Consumers´ preferences for the millennium bugs. Does "solemn oath" mitigate the hypothetical bias in choice experiment?

Tiziana de- Magistris*, Stefano Pascucci **

*Tiziana de Magistris is Researcher Outgoing Marie Curie at the Unidad de Economía Agroalimentaria y de los Recursos Naturales. Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA), Gobierno de Aragón. Zaragoza (Spain). E-mail: tmagistris@aragon.es

**Stefano Pascucci is Assistant Professor in Management Studies at Wageningen University (NL). E-mail: stefano.pascucci@wur.nl

Consumers´ preferences for the millennium bugs. Does "solemn oath" mitigate the hypothetical bias in choice experiment?

Tiziana de Magistris[1], Stefano Pascucci[2]

(1) CITA; (2) Wageningen University

AAEA Annual Meeting, Seattle,Washington ,August 12-14, 2012

1. INTRODUCTION

Choice experiment (CE) method is now the most widely used in state preferences in valuing consumer demand for nonmarket products. However, one of main controversial points on the use of this method is represented by hypothetical bias. Therefore, some work has focused in the development of various techniques for mitigating this bias in hypothetical choice experiment. One of the most successful technique has been applied is a cheap talk script proposed by seminal paper of Cummings and Taylor (1999)

A more recent approach to addressing hypothetical bias is the use of an oath script. Under this approach, respondents are asked to swear (or promise) to answer truthfully, as if they were in a courtroom. An oath may induce more truthful answers because it can be viewed as an commitment device binding participants to their answer while to a cheap talk script, which is only informative (Jacquemet et al., 2009; Carlsson et al., 2010).

To our knowledge there are only three studies on the effect of oath to test if participants respond truthfully. The first one on the effects of oath is Jacquemet et al. (2009), which used an oath in a laboratory setting. The authors used an incentive-compatible second-price auction where before to participating in the experiment, bidders were asked to sign an oath document and swear "on their honour" to give honest answers. The main result was that subjects who took the oath were less likely to either overstate or understate their bids. Furthermore, the study found that the hypothetical treatment with an oath outperformed both hypothetical and monetary incentivized treatments without an oath, as well as treatments with monetary incentives with an oath. Finally, Carlsoon et al (2010) used a contingent valuation survey conducted in Sweden and China to investigate the effect of oath script on the Willingness to pay for a public good. Their results indicate that an oath script has significant effects on respondent behavior in answering willingness-to-pay (WTP) questions, some of which vary by country.

2. OBJECTIVE

The aim of our study is to investigate the effect of an oat script in hypothetical choice experiment. In particular we assess consumer´s preferences for millennium bugs

3. EXPERIMENTAL DESIGN

Sample: 106 subjects were randomly drawn from a list of people who are responsible for food shopping in their household.

Choice design

Price (€ per package) 1.50, 2.50, 3.50 and 4.50 euros

Claim: Omega 3 is a fatty acid that prevents from cardiovascular diseases and enhances the immune system. It is clearly stated so, when the product contains Omega 3.

Treatments

In the first treatment (T1), we used a hypothetical choice experiment without any cognitive task. In the second one, we introduced a generic and short cheap talk script before participants responded to the CE questions. We refer to this as our cheap talk treatment (CT).We used the cheap talk script proposed by Cummings and Taylor (1999)

In the third treatment we used a "solemn" oath script following Jacquemet et al. (2009) and it appeared as:

I undersigned .... swear upon my honour that, during the whole experiment, I will Tell the truth and always provide honest answers. Wageningen , ... Signature..................

Subjects who participated in our choice experiment faced different choice set scenarios and they had to choose between two products with different attributes and prices plus a no-buy option, Moreover, they were asked to carefully study and inspect the different products in the choice sets. Finally, all participants were asked to complete a survey requesting basic information on socioeconomic and demographic characteristics

4. RESULTS

To assess consumers´ preferences for millennium bugs, we consider the utility function derived by Lancastrian Theory (Lancaster, 1966) and assuming a linear random utility function defined by:

$$U_{njt} = \alpha_i \cdot p_{ij} + \sum_{k=1}^{T} \beta_{tk} \cdot x_{ijk} + \varepsilon_{ij}$$

In our study we estimated a Random Parameter Logit Model (RPL) (Train, 2003) and we test if differences in marginal WTP exists among three treatments, using Combinatorial test suggested by Poe et al. (1994). This is a non-parametric test that involves comparing differences in marginal WTP for all possible combinations of the estimates obtained by the Krinsky-Robb (1986) method implying 1,000,000 differences.

Table 1. Random Parameter model estimates: comparison of treatments

	T1	CT	OA
	Parameters (t-ratios)	Parameters (t-ratios)	Parameters (t-ratios)
ASC	-2.68915***	-3.09300***	-3.89544***
PRICE	-0.38535***	-0.90669***	-1.33213***
VISUAL	-2.42552	-3.56254***	-7.97896***
LOGO	0.79466*	0.86655***	1.57833***
CLAIM	1.72950***	1.20295***	0.86361***
Standard deviations			
VISUAL	4.93471***	3.48067***	5.44897***
LOGO	0.76123***	0.32361	1.31975
CLAIM	1.14769***	1.69044***	2.76062***
N	38	38	30
Log likelihood	-171.5642	-222.1993	-150.1585

Note: ***, **, * = Significance at 1%, 5%, 10% level.

Table 2. Testing of the Marginal mean WTPs estimates

	OA	T1	p-value[a]	OA	CT	p-value[a]	T1	CT	p-value[a]
	WTP(T1-WTP(OA)			WTP(OA)-WTP(CT)			WTP(T1)-WTP(CT)		
Visual	-6.29 €	-5.98 €	0.43	-5.98 €	-3.92 €	0.433	-5.98 €	-3.92 €	0.48
Logo	2.06 €	1.18 €	0.43	1.18 €	0.95 €	0.44	1.18 €	0.95 €	0.49
Claim	4.48 €	1.39 €	0.47	1.39 €	1.32 €	0.44	1.39 €	1.32 €	0.49

Note: ***, **, * = Significance at 1%, 5%, 10% level.
p-values were identified using the combinational method of Poe, Giraud, and Loomis (2005) with 1,000 Krinsky-Robb (1986) bootstrapped WTP estimates.

5. DISCUSSION

➢ Results (table 1) suggest that the price variable (*PRICE*) is negative and statistically significant in accordance with economic theory. The visual logo attribute (VISUAL) variable is negative and statistically significant at 1% significance level indicating that consumers have lower utility when a insect is showed on the food product.

➢ The logo "chrysalide" is also statistically significant. Suggesting that consumers gain higher utility indicating that would rather prefer know the existence of insect.

➢ Finally, health claim is statistically significant and with positive sign, implying that consumers' utility is positive when a health claim is present

➢ The standard deviations for the effects code variables are not statistically significant except for the logo in treatment T1, indicating that consumers' preferences for logo attributes are not. heterogeneous

➢ Results from table 2 show that WTPs in oath treatment is statistically different neither from T1 control treatment or cheap talk treatments. Moreover, cheap talk treatment is not statistically different from T1 control treatment

6. CONCLUSIONS

Our study highlights the relevance of addressing hypothetical biases in state-preference based analysis.

Moreover indicates the need for further investigations to address the issue of new food sources such as insect-based products. Currently, our results suggest that solemn oath does not produce any affect on consumers WTPs evaluation, implying that the existence of hypothetical bias might be depend on more intrinsic nature of product interested and cultural factors than consumers´ inexperience/or the elicitation mechanism.