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Valuing tourism demand attributes to guide climate change adaptation measures efficiently: The case of the Spanish domestic travel market☆

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HIGHLIGHTS

- Southern Spanish coastal provinces will become less desirable in summer.
- Southern Spanish coastal provinces will experience market share losses in summer.
- Adaptation strategies aimed at changing destination-specific attributes are required.
- Knowing the economic value of destination assets is crucial for policy efficiency.

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ABSTRACT

Climate change (CC) may have substantial impacts on the distribution of current tourist flows by changing patterns of seasonal volumes of tourist demand. Such impacts are of potential importance for the Spanish coastal tourism destinations. In a context where the implementation of adaptation measures becomes relevant to counteract the expected CC-induced travel market share losses, this paper examines the role of preference analysis in the design of CC adaptation policies. Using data from the 2005 Familitur Survey on summer domestic tourist flows, a destination choice model is implemented to: 1) highlight the role of temperature and its relationship with other destination-specific attributes, 2) estimate CC-induced changes in travel market shares, and 3) compute the economic value tourists assign to a set of destination assets as a way to better permit the recovery the expected market share losses by regional tourism authorities.

1. Introduction

It has been argued that human-induced higher concentrations of greenhouse gas emissions will increase the planet's average temperature through processes of re-radiation (IPCC, 2001). This global warming has a direct impact on weather conditions and indirectly affects natural and urban systems. In turn this has potential implications for production and consumption patterns. As stated by Stern (2007), if action is not taken, the overall costs of climate change (CC) may be equivalent to losing at least 5% of the global gross domestic product each year.[2]

Despite the difficulties of making an economic assessment of CC impacts at a sectorial level, numerous studies have used various socioeconomic scenarios and climatic projections to show that CC can seriously affect the tourism sector. Indeed it is thought that CC induced changes in tourism demand patterns can lead to some regions benefitting from global warming at the expense of others (Amelung, Nicholls, & Viner, 2007; Amelung & Viner, 2006; Lise &

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[2] The overall CC costs could increase to 20% of the global gross domestic product if a wider range of risks and impacts is considered (Stern, 2007).

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Tol, 2002) for a number of reasons. First, the expected alterations in weather conditions, especially temperature, are key determinants of spatial and seasonal tourism distribution (De Freitas, Scott, & McBoyle, 2008; Gómez-Martín, 2006; Maddison, 2001; Perch-Nielsen, Amelung, & Knutti, 2010; Scott, McBoyle, & Schwartzentruber, 2004). Second, the expected environmental impacts on natural and urban systems will alter tourists' decisions because environmental quality strongly influences destination choice (Richardson & Loomis, 2004; Scott, Jones, & Konopek, 2007). In this context, the impossibility of a total mitigation and the fact that CC effects will remain for several decades, even if emissions are kept constant at current levels, make adaptation policies in tourism destinations unavoidable.

The need for adaptation has been recently recognised by the scientific community (Tol, Fankhauser, & Smith, 1997). The UN Framework Convention on CC encourages governments to adopt mitigation policies, and the Delhi Ministerial Declaration on CC and Sustainable Development (issued at the Eighth Conference of the Parties of the Framework Convention on CC in 2002), states that adaptation is of high priority for all countries (Adger, Arnell, & Tompkins, 2005). Adaptation is important because it contributes to increasing the resilience of the impacted ecological and social systems. Indeed, adaptation has to do not only with implementing operational decisions but with building adaptive capacity based on iterative learning about ecosystem functioning and management successes and failures, thus increasing the ability to respond to CC (Pahl-Wostl, 2007; Tompkins & Adger, 2004; Tompkins et al., 2010). Adaptation then allows changes in management practices on the basis of new experience and insights, thereby hopefully leading to greater ecological stability and more flexible institutions for resource management (Lee, 1999). Understanding adaptation as a way to increase community resilience can help reduce vulnerability and/or exploit new opportunities (Yohe & Tol, 2002).

As a policy option, adaptation represents a prescriptive exercise that requires information about possible strategies and principles to evaluate their success (Smit, Burton, Klein, & Wandel, 2000). This raises the question of policy evaluation, which implicitly means that adaptation should be subject to social acceptance; that is, it should accomplish generic principles of effectiveness, equity, efficiency and legitimacy (Adger et al., 2005). Adaptation can be adjusted to ongoing environmental and social change only by opting for socially accepted measures. Hence, the estimation of the social costs and benefits associated with adaptation policies and the analysis of individual preferences are cornerstones of policy evaluation. Indeed, some authors argue that responding to CC requires an understanding of the motives, behaviour and values of the many affected actors (Belle & Bramwell, 2005). Put another way, policy success can be ensured only if stakeholders' and visitors' preferences are known (Adger et al., 2005).

Although adaptation analysis has captured the attention of researchers in various fields, the techniques only remain in their infancy. In fact, there are but few such studies to be found in the tourism arena (Scott & McBoyle, 2007). Moreover, such analysis has been mostly restricted to quantitative analysis on the basis of impact assessments with little evidence of strategic adaptation planning (Scott & Becken, 2010; Scott, de Freitas, & Matzarakis, 2008) and even less attention to the analysis of individual preferences (Belle & Bramwell, 2005).[3] Indeed, a majority of studies address operational adaptation measures and the difficulties of applying them, especially in the context of ski and beach resorts and small islands.[4] Other papers mainly focus on analysing the expected reallocation of climatic assets across tourism regions without giving guidance on which adaptation measures could be undertaken. The contribution of these studies to policy making is therefore often limited.

In the light of this, this paper aims to serve as a basis for the design of CC adaptation policies with an emphasis on the role of preference analysis. To this end, the article focuses on the expected reallocation of summer domestic tourist flows induced by the anticipated asymmetric temperature increase in a set of Spanish coastal provinces. The paper is structured as follows. Section 2 presents the data used and outlines the methodology employed to elicit tourist preferences. Key determinants of the tourism demand function including temperature are presented. On the basis of this analysis and taking into account temperature projections for the sample set, the predicted changes in market shares under various CC scenarios are reported in Section 3. Because any regional adaptation strategy to minimise the loss of climatic attractiveness requires considering the relationships between temperature and the remaining tourism demand function determinants, Section 4 presents a welfare analysis oriented to guiding adaptation policy design. Several examples of adaptation measures are also provided. Finally, a number of conclusions are drawn in Section 5.

2. Analysing tourist preferences in the Spanish domestic travel market

Over the last decade, the Spanish domestic travel market has gained importance and now represents three-quarters of the aggregated tourism demand. Although tourist trips spread across the whole of Spain, coastal Mediterranean destinations (such as Andalucía, Comunitat Valenciana and Catalunya) are among the most visited destinations due to their desirable weather, hinterland and beach destinations. This helps to explain why almost half of these trips are mainly motivated by recreation and vacation, which results in a strong seasonal pattern linked to sun and beach activities (IET, 2005).

To analyse tourist preferences in the Spanish domestic travel market and hence determine the key factors that explain tourism demand, a yearly survey conducted by the Spanish Institute of Tourism Studies has been used. The survey includes information about the trips undertaken by 12,400 Spanish households: e.g., main destination, accommodation type, transport means, stay length, and party size (Familtur, 2006). Because the paper focuses on the analysis of the expected reallocation of tourist flows in the summer season due to CC-derived temperature increases, only recreation and leisure trips from June to September are considered. Thus overseas trips to and from the Balearic and Canary Islands as well as short-distance trips within the province of residence of the tourists have been excluded. As a result, 17 Spanish coastal provinces are assessed as tourist destinations after rejecting Almería and Vizcaya due to their low travel market shares. This led to a final sample of 2169 trips characterised by a mean party size of 2.40 individuals, an average length of stay of 6.58 overnights, and a mean daily expenditure of 77.84 euros. Most of these trips have

[3] Some examples are Braun et al. (1999), Gössling, Bredberg, Randow, Sandström, and Svensson (2006), Kozak (2002) and Scott, Gössling, and De Freitas (2007), who adopt a bottom up/survey-based orientation to the analysis of tourist preferences for climate conditions.

[4] See Dawson and Scott (2007), Elsasser and Bürki (2002), König and Abegg (1997), Scott, McBoyle, and Mills (2003), Scott, McBoyle, Minogue, and Mills (2006), Scott, McBoyle, and Minogue (2007), Scott, Dawson, and Jones (2008), Steiger and Mayer (2008) and Wolfsegger, Gössling, and Scott (2008) for discussions about adaptation measures in the context of ski resorts and Becken (2005), Ceron and Dubois (2005), Perry (2000), Phillips and Jones (2006), and Uyarra et al. (2005) for similar discussions when it comes to beach resorts and small islands.