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Oaths and hypothetical bias

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ABSTRACT

Results from experiments using an oath to eliminate hypothetical bias in stated preference valuation are presented. An oath has several potential advantages relative to other methods for reducing hypothetical bias. Our empirical results suggest that with an oath, mean hypothetical payments are not different from mean actual payments and that when controlling for experimental participants' characteristics using regression analyses, the oath eliminated hypothetical bias.

1. Introduction

Stated preference methods, such as contingent valuation and choice analysis, have become standard tools for economic valuation. In cases where policy makers are interested in estimating the value of non-market goods with passive use (existence) values, stated preference methods are often the only technique available. However, empirical evidence suggests that since stated preferences are hypothetical in both the payment and provision of the good in question, hypothetical bias may often occur wherein individuals state they would pay more in a hypothetical situation than they pay in an actual situation (Murphy et al., 2005a; List and Gallet, 2001). Since hypothetical values can exceed actual payments by a factor of two or three, this bias can often be a significant problem. Consequently, many economists have sought to develop methods for removing hypothetical bias from stated preferences (Murphy et al., 2005a). Yet, the techniques that have been devised to reduce or eliminate hypothetical bias such as cheap talk, uncertainty adjustment, prediction and "real talk" do not work well in all circumstances (see Murphy and Stevens, 2004). The purpose of this paper is to investigate a new and different approach recently developed by Jacquemet et al. (2009, 2010, 2013); the use of oaths for eliminating hypothetical bias.

The next section briefly reviews some of the problems associated with the two most commonly used methods of reducing hypothetical bias; cheap talk and uncertainty adjustment. Potential advantages of oaths are then discussed along with results from laboratory experiments suggesting that an oath may be an important alternative for eliminating hypothetical bias in empirical valuation.

1.1. Background

Of the methods that have been employed to reduce or eliminate hypothetical bias, *cheap talk* and *certainty scale calibration* have received the most attention. Cheap talk attempts to eliminate hypothetical bias by using a script in which the hypothetical bias problem is described to respondents who are then asked to consider this problem and respond as they would in a real situation. Cummings and Taylor (1999), who first presented cheap talk concluded that it eliminated hypothetical bias, but later research shows that this is not always the case (List, 2001; Aadland and Caplan, 2003; Murphy et al., 2005b; Blumenschein et al., 2008; Lusk, 2003; Poe et al., 2002).

Several approaches for dealing with uncertainty have also been used to avoid or adjust for hypothetical bias. The most common approach involves the use of follow-up certainty scales, which ask respondents to indicate how sure they are that they would actually pay the amount, or vote, as they just indicated they would. For example, Champ et al. (1997) used a 10-point rating scale with one labeled very uncertain and ten labeled very certain. Several studies

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including Champ et al. (1997), Blumenschein et al. (1998) and Little and Berrens (2004) show that use of follow-up certainty scales can eliminate hypothetical bias; however, the certainty scale must be calibrated. For example, when Champ, et al. (1997) included only those who gave a 10 on their certainty scale as positive responses, hypothetical bias was eliminated. On the other hand, Ethier et al. (2000) and Poe et al. (2002) found that a cut-off of 7, and Champ and Bishop (2001) found that a cut-off of eight was needed to produce equivalent results. Thus, the selection of the cut-off is arbitrary.

An alternative approach, which is the focus of this paper, is to interpret CV responses as an implicit contract between the researcher and the respondent. This was first suggested by Harrison and Kristrom (1995) and labeled minimum legal WTP (MLW). MLW may be especially useful because it is transparent, easy to communicate to laymen and based on an intuitive contractual notion. The contract used in this paper is an oath developed by Jacquemet et al. (2009, 2010, 2013) which is a signed promise designed to enhance commitment and honest behavior. Jacquemet et al. (2009, 2010, 2013) hypothesize that when a participant makes a promise in a hypothetical situation they will be more inclined to provide an accurate unbiased answer.

Several studies in social psychology support this view. For example, Kulik and Carlino (1987) found that parents who promised to give their children all prescribed antibiotic medication were more likely to do so. Wang and Katzev (1990) show that people who signed a contract to recycle paper actually recycled much more than those who did not sign. And Joule et al. (2007) found similar results when people promised to use high energy efficient light bulbs. Consequently, we believe that lack of a moral contract in traditional contingent valuation studies may be a major cause of hypothetical bias. However, other factors, such as uncertainty, may be involved as well and therefore the extent to which hypothetical bias is removed by an oath is an empirical question. Yet, there is relatively little empirical evidence about the influence of oaths or contracts on CV hypothetical bias.

Galiano (2008) conducted a preliminary unpublished study utilizing an oath with the Becker-DeGroot-Marschak (BDM) auction mechanism in a closed referendum experimental setting. Each treatment had three stages: a practice stage, a hypothetical payment and a real payment stage. One group was given the treatment with a promise/contract for truthful behavior while the other group did not receive a contract. Results suggested that the contract (promise) eliminated the difference between hypothetical and actual WTP.

The other empirical studies that examined the effect of an oath on hypothetical bias were conducted by Jacquemet et al. (2009, 2010, 2013). Jacquemet et a1. (2009), who noted that real-world courts ask witnesses to take an oath to tell the truth and nothing but the truth, tested whether an oath eliminates hypothetical bias in a second price auction. Their oath, which respondents were free to sign or not, simply asked bidders to swear that they would give honest answers. Results showed that the oath reduced hypothetical bias in both induced and non-induced value settings. Jacquemet et al. (2010) also used their oath in a referendum setting for a wind energy research and development program. They concluded that "people who sign an oath are as likely to vote for a public good in a hypothetical referendum as in a real one" (p. 1). More recently, Jacquemet et al. (2013) published an analysis in which an oath was found to control hypothetical bias in induced as well as in homegrown values. Their oath was administered with and without a "cheap talk" script; the oath was found to be the factor that controlled hypothetical bias. However, Jacquemet et al. (2013) "leave it for future research as to whether (the) results can be replicated in other contexts, for other cultures, and a broader group of people" (p. 130).

Table 1
Experimental design.

Treatment	Commodity	Payment type (Number of Subjects)		Elicitation mechanism
		Actual	Hypothetical	
1	Heifer International	30	30	Hypothetical followed by actual payment; no oath. Referendum BDM
2	Heifer International	33	33	Hypothetical followed by actual payment; oath administered. Referendum BDM
3	Heifer International	22		Actual payment; no oath administered. Referendum BDM

1.2. Theoretical considerations

The effect of an oath on hypothetical bias from an economic perspective can be illustrated by the model developed by Lusk and Norwood (2009) which is a modification of the framework developed by Levitt and List (2005). This model assumes that all hypothetical bias arises from a lack of being totally honest. As such, it is consistent with Ariely's (2012) suggestion that people generally try to balance the satisfaction from viewing themselves as honest and the gain derived from cheating.

Lusk and Norwood (2009) assume a person's utility can be characterized as

$$U = wM(A,H) + (1-w)V(I,E) \tag{1}$$

Lusk and Norwood's notation is that M represents utility obtained by fulfilling social norms or doing what is moral, A is an action taken by the individual that has normative or moralistic consequences, H is honesty, V is a typical indirect utility function, I is income, E is some exogenously fixed quantity of a public good, and w is a constant representing the weight placed on morality vs. consumption/wealth.[1]

Lusk and Norwood then show that:

$$\mathrm{WTP}^{H} = \mathrm{WTP}^{NH} + M_A/2M_H \tag{2}$$

When stating what they are willing to pay in a hypothetical survey setting, WTP^{H}, the respondents take their non-hypothetical valuation, WTP^{NH}, and "adjust" it according to how they trade off the utility they get from saying they are willing to pay (M_A) against the utility they derive from being honest, M_H.[2] If $M_A > 0$ and $M_H > 0$, it is clear that $\mathrm{WTP}^{H} > \mathrm{WTP}^{NH}$. This is the standard empirical result from the literature on hypothetical bias. Equation (2) shows that hypothetical bias results, in part, from people deriving utility from saying they are willing to pay for a good. If a person derives no utility from the act of saying he or she is willing to pay for a good, then $M_A = 0$ and WTP^{H} equals WTP^{NH}. Of course, the exact analytical result in Equation (2) is partially driven by the choice of the functional form for honesty.[3] Starting from the point of truth-telling,

[1] As noted by one reviewer this model could be modified to incorporate non-moral aspects of hypothetical bias.

[2] The subscripts denote derivatives (i.e., $M_A = \mathrm{d}M/\mathrm{d}A$). Lusk and Norwood assume that $H = -(\mathrm{WTP}^{H} - \mathrm{WTP}^{NH})^2$, which on differentiation gives the second term on the right side of Equation (2).

[3] If $M_H = 0$ individuals derive no satisfaction from being honest and Equation (2) is undefined.