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THE ECONOMIC EFFECTS OF TAXING TOURIST ACCOMMODATION

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ABSTRACT: In this article we present the theoretical approach that is commonly used to analyze the effects of a tax on tourism. The article also discusses the empirical approaches that are commonly used when examining this issue, while highlighting their limitations. Finally, by means of qualitative indicators, we raise some issues that might be useful for decision-making purposes. **Key words***:* Taxes, tourism, incidence, elasticity, ecotax, short and long term

RESUMEN: En este artículo, presentamos un abordaje teórica que es ampliamente usada para analizar los efectos de un determinado impuesto en el turismo. El artículo discute aún abordaje empíricas más utilizadas cuando se examina este asunto, destacando sus limitaciones. Finalmente, por medio de indicadores cualitativos, abordamos algunos tópicos que podrán ser útiles para efectos de tomadas de decisión. **Palabras- clave**: impuestos, turismo, incidencia, elasticidad, ecoimpuesto (ecotax), corto y largo plazo.

RESUMO: Neste artigo, apresentamos uma abordagem teórica que é amplamente usada para analisar os efeitos de um determinado imposto no turismo. O artigo discute ainda as abordagens empíricas mais utilizadas quando se examina este assunto, destacando as suas limitações. Finalmente, por meio de indicadores qualitativos, abordamos alguns tópicos que poderão ser úteis para efeitos de tomadas de decisão. **Palavras-chave**: impostos, turismo, incidência, elasticidade, eco-imposto (ecotax), curto e longo prazo.

INTRODUCTION

One of the aphorisms that is often used to illustrate the public debate on taxes is attributed to U.S. Senator Russell Long: *Don't tax you, don't tax me, tax that fellow behind the tree*. In fact, tourists seem to be the perfect type of fellow to be taxed as their behavior permits actions susceptible to taxation to be easily identified, such as the use of airports or hotel lodging. In addition, their ability to influence policy is very limited as tourists usually do not exercise their voting rights in the region or the country they visit. Therefore, it should come as no surprise that, unlike what occurred in the past, the tax burden on tourism-related activities has increased worldwide. This is due not only to the fact that already existing taxes have risen, but because new taxes, such as those

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related to the environment, are now being imposed; taxes whose effects are not being sufficiently analyzed (WTO, 1998).

In recent times, moreover, concern about environmental issues has grown in developed Western countries. Previously, ecological values were deemed secondary to obtaining high rates of economic growth and job creation. Today, however, citizens of rich countries seek to improve the environment and policies have been designed to offer solutions. In this context, some countries have begun to apply environmental taxes in many productive sectors and, logically, activities related to transportation and entertainment are no exception. In the early nineties, for example, France introduced a "noise tax" on aircraft landing and take-off procedures. At a more general level, the European Union is discussing a green tax reform which, among other things, would include a tax on energy and gas emissions that cause climate change.

As regards the specific case of Spain, due to the current economic crisis and the autonomous regions' need for revenues, the issue of imposing a tax on tourism has once again been raised, particularly in Catalonia. This is not a new trend. In early 2000, the Balearic Government headed by Francesc Antich imposed what is known as an ecotax. The revenues raised through the ecotax were used to endow a fund to finance activities aimed at the refurbishment and rehabilitation of tourist areas; recover rural and natural spaces and resources; revalorize important social, cultural and tourism assets; revitalize agriculture as an economically competitive activity; and promote the sustainable management of natural areas with a view to conserving biodiversity. The tax, which was levied on tourists in 2002 and 2003, raised a total of 84 million euros that were invested in measures to protect and reinforce the added value of the Balearic Islands, that is, its natural environment, landscape and ecology. Thanks to this ecotax, the historic Camí des Cavalls coastal trail was restored and reinstated for public use and investments were made in scenic routes of Menorca.

However, this measure was met with strong opposition by the islands' hotel owners, who felt that the tax would reduce the number of tourists coming to the island. This is not wholly true. Although there was a drop in tourism in 2002 due to the economic crisis affecting Germany (the main country of origin of tourists visiting the Balearic Islands), tourism picked up again in 2003; prompting the government to remove the tourist tax that same year.

In spite of the experience in the Balearic Islands, Catalonia has decided to levy a "tourist tax". To do so, the region has imposed a tax of €2.50 per guest staying in five star and luxury hotels or on cruises; €1.25 for hotels in Barcelona and €1.00 for hotels located outside the capital, while a tax of €0.75 euros per night in Barcelona and €0.50 in the rest of Catalonia has been imposed for other hotel establishments. Of the

revenues that are raised through the tax, 70 percent will be destined to the coffers of the autonomous government of Catalonia (known as the *Generalitat*) and 30 percent to the region's towns and cities, which must use them to promote tourism.

The paper is structured as follows: first we present the theoretical approach that is commonly used to analyze the effects of a tax such as the one that has been implemented in Catalonia. The article also discusses the empirical approaches that are commonly used when examining this issue, while highlighting their limitations. Finally, by means of qualitative indicators, we raise some issues that might be useful for decision-making purposes.

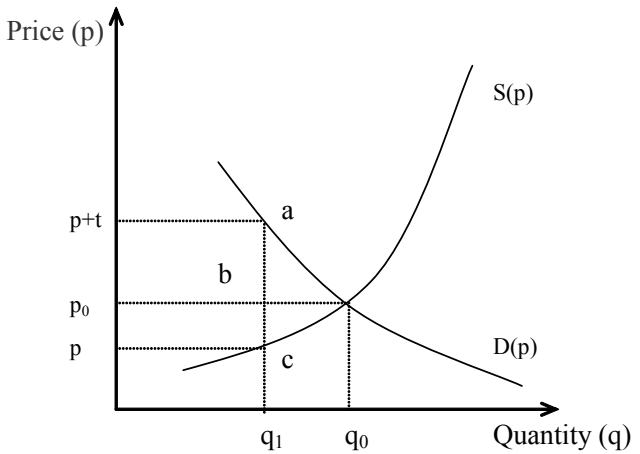
EFFECTS OF A TAX ON TOURIST ACCOMMODATION

Theoretical approach

Studies on tax incidence frequently include similar demand (D)-supply (S) graphs to the one depicted in Figure 1. A tax (t), either on consumption or production, causes a gap between the price paid by the consumer (p+t) and the price received by the producer (p), such that when the amount exchanged in the market is q_1 it is verified that

$$D(p+t) = S(p) \quad [1]$$

Figure 1. Effects of a tax



A basic comparative statistical exercise shows that, according to the plotted curves, the introduction of a tax reduces the size of the market (from q_0 to q_1) and the tax burden ($t \times q_1$) is shared between consumers $[(p+t) \times a \times b \times p_0]$ and producers $[p_0 \times b \times c \times p]$ according to the price

elasticities of demand (e_d) and supply (e_s). Indeed, by differentiating [1] with respect to t we obtain that

$D'[(dp/dt) + 1] = S' dp/dt$ [2]

By isolating (dp/dt), which measures the portion of tax that is transferred to the producer, and multiplying the numerator and denominator by the ratio between the price and the amount we get that

$(dp/dt) = e_d/(e_s-e_d)$ [3]

Consequently, when elasticity approaches infinity or zero, the tax burden will fall entirely on the producer or the consumer only in extreme cases. In this context, to ensure that the legal and economic burden falls on the guests of hotel establishments, the demand must be perfectly inelastic (e_d=o) or the supply perfectly elastic ($e_s=\infty$). The tax transferred to the producer (dp/dt) would be zero in these two cases only. In order for the tax burden to be shared between consumers (tourists) and producers (hotel owners), it is sufficient that the curves do not have extreme elasticities (zero or infinity).

On that basis, an analysis of the incidence of the ecotax would require estimating the price elasticities of tourist accommodation supply and demand.

Price elasticity of accommodation demand

Logically, the demand for accommodation by tourists, taken individually, may respond to a variety of reasons. However, the analysis should focus not on the demand for accommodation by an individual or group of specific individuals, but on the market demand as a whole, that is, the sum of the demand for accommodation by all individuals. According to the most elementary of economic theories, demand is more elastic, that is, it is more sensitive to price changes, when goods or services are less necessary, there are more substitutes for them, there is more time to respond, and the good or service accounts for a larger portion of the consumer's budget.

Obviously, there is no objective standard to establish a hierarchy of products based on need as the intrinsic properties of a good may be perceived very differently across individuals. We cannot say, therefore, that a good is essential or superfluous if we do not know the preferences of the consumer or specific consumer groups. However, it seems logical to assume that those traveling on business would view staying in a place other than their habitual residence as a more necessary service than those traveling for pleasure. To put it another way, the demand for accommodation by business travelers is more inelastic than that of holiday travelers. In this sense, the estimates made by Sakai (1988) enabled the author to conclude that because the tax burden borne by the buyer is inversely related to the elasticity of demand,

business travelers bear a greater tax burden on hotel accommodation than those traveling for pleasure.

On the other hand, when a good or service is easily substitutable by others that meet similar needs, consumers tend to be much more sensitive to price changes. In the case of tourist accommodation, we must not only consider that when prices change, those demanding such accommodation may opt to change the type of establishment where they stay, but also consider the possibility of a shift in demand between different geographical areas. In this context, as the price elasticity of demand depends on the availability of substitute destinations, the more distant and distinct a destination is, the less sensitive changes in demand will be to changes in prices (White, 1985). In fact, based on 50 previous studies containing empirical data, Crouch (1994) concluded that price, unlike other variables such as income or transport costs, did not have a significant influence on long-distance travel demand. The mean estimates of price elasticities of demand for long distance travel (-0.6) were lower than in short-distance travel (-0.48). In short, the more unique and irreplaceable the destination, the more likely tourists are to absorb the burden of a tax on accommodations since they will be less sensitive to price changes.

Moreover, the time horizon is also important in determining the e_d. In the short term, consumption patterns are quite rigid, but long-term behaviors are better suited to the incentives offered. Consequently, goods or services will have a more elastic demand in the long term than in the short term.

Finally, when considering the consumer's budget, one of the elementary principles of economics once again applies: people respond to incentives. Logically, if the purchase of a particular good or service involves a major effort by consumers as it accounts for a large percentage of their total spending, consumers will be more motivated to respond to price changes if the purchased goods account for only a small part of their budget. This argument can be used to discuss the various elasticities that could be attributed to different segments of tourism demand. For example, the meta-analysis by Crouch (1995) obtained apparently contradictory results because the price elasticities of demand for "sunlust" destinations were lower than those for "wanderlust" destinations: the average elasticity in Northern Europe (-1.73) was significantly higher than in Mediterranean Europe (-0.64). Crouch provided a possible explanation for these results: prices were higher in the first group of countries than in the second. Perhaps we should add that higher prices mean that tourism spending also accounts for a greater percentage of the budget of potential travelers and is therefore more sensitive to price changes. We could also hypothesize that

the lower the tourism prices, the more likely tourists are to assume the burden of a tax on accommodations.

In any case, although it has been argued that "holiday tourism demand is highly price elastic which means that a small change in price might lead to a disproportionately large change in demand" (WTO, 1998, p. 20), the fact is that estimates of tourism demand yield very different results, thus making any generalization difficult (Crouch, 1995). In addition, the scarcity of econometric tests or the lack of dynamic aspects has raised doubts about the consistency or reliability of the estimates (Lim, 1997a; Lim, 1997b; Wong, 1997).

However, as we have shown, it is not sufficient to estimate solely the elasticity of demand in determining the economic impact of a tax on tourist accommodation, but it is also necessary to quantify the elasticity of supply.

Price elasticity of accommodation supply

It is obvious that *supply elasticities* are conditioned, first, by the ease with which producers can vary production when faced with price changes. In this regard, it has been hypothesized that, at least in the short term, tourist accommodation businesses are encouraged to work at full capacity, no matter how high or low the prices are. This means that *the supply of short-term tourist accommodation would be highly inelastic*. This hypothesis is supported by the importance of fixed costs in tourist accommodation businesses.

The particular characteristics of tourism supply mean that, regardless of the actual demand, facilities must be maintained, thus generating costs that are not reduced when the number of tourists drops. It is therefore likely that in the cost structure of the firm, fixed costs will account for a significant percentage of the total costs given that the variable costs (i.e. those that vary with the level of production) are often relatively small.

According to basic economic theory, whenever marginal revenues exceed marginal costs, production should be increased. As the marginal costs are due to additional variable costs and these are relatively small, it is likely that the firm will always aim to achieve maximum occupancy. Provided that the price for additional accommodation exceeds the marginal cost – which we assume to be low – it is in the firm's interest to capture tourists. According to this reasoning, even if market prices vary, the optimal situation for the firm will be full occupancy.

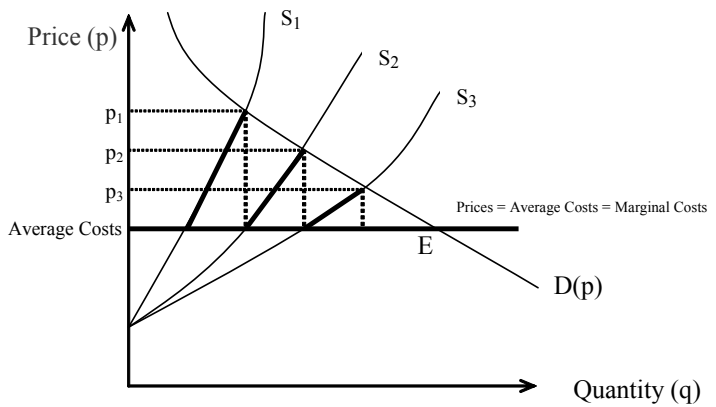
In short, tourist accommodation businesses would seek maximum occupancy in both the high and the low season. This means that the *supply* of *short-term* accommodation would be very *inelastic*, that is, such establishments will try to achieve maximum occupancy regardless of

the price. An increase in demand would lead to an immediate rise in prices. When demand is low, suppliers will lower their prices or develop promotional campaigns to achieve maximum occupancy.

In the long term, however, the accommodation supply, and thus, its elasticity, may change. On the one hand, some firms may decide to close in low season or even close permanently if their total revenues remain below total costs. On the other hand, new competitors may enter the market.

If there were no barriers to entry and exit, the supply curve would be increasingly elastic in the long term. Figure 2 illustrates this point. Assuming a stable demand curve, if the supply is S_1, the price would be p_1, which would exceed the average costs, and the firm would gain a profit and encourage the entry of new suppliers. As new firms enter, the supply curves shift to the right until the economic benefits are zero, at which point the prices are equal to the average costs and marginal costs (E).

Figure 2. Shift of supply curve in the long term



We have described a theoretical model of reference. According to the model, when there is freedom to exit and enter and therefore no firm enjoys special advantages (for example, location), the competition eliminates profit in the long term. That is, when supply can be expanded using the same combinations of productive factors, the long-term supply curve would be horizontal for the entire sector. When firms offer specific factors (such as unique sites), the supply curve would have a positive slope.

However, depending on the market structure and the specific mechanism of price formation, the above framework is debatable and may not be a true reflection of the actual situation. For example, Baum and Mudambi (1994, 1995) constructed a model where adjustments to

changes in demand do not occur through prices, as we have assumed so far, but through quality: given an oligopolistic structure, there would be a downward price inflexibility such that in periods of low demand the supply of inferior quality would drop as the estimates for the hospitality industry in Bermuda seem to demonstrate. This would be consistent with excess capacity as detected by Carey (1989, 1992) for luxury hotels in Barbados.

Moreover, the price formation process plays a key role in determining the elasticities of supply. For example, Van Dijk and Van der Stelt-Scheele (1993) have argued that in non-competitive structures, the prices of certain tourist activities (such as accommodation) are determined by applying a given profit margin on the cost per unit.

All of these issues greatly complicate the analysis. Even within a model of perfect competition where adjustments are made via prices, the introduction of the time dimension gives rise to problems in defining the economic effects of a tax on accommodations.

The time dimension

According to the above, the key to determining the economic impact of a tax lies in the relative elasticity of the supply and demand curves. However, we also concluded that these elasticities increase in the long term. In particular, we argued that in the long term under perfect competition, the supply curves tended to be perfectly elastic. Thus we could say that in this context, the economic impact of a tax depends on the time horizon used.

In the *short term*, capital stock is fixed and therefore the number of firms is also fixed: firm entry is not free. In these circumstances, the supply curve has a positive slope. Even in the particular case of tourist establishments, we argue that there are reasons to justify a vertical supply curve, that is, perfectly inelastic supply.

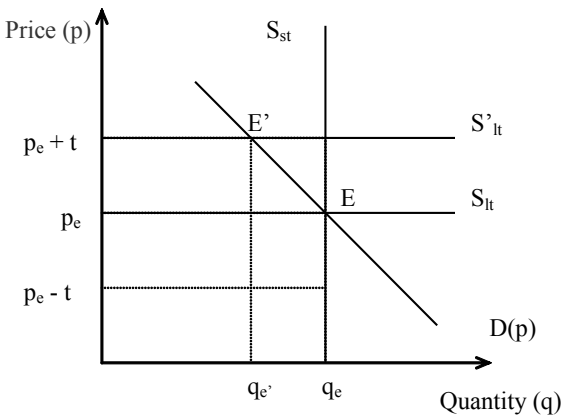
If we assume a zero price elasticity of demand against a demand curve that slopes downward (price elasticity greater than zero), we can deduce – as has been demonstrated – *that the tax burden falls entirely on the supplier*. Tourists will continue to pay the same price (p_e) and the supplier of tourist accommodations will receive p_e–t.

After the tax, some suppliers will find that their profits drop because the revenues they earn for accommodation are reduced by an amount equal to the tax. This may cause some firms with losses to exit the market. This would shift the supply curve to the left so that, everything else remaining constant since the demand curve would not move, prices would rise, that is, the tax would tend to fall entirely on the consumers (tourists).

Firms would exit in the *long term*. In this time horizon, prices equal their average costs. If average costs go up due to tax hikes, the price will also increase. In short, the tax tends to fall entirely on consumers in the long term.

Figure 3 shows the two extreme cases. However, as we cautioned above, it is likely that the long-term supply curve of tourist establishments will not reach perfect elasticity (horizontal).

Figure 3. Effect of a tax in the short and long term



Before the tax, in the short term, we have a vertical supply curve that determines the equilibrium price p_e at its intersection with the demand curve (E). In the long term, the supply curve tends to be horizontal because the entry and exit of firms will tend to equate prices to average costs. As long as some firms make a profit, there will be an incentive to enter that market. In an analogous manner, losses will prompt firms to exit. The trend is towards zero profit, that is, after paying the factors involved in production, the firms do not gain any additional profit, or pure economic benefit. In contrast, if nothing changes, the equilibrium price p_e will have a horizontal long-term supply curve, S_{lt}. It is important to note that because tourism establishments offer products which are often difficult to imitate, when they enjoy special advantages (i.e., location), the long-term supply curves never become fully horizontal.

Since the supply curve is vertical, when a tax is introduced, the tax will fall entirely on the suppliers in the short term. The consumers will continue to pay the price p_e, but the suppliers will only receive $p_e - t$. There is no possibility of increasing p_e. If a possibility had existed, the suppliers would have taken advantage of it before raising the tax in order to earn more money.

Given this new price ($p_e - t$), some firms will decide to exit the market, and if no other change occurs, the tendency would be to reach a new equilibrium point at $p_e + t$: the entire tax would fall on consumers as the new long-term supply will have incorporated the taxes and the new equilibrium without profits (or losses) will be established at E'. In the long run, therefore, the taxes will tend to fall entirely on consumers. Also note that the equilibrium quantity decreases from q_e to $q_{e'}$. Logically, this reduction will depend on the sensitivity of the quantity demanded to price changes: the more elastic the demand curve, the greater the reduction.

We must remember, however, that references to the short and long term have no specific correspondence in time. In each case it will depend on the ease of adaptation to market conditions. In addition, the role of *expectations* should be taken into account.

If we assume that economic agents assimilate all the available information and use it rationally, the announcement of the entry into force of a new tax may be assumed by the suppliers in advance so that when the tax is applied, the cost structures will have already assimilated the new situation. This would mean that the *long term* would arrive almost instantly. The short- and long-term supply curves would be very similar, with high elasticity.

Under these conditions, the effects of a tax would translate into a price hike equal to the amount of the tax and a reduction in quantity (overnight stays) that would depend on the elasticity of (tourist) demand. That is, prices would rise and the size of the tourism market would be reduced.

Empirical evidence

The empirical evidence we have found on the effects of a tax on tourist accommodation refers to the United States and is not only scarce but, worse yet, somewhat contradictory.

For example, in their study on the United States, Arbel and Ravid (1983) found a very high elasticity of supply (11.1) which was greater than the demand (1.67) and, consequently, the possibility of shifting most of the tax to the consumer (tourists). Using data for the State of Hawaii, Fujii *et al.* (1985) estimated a supply elasticity of 1.98, which was also higher than the demand elasticity (1.00). However, Mak (1988) later admitted that the elasticity of demand was probably greater than previously believed.

Finally, it is interesting to note the work of Hiemstra and Ismail (1993 and 2001). After estimating a supply elasticity of 2.9 in 1993 which was higher than that in the work of Fuji *et al.* (1985), they published a revision to their original article in February 2001 in which they

reduced this elasticity to 0.11. This finding, along with a demand elasticity of 0.44, led them to conclude that, contrary to the findings of previous studies, most of the tax would fall on the suppliers. Specifically, they concluded that only 28.4 percent of the tax would be paid by the consumers, while the remaining 71.6 percent should be assumed by the lodging industry.

These data, which are in some cases contradictory, illustrate the difficulties involved in accurately defining the ultimate economic effects of applying a tax on tourist accommodations.

Limitations of the partial analysis

Many of these difficulties are likely due to the fact that sufficient attention has not been paid to the limitations involved in using certain analytical tools. In this sense, we refer not only to discussions on the estimates of elasticities of supply, which, as can be inferred from the preceding paragraphs, pose serious problems when quantifying long-term relationships, but to the limitations inherent in the use of supply and demand curves that are constructed to perform a partial analysis.

Partial analysis assumes that adjustments can be studied in a particular sector, but neglects the effects that occur in the rest of the economy. That is, partial analysis is extremely simplistic and drastically narrows its scope of application: the larger the market being studied, the less appropriate partial analysis will be.

When market interdependence is not accounted for, the likelihood that a tax on tourist accommodation will alter the relative prices of substitute or complementary goods is ignored and there is a transfer of the demand and factors of production that alter the supply and demand curves.

Previously, we noted that the availability of substitutes depends on how the market is defined: as the market expands, the number of substitutes decreases. However, the fact that substitutes are reduced as the market expands does not mean, of course, that they are eliminated. Tourist accommodation in a given region can be substituted in the region for unregulated accommodations. It is even possible to differentiate between the regulated and unregulated supply of tourist accommodation in which the respective products of each would be substitutes. If, for example, the price of regulated (registered) tourist accommodation rises as a result of a tax, the demand for unregulated (not registered) accommodation, which by definition would not be subject to official control, may rise. However, from the point of view of the regional economy, the presence of tourist accommodation substitutes within the region would not be as worrisome as substitutes located outside the region. Indeed, tourist destinations compete against

one another not only through the resources offered, but also via pricing. Undoubtedly, competitiveness in terms of the ability to sell a product depends not only on costs or prices. Indeed, other variables (for example, quality) have become increasingly important in the tourism market in recent years. However, in our opinion, it does not follow that prices play a secondary or irrelevant role. On the contrary, we believe that price remains a key variable for many tourists when choosing a destination. Therefore, the presence of substitute tourist accommodations outside the region may be important in analyzing the effects of an ecotax applied in the region. In fact, it may be advisable to substitute the absolute price of tourist accommodation for a relative price (in comparison to other destinations) to gain a fuller understanding of fluctuations in demand.

Moreover, *complementary goods*, unlike the substitutes which compete with each other, combine to meet the needs of consumers. Thus, a rise in the price of a good decreases the demand for its complementary good. The very nature of tourism implies the existence of many complementary products. Tourist accommodations are complemented by catering, entertainment, or transportation services. For example, the lower cost of air travel was one of the reasons for the development of tourism in certain areas of the world following the Second World War. It is therefore likely that if the price of accommodations increases as a result of a tax, the demand for accommodation as well as the demand for all the complementary activities that cater to the needs of tourists (restaurants, car rentals, etc.) will decrease.

Another important aspect is that partial analysis does not account for the effects of how the tax revenues are actually used. As discussed above, ecotax revenues, at least in the case of the Balearic Islands, were used to reform and rehabilitate tourist areas. In this context, when attempting to integrate the combined effects of taxes and expenditures, the analysis is very complicated and quite difficult – if not impossible – to accurately determine the ultimate effects of such measures.

Theoretically, the above limitations can be overcome by constructing general equilibrium models that account for the interrelationship between different markets. A rigorous analysis will also require considering not only the values of the relevant price elasticities, but also the market structure and business costs which, in most cases, are beyond the scope of empirical analyses.

Qualitative approach: Delphi method

It seems, therefore, that we are faced with a dilemma which, on the other hand, is quite common in applied economics studies. If we attempt to be very rigorous, we may provide little practical information.

However, if the goal is to provide a large amount of practical information, the information is less precise and reliable. The problem is that decisions cannot await the development of analytical tools that permit a rigorous and comprehensive analysis. It is therefore necessary to test other methods in order to meet policymakers' demand for information. The Delphi method, for example, allows qualitative information to be extracted through an iterative process of consultation with a panel of experts. We used this method to study the appropriateness of applying a tourism ecotax in other regions of Spain (specifically Andalusia) similar to the one imposed in the Balearic Islands.

The Delphi method was originally conceived in the fifties to determine the needs of the U.S. military. It was designed "in order to obtain the most reliable opinion consensus of a group of experts by subjecting them to a series of questionnaires in depth interspersed with controlled opinion feedback" (Dalkey and Helmer, 1962). Since then it has been used in various fields and the references to it are numerous (Linstone and Turoff, 2002). In the specific case of tourism, the Delphi method has frequently been used as a forecasting tool (Yong *et al.*, 1988; Kaynak and Macaulay, 1988; Kaynak *et al.*, 1994; Lloyd *et al.*, 2000; Singh, 2000; Cunliffe, 2002), while its use in hospitality research has been rather limited. For example, we have found no similar studies in the available literature that can aid us in comparing the results we have obtained on the effects of taxing tourist accommodation.

The technique has not been without controversy and has been the subject of intense academic debate (Garrod and Fyall, 2005). However, despite the many criticisms it has received, the Delphi method has considerable advantages, and indeed, its popularity has grown in the social sciences. There are also recent contributions that demonstrate the relevance of applying the method to gain knowledge and conduct research of the hospitality industry (Sobaith *et al.*, 2012).

The number of experts involved can vary as the method does not aim to design a representative sample of the population, but rather to seek consensus among a group of experts. The number of experts is normally between 10 and 30 (Dunn, 1994). However, in the literature we can find studies with different ranges depending on the characteristics of the issue to be discussed. In our case, we selected 30 experts and ensured anonymity among the participants to prevent the influence of the opinions of the most influential experts (Moore, 1987). Clearly, the definition of "expert" implies a some amount of subjectivity in this context. The definition has even been questioned in the literature (Sackman, 1975). In our research, there was a predominance of professionals, but it also included government, university and trade union representatives. Given that the objective was not to seek a representative opinion of members of the tourism industry on the effects of the

ecotax, but to determine the specific effects of such a measure, the experts were selected according to their knowledge of tourism activity.

Furthermore, the number of rounds is variable although, as suggested by Delbecq *et al.* (1975) and Skulmoski *et al.* (2007), 2 or 3 iterations are usually sufficient in most cases. In our research we used three rounds. A questionnaire was administered individually to each expert in an initial phase. After the data were collected and processed, the experts were informed in a second phase of the results of the first phase and asked to reconsider their views on the questions for which least consensus had been reached. The process was repeated in a third phase with the experts whose opinions were further from the group mean. Most of the questions allowed five alternative responses (no, a little, some, quite, a lot).

The experts also discussed what should be the minimum percentage of agreement that would be accepted as a "consensus". In this sense, some alternatives were proposed which did not necessarily seek the agreement of the participants (Paraskevas and Saunders, 2012). In this work, however, we do not establish a limit to define consensus; we simply show the results and interpret them in line with the theory set out in the previous sections.

One of the questions on which greatest consensus was initially reached concerned the impact of the ecotax on prices. About 90 percent of respondents stated that the ecotax would raise the price of overnight stays at a level equal to the tax, regardless of the category of the establishment. This would be consistent with a very elastic supply that adapts to market conditions in such a way that allows transferring the full tax burden to tourists.

Table 1. Results in percentages disaggregated to the question: "Assuming that the ecotax is implemented in Andalusia, determine what would be the most likely option in each of the establishments"

	The price of overnight stays increases by the same amount as the tax	The price of overnight stays increases by an amount lower than the tax	The tax does not affect the price
5 star hotels	96	0	4
3 star hotels	89	7	4
2 and 1 star hotels	89	4	7
4-key tourist apartments	96	0	4
Other tourist apartments	89	11	0
Rural hotels	89	11	0
Country guesthouses or similar	85	11	4

Source: The authors

According to the experts, (Table 2) the rise in prices due to the tax would reduce the competitiveness of firms in Andalusia (only 17 percent of respondents believed that it would decrease a little or not at all) and lead to a decrease in the number of tourists coming to the region (31 percent of respondents believed that there would be a small or no fall in the number of tourists, while the rest disagreed). This qualitative information points to a high price elasticity of demand.

Table 2. Results in percentages of applying the Delphi method on the impact of the "ecotax"

	No	A little	Some	Quite	A lot
Would the ecotax hurt the competitiveness of tourism enterprises in Andalusia?	0	17	30	43	10
Could the ecotax decrease the number of tourists coming to Andalusia? (see Table 3)	10	21	48	21	0
Do you think the ecotax would decrease employment in the sector?	29	42	29	0	0
Would the ecotax lead to a decrease in the number of tourist accommodations in Andalusia?	24	59	17	0	0
Would the implementation of the ecotax contribute to the development of the non-formal accommodations sector and the expansion of second homes?	27	50	20	3	0
Could the ecotax have negative effects on the profits of tourism enterprises?	0	19	56	25	0

Source: The authors

However, we were able to further qualify this last finding according to the category of the establishments and the type of tourism (Table 3). Thus, while the reduction in number of tourists would be negligible in first rate establishments (more than 90 percent said that there would be little or no decrease in the number of tourists), the decline would be more significant in lower category establishments. Similarly, while golf, conference or business tourism would hardly be affected by a rise in prices as a result of the ecotax, sun and beach tourism would suffer significant declines. In general terms, this confirms that the price elasticity of tourism demand is high and that there are very different tourist behaviors which are worth considering.

Table 3. Results in percentages disaggregated by category of establishment to the question of whether the ecotax would decrease the number of tourists coming to Andalusia

	No	A little	Some	Quite	A lot
5 star hotels	47	47	3	3	0
3 star hotels	7	38	48	7	0
2 and 1 star hotels	7	17	14	34	28
4-key tourist apartments	11	26	26	15	22
Other tourist apartments	4	11	15	30	41
Rural hotels	4	15	22	18	41
Country guesthouses or similar	13	27	47	13	0

Source: The authors

In addition to the above information, we extracted other data from Table 2 which, in our view, requires rethinking some general statements on this subject. The majority of respondents (71%) believed that the ecotax would decrease employment in the sector a little or not at all, while a similar percentage felt that there would only be a small or no decrease in the number of accommodations, and almost 80% said that the ecotax would contribute little or nothing to the development of the residential or second-home tourism sector. On that basis, we should consider the hypothesis that factors of production are not easily transferable from tourist accommodation activities to other sectors, and that a decline in demand would force firms to maintain their cost structure with the consequent drop in profits (over 80% stated that the ecotax could have a somewhat strong or strong impact on firm profits).

CONCLUSIONS

The above arguments provide broad evidence of the economic effects of a tax on tourist accommodation. At the theoretical level, economic theory provides a rigorous approach to the effects that, in principle, one would expect from the introduction of a tax on tourist accommodations. The immediate effect would be to mark the difference, in terms of the exact amount of the tax, between the price paid by the consumer (tourist) and received by the supplier. What we are interested in determining, with respect to the price excluding tax, is how much more tourists are willing to pay and how much less owners of tourist establishments are willing to receive. Regardless of what is established according to law, the tax burden would be shared between consumers and suppliers depending on their price elasticities, that is, the sensitivity to price changes of the quantity demanded and supplied. Specifically, *the tax will fall more heavily on the part of the market that is more inelastic*. Thus, for example, the more elastic the supply over the

demand, the greater the increase in the price paid by tourists and the lower the reduction in the price obtained by the tourist establishment as a result of a given tax per overnight stay.

Consequently, the economic effects of a tax on tourist accommodation will ultimately be conditioned by the factors that determine supply and demand elasticities. The empirical evidence permits us to state that demand is more elastic, that is, it is more sensitive to price changes the less necessary the goods or services are, the more substitutes there are, the longer the time horizon, and the larger the portion of the consumer's budget dedicated to the good or service.

Furthermore, supply elasticities are conditioned by the ease with which producers can vary the quantity produced given price changes. In this regard, we have hypothesized that, at least in the short term, tourist accommodation firms are encouraged to work at full capacity regardless of the price level due to the importance of fixed costs. This would mean that the short-term supply of tourist accommodation would be very inelastic. In the long term, however, the supply of accommodation and therefore its elasticity may change. If, for example, costs rise, some firms may decide to close in low season or even close permanently if their marginal revenues remain below their marginal costs. In other words, the supply of tourist accommodation will be more elastic in the long term than in the short term.

Of course, references to the short and long term have no specific correspondence in time, but in each case will depend on market flexibility. In addition, the role of expectations should be taken into account. If we assume that economic agents assimilate all available information and use it rationally, the announcement of the entry into force of a new tax may be assumed by suppliers in advance so that when the tax is actually applied, the tax cost structures will have already assimilated the new situation to a large extent. Flexibility, as defined here, would therefore be maximum.

Under these conditions, the effects of a tax on tourist accommodation would lead to a price increase equal to the amount of the tax and a reduction in quantity (overnight stays by tourists) depending on the elasticity of the demand (tourism). That is, *prices would rise and the size of the tourism market would be reduced.* Although empirical exercises have been performed to determine how a tourist tax would affect the economy (Gago *et al.*, 2009), given the limited and contradictory empirical evidence, any statement about market adjustments would be unfounded. Consequently, research to accurately define the flexibility of the tourist accommodation market is pertinent.

There seems, therefore, to be both economic and environmental reasons that justify the imposition of a specific tax on tourism. However, the distorting effect of such a tax on the market and the use of "bad practices" to avoid paying the tax should also be taken into account.

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