



On the value of drovers' routes as environmental assets: A contingent valuation approach

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ABSTRACT

The aim of this study was to evaluate the non-market benefits resulting from the restoration of an old drovers' route for recreation uses in Valencia (Spain). The valuation was carried out using the Contingent Valuation Method (CVM) through the elicitation of individuals' willingness to pay (WTP). Since 52% of the respondents stated a zero WTP response, in order to inform decision-making processes more accurately, special attention was paid to the problem of zero and protest responses, and also to the possible presence of self-selection by those that protested. For the different specifications considered, results suggest that mean WTP estimates are higher for "rural areas" than for "the Valencia area".

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Introduction

For centuries the practice of the transhumance throughout Spain allowed for the movement of livestock between winter and summer pastures, maximizing resource exploitation through grazing while benefiting ecosystem conservation and biodiversity (Ruiz and Ruiz, 1986). In order to develop this farming practice throughout the Iberian Peninsula a huge network of drovers' routes (named *Cañadas Reales*) was created. These drove roads were governed by livestock organizations (*La Mesta*) under the protection of special legislation dating back to the 13th century. This network of gravel roads, with a length of over 120,000 km and an extension equivalent to 425,000 ha (i.e. 0.8% of the country's area), was used to move up to 3.5 million sheep between lowland and highland areas (Rodríguez, 2004). The flourishing trade of merino sheep wool (appreciated for its high quality) prevented the ploughing of pastures. However, the abolition of *La Mesta* in the 19th century, along with agricultural intensification, industrialization, and subsequent urban expansion, led to a dramatic reduction in these transhumance practices. Hence, despite their legal protection,¹ today the vast majority of the remaining drovers' routes have been

condemned to a state of neglect that is indeed threatening their very existence since they are no longer useful for their traditional uses.²

As Spain's population³ has become increasingly urbanized, the demand for land-based recreation activities continues to grow for a sizable part of the population who have grown weary of living in an environment dominated by noise, concrete and asphalt (Saz-Salazar and Rausell-Köster, 2008). Therefore, the recovery and restoration of the traditional drovers' routes for rural recreation can undoubtedly generate significant economic revenue from rural land of otherwise marginal economic value. Hiking, mountain biking and horseback riding are some of the outdoor recreation activities that can act as a catalyst for rural and regional development. However, despite their potential for recreational activities and the fact that they are open-access resources, so far there is hardly any recreational use of these natural resources since they remain almost unknown to the public. Apart from these recreational pursuits, these drovers' routes can also be considered ecological corridors (Múgica et al., 1996) permitting the movement of animals, the propagation of plants and genetic interchange, and connection between different protected areas.

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¹ In order to avoid their destruction and misappropriation, the Spanish Act 3/1995 on drovers' routes grants legal protection to the whole network of drover's routes giving priority to their traditional uses (transhumance practices).

² For those readers that are not familiar with the transhumance literature, we refer them to Manzano-Baena and Casas (2010) for a comprehensive explanation of the historical evolution of these husbandry practices in the Iberian Peninsula.

³ According to UNFPA (2010) in Spain 77% of the population lives in urban areas while in Western Europe this figure is 80%.

While policy makers are aware of the economic opportunities arising from outdoor recreation activities, rational public decision-making requires us to clearly identify these economic benefits and evaluate them appropriately in order to compare them in a cost-benefit framework (Hanley and Barbier, 2009; Buckley et al., 2009). However, estimating these benefits is not an easy and free-of-controversy task, given their non-market nature, as they share the non-rival and non-excludable nature of public goods.⁴ To overcome this obstacle, economists have traditionally addressed this valuation problem by adopting methodologies that rely upon surveys, as is the case of the Contingent Valuation method (CVM) (Mitchell and Carson, 1989). In a typical CVM survey respondents are asked about their willingness to pay (WTP) for the hypothetical provision of a public good or their willingness to accept (WTA) for its hypothetical loss. These economic values represent the economic benefits (or costs) of the proposed change and therefore may be aggregated in a cost-benefit framework to obtain the social benefits (or costs) from public policies that usually improve (or worsen) social well-being. Critics of CVM argue that elicited values are not valid measures of economic benefits because they are not founded upon actual behaviour. Hence the hypothetical nature of this methodology can result in economic values that are biased upwards (Ajzen et al., 2004; Collins and Vossler, 2009; Vossler and Evans, 2009; Murphy et al., 2010; Poe and Vossler, 2011), thus affecting the validity and reliability of CVM. Nevertheless, as Barr and Mourato (2009) point out, whatever the feeling towards CVM, policy decisions that ignore non-market values are at least incomplete and at worst misleading.

This paper, using a contingent valuation approach, aims to contribute to the growing literature in this area of outdoor recreation (Daubert and Young, 1981; McConnell, 1985; Bockstael et al., 1991; Christie, 1999; Hanley et al., 2003a; Buckley et al., 2009; Loomis and Keske, 2009; Howley et al., 2012). A case study is designed to estimate the non-market benefits derived from the restoration and maintenance of a drovers' route in Eastern Spain for recreational uses. This drovers' route, known as *Cañada Real del Reino de Valencia*, is located in the province of Valencia. Its current state of neglect – due to a reduction in transhumance practices – has prompted the need to seek alternative uses as a basis for the strategic planning of rural areas. Hence regional authorities are very interested in knowing the potential role that could be played by this environmental good in revitalizing and sustaining the rural economy.

In order to provide accurate WTP estimates to help in decision-making, another aim of this study is to shed some light on the issue of zero and protest responses in CVM studies, since 52% of respondents stated a zero WTP response. To deal with this problem a twofold solution was adopted. On the one hand, assuming that a sizable part of the respondents were not in the market of the environmental good in question, a Spike model was applied (Kriström, 1997). And, on the other hand, a bivariate probit model with selection was estimated in order to demonstrate whether the protest decision is (or not) correlated with the decision to participate in the hypothetical market. This model takes into account the possible presence of self-selection originated by the presence of protest responses (Lee et al., 1980).

The remainder of the paper is organized as follows. In second section the case study is presented. Section three describes the design of the questionnaire and the sampling process. Section four presents the econometric models applied, while outlining the Spike model and the procedure followed to deal with the problem of zero and protest responses. Section five presents the results obtained and validates them from a theoretical point of view. Section six addresses the aggregation issue in order to estimate the

non-market benefits resulting from this policy change aimed at restoring this drovers' route for recreational uses. In section seven the results are discussed. Finally, Section eight draws some conclusions and policy implications.

Case Study: La Cañada Real del Reino de Valencia

In Spain the ecological rationale for the practice of transhumance can be found in the physical configuration of the Iberian Peninsula, which is dominated by the Mediterranean climate, and where only the most northern areas enjoy permanent moist conditions (Manzano-Baena and Casas, 2010). In fact, the main drovers' routes depart from the south-west finishing in the mountainous regions of the north of the country. *La Cañada Real* is a drovers' route located in eastern Spain that crosses the province of Valencia from east to north-west. It measures 130 km in length, with a variable width of between 37–75 m and covers an area of 9240 ha (see Fig. 1). In the past, this piece of land allowed for the practice of the transhumance, that is, the seasonal movement of livestock from lowland to higher pastures in summer, while in winter the opposite route was taken. As with the rest of drovers' routes in Spain, the loss of special protection with the abolition of *La Mesta* in the 19th century was the beginning of its decline. Later, industrialization, technological changes in the cattle farming, which brought about the progressive intensification of production and the rationalization of feeding with the use of fodder, as well as alternative means of transport, led to the progressive abandonment of this drovers' route and to its current state of neglect. In fact, its extension has been reduced considerably as a consequence of land reclaimed for forestry and for other agricultural, industrial, and urban uses. In some places, houses, and roads have been built over the original course of this drovers' route. Furthermore taking advantage of its course, a wind farm was set up near the town of Buñol. As a result of all these changes, it would now be virtually impossible to return the route to its original state.

In view of its current state, the public bodies involved (mainly the regional government) have expressed the need to find new uses that are compatible with its original function – the movement of livestock. Therefore, this implies the recognition of the role that it can play as an environmental asset through the promotion of its recreational use (hiking, mountain biking and horseback riding, etc.) without forgetting its role as an ecological corridor favouring biodiversity, the movement of wildlife and the propagation of plants (Manzano and Malo, 2006). To this respect, Gómez Sal and Lorente (2004), point out that the extensive network of transhumant tracks have a high natural and cultural value and present problems of profitability that demand integrated approaches with a clear orientation towards multifunctionality (tourism, grazing, nature conservation, education, etc.).

Although early literature on outdoor recreation has suggested a potential conflict between wilderness recreation and nature conservation (see, e.g. Cole, 1993; Hanley et al., 2002; Loomis and Keske, 2009; Pickering et al., 2010), this issue was not addressed in this research since it was an ex-ante valuation scenario aimed primarily to value the potential benefits derived from the future recreational use of this natural asset once it has been restored. Therefore, in order to facilitate the understanding of the valuation scenario, it was not deemed necessary to anticipate this potential conflict. Nevertheless, we are aware that the open-access condition of this natural resource, coupled with an increasing demand for outdoor recreation, could cause future problems such as placing more pressure on the natural environment affecting the quality of the recreational experience itself.

Finally, the recovery and subsequent maintenance of this public good for these new uses depend on the supply of public funds that

⁴ As an anonymous referee points out, outdoor recreation activities can be rival in consumption if there are crowding externalities.

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