How do tourists book their accommodation?

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Abstract:

This paper analyzes tourists' preferences for accommodation booking using a sample of tourists visiting Asturias (Spain) between 2010 and 2016. We examine the differences between first-time and repeat visitors, price sensitiveness and the effects of information sources on the booking mode selected. Moreover, we also address the change in preferences over time. To do so, we estimate a Sequential Logit Model that allows us to decompose the booking decision into a sequence of interrelated steps. Our results show that the differences in booking mode preferences between first time visitors and repeaters crucially depend on how they get informed about the accommodation. In addition, highly price sensitive tourists tend to book in advance and prefer to make the reservation by the internet instead of by phone.

Keywords: booking mode, Sequential Logit model, tourists' decision tree, online booking.

JEL codes: C25, Z30

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1. INTRODUCTION

The accommodation sector accounts for a great share of the total tourism spending (Nicolau and Masiero, 2017) being thus one of the industries to which scholars have devoted much attention (Losada et al., 2017). The recent development of online platforms for accommodation booking such as *Booking.com* or *Trivago*, among others, have dramatically changed the tourist sector, shifting the industry towards online distribution channels (Buhalis and Law, 2008). The online channel has reduced information asymmetries between potential guests and accommodation firms, increasing the competition in the industry and becoming the most preferred way for many tourists to book the accommodation. However, distrust in transaction safety constitutes one of main reasons why some potential tourists still prefer traditional booking modes such as TA or the telephone (Tussyadiah and Pesonen, 2016).

This paper is related to the wide body of literature that studies the new trends in booking accommodation patterns and its determinants. These include, among others, Guttentag (2015), Sparks and Browning (2011) and Gavilán et al. (2018). Nevertheless, what this extant literature has not addressed yet and remains to be analyzed is the differences in booking patterns between first time visitors and those who have been to the destination before, which indeed constitutes one of the major contributions of this paper. Experience with a destination might significantly shape the way tourists book their accommodation.

On the other hand, much attention has also been devoted to tourism information search behaviour and how it affects tourist's choices (Gursoy and McCleary, 2004; Draper, 2016). The purchase of an accommodation is a complex decision that normally requires the potential buyer to engage in a large information search about prices, characteristics of the lodging, location, etc. Although nowadays the vast majority of potential tourists opt for the online channel to gather information before making a reservation (Lehto et al., 2006), other consumers still prefer to rely on more traditional information sources such as TA or travel guides. For the Spanish case, 75% of consumers that have made purchases online have previously searched for information on the internet, whereas among those who opted for an offline channel this percentage decreases to 54% (INE, 2017). Therefore, a second aim of the paper is to explore the relationship between how tourists get information about the accommodation and the channel they subsequently choose for making a reservation.

A third issue of concern here is how the booking mode for accommodation may depend on tourist's price sensitiveness. According to the last wave of the Spanish Household Technological Equipment Survey (INE, 2017), almost an 80% of respondents who made any online purchase declared that special discounts or price deals were the main reason for buying online. This seems to indicate that price sensitive consumers are more prone to book their accommodation online.

Therefore, our main aim here is to examine the effects of being a first time visitor to a destination, the information sources about the available accommodations and tourists' sensitivity to price on the booking accommodation mode chosen. To this end, we specify the reservation decision as a sequence of binary interrelated decisions. First of all, tourists decide whether to make a reservation for a bedroom in advance or just purchase it at the time of arriving at the hotel (no booking). If they opt for booking in advance, they can choose to do it themselves or through external intermediaries (TA, friends, relatives,

enterprise). In case they decide to book the accommodation themselves, they can do it by telephone or by the internet. Finally, if they make the reservation through intermediaries, they can either choose between a market one (TA) or a non-market one (friends, relatives, enterprise). Among these different stages in the decision-making, we specially devote our attention to the online booking choice.

As our study case, we use microdata obtained through personal interviews to a representative sample of tourists visiting the Principality of Asturias (Spain) and staying at hotels[5] during the period 2010-2016, which allows us to further assess the shift that has taken place towards the internet as the preferred booking mode over time. Although our focus here is on the effect of information sources, price sensitiveness and the differences between first-time visitors and repeaters, we also control for tourists' sociodemographic characteristics, length of stay, hotel quality and travel purpose, among others.

From a methodological point of view, we estimate a Sequential Logit Model that allows us to analyze the effects of the above mentioned variables on the four sequential binary choices considered. In this regard, a further contribution of the paper deals with the treatment of the unobserved heterogeneity in preferences. Provided that the Sequential Logit Model parameter estimates are quite sensitive to the presence of unobserved heterogeneity (Cameron and Heckman, 1998, 2001), we consider a random normally distributed error term in our estimations as to control for unobservables. Its magnitude and correlation with the explanatory variables is identified by means of a sensitivity analysis. To the best of our knowledge, this is the first empirical application of this methodology in the tourism literature.

Our results show that being a first time visitor and having gathered information by the internet positively affect the likelihood of booking their accommodation online. However, first time visitors who also look for information by the internet tend to prefer the telephone. Moreover, the estimates show that highly price sensitive tourists tend to book in advance and prefer to make the reservation by the internet instead of by phone. There is a clear tendency towards booking in advance and booking by the internet as opposed to by phone over time. Another interesting result is that distance to origin is positively related to the probability of booking by the internet whereas this probability decreases with the length of the stay.

Our findings provide a better understanding of tourists' preferences for accommodation booking mode, which might be of great interest for public authorities, Destination Management Organizations (DMO) and hotel managers. By uncovering the effects of information sources, visiting the destination for the first time and price concern on the tourists' booking mode choices, hospitality managers can adapt their booking platforms to tourists' desires and characteristics, thus enhancing a better management.

The paper is structured as follows. After this introductory section, in Section 2 we review the related literature. Section 3 is then devoted to the theoretical background and the econometric modelling. Section 4 describes the database and the variables employed. In Section 5 the empirical results are presented and interpreted. Finally, Section 6 makes some concluding remarks.

[5] We do not pay attention to the accommodation booking patterns in other types of accommodations such as rural houses or hostels as most of these types of accommodations do not offer the possibility of making the reservation by the internet.

2. LITERATURE REVIEW

Tourist's accommodation booking patterns have received substantial attention in the tourism literature (see for example Schwartz, 2012). The decision to book the accommodation in advance basically depends on a trade-off between the risks of potential unavailability of where to lodge and the gains of finding exceptional last minute deals (Schtwarz and Chen, 2009). In this sense, information and communication technologies (ICT) have significantly changed the traditional role of travel agencies (TA) and tour operators (TO) (Berné et al., 2015).

Social media websites and online booking platforms are becoming increasingly popular (Xiang and Gretzel, 2010). For example, in Norway up to 80% of customers booked their accommodation through *Booking.com* (Gössling and Lane, 2015). One of the main advantages that the online booking platforms offer to customers is the possibility of comparing prices, allowing price sensitive consumers to search for the most competitive ones, following a deal-seeking behavior (Chen and Schwartz, 2008). Another important advantage of online booking platforms is that people can post positive or negative experiences and evaluations. In this sense, growing attention is nowadays being paid to user-generated contents (UGC) (Gössling et al., 2018). Consumers tend to rely more on reviews from peers because they perceived them as relatively less unbiased and independent than those from marketing organizations, who normally emphasize the positive aspects and hide the negative ones (Dickinger, 2011; Filieri and McLeary, 2013)[6]. Nonetheless, due to the inherent information asymmetry, the credibility of UGC merely depends on being published by well-known online travel communities[7]. An example of this is the research by Masiero and Nicolau (2016), whose results indicate that individuals who stay up to 3 days display a higher preference for hotels which are close to the city center and that online user-generated ratings increase the probability of a hotel being chosen.

Another important advantage of the online channel for booking the accommodation is the possibility of making last-minute reservations. Tourists who do not plan their trip well in advance might be more prone to use the online channel. Nicolau and Masiero (2017) analyze the determinants of advanced booking and find that tourists who plan to stay longer and those who travel in big groups both tend to book with higher anticipation. In addition, those who book through the DMO call center exhibit higher anticipation compared with the hotel website.

As for the role of information on booking patterns, a vast amount of recent literature in tourism has devoted attention to the interdependencies between online information contents and the propensity to book an accommodation[8]. The majority of studies agree to point that positive online reviews significantly increase hotel room sales (Ye et al., 2009), being this effect higher for lesser-known hotels (Vermeulen and Seegers, 2009). However, there is evidence that people tend to weigh negative information more strongly (Sparks and Browning, 2011; Papathanassis and Knolle, 2011). In this sense, Gavilán et al. (2018) study the interdependencies between ratings and the number of reviews. Their

[6] Nonetheless, reviewers are not randomly selected from the population of tourists, being those extremely satisfied or dissatisfied the most likely ones to engage in online word-of-mouth (Anderson, 1998).

[7] In this regard, Casaló et al. (2015) demonstrate that participants in an experiment display more favourable attitudes towards a hotel when it appeared in a list on TripAdvisor rather than in an unknown travel community.

[8] See the review of the literature on electronic Word-of-Mouth (eWOM) by Serra-Cantallops and Salvi (2014).

results indicate that the trust in good ratings depends on the number of reviews, whereas the number of reviews does not affect the reliability of bad ratings. In general terms, better reviews are associated with those accommodations with a flexible cancellation policy and longer cancellation period (Liang et al., 2017). Tourists seem to rely on accommodations with the "Superhost" badge, as this label acts as a signal of better quality (Liang et al., 2017). Moreover, the degree of information search involvement when travelling seems to differ by gender. According to Kim et al. (2007), women display more positive attitudes toward off-line information sources and tend to seek information from various sources.

Other studies have analyzed the importance of online reputation management (Dijkmans et al., 2015; Prayag et al., 2018). Online contents do not only need to be trustworthy but also up-to-date, as many consumers tend to focus on the last reviews. In addition, consumers attach high importance to presentation and source credibility (Sparks and Browning, 2011). Information search requires time, money and even giving up other more desirable activities (Lehto et al., 2006). When time is scarce, consumers become goal-oriented (i.e. lack of interest to be involved in complex decision process) and prefer easy to evaluate information. They are not willing to spend time searching for detailed information and look for "easy-to-access" and "easy-to-process" one. In this regard, the advantage of the availability of a vast amount of user's reviews can become a problem of information overload that might even hinder the tourist's decision-making (Martín-Fuentes et al., 2018).

However, in spite of the big advantages that the online channel provides to customers, other scholars have indicated that some consumers do not trust in online booking because they perceived it as more risky than traditional channels (Ko et al., 2004). To a certain extent, the absence of interaction with service provides might make consumers to feel more insecure and thus lead to higher consumption uncertainty (Park and Nicolau, 2015). For a sample of American and Finnish travelers, Tussyadiah and Pesonen (2016) find that trust constitutes an important barrier for tourists to adopt P2P accommodation. In this sense, Sideshmukh et al. (2002) note that trust is the most important determinant on whether people purchase online or not. In the tourism context, risk is a major concern given the intangible nature of tourism services (Ruiz-Mafé et al., 2009). Concerning the perceived risk in travel booking, Park and Tussyadiah (2017) study its determinants when tourists book by their smartphones. Their findings clearly indicate that consumer's concerns about privacy and security on the one hand, and the difficulty to judge the quality of travel products online on the other are the main factors that prevent consumers for booking on the online channel. Based on descriptive statistics, Toh et al. (2011) indicate that although a substantial share of travelers use the internet for information search, they then book their accommodation by another way different from the internet (usually by phone). Those who choose the online channel for making the reservations prefer hotel websites rather than generic booking platforms as to avoid third-party booking fees. Their results also show that pleasure travelers tend to place more importance to the quality of the hotel website. Although in general consumers perceive platforms like TripAdvisor as trustworthy (Jeacle and Carter, 2011), possibly due to the above reasons some consumers do not trust in online contents. As a result, potential buyers may discard online booking mode and rather prefer traditional ones.

Apart from the possible risks associated with online booking, some tourists might prefer to purchase their accommodation through TA in order to economize in terms of time and effort. As indicated by Bargeman and Van der Poel (2006), tourists who are not willing

to engage in a large information search prefer to organize their trips by a TA. Furthermore, for some tourists the human factor cannot be substituted by the use of new technologies. For example, in the context of tourist information offices design, Araña et al. (2016) find that the most relevant attribute for tourist satisfaction is personal interaction, i.e. being attended by a person to whom ask questions and advice and who can speak the visitors' language. In fact, visitors would be willing to pay a little more than 3 € in exchange of an excellent personal service.

Whereas the effects of UGC, reviews and hotel reputation on the propensity to book an accommodation have been widely studied in the literature, to the best of our knowledge there are no empirical studies that attempt to empirically measure the determinants of the booking accommodation mode. This paper tries to fill this gap.

3. MODEL

When tourists travel to a destination one of the decisions they have to make is where to lodge. Depending on their preferences and budget constraints, they choose to stay in a hotel, in a rural house or at a private accommodation, among other possibilities, in a broad sense. In this paper we only consider tourists who lodge at hotels. Therefore, we take the decision about where to stay as exogenously given.

For studying the determinants of the tourists' accommodation booking decision, a benchmark model could be the well-known Multinomial Logit Model (hereafter MNL). Given that tourists face different options for making a reservation for a trip and are supposed to choose the one that provides them the highest level of utility, we could think of modelling the booking mode choice under this framework. However, the MNL assumes that each booking mode alternative (i.e. by internet, by phone, through a TA, etc.) is equally probable from a theoretical point of view. In other words, it implies that the entire sample is "at risk" of choosing each of the possible options (i.e. each individual considers the entire choice set simultaneously). However, it seems that the booking mode election could be better characterized by a sequence of steps or choices. For example, tourists might first decide whether to make a reservation in advance or just purchase the bedroom at the time of arriving at the hotel. Then, if they choose to make a reservation, they can opt for doing the task themselves or asking someone else for doing it on behalf of them, and so on. Several scholars have described the purchase of a tourism service as a funnel-like process in which consumers eliminate some irrelevant options from the total set as to construct a reduced "consideration set" from which they finally choose (e.g. Sirakaya and Woodside, 2005) Under this framework, the sample "at risk" of choosing between booking through intermediaries or doing it the tourist himself has been selected among those who previously decided whether to book in advance or not.

Due to these reasons, we model the booking decision as a sequence of dichotomic choices. Specifically, we estimate a Sequential Logit Model (hereafter SLM)[9]. This model, originally proposed by Mare (1979, 1980, 1981) for the study of educational transitions, is especially suitable for decision-making processes that can be operationalized as a sequence or binary decisions or steps, normally referred as *transitions*. This model has previously been applied to model different sequential decisions such as when to retire

[9] This model is also referred as sequential response model (Maddala, 1983), continuation ratio logit (Agresti, 2002), the Mare model (Shavit and Blossfeld, 1993) and the model for nested dichotomies (Fox, 1997).

(O'Rand and Henretta, 1982), automobile demand (Cragg and Uhler, 1970), educational attainment (Buis, 2015) and parents' decision to vaccinate their children (Barboza and Domínguez, 2016), among others. However, to the best of our knowledge, this is the first empirical application in tourism.

Conditional on lodging at a hotel, we define the following decision tree (see Figure 1): 1) whether to book the bedroom in advance or just purchase it personally at the time of arriving (walk-ins), 2) conditional on booking in advance, whether to make the reservation the tourist himself or through external intermediaries[10], 3) conditional on booking through external intermediaries, whether to make the booking through a TA or let the enterprise where the tourist's works, friends or relatives to make the booking on behalf of him, and 4) conditional on being the tourist himself who makes the booking, do it by telephone or through the internet.

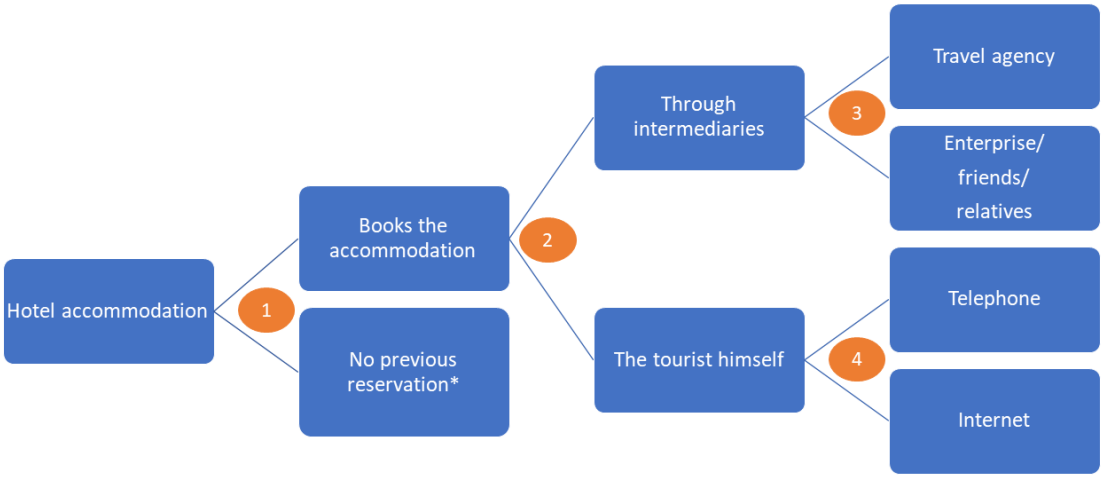

Figure 1.- Tourists' booking accommodation decision tree.
* The tourist purchases the bedroom at the time of arriving at the hotel.

We operationalize the booking accommodation decision in the following way. We estimate a logistic regression for each of the four interrelated binary decisions introduced before (see Figure 1). Based on the usual latent representation of a binary choice, the first transition is modelled as follows:

$$U_1^* = \alpha_1 + X\beta_1 + \varepsilon_1 \quad (1)$$

Where U_1^* denotes the latent utility of making a reservation in advance, X is a set of explanatory variables, α_1 is a constant term, β_1 is a vector of parameters to be estimated and ε_1 is a random error term which is assumed to be logistic distributed with mean 0 and standard deviation $\pi^2/3$. The observation mechanism assigns $y_1=1$ if $U_1^*>0$ and $y_1=0$ otherwise. The probability of making a reservation in advance will thus be given by:

[10] Please note that those who did not pass the first transition (they decide not to make any previous reservation) do not face the choice about whether to book the accommodation themselves or through any intermediary.

$$\text{Prob}\ (y_1=1|X) = \Lambda\ (\alpha_1 + X\beta_1) \quad (2)$$

Where $\Lambda(.)$ is the standard logistic function so that $\Lambda(.)= \frac{\exp(\alpha_1 + X\beta_1)}{1+\exp(\alpha_1 + X\beta_1)}$

Similarly, the latent utilities associated the second, third and fourth transitions are given by:

$$U_2^* = \alpha_2 + X\beta_2 + \varepsilon_2 \quad (3)$$

$$U_3^* = \alpha_3 + X\beta_3 + \varepsilon_3 \quad (4)$$

$$U_4^* = \alpha_4 + X\beta_4 + \varepsilon_4 \quad (5)$$

and the corresponding probabilities can be expressed as:

$$\text{Prob}\ (y_2=1|X, y_1=1) = \Lambda\ (\alpha_2 + X\beta_2) \quad \text{if } y_1=1 \quad (6)$$

$$\text{Prob}\ (y_3=1|X, y_1=1, y_2=1) = \Lambda\ (\alpha_3 + X\beta_3) \quad \text{if } y_1=1 \text{ and } y_2=1 \quad (7)$$

$$\text{Prob}\ (y_4=1|X, y_1=1, y_2=1) = \Lambda\ (\alpha_4 + X\beta_4) \quad \text{if } y_1=1 \text{ and } y_2=1 \quad (8)$$

Where U_2^* indicates the latent utility of being the tourist who books the accommodation himself, U_3^* refers to the latent utility of booking the bedroom through a TA and U_4^* denotes the latent utility of making the reservation by the internet; X is a common set of explanatory variables; α_2, α_3 and α_4 are the constant terms for each equation; β_2, β_3 and β_4 are vectors of parameters to be estimated; and ε_2, ε_3, and ε_4 are IID random error terms which follow a logistic distribution[11].

Our entire sample is at risk of passing the first transition. However, the subsequent samples in the later transitions are sub-samples that arise depending on whether the individual has passed the previous transition or not, being y_k the indicator function:

$$y_k = \begin{array}{l} 1 \text{ if } U_k^* \geq 0 \\ 0 \text{ if } U_k^* < 0 \quad \text{for k=1,2,3,4} \end{array} \quad (9)$$

The classical Sequential Logit Model of Mare (Mare, 1979) assumes that all the variables that affect the transitions in our decision tree are observable and included in the common set of explanatory variables X, with the error terms reflecting disturbances in latent utility mainly due to measurement errors. However, a serious drawback of the IID assumption of the error terms is that we are ruling out the possible existence of common unobserved variables across transitions. In this sense, it is likely that the latent utility for the last transition will share some unobserved variables with the previous ones. Think for example on the tourist's ICT skills. This unobservable variable will surely affect the probability of booking the accommodation by the internet, but it will also have an effect on the probabilities of making a reservation in advance (first transition) and booking the accommodation himself (second transition). In such case, the parameter estimates will

[11] Alternatively, we could have considered that the error term is normally distributed with zero mean and standard deviation equal to unity, in which case our model would be a Sequential Probit Model (SPM). Empirical applications of this model include Pal (2004) and Lillard and Willis (1994).

exhibit omitted variable bias. In this regard, Cameron and Heckman (1998) indicate that the Sequential Logit Model is quite more sensitive to the presence of unobserved heterogeneity than other models. Even if the omitted variables are uncorrelated with the observable explanatory variables in the first transition, a significant bias will arise in subsequent transitions[12].

Provided that the classical SLM seems to be quite restrictive and naive, we extend it by including residual taste heterogeneity. Let us now assume that the latent utilities for each transition are given by:

$$U_k^* = \alpha_k + X\beta_k + u\zeta_k + \varepsilon_k \qquad \text{for } k=1,2,3,4 \qquad (10)$$

Where u is an unobserved variable that affects the probability of passing each transition and ζ_k is the associated parameter. Rather than being a single unobserved variable, we consider u as a weighted sum of all unobservable variables that affect each transition (Buis, 2011). Let us further treat the composite unobserved variable $u\zeta_k$ as a random variable v_k that follows a normal distribution with mean 0 and standard deviation σ and that satisfies $u\zeta_k = v_k$ for k=1,2,3,4. Then, the probability of passing each transition conditional on the existence of unobserved heterogeneity can be derived by integrating over the distribution of v_k so that:

$$\text{Prob}(y_k=1|X, y_{k-1}=1) = \int \Lambda(\alpha_k + X\beta_k + v_k) f(v_k) dv_k \qquad (11)$$

Under the assumption that v_k is normally distributed, the integral in (11) has no closed form solution. Estimation then needs to be conducted by Maximum Simulated Likelihood. The incorporation of residual heterogeneity in the form of a random error term (v_k) allows us to obtain consistent estimates and standard errors (Lillard and Willis, 1994).

Before moving on, several comments need to be made. Firstly, Cameron and Heckman (1998) indicate that the assumptions about the distribution of v might lead to different results. Buis (2011) considers the possibility of v_k being both discrete and continuous uniformly distributed, finding that the normality assumption does not seem to be problematic. Secondly, it is important to note that although we allow the effect of v_k to vary over transitions, we assume the value of u is fixed over transitions. Finally, results may be sensitive to be size of unobserved heterogeneity in relation to the observables (i.e. the value specified for σ) and the degree of collinearity between v_k and the variables contained in X. To address this issue, previous to model estimation, in Section 5 we perform a sensitivity analysis by considering i) different values for the standard deviation of the unobserved heterogeneity σ, and ii) allowing for correlation between the explanatory variables and the term of unobserved heterogeneity in the first transition, as suggested by Buis (2011). By doing so, we can analyse the robustness of the parameter estimates to the assumptions made about both the distribution of the unobserved heterogeneity term and the degree of correlation with observables.

[12] Buis (2011) provides a discussion about the consequences of unobserved heterogeneity in the sequential logit model. Furthermore, Holm and Jaeger (2011) provide evidence using Monte Carlo simulations that the naive Sequential Logit Model without unobserved heterogeneity yields biased results of the explanatory variables at second and higher transitions.

4. DATA

Our database consists on detailed surveys directed to a representative sample of visitors to the Principality of Asturias (Spain) over 18 provided by the *Tourist Information System of Asturias*. Data were collected through personal interviews both on the street and in collective establishments along Asturias using a mixture of quota random sampling[13] and pure random sampling. Data were obtained over a period of 7 years, between January 2010 and December 2016. A total of 33,461 individuals were interviewed. Questionnaires were available in different languages (Spanish, German, English and French). The survey collects information about tourists' sociodemographic characteristics, travel purpose, length of stay, mode of transport and chosen type of accommodation, among others.

Asturias is a northern Spanish region with 10,602 square kilometers for whom the tourism sector has recently become a major source of income. In this sense, the tourism sector accounts for about a 10% of its GDP and 9% of its total employment. Among its several attractiveness, its mild and humid weather with abundant rainfalls, its 345 km of rectilinear and steep-sloped coastline with 205 beaches[14], its historical heritage and its natural environment with beautiful landscapes stand out (Toimil et al., 2018). The geographical proximity between the beach and the mountains make it a perfect destination for those tourists who seek for a mixture of sun and beach and mountain tourism.

As stated before, in our analysis we restrict the sample to those tourists who spent at least one night in Asturias and lodge at hotels. In addition, those who stay for more than a month were also removed. After having dropped from the sample those with missing values in any of the variables of interest, our database comprises 7,977 valid observations.

Once having decided to lodge at a hotel, the following step is to look for information about different alternatives available. Information search can be internal (based on previous experiences and acquired knowledge) or external[15] (Moutinho, 1987). Research by Fodness and Murray (1997, 1998, 1999) and Bargeman and Van der Poel (2006) indicates that tourists who visit a destination for the first time engage in much more external search. Conversely, visitors that have visited the destination before do not have to engage in large information search and rely on information gathered from past visits[16] (Gursoy and McCleary, 2004; Lehto et al., 2006). Afterwards, tourists normally make a reservation for a certain party size and for specific dates, as to guarantee the availability of the required bedrooms for the time of arriving at the destination. At this stage, tourists are faced with an array of different ways of booking their accommodation when travelling. Several channels for the booking are available, ranging from the most traditional ones such as the telephone or TA to new ones like online platforms.

Respondents were asked about the way they booked (if so) the chosen accommodation. Five options are considered: personally (which implies that the tourist did not make any reservation and just purchase the bedroom at the time of arriving at the hotel), by

[13] The quota random sampling procedure was based on type of visitor, type of accommodation, geographical area, day of the week and month. Sample size was determined according to a 95% confidence level with a 5% error. It was intended to ensure a representative sample of the visitors in order to avoid a possible self-selection bias.

[14] Among the 205 existing beaches, 14 are Blue Flag (BF, 2017).

[15] External information includes, among others, tourist offices, travel guides, travel agents, brochures, mass media, social networks, magazines and the internet.

[16] Nonetheless, Lehto et al. (2004) show that tourist information search does not necessarily decrease with experience with a destination.

telephone, by the internet, through a TA or other intermediaries[17]. Table 1 shows the percentage of tourists in the sample that make the reservation by each of the five possible alternatives per year.

Year	b_personally	b_phone	b_internet	b_TA	b_other_interm	N
2010	4,69	42,71	38,90	10,61	3,09	1,131
2011	4,55	37,25	37,69	16,48	4,03	1,141
2012	2,31	26,56	58,74	10,54	1,85	1,299
2013	4,17	39,84	46,85	6,50	2,64	984
2014	2,99	26,06	61,10	6,70	3,15	1,270
2015	2,32	17,45	72,21	5,46	2,56	1,209
2016	2,12	19,94	69,03	6,36	2,55	943
Total	3.28	29.77	55.08	9.03	2.83	7,977

Table 1.- Percentage of tourists that made their accommodation reservation by each possible mode.

As can be seen from Table 1, visitors who did not make a reservation previous to the trip have represented a low share of total tourists hosted in hotels, although this percentage has decreased over time. Regarding accommodation reservations made by internet, they have notably increased during the time span considered, changing from 38.90% in 2010 to 69.03% in 2016. At the same time, telephone bookings suffered a gradual decrease. Whereas in 2010 42.71% of the tourists visiting Asturias booked their accommodation by phone, in 2016 only a 19.94% of them opted for this mode. Their corresponding upward and downward trends seem to indicate that there has been a shift from telephone booking to online booking. As for booking the accommodation through TA, this mode has also suffered a continuous fall in the period 2010-2016, changing from 10.61% in 2010 to 6.36% in 2016. Finally, the percentage of tourists who delegate the booking of the accommodation to friends, relatives or enterprise has remained almost constant during the study period.

These five options act as our dependent variables (see Figure 1 above). As indicated earlier, the first transition refers to the choice between booking personally (*b_personally*) or by any other of the four remaining options; the second transition models the choice between booking either by telephone or by the internet (*the tourist himself*) and booking either through a TA or through the intermediation of friends, relatives or the enterprise the tourists works for (*intermediaries*); the third transition focuses on the choice between travel agency (*b_TA*) or leaving the booking to other intermediaries (*b_other_interm)* and the fourth transition analyzes the choice between booking by phone (*b_phone*) or by the internet (*b_internet*).

As stated earlier, our aim in this study is to analyse the effect of being a first-time visitor, the information sources and tourist's price sensitiveness on the booking accommodation mode choice. For this purpose, we define the variable *first* as a dummy variable that takes value 1 if it is the first time the tourist visits Asturias and 0 otherwise. As for the information sources about the accommodation, we consider three possibilities: the

[17] Recall that this category includes friends, relatives, the enterprise where the individual works or a club to whom the individual belongs.

internet (*inf_internet*), guides and books (*inf_guides*) and brochures (*inf_brochures*)[18]. It is important to note here the important existing differences between gathering information through traditional media and by the internet. In this sense, UGC greatly differs from a brochure as the former can provide extra information about the accommodation based on peers' experiences (Gavilán et al., 2018). Regarding price sensitiveness, we use the tourist self-report price-sensitivity as an indicator of the importance attached to price when purchasing the accommodation. Provided that there is some degree of price disparity across the different booking modes (Law et al., 2007), tourist's sensitivity to price might affect the booking mode choice. Therefore, we define the variable *price_concern* as a dummy variable that takes value 1 if the individual states that the price was the main reason for lodging at the chosen hotel and 0 otherwise.

To further investigate the effect of both being a first time and having searched for information online on the booking mode choice, we interact *first* with *inf_internet* (denoted as *inf_first_internet*). Moreover, another issue of our interest is the possible change in the booking accommodation patterns across time. Given that we have a pooled dataset of cross-sections for seven years (2010-2016), a set of dummy variables for each year are included as to account for time effects (denoted by *y11*, *y12*, *y13*, *y14*, *y15* and *y16*, respectively). The first year (2010) acts as the base category (*y10*).

In addition, in order to properly account for all possible sources of observable heterogeneity, we add several other variables as controls. Specifically, these variables that can be classified into four types: i) sociodemographic characteristics, ii) trip-related characteristics, iii) travel purpose and iv) hotel quality.

- Sociodemographic characteristics (Soc): here we include gender (*man*), age, both in levels and in squared form (*age* and *agesq*, respectively), education level (*secondary* and *high*, with primary education as the omitted category), and labor status (distinguishing among *retired*, *housewife*, *student* and *self-employed*[19], being *employed* the reference category, which includes either of civil servant, manager of a company or employee). It is worth noting that unfortunately we lack information regarding tourist's income in our dataset. Nonetheless, income is partially controlled by age, labor status and education level.
- Trip-related characteristics (Trip): in this category we consider daily expenditure on accommodation per person and day (*daily_exp_p*), distance to origin[20], both in levels and in squared form (*distance* and *distancesq*, respectively), a dummy variable if the individual has travelled to Asturias by public transport (*public_t*) as opposed to travelling by car, length of stay (*LOS*), a dummy variable that takes value 1 if the individual only visits Asturias in the current trip and 0 otherwise (*only_ast*), travel companions (distinguishing between *alone* or in a *couple*, being the rest of possibilities the omitted category), a dummy variable that takes value 1 if the tourist travels in the high season (*high_season*) as to control for seasonal effects (i.e. either in June, July or August) and the geographic area within the destination where the tourist stays[21] (*west*, *centre*, *east_coast* and *east_inner*).

[18] The omitted category includes other sources of information such as TA (*inf_trav_agency*), friends or relatives (*inf_fri_fam*).
[19] Within this category we consider professionals, businessmen/businesswomen and people employed.
[20] This variable has been calculated using a GPS system that measures the distance in kilometres in straight line from the tourist's place of living and Oviedo (the centroid of the destination).
[21] The omitted category refers to the three main cities in Asturias (Oviedo, Gijón and Avilés).

- Travel purpose (Purp): *leisure* and *business*. These two variables take value 1 only if the tourist states that leisure and entertainment or work are the main reasons for visiting Asturias in the current trip, respectively. Here the omitted category includes other reasons such as visiting friends or relatives (*family*), religious peregrination (*religion*), make some purchases (*shopping*), sports events (*sport*) or health-related treatments (*health*).
- Hotel quality (Q): we hypothesize that booking accommodation choice might vary depending on the quality of the selected hotel. In order to account for this, we infer hotel quality from the number of stars (Abrate et al., 2011). We define two dummy variables denoted by *middle_q* and *high_q*. The former takes value 1 for individuals hosted at three-star hotels, whereas the later takes value 1 for individuals at four- and five-star hotels. Hotels with one (*star1*) or two stars (*star2*) act as the reference category.

Table 2 provides the descriptive statistics of all the variables defined above.

As can be seen from Table 2, our sample of tourists visiting Asturias and staying at hotel is characterized by individuals with university studies (63.2%), being employed and with an average age of 40 years old. The average expenditure per tourist per day is 39 euros, with a mean value of 3.83 overnight stays. Tourists prefer middle and high quality hotels as the sum of these two categories account for a 67.5%. Respondents mainly travel in a couple (63.2%), by private car (83.8%), in the high season (51.1%) and for leisure purposes (89.5%). Average the distance to origin is 657 kilometres and the main source of information about accommodation is the internet (82.9%). Finally, the percentage of first visitors is 43.8%.

It should be remarked that, as Bargeman and Van der Poel (2006) show, the reservation of the accommodation (if so) is the last step in the tourists' sequence of trip-related decisions. Therefore, we assume destination, length of stay, mode of transport of accommodation type as fixed and exogenously given to the booking accommodation mode decisions.

Variables	Mean	Std. Dev.	Min	Max
b_personally	0.033	0.178	0	1
b_phone	0.298	0.457	0	1
b_internet	0.551	0.497	0	1
b_TA	0.090	0.287	0	1
b_other_interm	0.028	0.166	0	1
first	0.438	0.490	0	1
inf_brochures	0.020	0.141	0	1
inf_internet	0.829	0.377	0	1
inf_guides	0.007	0.085	0	1
inf_trav_agency	0.085	0.278	0	1
in_fri_fam	0.045	0.208	0	1
in_other	0.001	0.035	0	1
price_concern	0.261	0.439	0	1
y10	0.142	0.349	0	1
y11	0.143	0.350	0	1
y12	0.163	0.369	0	1
y13	0.123	0.329	0	1
y14	0.159	0.366	0	1
y15	0.152	0.359	0	1
y16	0.118	0.323	0	1
age	40.172	11.740	18	88
man	0.546	0.498	0	1
primary	0.065	0.242	0	1
secondary	0.302	0.459	0	1
high	0.632	0.482	0	1
self_employed	0.171	0.377	0	1
employee	0.670	0.470	0	1
student	0.064	0.245	0	1
housewife	0.027	0.161	0	1
unemployed	0.014	0.117	0	1
retired	0.051	0.219	0	1
daily_exp_p	39.168	18.398	12	575
distance	657.38	1138.68	0	17,713
public_t	0.127	0.333	0	1
car	0.838	0.368	0	1
only_ast	0.837	0.369	0	1
alone	0.035	0.185	0	1
couple	0.632	0.482	0	1
family	0.193	0.394	0	1
group	0.010	0.098	0	1
LOS	3.829	2.307	1	30
high_season	0.511	0.500	0	1
west	0.127	0.333	0	1
centrey	0.571	0.495	0	1
centre r	0.039	0.193	0	1
east_cost	0.125	0.331	0	1
east_innter	0.138	0.344	0	1
leisure	0.895	0.306	0	1
business	0.034	0.181	0	1
family	0.039	0.191	0	1
studies	0.004	0.061	0	1
health	0.004	0.061	0	1
shopping	0.001	0.022	0	1
religion	0.009	0.094	0	1
sport	0.015	0.119	0	1
star1	0.062	0.242	0	1
star2	0.183	0.386	0	1
middle_q	0.313	0.464	0	1
high_q	0.362	0.481	0	1
Total Observations	7,977			

Table 2.- Descriptive statistics

5. RESULTS

First of all, as stated in Section 3, previous to the estimation of the model we need to make some assumptions about the magnitude of the unobserved heterogeneity and its correlation with the observable explanatory variables. To check the robustness of our estimates to this assumption, we perform a sensitivity analysis by which we compare the results under different values. To do this, we consider five possible values for the standard deviation of v (σ= 0.5, 0.75, 1, 1.5, 2) and six values for the starting correlation between the explanatory variables and the unobserved heterogeneity term (Corr (v, X)= 0, 0.2, 0.4, 0.5, 0.6, 0.75)[22]. Please note that these correlations stand only for the first transition which considers all the sample, as they take different values in the subsequent ones due to selection.

Table 3 reports the Akaike values for each possible combination of them. As can be seen from the table, its seems that the model with σ=0.5 and Corr(v, X)=0.75 provides the best fit to the data. This implies that in our dataset the magnitude of the unobserved heterogeneity is not sizeable, but it is highly correlated with the covariates. Accordingly, our model is estimated assuming these values[23].

	Corr (v, X)						
		0	0.2	0.4	0.5	0.6	0.75
σ	0.5	12927.77	12927.65	12927.27	12926.98	12926.62	**12925.95**
	0.75	12931.4	12931.15	12930.4	12929.82	12929.1	12927.72
	1	12935.86	12935.48	12934.29	12933.38	12932.23	12930
	1.5	12946.23	12945.58	12943.54	12941.93	12939.86	12935.71
	2	12956.73	12955.91	12953.31	12951.19	12948.37	12942.44

Table 3.- Akaike information criterion values depending on the values of σ and Corr(v, X).

The results of the estimation of the Sequential Logit Model are shown in Table 4[24]. The estimates in columns (1), (2), (3) and (4) refer to the first, second, third and fourth transitions explained before, respectively. The parameters have been estimated using robust standard errors by pseudo-maximum likelihood using 1000 Halton draws.

Starting with the first transition, those tourists who visit Asturias for the first time display a lower probability of booking a bedroom in advance. Conversely, gathering information through traditional media such as travel guides and brochures encourage tourists to purchase the bedroom personally at the time of arriving (walk-in). This result can be partially explained by the fact that some of those who travel to Asturias for the first time are initially same-day visitors (they do not plan to stay overnight at the destination, so they do not make any reservation in advance) who finally end up spending (at least) a night there. However, tourists who visit Asturias for the first time and who have searched information online exhibit a higher likelihood of having arranged the booking prior to arrival. This clearly indicates that among first visitors, only those who engaged in previous information search online are the ones who tend to make reservations in advance, being the rest more open to improvisation. A similar result holds with the

[22] The specific values chosen are common practise.

[23] In any case, we have compared the parameter estimates across the different combinations of σ and Corr(v, X) considered in Table 3. Both their magnitude and significance are quite similar. We do not report these results but are available from the authors upon request.

[24] The estimates have been conducted using the *seqlogit* package (Buis, 2010) in Stata.

tourist's price sensitivity. Specifically, the higher importance the tourist attaches to the price of the accommodation, the higher the probability of booking in advance. It appears that those who worry about prices prefer to book their accommodation ahead to guarantee better deals. Regarding time effects, the estimates show a clear tendency towards booking in advance in recent years, an issue that can be motivated by the higher facilities provided by the online channel. On the other hand, it seems particularly noteworthy that the sociodemographic characteristics, travel purpose, length of stay and daily expenditure per person are not statistically significant. While traveling alone or in a couple and being hosted in the western area of Asturias are associated with purchasing the accommodation personally at the time of arriving, travelling by public transport and visiting only Asturias increases the probability of a reservation in advance. The latter finding makes sense and is in line with our expectations, as tourists who only visit Asturias in the current trip need to ensure the availability of bedrooms for all the period they plan to stay there. Likewise, travelling by public transport requires buying the tickets and, in turn, a plan ahead. These results can be of great relevance for the hospitality industry as a better understanding of the determinants of advance booking can improve the forecasting accuracy of hotel room demand (Lee, 2018).

Next, the results of the second transition are discussed. The coefficient estimates indicate that visiting Asturias for the first time is associated with a preference for booking through intermediaries. This finding implies that first time visitors who have decided to book in advance prefer to leave the purchase of the accommodation for other people instead of taking the responsibility themselves. In contrast, collecting information by means of travel guides, brochures or the internet increase the likelihood that tourists book their accommodation themselves. We interpret this as the higher the knowledge the tourist has about the possible accommodations, the higher his/her involvement in booking the accommodation. In the same way, first time visitors who also searched information through the internet (interaction term) display a higher propensity to booking themselves. This seems to point out that the degree of information significantly affects first time visitors' choices. As for the price sensitiveness, here this variable is not statistically significant. Besides, daily expenditures per person, length of stay, travelling by public transport, hotel quality and leisure as the main travel purpose are negatively related to the probability of the tourist making the reservation himself. As for sociodemographic characteristics, gender, age and education level are not statistically significant. However, retired people appear to be less prone to be on charge of booking the accommodation. Distance to origin, travel companions, visiting only Asturias and travelling there in the high season are also not significant in this stage. As for geographical differences, tourists lodged in the west and in the east inner zone are more willing to take the responsibility of booking the accommodation themselves.

EXPLANATORY VARIABLES	Books in advance	Books himself	Books through trav. agency	Books online
	(1)	(2)	(3)	(4)
first	-1.065***	-0.528***	0.285	0.507**
	(0.226)	(0.148)	(0.257)	(0.245)
inf_guides	-1.277***	3.362***	-1.871*	-2.059**
	(0.349)	(0.514)	(1.014)	(0.805)
inf_brochures	-1.856***	3.192***	-0.734	0.823***
	(0.246)	(0.388)	(0.877)	(0.277)
inf_internet	-0.334	3.122***	-3.280***	1.182***
	(0.259)	(0.154)	(0.327)	(0.187)
inf_internet_first	0.879***	0.640***	0.342	-0.509**
	(0.290)	(0.212)	(0.464)	(0.251)
price_concern	0.760***	-0.183	0.391	0.493***
	(0.193)	(0.126)	(0.289)	(0.069)
y11	0.160	-0.529***	0.866***	0.227**
	(0.226)	(0.166)	(0.330)	(0.105)
y12	0.554**	-0.162	0.761*	0.994***
	(0.261)	(0.178)	(0.395)	(0.103)
y13	0.340	0.092	0.525	0.536***
	(0.257)	(0.214)	(0.445)	(0.108)
y14	0.559**	-0.761***	0.215	1.104***
	(0.264)	(0.194)	(0.389)	(0.105)
y15	1.012***	0.105	0.703	1.771***
	(0.298)	(0.211)	(0.434)	(0.114)
y16	1.054***	-0.151	0.970*	1.641***
	(0.319)	(0.219)	(0.501)	(0.121)
age	-0.011	-0.027	0.044	-0.048**
	(0.043)	(0.033)	(0.058)	(0.021)
agesq	0.000	0.000	-0.000	0.001**
	(0.000)	(0.000)	(0.001)	(0.000)
man	0.269*	0.070	0.025	0.000
	(0.144)	(0.107)	(0.228)	(0.060)
secondary	-0.486	0.121	-1.559***	-0.164
	(0.331)	(0.216)	(0.392)	(0.138)
high	-0.344	0.407*	-1.108***	0.038
	(0.327)	(0.218)	(0.399)	(0.136)
self_employed	-0.078	0.047	0.255	-0.424***
	(0.183)	(0.144)	(0.310)	(0.077)
student	0.171	-0.127	-0.129	-0.381***
	(0.372)	(0.284)	(0.574)	(0.134)
housewife	0.191	-0.332	-0.455	-0.552***
	(0.497)	(0.331)	(0.529)	(0.187)
unemployed	0.929	-0.054	-0.770	-0.328
	(1.024)	(0.368)	(0.766)	(0.236)
retired	-0.192	-0.693**	-1.423**	-0.217
	(0.421)	(0.288)	(0.564)	(0.202)
daily_exp_p	-0.000	-0.014***	0.008	-0.008***
	(0.016)	(0.004)	(0.007)	(0.002)
distance	-0.000**	0.000	-0.000	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
distancesq	0.000*	-0.000	0.000	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
public_t	0.511**	-1.017***	0.346	0.039
	(0.251)	(0.146)	(0.260)	(0.112)
only_ast	0.996***	0.234	-0.322	-0.126
	(0.159)	(0.156)	(0.350)	(0.091)
alone	-1.027**	0.413	-0.377	0.526***
	(0.477)	(0.302)	(0.463)	(0.194)

couple	-0.332**	0.208*	0.980***	0.207***
	(0.164)	(0.109)	(0.232)	(0.064)
LOS	0.010	-0.092***	0.086	-0.040***
	(0.031)	(0.024)	(0.054)	(0.015)
high_season	0.336*	0.148	0.154	0.320***
	(0.202)	(0.123)	(0.256)	(0.067)
west	-1.528***	0.450**	-0.540	-0.971***
	(0.175)	(0.210)	(0.455)	(0.087)
centre	-0.737*	-0.269	-1.479***	-0.405**
	(0.426)	(0.299)	(0.491)	(0.158)
east_coast	-0.160	-0.260	0.021	-0.254***
	(0.228)	(0.164)	(0.331)	(0.095)
east_inner	-0.052	0.560***	-0.050	0.151
	(0.253)	(0.200)	(0.420)	(0.093)
leisure	-0.125	-0.480**	1.937***	0.758***
	(0.228)	(0.217)	(0.357)	(0.120)
business	-0.108	-2.985***	-0.964**	0.097
	(0.514)	(0.302)	(0.458)	(0.218)
middle_q	0.621***	-0.578***	0.808***	0.473***
	(0.235)	(0.147)	(0.284)	(0.076)
high_q	1.341***	-0.340**	1.302***	0.833***
	(0.395)	(0.168)	(0.351)	(0.088)
Constant	3.670***	2.348***	-1.103	-1.658***
	(1.137)	(0.802)	(1.500)	(0.502)
Observations		7,977		
Pseudo-log-likelihood		-6302.9		

Tabla 4.- Sequential Logit Coefficient Estimates.
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Now we proceed to comment on the results of the third transition. Somewhat surprisingly, both our price concern variable and visiting the destination for the first time are not statistically significant. In the same way, neither gathering information through travel guides nor through brochures affect the decision to book the accommodation through a TA in comparison to other types of external intermediaries. Nevertheless, there is a negative and statistically significant effect of looking for information online. Regarding time effects, it seems that there has not been any change in the probability of booking the accommodation through TA in our study period. With reference to the tourist's sociodemographic profile, our estimates show that as education level rises, the probability of booking the accommodation through a TA decreases. Interestingly, retired people also prefer to let friends or relatives to be on charge of the accommodation instead of calling on TA. Tourists who travel in a couple and those who opt for high quality hotels are more likely to turn to TA. Unsurprisingly, TA are also greatly preferred by leisure tourists. However, tourists visiting Asturias for job-related reasons display a higher propensity to book their lodging through other intermediaries, mainly by means of the enterprise where they work. Another result that deserves mention is that tourists in the center area other than Oviedo-Gijón-Avilés like TA better. On the other hand, the daily expenditure per person, distance to origin, visiting only Asturias, length of stay, travelling in the high season or by public transport do not have an effect on the probability of booking through TA.

Finally, we turn the attention to the choice between booking through the internet or by phone (fourth transition). Our parameter estimates show that first time visitors and highly price sensitive tourists significantly prefer the internet rather than the telephone. It can be

argued that as they do not have previous experience and attach high importance to the price, they opt for the online channel as it can provide them special offers. Gathering information through brochures or the internet also increase the probability of booking the accommodation through the internet. This result indicates that there is an important connection between first look for information online and then book the accommodation though the same channel. However, quite surprisingly, first visitors who also seek information on the net opt for hiring the accommodation by telephone. We speculate that this finding can be due to the following: first time visitors who have decided to book the accommodation themselves are quite risk averse, so they engage in large online information search but then prefer to talk with the hotel on the phone, just to make sure everything is as indicated in the web and to get further specific details. Similarly, getting informed by means of travel guides is positively associated with booking by telephone.

With reference to the time dimension, there is a clear tendency towards booking through the internet over time. This change from telephone reservations to online booking is consistent with previous findings (Toh et al., 2011). As for sociodemographic characteristics, as age increases, the probability of booking online decreases, but at a decreasing rate. Further, housewives and self-employed seem to prefer the phone rather than the internet for booking the accommodation. Quite counterintuitive, students also prefer to book by phone. This result is contrary to the one reported by Toh et al. (2011), who find that young people are more prone to book online. Worthy of note is that the higher the distance to origin, the higher the probability of making the reservation by the internet (although at a decreasing rate). Conversely, the higher the daily expenditure on accommodation per person, the higher the preference for the telephone. The same holds for the length of the stay, in line with the results of Toh et al. (2011). This might suggest that those who plan to incur in a large spending and stay for a longer period rather prefer to purchase the lodging by phone as to make sure the hotel satisfies their desires and gather further information.

On the other hand, individuals who travel alone or in a couple, for leisure purposes and in the high season are more likely to book their accommodation by the internet. While visiting only Asturias does not affect the choice between the internet or the telephone, tourists hosted at medium and high quality hotels prefer to book their accommodation by the internet. Tourists hosted in the west, in the central area other than the three main cities and in the east coast of Asturias display a higher preference for booking by telephone.

Looking at the estimation results, one might wonder whether coefficients estimates for the same explanatory variable can be compared across transitions. In the logistic regression, the variance of the error term is fixed to $\pi^2/3$. This assumption implies that the scale of the latent utility is fixed to one in order to identify the parameters (i.e. the estimated parameters equal the true parameters divided by the scale of the latent utility, which equals the error variance). In case this is not true (i.e. in presence of scale heterogeneity) so that error variances differ, parameter estimates across transitions could not be directly comparable, an issue normally referred as the scaling problem (Williams, 2009; Mood, 2010). Indeed, Cameron and Heckman (1998) argue that this situation is likely to hold in a Sequential Logit as the sub-samples in each transition have been selected based on the values of the y_k^*, which ultimately depend on the error terms. Accordingly, the variance of the error term decreases as we move forward in the decision tree (Holm and Jaeger, 2011). In order to avoid this scaling bias in the presence of

heteroscedasticity, we do not compare the magnitude of the parameter estimates across transitions.

6. CONCLUSIONS

This paper provides a detailed analysis of the factors that underlie tourist's preferences for accommodation booking mode. Therefore, our research adds to the growing literature concerned with the new ways of accommodation booking. To develop an understanding of tourists' preferences when booking an accommodation, we have estimated a Sequential Logit Model which, first, allows us to analyze the effects of our variables of interest on each of the different sequential binary decisions and, second, controls for the possible selection bias caused by unobserved heterogeneity.

Using a sample of visitors to the Principality of Asturias (Spain) lodging at hotels, our results show that information sources play a key role in the booking accommodation choice. Those who gather information by internet are more likely to book in advance and, conditional on that, show a higher preference for booking online and tend to dislike TA. Conversely, those who gather information by brochures or travel guides prefer to walk-in and purchase the accommodation personally. Results further indicate that highly price sensitive tourists tend to book in advance and prefer to make the reservation by the internet instead of by phone. First-time visitors seem to prefer to book the accommodation personally at the time of arriving and rely on external intermediaries instead of being of charge of the booking themselves. For those first time visitors who take the responsibility, the internet is preferred over the phone. Moreover, the estimates show that there is a clear tendency towards advance booking and booking by the internet as opposed to by phone over time.

On the other hand, there is a clear negative relationship between age and online booking, but we do not find any gender differences in booking mode choices. Distance is positively related to the probability of booking by the internet whereas this probability decreases with the length of the stay. Travelling by public transport and visiting only Asturias positively affect the probability of booking in advance. Leisure tourists prefer to book by TA whereas business tourists opt for other intermediaries such as the enterprise where they work.

Overall, the most important conclusion drawn by our estimations is that there are significant differences in the booking mode choices of first-time visitors depending on how they get informed. First time visitors on the one hand, and those who gather information by the internet on the other, display a higher likelihood of booking their accommodation online. However, first time visitors who also look for information by the internet tend to prefer the telephone. This finding sheds new light on the importance of risk aversion and information availability when booking an accommodation.

A limitation of the study is the fact that the data do not include information about tourists' income. Nonetheless, we account for it by controlling for education level, labor status and age. An important avenue for further research would be to extend the analysis to other types of accommodations and compare the differences in booking behaviour among them.

As for public policy implications, important suggestions emerge from the present analysis. First, this research provides valuable information for hospitality authorities

about the characteristics of the tourists who book by each of the existing channels. Second, we offer evidence about how information sources and price sensitivity shape their preferences. Promotional campaigns and price discounts should be designed accordingly. Second, from the managerial perspective, hotel managers should provide potential customers the best facilities and the higher number of alternatives as possible for booking their accommodation, paying special attention on the internet channel.

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