



Economic valuation at all cost? The role of the price attribute in a landscape preference study



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ABSTRACT

In ecosystem services and landscape research, both monetary and non-monetary preference studies are applied to elicit values that people assign to landscapes. In this paper, we apply a split-sample approach to compare relative preferences for landscape attributes between a choice experiment with and an experiment without price attribute. Also, within the choice experiment with a price attribute, we examine the effect of non-attendance to the price attribute (i.e., ignoring the price) on landscape preferences. A comparison of the marginal rates of substitution of landscape attributes between the two experiments reveals a clear difference of preference patterns. In addition, 36% of the respondents in the monetary experiment ignored the price attribute. This group expressed similar preferences for landscape attribute as respondents in the non-monetary experiment. We also show that ignoring this type of non-attendance leads to a substantial upward bias in monetary value estimates. We conclude that adding a price attribute to choice experiments substantially affects trade-offs and choices made by respondents. Including a payment vehicle ensures that trade-offs between attributes are more pronounced, and that money has to be put where the mouth is. However, controlling for non-attendance appears crucial for obtaining accurate monetary value estimates.

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1. Introduction

The importance of cultural ecosystem services in agrarian landscapes is increasingly recognized as the quality of many landscapes is affected by scale enlargement and intensification of agricultural practices. Parallel to these processes of landscape change, there is a growing societal demand for cultural services in many landscapes (Sayer et al., 2013; Zasada, 2011). In many landscapes, scale enlargement and intensification lead to negative welfare effects. The notion that cultural and recreational landscape qualities should be protected through European agricultural policies by compensating farmers for landscape conservation and maintenance is gaining traction in science and policy (Plieninger et al., 2012; Seppelt et al., 2012; van Zanten et al., 2014a). However, methods to identify and integrate the socio-cultural and economic values of cultural ecosystem services in a consistent way are not sufficiently developed (Chan et al., 2012b; Daniel et al., 2012; Schaich et al., 2010).

To grasp the value of landscapes and to identify which landscape attributes contribute to these values, many studies have investigated stated preferences for agricultural landscapes. In the

domain of stated preference studies, we can distinguish between holistic landscape assessments and attribute-based studies that focus on specific characteristics of landscapes (Hynes et al., 2011). Both holistic and attribute-based studies have applied a diverse portfolio of elicitation methods, including several economic valuation methods (Campbell, 2007; Dachary-Bernard and Rambo-nilaza, 2012; Grammatikopoulou et al., 2012) and non-economic approaches (Arriaza et al., 2004; Dramstad et al., 2006). Economic valuation methods, such as contingent valuation and choice modeling, estimate the willingness to pay (WTP) of respondents for landscape scenarios or attributes by including a financial trade-off. Non-economic landscape preferences – in the context of ecosystem services often referred to as socio-cultural values (Castro et al., 2014; de Groot et al., 2010; Martín-López et al., 2014; Millennium Ecosystem Assessment, 2005) – are measured using a heterogeneous portfolio of conceptual approaches and assessment methods (Scholte et al., 2015; van Zanten et al., 2014b).

Both economic and non-economic approaches have their pros and cons. Economic valuation of ecosystem services is often contested in the literature (Chan et al., 2012a; Sagoff, 2011). Discussions on the use of monetary valuation of ecosystem services range from objections against commodification of the environment (Gomez-Baggethun and Ruiz-Perez, 2011; Schröter et al., 2014) to the risk of inaccurate value estimates as a result of the limited understanding of the functioning of highly complex

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ecological systems (Kumar and Kumar, 2008). Note, however, that the first criticism is not aimed at the approach itself, but at the use of the results, while the second criticism also includes non-economic approaches to values and preferences. In addition, measuring preferences and values through choice experiments has its specific methodological constraints, since preference estimates have been found sensitive to both the predefined levels of the attributes in the experiment and attendance level of the price by respondents (Hanley et al., 2005; Hess et al., 2013; Scarpa et al., 2009). Of course, the first criticism also holds for non-monetary choice experiments. Socio-cultural valuation methods that are used to measure landscape preferences and ecosystem services also have their methodological constraints (Daniel et al., 2012; Schaich et al., 2010). The absence of a trade-off between landscape attributes in the design of many landscape preference studies makes it hard to distinguish the relative preferences different attributes. Moreover, not including a price attribute in experiments makes it impossible to evaluate all effects using the same metric, implying that an overview of the full costs and benefits is difficult to obtain, allowing for implicit rather than explicit trade-offs in decision making.

Given the potential limitations of obtaining accurate monetary value estimates through choice modeling, but acknowledging its advantages over other methods that do not trade-off different landscape attributes, using choice experiments without a price attribute may be a viable alternative to measure the relative importance of landscape attributes. A number of studies in landscape research applied such an approach to explore preference heterogeneity among groups of beneficiaries (Arnberger and Eder, 2011; Soini et al., 2011). Outside landscape research, Aas et al. (2000) and Wattage et al. (2005) applied non-monetary choice modeling to assess the relative importance of attributes of fisheries management schemes. However, these studies did not test whether relative preferences for landscape attributes change as a result of adding a price attribute. The relevant associated question is whether people have different relative preferences for the attributes in the experiment if a monetary trade-off is included. The literature on this issue is limited, but the available evidence shows that there are significant differences in the marginal rate of substitution (MRS) and the ranking of individual attributes between experiments with and without a payment vehicle (Aravena et al., 2014; Carlsson et al., 2007). These results contradict the assumption made in mainstream economics that relative preferences for attributes are independent of the inclusion of a price attribute. Carlsson et al. (2007) suggest that the differences are caused by cognitive overload as a result of increased complexity of the experiment due to adding a price attribute. In addition to these factors, there is the possibility that people do not include the price in making their choices (price-attribute non-attendance). Scarpa et al. (2009), for example, found in an image-based rural landscape preference study that 80–90% of the respondents ignored the price. This could affect relative preferences for landscape attributes, i.e., people who ignore the price may make different choices.

The objective of this study is to address the effect of including a price attribute on relative preferences for landscape attributes. We apply an image-based choice experiment to address preferences for attributes of agricultural landscapes in a case study area in the Eastern part of the Netherlands. We apply a split-sample approach in which about half of the respondents completed a choice experiment without a price attribute, and the other half completed a choice experiment with a price attribute. First, we compare the outcomes of Multinomial logit (MNL) model estimates for the two samples. Second, we assess if respondents who indicate that they ignore the price in the monetary experiment express different preferences for landscape attributes and how this affects WTP

estimates. Here, we test the intuitive hypothesis that respondents who ignore the price and respondents in the non-monetary experiment express similar landscape preferences.

2. Methods

2.1. Data collection and research design

In July 2013, a total of 425 questionnaires were completed through face-to-face interviews in the Dutch municipality of Winterswijk. The respondents, who were tourists, were interviewed on tourist accommodations. To ensure a representative sample of different types of tourist accommodations, such as campsites, bed & breakfasts and hotels, we involved the local tourism association for the selection of the sampling locations. Interviews were conducted by an experienced team affiliated with the Institute for Environmental Studies at the VU University in Amsterdam. A total of 191 respondents completed the experiment without price attribute, while 234 respondents participated in the experiment with price attribute (see Fig. 1). Within the sample of the monetary experiment, we make a distinction between a stated non-attendance sample and a stated attendance sample. The stated non-attendance sample contains respondents who indicated that they did not take into account the price in the choice process. The price attribute is defined as the extra costs respondents would have to pay per overnight stay per room/tent. We intentionally avoided the term tourist tax for the price attribute, since there had been negative publicity about the local spending of tourist taxes and many respondents anchored preferences on tourist tax during the pre-test phase. Except for the inclusion of a price in the monetary choice experiment, questions in all 425 questionnaires were identical.

Regarding the key demographic variables age, education level, gender and income, the samples of the non-monetary and the monetary experiment are almost identical. Table 2 shows that in both samples, the mean year of birth is 1954. The mean and mode education level class in both samples is 'vocational'. Also, both samples contain slightly more female respondents (53% and 52% female). The mean income class in both samples is a net household income of 2000–2500 euros per month. There is no secondary statistical data available to validate the representativeness of our samples in terms of these key demographic variables. However, the fact these samples are rather identical indicates that we have drawn a representative sample of the visitor population of tourist accommodations that was present during the period of our data collection and on the selected interview locations.

The survey is designed to provide policy relevant information of tourist preferences for the visual quality of the agricultural landscape. The type of landscape attributes that are included in the experiment were selected based on a meta-analysis of European landscape preference studies (van Zanten et al., 2014b) and the visual appearance of these attributes in the local landscape context was further specified in close collaboration with a focus group of local landscape experts. Hence, preferences for the landscape attributes are measured in the context of the case study and value estimates are not generically applicable in other agricultural landscapes around Europe (van Zanten et al., 2016). The landscape alternatives were presented to the respondents using digitally calibrated images instead of the standard tabular format of choice cards. Results by Bateman et al. (2009) show that an image-based approach enhances the evaluability of choice situations, thereby reducing respondent judgment error. Additionally, the use of photographs as a valid surrogate for a real landscape experience has been accepted and is common practice in non-economic landscape preference studies since several decades

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