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Decomposing the Tourist's Satisfaction Gap:
The Role of Expectations and Cognitions

Luis Díaz-Serrano

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Departament d'Economia
www.fcee.urv.es/departaments/economia/public_html/index.html
Universitat Rovira i Virgili
Facultat d'Economia i Empresa
Avgda. de la Universitat, 1
43204 Reus
Tel.: +34 977 759 811
Fax: +34 977 300 661
Email: sde@urv.cat

CREIP
www.urv.cat/creip
Universitat Rovira i Virgili
Departament d'Economia
Avgda. de la Universitat, 1
43204 Reus
Tel.: +34 977 558 936
Email: creip@urv.cat

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Decomposing the Tourist's Satisfaction Gap: The Role of Expectations and Cognitions

Luis Diaz-Serrano[♣]

Universitat Rovira i Virgili - CREIP

Abstract

In this paper we present an empirical methodology that allows the tourist's satisfaction gap between two destinations to be decomposed into two components. One explains the role of differences in observed characteristics of the tourists and the stay (*endowments*). The other captures the share of the gap due to differences in the utility that tourists derive from those characteristics (*cognitive*). To illustrate the use of this method, we employ data coming from a sample of tourists visiting two touristic enclaves in Tarragona (Spain). Our results indicate that the *cognitive* component explains most of the satisfaction gap.

Keywords: Satisfaction, expectations, cognition, touristic destination

[♣] CREIP - Departament d'Economia. Universitat Rovira i Virgili. Av. de la Universitat, 1. 43204 Reus (SPAIN): Tel: +(34) 977759811; Fax: +(34) 977300661; email: luis.diaz@urv.cat.

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1. Introduction

Self-reported satisfaction with various aspects of individuals' lives has been the focus of many psychological studies. Only recently has the subject figured on the research agenda of other scientific disciplines in social sciences. This interest stems from the fact that many individuals' decisions are aimed at maximising well-being, which in turn is determined by the level of satisfaction in certain life domains such as work, housing, income and leisure (among other reasons). Given this interest, there has been an increase in the literature on the analysis of the determinants of life satisfaction, as well as satisfaction in other domains. For instance, Neal et al. (1999) concluded that satisfaction with touristic destinations plays an important role in determining life satisfaction.

In the field of consumer research, self-reported satisfaction has become an extremely important concept, since in many cases this variable is a feasible way of assessing the success of consumption products, among them touristic destinations. This means that the analysis of determinants of tourists' satisfaction is crucial not only for scholars, but also for managers and local governments that exploit tourism as their main economic activity. The literature is full of empirical studies aimed at studying the determinants of tourist satisfaction with specific destinations (see Hughes 1991; Kozac and Rimmington 2000; Heung and Cheng 2000; Kozac 2001; Akama and Kieti 2002; Yu and Goulden 2006; Hui et al 2007). In this context, tourists' loyalty with a touristic destination can be

determined by their satisfaction with that destination (see Yoon and Uysal 2005; Gallarza and Saura 2006; Chia and Qu 2007).

Since satisfaction was introduced as a field of study in tourism research, many studies have focused on analysing its determinants. The most interesting feature of this variable is that it is based on both tourists' cognitions and emotions (Jun et al 2001; Yu and Dean 2001; Rodríguez del Bosque and San Martín 2008). However, self-reported satisfaction also possesses two inconvenient features. On the one hand, two identical individuals may have a different perception of the same scale. On the other hand, this heterogeneity in tastes, cognitions and emotions across tourists may mean that individuals similar in their observable characteristics derive different utility from the same attributes of a touristic destination. This makes it difficult to disentangle the forces driving tourist satisfaction.

Disentangling how the subjective factors mentioned above may affect tourists' assessment of destinations is a difficult task. However, it is empirically feasible to determine the extent to which the satisfaction gap between two touristic destinations is due to observable characteristics of the tourist or the touristic destination, or, *ceteris paribus*, to differences in the tourist's cognition of touristic destinations.

The main goal of this study is not only to estimate the determinants of satisfaction with a given touristic destination, but also to ascertain to what extent the

satisfaction gap between two touristic destinations is due to differences in the observable characteristics of the tourist and the destination in themselves, or differences in the utility that tourists derive from those characteristics, which in turn is driven by tourists' expectations, aspirations and beliefs. To do so, we propose the use of a methodology, which will be explained in more detail in the empirical section, consisting of decomposing the tourist's satisfaction gap between two destinations. This decomposition allows us to separate the two concepts mentioned above, i.e. observable characteristics vs. perceived utility. We hypothesize that a different perception of the destination's environment, and hence its effect on satisfaction, might exist as a result of unfulfilled expectations regarding that destination.

In tourism research, the literature dealing with tourists' cognitions, emotions and satisfaction seems to be taking off, since in recent years there has been a growing body of papers dealing with this issue. However, practically all this literature proposes alternative theoretical cognitive-emotional models to explain satisfaction (see Decrop 1999; Rodríguez del Bosque and San Martín 2008). We contribute to the existing literature by proposing a plausible and straightforward empirical framework able to disentangle the effect of expectations and cognitions on explaining tourists' satisfaction gaps between touristic products and destinations. This type of analysis is a useful tool for touristic managers and local authorities. The implications we can derive from this type of analysis are threefold. First, if the satisfaction gap between destinations is driven by differences in the

observable characteristics of the tourist, then we can reduce the gap by raising aggregated levels of satisfaction in the less attractive destinations by attracting specific groups of tourists. Secondly, if this gap is due to differences in the attributes of the destinations, it can be reduced by redesigning the packages of amenities provided by the less attractive destinations. Finally, if differences in satisfaction come from tourists' heterogeneity in the cognition or perception of destinations' attributes, then the design of actions for improving aggregated satisfaction of a touristic destination should aim to change tourists' expectations and beliefs.

With the aims described above, we proceed as follows: we first estimate the determinants of satisfaction of two touristic destinations, and use the estimated coefficients in the satisfaction equations as inputs to decompose the satisfaction gap between the two destinations into observable characteristics of the tourist and the destinations and differences in the cognition of these observables. To do so, we refer to survey data about a sample of tourists that visited two different touristic enclaves in the province of Tarragona (Spain) in 2006 and 2010.

The remainder of this paper is organised as follows. Section 2 describes the conceptual framework. In section 3 we explain the empirical strategy used in this study. Section 4 describes the data used in the empirical analysis. Section 5 presents the results and the main empirical findings. Finally, Section 6 summarizes and concludes.

2. Conceptual framework

The balance between individuals' expectations and experienced events as a determinant of individuals' well-being has its origin in psychology. However, this issue has also become relevant in consumer research and studies aiming at estimating the determinants of consumer satisfaction. This approach has also been taken as a baseline in studies dealing with tourist satisfaction. In the context of tourism research, this approach implies that individuals cognitively construct a reference condition for all the important features of a touristic destination. The quantity or quality of the given features will depend on individual expectations. If the perceived experience coincides with or is fairly close to expectations, tourists should manifest satisfaction, while if there is a non-negligible gap between expectations and experiences, individuals will feel dissatisfied with their touristic destination. This conceptualization of satisfaction is similar to the one provided by Engel et al. (1993).

All these analyses regarding expectations, satisfaction and touristic destinations hinge crucially on estimating the determinants of tourist satisfaction. One of the most interesting features of this variable is that it captures aspects of the touristic experience that cannot be captured by other observable variables. Tourist satisfaction, like many other satisfaction variables, is the result of both objective and subjective factors and is more complex than standard variables. Tourist satisfaction is the result of how individuals perceive salient attributes of the

destination environment and their consequent evaluation according to certain standards of comparison, which in turn are constructed according to expectations. Thus, the determinants of tourist satisfaction can be divided into three groups of factors: i) objective characteristics of the touristic destination; ii) objective characteristics of the tourists, and; iii) subjective factors such as beliefs, aspirations and expectations.

The most difficult issue in the treatment of satisfaction originates from the fact that tourists' perception of the amenities offered by a given destination is subject to a large degree of heterogeneity, which in turn is mainly determined (among others) by the group of subjective factors mentioned in iii). In this context, the tourist's motivations could be crucial in picking up some of this heterogeneity. This way of linking expectations and perceptions to self-reported levels of satisfaction is the conceptual approach employed in most of the studies aimed at estimating the determinants of consumer satisfaction (Engel et al. 1993).

In this paper, we conceptualize self-reported tourist satisfaction as a variable reflecting the gap between tourists' expected utility and the experienced utility in the touristic destination. Since satisfaction is commonly measured on an ordinal scale, a tourist fulfilling his/her expectations will feel fully satisfied, and hence it is expected he/she will report the highest value on the scale. However, tourists may also experience dissatisfaction with aspects of the touristic destination, and

this, in turn, will probably have an impact on their overall satisfaction with that destination.

Our key assumption is that changes in tourists' satisfaction with a given destination, or differences in satisfaction between two destinations, can be determined by three reasons: i) changes in the characteristics of the tourist; ii) changes in the characteristics of the destination, and; iii) differences in the tourist's expectations regarding that destination. We think that i) and ii) can be easily captured by comparing characteristics of the tourists and the destination. Although measuring tourists' expectations is not straightforward, we think that a model estimating the determinants of tourist satisfaction contains all the relevant information to capture most, or at least some, of the subjective dimension of tourist satisfaction.

The theoretical framework of this paper is simple, and we take as baseline the well-known concept in economics of utility, which in turn is the force that drives individuals' choices. That is, an individual will choose one option over an alternative only if the first provides him/her with greater utility than the other. The extension of this idea to the context of our research, i.e. tourists' assessment of a destination, is straightforward. We follow the model of product differentiation presented by Rosen (1974), i.e. goods are valued for their utility-bearing characteristics. In our case, we assume that the tourist's utility, $U(\cdot)$, derived from

a given touristic experience in destination *j* depends on a set of *k* destination's attributes, w_{kj}, and a set of *g* tourist's characteristics, y_{gi}:

$$U_{ij} = U(w_{kj}; y_{gi}); \quad k = 1, 2, ..., K; \quad g = 1, 2, ..., G \tag{1}$$

In equation (1) tourists have the same attributes to value in each alternative *j* and the scales of measurement are identical. However, tourists may differ in how they value these characteristics. Assume that individuals have to choose between two alternative destinations, say *j* and *l*, whose utility functions can be defined as:

$$\begin{aligned} U_{ij} &= f(\gamma_{jk} w_{ijk}; \delta_{jg} y_{ijg}) \\ U_{il} &= f(\gamma_{lk} w_{ilk}; \delta_{lg} y_{ilg}) \end{aligned} \tag{2}$$

where γ_{jk} and δ_{jg} are the contributions of destination and individual characteristics to the tourist's utility. Individual *i* is indifferent between the two alternative destinations if $U_{ij} = U_{il}$. It should be remembered that our hypothesis is that identical destination attributes might provide different utility to tourists depending on their expectations. If this hypothesis is true, in equation (2) it will be $\gamma_{jk} \neq \gamma_{lk}$ for all or some *k*. Analogously, we could also observe that depending on his/her expectations, the same type of tourist could derive different utility per se, therefore $\delta_{jk} \neq \delta_{lk}$.

The conceptual framework developed here allows us to formulate the following hypotheses:

Hypothesis 1: The impact of destination characteristics (γ_j) on tourists' utility (U_{ij}) is driven by expectations, beliefs or aspirations.

If, after controlling for the set of observable characteristics of the tourist and the destination, we still observe that $\gamma_{jk} \neq \gamma_{lk}$ or $\delta_{jk} \neq \delta_{lk}$, then this different impact of the observables on tourists' utilities comes from differences in tourists' expectations visiting both destinations.

Although the concept of utility is not easy to measure, the interesting feature of this framework is that the utilities expressed in equation (2) can be approached using a satisfaction function S_{ij}, for which $S_{ij}>S_{il}$ only if $U_{ij}>U_{il.}$.

3. Empirical framework

Tourist's satisfaction is generally measured on an ordinal scale. Therefore, the propensity of an individual i to report a certain level of satisfaction with destination j is driven by the following linear relationship: $S_{ij}^{*} = \beta' X_{ij} + e_{ij}$, where S_i^{*} is a latent outcome, X_i are the determinants of the outcome, and e_i is a random error term. The matrix X_{ij} = [W_j, Z_{ij}] contains the set of characteristics of the destination and its environment (W_j), as well as the set of individual characteristics (Z_i). We do not observe S_{ij}^{*} but instead an indicator variable of the type $S_{ij}= h$ if $\mu_{h-1} < S_{ij}^{*} \leq \mu_h$ (h=1, …, H), where h is any point on the satisfaction

scale. Based on this observability rule, we get that $P(S_{ij} = h) = F(\mu_h - \beta' X_{ij}) - F(\mu_{h-1} - \beta' X_{ij})$, where $F(\bullet)$ can be either the cumulative normal or cumulative logistic distribution. In this context, ordinal logit or probit is the most suitable method of estimation. However, in order to fit this empirical framework to the conceptual framework described in the previous section, we find it more convenient to collapse the satisfaction scale into a binary indicator simply reflecting satisfaction or dissatisfaction. This approach also allows for a more straightforward interpretation of the results. Now the problem becomes:

$$y_{ij} = I(y_{ij}^* > 0) = I(\beta' X_{ij} + e_{ij} > 0), \tag{3}$$

where $I(\bullet)$ is a binary indicator function that takes the value 1 if the argument is true and 0 otherwise, X_{ij} is a vector of explanatory variables, β is a vector of coefficients to be estimated, which determine the impact of the covariates on satisfaction, and e_{ij} is the error term. The natural candidate to estimate this binary model would be either the logit or probit model. However, given the methodology we propose below for decomposing the satisfaction gap, the linear probability model (LPM) is a more convenient estimation method.

tourists' cognition in explaining the satisfaction gap between two touristic destinations, we propose the use of the Oaxaca-Blinder (1973) decomposition method. This methodology is also useful for assessing the determinants of the

satisfaction gap for the same destination in two different moments in time. We find this last framework even more attractive, since the characteristics of the destination are expected to be the same or very similar in the two periods of time we are comparing. This circumstance would facilitate disentangling the role of tourists' cognition in the satisfaction gap, i.e., differences in the impact of identical destination characteristics on tourist satisfaction in two different moments in time are expected to be caused by a different cognition of the same characteristics.

If we assume that equation (3) can be estimated using the LPM,[1] then, following Oaxaca-Blinder (1973), the tourist's satisfaction gap between two touristic destinations *j* and *l* can be decomposed as follows:

$$\hat{P}_j - \hat{P}_l = (\overline{X}_j - \overline{X}_l)\hat{\beta}_l + \overline{X}_l(\hat{\beta}_j - \hat{\beta}_l), \tag{4}$$

where $\hat{P}_j$ is the estimated value for the probability of reporting satisfaction with destination *j*. $\hat{\beta}_j$ and $\hat{\beta}_l$ are the estimated coefficients picking up the impact of observable characteristics on tourist satisfaction in both destinations *j* and *l*. And $\overline{X}_j$ and $\overline{X}_l$ are the average values for the observed characteristics of the tourists and the destinations *j* and *l*, respectively. The left-hand side measures the

[1] In the context of binary models, the decomposition proposed by Fairlie (2005) is more suitable. However, this decomposition method is quite sensitive to the order of the groups used to compute the gap in the outcome variable. That is, G_1-G_2 could not provide the same results in the decompositions as G_2-G_1. In this sense, the Oaxaca-Blinder (1973) decomposition method is more stable. Therefore, if the LPM performs well in terms of predicted probabilities and provides similar marginal effects of the explanatory variables, we recommend the use of this decomposition method.

estimated gap in the probability of reporting satisfaction between destinations *j* and *l*. The first term of the right-hand side represents the part of the satisfaction gap attributed to differences in observed characteristics (*endowments*), and the second term shows the part of the difference that is due to the differences in the obtained rewards in terms of satisfaction from those observable characteristics (*cognition*).[2] In practice, the interpretation would be the following: the larger the proportion of the gap explained by the *cognition* component, the larger the difference in the satisfaction derived (perceived utility) from the set of destination characteristics between *j* and *l*. As we hypothesized in the previous section, these cognitive differentials of the same attributes between similar tourists can be attributable to differences in expectation or aspiration. However, the proportion of the gap explained by the *endowments* component will pick up the impact of changes in the tourist's profile and destination amenities between the two destinations, which are observable.

The extension of this interpretation in the context of analysing the satisfaction gap between two different periods, *t* and *t+1*, for the same destination *j* is straightforward. Now the decomposition defined in equation (4) becomes:

$$\hat{P}_{j,t+1} - \hat{P}_{j,t} = (\overline{X}_{j,t+1} - \overline{X}_{j,t})\hat{\beta}_{j,t} + \overline{X}_{j,t}(\hat{\beta}_{j,t+1} - \hat{\beta}_{j,t}), \quad (5)$$

[2] The most usual application of the Oaxaca-Blinder decomposition method is to measure wage gaps. Originally, the method was created to study the level of discrimination in gender wage gaps. Therefore, what we label as *perception*, in the labour economics literature is commonly considered as a measure of *discrimination*.

4. Data and variables

The data used in this paper is provided by the *Fundació d'Estudis Turístics de la Costa Daurada* (FETCD). Since 2006, this institution has carried out annual surveys to tourists visiting the *Costa Daurada* and *Terres de l'Ebre*. There are two survey waves every year. More specifically, the data used in this study refers to two years, 2006 and 2010. The 2006 data comes from a random sample of 2478 individuals, 2000 visiting *Costa Daurada* and 478 visiting *Terres de l'Ebre*. The 2010 data is based on a sample of 783 tourists visiting *Terres de l'Ebre*.

Both touristic enclaves are geographically located on the Mediterranean coast of the province of Tarragona (Southern Catalonia – Spain). Both touristic destinations exhibit quite different characteristics. While *Costa Daurada* is a typical destination for tourists seeking beach and sun, the main reason to visit *Terres de l'Ebre* is that this touristic enclave is endowed with a natural park. Therefore, we could expect that tourists visiting these destinations might differ not only in their observable characteristics, but also in their motivations, and hence in their expectations of these touristic destinations.

The survey collects information regarding the socio-demographic characteristics of the tourist, the characteristics of the stay in the touristic destination and variables reflecting the tourist's motivation for visiting that destination. Elicited responses also refer to the tourist's satisfaction in different aspects of the touristic destination, among them overall satisfaction. Individuals are asked to rate their

satisfaction on a five-point scale ranging from 'not satisfied at all' (1) to 'fully satisfied' (5). However, as we mentioned in the previous section, our outcome variable is a binary indicator taking the value of 1 if self-reported tourist satisfaction is equal to 4 or 5, and 0 otherwise.

Our vector of explanatory variables (X_{ij}) in equation (3) accounts for various types of determinants of tourist satisfaction, including tourists' characteristics (i.e. age, gender, education, nationality and loyalty) and characteristics of the stay in the touristic destination (i.e. length of the stay, type of accommodation and expenditure during the stay). The variable *loyalty* refers to whether the individual visited the destination for the first time or not. One interesting feature of the variable *tourist's expenditure* is that it can also be taken as a proxy of the tourist's income.

4.1. *Costa Daurada* vs. *Terres de l'Ebre*

In Table 1 we show a summary statistics of the explanatory variables included in our analysis, comparing the satisfaction gap between *Costa Daurada* and *Terres de l'Ebre*. We provide separate statistics for both touristic destinations and the result of the test of the equality of means for both enclaves. We observe that there are remarkable differences between the characteristics of the tourists visiting both destinations. Compared to *Costa Daurada*, tourists visiting rby'?*Terres de l'Ebre* are significantly younger (47 vs. 42 years), more often Catalan (20% vs 49%), more educated, and less loyal (66% vs. 50%). Regarding the characteristics of the

stay, those visiting *Terres de l'Ebre* tend to spend more (450 vs. 562€); however, they look for cheaper accommodation since they tend to stay more frequently in two-star hotels or campsites. Finally, as we might expect, since the two touristic enclaves are intrinsically different – beach/sun vs. nature – we also observe notable differences in the motivation that drives tourists to visit both destinations. Compared to those visiting *Costa Daurada*, tourists visiting *Terres de l'Ebre* are more likely to be motivated by nature and mountains (8.7% vs. 47.1%), quietness (16.% vs. 23%), work (1.5% vs. 3.3%), it is nearby (0.4% vs. 4%) and family trip (1.4% vs. 4.6%). However, they are less likely to be motivated by the beach (53% vs. 36%), second residence (24% vs. 0.8%), habit (12.1% vs. 7.5%), PortAventura (9.7% vs. 3.1%), organised trip for retired people (9% vs. 0.4%) and for fun (2.4% vs. 0.2%).

Table 2 reports the differences in the average satisfaction in each domain. We observe that compared to those visiting *Costa Daurada*, tourists visiting *Terres de l'Ebre* tend to feel more satisfied with the quality-price ratio (52.2% vs. 60.2%), cleanliness (60.4% vs. 68%) and natural resources (63.3% vs. 73.1%). However, they tend to feel less satisfied with signposting (80.5% vs. 74.5%), accommodation (81.3% vs. 76.5%) and pedestrian facilities (82.5% vs. 67.6%). Regarding our variable of interest, overall satisfaction with the destination, tourists visiting *Terres de l'Ebre* tend to feel less satisfied than those visiting *Costa Daurada*. For the former the probability of reporting satisfaction was 79.2%, while for the latter the probability was 88.7%.

[Insert table 1 about here]

[Insert table 2 about here]

4.2. *Terres de l'Ebre*: 2010 vs. 2006

In Table 3 we show summary statistics of the explanatory variables included in our analysis. We have provided separate statistics for 2006 and 2010 and the result of the test of the equality of means for both years. We observe that the characteristics of the tourists changed between 2006 and 2010. The most significant changes are regarding the nationality of the tourists and their gender. The percentage of Catalan tourists rose by almost 7%, while the proportion of non-Spanish tourists decreased by 5.6%. Analogously, the percentage of females increased by 6.3%. As for the characteristics of the stay, the most notable change is regarding tourist expenditure in the destination and the accommodation. Between 2006 and 2010 tourist expenditure fell dramatically from 562€ to 355€ (36.8%), while the percentage of tourists staying in campsites decreased by 16.5%.

Table 4 reports the changes in average satisfaction in each domain. We observe that between 2006 and 2010 satisfaction only increased significantly in the domain of quality-price ratio. The probability of reporting satisfaction in this domain increased by 8.5 percentage points. However, the satisfaction decreased in a remarkable number of domains, these being: signposting (-14.7), historical

resources (-15.8), leisure and nightlife (-29.7), accommodation (-7.7), kindness (-11.4), pedestrian facilities (-12.1) and natural resources (-10.5). However, our results reveal a paradox. While satisfaction in most of the domains has decreased between 2006 and 2010, overall satisfaction, our variable of interest, has significantly increased by 10.4 percentage points.

[Insert table 3 about here]

[Insert table 4 about here]

5. Econometric results: the determinants of tourists' overall satisfaction

5.1. *Costa Daurada* and *Terres de l'Ebre* 2006

In this section we report the results of our regression analysis comparing *Costa Daurada* and *Terres de l'Ebre*, which are reported in Table 5. We run a pooled model including both destinations. We use both the probit and the Linear Probability Model (LPM). For the former, in order to allow for comparisons across alternative models and specifications, we provide the marginal effects instead of the estimated coefficients. Since both estimation methods, the probit and LPM, perform similarly we use the probit model in order to explain the effect of the explanatory variables on satisfaction.

Firstly, it is important to note that the dummy variable *Costa Daurada* reports a statistically significant marginal effect of 0.094. This result indicates that after controlling for the set of observable characteristics and motivations of the tourist

and the characteristics of the stay, tourists visiting *Costa Daurada* are still more likely to report satisfaction than those visiting *Terres de l'Ebre* by 9.4 percentage points. Since the difference between the raw means is 0.095 (Table 2), this result implies that none of the observable characteristics, including tourists' motivation, retain any portion of the satisfaction gap. With this result we are able to anticipate that the role of the observable characteristics (*endowments*) when decomposing the satisfaction gap will be negligible or fairly modest.

Our results also indicate that the effect of age on satisfaction is an inverted U shape, i.e. positive but decreasing with age. The birthplace of the tourist has also turned out to be statistically significant. Compared to Catalan tourists, the probability of Spaniards reporting satisfaction decreases by 0.035. Satisfaction also increases, by 0.03 percentage points, with education and loyalty, since tourists with higher levels of education and loyalty are more likely to report satisfaction. However, length of stay reports a negative effect, since tourists that spend more than two weeks are 5.2 percentage points less likely to report satisfaction. Surprisingly, the amount spent in the destination has turned out to be non-statistically significant, the same being true for accommodation and gender. Surprisingly, we find that motivations are not very relevant in determining tourist satisfaction, since only three of the motivations included in the regressions have reported a statistically significant (positive) effect (culture, quietness and recommendation). However, although theoretical models predict that motivations play an important role in determining satisfaction, many empirical studies linking

tourists' motivation with satisfaction also report a modest effect (see Meng et al. 2008).

[Insert table 5 about here]

5.2. *Terres de l'Ebre*: 2006 and 2010

In this section we report the results for the regression analysis of the determinants of satisfaction for the tourists visiting *Terres de l'Ebre* in 2006 and 2010 (Table 6). As in the previous analysis, we use both the probit and the Linear Probability Model (LPM). Since we do not have information about tourists' motivations for 2010, this set of variables has been excluded from this analysis. In the descriptive analysis, we observe that the average probability of reporting satisfaction was 10.4 percentage points higher in 2010 than in 2006 (table 4). However, after controlling for the observable characteristics of the tourist and the stay, the satisfaction gap between 2006 and 2010 decreases by only 1.1 percentage points, indicating again that observable characteristics retain a very small portion of the time variation of tourists' overall satisfaction, although some of these variables are statistically significant in explaining overall satisfaction.

In the previous analysis, we usehe probit model to explain the effect of the explanatory variables on satisfaction. Interestingly, a cubic effect is reported for age, i.e. the effect is negative but increases for middle-aged tourists and decreases for older tourists. This result contrasts with the inverted-U-shaped effect observed

in *Costa Daurada*. The nationality of the tourist has also turned out to be statistically significant. Compared to Catalan tourists, the probability of Spaniards reporting satisfaction decreases by 0.061, while for non-Spanish tourists this probability falls by 0.073. Contrary to what is observed in *Costa Daurada*, a statistically significant inverted-U-shaped effect is reported for tourist expenditure in *Terres de l'Ebre*, i.e. expenditure in the destination exerts a negative but increasing effect on satisfaction. Accommodation is the factor where the strongest effect is reported. Between 2006 and 2010, the probability of reporting satisfaction decreases by 0.134 for those tourists accommodated in four- or five-star hotels, while the fall in the probability is about 0.06 for those staying in three-star hotels. This result indicates that, contrary to what we observe in *Costa Daurada*, alternative forms of accommodation to hotels in *Terres de l'Ebre* are valued more positively by tourists. Finally, no statistically significant effect is reported for gender, education, loyalty or length of stay. .

[Insert table 6 about here]

5.3. Decomposing the tourists' overall satisfaction gap

In Table 7 we report the results of the decomposition of the tourists' overall satisfaction gap. In this table we report the results of both decomposition exercises, i.e. the cross-section gap in 2006 between *Costa Daurada* and *Terres de l'Ebre* and the time satisfaction gap in *Terres de l'Ebre* between 2006 and 2010. We use the Oaxaca-Blinder decomposition method explained in section 3,

which is a method designed for linear models. Therefore, this decomposition method uses as inputs the coefficients of the LPM used to estimate the determinants of overall tourist satisfaction, instead of those provided by the probit model. We expect this decomposition to perform well, since both the LPM and probit models perform in a similar way in terms of the predicted probabilities and estimated marginal effects of the explanatory variables.

We start by commenting on the results of the decomposition of the satisfaction gap between *Costa Daurada* and *Terres de l'Ebre* in 2006. Our estimates indicate that differences in the characteristics of the tourists, the stay and motivations (*endowments*) do not contribute to explaining the satisfaction gap. This result implies that if the characteristics of the average tourist/stay and their motivations were exactly the same in both destinations, the satisfaction gap between the two touristic enclaves would remain exactly the same as that observed. The implication of this result is that policies aimed at changing the characteristics of the tourists might exert no impact on the aggregated level of satisfaction of the touristic destination. We are struck by the fact that motivations do not exert any significant effect on explaining the satisfaction gap. However, although not statistically significant, the effect is negative, which means that if tourists visiting both destinations exhibited exactly the same motivations, the gap would increase. On the contrary, the *cognitive* component of the decomposition, i.e. differences in the estimated effects on satisfaction between both destinations, fully explains the satisfaction gap. This component refers to how differences in the cognition and

valuation of the observable characteristics in both destinations affect the satisfaction gap between the two destinations.

Results regarding the decomposition of the satisfaction gap between 2006 and 2010 in *Terres de l'Ebre* are a bit different from those obtained in the previous decomposition. Here we observe that almost 20% of the satisfaction gap is explained by the changes in the characteristics of the tourists and the stay (*endowments*). More specifically, tourists' characteristics (age, gender, nationality, education and loyalty) explain 8.8% of the gap, while tourist expenditure in the destinations explains 9.6% of the gap. This result implies that if the characteristics of the average tourist/stay had been the same in 2006 and 2010, the satisfaction gap between the two periods would have decreased by about 20%. Again, the implication of this result is that policies aimed at changing the characteristics of the tourists could have a limited impact on the aggregated level of satisfaction with this touristic destination. The *cognitive* component of the decomposition, i.e. differences in the estimated effects on satisfaction between 2006 and 2010, represents most of the satisfaction gap, a little more than 80%.

[Insert table 7 about here]

6. Summary and concluding remarks

In this paper we propose a methodology to explain the role of tourists' cognitions, which are driven by tourists' expectations, and observable characteristics of the

tourist/destination in disentangling the satisfaction gap between two touristic enclaves. We hypothesize that the impact of these observable characteristics on tourist satisfaction will be driven by subjective factors such as tourists' beliefs, aspirations and expectations. Hence, estimated coefficients of the satisfaction regressions can be used to quantify what share of the satisfaction gap can be attributed to differences in the utility derived from the same observable characteristics, which in turn are caused by a different cognition of these characteristics. To this end, we propose the use of the Oaxaca-Blinder (1973) decomposition method, which allows us to decompose the satisfaction gap into two components, one picking up the effect of observable characteristics (*endowments*), and the other that of tourists' cognitions (*cognitive*).

This methodology can be used to analyse not only the satisfaction gap between two touristic destinations, but also satisfaction gaps over time for the same touristic enclave, or any other satisfaction domains regarding a touristic destination, touristic products, etc. This type of analysis can be useful for managers in the tourist industry and local governments for the design of policies aimed at improving aggregated levels of tourist satisfaction with destinations or touristic products. However, we have to acknowledge that this methodology also has a limitation, which is that if in the satisfaction regression analysis we omit relevant variables determining tourist satisfaction, estimated coefficients might be biased, and hence also the results of the decomposition. In this scenario, the *endowments* component will tend to be underestimated, while the *cognitive*

component will tend to be overestimated. Therefore, the larger the number of relevant variables included in the satisfaction equations, the greater the reliability of the results.

In order to illustrate the use of this methodology, we analyse the determinants of tourists' overall satisfaction with two Catalan (Spain) touristic enclaves, *Costa Daurada* and *Terres de l'Ebre*. Both destinations differ in that the first is a typical destination for tourists seeking the sun and beach, while the second is characterized by visitors looking for nature. Firstly, we decompose the satisfaction gap between tourists visiting both destinations in 2006. Secondly, we decompose the satisfaction gap between 2006 and 2010 for tourists visiting *Terres de l'Ebre*. In both cases we see that the observable characteristics of the tourists and the stay explain very little of the satisfaction gap. We find that observables explain up to almost 20% of the four-year satisfaction gap in *Terres de l'Ebre,* while in the other decomposition observables are not statistically significant in explaining the satisfaction gap between *Costa Daurada* and *Terres de l'Ebre*. While bearing in mind that in the analyses we have probably omitted relevant variables, the fact that most or all of the satisfaction gap can be attributed to the *cognitive* component implies that policies aimed at changing the observable characteristics considered in the analysis may have a limited impact on reducing the satisfaction gap.

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Table 1: Descriptive statistics explanatory variables (*Costa Daurada* vs. *Terres de l'Ebre*, 2006)

	***Costa Daurada* (CD)**		***Terres Ebre* (TE)**			
	Mean	**S.D**	**Mean**	**S.D.**	**Mean gap CD-TE**	**T-test**
Age	47.139	17.633	42.269	12.189	-4.870	-7.13
Woman	0.470	0.499	0.504	0.501	0.034	1.34
Catalan	0.204	0.403	0.490	0.500	0.286	11.63
Spanish	0.531	0.499	0.272	0.445	-0.259	-11.13
Non-Spanish	0.273	0.445	0.243	0.429	-0.030	-1.35
Primary	0.430	0.495	0.331	0.471	-0.099	-4.11
Secondary	0.238	0.426	0.337	0.473	0.099	4.20
University	0.333	0.471	0.333	0.472	0.000	0.01
Loyalty	0.661	0.474	0.450	0.498	-0.211	-8.39
Less than 7 days	0.587	0.493	0.563	0.497	-0.024	-0.94
7 - 14 days	0.266	0.442	0.230	0.421	-0.036	-1.66
More than 14 days	0.148	0.355	0.207	0.406	0.060	2.95
Expediture	4.505	6.082	5.624	6.680	1.119	3.35
4-5 stars hotel	0.143	0.350	0.132	0.339	-0.011	-0.62
3 stars hotel	0.369	0.483	0.385	0.487	0.016	0.66
2 stars hotel	0.014	0.115	0.029	0.169	0.016	1.94
Camping	0.074	0.261	0.454	0.498	0.380	16.17
Motivations						
Beach	0.534	0.499	0.360	0.480	-0.174	-7.05
Culture	0.185	0.388	0.151	0.358	-0.034	-1.85
Second residence	0.239	0.427	0.008	0.091	-0.231	-22.15
Nature and mountain	0.087	0.282	0.471	0.500	0.384	16.19
Habit	0.121	0.326	0.075	0.264	-0.045	-3.20
Quietness	0.163	0.369	0.230	0.421	0.068	3.23
Portaventura	0.097	0.296	0.031	0.175	-0.066	-6.33
Retired	0.090	0.286	0.004	0.065	-0.086	-12.17
Visit relatives	0.054	0.225	0.048	0.214	-0.005	-0.49
Climate	0.065	0.246	0.054	0.227	-0.010	-0.86
For fun	0.024	0.152	0.002	0.046	-0.021	-5.38
Work	0.015	0.122	0.033	0.180	0.018	2.13
For recommendation	0.011	0.102	0.021	0.143	0.010	1.50
By chance	0.004	0.059	0.040	0.196	0.036	4.01
Family trip	0.014	0.115	0.046	0.210	0.033	3.27
Other	0.023	0.148	0.094	0.292	0.072	5.20
Sample size	2000		478			

Table 2: Descriptive statistics satisfaction variables (*Costa Daurada* vs. *Terres de l'Ebre*, 2006)

	***Costa Daurada* (CD)**			**Terres Ebre (TE)**				
	N	**Mean**	**S.D.**	**N**	**Mean**	**S.D.**	**Mean gap CD-TE**	**T-test**
Overall	1870	0.887	0.317	466	0.792	0.406	0.095	4.69
Restaurant	1368	0.726	0.446	420	0.733	0.443	-0.007	-0.30
Signposting	1804	0.805	0.396	458	0.745	0.437	0.060	2.69
Quality-price	1815	0.522	0.500	462	0.602	0.490	-0.080	-3.12
Historic resources	573	0.606	0.489	138	0.623	0.486	-0.018	-0.38
Beach equipments	1539	0.650	0.477	407	0.612	0.488	0.039	1.43
Beach cleaning	1800	0.646	0.478	427	0.660	0.474	-0.015	-0.58
Leisure & night life	949	0.652	0.477	260	0.631	0.484	0.021	0.64
Cleaning	1881	0.604	0.489	456	0.680	0.467	-0.075	-3.06
Security	1216	0.671	0.470	410	0.717	0.451	-0.046	-1.77
Accommodation	1119	0.813	0.390	429	0.765	0.425	0.049	2.06
Kindness	1864	0.841	0.366	463	0.836	0.371	0.005	0.25
Pedestrian facilities	1846	0.825	0.380	407	0.676	0.469	0.149	6.01
Natural resources	1816	0.633	0.482	424	0.731	0.444	-0.098	-4.02

Table 3: Descriptive statistics explanatory variables (*Terres de l'Ebre*: 2006 vs. 2010)

	2006		2010			
	Mean	**S.D**	**Mean**	**S.D.**	**Mean gap 2010-2006**	**T-test**
Age	42.269	12.189	43.564	12.741	1.295	1.80
Female	0.504	0.501	0.567	0.496	0.063	2.17
Catalan	0.490	0.500	0.558	0.497	0.069	2.36
Rest of Spain	0.272	0.445	0.262	0.440	-0.010	-0.39
Not Spanish	0.243	0.429	0.186	0.390	-0.056	-2.33
Loyalty	0.450	0.498	0.493	0.500	0.043	1.49
Lenght of stay	13.389	22.544	11.338	21.093	-2.051	-1.60
noches7_d	0.563	0.497	0.655	0.476	0.092	3.25
noches714_d	0.170	0.376	0.230	0.421	0.060	2.63
noches14_d	0.207	0.406	0.175	0.380	-0.032	-1.40
Expenditure (x 100€)	5.624	6.680	3.551	5.791	-2.072	-5.61
4-5 stars hotel	0.132	0.339	0.100	0.300	-0.032	-1.71
3 stars hotel	0.385	0.487	0.337	0.473	-0.048	-1.71
2 stars hotel	0.029	0.169	0.038	0.192	0.009	0.87
Camping	0.454	0.498	0.289	0.453	-0.165	-5.90
Sample size	476		782			

Table 4: Descriptive statistics satisfaction variables (*Terres de l'Ebre*: 2006 vs. 2010)

	2006			2010				
	N	**Mean**	**S.D.**	**N**	**Mean**	**S.D.**	**Mean gap 2010-2006**	**T-test**
Overall	466	0.792	0.406	394	0.896	0.306	0.104	4.28
Restaurant	420	0.733	0.443	392	0.737	0.441	0.004	0.13
Signposting	458	0.745	0.437	529	0.597	0.491	-0.147	-4.99
Quality-price	462	0.602	0.490	526	0.686	0.464	0.085	2.77
Historic resources	138	0.623	0.486	172	0.465	0.500	-0.158	-2.81
Beach equipments	407	0.612	0.488	382	0.560	0.497	-0.052	-1.47
Beach cleaning	427	0.660	0.474	323	0.622	0.486	-0.038	-1.08
Leisure & night life	260	0.631	0.484	234	0.333	0.472	-0.297	-6.91
Cleaning	456	0.680	0.467	488	0.637	0.481	-0.043	-1.38
Security	410	0.717	0.451	412	0.752	0.432	0.035	1.15
Accommodation	429	0.765	0.425	291	0.687	0.464	-0.077	-2.27
Kindness	463	0.836	0.371	201	0.721	0.449	-0.114	-3.17
Pedestrian facilities	407	0.676	0.469	447	0.555	0.498	-0.121	-3.65
Natural resources	424	0.731	0.444	265	0.626	0.485	-0.105	-2.85

Table 5: Determinants of tourist's overall satisfaction (Costa Daurada and Terres de l'Ebre, 2006)

	LPM		**Probit**	
	M.E.	*t-stat*	*M.E.*	*t-stat*
Costa Daurada	0.096	4.30***	0.094	3.98***
Age	0.006	2.35***	0.006	2.42***
Age squared	0.000	-1.70*	0.000	-1.76*
Woman	0.013	0.91	0.012	0.85
Nationality (base: Catalan)				
Spanish	-0.040	-2.15**	-0.035	-1.96**
Non-Spanish	-0.021	-0.95	-0.018	-0.80
Education (base: primay)				
Secondary	-0.003	-0.15	0.000	0.01
Higher	0.031	1.73*	0.030	1.76*
Loyalty	0.034	1.96**	0.029	1.73*
Lenght (base: 7 to 14 days)				
Less than 7 days	-0.020	-1.10	-0.024	-1.32
More than 14 days	-0.047	-1.97**	-0.052	-2.09**
Expenditure	-0.002	-0.79	-0.006	-1.73*
Expenditure squared	0.000	1.39	0.000	1.87*
Accomodation				
4-5 stars hotel	-0.034	-1.45	-0.034	-1.45
3 stars hotel	0.007	0.35	0.008	0.42
Motivation				
Beach	0.019	1.03	0.019	1.09
Culture	0.042	1.79*	0.033	1.65*
Second residence	0.033	1.31	0.033	1.37
Nature and mountain	0.034	1.42	0.029	1.37
Habit	0.036	1.38	0.029	1.23
Quietness	0.044	1.98**	0.036	1.80*
Portaventura	0.042	1.45	0.037	1.45
Retired	-0.012	-0.33	-0.018	-0.52
Visit relatives	0.053	1.51	0.044	1.44
Clima	0.033	1.03	0.028	1.00
For fun	-0.016	-0.30	-0.011	-0.23
Work	0.060	1.09	0.048	1.08
For recommendation	0.153	2.29***	0.102	1.99**
By chance	-0.016	-0.23	-0.004	-0.06
Familiar	0.040	0.77	0.038	0.87
Other	-0.038	-0.96	-0.031	-0.83
N	2332			

Significant at 1% (***), 5% (**) and 1% (*)

Table 6: Determinants of tourist's overall satisfaction (Terres de l'Ebre, 2006 and 2010)

	Probit		**LPM**	
	M.E.	*z-stat*	*M.E.*	*z-stat*
2010	0.081	3.16***	0.083	3.21***
Age	-0.033	-1.66*	-0.031	-1.64*
Age squared	0.001	1.75*	0.001	1.72*
Age cubic	0.000	-1.72*	0.000	-1.70*
Woman	0.026	1.07	0.029	1.14
Nationality (base: Catalan)				
Spanish	-0.061	-1.99**	-0.061	-2.03**
Non-Spanish	-0.073	-2.02**	-0.060	-1.74*
Education (base: primay)				
Secondary	-0.010	-0.31	-0.013	-0.40
Higher	0.031	1.04	0.029	0.96
Loyalty	0.023	0.85	0.021	0.79
Lenght (base: 7 to 14 days)				
Less than 7 days	-0.028	-0.86	-0.027	-0.81
Betwen 7 and 14 days	-0.027	-0.63	-0.032	-0.77
Expenditure	-0.010	-1.84*	-0.007	-1.70*
Expenditure squared	0.000	1.53	0.000	1.65*
Accomodation				
4-5 stars hotel	-0.134	-3.08***	-0.124	-3.13***
3 stars hotel	-0.060	-1.97**	-0.058	-1.96**
N	785			

Significant at 1% (***), 5% (**) and 1% (*)

Table 7: Decomposition of the satisfaction gap

	***Costa Daurada* vs. Terres Ebre**			**Terres Ebre (2006 vs. 2010)**		
	Coef	*z-stat*	*% explained*	*Coef*	*z-stat*	*% explained*
Endowments						
Tourist characteristics	-0.004	-0.47	-4.3%	0.009	1.65*	8.8%
Length of stay	0.002	1.43	2.4%	-0.001	-0.34	-1.0%
Expenditure	0.001	0.49	1.0%	0.010	1.54	9.6%
Accommodation	-0.001	-0.78	-0.6%	0.002	0.62	1.9%
Motivation	-0.001	-0.1				
Total	-0.003	-0.18	-2.7%	0.020	2.20**	19.3%
Cognitive						
Tourist characteristics	0.095	0.46	100.9%	0.331	0.69	322.1%
Length of stay	0.025	0.67	26.8%	0.049	1.00	47.2%
Expenditure	0.019	0.75	20.6%	0.020	0.77	19.6%
Accommodation	0.055	2.28***	58.3%	0.016	0.60	15.2%
Motivation	-0.083	-1.11	-88.4%			
Constant term	-0.015	-0.06	-15.5%	-0.333	-0.70	-323.5%
Total	0.096	4.03***	102.7%	0.083	3.38***	80.7%
Prediction (Group 1)	0.887	121.09		0.896	58.21	
Prediction (Group 2)	0.793	42.16		0.793	42.15	
Satisfaction Gap	0.094	4.65***		0.103	4.23***	

Significant at 1% (***), 5% (**) and 1% (*)