

# A model to study the economic impact of collective accommodation in a region

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## Abstract

This paper presents a statistical methodology to estimate the economic expenditure of tourists at the destination taking the expenditure in collective accommodation establishments as the starting criterion. Since classical parametric procedures (linear or logarithmic regressions, etc.) are not suitable in this particular case, a more realistic and objective model based on new non-parametric techniques is developed. This model allows the analysis of the expenditure at the destination taking into account the different tourist typologies. As an example of its application we offer the results obtained in the analysis of tourist expenditure in the region of Asturias, in northern Spain. © 2005 Elsevier Ltd. All rights reserved.

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## 1. Introduction

One of the aims of the tourist industry consists of enhancing the visitors' expenditure in a specific socio-economic situation. Thus, the analysis of tourist expenditure within the framework of a regional economy is of vital importance to know the tourist consumption habits in that particular destination better and to study the economic impact of tourist activity in the region. Regarding this we should remember that the Tourism Satellite Accounts (EUROSTAT, 2002b; Frechtling, 1999; World Tourism Organization, 1998) provide an essential methodological tool to quantify the economic consequence derived from tourism activities.

Tourism consumption is defined as the total expenditure in visitors' consumption during their journey and stay at the destination. The World Tourism Organization (2000) recommends that the tourism consumption which takes place during the trip should be broken down into the following product categories: tourist packages, accommo-

dation, food and drink, transport, entertainment, shopping and others.

In order to estimate the final consumption of the tourists at the destination there are several methodologies. However, as tourism is mainly an activity based on demand, the best method to collect information about tourist expenditure is to ask the visitors during their stay in the region (EUROSTAT, 2000; World Tourism Organization, 1994).

Unfortunately there are too many problems to use this method in a reliable way: problems of representativity of the sample, biased results due to the length of stay, the degree of approachability of tourists, the method to collect information, the cost of fieldwork, etc., this information is needed in tourism management (Wöber, 2003). Therefore it is necessary to develop economic models that complement and improve the analysis method of tourist expenditure in a region.

There have been several empirical studies that aim at modelling the behaviour of tourist demand. Lim (1997), for example, classified 100 models of international tourism and he observed that most of them are based on temporary series of data. In Spain, the second country in the world in inbound tourism (World Tourism Organization, 2003), there are a great number of experiences that deal with

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tourist expenditure, such as for example the studies of the Instituto de Estudios Turísticos (2002).

The experience in analysing tourist demand and expenditure of the Tourism Information System of Asturias (Valdés, Ballina et al., 2001; Valdés, Menéndez, Aza, & Torres, 2001; Torres, Sustacha, Menéndez, & Valdés, 2002) has led to investigating the development of methodologies of tourist expenditure models; this has the advantages of having relatively economical methods, which do not require the visitor to remember all the details of their trip but only some data about their stay, according to the methodology of the World Tourism Organization (2000).

In this paper we present the main steps of the methodology proposed to estimate the expenditure of tourists at the destination taking the expenditure on accommodation as a starting point, as this is a kind of information that can be easily obtained from the analysis of establishment tariffs. In particular the behaviour of the expenditure of tourists who stay overnight at collective accommodation establishments is analysed and the functional relationship between the expenditure which takes place at the accommodation and that which takes place outside the establishment (meals at bars and cafés, entertainment or sport or cultural activities, shopping, souvenirs, and other presents during their stay at the region) is obtained, taking into account the typological features of tourists.

As an example of the application of this methodology, this has been applied to Asturias, a region in northern Spain (Fig. 1), which receives more than 5.3 million visitors p.a. and where the economic impact of tourism accounts for 8.4% of the regional GDP (Valdés, Torres, & Del Valle, 2003). The study shows the main economic results and interpretations, as well as their implications on tourism, particularly highlighting that the proposed model can be a useful instrument to develop tariff strategies according to the maximum level from which the increases of accommodation tariffs do not imply increases in the expenditure on other concepts.

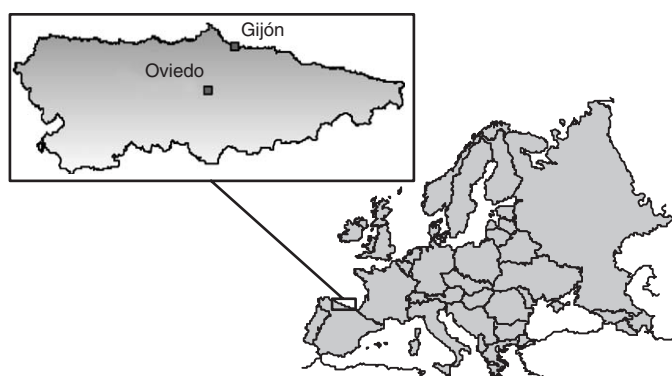


Fig. 1. Location of the region of Asturias.

## 2. Methodology of the study

The model to estimate tourist expenditure was developed at different stages (see Fig. 2) that are described below in this section. We start from two working hypotheses:

(1) The accommodation expenditure is a natural indicator of the economic resources of tourists in order to meet other needs during their trip (meals, shopping, entertainment, etc.). A priori, we consider this relationship is non-decreasing, so that a higher expenditure on accommodation indicates that tourists have higher economic resources and thus a higher total expenditure at the destination is expected. The non-decreasing relationship entails the possibility that the expenditure outside the accommodation establishment can become more stable at a particular moment. Therefore we will not use any functional starting model (lineal, logarithmic, potential, etc.).

(2) The tourists who visit a region do not have a homogeneous behaviour regarding their behaviour on their expenditure at the destination. Apart from the previous hypothesis, in order to analyse the economic impact of collective accommodation on a region, it seems reasonable to consider the qualitative features of the traveller, such as the reason for travelling, the type of accommodation, the area where she/he stays overnight, etc., and which give account for the different tourist profiles. The methodology should therefore obtain different profiles of interest for the present analysis, i.e. estimate the economic impact of tourism taking the expenditure on accommodation as the starting point, and should allow a specific analysis of the behaviour of those profiles.

Both hypotheses can be briefly summarized like this: the higher the economic level of a tourist, the higher the expenditure on accommodation and outside this at the destination, and depending on the qualitative typology of visitors, there will be different flexibilities, according to the recommendations of the World Tourism Organization (1998).

Below the steps we have followed to obtain the model are briefly described. The most relevant aspects will be detailed in the following sections.

(1) Analysis of the collective accommodation industries in the region, and in particular of the service rates and the occupancy rates. The analysis of the basic characteristics of the supplied services and of their prices is based on a yearly

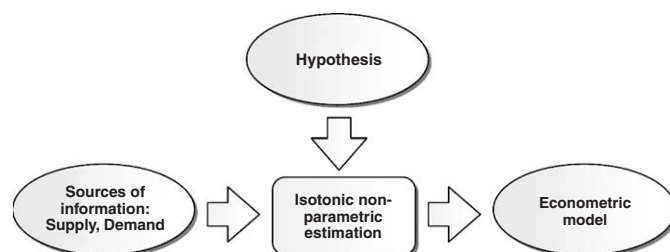


Fig. 2. The methodology diagram.

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