quite small. This is a concern especially in the context of a real policy. If hypotheticality *per se* if found to be a weak influence absent inducements such as high bid values, the true challenge for researchers may be to carefully manage expectations that a defeated issue might be revisited and revised.

Incentives in follow-up CV question experiments offer some guidance. Bohara et al. (1998) conducted a series of tests to argue that follow-up questions are deflated out of a concern to contain project costs. Cost concerns arise if follow-up questions signal the presence of a sequential bargaining game over delivery price, which violates TILI to induce conservative responses. If the two expectations [that the results (1) might be used and (2) might be revised if rejected] exist prior to the follow-up, even prior to the survey, this would affect response incentives to a DC question. This reinforces advice to attend closely to the real world respondent context.

In this tradition, Sugden (2005) suggests that surveys yield more reliable results when they approximate the most plausible market. This is informative to cases where the researcher is limited by time and by resources, a common feature of research conducted in an active policy environment. The policy environment for this study resists the referendum analogy. Citizen referenda as a public policy tool is politically divisive in this community, corroborated in pre-survey work for this survey population. Moreover the 'market' is governed by a public entity that sets a fixed uniform price for a

mandated automobile emissions inspection. An offer to exempt new vehicles from one inspection at a price other than the existing fee was a viable policy option, but there was a short window to enact the policy. The more we attempted to mimic what seemed to characterize the likely environment following policy adoption, the higher were our response rates and the lower were rejections or declarations of response protests. Careful pre-survey vetting seemed to better align real world conditions to the survey, which also avoided response anchoring in the DC question around the existing fee, as conjectured by Harrison (2006), among others. Rather, these knowledgeable respondents recognized the real once-and-for-all conditions of this policy, which worked in our favor. Yet a surprising result persisted: rejection by some respondents of clear gains and with evidence that marginally conservative responses prevail across the bid array.

We elicit DC responses to an issue that is active on the policy agenda. We observe that some respondents reject known gains. Subsequent tests suggest that this response pattern is not unique to these prices. Rather, bargaining or signaling appears to be robust even if only a few recipients exercise this prerogative. Moreover, the policy under review is a credible once-and-for-all proposition in reality, something we reinforce throughout the survey.

The active policy environment imposes a special burden on the analyst to motivate the once-and-for-all structure in the CV survey, not because respondents know too little about the issue, but because they know a lot and may even engage in policy advocacy. Great effort should be expended to secure buy-in of the once-and-for-all condition in a survey, though there may be limits to this capacity in the real world. This expected limit, we argue, arises naturally from the active policy environment where public policy issues that capture widespread attention operate through a policy cycle that naturally includes setbacks and revisions.

2 The survey and policy issue

Currently, all automobile owners in the Greater Atlanta region (13 counties) submit to a mandatory air quality emissions test for which they pay a $25 inspection fee *per vehicle*. The Clean Air Act requires that most states in the U.S. perform these tests on every car every other year. Fleet managers comprise a class of automobile owners that oversees particularly well-maintained vehicles that almost always exceed emissions standards during the first years of operation. The Georgia Department of Natural Resources (DNR), seeking funds to finance other compliance programs, sought to exempt fleet owners from their first emissions test and to extract a fee for the privilege. As a result, fleet owners save time and DNR acquires new resources. DNR currently pays $18 to inspectors and retains $7 from each inspection. If fleet owners pay $30 for a waiver, however, the entire fee would accrue to DNR, representing more than a four-fold gain.

While DNR held the direct authority to admit the waiver, this authority was known to be transitory. The plight of Atlanta air quality compliance was (is) front-page news; and local fleet owner associations gather monthly to educate members on technical and legal issues facing their automobile fleets. *All* associations visited by the Air Quality Lab at the Georgia Institute of Technology, an affiliate of this study, placed the fee waiver option on their monthly agendas *more than once* during the 18 months preceding this survey—a time when local air quality non-compliance meant certain U.S.

Environmental Protection Agency (EPA) regulatory control. An already established waiver would be grandfathered following EPA regulatory control if no air quality harm could be shown; but upon entry of the EPA the burden of proof changes. Since any new provisions would have to show clear environmental benefit, the EPA decision to invalidate the waiver meant that it did not yet meet the standard for a proven environmental benefit. Our valuation question underscores this political reality, familiar to most fleets, to reinforce the one-shot nature of the exercise. Those who participated in one-on-one interviews and focus groups prior to the survey emphasized the urgency to adopt a waiver quickly.

Our CV survey asks fleet owners to react to a DC Bid to purchase a voluntary emissions waiver.[1] This establishes that no inspection is required until the fourth year of ownership. If fleet managers attach any non-negative value to the time and effort to satisfy the existing regulation, they must be willing to pay at least $25 to acquire an inspection waiver—the existing fee. The survey elicits DC responses over a Bid range from $10 up to $120. Bids equal to $10, $15, and $20, of course, represent unambiguous gains to the respondent who currently pays $25 for an inspection. *Nearly 25 percent of respondents who were offered these gains rejected those Bids*. By telephone, we debriefed 16 of those who rejected clear gains[2] and each reported that they knowingly and deliberately rejected a known gain. This is discussed below.

The final survey (located in the Appendix) was reviewed by six researchers, anonymous to us, drawn from a list of 28 authors whose works had appeared within 30 months of our survey and had included a CV survey. Concerns fell into three categories: two researchers did not trust mail surveys; one thought we had over-stated and another under-stated the once-and-for-all nature of the DC. Four anonymous researchers considered the presence of a follow-up open-ended question to be a powerful validity threat to the DC question, by far the most impassioned concern. A related fourth concern is that respondents 'read ahead.' This motivated a comparative test of DC responses, some with and some without the follow-up question.

Respondents are drawn from a list of 5000 suspected fleet managers identified by the Georgia DNR in the fall of 1997. Two focus groups of fleet managers (9 persons in all) and 12 one-on-one phone interviews preceded two mail pre-tests of 75 known fleet owners each (one focus group and six one-on-ones preceded each pre-test). In all, 67 out of 150 pre-test surveys were returned. A shorter survey (20 questions) is the final survey reviewed, chosen as it delivered a much larger response rate (38 out of 75 versus 29 out of 75).[3]

We administered our final survey to 1100 names on the fleet manager list. The mail survey consists of 18 multiple-choice questions and two valuation questions. The first CV question is a DC question that asks the respondent to accept or to reject a given

[1] It proved difficult to adapt the referendum analogy to the survey, even hypothetically. Georgia, like many states, requires majority General Assembly approval before submitting any issue to a statewide referendum.

[2] 88 persons were contacted by phone (pre-tests, final survey de-briefings, and follow-ups to non-respondents). Of 43 bid rejecters contacted (27 from bids > $25, 16 from bids = 25), 28 acknowledged that they would "not change" their answer but would "seriously" reconsider accepting the bid if conditions changed (12 to bids > $25). 41 supported the program as "sensible policy," and 36 in an open question of concerns noted the need to contain project costs. Focus groups and one-on-one interviews were drawn from persons or members of associations known to us.

[3] One-on-one interviews and focus groups found the final survey more effective. Few thought the issue would die forever but the final survey led them to consider strongly how long it would take for the waiver to reappear if tabled.

Bid price for the inspection waiver. A second OE value question asks respondents to articulate the highest dollar amount they are willing to pay to acquire the waiver. A split sample with and without the open-ended follow-up is performed over a range of prices ($10, $15, $20 and $25).

Three hundred sixty-two of the 1100 companies (33 percent) responded to the two initial rounds of surveying (n = 412 after adding a non-respondent survey). Follow-up registry examination of non-respondents determined that 42.5 percent of the names on the list were not fleets,[4] consistent with other surveys of this population; so the adjusted autumn response rate is estimated at 57.3 percent. That rate is close to our pre-survey summer response rate of 51 percent on this instrument and consistent with lower response rates in summer. In a random sample of 65 non-respondents (failing twice to respond), we faxed or re-mailed the same survey with the same Bid and achieved a 77 percent response rate (50/65), stopping at 50. Only two significant differences arose: non-respondents had smaller fleets and attached a higher value to their time; but we found no difference in open-ended WTP for fleets their size.

3 Incentives

A number of specific games can be subsumed into the incentives—bargaining games, signaling games, reaction function structures, and one-shot TILI games. All produce similar respondent results *vis-à-vis* credible or less credible one-shot opportunities. Specific game models assume more explicit objectives on the part of a responsible political body (e.g. surveying entity) that supplies the program. We present the general model below to focus on the side of the game of interest—the survey respondent.

At first glance, respondents rejecting a clear gain (rejecting a per vehicle price for an inspection exemption below today's $25 charge) may seem irrational, especially if the program appears as a one-shot game. But the behavior is consistent with empirical findings of voting choices from the public choice literature (Shapiro and Sonstelie 1982; Romer and Rosenthal 1979a, 1982; Fort 1988).

Consider a baseline utility characterized by the expenditure function $e(P^0,Q^0,U^0) = e^0$, where P, Q, and U refer to price, quantity, and the utility provided by a public service improvement, respectively. The CV offers the public service improvement from Q^0 to Q^1, which corresponds to a new expenditure function $e(P^0,Q^1,U^0)$, or e^1. Since $Q^1 - Q^0 > 0$, total willingness to pay (WTP) for the change in service is $e(P^0,Q^0,U^0) - e(P^0,Q^1,U^0)$, or $e^0 - e^1$ for shorthand.[5] Of course, the referendum advertises that service at a non-zero Bid (BID), for a payoff that supports an expenditure function $e^j = (\text{Bid},Q^1,U^j)$ that maps to U^j. U^j may differ from U^0. For example, if agents expect WTP > BID to be a credible outcome, $U^j > U^0$.

We do not assume that respondents believe that the CV must influence policy: it may or may not. *What is required only is that a respondent maintains some non-zero*

[4] The tax recording authority observes privacy firewalls and cannot share information; yet there is a registry at the Department of Motor Vehicles of fleets if examined on-site. 89 out of 155 firms were qualified fleets from a random draw. 37 had been fleets within the last 5 years and 29 were not registered as fleets over the last 5 years. Among survey respondents on the list of 155 names, all were located on the registry as active fleets.

[5] It is useful to keep in mind that a service improvement implies that $e^1 - e^0 < 0$. e^1 accounts for the lower expenditure required to retain U^0 if $Q^1 - Q^0$ is added to the existing package of acquired goods.

probability that the CV might impact a real outcome; and if a respondent rejects a proposal, the respondent allows some non-zero chance of revision. Critically, program revisions are not single point outcomes but an array of lower prices below the Bid rejected. We detail the full expected benefits of each response under different take-it-or-leave-it assumptions. In each case, we solve for a critical bid, Bid_c, where the expected benefits of rejection are equally preferred to the expected benefits of acceptance. Having isolated that indifference condition, if indifference leads to a position where $\text{Bid}_c < \text{WTP}$, then $U^j > U^0$ for the expenditure function, $e^j = (\text{Bid}, Q1, U^j)$, supported by the critical indifference Bid. For that case, this means that the condition that induces $\text{WTP} - \text{Bid}_c$ is strictly preferred to the baseline condition e^0.

Prima facie, we expect risk aversion to mitigate yea-saying in order to avoid approving a program that is too expensive; and we expect risk aversion to control conservative DC responses to avoid defeating a beneficial program. Yet these incentives, informed by behavior in political settings, are incomplete.

Accept payoff: Some uncertainty exists in the *effectiveness* of an acceptance to resolve a real policy question; the exercise may be hypothetical. Consider, then, the expected payoff of acceptance:

$$\text{Expected Payoff (Accept)} = \left\{\left[1 - \pi\,(BID)\right] \cdot [WTP - BID]\right\} + \left\{\pi\,(BID) \cdot e^0\right\}. \quad (1)$$

$1 - \pi\,(BID)$ is the respondent attributed probability that the referendum is truly decisive and $\pi\,(BID)$ is the probability that the exercise is hypothetical. So there is a π chance that the agent accepts a BID and receives only her baseline utility (e^0); and there is a $1 - \pi$ chance that the response affects a real result. Drawing on Filimon (1982), wherein an agenda-setting bureau spends the amount approved to establish a provision level, Q^1, we locate the expected payoff of accepting a Bid that affects policy at WTP—BID: $e^0 - e^1 - \text{BID}$.

For completeness, we permit on-going goodwill to be important to a policy-maker. For generality, then, π contains BID as an argument; or BID itself influences the subjective probability that a choice will be decisive, $[\pi\,(BID)]$. Bendor et al. (1985) show that agents who accept large prices or reject low prices influence policy-makers more than can be explained by the filter of passing a benefit-cost test. The premise is that responses signal WTP but also some measure of political irritation. If respondents expect a policy-maker to, say, avoid alienating hunters with excessive permit fees or fleets with unreasonable waiver prices, then rejection conveys some mix of low WTP and an objection to the price/quantity package presented; so π contains BID as an argument.

Reject payoff: The expected payoff of rejection allows the respondent to expect that the defeated proposal could be revised. Fort (1988) found that voters assume an issue could be revisited *even in the presence of a non-repeated bond issue.* They simply do not find the TILI offer fully convincing.

Any strict utility improving re-consideration inside a {Q, BID} set is permitted. Agencies can suggest a lower price or a better product. Without loss of generality, improvements are cast as expected price changes for Q^1-Q^0. To capture this expectation, consider a subjective cumulative probability density function (pdf) over all reasonable price revisions. Using Eavey and Miller (1984), we set the bounds of integration for revision from zero to the last rejected price (BID) and integrate the pdf from zero to the rejected BID to represent plausible revisions. The expected payoff of rejection becomes:

Expected Payoff (REJECT)

$$= \int_0^{BID} [WTP - P]\left[pdf\,(P|BID)\right] dP + e^0 \cdot \left\{1 - \int_0^{BID} pdf\,(P|BID)\, dP\right\} \quad (2)$$

Rejection invites an array of revisions (P) under the integrated probability density function $\int_0^{BID} pdf\,(P|BID)\, dP$. Again, BID conditions this subjective probability, or $pdf\,(P|BID)$. The respondent expects to receive baseline utility e^0 in two ways: by *permanent* rejection of a real decision or by a truly hypothetical exercise. Together these occur with the probability $1 - \int_0^{BID} pdf\,(P|BID)\, dP$.

These dual motivations for rejection have two implications.

1. The chance of favorable program revision provides some inducement to reject Bids that represent real gains, even if that chance is very small.
   Yet rejection is risky; so,
2. Respondents who care greatly for a proposal or are very risk averse avoid inviting permanent defeat or a long delay; so respondents reject bids above WTP.

This makes it difficult to observe rejection motives from DC responses. For a formal incentives proof, we trace indifference to the Bid relative to the value of WTP to see if that indifference condition for Bid_c is more or less preferred to baseline conditions, e^0.

Indifference (take-it-or-leave-it case): The critical indifference BID, labeled BID_c, is located at the position where the expected payoff of acceptance (Eq. 1) is equally preferred to the payoff of a rejection (Eq. 2). Since indifference is calibrated only as a preference condition, we simplify the choice by comparing two states of the world at BID_c: the condition WTP—BID_c supporting $e^j(Bid,Q^1,U^j)$, and the baseline utility represented by e^0. In each case, we examine if indifference supports a more preferred, utility improving, condition for Bid_c. An incentive compatible game would yield no utility improvement, or respondents are indifferent only if $BID_c \approx$ WTP; or WTP - BID_c supports an expenditure function, $e^j(Bid,Q^1,U^j)$ such that $U^j = U^0$. If WTP > BID_c, $e^j(Bid,Q^1,U^j)$ is more preferred than $e(P^0,Q^0,U^0)$, or e^0. Solutions compare conditions as more or less preferred, not as monetary identity. [6]

Proposition 1 *If the expected chance that an issue will not be revisited is unity, it is a dominant strategy to accept Bids where $BID_c = WTP$, or $e^j(Bid,Q^1,U^j)$ is just as preferred as $e(P^0,Q^0,U^0)$.*

For indifference under the TILI condition, the expected chance that an issue might be revisited is zero (or reasonably close), which translates into $\int_0^{BID} pdf\,(P|BID)\, dP \approx 0$. Indifference is defined in *utility* preference equivalence between the payoffs between that states of the world generating Bid_c and e^0 from Eq. 1 and 2. By simplification:

$$WTP - BID_c \approx e^0. \quad (3)$$

This suggests that the point of critical indifference, BID_c, is WTP. The value of this game at Bid_c simply returns a payoff to the respondent that is equally preferred as the

[6] Two states of the world arise because the exercise may affect policy or be hypothetical; so we compare states of the world by more or less (or equally) preferred. If the survey was known to affect policy, then expected payoffs considering potential revisions following rejection can be articulated as a net monetary valued gain: WTP – BID.

original e^0.[7] So, TILI is sufficient to assure truthful revelation as a dominant strategy to:

Reject the public service improvement if BID > WTP,
Accept the public service improvement if BID < WTP, or
Be Indifferent if BID_c = WTP. *QED*

Indifference (general case): TILI may be a strong assumption in an active policy setting.

Proposition 2 *If the chance of revising a policy is not strictly zero, indifference generally gives rise to the indifference condition that* $BID_c \leq WTP$; *or* $e^j(Bid, Q^1, U^j)$ *is at least as preferred as* $e^0(P^0, Q^0, U^0)$: $U^j \geq U^0$.

$$\left\{\left[1-\pi\left(BID\right)\right]\cdot\left[WTP-BID_c\right]\right\}+\left\{\pi\left(BID\right)\cdot e^0\right\}$$
$$\approx e^0+\int_0^{BID}\left[WTP-P\right]\cdot\left[pdf\left(P|BID\right)\right]dP \tag{4}$$

Collecting terms, BID_c is characterized by

$$WTP-BID_c\approx e^0+\frac{\int_0^{BID}\left[\left(WTP-P\right)\cdot pdf\left(P|BID_c\right)dP\right]}{\left[1-\pi\left(BID_c\right)\right]}.$$

We now show that WTP - $BID_c \geq e^0$.

$$\text{Since }\left[WTP-BID_c\right]\approx e^0+\frac{\int_0^{BID}\left[WTP-P\right]\cdot\left[pdf\left(P|BID_c\right)\right]dP}{1-\pi},$$

and the payoff $\int_0^{BID}\left[WTP-P\right]\cdot\left[pdf\left(P|BID_c\right)\right]dP\geq 0$, then WTP - $BID_c \geq e^0$; or equivalently:

$$BID_c \leq WTP.\ QED$$

Corollary Proposition 2 If $\int_0^{BID}\left[WTP-P\right]\cdot\left[pdf\left(P|BID_c\right)\right]dP > 0$ *strictly, then* $BID_c < WTP$.

If $\int_0^{BID}\left[WTP-P\right]\cdot\left[pdf\left(P|BID_c\right)\right]dP > 0$ strictly, the respondent is no longer indifferent when BID = WTP. From Eq. 4, it follows that, WTP − $BID_c \succ e^0$. This means that rejecting some price strictly below WTP is more preferred than baseline utility; and it becomes a dominant strategy to:

Reject if BID > WTP,
Accept if BID < BID_c, and
Be Indifferent if BID = BID_c, where $0 \leq BID_c <$ WTP.

[7] This does not exclude the potential for a *hypothetical* proposal to be incentive compatible if respondents answer from the hypothesis, or thought experiment, that this is a one-shot opportunity. In that case, technically, indifference forces WTP–$BID_c \approx \pi$(WTP–BID_c), where π=1 (hypothetical); WTP = BID_c. This formalizes what seems a paradox in Hoehn and Randall (1987) that simply notes that is not inconsistent that TILI can be a "real" response perspective while retaining hypotheticality of the exercise, but this relies critically on meeting exacting survey conditions.

For agents (perhaps only a few) that face prices in the range $BID_c \leq BID < WTP$, it is optimal to reject a BID given there is some chance of getting a better deal even though the agent is willing to pay that BID.

At BID = WTP exactly, respondents realize a payoff that erodes all expected benefit. It is trivial to show that a risk neutral agent would deliver a conservative DC response at some point as BID approaches WTP. The level of risk aversion then determines how far BID_c falls below WTP; so

BID_c *represents the risk-adjusted indifference value.*

$WTP - BID_c$ represents the monetary value a respondent assigns to accept the risk in the chance that the proposal can be revised. Critically, as only Bid_c is observed, the distance $WTP - BID_c$ will be a function of true WTP and some willingness to risk permanent rejection. Among subsets of respondents who have similar WTP values and similar levels of risk aversion, Bid_c would correlate with indicators of WTP, generally masking any conservative response strategies, absent an external price anchor. This means:

1. Conservative DC responses obey regular price responsiveness; and
2. Absent a non-zero anchor to assess baseline utility, such as an existing user fee, a conservative DC response is not generally observable and cannot be distinguished from an incentive compatible DC response.

On-going debate on a public issue increases the likelihood that a referendum or another value elicitation process does not end discussion forever. The robustness of this expectation will require on-going experimentation; but for active environments, respondents may suppose broadly that she (or a credible respondent delegate) will have another opportunity to review the program; and this makes it rational to record a conservative DC rejection, even if the policy decision timeline is quite short.

Due to the presence of an observable baseline—the existing $25 fee, we can test some hypotheses:

(a) Some rejections to clear gains occur at prices strictly below $25 (consistent with hypothesis 1);
(b) Acceptance rates follow a sigmoid decline over price that commences with bids that represent clear gains (consistent with hypothesis 2);
(c) Indicators consistent with relative risk neutrality attach to rejecters of clear gains more so than to rejecters of higher prices (consistent with hypothesis 3); and
(d) Observable differences exist between rejecters to a known gain and rejecters to small positive prices (consistent with hypotheses 1, 2 and 3).

4 Results

The four hypotheses above can be translated to a set of testable expectations. We also test for two response anomalies that might explain our results: (1) we examine if the presentation of offers of a BID below the existing fee itself leads to conservative responses by exploring possible structure changes in responses above and below these prices; and (2) we test for influences of a follow-up CV response to induce a conservative DC response by comparing surveys with and without a follow-up question.

Testing expectations a and b, we find that of 165 respondents who faced dichotomous choice Bids equal to $10, $15, $20 or $25, 41 (or 24.8 percent) rejected those

Table 1 Acceptance rates of bid prices

Starting price	Acceptance rate (n)	Starting price	Acceptance rate (n)
$10	81% (21)	$50	34% (29)
$15	76% (25)	$60	28% (27)
$20	75% (32)	$75	27% (21)
$25	68% (22)	$90	15% (23)
$30	65% (26)	$100	5% (19)
$35	63% (24)	$120	21% (24)
$40	45% (20)		

prices. 13 respondents rejected $25, and 28 others rejected Bids strictly lower than the existing fee (or known gains). This is not surprising since pre-survey results found 6 out of 19 persons rejected known gains.

Table 1 records acceptance rates for Bids up to $120 and generally shows an orderly decline. To prevent bias from experimental variation to the survey, Table 1 excludes respondents from the test group without a follow-up question (13, 25% facing these prices) and from the non-respondent survey (3, 20% facing these prices). Results show:

19% rejected $10;
24% rejected $15;
25% rejected $20 and
32% rejected $25.

One explanation is that respondents were simply confused and rejected Bids equal to $20 or less under the premise that they were really rejecting, say, $45 (or $20 + $25 fee). If *most* respondents were confused, we would expect to see acceptance rates that spike at $30 or $35, relative to $25. Yet 19 percent rejected $10 while 37 percent rejected $35. So, any confusion that a $10 Bid meant $35 may lie with only a few rejecters.

We called 22 persons who rejected these Bids: 16 out of the 41 from the field survey and all 6 from pre-surveys. *All 22 respondents who rejected a known gain acknowledged that they were aware that they had rejected a known gain, that the price was $25 and that they had not 'added' to the $25 base* (or rejected a $35 *total* Bid when presented a $10 Bid). This included de-briefings of 5 rejecters and 4 accepters who faced Bids less than or equal to $20 six months later, weeks prior to EPA entry. We reviewed for these respondents their prior survey responses by stating; "Several months ago you rejected (accepted) adding $XX to the existing $25 emissions inspection fee that would waive you from your first inspection test," where $XX is the nominal bid value. All asserted, even interrupted us, that they had not accepted or rejected, say, a $35 *total* Bid when responding to a $10 Bid, and underscored that they had intended to accept (reject) a $10 Bid at face value, in no sense 'added' to a $25 base. Significantly, none wanted to change her DC response even though the policy environment had progressed to where federal control of greater Atlanta's air quality policy apparatus was imminent within weeks. The reactions of rejecters to known gains in the field test were stable relative to comments out of 2 focus groups and 12 one-on-one interviews nine months earlier; respondents wanted a fair share of the gains DNR would obtain at their expense but also wanted DNR to rule immediately before EPA intervened.

4.1 Test of framing effect by offer of a known gain

Another hypothesis is that conservative DC responses appear solely because the survey offers a price at or below the current vehicle inspection cost. That offer may introduce, or frame, the suggestion that an unusually good deal is possible from the public agency in a way that prices above $25 do not provide. If so, we expect recipients of Bids strictly above $25 to be immune from this effect. We start with a logit model to examine if any strong structural differences appear between rejecters to prices above and below the $25 baseline undetected by the smooth decline in acceptance rates in Table 1 to test for this framing effect and to examine expectation b (that acceptance rates follow a sigmoid decline over prices across the Bid array).

4.2 Logit results

Table 2 records the results of a logit model from the entire sample to predict the characteristics of Bid acceptance. This also forms the basis of a censored logit estimate later. The dependent variable is "Accept" where Accept = 1 if the respondent answers 'Yes' to a Bid, otherwise Accept = 0. Bid acceptance is regressed against the natural log of Bid price (LNPRICE) to conform to the censored logit estimator. Next, bid acceptance is explained by an expression that the time saved is the primary benefit of the waiver (TIME_SAV, Question 20) as opposed to clean air or fear of failing the test. Other explanatory variables deal with reports that the waiver is truly worth no more than the final open-ended (OE) amount offered (WORTH, Question 19) or that the program should not cost more than the OE value reported (COST). Finally, we consider TIME (Question 13), a report of the amount of time needed to complete the test, and FUTURE (Question 12), the report that new testing rules will make the time required to complete a test even longer in the future, to explain bid acceptance. All variables are expected to *positively* influence bid acceptance except for the natural log of Bid price (LNPRICE).

Table 2 results conform to theory. Coefficients on LNPRICE and expressions that the time saved is the primary benefit (TIME_SAV, Question 20) are highly significant and with the correct signs. We also compare WORTH and COST (Question 19). Concern that the program should COST no more than the final OE value offered is significant to predict DC bid acceptance. This suggests that cost concerns might not only affect a follow-up response (Alberini et al. 1997; Burton et al. 2003) but may motivate a DC response as well. WORTH, however, is not a significant predictor of DC acceptance; nor is FUTURE. [8] Finally the time necessary to complete the test (TIME) is significant at the 95 percent confidence level as expected.

The predicted logit equation fits the familiar S-pattern of Bid rejection: a slow increase in rejection up to $35 precedes a steep increase in expected rejections from $35 to $50 around the median, followed by a leveling off between $50 and $90. This fitted equation also matches the raw data presented in Table 1. The presence of Bids that represent known gains does not produce obvious deviations from a fluid decline

[8] The FUTURE variable was created out of focus group experience. Three large entities expressed this concern while smaller entities confided that the real time loss was getting to the testing site. One large entity (an automobile dealer) claimed that the time for the new test rules would determine if they bought the test machines themselves to use on site. Even so, FUTURE passes a Lagrangian Multiplier test for inclusion in the estimated equation.

Table 2 Logit equation to predict bid price acceptance*

	Coefficient Estimate	T-statistic
LNPRICE	−1.674	−7.78
TIME_SAV	1.788	5.17
WORTH	0.466	1.42
COST	0.808	1.98
TIME	0.404	1.92
FUTURE	0.220	0.98
Constant	3.626	4.46

* n = 347, twenty item non-responses.
* Percentage of Correct Prediction = 78 percent
* McFadden Pseudo R^2 = .27

in acceptance rates across Bids (Table 1) or obvious distortions in the logit model (Table 2).

As a final check that it is only the offer of a Bid at or below the existing $25 fee that induces conservative DC rejections, we conducted a series of tests to ascertain if reactions to Bids below and above $25 induce structural change in the estimated logit equation. In particular, we tested prices individually and in groups, adding dummy variables to Table 2 regressors common in examinations of anchoring effects in double-bounded DC formats (Whittington 1990; Green and Tunstall 1991; Cameron and Quiggin 1994).[9] Except for Bid equal to $100, where range effects appear to introduce a significant structural shift in the logit estimator, no individual price passes a likelihood ratio (LR) test.[10] That is, no other individual price (including $25) significantly explains differences in Bid acceptance between the *unrestricted* model with all individual dummy price variables and a *restricted* model when the price of interest was removed. For the DC responses, this suggests no obvious censoring at the $25 market price as found elsewhere (Murphy and Stevens 2004).

4.3 Follow-up question framing test

Another possible framing effect centers on the possibility that conservative DC responses are due solely to the presence of a follow-up value question. We need to examine if the presence of a follow-up CV question exerts any unusual influence on the initial DC responses.

Given the high rates of rejection to "bargain basement" prices, one hypothesis is that the survey itself induces conservative DC responses by betraying a TILI structure with a follow up question. The logic is that any follow-up question signals that the once-and-for-all condition is not operating. If the DC question represents a one shot, TILI proposition never to be revisited, then why bother with a follow-up? While this has explained different acceptance patterns in some follow-up DC questions and appears to explain observed effects on open-ended follow-up responses, the question here is whether a mail survey, where respondents can read ahead, might exert the same influence on the DC response. While numerical survey responses outside the CV environment do not show this "reading-ahead" effect, the CV environment can be unique. Indeed our survey reviewers considered this a serious validity threat without some test for the effect.

[9] We follow tests for joint significance of price dummy variable on the right-hand side of the double-bounded WTP model for starting point bias tests in CV studies. Alberini et al. (2005) highlights empirical issues of this approach.

[10] Also a variable noting Bids strictly above or below Bid = $25 was determined to be exogenous.

Table 3 Comparing acceptance rates* (with and without follow-up)

	N	Acceptance Rate	Std. Deviation	Std Error Mean
With Follow-up	113	.74	.44	4.13E02
Without Follow-up	52	.75	.44	6.06E02

*N = 165 here as these observations represent bids at $10, $15, $20 and $25

To test that possibility, we administered a split sample of surveys. 113 persons received a survey with a follow-up open-ended question (though 2 did not answer that question) and another 52 persons received a CV survey without the follow-up open-ended question. Table 3 shows the result.

Critically, no statistical difference in rejection rates among known gains exists between the two formats. A follow-up WTP question does not appear to induce a greater percentage of respondents to reject known gains. Instead, the rates of rejection are virtually identical between formats. If rejection of a known gain appears because there is a violation of the TILI condition, it is because respondents in this policy environment appear to hold this expectation *ex ante*, prior to receipt of the survey. To further underscore the real one-shot nature of the waiver opportunity in the existing policy environment, we deliberately draw attention to imminent EPA entry in the CV question (Question 15). While the result is standard in survey research literature that elicits numerical responses, CV could be different. For those who find anchoring effects in double-bounded CV explained by the same incentives as OE, the test would be expected to apply equally to those circumstances.

This collection of tests supports the first two expectations: (a) the existence of rejecters to clear gains below $25 and (b) the rate of acceptance follows a sigmoid decline over price, commencing with bids that represent clear gains. We now test for expected differences among rejecters: (c) lower risk aversion attaches to rejections to clear gains than to other prices and (d) observable differences exist between rejecters to known gains and to small positive prices.

4.4 Multinomial logit estimate of rejecter differences among bid groups

To reiterate, we observe respondents who reject a known gain. As Tables 2 and 3 attest, we cannot attribute this to structural differences caused by the presence of prices below $25, to unusual DC response patterns, or to a lack of understanding regarding the baseline price. In this section, *we restrict tests to those who reject their Bid to see how they differ*. We partition rejecters into three Bid categories: rejecters to know gains at $10, $15 and $20 (comparison group); rejecters to small prices at $30 and $35 (Group 1) below median acceptance; and rejecters to larger prices greater than or equal to $40 (Group 2). In this multinomial logit comparison, we expect rejecters to known gains and to small prices to look very similar except for specific predictions, such as the size of the fleet operation.

The multinomial logit model presented here is a standard multiple group comparison. It examines three different divisions of the population of rejecters. Since respondents do not choose the price they receive, cross correlation over the categories that give rise to the independence of irrelevant alternatives (IIA) violations by Hausman and McFadden (1984) is not an issue. Also, our focus on rejecters only in

this section reflects the information available. In the Incentives section above, Bid rejection is hypothesized to reflect receipt of a Bid above WTP but also the desire to signal the policy-maker to improve the program, meaning two latent behaviors are indicated by one observed choice; or we cannot extract *generally* the information to distinguish between these two rejection motives by consulting information from Bid acceptances. Since theory suggests that the variables influencing WTP also predict signaling, it is difficult to define *a priori* separate distributions for each motivation in a random utility model (RUM), especially if the unobserved influences affect both motivations. Unlike imputed correlations in a mixed logit, nested logit, or probit class estimator, cross correlations between rejection motives are latent. Since our goal is to examine observed rejecters to a known gain and to distinguish them generally from other rejecters, misspecification identified by Hensher and Greene (2001) and by Train (2003) can be avoided if we adopt the multinomial logit estimator tied to the choice actually observed as the recommended default estimation strategy (Louviere 2000).

Across the three groupings, we expect few variables to differ across groups. Indeed, numerous differences would tend to reject the theory of conservative DC responses across the Bid array; so rejecters to known gains should look similar to other respondents generally, especially rejecters to low bid prices. [11]

Yet, we do expect two differences to mark rejecters to clear gains. The first is an indication of risk aversion, in particular evidence consistent with a large exposure by the entity to evaporation of the waiver opportunity. The second difference emerges out of the reason respondents choose to explain not offering a higher WTP statement in their OE response.

For the first, we expect rejecters to low prices to represent disproportionately larger entities that are highly specialized in fleet service activities *per se*. These firms secure a larger number of employees hired directly to attend to fleet maintenance and operations, measured by FTEMPLOY. We expect high FTEMPLOY entities to avoid rejecting a known gain and for reasons explained below, we also expect large FTEMPLOY entities to have a low WTP overall. *So, we expect FTEMPLOY to be significantly different between group 1 and the comparison group rejecting clear gains; but not different than group 2.*

We also expect rejecters in the comparison group of rejecters to known gains to cite more frequently the need to maintain project COST as the reason for their CV responses, as it hardly makes sense to declare that a known gain is not worth it.

Theory predicts that larger fleets would have a lower willingness to pay per unit for each inspection waiver. They are more able to reduce costs (especially labor costs, administrative costs, and management costs per unit) by volume testing. Yet some larger fleets are more diversified and able to reject a bid below willingness to pay. Others are more exposed to the waiver's effects and their choice to employ more persons to fleet activities reflects their specialization in fleet activities. So it is the number of employees rather than the number of fleet vehicles likely to define this distinction between larger entities delivering strategic rejections to a known gain and those unwilling to risk rejection of a known gain, but will reject small positive prices. For example, automobile dealerships have large numbers of fleet vehicles, yet only

[11] TIME_SAV exhibits virtually no variance over responses, suggesting that it is time, not clean air or fear of test failure, that drives the waiver's value. The few instances (8 reported fear of test failure; 2 reported improvements in air quality) of other choices fall disproportionately among rejecters. But, we have no theory to expect any difference among the rejecter groups.

a few persons devoted exclusively to fleet activities. By contrast, rental car agencies are fully dedicated to the operation of an active fleet; they may have fewer cars, but more persons devoted to fleet services explicitly. We expect the risk of losing a waiver for more exposed organizations to restrain strategic responses: their per unit transactions costs may be quite low; but their exposure to cost items that affect fleet activities directly lends to a more risk averse position to protect against the possible disappearance of a beneficial inspection waiver program.

We also expect conservative DC responses to prevail across the bid array. In support of findings earlier, we expect rejecters to known gains to cite more frequently COST as a moderating influence on their open-ended WTP statements. Yet we expect the influence of this distinction to become stronger as bids increase. This is because we expect rejecters to small prices still to include many conservative respondents. *So we expect the comparison group rejecting known gains to adopt a significantly higher rate of COST reports, though differences with group 2 are expected to be much stronger than group 1.*

A weaker expectation is that rejecters to small positive prices (group 1), being more risk averse than the comparison group, are likely to express less confidence in future emissions tests and anticipate that tests will become more difficult in the future. A positive coefficient on FUTURE is an expectation for testing conditions to worsen. *Empirically, FUTURE may record some difference for rejecters to small prices, but FUTURE is expected to record a stronger influence for group 2 than for group 1.* Again this is because we expect rejecters to small prices still to include many conservative responses.

The theory presented above is largely consistent with findings in the multinomial logit on Table 4. Results conform to expectations that FTEMPLOY would differ in group 1 ($Z = 1.72$) but not in group 2 ($Z = 0.83$) and that COST would become more significant as Bids increase (from $Z = -0.87$ to $Z = -2.34$). Also a trend toward greater difference as bids increase for FUTURE (from $Z = -0.75$ to $Z = 1.29$) is weakly indicated, but not significant in group 2. Equally important, none of the variables expected to remain stable among rejecter classes shows any significance.

That COST fails to realize expectations in group 1 may be due to high correlation to FTEMPLOY among rejecters; yet the trend as bids increase is more important. That COST differences and FUTURE differences would become more pronounced as Bids increase because rejecters include more persons truly unwilling to pay those higher bids is consistent with a robust and a continued strong presence of conservative DC rejections to waiver exemptions costing only $5 and $10 above the baseline fee. On-going conservative DC strategic responses among rejecters to small prices is the reason we expect these differences as bids increase, though we still expect a significant difference for COST in group 1. Nonetheless other evidence reinforces the presence of on-going conservative DC responses across the Bid array. There is remarkable internal consistency among responses to valuation questions given *external* wage data in the state that indicates that DC responses fall below the wage costs of those employees that respondents indicate complete these tests and the reported time required for these persons to then complete the tests. Responses regarding time to complete a test (Question 11) and the value of time relative to the inspection fee

Table 4 Multinomial logit estimates by rejecter class (0 = comparison group)

Group	Variable	Coefficient Estimate	Z-statistic
1			
	TIME_SAV	−0.41	−0.66
	COST	−0.68	−0.87
	TIME	−0.48	−0.95
	FUTURE	−0.42	−0.75
	FTEMPLOY	0.06	1.72
	Constant	−0.07	−0.08
2			
	TIME_SAV	0.38	0.88
	COST	−1.19	−2.34
	TIME	0.06	0.19
	FUTURE	0.46	1.29
	FTEMPLOY	0.02	0.83
	Constant	1.06	1.67

*Bid = $40 in group 1 (n = 14), not 2, did not measurably alter any z-statistic
*N = 29 for Comparison Group, N = 20 for Group 1, N = 138 for Group 2 (Total N = 187)
*Log likelihood = −126.21
*McFadden Pseudo R^2 = .06

(Question 13) are very consistent with subsequent open-ended WTP responses. This coherence of time reports is consistent with marked strategic valuation responses.[12]

Overall, the results of the multinomial regression are very consistent with predictions of the incidence of conservative DC responses across the Bid array. We complete our examination of differences between rejecters to known gains and rejecters to small prices (group 1) by using variable-by-variable tests.

4.5 Further comparison of rejecters at different price levels: variable-by-variable tests

As a final check, we conduct variable-by-variable tests unencumbered by regression collinearity for corroborating evidence of different responsiveness to cost and for supporting evidence of differences in risk aversion between rejecters to known gains and small prices. Thirty-four pairwise variable-by-variable tests (t-tests or chi-square

[12] Censored logit estimates helps gauge the magnitude of conservative responses on WTP estimates. The censored logit estimates of mean and median WTP (Cameron 1988) locate a mean estimate of $58 and a median estimate of $38. This value is *externally* consistent with the value of time in Georgia for various professions (US Bureau of Labor Statistics 2000). Using Question 11 reports of the time ranges required to complete the test, the median value for time is approximately $12.80 per hour, consistent with the low side of wages for full-time laborers employed in automotive maintenance (*Ibid.*, $15.31/hr), those respondents more likely to use maintenance employees (from Question 10) to complete inspections. Similarly the $27 per hour figure seems marginally conservative *prima facie* as it accounts for the 27%-34% minority of respondents that accepts $50, $60 and $75, given who completes the test. These are workplaces with smaller fleets and higher wage jobs, such as attorneys, developers, consultants, technical sales persons or high wage dealership mechanics - all with wages from $56/hr to $110/hr (*Ibid.*). Also, survey value responses pass a number of rigid internal consistency checks between the time required to complete a test, the relative burden of time compared to the inspection fee, which completes the test, and open-ended WTP reports. Conservative response behavior appears roughly consistent with externally comparable values, yet it does not appear excessive. It does not appear that respondents are either confused by the survey or are unfamiliar with the existing air quality regulations that affect them. They value TIME highly and report so with a high degree of consistency *vis-à-vis* their DC and subsequent OE responses.

as appropriate) reveal that the similarities *between* all rejecters of \$10, \$15, and \$20 *and* rejecters of \$30 and \$35 Bids dominate differences (only 5); and all conform to theory. Differences between rejecters to prices above \$40 and rejecters below \$40 are more prominent (9) and include variables associated with WTP.

COST now differs significantly between rejecters to small prices and to known gains as expected (χ^2 statistic = 2.73, at the 93 percent significance level), an indication that respondents signal the desire to lower the waiver price when rejecting a known gain and that they knew this is what they had done. Further, confirming the multinomial regression results above, FTEMPLOY significantly differs between rejecters of known gains and small prices but TIME_SAV, WORTH, and TIME do not. Only three other differences out of 34 variables appear, described below.

First, those who reject \$30 and \$35 more likely to report that the inspection fee rather than the time required to complete a test is the greater burden (Question 13, *t*-statistic = 2.33). This is another indication of a class of rejecters unwilling to pay an extra \$5 or \$10 but also unwilling to risk rejecting a known gain. Second, those who declare "Integrating Fleet Services into the Overall Organization Mission" in Question 7 as a central duty represent a larger share of those rejecting small prices (χ^2 statistic = 5.2, at the 98 percent significance level) but not clear gains. In both cases, persons who cite the \$25 fee as more costly than the time to complete the inspection or those who report that they focus on "Integrating Fleet Services into the Overall Organization Mission" are likely engaged deeply in fleet operations. The result is consistent with entities that, like FTEMPLOY, organize resources to reduce labor costs of emissions inspections but are still reluctant to risk eliminating the waiver opportunity.

A third difference arises from those who report instead that "Managing Employee and Labor Relations" reflects their primary duties. These respondents represent a larger share of those who do reject known gains (χ^2 statistic = 3.8, at the 95 percent significance level). We expect respondents who deliver a conservative DC response to possess a greater capacity to absorb the risks of delay or of defeat into a wider set of economic activities. A report that their work is less related to fleet management tasks *per se* is consistent with risk-taking and the observed risk taken (i.e. rejection of a known gain).

Delivery of a conservative DC response is the product of an ability to endure a delay or even an eradication of the waiver program. Some large entities (some quite exposed to this cost) are technically able to adopt strategies to contain the internal costs of the current emissions inspection. Variables consistent with risk aversion correspond to those fleets that refrain from conservative DC responses. Other large fleets enjoy scale economies sufficient to spread risks over numerous activities and to send a signal to policy-makers to lower the cost of the waiver by delivering conservative DC responses that raise the chance of delay or permanent defeat.

5 Conclusion and future research

In this work, we establish a credible value baseline for a contingent good from which to compare responses. We carefully elicit from each respondent the features they consider most beneficial. Put simply, more than 25 percent of those who receive offers of a clear gain reject those gains; and the phenomenon does not appear to be limited to those who receive these prices. Overall, rejecters to Bid prices in the Bid range from \$10 to \$40 look similar, which suggests conservative DC response behavior affects

responses throughout the data set. No clear anomalies or benchmark shifts in the rate of Bid acceptance are noted at the $25 baseline or at the first positive price ($30), nor do tests for structural change in Bid acceptance at these prices show positive results until Bid price equals $100. Rather, the decline in acceptability of Bids appears orderly. Those with the most to lose and who expend the greatest direct effort to lower inspection costs currently protect known gains and go on to reject relatively small prices. Those whose priorities (and cost abatement technology) lie elsewhere may pay more for inspections on a per unit basis but still disproportionately represent rejecters to known gains and continue to reject small positive prices. This hints to a pattern of conservative response behavior that runs through the data set, one source of which may be the active policy environment and the immediacy of the topic. Therefore, it is not easy to dismiss conservative DC responses to survey-induced frames to explain the behavior observed here.

Conservative DC response behavior is consistent with some attempt to signal a desire for a favorable revision to the regulator and to risk permanent rejection in order to get a better deal; yet fleet managers with whom we spoke and fleet organizations that we visited voiced an urgency to adopt a waiver, given the imminent entry of the EPA authority at the expense of the Georgia DNR. We emphasize this feature in the contingent value question to reinforce a real world and plausible once-and-for-all choice where rejection carries a real risk. After accounting for differences in risk aversion *between* respondent types, price responsiveness remains to explain the variation in Bid rejection *within* each type.

We do not expect this conservative response behavior to appear in every contingent value experiment. But its appearance in this exercise is instructive as it (1) forces a re-examination of incentives theoretically and (2) empirically illustrates the power of incentives to influence reports of WTP. We explicitly extend the reach of this concern for incentives to an external condition that could be difficult to extricate from the survey environment — an active political environment, especially if the survey population is well-informed and may include some persons highly engaged in the political process (e.g. advocacy) as was the case here.

Conceivably, these results may encourage the use of CV for immediate, active, and highly visible policy issues where the policy-maker demands a quick turnaround from the analyst. With enough time and resources, the conservative DC responses we witnessed might be controlled; but CV experiments can be expensive and the analyst may enjoy only quite limited time and resources for the analysis. In the absence of an immediate remedy, a more cost effective solution is to be aware of possible complications and then to treat the concern theoretically in the context of the given survey — in this case an active policy setting.

One obvious extension of this work is to examine follow-up value responses as a source of added information to infer WTP. In this exercise, both the DC and OE responses exhibit very similar range effects (reflected in the high acceptance of $120) and cost effects. To extend the theory presented here to an open-ended follow-up may prove useful.

Another extension is to assess the robustness of conservative DC response behavior in those active and familiar policy environments where respondents may be engaged as policy advocates. Arguably, this is an especially important area of study as the active policy environment may be the venue where policymakers most value willingness to pay information, meaning the phenomenon examined here is more likely to appear when the results are most likely to be used.

Appendix: Survey instrument

This survey requests some basic information about you and the type of organization you represent. The survey also seeks your reactions to a policy proposal under consideration by the Georgia Department of Natural Resources. We seek your honest responses for the best results. There are no right or wrong answers. Your responses will be used in our evaluation of the policy proposal.

1. Are you the owner or chief executive officer of the organization you represent? Circle One.

   YES NO

2. Which category best describes the type of organization you represent? Circle One.

   Private Enterprise Private, Non-Profit Enterprise Public Agency

3. Which task consumes the most time in your daily schedule. Check Most Significant.
   - — Coordinating Day to Day Vehicle Use (check-in / check-out)
   - — Strategic Planning of the Role of Fleet Operation in your Organization
   - — Supervision of Automobile Servicing and Purchases
   - — Personnel Management in Fleet Operations
   - — Tasks unrelated to Fleet Operations
4. How many years have you been:
   in your current position — yrs.
   with your current organization — yrs.
   engaged in Fleet management activities — yrs.
5. How Many Full-time Equivalent persons are employed in fleet operations? Circle One.

   0–4 5–9 10–19 20+

6. How many vehicles are in your fleet? Circle One.

   0–9 10–19 20–39 40–75 75+

7. Which are the chief concerns that you perceive to be most important to your supervisor or chief executive in managing your vehicle fleet ? (answer for yourself if you are the owner or chief executive of your organization). Check the Two most important.
   - — Maintaining Good Records of Vehicle Use
   - — Integrating Fleet Services into the Overall Organization Mission
   - — Managing Daily Availability of Fleet Transportation Services
   - — Controlling Overall Vehicle and Equipment Costs of the Fleet
   - — Controlling Overall Labor Costs in Fleet Operations
   - — Managing Employee and Labor Relations
8. What percentage of vehicles in your fleet are 1997 or 1998 models (’96 model or newer)? Circle One.

   0–24% 25–40% 41–60% 61–80% 81–100%

9. What percentage of vehicles in your fleet received a vehicle emissions test in the last 12 months? Circle One.

0–24% 25–40% 41–60% 61–80% 81–100%

10. Which position best describes the person in your organization who typically completes the task of obtaining an automobile emissions inspection? Circle One.

Self Mechanic Contractor General Laborer Designated Vehicle User*

* Only persons not employed directly in fleet operations who drive the vehicle.

11. How much time in total do you expect to be consumed in coordinating an inspection for one vehicle? (Include management time to coordinate and assign the task, paper work to track the task, driving time to and from the inspection site and the time spent at the inspection site).

Less than One hour Between One to Two hours More than Two hours

12. Which do you think is more likely: that emissions inspections will consume more time or less time for your organization to complete in the near future? Circle One.

More Time in Future About the Same Less Time in Future

13. In your opinion which cost most burdens your organization in completing an emissions test:

Charge for the Emission Test Time Required to Obtain the Test

Automobile emissions testing in the Greater Atlanta Area changed in October 1996. The program tests more vehicles, going back to the 1975 model year, and in more counties. Also emissions standards are stricter and the testing equipment is more sensitive.

14. Do you expect improvement in Air Quality from comprehensive emissions testing? (Circle One).

No Improvement A Little Improvement A Large Improvement

This new program requires new resources. Greater emissions test failures on higher emitting, older vehicles will increase costs to review the repairs intended to lower vehicle emissions on those vehicles which fail an emissions test and then to re-test them.

One way to fund the program is to permit fleet owners to pay a fee to "opt-out" of their first emissions inspection test. The fee is paid during re-registration of that vehicle during the second year of ownership or at the first required emissions test. If the owner purchases an opt-out fee at re-registration, the first required emissions inspection would not occur until the end of the fourth year of ownership. Owners retain the right to operate under existing rules and to continue to obtain an emissions inspection.

The up-coming regional air quality review means that this is the last chance to adopt this proposal before federal emissions testing rules, that do not allow a waiver, govern any changes in testing practices.

We want to know how valuable an emissions test opt-out on new vehicles is to your organization.

15. If you could purchase an emissions test opt-out exempting you from one auto emissions inspection when you renew your vehicle registration, would you be willing to pay $ XX for a fee to exempt each new fleet vehicle from one vehicle emissions test.

YES NO

16. IF YES, what is the largest amount you would pay for one emissions test waiver?

$—.

IF NO, how much would you be willing to pay to acquire one emissions test waiver?

$—.

17. How would your response to question 15 change if the emissions test opt-out were not completed during registration of your vehicle, but required instead a separate transaction? My Response to 15 would: (Circle One)

Change from Yes to NO (go to 18) Change from NO to YES (go to 19) Not Change (go to 19)

18. If Changing from YES to NO above, would the amount entered in question 16 become:

A Little Smaller Much Smaller Very Much Smaller

19. Which response below best describes your view: In determining how much I am willing to pay for each emissions test waiver, I decided not to pay more than indicated on question 16 because: Check One.
    - — Given all of the other costs of our operation, we cannot afford to pay any more than indicated to obtain an emissions test opt out.
    - — Considering the benefits of the emissions test waiver to our organization, it is not worth more than indicated to obtain the emissions test opt out.
    - — If all fleet owners pay this amount for each emissions test opt-out, the amount collected should be enough to pay for the proposed program.
20. Which aspect of the emissions buy-out suggestion is most important in your responses above? Check One.
    - — Time saved from the emissions test exemption
    - — Avoids the possibility of Failing an Emission Test
    - — Improvement in Air Quality

Thank you for your response. Our work is greatly improved by your thoughtful consideration.

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