

This is the accepted manuscript of the article:

Nicolau, J. L., & Mas, F. J. (2005). Stochastic modeling: a three-stage tourist choice process. *Annals of Tourism Research*, 32(1), 49-69.

<https://doi.org/10.1016/j.annals.2004.04.007>

STOCHASTIC MODELING: A THREE-STAGE TOURIST CHOICE PROCESS

Abstract: This study analyzes a multistage tourist choice process which includes three basic decisions: **first, taking a vacation; second, visiting foreign vs. domestic destinations; and third, taking multi vs. single destination vacations.** Various research hypotheses relating to the impact of a number of personal characteristics on these decisions are stated. The methodology uses Multinomial Logit Models with Random Coefficients estimated by Hierarchical Bayesian procedures. The empirical application is carried out in Spain and leads to the conclusion that personal characteristics relating to the chosen destination, personal restrictions and sociodemographic and psychographic characteristics are determinants of these decisions and that the nested and non-independent character of the three decisions reveals a multi-stage decision making process.

Keywords: marketing, multistage tourist choice Process, Random-Coefficient Multinomial Logit Models, Hierarchical Bayesian procedures. **116**

INTRODUCTION

Interest in the way in which individuals decide on purchase alternatives (products, brands, etc.) makes the analysis of choice and preference one of the most studied areas of marketing in recent years (Zwerina 1997). A contribution to this is the development of probabilistic choice models derived from the Random Utility Theory. These are the most used choice models in the literature of Marketing (González-Benito 1999).

Probabilistic choice models are used for numerous applications. For example, probabilistic analysis of tourist choice behavior can explain the success of marketing actions, determine the aspects tourists value most and estimate changes in demand resulting from modifications to these aspects. In tourism, these applications are strengthened by the great flexibility of the probabilistic approach when dealing with the discrete character of tourist choice alternatives. This makes them highly suitable for the analysis of tourist choice (Morley 1994a).

In general, the study of choice has been made from a wide perspective, due to the multiple sub-decisions which make up the decision making process (Fesenmaier and Jeng 2000). If the focus is on the basic choice made by tourists, i.e. to take a vacation, one finds that the literature of probabilistic choice usually treats this as a single decision and applies Binomial Logit models (Hay and McConnell 1979; Miller and Hay 1981; Walsh, John, McKean and Hof 1992). However, Eymann and Ronning (1992) and Eymann (1995) believe that tourist choice is a more complex process which can be separated into various stages incorporating the following decisions: to take a vacation (obviously, the decision to leave the usual place of residence during the vacation period constitutes the first choice (Morley 1992, 1995; Seddighi and Theocharous 2002), to go abroad and choice of destination country. To test this process, these authors use a Nested Logit Model (NL) because it resolves the problem of the assumption of Independence from Irrelevant Alternatives and is therefore more suitable for the analysis of multi-choice decisions. In Eymann and Ronning (1992) and Eymann (1995) the NL model is estimated with the sequential technique of McFadden (1981) in order to avoid computational problems arising from maximum likelihood estimations using a large database and a large number of alternatives. The maximization of the likelihood function can be difficult as it is not always fully concave. It is also important to stress that sequential estimation results in consistent but not efficient estimators (Train 2003:89).

Unlike the studies of Eymann and Ronning (1992) and Eymann (1995), this article proposes a multi-stage choice process which includes the decisions to take a vacation, to go abroad and to take a multideestination vacation. The inclusion of the latter decision is due to the

following aspects: One, the multideestination decision is not independent of the first two decisions as a multideestination vacation could take in various countries or different geographical areas of the same country. Two, the option of visiting several destinations as opposed to staying in only one is justified by the aggregate property of tourism products. The accumulated utility of buying multideestination vacations is greater than the sum of the individual utilities of each separate destination (Lue et al 1996; McGinley 1999). Fesenmaier and Jeng (2000) point out that the decision to visit additional destinations is an important component of the whole decision making process. And three, an understanding of the nature of multideestination vacations is crucial for the implementation of marketing strategies as a destination in a region well known for touring should join forces with other destinations in the same region (Hwang and Fesenmaier 2003).

To test the multi-stage decision making process, this study proposes a Random-Coefficient Multinomial Logit Model (RCL) to find the correlations structure of the aforesaid nonindependent alternatives. McFadden and Train (2000) demonstrate that any random utility model (such as the NL model) can be approximated by an RCL model, which also finds the heterogeneity between tourist preferences by assuming that the coefficients of the variables vary among tourists.

In summary, the objective of this article is to analyze the multi-stage choice process, which includes the basic decisions to take a vacation, of foreign and multideestination vacations. This study proposes various research hypotheses to explain the above decisions in terms of personal characteristics relating to the chosen destination, personal restrictions and sociodemographic and psychographic characteristics.

THREE BASIC TOURIST CHOICES

In order to examine interdependence among the proposed three basic decisions, the literature of choice is revised so as to find the determinant factors of these decisions, and to state and test research hypotheses.

Decision to Take a Vacation

In general, probabilistic literature empirically analyses the decision to take a vacation (Hay and McConnell 1979; Miller and Hay 1981; Walsh et al 1992; Eymann 1995; Eymann and Ronning 1992) in terms of the personal restrictions of tourists and in terms of their sociodemographic characteristics. This study proposes hypotheses relating to the influence of

personal restrictions (income and household size), of some sociodemographic characteristics (age, occupational situation and size of town or city of residence) and of psychographic factors such as an individual's opinion of taking a vacation.

Personal restrictions: Level of income. Income is a personal budget restriction which determines spending capacity and is taken into account to maximize utility (Crawford and Godbey 1987). Essentially, empirical literature shows that medium-high and high income groups are more likely to take vacations (Bardón 1991; Hay and McConnell 1979; I.E.T. 2000; S.G.T. 1989a, 1992, 1993; Walsh et al 1992). This result corroborates the idea that tourism generally behaves as a *normal good* with positive demand-income elasticity, increasing its consumption as income increases (Davis and Mangan 1992; Middleton 1994). Along this line, hypothesis 1 is as follows:

H.1: *Greater levels of income are associated with greater probabilities of taking a vacation.*

Household size. Essentially, household size is a representative aspect of the so called *interpersonal barriers* (Crawford and Godbey 1987). Caswell and McConnell (1980), Eymann and Ronning (1992, 1997) and Walsh et al (1992) consider that family size (a commonly used indicator of household size) plays an important and deterrent role in recreational decisions, both in the realization of vacations and in the determination of the destination, as large family size restricts spending. Therefore, insofar as a reduced household size, characterized by a lack of children, implies more possibilities to travel and cover vacation costs (Collins and Tisdell 2002a), the following hypothesis is proposed:

H.2: *Larger household size reduces the propensity to take a vacation.*

Sociodemographic characteristics: Age. One of the most important demographic dimensions which influence vacation demand is age (Mieczkowski 1990). Authors generally agree that the assumption of a linear relationship between age and tourism seems excessively simplistic and unrepresentative of real behavior. Obviously, a linear impact implies that the marginal effect of a change in age on participation in a certain recreational activity is constant and independent of age; when in reality, the effect of an increase of a decade (on the predisposition to take part in an activity vacation, for example) varies according to whether the individual is twenty or fifty years old.

Authors such as Hay and McConnell (1979), Miller and Hay (1981) and Walsh et al (1992) propose a non-linear relationship between age and propensity to take vacations and suggest a positive (negative) marginal effect up to a certain point and a negative (positive) marginal effect after that point. Eymann and Ronning (1992; 1997) suggest further stretching of

the above relationship, allowing non-linear impacts by age group. This allows them to represent any behavior pattern in function of age; for example the *bimodal relationship* proposed by Becker (1992), Lawson (1991) and Oppermann (1995) of a greater propensity to travel among both younger and older people. This is basically due to a lack of children and the support given by public institutions to these groups (Núñez de Cella 1998). Hence, the following hypothesis is proposed:

H.3: *Age exerts a non-linear effect on the probability of taking a vacation.*

Occupational Situation. In general, the occupational situation of an individual is used as a substitute variable of income (Riera 2000; Walsh et al 1992), in such a way that an active situation determines this decision. The studies of the I.E.T. (2000) and the S.G.T. (1989a, 1993) show that people in work have a greater propensity to take vacations due to their greater budgetary capacity. However, occupational situation can also include other aspects with direct and positive effects on recreational decisions, such as the leisure time available and its distribution throughout the year (Moutinho and Trimble 1991). Along these lines, it is found that students have a greater propensity, given the duration and continuousness of their available time (I.E.T. 2000; S.G.T. 1989a, 1993). Consequently, hypotheses H.4 and H.5 are proposed as follows:

H.4: *An active occupational situation increases the probability of taking vacations.*

H.5: *Students have a higher probability of taking vacations.*

Size of the city of residence. The size of the city of residence could justify this decision. At an empirical level, the work of the S.G.T. (1989a, 1992) finds that the proportion of people who take vacations reaches the lowest levels in towns with lower populations. This is because inhabitants of high population density cities have a greater need to escape for relaxation (Eymann and Ronning 1997). Along this line, it is proposed that:

H.6: *A larger city of origin brings about a greater propensity for travel during vacation periods.*

Psychographic factors: Favorable opinion of taking a vacation: Although the previous characteristics are of great use in explaining tourist behavior, Plog (1994) suggests incorporating dimensions which allow representation of other internal aspects. Ashok et al (2002) and Seddighi and Theocharous (2002) show that the choice can be influenced by non-product related aspects. Along this line, González and Díaz (1996) suggest that values and life styles (psychographic variables) provide a global description of the cognitive structure of the individual. Therefore, these factors are a fundamental complement of sociodemographic characteristics in order to properly configure tourism products (Moreover, from a wider point of

view, research demonstrates that psychographic variables have a strong explanatory power on tourist choice behavior (Dalen 1989; González and Bello 2002; Hsieh et al 1993; Muller 1991; Pitts and Woodside 1986; Shih 1986;)). However, these psychographic factors are not widely used in the literature of choice as they are not directly observable and would require additional effort in the collection of information through databases and VALS (*Value and Life Styles*), LOV (*List of Values*) or AIO (*Activities, Interests and Opinions*) studies (Plog 1994).

However, certain one-dimensional indicators, which are also known as primary dimensions or life style parameters (Bigné et al 2000; Lehmann 1993;), allow the capture, as proxies, of psychographic aspects. Chief among them is the favorable/unfavorable opinion of the product, as a person with a favorable opinion of taking a vacation presents greater probability of tourist travel (Plog 1994; Ryan 1995). (Lack of information only allows the analysis of primary dimensions of the psychographic variables). Therefore, the following hypothesis is made:

H.7: Favorable opinions of taking a vacation positively affect the opinion of leaving the habitual place of residence.

Foreign Vacations

The two probabilistic studies detected only empirically analyze the choice of foreign vacations in terms of age (Eymann 1995; Eymann and Ronning 1992). This article proposes hypotheses on the influence of personal characteristics relating to the chosen destination (manner of organizing the vacation), personal restrictions (number of children), sociodemographic characteristics (education) and psychographic aspects (interest in discovering new places and widening cultural knowledge).

Personal characteristics relating to the destination: Use of intermediaries in the organization of the vacation. This dimension refers to the way in which vacations are purchased, either directly or through intermediaries (Eymann and Ronning 1992). The method of organization is of singular importance nowadays, due to the greater ease of direct purchase through new technologies (Buhalis and Licata 2002). In addition, knowledge of the means of purchase is fundamental for service providers at the destination, given that it allows them to develop efficient communication policies and to establish commercial links with travel operators. The greater or lesser demand for a vacation product, due to its being included in a package sold through intermediaries, largely conditions the type of relationship, direct or indirect, that service providers have with their clients (Sheldon and Mak 1987).

Generally, the use of new technologies (which allow direct purchase) has greater impact on purchases of products of lesser importance and specialization (Falkenstein 1997) (for

example, an individual is more likely to book a flight over the internet than buy an all inclusive vacation). Conversely, purchase from travel agents is associated with more complex products (Esteban et al 2000; Mak and Mancur 1980; Millán and Esteban 2002; Sheldon and Mak 1987), such as foreign vacations, due to the reduced uncertainty they bring and the time saved in the organization of multi-component trips (transport, accommodation, bookings, etc.). Bote et al (1991) show that, in the case of Spain, although the number of organized vacations taken by Spaniards is low, due mainly to the widespread use of private transport and accommodation, the use of travel agents for foreign vacations is common. This has been corroborated by the studies of the I.E.T. (2000) and the S.G.T. (1989b; 1992; 1993). In virtue of the above, the following hypothesis is stated:

H.8: The purchase of vacation products through intermediaries is associated with foreign vacations.

Personal restrictions: Number of children. As shown in the previous section, the number of children at home negatively influences vacation decisions and conditions the choice of destination (Hsieh et al 1993; Sheldon and Mak 1987; Stemmerding et al 1999) as it restricts spending. Also, the conclusions of the S.G.T. report (1989b) show that foreign vacations are more common among households of one or two members, due to their greater freedom of movement. Therefore, children are associated with national destinations. Hence, hypothesis H.9 proposes that:

H.9: The number of children going on vacation is a restriction on the choice of foreign destinations.

Sociodemographic characteristics: Education. Cultural and educational levels are determinant factors of tourist preferences, especially in the selection of foreign vacations, in which knowledge of the language spoken in the destination country is fundamental (Eymann and Ronning 1997). Education may also provide training and preparation for some types of recreational activities and enhances foreign travel (Dardis et al 1981). Along this line, and in the case of Spain, it is found that people with educational levels of or above high school level are more likely to go abroad (Bardón 1991; I.E.T. 2000; S.G.T. 1989a; 1992; 1993).

Consequently, it is proposed that:

H.10: A higher educational level increases the propensity for foreign vacations.

Psychographic factors: Interest in discovering new places and broadening cultural knowledge. The previous section shows the importance of primary psychographic variables as determinants of tourist behavior (Plog 1994; Ryan 1995). Anderson (1970) and Santos (1983) propose the so

called “Ulysses Factor”, which is a psychological aspect of special relevance in the planning of vacations, through which people feel a deep need to explore and to discover what lies beyond the known horizon. Mayo and Jarvis (1981) suggest that this “need to explore” is determinant in the explanation of travel, due to the fact that “travel allows one to satisfy the intellectual need to know”. Bearing this in mind, it can be assumed that this yearning to explore, manifested by an interest in discovering new places and in broadening cultural knowledge, is associated with foreign vacations. Therefore, it is stated that:

H.11: *The interest of an individual in discovering new places positively influences the choice of foreign vacations.*

H.12: *The interest of an individual in broadening cultural knowledge positively influences the choice of foreign vacations.*

Single vs. Multidestination vacations

Probabilistic research does not consider the choice of multidestination vacations. This study, however, proposes that the decision to take one is associated with personal characteristics relating to the chosen destination (way of organizing vacations) and to psychographic characteristics (interest in discovering new places and in broadening cultural knowledge).

Personal characteristics relating to the destination: Use of intermediaries in the organization of the vacation. As hypothesized in the previous section, this is associated with the purchase of more complex products (Mak and Mancur 1980; Sheldon and Mak 1987). In this way, an individual reduces uncertainty and makes the purchase of multi-component products easier. Therefore, and given that multidestination vacations are highly complex products, they should be associated with greater use of intermediaries. In virtue of the above, hypothesis H.13 states:

H.13: *The use of intermediaries is associated with multidestination vacations.*

Psychographic factors: Interest in discovering new places and broadening cultural knowledge. In line with the “Ulysses Factor” (Anderson 1970; Santos 1983) (see above), Mayo and Jarvis (1981) show that any vacation travel, be it multi or single destination, satisfies the intellectual “need to know”, because it involves visiting new places. They identify two tourist types: “sightseers”, who visit various destinations in order to see, on a superficial level, their main sights; and “vacationers”, who remain in one destination in order to “experience” in detail the characteristics of the place.

Opaschowski (1990) indicates that there is an increasing tendency for tourists to diversify their vacations by looking for variety in the same trip (multidestination), which puts them into the category of sightseers. This is due to the fact that tourists are increasingly

becoming psychologically saturated and more critical of traditional single-destination products (for example, they are becoming tired of spending their entire time available at sunny beach locations). In reality, individuals who choose multideestination vacations are showing interest in discovering various places. In line with Opaschowski, the following hypotheses are proposed:

H.14: *Interest in discovering new places positively influences the choice of multideestination vacations.*

H.15: *Interest in broadening cultural knowledge positively influences the choice of multideestination vacations.*

Study Methods

The methodology proposed to analyze the multi-stage tourist choice process and to test the hypotheses, is based on the Random-Coefficient Logit Model (RCL) because of the following aspects: One, its ability to deal with the unobserved heterogeneity of tourists, by assuming that the coefficients of the variables vary among tourists; and two, its flexibility, which allows representation of different correlation patterns among non-independent alternatives (taking a vacation, going abroad and multideestination vacations). In fact, Mcfadden and Train (2000) demonstrate that it can approximate any random utility model.

With regard to the first point, it is highly unlikely that the whole sample **used in this study** has the same set of parameter values, which implies the need to consider unobserved heterogeneity of tourists in parameter estimations. Hence, the utility of alternative i for tourist t is defined as $U_{it} = X_t \beta_t + \varepsilon_{it}$ where X_t are tourist characteristics; β_t is the vector of coefficients of these characteristics for each individual t which represent personal tastes (these coefficients β_t vary over decision makers with density $f(\beta)$); and ε_{it} is a random term that is iid extreme value. This specification of the RCL model differs from the traditional Logit model in which β is fixed. In fact, if parameter β_t were observable, the choice probability of alternative i conditional on parameter β_t would be given by this expression:

$$P_t(i / \beta_t) = \frac{e^{X_t \beta_t}}{\sum_{j=1}^J e^{X_t \beta_j}} \quad (1)$$

which is the standard Logit model. However, as it is not observable, the non-conditional probability is the integral of $P_t(i / \beta_t)$ over all the possible values of β_t :

$$P_t(i) = \int_{\beta_t} P_t(i / \beta) f(\beta) d\beta \quad (2)$$

With regard to the second aspect, the flexibility of the RCL model allows one to represent different correlation patterns among nonindependent alternatives. This flexibility allows us to avoid the assumption of Independence of Irrelevant Alternatives. In fact, it does not exhibit the restrictive substitution patterns of the Logit model, as the ratio of probabilities P_{ii}/P_{ij} depends on all the data, including the attributes of alternatives other than i and j . As one can see, the denominators of the formula of the Logit (1) are inside the integral (RCL model (2)) and are, therefore, not cancelled.

Additionally, the flexibility of the RCL model also allows representation of any random utility model. In particular, an RCL model can approximate a Nested Logit (NL), which, to date, has been used in the analysis of multi-stage tourist choice processes (Eymann 1995; Eymann and Ronning 1992). Following Browstone and Train (1999), the RCL model is analogous to an NL model in that it groups the alternatives into nests by including a dummy variable in the utility function which indicates which nest an alternative belongs to. The presence of a common random parameter for alternatives in the same nest allows us to obtain a co-variance matrix with elements distinct from zero outside the diagonal, obtaining a similar correlation pattern to that of an NL model.

Regarding the estimation of the RCL model, Bayesian procedures are used as they give the analyst a parameter for each sample individual and avoid the problems of convergence of algorithms of the classical estimation (Train 2003:285). Following this author, the likelihood L of observed choice y_t for an individual t conditional on parameters b and W (average and variance of β_t , respectively) is expressed as:

$$L(y_t / b, W) = \frac{e^{X_t \beta_t}}{\sum_{j=1}^J e^{X_t \beta_j}} \phi(\beta_t / b, W) \quad (3)$$

where ϕ is the function of Normal distribution.

Let $k(b, W)$ be the prior distribution of parameters b and W . In general, it is assumed that b has a Normal distribution and W an Inverted Gamma distribution (or Inverted Wishart distribution in the case of multi-variation) of type $f(W) = W^{-(v+1)/2} e^{-vs/2W}$ with v being the degrees of freedom and s a parameter of scale to be estimated. Bayes' rule allows the analyst to obtain the posterior distribution $K(b, W, \beta_t / Y)$ for the group of choices Y of the sample individuals ($t=1, \dots, T$) as:

$$K(b, W, \beta_i / Y) \propto \prod_{t=1}^T L(y_t / b, W) k(b, W) \quad (4)$$

The posterior distribution has three parameter types to estimate $\theta = \{b, W, \beta_i\}$: the average b , the variance W , and the parameters of each individual β_i , from which the utility functions of each individual are obtained and, therefore, the preference structure. The estimation of the parameters is obtained through the following expression

$$\hat{\theta} = \int_{\theta} \theta \cdot K(\theta / Y) d\theta \quad (5)$$

This integral has no closed solution, which leads the researcher to use a procedure of estimation by simulation. Therefore, θ is estimated as the average of the simulated drawings. However, the posterior distribution $K(\theta / Y)$ does not always take the form of a known distribution from which one could immediately take draws. Train (2001a), in the case of choice models, suggests the use of Monte Carlo Markov Chains; specifically, the sample simulation algorithms of Gibbs and Metropolis-Hasting for the draws of the density function. Train (2001b) also demonstrates that the estimator of the simulated average of the posterior distribution is consistent, asymptotically normal and equivalent to the estimator of maximum likelihood.

Sample and Variables

To reach the proposed research objectives, information on tourist choice behavior obtained from a national survey called “Spanish Vacation Behavior (III)”, which was carried out by the Spanish Sociological Research Centre, is used. This information is employed for the following reasons: One, the availability of information on tourist behavior. Two, the survey is home based and directed at a sample of individuals (over 18 years old), which avoids the selection bias characteristic of samples obtained in destinations and allows the incorporation of the decision making processes of individuals who do not take vacations; leading to a more precise analysis of tourist demand. And three, the lack of previous empirical studies which apply discrete choice models to the individual behavior of Spanish tourists at a national level. The sample is taken from an adult population, using multi-stage sampling, stratified by conglomerations, with proportional selection of primary units (cities) and of secondary units (censorial sections). The information was collected in October 1995 through personal, at home, interviews with a structured questionnaire. The final sample is of 3,781 individuals with a sample error of $\pm 1.24\%$ for a confidence level of 95.5%.

To make the proposed choice model operative, the variables used are defined (identifying the dependent and independent variables). *Dependent variable*: A polytomous dependent variable is used, with five vacation alternatives: First, multideestination foreign; Second, single destination foreign; Third multideestination national; Fourth, single destination national; and Fifth, not taking a vacation. *Independent variables*: Personal characteristics relating to the destination: *Organization*. The way of organizing the vacation is collected with a dummy variable which takes a value of 1 if a travel agent is used and 0 if not. Personal restrictions: *Income*. This dimension considers different income levels in order to observe the possible non-linearity of their effect (Eymann and Ronning 1997). Monthly income levels are placed into the following categories: *Income 1*, up to 600€ per month; *Income 2*, between 600 and 1200€; *Income 3*, between 1200 and 2400€; *Income 4*, between 2400 and 4500€; and *Income 5*, more than 4500€. Income 1 is taken as the base reference. *Household size*. This is measured by the number of people living in the house (Caswell and McConnell 1980; Eymann and Ronning 1992; 1997; Walsh et al 1992). *Children*. The number of children under sixteen who go on vacation (Moutinho 1987).

Sociodemographic characteristics: *Age*. To test for possible non-linear effects and to give more flexibility to the effect of age, this study follows Cai's (1998) approach by constructing an age group variable with four categorical variables: *Age 1*, under 25 years old; *Age 2*, between 26 and 45; *Age 3*, between 46 and 65; and *Age 4*, over 65 years old. As a reference category *Age 4* is taken. This piecewise definition allows us to represent any pattern in function of age. (Cai 1998; Eymann and Ronning 1992; 1997). The grouping is based on the World Tourism Organization's recommendations (Smith 1995:28). *Education*. Three educational levels are established: *Education 1*, Basic Education; *Education 2*, High School education; and *Education 3*, University Education. *Education 1* is taken as a base reference. (Caswell and McConnell 1980; Eymann and Ronning 1997; Riera 2000); *Occupational Situation*. Five situations are established, defined by the following categorical variables: *Occ. Sit. 1*, employed; *Occ. Sit. 2*, retired; *Occ. Sit. 3*, unemployed; *Occ. Sit. 4*, student; and *Occ. Sit. 5*, housewife. As a base category, *Occ. Sit. 5* is used (Riera 2000; Walsh et al 1992). *Size of City*. The size of the place of residence is defined by the following categorical variables: *Size of City 1*, up to 10,000 inhabitants; *Size of City 2*, between 10,000 and 100,000 inhabitants; *Size of City 3*, between 100,000 and 1,000,000 inhabitants; *Size of City 4*, over 1,000,000 inhabitants. The category *Size of City 1* is taken as a base reference (Eymann and Ronning 1997; Smith and Munley 1978).

Psychographic factors. As one-dimensional indicators of internal aspects, the following three dimensions are included: *An individual's favorable/unfavorable opinion of taking a*

vacation at least once a year. This is measured with a dichotomous variable and takes a value of one if an individual has this favorable opinion, and zero if not (Plog 1994); *Interest in discovering new places*, which is found with a dummy variable where one indicates that this aspect is considered when planning vacations and zero if not; and *Interest in broadening cultural knowledge* using another dummy where one reflects an individual with interest and zero otherwise (Hsieh et al 1993). Additionally, two dummies are included, which identify each alternative with either foreign destinations (Nest 1) or national destinations (Nest 2).

Study Results

The identification of the determinants of the decision to take a vacation in terms of the variables corresponding to hypotheses H.1-H.7 (income, household size, age, active occupational situation, being a student, size of city and opinion of taking a vacation), of the choice of a foreign vacation regarding the variables of the group of hypotheses H.8-H.12 (use of intermediaries, number of children, education, cultural interest and interest in discovering new places), and of the choice of multidestination vacations in terms of the variables corresponding to the group of hypotheses H.13-H.15 (use of intermediaries, interest in culture and discovering new places) implies the estimation by Bayesian procedures of an RCL model, which is shown in Table 1. In the estimation of the model, each dimension is included in the corresponding choice alternative to test the hypotheses.

Before applying the model, a detailed study of the correlation between the explanatory variables is carried out in order to avoid possible multicollinearity. Its impact on the final results is limited by selecting non-collinear variables, so that the equations presented for each model constitute different combinations, which are designed to collectively solve the problem of multicollinearity. With regard to the alternative-specific constants, their coefficients represent utility relative to the omitted alternative, which in this case is the option of not taking a vacation. As can be seen, all the parameters are significant at a level of 10% and have negative signs except “national multidestination vacation”, which is significant and positive. This implies that, all other variables being equal, tourists who decide to take a vacation obtain positive utility from and, therefore, show a relative preference for national multidestination vacations as opposed to the alternative of not taking a vacation.

With regard to the parameters of the nests, it is important to make two points: Firstly, the fact that they are significant (except nest 2 of equation 2 and 4), indicates a differentiated utility for each group (nest). The parameter of nest 1 “Foreign destinations” is larger (more negative) in all cases than that of nest 2 “National destinations”, which shows a preference among Spanish

tourists for the latter. Secondly, the parameters of the variance of the coefficients are also significant in all the equations. The variance of national destinations is greater than that of foreign destinations. In reality, these parameters represent the covariances among the alternatives in a nest. In this case, their magnitudes indicate the existence of a large number of non-observable factors; common to national destinations. These results show that tourist choice is a complex process which can be broken down into three stages: the decisions to take a vacation, to travel abroad and multideestination vacations, which are nested non independent decisions.

With regard to the coefficients estimated, it is important to stress that the significance of parameter b indicates the average effect of the dimension analyzed, and that the significance of the parameter of standard deviation $SD(\beta)$ shows that the effect of this dimension is different for each tourist (which proves the existence of heterogeneity and the superiority of the RCL model over the standard Logit). The results obtained show the following: Concerning the initial decision to take a vacation, the determinant factors appear to be income, household size, age, an active occupational situation, being a student, size of city and opinion of taking a vacation, and are significant at a level below 5% in all the equations. The estimations of these coefficients show robust results in all equations, given that the variables are significant in all of them and have the same signs.

All the categorical variables relative to income levels show a positive sign. Moreover, all the parameters are significantly greater than those of the reference category of low income (up to 600€) and show that the two middle income categories (€600-1,200 and €1,200-2,400) have the greatest impact on the probability of taking a vacation, which suggests the presence of a saturation point. According to Davis and Mangan (1992), tourism expenditure initially rises steeply as income rises, but the rate of increase declines as saturation is approached. This confirms hypothesis H.1 that the consumption of vacation products is positively related to income and is in line with Bardón (1991), Hay and McConnell (1979), S.G.T. (1989a; 1992; 1993) and Walsh et al (1992). Therefore, this type of product is a *normal product* with a saturation point (Davis and Mangan 1992). Household size presents a negative sign, which means that smaller households tend to take more vacations, due to their larger budgets, thus supporting hypothesis H.2 in line with Collins and Tidell (2002) and Crawford and Godbey (1987). As regards age, the youngest groups, *age1* (under 25) and *age2* (between 26 and 45), are more likely to take vacations. They present significantly larger parameters than those of the older age groups. This result is in line with that of Dardis et al (1981 1993), who find that expenditure on recreation declines as age increases. Additionally, the estimation of the

parameters of the four age groups does not support a fully linear effect, which favors hypothesis H.3, in line with Cai (1998).

With regard to occupational situation, the positive signs of categories 1 and 4, of employed people (larger incomes) and of students (more free time), suggest greater probabilities of taking vacations. Their parameters are significantly greater than those of the other three categories, which verifies hypotheses H.4 and H.5 respectively, in line with the results obtained in other studies (I.E.T. 2000; S.G.T. 1989a; 1993). Similarly, the size of the city of residence shows a positive sign for larger cities (categories 3 and 4 **with more than 100,000 inhabitants**) whose coefficients are significantly greater than those of the small size categories (1 and 2 **with less than 100,000 inhabitants**) and is indicative of the existence of a need to escape from large urban centers (Eymann and Ronning 1992); thus corroborating hypothesis H.6. The positive sign of the variable relating to the favorable/unfavorable opinion of taking a vacation supports hypothesis H.7 that a favorable opinion foments vacations. Therefore, this psychographic dimension of the individual determines tourist decisions, in line with Ashok et al, (2002), González and Díaz (1996), Plog (1994) and Seddighi and Theocharous (2002).

With regard to the decision to take a vacation abroad, it is shown that the use of intermediaries, the number of children under sixteen, education and the psychographic dimensions are determinants, all being significant at a level below 5%. Also, it is important to indicate that the estimations of these coefficients show robust results in all equations. The positive sign of the variable of organization corroborates hypothesis H.8, which links the use of intermediaries with international vacations (more complex products), as this allows a reduction in their inherent uncertainty (Bote et al 1991; Mak and Mancur 1980; Sheldon and Mak 1987). The number of children under sixteen on the vacation presents a negative sign, showing a preference for national destinations, as with the study of the S.G.T. (1989b), which supports hypothesis H.9. This shows that children are considered when choosing a destination (Hsieh et al 1993; Sheldon and Mak 1987; Stemerding et al 1999).

The positive sign of university studies (*Education 3*) suggests that graduates have a greater propensity to take foreign vacations than those with lower educational qualifications, verifying hypothesis H.10. This implies that education, culture and knowledge of foreign languages are important aspects in this context, in line with Eymann and Ronning (1997). As regards the psychographic dimensions, the positive sign of “interest in broadening cultural knowledge” confirms its influence on the decision to vacation abroad, supporting hypothesis H.11. However, “interest in discovering new places” is not significant. Therefore, hypothesis

H.12 is rejected. These results suggest that international tourists are more concerned with new cultural experiences than with the simple act of seeing new places.

With regard to multideestination vacations, the results show that the means of organization and the psychographic dimensions have an influence; being significant at a level below 5% (The robustness of the results is also evidenced). The variable of organization shows a positive coefficient, which supports hypothesis H.13 of the use of intermediaries being associated with vacations to various destinations (highly complex product) due to the fact that tourists can reduce their uncertainty and more efficiently obtain the aggregation of multiple components (Mak and Moncur 1980; Sheldon and Mak 1987). The two psychographic dimensions present negative signs, which lead us to reject hypotheses H.14 and H.15 that they positively influence the choice of this type of multideestination vacation. On the contrary, a Spanish tourist who shows an interest in discovering new places and in broadening cultural knowledge behaves as a “vacationer”, according to the classification of Mayo and Jarvis (1981). Therefore, it seems that the intellectual “need to know” is satisfied by remaining in one destination during their vacation in order to “learn” in detail the characteristics of the place.

CONCLUSION

The implication that tourist decisions can be considered a multi-stage process and can be explained by certain characteristics of the individual, allows the analysis of these phenomena in the context of Spain on a sample of 3,781 individuals. To do this, this study proposes various hypotheses on the impact of personal characteristics relating to the chosen destination, personal restrictions, sociodemographic characteristics and psychographic dimensions. The operative formalization used to test these hypotheses follows an RCL model.

The empirical application carried out on the sample reaches the following conclusions: *Decision to take a vacation.* The dimensions which appear to have an effect on this decision are income, household size, age, active occupational situation, being a student, size of the city of origin and opinion of taking a vacation. It is concluded that a greater propensity to take a vacation is associated with high income (meaning that they are normal goods, though with a saturation point), smaller household size (due to the monetary restrictions of large households), tourists aged under 45, an active occupational situation (implying a greater available budget), being a student (having more leisure time), residence in large cities (because of the need to escape) and a favorable opinion of taking a vacation (psychographic dimension). *Choice of foreign vacation.* The determinant factors of the choice of foreign vacations are the means of

organization, the number of children under sixteen, education and interest in broadening cultural knowledge. In other words, the choice of a foreign vacation is linked with the use of travel agents (to facilitate the organization of complex vacations), fewer children (which allows greater spending and more freedom of movement), university education (which supposes higher levels of education, culture and knowledge of foreign languages) and greater interest in widening cultural knowledge (psychographic dimension). *Multidestination vacations*. The explanatory variables of this type of vacation are the means of organization and interest in widening cultural knowledge and discovering new places. This means that multidestination vacations (complex products) are associated with the use of intermediaries and that these psychographic dimensions positively influence the selection of single-destination vacations. Finally, the nested non-independent character of the three decisions (taking a vacation, foreign and multidestination vacations) reveals the multi-stage nature of the decision making process.

As implications for management, it can be mentioned that knowledge of the profile of the tourist and the type of vacation they take (foreign and multidestination) allows travel organizations to better design their policies and Marketing strategies, adapting them to those aspects which are considered most important. Likewise, firms which provide services at destinations popular with foreigners and “sightseers” should establish commercial links with operators and develop efficient intermediation policies, given that the purchase of foreign and multidestination vacations is made at travel agents.

Among the limitations of the study is the fact that it does not consider the impact of important explanatory dimensions such as price variables (fares, accommodation costs, etc.), other destination related variables and personal motivations. This is due to the lack of information on them. Equally, the perceptions of individuals on the attributes of foreign and multidestination vacations could also provide the analyst with relevant information on the choice of one of these. In terms of future lines of research, the results presented here should be supported by studies on other geographical areas. Likewise, it would be interesting to test the proposed hypotheses from a longitudinal perspective, which would allow observation of the temporal evolution of the effects of the dimensions studied. ■

Acknowledgments—This study has benefited from a “Spanish Tourism” grant from the Secretary of State for Commerce and Tourism of the Ministry of Economics to carry out the Doctoral Thesis of the first author.

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Submitted 29 July 2003. Resubmitted 6 February 2004. Resubmitted 8 April 2005. Accepted 20 April 2004. Final version 5 May 2004. Refereed anonymously. Coordinating Editor: Egon Smeral

Table 1. Determinant Factors of Vacation Decisions^a

Independent Variables	Equation 1		Equation 2		Equation 3	
	<i>b</i>	SD (β)	<i>b</i>	SD (β)	<i>b</i>	SD (β)
Take Vacation						
Income						
€600-1,200	0.538 ^a (0.091)	0.442 ^a (0.120)			0.789 ^a (0.228)	0.232 ^d (0.119)
€1,200-2,400	1.923 ^a (0.203)	0.393 ^b (0.180)			2.453 ^a (0.319)	0.616 ^c (0.284)
€2,400-4,500	1.993 ^a (0.126)	0.855 ^d (0.437)			1.984 ^a (0.518)	0.561 ^d (0.296)
Over €4,500	0.212 ^d (0.130)	0.526 ^a (0.133)			0.607 ^a (0.130)	0.750 ^a (0.125)
Household size						
	-0.362 ^a (0.035)	0.160 ^a (0.036)				
Occupation						
Employed	0.499 ^b (0.163)	0.799 ^c (0.334)				
Retired	-0.987 ^a (0.107)	0.954 ^a (0.222)				
Unemployed	-0.202 (0.225)	1.109 (0.752)				
Student	1.076 ^a (0.223)	0.773 ^b (0.276)				
City Size						
10,000-100,000	-0.892 ^a (0.174)	0.775 ^a (0.210)				
100,000-1,000,000	0.325 ^a (0.093)	0.704 ^b (0.230)				
Over 1,000,000	0.445 ^c (0.179)	1.284 ^b (0.448)				
Opinion holidays						
	1.523 ^a (0.828)	0.828 ^b (0.342)				
Foreign Vacation						
Organization through travel agents			2.061 ^a (0.328)	2.015 ^a (0.529)		
Children			-0.511 ^a (0.093)	0.369 ^a (0.096)		
Education						
High school			0.075 (0.189)	0.648 ^a (0.202)		
University			1.015 ^b (0.388)	1.171 ^a (0.303)		
Interest in new places			-0.301 (0.226)	1.730 ^b (0.663)		
Cultural interest			1.016 ^a (0.248)	1.465 (0.324)		
Multidestination Vacation						
Organization through travel agents					0.573 ^c (0.247)	2.870 (2.804)
Interest in new places					-1.386 ^a (0.101)	0.807 ^a (0.196)
Cultural interest					-1.321 ^a (0.128)	0.863 ^a (0.211)
Alternative-specific constants						
Foreign multidestination vacation						
	-1.776 ^a (0.065)	0.205 ^a (0.048)	-2.016 ^a (0.158)	0.222 ^a (0.068)	-2.178 ^a (0.218)	0.221 ^c (0.090)
Foreign single-destination vacation						
	-0.105 ^d (0.100)	0.491 ^a (0.112)	-0.669 ^a (0.107)	0.587 ^b (0.229)	-1.280 ^a (0.278)	1.521 ^c (0.749)
National multidestination vacation						
	0.787 ^a (0.051)	0.334 ^d (0.193)	0.567 ^a (0.103)	0.536 ^b (0.196)	0.947 ^a (0.068)	0.517 ^a (0.123)
National single-destination vacation						
	-0.668 ^a (0.058)	0.269 ^d (0.163)	-1.038 ^a (0.138)	0.775 ^a (0.237)	-1.379 ^a (0.105)	1.373 ^a (0.420)
Nest dummies						
Nest 1=Foreign destinations						
	-2.365 ^a (0.205)	0.326 ^a (0.081)	-2.848 ^a (0.334)	0.273 ^c (0.112)	-2.435 ^a (0.234)	0.327 ^b (0.121)
Nest 2=National destinations						
	-0.320 ^d (0.168)	0.785 ^a (0.190)	-0.105 (0.119)	1.236 ^b (0.461)	-0.882 ^a (0.239)	0.540 ^a (0.099)

a=prob<0.1%; b=prob<1%; c=prob<5%; d=prob<10%.

Independent Variables	Equation 4		Equation 5		Equation 6	
	<i>b</i>	SD (β)	<i>b</i>	SD (β)	<i>b</i>	SD (β)
Take vacations						
Household size	-0.236 ^a	0.116 ^a				
	(0.030)	(0.020)				
Age						
Under 25					0.658 ^c	0.761 ^b
					(0.268)	(0.285)
26-45					0.476 ^b	0.219 ^b
					(0.171)	(0.074)
46-65					-0.170	1.396
					(0.137)	(0.843)
Occupation						
Employed	0.509 ^b	0.756 ^a				
	(0.178)	(0.124)				
Retired	-1.159 ^a	0.616 ^a				
	(0.126)	(0.120)				
Unemployed	-0.475 ^a	0.614 ^b				
	(0.119)	(0.228)				
Student	0.958 ^c	1.266 ^a				
	(0.397)	(0.249)				
City Size						
10,000-100,000	-0.228 ^a	0.498 ^a				
	(0.065)	(0.120)				
100,000-1,000,000	0.598 ^a	0.951 ^a				
	(0.106)	(0.241)				
Over 1,000,000	0.982 ^a	0.653 ^b				
	(0.115)	(0.236)				
Opinion holidays	1.609 ^a	0.222 ^a				
	(0.959)	(0.226)				
Foreign vacation						
Organization through travel agents	0.720 ^c	2.209	1.738 ^a	1.191 ^b		
	(0.332)	(1.819)	(0.352)	(0.436)		
Children			-0.510 ^a	0.340 ^a		
			(0.099)	(0.094)		
Education						
High school			-0.306	1.024		
			(0.201)	(0.725)		
University			1.132 ^b	1.324 ^c		
			(0.410)	(0.648)		
Interest in new places	-0.156	1.206 ^a	-0.143	0.950 ^b		
	(0.100)	(0.288)	(0.143)	(0.388)		
Cultural interest	0.340 ^a	0.467 ^a				
	(0.080)	(0.125)				
Multidestination vacation						
Organization through travel agents	0.648 ^a	1.795 ^c	0.695 ^a	0.505 ^b		
	(0.162)	(0.698)	(0.078)	(0.172)		
Interest in new places	-1.214 ^a	0.237 ^c	-1.174 ^a	0.419 ^d		
	(0.169)	(0.115)	(0.091)	(0.239)		
Cultural interest	-0.718 ^a	0.937 ^d				
	(0.205)	(0.548)				
Alternative-specific constants						
Foreign multidestination vacation	-1.922 ^a	0.210 ^a	-2.459 ^a	0.264 ^b	-2.210 ^a	0.163 ^a
	(0.110)	(0.052)	(0.144)	(0.095)	(0.168)	(0.047)
Foreign single-destination vacation	-0.648 ^a	0.459 ^a	-0.848 ^a	0.393 ^b	-0.742 ^a	1.071 ^a
	(0.111)	(0.143)	(0.080)	(0.132)	(0.141)	(0.234)
National multidestination vacation	0.819 ^a	0.226 ^d	1.142 ^a	0.266 ^b	1.032 ^a	1.313 ^a
	(0.060)	(0.125)	(0.102)	(0.095)	(0.205)	(0.395)
National single-destination vacation	-1.023 ^a	0.171 ^b	-1.372 ^a	3.077 ^c	-0.514 ^b	0.413 ^a
	(0.104)	(0.061)	(0.280)	(1.417)	(0.180)	(0.112)
Nest dummies						
Nest 1=Foreign destinations	-2.234 ^a	0.254 ^a	-2.214 ^a	0.293 ^a	-2.118 ^a	0.277 ^a
	(0.167)	(0.055)	(0.192)	(0.084)	(0.090)	(0.069)
Nest 2=National destinations	-0.177	0.261 ^a	-0.434 ^a	0.534 ^b	-0.739 ^b	1.968 ^d
	(0.111)	(0.056)	(0.104)	(0.221)	(0.247)	(1.072)

^aStandard Errors In Brackets

a=prob<0.1%; b=prob<1%; c=prob<5%; d=prob<10%.