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***Personal versus Societal Preferences in Contingent
Valuation Assessments***

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Personal versus Societal Preferences in Contingent Valuation Assessments

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Abstract: Contingent valuation has been used extensively in estimating the value of environmental goods. One criticism of this approach, however, is that respondents in referendum-style contingent valuation surveys may express citizen assessments that take into account benefits to others rather than benefits that accrue purely to the respondent themselves. Within this context, the aim of this paper is to examine to what extent individuals express different preferences when adopting a personal or a social/citizen perspective. While this paper provides some support for the hypothesis that individuals express different preferences when adopting collective as opposed to personal choices, reported willingness to pay (WTP) was found to be insensitive to whether or not the respondents were asked the WTP question from a personal or social perspective.

Keywords: Contingent valuation, preferences, personal or social perspective

JEL: Q18, Q51

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Introduction

Stated preference approaches are becoming increasingly popular as a means of quantifying environmental values. Contingent valuation, in particular, has been used extensively in estimating the value of environmental goods (see for example Pruckner, 1995; Bateman et al., 1996; Kline and Wichelns, 1996; Fleischer and Tsurz, 2000; Dupont, 2004; Berta Martin-Lopez et al., 2007; Buckley et al., 2009; Caula et al., 2009) and provides useful information to decision makers, in cases when a market for some goods is absent (Arrow et al., 1993; Bishop and Romano, 1998; Jacobsson and Drugun, 1996). The idea behind contingent valuation is to create a hypothetical market for the good being examined. Estimates of consumers' valuation of the good are then derived contingent on a description of a hypothetical change in the particular resource being assessed (Bateman and Willis, 1999; Hanley and Spash, 1998).

It is now widely accepted that contingent valuation is a useful method when used to value private goods and public goods with discernable services (Curtis and McConnell, 2002). There is, however, numerous problems associated with the existing paradigm in contingent valuation such as respondents behaving strategically, or not knowing their preferences for complex public goods (see Schlapfer, 2009 for a discussion of these problems and of potential solutions). One further criticism which is examined in this paper is that respondents in referendum-style contingent valuation surveys on environmental goods may express citizen assessments that take into account benefits to others rather than act in a purely self-interested fashion. In order to accurately estimate aggregate WTP it is important that individual WTP estimates reflect an individuals personal benefits as opposed to wider community benefits to society. If the reported welfare measures take into account wider benefits to others

then aggregate benefit measures may be double counting, undercounting, or meaningless (Blamey et al. 1995). In other words, as Nyborg (2000) asserts, if WTP responses are a mixture of both personal and social values then “aggregation may amount to adding ‘apples and oranges’” and as such may be unsuitable for use in cost benefit analysis.

Within this context, the aim of this paper is to examine to what extent individuals express different preferences when adopting a social or personal perspective. A survey of the general population in Ireland was conducted where individuals were asked to rate the importance of a number of features of the countryside from both a personal perspective and from the perspective of society as a whole. Comparing respondents’ importance ratings of these landscape attributes provides guidance as to whether individuals express different preferences when adopting a personal or social perspective.

Second this paper investigates the sensitivity of individual estimates of WTP to different formulations of the contingent valuation question. Half of the respondents were given a WTP question which encouraged them to adopt a personal perspective and the other half were given a WTP question which encouraged them to adopt a social perspective. Separate generalized tobit models of WTP were then estimated for both samples of the population to ascertain if there were any differences in the preferences expressed. In terms of overall structure, a review of the consumer versus citizen debate in the non-market valuation literature is presented in the next section. This is followed with a description of the research design and modeling approach.

Next the estimation results are presented and finally this paper concludes with a discussion of this paper's main findings and their implications for CV analysis.

Review of Consumer versus Citizen Debate in Non-Market Valuation Literature

A number of commentators have suggested that consumers when faced with difficult decisions about environmental goods will act as 'citizens' and adopt a social perspective rather than adopt a purely self-interested approach based on personal well-being. One of the central assumptions behind stated preference approaches is that individuals calculate their maximum WTP for a change in any good on the basis of their own personal benefits. In other words, it is assumed that individuals will act purely in terms of self-interest in order to maximize his/her utility. In cost benefit analysis it is assumed that the aggregation of these individual WTP estimates will provide an accurate representation of the total benefits to society. A number of critics have questioned the validity of individual WTP estimates. For instance, Sagoff (1998) argues that individuals take a citizen orientated viewpoint taking into consideration broad ethical and social considerations when assessing environmental goods.

Similarly, Blamey et al. (1995; p. 264) contend that respondents in CV surveys 'may be expressing social or political judgments rather than preferences over consumption bundles'. Blamey et al. (1995) note that the typical referendum format which is used to elicit respondents WTP in CV surveys has more in common with voting than market place decisions and this may encourage consumers to adopt a social perspective when valuing environmental goods. Nyborg (2000) report that it is probably much easier for respondents to take a solely 'consumer' or personal view

when asked to assess market goods such as strawberries and coffee mugs. On the other hand, when asked to value ethically difficult issues that may only be tenuously linked with private interests such as biodiversity or wilderness protection it might be much more natural for individuals to regard the context as a political one, thus taking a citizen point of view. Moreover, whereas contingent valuation places individuals in a context whereby they are basing their responses on a hypothetical change in the particular resource being examined there is also some concern that respondents may instead refer to environmental public goods in general (e.g., Thaler, 1990; Kahneman and Knetsch, 1992; Svedsäter, 2003).

The empirical evidence surrounding this issue is somewhat mixed and often contradictory. Recently, Alvarez-Farizo (2007) using water quality improvements under the Water framework directive as their case study examined if preferences change according to whether people are making individual or collective choices. They found no significant differences except in cases which allowed for differences in the motivation of respondents. Similarly Curtis and McConnell (2002) found that respondents who could be interpreted as having a citizen perspective have preferences (or willingness to pay for the public good) that are indistinguishable from other respondents. This they argue means that it is irrelevant which preferences, be it citizen or consumer, prevail as both lead to the same result. In contrast, Mill et al. (2007) in a study of preferences for forest attributes found that individuals express different preferences when adopting a personal or social perspective and that personal and social mean willingness to pay (MWTP) can differ greatly. Likewise, results from a CV analysis of conservation areas in Finland by Ovaskainen and Kniivila (2005) suggest that the consumer-citizen distinction is important. In this study

respondents who were encouraged to consider the benefits to them personally reported a lower WTP than respondents who were asked to consider the benefits to society of preserving conservation areas.

Diamond and Hausmann (1994) describe how several hypotheses have been put forward as explanations as to why responses in CV surveys may not be a true measure of economic preferences. First they describe how it has been commonly argued that individuals may receive what has been termed as a “warm glow” from expressing support for the protection of environmental resources (see Andreoni, 1989; Kahneman and Knetsch, 1992). As Spash (2000) describes, if an individual gains moral satisfaction from giving to a good cause i.e. the protection of an environmental resource, then that individual may in turn be more likely to have a positive intention to pay. This positive intention to pay may, however, be largely independent of what happens to the money afterwards.

In addition, individuals may be describing what they think in a general sense is good for the country in a sort of casual cost benefit analysis (Diamond and Hausman, 1993). In other words, individuals may be expressing a response that reflects how much they think people generally care about a particular issue rather than their own personal preference. This viewpoint was supported by Spash (2000) in study of marine biodiversity in Jamaica and Curaco which found respondents WTP for an environmental improvement was positively related to belief in duties towards environmental entities. Spash (2000) describes how this means WTP can reflect non-exchange values and as such do not necessarily correspond with market prices in a cost benefit analysis. Finally, Diamond and Hausmann (1994) assert

that rather than evaluating the state of an environmental resource individuals may be expressing a reaction to actions that have been taken (e.g allowing an oil spill).

The framing of the CV survey may itself have a significant impact on the perspective a respondent takes. Ajzen et al. (1996) outlines how even if every effort is made to produce an accurate and balanced description of the good being valued, this information will almost certainly alter the respondents' attitude towards the good. Ajzen et al. (1996) describes how respondents are much more likely to carefully process the information given to them about the good when the information given is of personal relevance. If the information is not of significant personal relevance then respondents may lack the sufficient motivation to adequately process the relevant information. This, in turn, may mean that respondents may base their final judgment on factors such as altruistic or individualistic motives which are unrelated to the content of the message.

More recent evidence indicating that the presentation of background information can significantly alter respondents' opinions comes from Polome et al. (2006) and Howard et al. (2008). Polome et al. (2006) found that estimated WTP from a CV survey was significantly larger when a referendum is explicitly mentioned than without reference to voting. Howard et al. (2008), in a discrete choice experiment aimed at evaluating respondents WTP for different tests aimed at screening for colorectal cancer, found that framing of attributes can significantly influence estimation of WTP and the marginal rate of substitution between attributes.

If respondents behave as citizens when valuing environmental goods the aggregation of WTP estimates may not yield a meaningful measure of social benefits. As Nyborg (2000) points out personal values and social values are conceptually different and if some respondents report social values, while others report their personal values, one could get a double counting of the interests of those who report their personal valuations. It must be noted, however, that while an individual response may be partly the result of altruistic motives they may still be based on a completely private preference function, rather than a citizen's preference function (Curtis and McConnell, 2002). What is important here is the type of altruism involved (Ovaskainen and Kniivila, 2005).

Altruism based on the utility derived from other individuals overall well-being would be suitable for cost benefit analysis (Johansson 1992; McConnell 1997). On the other hand, where the respondents' altruism is based on valuing other individuals' consumer surplus for an environmental resource then this may result in a double counting of benefits. In practice a mixture of altruistic motives are likely to prevail. This paper adds to this literature by examining if preferences differ when respondents adopt a self-interested personal or a wider social perspective using opinions on rural landscape preservation as a case study. Furthermore, this paper analyses the sensitivity of individuals WTP to different orientations of the CV question; one whereby respondents are encouraged to adopt a personal viewpoint and another where they are encouraged to adopt a social perspective.

Methodology

Data Collection

A survey of 1000 individuals living in Ireland was conducted between November 2008 and January 2009. A quota controlled sampling procedure was followed to ensure that the survey was nationally representative for the population aged 18 years and above. Quota sampling sets demographic quotas on the sample based on known population distribution figures. The quotas used in this case were based on known population distribution figures for age, sex and region of residence taken from the Irish Census of Population, 2006. Interviews were spread across different days of the week and across different times of day to ensure all population sub groups had an equal chance of being interviewed. Pilot testing of the survey instrument was conducted prior to the main survey¹. Along with expert judgment and observations from earlier focus group discussions, results from the pilot were used to refine the questions asked in the main survey.

All respondents were asked similar questions in relation to their personal characteristics and their attitudes towards the environment and the countryside in general. To help ascertain if respondents express different preferences when adopting a social or personal perspective half of the respondents were given a list of attributes of the countryside and asked to indicate on a scale of 1 to 10 how important was that attribute to them personally. The remaining respondents were given the same list of attributes and asked to indicate how important they felt that attribute was to society as a whole.

¹ The survey company RED C Research & Marketing was hired to conduct the interviews for both the pilot and main phase of the survey.

This was followed with a question on respondents WTP landowners for agricultural activities aimed at the conservation of the rural landscape. In order to assist respondents to respond meaningfully to the WTP question they were firstly informed that: *“There are a number of possible future agricultural landscapes that may exist in 2030. An ever expanding world population, higher demand for food, and land being used to produce renewable energy and green materials to replace petroleum based products such as plastic could result in agriculture in Ireland becoming much more intensive. For these reasons, the environmental pressures on the rural landscape in Ireland may increase. Therefore, under future Common Agricultural Policy reform it may be the case that farmers will be paid more for conservation activities rather than for the security of food production.*

Half of the individuals in the survey were then asked the following question:

*“Bearing in mind the importance or unimportance of conserving traditional landscapes for you **personally**; if you could be sure that your money would go to landowners for protecting traditional rural landscapes in Ireland only, would you be prepared to pay to support agricultural activities contributing to the protection of the traditional farm landscape as portrayed in Showcard 11”* (see figure 1).

The other half of the respondents were asked a WTP question which was identical to the one above except that *“Bearing in mind the importance or unimportance of conserving traditional landscapes for you personally”* was replaced by *“Bearing in mind the importance or unimportance of conserving traditional landscapes for **society as a whole**”*. Therefore the basic difference between the two valuation questions was that one asked the respondent to consider the impacts on his/her own welfare only

whereas the second encouraged respondents to take a more citizen orientated viewpoint by asking respondents to consider the benefits to society as a whole.

Those who answered the WTP question in the affirmative were then presented with a payment card showing the bid amounts of €20, €35, €50, €65, €80 and €95 and were asked: “of these bid amounts which would be the maximum you would be willing to pay (€) each year into a conservation fund to support those agricultural activities contributing to landscape preservation. The pilot sample was used to gauge the likely range of respondents’ willingness to pay in order to inform the bid design in the main survey. Following Cameron and Huppert (1989), the response is interpreted not as an exact statement of willingness to pay but rather as an indication that the WTP lies somewhere between the chosen value and the next larger value above it on the payment card. Recent applications of the payment card method in the literature include Krupnick et al. (2006), Ryan and Watson (2008) and Hynes and Hanley, (2009).

Model specification

Separate Generalised Tobit Interval WTP models were calculated for both groups of respondents. Following Hynes and Hanley (2009) the WTP responses in both models were treated in a parametric model, where the WTP value chosen by each respondent was specified as: $WTP = \mu + \varepsilon$. where μ is the deterministic component and ε is the error term. It is assumed that $\varepsilon \sim N(0, \sigma^2 I)$. The Generalized Tobit Interval model employs a log-likelihood function adjusted to make provision for point, left-censored, right-censored (top WTP category with only a lower bound) and interval data. For individuals $j \in C$, we observe WTP_j , i.e. point data and for respondents $j \in L$, WTP_j

are left censored. Individuals $j \in R$ are right censored; we know only that the unobserved WTP_j is greater than or equal to WTP_{Rj} . Finally respondents $j \in I$ are intervals; we know only that the unobserved WTP_j is in the interval $[WTP_{1j}, WTP_{2j}]$.

The log likelihood is given by:

$$\begin{aligned} \ln L = & -\frac{1}{2} \sum_{j \in C} w_j \left\{ \left(\frac{WTP_j - x\beta}{\sigma} \right)^2 + \log 2\pi\sigma^2 \right\} + \sum_{j \in I} w_j \log \Phi \left\{ \left(\frac{WTP_{1j} - x\beta}{\sigma} \right) \right\} \\ & + \sum_{j \in R} w_j \log \left\{ 1 - \Phi \left(\frac{WTP_{Rj} - x\beta}{\sigma} \right) \right\} + \sum_{j \in I} w_j \log \left\{ \Phi \left(\frac{WTP_{2j} - x\beta}{\sigma} \right) - \Phi \left(\frac{WTP_{1j} - x\beta}{\sigma} \right) \right\} \end{aligned}$$

where $\Phi()$ is the standard cumulative normal and w_j is the weight of the j th individual. Of the 273 usable responses in the model where respondents were asked to consider only their personal benefits in reporting their WTP figure, a total of 48 zero WTP values were treated as $j \in C$. A further 29 WTP values were considered right censored at €95 while the remaining 196 were treated as interval observations. Of the 273 usable responses in the model where respondents were asked to consider the benefits to society, a total of 43 zero WTP values were treated as $j \in C$. A further 32 WTP values were considered right censored at €95 while the remaining 198 were treated as interval observations.

Fifty two per cent of the respondents who were asked to consider benefits to society reported that they would be willing to pay for the conservation of the traditional rural landscape. A slightly lower figure of 47 per cent of respondents who were asked to only consider personal benefits reported that they would be willing to pay. Respondents who stated they were not willing to pay anything were asked why not.

Individuals who stated they were not willing to pay anything – because of a legitimate reason such as the price is too much, the government should pay from existing revenue, I do not visit the countryside enough to justify it – were considered as point observations of €0. Respondents who gave other reasons for not being WTP namely, they prefer other ways of paying other than taxes, they do not have enough information to make a decision, they do not believe such a scheme will be implemented, they object to paying for this type of scheme – were considered as protest bids and excluded from the analysis. Of the €0 WTP responses, 111 were treated as legitimate bids while 454 were treated as protest bids. These later observations were excluded from the analysis. The total final number of responses used in the analysis was therefore 546.

Both Generalised Tobit Interval WTP models used the same independent variables. These were socio-demographic variables such as education and income. Two dummy variables indicating whether the respondent lived in the countryside and whether they had siblings involved in farming were also included for analysis. Two further variables representing respondents' views on the importance of a number of landscape attributes were also included in the analysis. Finally a variable representing how important respondents feel improving the environmental state is for society was included in the model.

Results

Attribute analysis

In order to ascertain respondents' views on a variety of countryside landscapes they were presented with 9 landscape attributes. Half of the respondents in the survey were

then asked to indicate on a scale from 1 to 10 how important the protection of each particular attribute was to them personally with 10 being most important and 1 being least important. The remaining half was asked to indicate how important they felt that landscape attribute was from the perspective of society as a whole. Table 1 lists the 9 attributes and the mean scores of each from both sets of respondents. As can be seen in table 1 while actual differences were relatively small all the attributes examined were held as more important by respondents when adopting a social rather than a personal viewpoint.

Insert table 1 here

Factor analysis was used to identify underlying factors that would assist in understanding the observed response patterns. Factor analysis is a generic term for a family of statistical techniques which is predominantly concerned with estimating a smaller number of underlying hypothetical variables that help to explain the variance of observable variables (Kline and Wichelns, 1998; Gorton et al., 2008). In the case of environmental preferences it has been previously used to disentangle consumers' attitudes to various features of the environmental landscape (see Kline and Wichelns, 1996; Karp, 1996; Kaiser et al., 1999; Nunes, 2002). Factor analysis is performed by examining the pattern of correlations (or covariances) among independent variables and reveals simple underlying structures among these variables using analytical solutions from linear algebra.

If some of the original variables are highly correlated, they are effectively 'saying the same thing' and factor analysis transforms this set of correlated variables to a smaller

number of uncorrelated variables. In addition to factor loadings, individual factor scores were produced which were the scores of an individual on a particular factor. The factor scores for each individual offer the possibility of their use as inputs in follow on multivariate analysis. Each of the respondents factor scores are relative to the sample mean, which corrects for any potential bias accruing from respondents giving positive responses “yea-saying” which could potentially inflate support for the preservation of certain landscape features (Boyle et al., 1998; Johnston et al., 2003). The factor scores have the advantage in that large numbers of highly correlated variables (in this instance respondents’ opinions on a variety of landscape features) can be reduced to a smaller more manageable number of uncorrelated variables thus eliminating any potential multicollinearity problems in regression analysis.

The results from the factor analysis are shown in table 2 and 3. A similar pattern was evident for both groups of respondents. Factor 1 has a high factor loadings on woodland, bogland, wild flora and fauna, water quality and features associated with our cultural heritage. Therefore this factor has been termed as ‘biological and cultural diversity’. The second factor shows high factor loadings on features of the countryside that would be associated with more obvious and scenic features of farming activity such as open grass covered fields, grazing farm animals and well maintained traditional farm buildings. Therefore, factor 2 has been termed as ‘traditional farming landscapes’. Both factors were included as dependent variables in the Generalised Tobit Interval models discussed next to determine if respondents evaluation of landscape attributes from both a personal and social perspective had an impact on WTP.

Insert table 2 here

Insert table 3 here

WTP estimation results

Separate Generalized Tobit Interval models of WTP were estimated for both groups of respondents. More specifically, the functional relationship for the WTP estimation can be specified as

$WTP = f(\text{Income}, \text{Education}, \text{Live in the countryside}, \text{Siblings in farming}, \text{Factor 1}, \text{Factor 2}, \text{Environmental importance for society})$ where;

WTP = total WTP for agricultural activities aimed at protecting the traditional rural landscape

Income = gross income of respondent, rescaled by dividing by 1000 (€)

Education = education level of respondent (0 = no third level education, 1 = third level education)

Siblings in farming = whether they have siblings in a farming background (0 = no, 1 = yes)

Live in the countryside = where the respondent lives (0 = not in the countryside, 1 = in the countryside)

Factor 1: Biological and cultural diversity = importance respondents place on the protection of the ‘biological and cultural diversity’ landscape features captured in factor 1

Factor 2: Traditional farming landscapes = importance respondents place on the protection of the ‘traditional farming’ landscape features captured in factor 2

Environmental importance for society = degree to which (scale of 1-5) respondents feel improving the environmental state of the country is important for society

The regression results from the Generalized Tobit Interval models are presented in table 4. The log likelihood χ^2 statistic shows that, taken jointly, the coefficients in the personal (respondents who were asked to consider personal benefits only) Generalized Tobit Interval model is significant at the 1% level. Income was found to have a significant and positive effect on willingness to pay for the conservation of the traditional rural landscape. This would be consistent with economic studies of the valuation placed by individuals on environmental goods where a significant and positive income coefficient has been widely reported (Pearce et al., 2006). Education was also found to have a significant effect on willingness to pay as the results suggest that respondents having a third level education have a higher WTP than respondents who do not have a third level education.

Individuals who have siblings in farming were also much more likely to be willing to pay for measures aimed at protecting the traditional rural landscape. It would be expected that individuals are likely to support measures such as the payment of landowners to preserve traditional rural landscapes whereby immediate family members are likely to benefit. The location where an individual resides was also found to have a significant and positive impact on WTP as respondents who live in the countryside were found to have a higher WTP than residents who do not live in the countryside. This is in accordance with our *a priori* expectations as individuals who benefit more from a particular good (i.e. in this instance those who live in the countryside) are more likely to pay for its use. Factor 1 termed ‘biological and cultural diversity’ was statistically significant at the 1 % significance level, whereas factor 2 ‘traditional farming landscapes’ was statistically insignificant at either significance level.

In relation to the social (respondents who were asked to consider social benefits) model the log likelihood χ^2 statistic shows that, similarly to the personal model, taken jointly the coefficients in the social Generalized Tobit Interval model is significant at the 1% level. If respondents adopt different preferences according to the context of the survey then we would expect some differences between the estimation results from the personal model described above and the social model. For instance, if respondents do indeed primarily base their WTP on their assessment of the benefits to society then members of socio-economic groupings that are expected to derive significant personal benefits from these environmental measures should not express a higher WTP than other respondents.

In order to test if preferences change significantly across the two models a chow test was devised to test the null hypothesis of equality of parameters across the two tobit models. The resulting χ^2 (7) test statistic was 10.46 and $\text{Prob} > \chi^2$ was =.23 which means that we cannot reject the null hypothesis of parameter equality at any level of significance below 23%. There were, however, some interesting differences in terms of individual coefficients across both models. Both education and the variable representing those who live in the countryside was found to have a statistically significant different impact across both models at the 5 and 10 % significance level respectively. While education was significant at the 1% level in the personal model it was insignificant in the social model. It could be that respondents who have a relatively higher level of education may be able to better understand the benefits that they would derive personally for environmental measures and how to access those benefits (Ryan and Spash, 2008).

In considering personal benefits, individuals who live in the countryside should be more likely to offer a positive bid than respondents who reside further away. This was evident in the personal WTP model as the dummy variable comparing respondents who live in the countryside to other respondents was significant at the 1% significance level. However, if respondents distinguish between personal benefits and benefits to society then this variable should have far less influence in the social model of WTP. As can be seen in table 4 the dummy variable 'live in the countryside' is indeed insignificant in the social model.

A similar argument can be made for respondents who have siblings involved in farming. In considering their personal benefits respondents may derive utility from the knowledge that family members will benefit from any environmental measures aimed at paying landowners for agricultural activities aimed at protecting the traditional farm landscape. This should translate into a higher WTP in the personal model. However, if respondents primarily consider benefits for society as a whole then whether they have family members involved in farming should have far less significance. While the variable 'siblings involved in farming' was statistically significant in the personal model it can be seen that this variable is insignificant in the social model. That said, results from the chow test would indicate that this difference was not statistically significant as the null hypothesis of parameter equality in relation to the variable representing those with siblings involved in farming could not be rejected at any level of significance below the 20% significance level.

Similarly to the personal model, factor 1 has a significant impact on WTP in the social model while factor 2 does not have an effect. It appears, therefore, that it does not

matter whether variables representing individuals' evaluation of environmental attributes from a social or strictly personal perspective are included in the estimation of WTP as the effect was broadly similar across both models.

Insert table 4 here

Mean WTP

Moving on to overall WTP, respondents who were asked to consider personal benefits had a mean WTP of €43 per annum (see table 5). In comparison, the mean WTP of respondents who were asked to consider the benefits to society was slightly higher at €44 per annum. However, the mean WTP (€44) of respondents who were asked to consider social benefits lies within the confidence interval of respondents who were asked to consider personal benefits only. Therefore, while there were some differences in individual parameter estimates across both models which would support the hypothesis that individuals express different preferences when asked to adopt a consumer or social viewpoint, these differences did not lead to any significant differences in overall WTP. In short, the results here would suggest that respondents reported mean WTP is insensitive to the type of preferences (personal or citizen) used.

Insert table 5 here

Conclusion

In addition to taking into account his personal interests an individual may assess non-market environmental goods from the perspective of society generally. However, individuals' wider social preferences may not coincide with his personal or private preferences. If individuals behave as citizens and consider environmental goods from

the perspective of overall welfare for society then the aggregation of individual WTP estimates may not be an accurate reflection of the overall benefits of that particular good. This means such estimates may be unsuitable for cost benefit analysis. The overall aim of this paper was to examine if such a consumer or personal versus social distinction exists. More specifically, using opinions on rural landscape preservation as a case study, this paper examined if preferences differ when respondents adopt a social perspective as opposed to a self-interested personal perspective. Furthermore, this paper analysed the sensitivity of reported WTP estimates to different formulations of the valuation question; one whereby respondents are encouraged to adopt a self-interested approach and another where they are encouraged to consider the benefits to society.

The results presented here would provide some support for the hypothesis that individuals express different preferences when adopting a social or citizen viewpoint to those expressed when adopting a personal viewpoint, as all the landscape attributes examined here were considered more important from a social rather than the personal perspective. It must be noted, however, that these differences were quite minor. The paper also examined if WTP differs according to the type of preferences expressed. More precisely, two separate Generalised Tobit Interval models of WTP were formulated to examine if WTP differs according to whether people are making individual or collective choices.

Given the method of sampling of respondents it would be expected that both Tobit models would be quite similar if preferences remain constant when respondents are asked to express their personal or social willingness to pay. While for the models as a

whole we could not reject the null hypothesis of equality of parameters, there were some significant differences in the individual parameter estimates. For instance, more consumer orientated variables such as a dummy variable representing those who live in the countryside and those with a third level education had a significant impact in the personal but not the social model. Further interesting differences related to the variable 'siblings in farming' and 'environmental importance for society'. The more consumer orientated variable 'siblings in farming' was significant at the 1% level in the personal but not the social model. Finally, the more citizen orientated variable which asked respondents to consider the benefits of an improved environment for society was statistically significant in the social but not the personal model.

In relation to overall WTP, it made little difference to the results whether respondents were asked to consider social or just personal benefits. This is not to say that the consumer-citizen distinction is not important but rather consideration must be given as to whether respondents express different WTP estimates when adopting a social as opposed to consumer perspective. In this study, reported WTP was insensitive to the type of preferences (either social or personal) used. Beyond this empirical investigation, the consumer-citizen distinction still has potentially important implications for the interpretation of the results of stated preference valuation studies. Although empirical studies of the effects of the consumer-citizen distinction are currently too few to conduct a meta-analysis such an approach should be an area for future research when enough of these types of studies exist. This would allow the researcher to get a better understanding of the type of respondent characteristics that influence whether or not a person will have different personal versus social perspectives.

In the context of a contingent valuation survey, the applied researcher should deliberately attempt to activate a certain type of preferences in order to make sure that it is reasonable to measure WTP (and to use the results for benefit-cost analysis or whatever decision-supporting mechanism). The researcher should also perhaps try to gain more information on respondents' motivations to be in a better position to control for the type of altruism present. Given the potential for double counting of benefits in the case where the respondents' altruism is based on valuing other individuals' consumer surplus for an environmental resource it is important, in any CV study, to ensure that individuals adopt a personal as opposed to social perspective when reporting their WTP estimates.

Within this context, it would also be useful to have further research to determine what type of valuation scenario may influence an individual to adopt a citizen as opposed to a personal perspective when asked to report their WTP. Characteristics of the good under examination as well as the background and contextual information provided in a survey may explain why respondents may adopt a wider social perspective when reporting welfare estimates. For instance, Ajzen et al. (1996) note that when a particular good has a relatively low personal relevance then respondents are said to adopt a peripheral processing mode. This means that respondents may base their welfare estimates on what they describe as 'relatively superficial motivational cues' such as altruistic considerations.

Other factors such as whether the resource under examination is a pure public good with/without private good features or has strong non-use as well as use

values may also influence the perspective a respondents takes but research in this area is limited. Careful design of a CV survey can certainly mitigate the chance of respondents adopting wider social preferences in their decision making process. In particular, the framing of the actual WTP question and scenarios will as always be critical in eliciting a personnel response but also the overall survey needs to be designed in such a way so as to encourage respondents to continuously take a personal perspective when thinking about the environmental good in question during the entire surveying process. Ultimately, respondents will take better care in processing the information given to them about the environmental good when all of the information presented is of personal relevance.

References

Ajzen, I., Brown, T.C. and Rosenthal, L.H. (1996) Information bias in Contingent Valuation: effects of personal relevance, quality of information, and motivational orientation. *Journal of environmental Economics and Management*, 30, 43-57.

Alvarez-Farizo, B., Hanley, N., Barberan, R., Lazaro, A., 2007. Choice modelling at the 'market stall': Individuals versus collective interest in environmental valuation. *Ecological Economics*, 60(4), 743-751.

Andreoni, J. (1989) Giving with impure altruism: application to charity and Ricardian equivalence. *Journal of Political Economy*, 97(6), 1447-58.

Arrow, K.J., Solow, R., Portney, P.R., Leamer, E.E., Rander, R., Schuman, H., 1993. Report of the NOAA Panel on Contingent Valuation. US Department of Commerce.

Bateman, I., Diamond, E., Langford, I., Jones, A., 1996 Household willingness to pay and farmers willingness to accept compensation for establishing a recreational woodland. *Journal of Environmental Planning and Management*, 39, 21-43.

Bateman, I., Willis, K (Eds.) 1999. Contingent Valuation of Environmental Preferences: Assessing Theory and Practice in the USA, Europe and Developing Countries. Oxford University Press.

Bishop, R., Romano, D., 1998. Environmental Resource Valuation: Applications of the Contingent Valuation Method in Italy. Kluwer Academic Publishers, Boston.

Blamey, R., Common, M., Quiggin, J., 1995. Respondents to contingent valuation surveys: consumers or citizens? *Australian Journal of Agricultural Economics*, 39, 263–288.

Boyle, K., MacDonald, J., H. F., Cheng, H., McCollum, D.W., 1998. Bid Design and Yea Saying in Single-Bounded, Dichotomous Choice Questions. *Land Economics*, 74, 49-64.

Buckley, C., Van rensburg, T.M., Hynes, S., 2009. Recreational demand for farm commonage in Ireland: a contingent valuation assessment. *Land use policy*, 26, 846-854.

Berta Martin-Lopez., Carlos Montes., Benayas, J., 2007. The non-economic motives behind the willingness to pay for biodiversity conservation. *Biological Conservation*, 139, 67-82.

Cameron, T., Huppert, D., 1989. OLS versus ML estimation of non-market resource values with payment card interval data. *Journal of Environmental Economics and Management*, 17, 230–246.

Caula, S., Hvenegaard, G.T., Marty, P., 2009. The influence of bird information, attitudes, and demographics on public preferences toward urban green spaces: The case of Montpellier, France, *Urban forestry and Urban Greening*, 8, 117-128.

Curtis, J.A., McConnell, K.E., 2002. The citizen versus consumer hypothesis: evidence from a contingent valuation survey, *The Australian Journal of Agricultural and Resource Economics*, 46, 69–83.

Diamond, P.A. and Hausman, J.A. (1993) On contingent valuation measurement of non-use values, in Hausman, J. (Ed.), *Contingent Valuation: A Critical Assessment*. North Holland Press, Amsterdam, pp. 3-38.

Diamond, P.A. and Hausman, J.A. (1994) Contingent Valuation: is some number better than no number? *Journal of Economic Perspectives*, 8(4), 45-64.

Dupont, D.P., 2004. Do children matter? An examination of gender differences in environmental valuation, *Ecological Economics*, 49, 273-286.

Hanley, N., Spash, C., 1998. Cost-benefit Analysis and the Environment. Edward Elgar, Cheltenham.

Howard, K. and Salkeld, G. (2008) Does attribute framing in discrete choice experiments influence willingness to pay? Results from a discrete choice experiment in screening for colorectal cancer. *Value in Health*, 12(2), 354-363.

Hynes, S., Hanley, N., 2009. The “Crex crex” lament: Estimating landowners willingness to pay for corncrake conservation on Irish farmland, *Biological Conservation*, 142, 180-188.

Fleischer, A., Tsurz, Y., 2000. Measuring the recreational value of agricultural landscape. *European Review of Agricultural Economics*, 27, 385–398.

Gorton, M., Dourin, D., Davidova, S., Latruffe, L., 2008. Attitudes to agricultural policy and farming futures in the context of the 2003 CAP reform: A comparison of farmers in selected established and new Member States. *Journal of Rural Studies*, 24(3), pp. 322-336.

Jacobsson, K.M., Dragun, A., 1996. Contingent Valuation and Endangered Species. Methodological and Applications. Edward Elgar, Cheltenham.

Johansson, P-O. 1992. Altruism in cost–benefit analysis, *Environmental and Resource Economics*, 2, 605–613.

Johnston, R.J., Swallow, S.K., Bauer, D.M., Anderson, C.M., 2003. Preferences for Residential Development Attributes and Support for the Policy Process: Implications for Management and Conservation of Rural Landscapes, *Agricultural and Resource Economics Review*, 32, 65-82.

Kahneman, D., Ritov, K.E., Jacowitz, E. and grant, P. (1993) stated willingness to pay for public goods: A psychological perspective. *Psychological Science*, 4(5), 310-315.

Karp, D., 1996. Values and their effect on pro-environmental behaviour, *Environment and Behaviour*, 28, 111-133.

Kahneman, D., Knetsch, J.L., 1992. Valuing public goods: the purchase of moral satisfaction. *Journal of Environmental Economics and Management*, 22, 57–70.

Kaiser, F.G., Wolfing, S., Fuhrer, U. 1999. Environmental attitude and ecological behaviour. *Land Use Policy*, 19, 1-19.

Kline, J., Wichelns, D., 1996. Measuring public preferences for the environmental amenities provided by farmland, *European Review of Agricultural Economics*, 23, 421-436.

Kline, J. and Wichelns, D., 1998. Measuring heterogeneous preferences for farmland and open space. *Ecological Economics*, 26(2), 211-224.

Krupnick, A., S. Hoffmann, B., Larsen, X., Peng, R., Tao, and C. Yan., 2006. The willingness to pay for mortality risk reductions in Shanghai and Chongqing, China. Washington, D.C.: Resources for the Future.

McConnell, K.E., 1997. Does altruism undermine existence value? *Journal of Environmental Economics and Management*, 32, 22–37.

Mill, G.A., Van Rensburg, T., Hynes, S., Dooley, C., 2007. Preferences for multiple use forest management in Ireland: citizen and consumer Perspectives. *Ecological Economics*, 60, 642-653.

Nunes, P.A.L.D., 2002. Using factor analysis to identify consumer preferences for the protection of a natural area in Portugal. *European Journal of Operational Research*, 140, 499-516.

Nyborg, K., 2000. Homo Economicus and Homo Politicus: interpretation and aggregation of environmental values. *Journal of Economic Behavior and Organization* 42, 305–322.

Ovaskainen, V., Kniivila, M., 2005. Consumer versus citizen preferences in contingent valuation: evidence on the role of framing. *The Australian Journal of Agricultural and Resource Economics*, 49, 379-394.

Pearce, D.W., Atkinson, G., Mourata, S., 2006. Cost benefit analysis and the environment. OECD publishing.

Polome, P., van der Veen, A. and Geurts, P. (2006) Is referendum the same as dichotomous choice contingent valuation? *Land Economics*, 82(2), 174-188.

Pruckner, G., 1995. Agricultural landscape cultivation in Austria: an application of the CVM. *European Review of Agricultural economics*, 22, 173-190.

Ryan, M., Watson, V., 2008. Comparing welfare estimates from payment card contingent valuation and discrete choice experiments. *Health Economics*, 18, 389 – 401.

Ryan, A. and Spash, C.L. (2008) Contingent valuation methodology: an economic assessment or a political measure? an empirical investigation of Sagoff's hypothesis. Available at: <http://www.esee2009.si/papers/Ryan%20-%20Contingent%20Valuation.pdf>

Sagoff, M., 1988. *The Economy of the Earth*. Cambridge University Press, Cambridge.

Schlapfer, F. (2009) Contingent Valuation: confusions, problems, and solutions. *Ecological Economics*, 68, 1569-1571.

Spash, C.L. (2000) Ethical motives and charitable contributions in Contingent Valuation: empirical evidence from social psychology and economics. *Environmental Values*, 9, 453-479.

Svedsäter, H., 2003. Economic valuation of the environment: how citizens make sense of contingent valuation questions. *Land Economics* 79, 122–135.

Variyam, J. N., Jorday, J.L., Epperson, J.E., 1990. Preferences of Citizens for Agricultural Policies: Evidence from a National Survey. *American Journal of Agricultural Economics*, 72, 257-267.

Thaler, R.H., 1990. Saving, fungibility and mental accounts. *Journal of Economic Perspectives* 4, 193–205.

Tables

Table 1: Opinions on countryside landscape attributes

	Mean Social importance score	Mean personal importance score
High quality water in rivers and lakes	9.11	9.00
Grazing farm animals	8.63	8.42
Open grass covered fields	8.39	8.29
Native woodland	8.27	8.14
Well maintained stone walls or hedges	8.19	7.98
Wild flora and fauna	8.14	7.92
Cultural heritage	8.10	7.83
Well maintained traditional farm buildings	7.92	7.87
Preserved bogland	7.77	7.55

Table 2: Rotated factor matrix showing factor loadings for personal ratings of landscape attributes (values > 0.5 are in bold)

	Factor 1: Biological and cultural diversity	Factor 2: Traditional farming landscapes
Native woodland	0.81	0.22
Preserved bogland	0.83	0.25
Wild flora and fauna	0.85	0.27
Cultural heritage	0.78	0.36
High quality water in rivers and lakes	0.56	0.41
Well maintained stone walls or hedges	0.67	0.50
Open grass covered fields	0.28	0.83
Well maintained traditional farm buildings	0.30	0.78
Grazing farm animals	0.28	0.86

Extraction method: principal component analysis. Rotation method: Varimax with Kaiser Normalization. Rotation converged in six iterations

Table 3: Rotated factor matrix showing factor loadings for social ratings for landscape attributes (values > 0.5 are in bold)

	Factor 1: Biological and cultural diversity	Factor 2: Traditional farming landscapes
Native woodland	0.83	0.16
Preserved bogland	0.88	0.21
Wild flora and fauna	0.76	0.39
Cultural heritage	0.68	0.49
Well maintained stone walls or hedges	0.63	0.58
High quality water in rivers and lakes	0.48	0.43
Open grass covered fields	0.25	0.83
Well maintained traditional farm buildings	0.32	0.79
Grazing farm animals	0.22	0.88

Extraction method: principal component analysis. Rotation method: Varimax with Kaiser Normalization. Rotation converged in six iterations

Table 4: Personal and Social model of WTP

Independent variables	Personal Model	Social Model
Gross income***	0.31 (0.11)	0.30 (0.10)
Education ***	13.24 (4.19)	0.85 (4.38)
Siblings in farming ***	16.40 (4.84)	7.26 (5.44)
Live in the countryside ***	12.4 (4.39)	1.63 (4.68)
Factor 1: Biological and cultural diversity ***	6.50 (2.13)	4.43 (2.10)
Factor 2: Traditional farming landscapes	2.32 (2.20)	1.12 (2.12)
Environmental importance for society	2.68 (2.58)	3.91 (2.36)
log likelihood	-671.7	-672.4
Likelihood ratio (7)	61.9	24.3
Left censored observations	0	0
Right censored observations	29	32
Uncensored observations	48	43
Interval observations	196	198

Standard error in brackets, *** significant at 1% significance level, ** significant at the 5% level, * significant at the 10% level

Table 5: Mean Willingness to pay

	Mean	Std. Err.	95% confidence interval
Personal	43.5	0.5	42.5 - 44.5
Social	44.3	0.3	43.7 - 44.9