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On the treatment of protest responses induced by perceived corruption in stated preferences studies

William F. Vásquez
Fairfield University

Carlos E. de Rezende
Universidade Estadual do Norte Fluminense

Abstract

Despite the prevalence of protest responses induced by perceived corruption in stated preferences surveys, consensus on how to treat those responses remains elusive. This study proposes a counterfactual approach to mitigate corruption-induced biases in willingness-to-pay estimates. Specifically, we present a debiasing prompt that asks protesters to reconsider their choice within a hypothetical context of institutional transparency. Using these modified protest responses, we provide willingness-to-pay estimates relatively free from protest bias. Applying this method to a contingent valuation study of cultural property in Brazil, we find a median willingness-to-pay 80% higher than the baseline. This suggests that standard valuation methods may undervalue public goods in contexts of high perceived corruption.

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Contact: William F. Vásquez - wvasquez@fairfield.edu, Carlos E. de Rezende - crezende@uenf.br.

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1. Introduction

Protest responses, defined as the rejection of a valuation scenario for reasons other than the individual's true value for the proposed good or service, are often a concern in stated preferences studies, particularly in contexts of high levels of perceived corruption. For instance, Vásquez et al. (2022) and Vásquez et al. (2025) found that a substantial share of negative responses to contingent valuation questions are primarily motivated by public distrust in local institutions in Brazil (21%) and Colombia (29%), respectively. In their study of preferences for urban heritage trees in China, Chen and Hua (2015) report that 76.8% of sampled respondents rejected to make any payment, and 58.4% of those respondents based their decision on their distrusting of the government. Correspondingly, some stated preferences studies have found that respondents prefer nongovernmental organizations rather than government agencies to manage the proposed program in Ecuador (Zambrano-Monserrate 2024), Guatemala (Vásquez et al. 2024), and South Africa (Manhique and Wätzold 2024), to name a few. In these contexts, corruption perceptions are relatively high (Transparency International 2025).

It is common practice to identify protesters using follow-up questions on reasons for rejecting the proposed good or service, and then exclude them from the analysis (e.g., Vásquez et al. 2022; Vásquez et al. 2025). However, by excluding protesters, researchers may introduce selection biases into value estimates, especially if protesters and other respondents are different from each other in factors related to their willingness to pay (WTP) (Frey and Pirscher 2019; Lo and Jim 2015). Statistical detection of protest responses using, for instance, latent-class models has also been proposed (Cunha-e-Sá et al. 2012; Frey and Pirscher 2019). However, as Meyerhoff et al. (2012) argue, those models can fail in identifying respondents who do not protest, and can yield small classes of respondents with low protesting. Consequently, latent-class models may be unreliable to estimate true values.

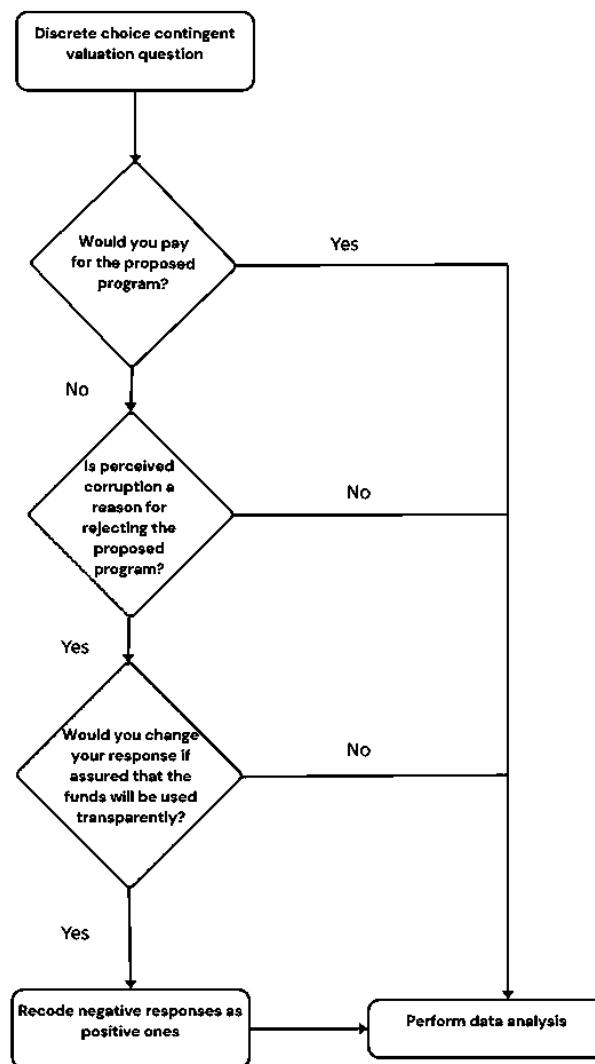
Researchers have also used entreaties to reduce protest responses prior to eliciting WTP values. However, as Atkinson et al. (2012) show, that approach may not be completely effective. In two studies implemented in the UK, they found that the number of protest responses decreases only by approximately one-third when entreaties are used. Despite the prevalence of protesters, and the availability of multiple approaches, there is no consensus on how to identify protesters and how to treat their responses (Johnston et al. 2017).

This study proposes a counterfactual approach to treat protest responses induced by perceived corruption, and presents a proof-of-concept application using a case study of preferences for cultural property in a high-corruption context (Campos dos Goytacazes, Brazil). Using follow-up questions, we first identify protesters and then we present a debiasing prompt that asks respondents to reconsider their choice in a hypothetical context of institutional transparency. Similar to the certainty-correction approach used to mitigate hypothetical bias (Blumenschein et al. 2008; Champ et al. 2009; Ryan et al. 2017), we recode the protest responses as positive if protesters indicate they would change their voting choice in such alternative context. This approach aims to correct for undervaluation induced by perceived corruption while avoiding the selection bias inherent in removing protest responses (Frey and Pirscher 2019; Lo and Jim 2015) and the potential inaccuracy of latent-class models in identifying non-protesters (Meyerhoff et al. 2012).

2. Methodological Approach

Figure 1 illustrates the approach we propose to treat protest responses induced by corruption perceptions. First, we developed an online survey to elicit local preferences for cultural property in our study site. We framed the CV question as a referendum on a Cultural Property Fund (CPF) aimed at maintaining and restoring the city's cultural property (see Appendix A). We chose an increase in property taxes as payment vehicle to finance the proposed fund, randomly varying it across respondents from 100 to 500 Brazilian Reais. Following Vásquez et al. (2024), Manhique and Wätzold (2024), and Zambrano-Monserrate (2024), the CV question included a split-sample treatment on the CPF administrator: 1) the municipal government; 2) an interinstitutional committee with representatives of the local government, universities, nongovernmental organizations, and the civil society; and 3) the base of comparison where a fund administrator was not specified.

Figure 1. Proposed Approach to Treat Protest Responses Induced by Perceived Corruption



Then, consistent with contemporary guidelines to design CV surveys (Johnston et al. 2017), we ask respondents who rejected the proposed fund about their reasons to do so. Perceived corruption was one of the multiple response options listed in that question (see Appendix A). Next, conditional on reporting perceived corruption as their primary motivation to vote against the CPF, we present a debiasing prompt asking respondents whether they would change their vote if they could be certain that the CPF would be used transparently. We used the response to this question to recode negative voting responses as positive ones if applicable.

To illustrate this approach, we administered a CV survey in Campos dos Goytacazes (Brazil). Respondents were recruited via social media and personal invitations in public areas (e.g., malls and bus stations) between August and October 2025. A total of 237 residents answered our survey, which was administered online using Qualtrics.

3. Empirical Modeling

Voting choices were analyzed using logit models with the following specification:

$$LN\left(\frac{P}{1-P}\right) = \alpha LNTAX + X\delta + \varepsilon \quad (1)$$

where P is the probability of voting in favor of the proposed fund, and $LN(TAX)$ is the natural logarithm of the tax increase presented in the CV scenario. X is a vector of binary indicators depicting our split-sample treatment, LOCALGOV and COMMITTEE. α and δ are coefficients to be estimated under the assumption that the stochastic error term ε follows a logistic distribution. We used the estimated coefficients, δ and α , to derive the tax increase the median resident is willing to pay (WTP) for restoring and maintaining the city's cultural property:

$$WTP = e^{-(\bar{X}\delta/\alpha)} \quad (2)$$

where $\bar{X}$ is a vector of the average of covariates.

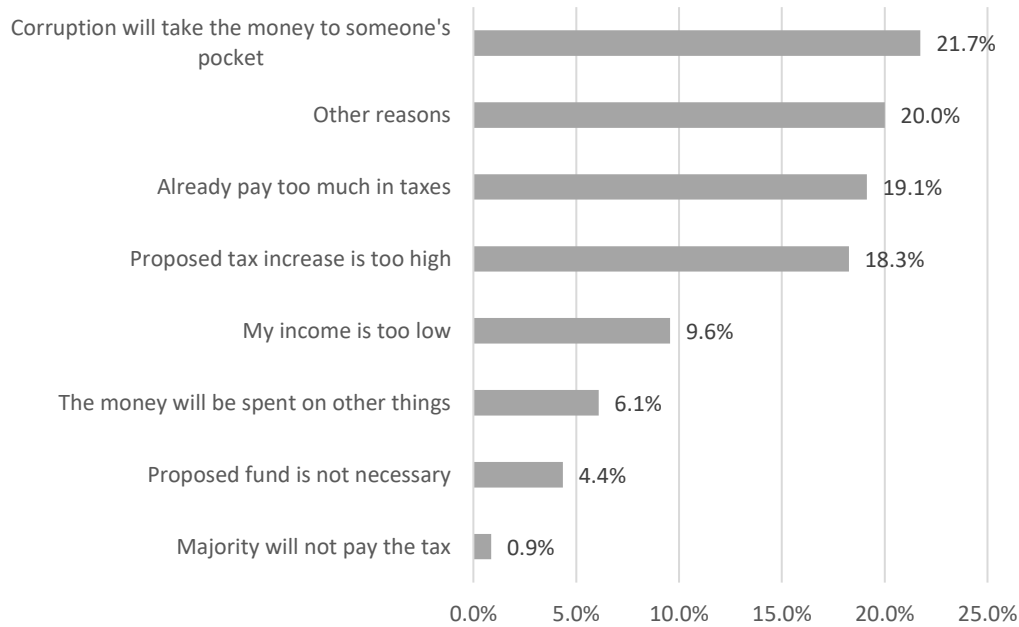
4. Results

Out of the 237 respondents, 48.5% voted against the proposed fund. As shown in Figure 2, perceived corruption was the primary reason for voting against the CPF, reported by 25 respondents of the 115 who rejected it. Of them, 16 residents reported that they would change their vote if they could be assured that the fund will be administered with transparency.

Table I shows marginal effects from three logit models estimated to investigate the influence of the bid and type of administrator presented in the CV scenario on voting responses. Model 1 is estimated using the raw data. Model 2 excludes protesters who are primarily motivated by perceived corruption to reject the proposed fund, a common practice in CV studies. Model 3 includes all respondents, but it recodes the negative responses of those who would change their vote if they can be assured that the proposed fund will be used transparently.

Coefficients of management indicators are statistically insignificant across all models. This suggests that residents' willingness to pay is not influenced by the type of administrator shown in the CV scenario. LNTAX is statistically significant (at 10% level) in Model 3 only. As a robustness check, we included factors such as income, household size, age of the respondent, and whether the respondent is the household head. Those factors were not statically significant. Hence, we chose a more parsimonious model specification to derive WTP estimates.

Figure 2. Reasons to Vote Against the Proposed Cultural Property Fund



Notes: n = 115.

Table I. Logit Models of Voting Responses (Marginal Effects)

	Model 1: Raw Data	Model 2: Excluding Protesters	Model 3: Recoded Data
LNTAX	-0.061 (0.055)	-0.079 (0.058)	-0.097 (0.054)*
MUNICIPAL	-0.094 (0.079)	-0.087 (0.083)	-0.059 (0.079)
COMMITTEE	-0.010 (0.080)	0.020 (0.082)	0.041 (0.078)
Observations	237	212	237
Count R ²	0.549	0.575	0.595
AIC	333.440	293.495	325.514
BIC	347.312	306.921	339.387

Notes: Robust standard errors are reported in parentheses. * implies statistical significance at 10% level.

We use estimated logit coefficients to derive WTP values. When protesters are included and their response is left as provided, the median respondent would pay almost R\$331 (US\$61.49). When voting responses are adjusted to reflect respondents' willingness to change their answer under the assumption of transparency, the median WTP increases to R\$596 (US\$110.71). The WTP estimated using the subsample that excludes protesters is the highest (R\$662 or US\$123), although it is not statistically significant.

Table II. Willingness to Pay Estimates in Brazilian Reais (95% Confidence Intervals)

	Model 1	Model 2	Model 3
Median WTP	330.82*	661.99	596.26*
Upper Bound	703.89	1,711.15	1,266.59
Lower Bound	-42.24	-387.17	-74.06

*Notes: * implies statistical significance at 10% level.*

5. Discussion and Conclusions

Perceived corruption among potential providers can induce protest responses in stated preferences studies. However, the literature remains inconclusive regarding the optimal treatment of these responses (Johnston et al. 2017). This study addressed this gap by proposing a counterfactual elicitation framework to determine whether protesters motivated by perceived corruption would support a program under a hypothetical context of institutional transparency. This approach identifies whether a protester has a latent WTP that is being suppressed by perceived corruption, allowing for WTP values that are relatively free from corruption-induced protest bias.

In our application, we found that 10.5% of our respondents rejected the proposed CPF primarily due to corruption perceptions. However, 64% of these protesters reversed their decision when presented with a transparency-contingent debiasing prompt. Using these adjusted responses (Model 3), the estimated median WTP was 80% higher than the baseline (Model 1). This indicates that WTP values may be significantly underestimated in the presence of corruption perceptions.

Compared to the common practice of excluding protesters, our approach avoids selection biases inherent in reducing the sample (Frey and Pirscher 2019; Lo and Jim 2015). We found that the median WTP estimated using the subsample of non-protesters (Model 2) is approximately 11% higher than the WTP estimated using the proposed approach (Model 3), which can be attributed to the exclusion of protesters. That exclusion may also explain why the median WTP of non-protesters was not statistically significant, as it reduces a sample that was already small.

Additionally, by using the full sample, our approach avoids the risk of producing small classes often seen in latent-class models (Meyerhoff et al. 2012). The variation in WTP estimates across the three models demonstrates the analytical utility of our approach, providing a more nuanced reflection of voter preferences.

As a proof-of-concept study, our findings are subject to limitations. The use of a snowball sampling strategy and a relatively small sample size imply that our results primarily serve as a methodological demonstration rather than a representative WTP estimate. The lack of statistical significance in some logit coefficients further stresses the need for larger-scale replications to evaluate the effectiveness of our counterfactual approach. In future studies, researchers would do well to present the debiasing prompt to respondents who rejected the proposed program due to “other reasons”. In our study, that option was used by 23 respondents, seven of whom expressed corruption perceptions in the open-ended textbox rather than in the closed option provided. Despite these limitations, our approach to treating protest responses induced by perceived corruption is a promising tool that warrants further attention in the stated preferences literature.

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Appendix A. Contingent Valuation Scenario and Follow Up Questions

In Campos dos Goytacazes, many cultural properties are deteriorated. Some are at risk of being destroyed. Restoring these cultural properties requires a substantial amount of money that the municipal government currently does not have. Suppose a Cultural Property Fund is being proposed and will be subject to a vote. This fund will be used to restore and maintain cultural properties of Campos dos Goytacazes.

Treatment A: The fund will be administered by the municipal government.

Treatment B: The fund will be administered by an inter-institutional committee with representatives from the local government, universities, non-governmental organizations, and other civil organizations.

Treatment C: Not specified.

If this proposal is approved, there will be an increase of **R\$[100/200/300/400/500]** in your property tax per year. If you rent, assume that the tax increase will be added to your rent each year. Remember that this tax increase implies a reduction in your budget for goods and services such as food, medical care, etc. The referendum would need a majority vote (more than 50%) to be approved. Would you vote in favor or against the proposed fund?

- In favor
- Against

[Conditional on voting against the CPF] What is the main reason why you would vote against the proposed fund?

- The proposed tax is too high
- My income is too low
- I already pay too much tax
- This fund is not necessary
- This money will be used for other things
- Corruption will end up putting the money in someone’s pocket
- The majority will not pay the proposed tax
- Other reasons. Which ones?

[Conditional on voting against due to perceived corruption] If you could be assured that the fund would be used transparently and honestly, would your vote change in favor of the fund?

- Yes
- No