Taxing Tourism: the effects of an accommodation tax on tourism demand in the Balearic Islands (Spain)

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Published

2017

Journal Title

Cuadernos Economicos

Version

Version of Record (VoR)

Taxing tourism: the effects of an accommodation tax on tourism demand in the Balearic Islands (Spain)*

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Abstract

Tourist taxes have become an easy way for governments to collect extra revenue for investment purposes, infrastructure and social services. However, because tourism represents a primary source of wealth and focus of new employment for different destinations, it is important not to levy disproportionate taxes on this sector. On the occasion of the recent introduction of a tourist tax in the Balearic Islands (Spain), one of the most leading destinations in the Mediterranean, the objective of this paper is to evaluate its price effects on tourist arrivals. In order to estimate this effect, a review on methodologies for analysing the price effect on tourism demand and empirical applications focused on the Balearic Islands or Spain is undertaken. The results show that the tourist tax now in operation will lead to an expected drop of between 0.4 per cent and 0.8 per cent in the total demand, measured in terms of tourist stays.

Keywords: *tourism, taxes, demand modelling, the Balearic Islands.*
JEL codes: *H23, L83, R41, Z38.*

Resumen

Los impuestos turísticos se han convertido en una alternativa sencilla por parte de la administración pública a la hora de obtener ingresos extra para la financiación de inversiones, infraestructuras y servicios sociales. Sin embargo, dado que el turismo representa una fuente primaria de riqueza y de empleo para muchos destinos, resulta importante no instaurar impuestos excesivos en el sector. Con motivo del reciente establecimiento de un impuesto turístico en las Islas Baleares (España), una de los destinos líderes del Mediterráneo, el objetivo de este trabajo es evaluar el efecto precio que sobre las llegadas de turistas tendrá esta implantación. Para ello, se efectúa una revisión de las metodologías para analizar el efecto precio sobre la demanda turística y las aplicaciones empíricas que se han tomado como casos de estudio las Islas Baleares y España. Los resultados muestran que el impuesto turístico actualmente implantado se espera que suponga una reducción de entre el 0,4 por 100 y el 0,8 por 100 de la demanda total, medida en términos de estancias.

Palabras clave: *turismo, tasas, modelo de demanda, Islas Baleares.*
Clasificación JEL: *H23, L83, R41, Z38.*

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* The authors thank the financial support from the CICYT Programme (Spanish Government) through grants ECO2016-79124-C2-1-R (AEI/FEDER, UE) and ECO2014-58991-C3-3-R.

1. Introduction

Tourism has become a key economic activity for many countries. The economic benefits of tourism are obvious: an increase in the GDP, job creation, currency inflows, a better trade balance, investment etc. However, tourism entails different social and environmental costs such as congestion, a decline in environmental quality and mass consumption of natural resources. Consequently, the need for public sector intervention in tourism destination management is usually generally accepted in order to try and balance out the benefits and the costs and thus achieve the highest possible net social welfare.

Among the instruments at governments' disposal, taxation is becoming an increasingly popular mechanism. Public administrations around the world have come to understand the potential source of revenue that the expansion of the tourist industry can represent. Indeed, the World Travel and Tourism Council estimates that taxes on transport and tourism will account for 10.7 per cent of all tax revenue by 2020 (Dwyer *et al.,* 2010). At the same time, tourist taxes are a big cause of controversy: on the one hand, travel and tourism is one of the few export industries to be taxed and, on the other, tourists are tax payers with no local voting rights and hence an attractive solution for any democratic system that seeks to boost its public revenue.

Tourists encounter a variety of taxes on their travels and so it is important to try and define what is meant by a tourist tax. In addition to possible airport taxes or indirect ones levied on transport, tourists have to pay other taxes on purchases of goods or services whose consumption by the resident population would also be taxed. Thus, a tourist tax cannot be defined by the fact that it is solely paid for by tourists, because many of these taxes are non-discriminatory and residents also pay for them when they make these same purchases, even though it must be acknowledged that, in the case of certain goods and services, most of these purchases are made locally by tourists (e.g. hotel rooms and rental cars). This is the criterion that Dwyer *et al*. (2010) apply when they define 'tourist taxes' as taxes that are mainly paid for by tourists, citing taxes on hotel stays as an explicit example.

The effects of taxes on tourism vary depending on the type of tax and the tax system in operation at the destination. The main purpose of a tax system is to generate revenue for governments in order to fund public services and other costs. Indeed, most government expenditure has to be financed through taxation and, in the case of tourism, funds should also be raised this way. As the consumers of public services (public safety, the cleaning of public areas, roads, transport infrastructure etc.), tourists must contribute to the cost of their maintenance. However, a tax system also has other purposes, such as helping to redistribute income, encouraging/discouraging the consumption of certain goods and services, or as a mechanism in economic stabilization (Judd, 1985).

The controversy on the introduction of a tourist tax is clear in many popular destinations around the World. For instance, in the case of the Balearic Islands

(Spain), a tourist tax on tourist stays was introduced in 2002 but abolished in 2003, when a new regional government won the elections (Serra, 2004). However, once the previous administration recovered the regional government, and tourist taxes have been popularized in other Spanish regions, a new a tourist tax was introduced on July 1st 2016. It is important to note how the Balearic Islands are a very known destination for European citizens travelling to warmer climes in the summer months and they are also a classic example of a Mediterranean tourist destination, that is used frequently as a reference case study. In this context, the objective of this study is to evaluate how the introduction of this new tourist tax, levied on tourists to the Balearic Islands (Spain), will affect the archipelago's tourism demand in terms of stays in the short-run.

To do so, foundations and methodological considerations about how changes in the price of tourism determine the level of tourism demand and how this relationship has been quantified in the literature are discussed with special focus on those empirical exercises that has taken Spain or the Balearic Islands as case studies. Although from a theoretical point of view, tourism demand could be defined as the amount of tourism goods and services that tourists wish to consume at different price levels, conditional also upon other factors, Li *et al*. (2005) show that in empirical studies, tourism demand has mainly been measured either through tourist numbers or tourist stays (63 per cent of such studies) or through tourist spending (29 per cent). Although differences in the use of both measures can be identified (Song *et al*., 2010), a high correlation between them can commonly be found, and consequently the decision which one to use mainly depends on the objective of the study or available data.

Since the Balearic tax is levied on tourist stays, this is the variable used here as a measure of tourism demand. It should be noted that tourist stays can be defined as the number of tourists multiplied by the average length of stay, and so differences might be expected in the impact of an increase in the daily price of a room in the sense that tourists might be diverted to other destinations or else they might decide to reduce their length of stay. However, current models in the literature on the subject are not sufficiently developed to make this distinction. In contrast, in literature, examples can easily be found of aggregate models on tourism demand to the Balearics and/or Spain, mainly based on tourist flows, and, as shown in the following sections, they do achieve similar results when quantifying the effect of prices on tourism demand.

The remainder of this paper is structured as follows: section 2 presents the theoretical discussion and it contextualizes the analysis of a tax on tourism demand; section 3 outlines the results of previous tourism demand estimations that took Spain as their reference or the Balearic Islands as the chosen destination, focusing on the price elasticity values obtained in these studies; section 4 estimates the impact of the Balearic tourist tax's introduction on tourism demand, taking into account all the segmentations that are available for the archipelago; and finally, section 5 contains the main conclusions.

2. Underpinnings and methodological issues in the estimation of price elasticities

Regardless of the methodology that is used to determine tourism demand, utility theory is normally taken as the theoretical basis for understanding tourist behaviour in the selection of a destination. According to this theory, which was initially applied to tourism by Morley (1992) and readapted by Papatheodorou (2001), an individual planning to visit a tourist destination is assumed to be characterized by the following utility function:

$$U_{ijt} = f(N_{ijt}, Q_{it}, ZO_{it}, ZD_{jt}) \quad [1]$$

where U_{ijt} refers to the utility that an individual from origin *i* travelling to destination *j* during period *t* will obtain; *N* is the number of visits from origin *i* to destination *j* during period *t*; *Q* is a vector of other consumer goods; and *ZO* and *ZD* are vectors for site-related characteristics of the place of origin and destination, respectively. The budget constraint associated with choosing a particular destination can be expressed as:

$$\pi_{ijt} N_{ijt} + p_{it} Q_{it} \leq M_{it} \quad [2]$$

where π_{ijt} refers to the cost of visiting destination *j* from origin *i* during period *t*; *p* is the price vector associated with other consumer goods; and *M* is the personal income. The utility maximization problem subject to the budget constraint can be solved, thus finding the optimal levels of consumption of other goods and services and the number of visits from each origin to each destination. Analytically, the problem to be solved can be written as:

$$\underset{Q_{it},\, N_{ijt}}{\text{Max}}\; U_{ijt} = f(N_{ijt}, Q_{it}, ZO_{it}, ZD_{jt})$$

subject to

$$\pi_{iJt} N_{ijt} + p_{it} Q_{it} = M_{it} \quad [3]$$
$$N_{ijt} \geq 0,\; Q_{it} \geq 0$$

The solution is found using the Lagrangian approach, and first-order conditions determine optimal levels of consumption of other goods (Q^*) and the number of trips between the different origins to the different destinations (N^*):

$$Q^*_{it} = q(p_{it}, \pi_{ijt}, M_{it}, ZO_{it}, ZD_{jt})$$
$$N^*_{12t} = n(p_{12}, \pi_{12t}, M_{1t}, ZO_{1t}, ZD_{2t})$$
$$N^*_{13t} = n(p_{13}, \pi_{13}, M_{1t}, ZO_{1t}, ZD_{3t})$$
$$\vdots$$
$$N^*_{K(K-1)t} = n(p_{Kt}, \pi_{K(K-1)t}, M_{Kt}, ZO_{Kt}, ZD_{(K-1)t})$$

It should also be noted that, from the solution taken by the individual, it is possible to obtain the indirect utility function for a particular destination *J*. That is:

$$U'_{iJt} = f(N^*_{iJt}, Q^*_{it}, ZO_{it}, ZD_{Jt}) \quad [5]$$

In all cases, due to the potential (frequent) possibility of a corner solution, the utility expressed in equation [5] must be compared with the utility of not travelling to *J*:

$$U^0_{it} \quad [6]$$

Hence, the maximum utility that an individual U^*_{iJt} can obtain is derived from the expression:

$$U^*_{iJt} = \text{Max}[U'_{iJt}, U^0_{it}] \quad [7]$$

From these general considerations, two empirical methodological approaches can be used to determine tourism demand (and thus find the relationship between the cost of tourism for travellers and tourism demand): discrete choice models and aggregate ones. Discrete choice models are presented as a probabilistic model based on the principle of utility maximization and they were specifically developed for modelling individual choices when faced with a range of mutually exclusive alternatives. Given that it is impossible to observe the utilities of individuals, these are taken into consideration in the form of random variables. Thus the probability of one particular alternative being chosen is defined as the probability that the most utility will be derived from this alternative out of all the available set of choices (Ben-Akiva and Lerman, 1985). At an empirical level, when tourism demand has been modelled in relation to prices, as expected, a negative relationship has been found between the cost of tourism and the chosen destination (Eymann and Ronning, 1997; Haider and Ewing, 1990; Morley, 1994a and 1994b; Nicolau and Mas, 2006).

Nonetheless, there are two drawbacks to using choice models to evaluate the price effect of a tourist tax on international tourism demand. Firstly, due to the cross-sectional nature of these studies, the price variable has mainly been represented by indicators such as distance, which hinders the possibility of introducing and evaluating a price rise due to the application of a tax. Secondly, in order to estimate the effect of the tax's introduction on potential consumers, without any kind of bias, a representative sample of households is needed: that is, an international sample, with information on the alternative destinations available to them. Obviously, this is very hard to achieve.

Aggregate models –the other option– also explore consumer choices, but in this case through aggregate data. As pointed out by Morley *et al*. (2014), when the individual demand function expressed in equation [4] is taken, it is possible to consider the aggregation of all the residents of a given origin that visit a particular destination *J*:

$$N_{iJt} = \underset{i \in I / j \in J}{\text{Max}} N^*_{ijt} \quad [8]$$

thus representing all individuals travelling from *I* to *J* during *t*. Consequently, it is perfectly acceptable for:

$$N_{iJt} = F(p_{It}, \pi_{IJt} M_{It}, ZO_{It}, ZD_{Jt}) \quad [9]$$

At this point it should be stressed that equation [9] is a generalization of the expression presented in Song *et al*. (2009), representative of the relationship between tourism demand and its determinants and often used in tourism demand modelling exercises. Equation [9] still needs to be parameterized in order to find the mathematical function *F* that best describes and fits the data and can be econometrically estimated. As Song *et al*. (2010) show, the linear assumption is often combined through the use of logarithms. Thus, assuming the existence of a multiplicative function between the number of trips (*N*) and the determining variables, expression [9] can be written as:

$$N_{IJt} = (p_{It})^{\beta a}(\pi_{IJt})^{\beta b}(M_{It})^{\beta c} f(ZO_{It} ZD_{Jt}) \quad [10]$$

where β_a, β_b and β_c are the parameters to be estimated and *f* is a function relating tourism demand, with the rest of the variables usually assumed to be additive or multiplicative.

At this point, it should be highlighted that a large part of recent empirical literature on the subject has focused on explaining the structural factors of the relationship shown in expression 10, hence focusing on the spatial aspect of this relationship. This literature often uses the name 'gravitational models' instead of 'tourism demand models' when applying these equations (Gil-Pareja *et al*., 2006; Santana *et al*., 2010; Fourie *et al*., 2015). Given that the objective of this study is to identify the relationship between price and tourism demand, these models have the same limitation as discrete choice ones in terms of the difficulty that is involved in measuring the different costs of different destinations through distance. Having said that, although the spatial component of the cost may have some relevance in determining consumer choices, most empirical literature published over the last fifty years that forecasts tourism demand or determines the relationship between price and tourism demand has 'overlooked' the spatial dimension of the relationship shown in expression [9], focusing instead on the temporal aspect of the problem (Lim, 1999; Peng *et al*., 2012; Song and Li, 2008; Witt and Witt, 1995). From the empirical literature, the variables that have been generally accepted as the main determinants of international tourism demand comprise potential tourists' income levels, the relative price of tourism products in the origin and destination countries, substitute prices of tourism products in alternative destinations, transportation costs, population of origin country, exchange rates, marketing expenditure by the destination in the origin country and one-off events (Peng *et al*., 2012). Thus, the equation used in most of these studies and described by Song and Witt (2010), using the notation seen before, can be simplified and written as:

$$\ln N_{IJt} = \beta_0 + \beta_b \ln \pi_{IJt} + \beta_a \ln p_{It} + \beta_c \ln M_{It} + \beta_d \ln A_{IJt} + \beta_e X_{IJt} \quad [11]$$

The importance of the temporal aspect of these studies means that N_{IJt} mainly captures tourist flows from *I* to *J* during *t*; π_{ijt} can be captured through the nominal exchange rate or the real exchange rate between the place of origin and destination (i.e. the nominal exchange rate adjusted for price differences between both places); *p* is measured as a combined indicator that captures the evolution of the exchange rates (nominal or real) of different rival destinations; *M* is measured through the per capita GDP of the place of origin; *A* tries to capture promotional efforts from *I* to *J* during *t*; and *X* is a set of other possible time-determinants of demand, such as terrorist attacks, special events or health alerts, usually captured by dummy variables.

Thanks to the specification of equation [11], the relationship between tourism demand and prices can be quantified through the concept of price elasticity, thus assuming the existence of a constant relationship between the behaviour of both variables in percentage terms. Based on the theoretical notion, it is possible to demonstrate that the price elasticity of tourism demand, *h*, is, in fact, parameter β_b in expression [11]. Analytically:

$$\eta = \frac{\frac{\partial N_{IJt}}{N_{IJt}}}{\frac{\partial \pi_{IJt}}{\pi_{IJt}}} = \frac{\partial N_{IJt}}{\partial \pi_{IJt}} \frac{\pi_{IJt}}{N_{IJt}} = \beta_b e^{\beta_0} \pi_{IJt}^{\beta_b - 1} p_{It}^{\beta_a} M_{It}^{\beta_c} A_{IJ}^{\beta_d} e^{\beta_e X_{IJt}} \frac{\pi_{IJt}}{e^{\beta_0} \pi_{IJt}^{\beta_b} p_{It}^{\beta_a} M_{It}^{\beta_c} A_{IJ}^{\beta_d} e^{\beta_e X_{IJt}}} = \beta_b \qquad [12]$$

Thus a constant elasticity between the variables is often assumed, an issue that can be overcome by using different strategies. In general, empirical literature on quantitative methods show the existence of different estimation techniques that can be divided in three main categories: time series models, econometric techniques and artificial intelligence methods (Peng *at al*., 2012). However, when the relationship between one particular determinant and tourism demand has to be evaluated, econometric techniques are presents as the most recommended one (Song *et al*., 2009).

3. Estimations of the price elasticity of demand to the Balearic Islands and Spain

Spain and the Balearic Islands are internationally famous tourist destinations and they have been used as case studies in numerous empirical tourism demand applications using time-series data. Table 1 presents the most recent salient estimates of the price elasticity of demand, published in literature since 2005. All these studies have estimated the price elasticity using exchange rates (usually in real terms). For the sake of coherence between the empirical literature and the theoretical basis, the estimated parameters of the price elasticity are shown in absolute terms.

Table 1 shows that the three studies relating to the Balearic Islands found short-run price elasticity values for tourism demand close to 1 or lower. It should also be noted that Aguiló *et al*. (2005) and Rosselló *et al*. (2005) used a model that identified a negative trend in the elasticity values.

TABLE 1
RECENT ESTIMATIONS OF THE PRICE ELASTICITY OF DEMAND FOR SPAIN AND THE BALEARIC ISLANDS

Study	Elasticity for Spain	Elasticity for Balearic Islands
Aguiló *et al*. (2005)	–	International tourism: 1.03
Rosselló *et al*. (2005)	–	British: 0.8; German: 0.3
Garín (2007)	German: 1.06 in the short run and 2.16 in the long run	–
Garín and Montero (2007)	–	International: 0.76 in the short run and 1.65 in the long run
Ordóñez *et al*. (2010)	International: Between 0.82 and 0.99	–
Garín, T. (2011)	British: 0.66	–
Álvarez-Díaz *et al*. (2015a)	British 0.53; German 0.91; Dutch 1.52; Italian 1.02	–
Álvarez-Díaz *et al*. (2015b)	British: 0.84 in the short run and 1.60 in the long run	–
Albaladejo *et al*. (2016)	Domestic: 0 (statistically not significant) International: 0 (statistically not significant)	–

SOURCE: Own elaboration.

Similarly, the price elasticity value for Spain stood at around 1 or below. Consequently, tourism to Spain can be classified as a necessary good. Given the results, since no single value can be obtained for the price elasticity of demand to the Balearics or to Spain, this study considers two elasticity scenarios in attempts to evaluate the effect of the tourist tax that was introduced to the Balearics in 2016: $h = 1$ and $h = 0.5$.

4. The effects of the tax on tourism demand to the Balearic Islands

On March 3rd 2016, a new tourist tax, formally known as 'Llei 2/2016, de 30 de març, de l'impost sobre estades turístiques a les Illes Balears i de mesures d'impuls del turisme sostenible', was introduced in the Balearic Islands. It was not the first attempt, since between 2002 and 2003 a similar tax on tourist stays had been levied (Serra, 2004). The new tourist tax involves the payment of a certain amount for each night's stay in tourist accommodation establishments, depending on the type or category of accommodation (Table 2). Consequently, this tax is not paid by tourists who stay elsewhere (for instance, in second homes or with friends and relatives). There are also various exemptions, such as situations of force majeure, stays for

TABLE 2

DAILY TAX RATE BY TYPES OF ACCOMMODATION IN THE BALEARIC ISLANDS

Type	Daily amount in euros
Five-star hotels, five-star urban hotels and five-star apartment hotels; luxury five-star hotels; and superior four-star hotels	2
Four-star hotels, four-star urban hotels and four-star apartment hotels; superior three-star hotels	1.5
One, two and three-star hotels, urban hotels and apartment-hotels	1
Four-key and superior four-key tourist apartments	2
Superior three-key tourist apartments	1.5
One, two and three-key tourist apartments	1
Non-residential accommodation owned by residential and holiday complex management companies	2
Holiday rentals	1
Rural hotels, Agro-tourism accommodation establishments and inland hotels	1
Guesthouses, residential guesthouses, and campsites	0.5
Hostels and refuges	0.5
Other tourist establishments	1
Cruise ships	1

SOURCE: Llei 2/2016, de 30 de març, de l'impost sobre estades turístiques a les Illes Balears i de mesures d'impuls del turisme sostenible. Available at: *http://www.caib.es/eboibfront/ca/2016/10470/578257/llei-2-2016-de-30-de-marc-de-l-impost-sobre-estade*.

healthcare reasons, children under the age of 16 and stays subsidized by social programmes. In addition, there is a 50 per cent discount for stays between November 1st and April 30th, and a 50 per cent discount from the ninth day of a stay at the same accommodation establishment.

Since the studies in section 2 estimated the elasticity by using the exchange rate between the place of origin and destination, taking into account the total tourism demand from a certain place of origin to Spain or the Balearics during a given period (usually a year), different factors must be considered before the elasticity is used to quantify the effects of the tourist tax on tourism demand.

We take 2014 as the reference year in our estimation of the effect of the tourist tax. This decision was mainly motivated by the fact that some of the data for 2016 is provisional and the data for 2015 was affected by methodological changes to some of Spain's key tourism statistics due to the transfer of authority over such matters from the Institute of Tourism Studies to the National Statistical Office. Only when certain data is not available for 2014 do we take the latest data at our disposal.

Table 3 contains a breakdown of tourist numbers by types of accommodation, showing that, in 2016, 81.1 per cent stayed at what was classed as market accommodation (and had to pay the tourist tax). (Data for 2014 is not available.)

As for the different tax rates per type of establishment, the analysis of tourist profiles in the Yearbook of Tourism Statistics (ATB, 2015) shows that most tourists prefer 3 or 4-star accommodation (38.0 per cent and 44.7 per cent, respectively, according to data for 2014), for which a daily levy of 1.5 euros is charged. However, the existence of multiple tax rates, depending on the type of accommodation, suggests that a reference rate should be calculated, based on the weighted average of the beds available in 2014 for the different types of accommodation, using data by ATB (2015). When this calculation was made, the weighted average was €1.25 during the high season, an amount that rises to €1.37 if 10 per cent Value Added Tax is added.

There is a lack of statistical information on most of the exemptions from payment of the tax contemplated in the relevant law, but exemptions due to situations of force majeure or for healthcare reasons are not expected to affect the calculation of the total number of yearly visits to the Balearics. In the case of exemptions for tourists taking part in social programmes, despite their popularity in the local media during the low season, it should be noted that they are only estimated as accounting for fewer than 200,000 arrivals a year (Riera and Ripoll, 2010). As a result, the most relevant exemption is probably children under the age of 16, although unfortunately there is no specific data on their number. The only related information is that 19.2 per cent of all tourists to the Balearic Islands in 2014 were aged 25 or under (ATB, 2015). Consequently, we assume that the tourist tax applies to 90 per cent of all stays at market accommodation.

TABLE 3

ACCOMMODATION USED BY TOURISTS TO THE BALEARIC ISLANDS IN 2016

Market accommodation		12,647,688 (82.1%)
Hotels and similar	10,183,006	
Rented accommodation	2,088,977	
Other types of market accommodation	375,704	
Non-market accommodation		2,754,433 (17.9%)
Own home	917,834	
Friends and relatives' homes	1,712,383	
Other types of non-market accommodation	124,216	
Total		15,402,120 (100%)

SOURCE: Ibestat.

As for discounts, on the one hand, it is assumed that the 50 per cent reduction on stays at the same accommodation establishment from the ninth day onward is rare. Given that the average length of stay at a hotel is 7.2 days (ATB, 2015), tourists remaining at the same hotel for nine nights or more are considered to be few and far between. On the other hand, a weight of 13 per cent has been given to the 50 per cent reduction on stays during the low season (from November 1st to April 30th), as shown in Table 4.

Now that the tourists who have to pay the tax have been characterized, the increase in the tourist price must now be determined in order to estimate the effect on demand through the elasticity scenarios mentioned above. The reference amount to take into consideration here is the mean daily tourism expenditure figure of €108 recorded in 2014 (ATB, 2015).

Figure 1 summarizes all the above data and shows the estimation of the effect of the Balearic tourist tax on tourism demand. Thus, from the total figure for stays (111.3 million), only stays at market accommodation are considered (91 million) and it is assumed that 90 per cent (81.9 million) are not exempt from the tourist tax. Out of this figure, 85.7 per cent of the visits (70.2 million) are considered to take place

TABLE 4
MONTHLY TOURISTS AND OVERNIGHT STAYS IN 2014

	Tourists		**Overnight stays**	
January	166,140	(1.1%)	1,676,310	(1.5%)
February	171,934	(1.2%)	1,514,344	(1.4%)
March	379,553	(2.5%)	3,064,578	(2.8%)
April	843,482	(5.6%)	6.375.389	(5.7%)
May	1,500,216	(10.0%)	10,770,304	(9.7%)
June	2,002,814	(13.4%)	15,438,910	(13.9%)
July	2,442,948	(16.3%)	19,881,904	(17.9%)
August	2,442,948	(16.3%)	23,774,604	(21.4%)
September	2,660,693	(17.8%)	16,440,761	(14.8%)
October	1,956,200	(13.1%)	9,078,198	(8.2%)
November	220,600	(1.5%)	1,848,552	(1.7%)
December	161,076	(1.1%)	1,438,482	(1.3%)
May-October	13,005,819	(87.0%)	95,384,681	(85.7%)
Rest of the year (discount period)	1,942,785	(13.0%)	15,917,655	(14.3%)
Total	14,948,604		111,302,336	

SOURCE: ATB (2015).

FIGURE 1
ESTIMATION OF THE EFFECTS OF THE TOURIST TAX ON TOURISM DEMAND TO THE BALEARIC ISLANDS

		Stays
Total (2014)		111,302,338
Market stays	82.1%	91,397,629
No tax exemption	90.0%	82,257,866

			Rate	% increase in expenditure (108€)
May-October (No discount)	85.7%	70,493,941	€1.37	1.3%
Rest of the year (50% discount)	14.3%	11,763,925	€0.69	0.6%

	Scenario $\eta = 1$	Scenario $\eta = 0.5$
Lost stays by season	–896,115	–448,057
	–74,771	–37,386
Total lost stays	–970,886	–485,443
% of stays at market accommodation	–1.1%	–0.5%
% of total stays	–0.9%	–0.4%

SOURCE: Data from ATB (2015) and own elaboration.

between May and October (the period without a discount, with a mean tax rate of €1.37), while 14.3 per cent (11.7 million) occur between November and April (the period with a mean tax rate of €0.69). Taking the daily tourism expenditure figure in the Balearics of €108 as a reference, a price rise of 1.3 per cent and 0.6 per cent are obtained for the high and low seasons, respectively.

If scenarios $\eta = 1$ and $\eta = 0.5$ are considered, the estimated annual drop in tourism demand is between 970,886 and 485,443 tourist stays. These figures represent a decrease of between 1.1 per cent and 0.5 per cent in stays at market accommodation establishments and a drop of between 0.9 per cent and 0.4 per cent in the total demand to the Balearic Islands.

If the long-run effects are considered, a reasonable value for this elasticity could be 1.5, according to the relevant literature, in which case the tourism demand would fall by 1.3 per cent. However, long-run projections are subject to much greater uncertainty due to both the timeframe and the lower availability of long-run elasticity estimates.

5. Conclusions

According to economic theory, there is an inverse relationship between price and tourism demand. Empirical literature on the subject has confirmed the hypothesis through the concept of price elasticities, mainly using time series models. This hypothesis has been corroborated on numerous occasions over the past ten years using Spain and the Balearic Islands as case studies and these destinations have been characterized as being relatively inelastic. That is why this study took into account two types of price elasticity scenarios to estimate the effect of the tourist tax introduced in the Balearic Islands during the summer of 2016: $\eta = 1$ and $\eta = 0.5$.

Taking the characterization of tourists to the Balearic Islands in 2014 and key factors in the design of the tourist tax in terms of its tax rates, exemptions and discounts as our reference, the *ceteris paribus* estimation of the effects of the tax on tourism demand point to a drop of between 0.9 per cent and 0.4 per cent in the total demand to the Balearic Islands

It is important to point out that the estimation conducted in this study is limited to the price effect of the tourist tax. Tourism, as a social activity, is influenced by many factors, such as advertising, news and other issues that undoubtedly affect demand behaviour in many ways. Possible media coverage of the tax's introduction in the countries of origin and how revenue from it is reinvested are examples of factors that are not considered in this study.

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