The economics of second-home tourism: Are there expenditure reallocation effects from accommodation savings?

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Abstract:

Second-home tourism is a popular tourism activity by which people spend leisure time away from home at second residences. Given the budget constraint, savings from not having to pay for the accommodation might produce expenditure reallocation effects on other items. This paper examines the differences in expenditure between tourists who stay at market accommodations versus those at second homes considering distinct categories. Using microdata for around 37,000 tourists in Spain travelling in the summer periods of 2017, 2018 and 2019, we estimate Craggit-type regressions to study potential reallocation effects in recreational activities, bars and restaurants, and other items including purchases at supermarkets and goods for personal care. We find that tourists at second homes spend significantly *less* in bars and restaurants, tourism activities, and other items. There is no evidence of reallocation effects in expenditure at destination, suggesting that the economic contribution of second-home tourism is lower than typically assumed.

Keywords: *second-home tourism; expenditure; Cragg model; reallocation effects*

Cite as:

Boto-García, D. and Baños-Pino, J.F. (2023). The economics of second-home tourism: Are there expenditure reallocation effects from accommodation savings? *Tourism Economics*, OnlineFirst. https://doi.org/10.1177/13548166231177555

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1. INTRODUCTION

Second-home tourism has a long tradition in many countries since the 70s as a form of spending leisure time at secondary residences (vacation homes). Although it has received attention from different viewpoints (Back, 2020; Back and Marjavaara, 2017; Casado-Díaz, 1999; Larsson and Müller, 2019; Litvin et al., 2013), there is some debate about whether stays at second residences can be considered a 'tourism' activity (Cohen, 1974; Müller, 2007). Unlike ordinary tourists that usually visit distinct destinations per trip, second-home owners typically travel to the place where they have their second dwelling every year. As such, visitors staying at second homes are at the edge of tourism (Müller, 2004) and can be deemed as 'permanent tourists' (Jaakson, 1986) or 'place-loyal tourists' (Simpson and Siguaw, 2008).

Second-home tourism has important positive impacts on tourist destinations in terms of greater employment (Hilber and Schöni, 2020; Hoogendoorn and Visser, 2010), spending in local businesses (De-Juan Vigaray et al., 2021) and word of mouth (McLeod and Busser, 2012). A theoretical characterization of their contribution to local economies is presented in Sheard (2019). Although their travel motivations typically differ from those of ordinary tourists, those staying at second residences are a relevant market for nature-based activities (Tangeland et al., 2013) and coastal recreation (Bujosa et al., 2015), and generally represent an important source of income for regional economies (Velvin et al., 2013).

However, the economic impact of second-home tourism to destinations has been overlooked by officials, policy makers, and academics (Müller, 2021).[1] Yet there is little research on the distinct contribution in terms of local expenditure between second-home and traditional (market-based) tourism. Those staying at second residences do not have to pay for a market-based accommodation so, given disposable income, they are potentially better able to reallocate that money to other categories like leisure activities or bars/restaurants. Since second-home acquisition and maintenance throughout the year can be considered as a 'fixed' or sunk cost, the substitution effects generated by accommodation savings are policy relevant for stakeholders, local businesses, and academics.

This article studies the differences in expenditure at destination between second-home and traditional tourism, being the latter conceptualised as tourists who lodge at market-based accommodations. We examine the expenditure gap between both segments in three categories

(recreational activities, bars and restaurants, and other items – including expenditure in supermarkets, shops, goods for personal care or souvenirs). We analyse the case of Spain, a country where second homes for personal use represent 14.6% of all Spanish housing (3.7 million), reaching around 30% in some provinces (Caixabank Research, 2021). Exploiting survey microdata for the summer periods of the years 2017, 2018 and 2019 involving more than 37,000 domestic tourists, we estimate theoretically consistent expenditure regressions to uncover the distinct economic contribution of traditional and second-home tourism to local economies. Our analysis controls for an array of sociodemographic and trip-related characteristics together with time and province fixed effects.

Since some expenditure categories exhibit a large mass of zeroes, we estimate a hurdle regression (Cragg, 1971) that distinguishes between zero and positive expenditures in each category. Therefore, we study conditional-on-covariates differences between the two segments in both the zero-expenditure choice and the amount of money spent. Importantly, our analysis deals with the non-random assignment of tourists to second homes (self-selection) and the plausible endogeneity of the length of stay at destination documented in previous studies (e.g., Qiang et al., 2020; Thrane, 2015) using a control function approach (Wooldridge, 2015).

A proper understanding of the contribution of second-home tourism to destinations and the differences with traditional tourists is nowadays relevant after COVID-19 (Czarnecki et al., 2023; Müller, 2021). The pandemic caused substantial drops in international trips and a switch towards domestic travelling (e.g., Li et al., 2021). Additionally, tourists have become more demanding concerning hygiene requirements in traditional accommodations (Pappas and Glyptou, 2021). As a result, second-home tourism has increased its popularity (Falk et al., 2022; Zoğal et al., 2022) and is predicted to continue being relevant during the sector's recovery. In Spain, the share of domestic tourists staying at second residences has increased from 59.7% in 2019 to 66.2% in 2020 (INE, 2021). Overall, an in-depth analysis of second-home tourism expenditure patterns raises important implications for policy and practice.

2. LITERATURE REVIEW

2.1. Aggregate and itemised tourism expenditure

The literature on tourism expenditure is rather extensive. It is not the purpose here to offer a detailed review of existing studies but to summarise the main findings. The reader is referred to Wang and Davidson (2010) and Brida and Scuderi (2013) for more complete reviews of the state of art.

Most studies use total expenditure as the dependent variable, although some papers also consider daily expenditure (e.g., Massidda et al., 2020; 2022). Overall, expenditure is positively associated with income (Aguiló et al., 2017; Kozak et al., 2007), education (Alegre and Pou, 2016; Alegre et al., 2013; Sahoo et al., 2022), and travel party size (Almeida and Garrod, 2022). Nonetheless, some scholars document economies of scale so that expenditure per person decreases with travel party size (Kozak et al., 2007; Thrane and Farstad, 2011). Labour market status has also been considered another important determinant (Massidda et al., 2020); while in some cases it is used as a proxy of income, Alegre et al. (2013) show that the unemployment of the household breadwinner is a significant predictor of expenditure even when income is controlled for. Regarding the relationship between expenditure and age, empirical evidence is unconclusive. Some authors find that expenditure is higher for older cohorts (Bernini et al., 2017; Sahoo et al., 2022) while others document non-significant (Kozak et al., 2007; Massidda et al., 2022) or inverted U-shaped relationships (Alegre et al., 2013). Another source of heterogeneity stems from differences in cultural traits; several works have documented that expenditure differs by country of origin (Aguiló et al., 2017; Kozak et al., 2007; Park et al., 2020).

Great attention has been paid to the association between expenditure and length of stay. Although total expenditure is positively correlated with the time spent at the destination (Downward and Lumsdon, 2003; Wang et al., 2006), some studies document that average expenditure per day decreases with the length of the stay, suggesting a potential non-linear relationship (Kozak et al., 2007; Massidda et al., 2020; Thrane and Farstad, 2011).

Surprisingly, there are not many studies that consider price information among the regressors. The reason is that, because most studies use cross-sectional data for a single destination where

all tourists face the same prices, there is not enough variability for identification. Studies that have information for different destinations have offered mixed evidence on the sign and magnitude of the expenditure-price elasticity. Belenkiy and Riker (2013) find the elasticity is approximately -0.8 for US residents travelling abroad. Qiu and Zhang (1995) report the elasticities of international tourists visiting Canada vary depending on the country of origin, being negative for tourists from the US, the United Kingdom, and Germany, but positive for French visitors.

Most of the literature has studied the determinants of overall expenditure. However, as discussed in Park et al. (2020), focusing on total expenditure masks relevant heterogeneity in the money allocated to the different commodities that integrate the tourist basket. Skuras et al. (2006) analyse visitors' expenditure on local food in Greece, showing that it is positively correlated with expenditure for travel, hotel accommodation, and the practice of recreational activities. Wang et al. (2006) study the influence of sociodemographic and trip-related factors in explaining the expenditure in accommodation, bars and restaurants, entertainment, festivals, shopping, and transportation made by US travellers. They report that the expenditure elasticities with respect to income, travel party size, and length of stay notably vary across categories. Marcusen (2011) investigates the determinants of the money allocated by Danish tourists to transportation, accommodation, and other items. This author shows that length of stay, the type of accommodation, and travel party size are the most important predictors.

Using data for foreign tourists visiting Italy, Disegna and Osti (2016) document that money spent on accommodation and food and beverages is highly influenced by any percentage increase in all other expenditure categories. Aguiló et al. (2017) decompose the personal daily expenditures inside and outside the accommodation and length of stay of tourists visiting Mallorca, reporting that those lodged at apartments spend significantly more outside. More recently, Massidda et al. (2022) analyse the factors that influence British travellers' expenditure in total and disaggregated into accommodation, food and beverage, shopping, culture, and recreation. They find that tourists lodging at hotels spend more on each category, with those visiting friends and relatives spending the least.

2.2. Second home tourism

In the last decades, we have seen a sustained increase in holiday home ownership. Households' decision to hold/purchase a second residence is driven by several demand-side factors, including place attachment and landscape attractiveness (McLeod and Busser, 2012), urban-rural migration when retiring (Pitkänen, 2008; Williams et al., 2000), or acting as a recreational accommodation (Norris and Winston, 2010).[2] Using spatial econometrics, Carrascal-Incera and Gutiérrez-Posada (2021) show that the share of second residences in Spain is positively correlated with the share of people over 65 and closeness to tourist locations, but negatively associated with distance to the coast, urban land prices, rainfall, and the density of households.

The growth of second-home tourism has produced both positive and negative effects on local economies. On the positive side, second-home tourism contributes to the economic development of rural areas (Velvin et al., 2013), alleviating rural depopulation problems (Müller, 2004) and stimulating new capital inflows, employment creation, and property price appreciation (Hoogendoorn and Visser, 2010). In this regard, local stakeholders and private service providers exhibit positive attitudes towards second-home tourism development as they provide business opportunities (Larsson and Müller, 2019). Nonetheless, the rise of second-home tourism also produces negative externalities in terms of pollution, congestion, and noise (Hiltunen, 2007), creates sprawled settlement patterns in areas of high natural value (Adamiak, 2016), and can also lead to conflicts with locals (Rye, 2011; Volo, 2011).[3]

There is little research on expenditure differences between ordinary and second-home tourism segments. In a study of the daily expenses of foreign tourists in Spain, García-Sánchez et al. (2013) document that daily expenditures are notably larger among tourists lodged at market-based accommodations as compared to those who stay at second residences. Using data from a sample of tourists in North Wexford (Ireland), Mottiar (2006) presents descriptive evidence that traditional tourists spend more per day in the local area than holiday homeowners. However, second-home tourism contributes more to the local economy annually through more frequent visits and longer stays. The current work aims to expand this scarce evidence.

3. THEORETICAL FRAMEWORK

According to microeconomic theory, individuals' consumption patterns reflect the combinations of goods that maximise their utilities given prices and the budget constraint. Assuming their preferences are weakly separable in the sense of Deaton and Muellbauer (1980), they first allocate their disposable time and income to different *gross* categories (i.e., housing, clothing, leisure, etc.). Subsequently, conditional demand functions for each category are derived.[4]

Suppose the individual decides to make a tourist trip to a given destination *j* for a period *t*. The choice of destination and how long to stay are assumed to be pre-allocated. Individuals assign the disposable income for the tourist trip to several commodities *k*. Following Downward and Lumsdon (2000; 2003), the quantity demanded of commodity *k* per unit of time (e.g., day) is given by:

$$q_k = f(p_k, I, \eta_k) \tag{1}$$

where p_k is the price of commodity *k*, *I* is disposable income, and η reflect consumers' tastes over commodity *k*.

If we aggregate over the period the individual stays at the destination ($t = 1, \dots T$), we have:

$$Q_k = \sum_{t=1}^{T} q_k = \sum_{t=1}^{T} f(p_k, I, \eta_k) \tag{2}$$

If q_k is time-constant, the total quantity demanded for commodity *k* (Q_k) would be simply *T* times q_k. However, it is highly likely that demand is non-linear with the length of they stay due to economies of scale. Therefore, total quantity demanded is assumed to be a (non-linear) function of the time spent at the destination (*T*) so that:

$$Q_k = f(p_k, I, \eta_k, T) \tag{3}$$

If we now multiply by prices, we have that expenditure on commodity *k* is a function of prices, time, preferences, income, and a vector of tastes:

$$Exp_k = p_k Q_k = g(p_k, I, T, \eta_k) \tag{4}$$

The expenditure function is therefore increasing in income (assuming tourism commodities are normal goods) and length of stay (possibly in a non-linear fashion) and varies depending on individual preferences, generally proxied by a set of sociodemographic and trip-related characteristics.[5] The relationship between prices and expenditure is undetermined a priori, since it depends on the price elasticity of demand. It will be positive (negative) if the price elasticity is inelastic (elastic) and non-significant in case the price elasticity is unitary. Typically, detailed price information for each commodity *k* is almost never available. Therefore, the common way to proceed in applied research is to use price indexes as proxies, which vary across regions and time periods. This assumes all tourists at the same destination and period face the same prices so it can be taken as numeraire within submarket-period combinations.

Under the assumption that consumers have 'utility tree' functions à la Pollak (1971), they assign a share of their disposable income to different goods including tourism travelling. Once some other travel facets have been pre-allocated, they subsequently decide how to spend their tourism budget to alternative commodities in a discretionary fashion. Suppose two tourists A and B with the same tourism budget and personal characteristics that travel to the same destination in the same period. Tourist A lodges at a second home (either of his/her property or owned by a friend/relative) while tourist B stays at a market-based accommodation like a hotel. As compared to B, it is highly likely that A faces lower accommodation costs. Although it is true that the tenure of a second residence involves several acquisition and maintenance costs that, aggregated over the year, are likely to be higher than market-based accommodation costs, such expenditure could be understood as 'sunk' costs. Economic theory predicts that rational agents should not considered costs that have been already incurred (e.g., Mankiw, 2004, p.297).

As some experimental studies have documented (Crouch et al., 2007; Dolnicar et al., 2008), individuals reallocate their expenditure across different categories faced with unexpected savings or extra costs in a commodity. Eugenio-Martín and Inchausti-Sintes (2016) show that expenditure savings from travelling by low-cost carriers are transferred to higher expenditure at destination in other categories. However, charter-flight tourists are not found to translate transportation savings to additional expenditure at destination. Importantly, these authors document that the chosen accommodation matters to a large extent: those who stay with friends

or relatives spend less both at origin and at destination when travelling by low-cost carriers. Similar findings are presented in Ferreira-Silva et al. (2020), who show that airline liberalization in the Azores islands changed the determinants of tourism expenditure. Aguiló et al. (2017) also document that those who stay at apartments spend more outside the accommodation than those who lodge at hotels.

Along these lines, we expect that expenditure savings in the accommodation for those staying at second residences translate into higher overall expenditure in other tourism commodities (everything else being equal), producing expenditure reallocation effects. However, this money reallocation is likely to be heterogeneous depending on the category considered. Since second homes allow tourists to cook, one might expect that expenditure shifts towards consumption at bars and restaurants would be minimal and even negative. On the contrary, reallocation effects are predicted to be positive and quantitatively important for the case of items purchased at supermarkets and shops (food, drinks, goods for personal use, etc.). Similarly, we also expect positive reallocation effects on leisure and recreational activities, *ceteris paribus*. Moreover, these potential reallocation effects might differ by tourists' profile. For instance, we could expect repeat visitors to be generally less interested in visiting museums, theme parks, or local attractions if they have already done it before (Alfarhan et al., 2022; Wong and Zhao, 2016).

4. DATA

4.1. Dataset and variables

We use nationwide representative microdata from the Spanish Domestic Travel Survey (ETR). This is a monthly survey conducted by the Spanish Statistics Institute (INE) that collects detailed information about the travel habits of Spanish residents together with a set of personal characteristics. Respondents are sampled using multistage sampling, stratified by clusters with proportional selection of cities and census sections. Taking the survey is compulsory for respondents by law, who answer the questionnaire by telephone. We consider the summer periods (July, August, and September) of the years 2017, 2018 and 2019. Since we are interested in domestic tourism for leisure purposes, trips abroad and those for business purposes are excluded from the sample. Individuals who stay at the destination for more than 90 days are also dropped. After data cleaning, the sample involves 37,083 observations.

Although the survey has a rotating design, the overlap between waves is quite reduced. Aside from remaining in the panel pool over time, observing the same individual consecutively requires that he/she has travelled domestically and stayed away from home for leisure purposes during the study period. Since this is highly infrequent, the data are treated as a pool of cross-sectional units observed in different periods.

Dependent variables

The survey provides information on the total expenditure of the trip per person in euros (EXP_TOTAL).[6] We also have information about the money allocated to the following categories:

- Accommodation (EXP_ACCOM): it refers to all the expenditure made in accommodation services, including tips, laundry services, parking, and food and beverage not included in the accommodation price.
- Bars and restaurants (EXP_BARS_REST): it includes all money spent in cafes, bars, pubs, restaurants, and discos.
- Tourist and recreational activities (EXP_TOUACT): expenditure made on attendance to sports events, theme parks, cinemas, theatres, concerts, circus, museums, zoos, mountaineering, natural parks, skiing, or any other organised activities. This category does not only gather ticket prices but also includes the cost of renting the necessary equipment.
- Durable goods (EXP_DURABLE): money spent on jewellery, artworks, paintings, and any other item that is not expendable.
- Other items (EXP_OTHER): here we gather all the remaining expenditure not included in other categories, including that in supermarkets or small businesses, gambling activities, goods for personal or health care, and souvenirs.

It is important to indicate that expenditure on transportation is excluded from the analysis, as done by Alfarhan et al. (2022). On the one hand, the survey does not distinguish between expenditure made to reach the destination (e.g., air fares) and on mobility within the destination (e.g, a taxi). As such, the use of expenditure on transportation would provide a misleading picture on the contribution of second home tourism to regional areas since part of that money is potentially spent at origin.

Explanatory variables

In line with the related literature and the theoretical framework presented in Section 3, expenditure is modelled as a function of destination prices (Bernini et al., 2017), sociodemographic (Aguiló et al., 2017; Alegre et al., 2013; Sahoo et al., 2022) and trip-related characteristics (Almeida and Garrod, 2022; Massidda et al., 2020; Thrane and Farstad, 2011), plus temporal and region-of-destination fixed effects (García-Sánchez et al., 2013).

- **Tourists at second homes**: our key explanatory variable is a binary indicator for whether the individual stays at a second residence (as opposed to other types of accommodation). This includes residences owned by the tourist herself, relatives or friends and exchanged homes, a phenomenon of recent popularity (Casado-Díaz et al., 2020). The key aspect is that the tourist does not pay a market price for the accommodation. Figure 1 maps the share of tourists in the sample that stay at second residences. Interestingly, this share is greater in inland provinces.
- **Prices**: like Bernini et al. (2017), we use consumer price indexes to capture price differences across provinces and over time. We specifically consider the monthly general consumer price index (PRICE INDEX: GENERAL) and the price subindexes for bars and restaurants (PRICE INDEX: BARS & REST.), and for leisure/recreational activities (PRICE INDEX: LEISURE ACT.). The data is drawn from the Spanish National Statistics Institute at the province level on a monthly basis.
- **Sociodemographic characteristics**: we consider gender (dummy variable for female), age (in years), education (dummy indicators for primary, secondary and university education), income (in intervals), labour market status (distinguishing between unemployed, retired, employee or inactive), nationality (dummy indicator for foreign nationality), civil status (dummy for being married), and household size (number of people living in the household).
- **Trip-related factors**: length of stay (in days), a binary indicator for loyalty behaviour (travels to the same destination each summer), a dummy for whether the tourist travels within the autonomous community of residence (capturing short versus long-distance travelling), mode of transport (dummy for travelling by car), and the composition of the travel party (dummy indicators for solo traveller, in a couple, with the family/children and with other travel companions).

- **Temporal controls**: although we focus on the summer period, expenditure could exhibit temporal and seasonal patterns associated with unobserved temporal shocks. To control for this, we consider yearly and monthly fixed effects.
- **Regional controls**: Bernini et al. (2017) show that tourists' expenditure is affected by location-specific and place-based characteristics. In the case of second-home tourism, Velvin et al. (2013) document that annual expenditure by homeowners correlates with locational dimensions like car accessibility or the trading structure of the area where the property locates. We therefore consider a full set of province-of-destination fixed effects.

FIGURE 1 HERE

4.2. Descriptive statistics

Table 1 presents summary statistics of the dataset. Average total expenditure per person is €217. This budget is mainly allocated to bars and restaurants (€73, on average) and accommodation services (€71). About €50 are spent on supermarkets, gambling and goods for personal care and health, and €11 on recreational/leisure activities. Nonetheless, the standard deviations indicate large dispersion in all the categories. We also see that all the categories exhibit a large mass of zeroes. Particularly noticeable is the case of durable goods, with only 0.5% of the sample having positive expenditure. For this reason, this category is excluded from the analysis that follows.

TABLE 1 HERE

Around 65.5% of the sample stays at second residences. The mean length of stay is 6.1 nights and 47.2% travel to the same destination every summer. Similarly, 48% of the sample travels within the same autonomous community. The mean age is 49.7 years old and around half of the sample has college education (48%). With respect to income, 34.4% monthly earn between €1,500 and €2,500, with 11.3% earning less than €1,000 and around 3.6% gaining more than €5,000 per month. Approximately 55.8% are married and only 4.4% have foreign nationality. Concerning labour market status, 17.6% are retired and 60% are employed. Around 18.4% travel alone and 33.3% with their partner. Interestingly, most tourists travel by car (84.2%).

Table 2 reports descriptive statistics of the price indexes per year. The overall level of prices increased, on average, during the study period. The price inflation for bars and restaurants was generally above the general one. On the contrary, the prices of leisure activities decreased.

TABLE 2 HERE

Table 3 presents a comparison of average expenditure per person between those at second homes and those at market-based accommodations. Tourists who stay at second residences spend around €281 less in total. A large share of this gap is due to the larger expenditure incurred by ordinary tourists, who pay €197 more for their lodging. Descriptive statistics also indicate that ordinary tourists spend €48 and €12 more on bars and restaurants and recreational activities, respectively. In contrast, tourists at second homes spend €6.7 more on supermarkets and other items, and stay for 0.3 nights more (on average). In all cases, the differences are statistically significant.

TABLE 3 HERE

5. ECONOMETRIC MODELLING

5.1. Functional form

Most empirical applications apply a logarithmic transformation to the expenditure variable, which offers the advantage that the estimates for continuous regressors can be interpreted as semi-elasticities. However, the log transformation makes expenditure to be undefined when it takes value zero. In recent years, applied econometricians have favoured the inverse hyperbolic sine (IHS) transformation (e.g. Bellamare and Wichman, 2020), which allows to retain zero-valued observations together with handling extreme values using the following expression:

$$\widetilde{y_k} = \text{arcsinh}(y_k) = \ln\left(y_k + \sqrt{{y_k}^2 + 1}\right) \quad (3)$$

We apply this transformation so that our empirical model assumes an arcsinh-linear functional form. Figures A1-A3 in Supplementary Material present histograms of the IHS-transformed expenditure variables in each category (denoted by y_k).

5.2. A hurdle expenditure function

As shown in Table 1, there is a large proportion of zeroes in the expenditure on bars and restaurants (19.1%), tourist activities (75.6%), and other items (28.9%). This is a common pattern in most studies (Alegre et al., 2013) that reflects corner solutions of non-consumption (i.e., left censoring). Applying a linear regression to variables with a large mass point at zero produces inconsistent estimates. To overcome this, we use a (single) hurdle regression model (Cragg, 1971) that estimates separate equations for the 'participation' (binary decision to spend) and 'intensity' (amount spent, conditional on making some positive expenditure) processes as follows:

Participation equation for expenditure category *k*:

$$d_k^{*} = \alpha_{1k} + \delta_{1k} SH + \gamma_{1k} \ln LOS + \tau_{1k} P_k + \vartheta_{1k} I + \beta_{1k} X + \varepsilon_{1k}$$

$$\begin{cases} d_k = 1 \; if \; d^{*}{}_k > 0 \\ d_k = 0 \; otherwise \end{cases} \tag{4}$$

Intensity equation for expenditure category *k*:

$$\widetilde{y_k}^{*} = \alpha_{2k} + \delta_{2k} SH + \gamma_{2k} \ln LOS + \tau_{2k} P_k + \vartheta_{2k} I + \beta_{2k} X + \varepsilon_{2k}$$

$$\begin{cases} \widetilde{y_k} = \widetilde{y_k}^{*} \; if \; \widetilde{y_k}^{*} > 0 \; and \; d_k = 1 \\ \widetilde{y_k} = 0 \; otherwise \end{cases} \tag{5}$$

where individual subscripts are omitted for convenience; d_k^{*} is a latent variable capturing the utility of positive consumption, d_k is a dummy variable for whether the individual has positive expenditure in category *k*; $\widetilde{y_k}$ is the IHS transformation of expenditure in category *k*; *SH* is the binary indicator for staying at a second home; *LOS* is the length of the stay (in logs); P_k is the corresponding price index for commodity *k*; *I* denotes individual income; *X* is the set of sociodemographic, trip-related and temporal control variables; ε_{1k} is the random error term for the participation equation with zero mean and unit variance; ε_{2k} is the random error term for the intensity equation with zero mean and variance σ; α_{1k} and α_{2k} are the intercepts; and δ_{1k}, δ_{2k}, γ_{11k}, γ_{12k}, γ_{21k}, γ_{22k}, τ_{1k}, τ_{2k}, ϑ_{1k}, ϑ_{2k}, β_{1k} and β_{2k} are parameters to be estimated.[7]

The vector *X* includes a full set of province-of-destination fixed effects capturing differences in destination attractiveness, supply of tourist activities or climatic conditions. Therefore, parameter identification is based on differences in expenditure within provinces.

The hurdle model in (4-5) is a two-part model that does not require any exclusion restriction for identification and is robust to endogenous selection into positive expenditure.[8] The participation equation is estimated using a Probit regression while the intensity equation uses Ordinary Least Squares, thereby allowing for distinct parameters in each equation (i.e., $\delta_{1k} \neq \delta_{2k}$). The error terms are assumed to be uncorrelated, with the variance of the first equation normalised to one for identification.

The theoretical rationale for the separate parametrization of the 'participation' and 'intensity' decisions is that the nonconsumption of a tourism good (e.g., bars and restaurants) might be the result of a noneconomic but ethical, psychological, or social considerations rooted on personal preferences. That is, non-consumers of a category are assumed to have a different preference structure and participation dominates consumption (first hurdle dominance). For non-consumers, the utility maximizing quantity demanded equals zero. Accordingly, for observing a positive expenditure in a category the individual must pass the participation hurdle. As opposed to double-hurdle (Bernini et al., 2017) or Heckman-type approaches (Alegre et al., 2013), this implies the zeroes are taken here as *genuine* zeroes.[9] A recent work by García and Suárez (2023) shows that two-part (hurdle) models perform better than Heckman and double-hurdle counterparts in terms of Akaike Information criterion.

5.3. Endogeneity concerns

Lodging at a second home versus a market-based accommodation (e.g., a hotel) is a choice decision that is unlikely to be evenly distributed across tourist segments. Apart from observed sociodemographic differences, tourists at second residences might have distinct motivations. Therefore, the descriptive comparison of the money spent across categories in Table 2 is potentially affected by selection bias. If this is the case, SH cannot be taken as exogenous in (4-5). To deal with the endogeneity of SH, we implement a control function approach (Wooldridge, 2015). This consists of first running the following auxiliary linear regression:

$$SH = \mu + \theta Z + \pi X + \omega \tag{6}$$

Equation (6) regresses SH on the control variables (X) and an instrumental variable (Z) that is assumed to be correlated with SH^* (relevance condition) but uncorrelated with $\widetilde{y_k}$ (exogeneity

condition). Next, we expand the model specifications in (4-5) with the inclusion of the residuals from equation (6) $\hat{\omega}$ in both the participation and intensity equations. The aim here is to partial out the association between SH and expenditure by controlling for the non-explained linear projection of SH on tourists' characteristics (X) and the auxiliary instrument (Z). Since the Cragg's likelihood function is separable and therefore the two equations can be estimated independently, our modelling approach corrects for the endogeneity of second home accommodation choice in each equation.

We use the tenure of a second residence in property anywhere in the country (OWNS SH), and exposure to second-home accommodations, defined as the share of second homes at the destination province (SHARE SH), as the instrumental variables.[10] The latter is computed as the ratio of second homes over principal homes and is a measure of the relative supply of second homes in a province. The data is obtained from the Spanish Ministry of Transport, Mobility and Urban Agenda (*Estimación del Parque de Viviendas*). The rationale is that second-home tourism is expected to be more prevalent among those who own a second residence (but not necessarily) and among those travelling to areas with a high supply of second residences (Falk et al., 2022).[11] Since supply and demand are linked, the latter implicitly captures unobserved taste for second residences over time and across geographical areas (Johnson and Walsh, 2013). Moreover, a greater relative supply of second residences over total buildings might translate into lower market prices, which might increase demand for second-home tourism through (i) lower incentives to sell the property among homeowners, and (ii) lower acquisition costs for prospective buyers.

Figure A7 presents a scatterplot of the pairwise correlation between SHARE SH and the percentage share of tourists that stay at second residences. There is a strong association between the two. Figure 2 maps the distribution of second residences across Spanish provinces during the study period. This plot illustrates there is enough spatial variability in SHARE SH for identifying θ in (6). Further descriptive statistics are presented in the Supplementary Material, Table A1. The exogeneity and relevance conditions of these instruments are formally tested and verified in Supplementary Material, Table A2.

FIGURE 2 HERE

Similarly, LOS is also likely to be endogenous (Alfarhan et al., 2022; Qiang et al., 2020; Thrane, 2015). The length of the stay and expenditure are typically jointly determined, which rules out

independence between this regressor and the error terms in (4) and (5).[12] To deal with this, we specify a second auxiliary linear regression as follows:

$$\ln LOS = \psi + \lambda Z + \zeta X + \xi \tag{7}$$

where Z is an instrumental variable that is assumed to be correlated with the length of stay but to be orthogonal to expenditure in the different commodities considered conditional on the rest of covariates, ψ is a constant term, X is the set of control variables presented before and ξ is an error term. As before, the endogeneity of LOS in equations (4) and (5) is corrected by adding the residuals $\hat{\xi}$.[13]

In this case, it is not easy to find a suitable instrument. Authors like Thrane (2015) and Park et al. (2020) propose the use of trip satisfaction, the number of times the tourist has previously visited the destination, and the place where the survey took place. Although these variables are likely to correlate with the length of stay, there are very unlikely to satisfy the exclusion restriction of being uncorrelated with expenditure. Instead, we resort on the average and standard deviation of the LOS of other domestic tourists the same month the year before visiting the same destination province (denoted by LAG_MEAN_LOS and LAG_SD_LOS) as the instrumental variables. Like before, the intuition is that there might be some destination-specific factors (*taste shifters*), varying geographically and over time, that explain the differences in the mean and volatility of length of stay across individuals per destination. Some examples could be the transport connectivity and accessibility of the destination that shift LOS due to travel times, or heterogeneity in visitors' time constraints that vary depending on the labour market structure and composition of the source markets. Accordingly, the mean and the standard deviation of lagged LOS capture external sources of variability in LOS. Figure A5 in Supplementary Material presents a scatterplot of the mean LOS per province on the mean LOS in the same province one year before. As illustrated there, there is a positive association between the two. At the same time, current expenditure levels are unlikely to correlate with past average stays of other tourists. Table A3 in Supplementary Material present formal tests on the fulfilment of the exogeneity and relevance conditions.

6. RESULTS

6.1. Main findings

Columns (1) and (2) in Table 4 presents the coefficient estimates of the auxiliary linear regressions for the endogenous SH and LOS variables.[14] Columns (3)-(8) report the estimates for the Craggit model (probit and OLS regressions), separately for expenditure in bars & restaurants, recreational activities, and other items. Standard errors for the Craggit regressions are bootstrapped after 500 replications due to the uncertainty around the residuals included.[15] Table 5 reports the average marginal effects (AMEs) for the participation and intensity equations.[16]

The residuals from equation (6) are statistically significant, suggesting that staying at a second home is an endogenous decision. A naïve regression that treats it as exogenous will suffer from endogeneity bias (Supplementary Material, Table A5). However, the residuals from equation (7) are not significant in none of the equations. Therefore, there is no evidence of endogeneity in *Ln LOS* for explaining expenditure in each category.

Starting with the first-stage regressions, the decision to stay at a second home is positively associated with the tenure of a second residence on property (OWNS SH) and the percentage of second residences over total buildings in the destination province (SHARE SH). Furthermore, second homes are more prevalent among those who travel within the region of residence, elderly tourists, those who travel alone or with children, and by car. In contrast, the probability of staying at a second home decreases with household size, income, and destination prices, and is significantly lower for loyal tourists. On the other hand, length of stay is highly correlated with the mean (LAG MEAN LOS) and standard deviation (LAG SD LOS) of stays at the destination province the year before. This result likely reflects the existence of regional-specific time-varying factors that translate into longer stays. Beyond this, the length of the stay is negatively correlated with prices and household size but positively associated with age and income. Moreover, tourists who travel by car, alone, and within the region of residence stay for shorter. Interestingly, place-loyal tourists stay for longer.

TABLE 4 HERE

TABLE 5 HERE

The expenditure equations show that tourists at second homes are significantly less likely to spend positively on bars and restaurants and on tourism activities (-15.4% and -9.5%, respectively). Additionally, for those who make some purchases, the amount of expenditure is also quantitatively lower (-48.5% and -51.8%, respectively). The former result is in line with Mottiar (2006), who documents that second homeowners are the lowest spenders in meals and drinks. Because they can cook and eat at home, it seems that they barely consume at restaurants. For the case of recreational activities, the lower expenditure of tourists at second homes might operate through a lower demand for novelty seeking (Alfarhan et al., 2022; Wong and Zhao, 2016). Accordingly, there are not expenditure reallocations towards these categories but *detractions*, which likely operate through different preferences; the travel motivations of tourists at second homes appear to be different from those by ordinary tourists.

Those who stay at second residences are nevertheless more likely to spend on the other items (miscellaneous) category (+40.1%). Mottiar (2006) also indicates that visitors at second homes mainly spend their money on milk, bread, newspapers, and groceries. Part of this expenditure could be also devoted to purchasing household items. Nonetheless, the amount of expenditure does not differ by type of accommodation. Overall, we reject our research hypothesis: there is no evidence in favour of expenditure transfers across categories from accommodation savings. Domestic tourists staying at second homes in Spain consistently spend less (or the same) in all the categories. To some extent, this result connects with other studies that show that foreign tourists staying at second residences or visiting friends and relatives spend significantly less (García-Sánchez et al., 2013; Massidda et al., 2020; 2022).

Concerning the control variables, the results are in line with previous literature. Expenditure is positively associated with the length of the stay (Brida and Scuderi, 2013; Downward and Lumsdon, 2003; Wang et al., 2006) and education (Alegre and Pou, 2016; Alegre et al., 2013) but negatively correlated with household size (Sahoo et al., 2022), travelling by car (Thrane, 2014) and within the region of residence (Sahoo et al., 2022). The elasticity of expenditure to length of stay is larger for the miscellaneous category (+0.699), closely followed by that for bars and restaurants (+0.618) and leisure activities (+0.386). Tourists who travel within the region of residence spend significantly less in bars and restaurants (-25.6%) than on other items (-14.9%). Interestingly, the money spent on bars and restaurants is almost linear in income but there are only significant differences in expenditure in tourism activities and other items

between the high-income segment and the rest. Quantitatively, expenditure on bars and restaurants is more sensitive to income than that on recreational activities or other items. This result is consistent with evidence presented in Wang et al. (2006) and Massidda et al. (2022) showing heterogeneous income elasticities per category group. The labour market status is also a significant predictor even when household income is controlled for, in line with Alegre et al. (2013). Additionally, prices are not significant for explaining expenditure. Consistent with microeconomic theory, this suggests the demand for the three categories is unitary.

There are some other variables with distinct influence depending on the category considered. For instance, tourists who have been to the destination before spent significantly less on bars and restaurants and leisure activities (-2.8% and -5.8%, respectively). This falls in line with Alfarhan et al. (2022), who show that first-time visitors spend more through a demand for novelty mechanism. However, no differences are detected regarding expenditure on other items. Something similar applies to females, who spend less on bars and restaurants (-1.0%) and tourism activities (-6.2%) but instead spend more on the other items category (+2.8%). It is also interesting to note that foreign and elderly people spend more on bars and restaurants (+2.9% and +2.0% per 10-year increase, respectively) and other items (+11.1% and +5% per 10-year increase, respectively). For the tourism activities category, no differences are detected by nationality whereas the elderly segment spends significantly less (-3% per 10-year increase).

5.2.Robustness checks

We have performed some robustness checks to the main analysis. First, we have estimated an augmented version of the model in (4-5) expanded with interaction terms between SH and travelling within the region of residence (SAME REGION) and loyalty to the same destination (LOYALTY). We find that tourists at second homes travelling within their region on a routinised basis are the segment with the lowest expenditures in all the categories (Supplementary Material, Table A6). Second, we have restricted the sample of ordinary tourists (comparison group) to only those that stay at private apartments (entire property or single bedroom) in exchange of price. Results are about the same (Supplementary Material, Table A7), showing great robustness to the definition of the group of comparison. Third, we have re-estimated the model using expenditure per day as the dependent variable and excluding *ln LOS* as a covariate, as done by Massidda et al. (2020; 2022). We document that, together with the level differences reported before, tourists at second homes also spend significantly less per day in bars and restaurants and leisure activities (Supplementary Material, Table A8). Accordingly,

the expenditure gap between ordinary and second-home segments holds at both the intensive and extensive margins. Nonetheless, for the other items category, tourists at second homes spend more per day. Finally, we have aggregated all the expenditure and run an OLS regression (Supplementary Material, Table A9). Overall, tourists at second homes spend 66.5% less in total per trip ((exp(-1.094)-1)*100) than ordinary tourists, *ceteris paribus*.

6. DISCUSSION AND CONCLUSIONS

Despite the high popularity of second-home tourism, the differences in behaviour and expenditure patterns at destination between ordinary tourists and those staying at second dwellings have been quite overlooked to date. This paper has tried to fill this research gap by investigating potential reallocation effects from accommodation savings to other categories. In line with Eugenio-Martín and Inchausti-Sintes (2016), we have hypothesised that tourists staying at second residences transfer part of the savings from not having to pay a market price for the accommodation to greater expenditure on other tourism categories. Exploiting a large dataset of domestic summer trips by Spanish residents for the years 2017, 2018 and 2019 involving both types of tourists, we have estimated Craggit regressions (Cragg, 1971) for modelling expenditure on bars and restaurants, tourism leisure activities, and a miscellaneous category gathering expenditure in supermarkets, shops, souvenirs, and goods for personal care. Our model has allowed for distinct coefficients for the probability of observing a positive consumption and for the intensity of consumption. The endogeneity of staying at a second home and the length of stay has been modelled using a control function approach.

Our results do not support our research hypothesis: no evidence is found in favour of expenditure reallocation effects. On the contrary, second home tourists spend significantly less in bars and restaurants and leisure activities, whereas no differences are detected for the miscellaneous category. Whereas some previous works have shown that tourists at second homes have lower daily expenditures (García-Sánchez et al., 2013; Mottiar, 2006), we have shown they also spend less money in total terms. This gap in expenditure is larger for those who travel within their region of residence and have previous experience at the destination. This finding could be explained by informational knowledge about prices and novelty seeking mechanisms. On the one hand, repeat tourists might be more aware of the price and quality distribution of goods at the destination, thereby spending less by purchasing them at cheaper establishments (Alegre and Cladera, 2010). On the other hand, those who annually travel to the

same destination are less motivated to try new restaurants or engage into a guided visit (Alfarhan et al., 2022; Wong and Zhao, 2016).

The paper expands contributes to the literature in different ways. From a theoretical perspective, the paper documents the absence of expenditure reallocation effects from accommodation savings. While Eugenio-Martín and Inchausti-Sintes (2016) report that a share of savings from travelling by low-cost carriers translate into additional expenditures at destination, this pattern does not seem to hold for tourists at second residences in any of the three categories examined.

From a policy viewpoint, there is some debate about whether second-home tourism should be promoted or limited. The arrival of tourists is positive if the economic benefits from tourism activities outweigh their potential negative externalities. To some extent, second homes are often seen as a curse or a blessing, and it is yet unclear whether second-home tourism should be properly considered as tourism (Müller, 2004). The amount of money spent locally is therefore critical for evaluating their contribution to regional economies. Our results indicate that domestic tourists at second homes are the least profitable segment at both the intensive and the extensive margins. In line with Sheard (2019), second-home tourism in Spain mainly involves cheap outdoor activities and home-prepared meals that contribute little to the local economy. Aside from other potential indirect benefits for local economies discussed before, tourists at second residences behave closer to residents than to tourists; they do not seem to stimulate demand in linked sectors because they have distinct motivations than ordinary tourists. Moreover, tourists at second homes consume locally during shorter periods than residents. Accordingly, it does not seem that the potential gains outweigh its negative externalities.

Countries like France or Sweden have implemented taxing policies, constraints on new second home investments, or restrictions on the ownership of second dwellings by non-residents to deal with the housing affordability problems that second homes are generating in some areas (Hilber & Schöni, 2020; Segú, 2020; Sheard, 2019). These policies must be carefully designed and implemented since they can adversely affect local labour markets and increase tourist accommodation prices. In this regard, further works are needed to examine the net benefits from second-home tourism developments by considering its effects on other outcomes like housing rents, employment creation, or other types of accommodation.

Our study has some limitations that deserve mention. Firstly, possibly the most important one is the cross-sectional nature of our dataset, which always imposes the threat of omitted variable bias associated with unobserved tastes. If the same individuals were observed staying at both second residences and market-based accommodations in different trips, we would better asses the within-individual differences in expenditure net of unobserved heterogeneity. Secondly, the endogeneity of self-selection into second-home tourism is challenging to solve, and the validity of the control function estimator heavily relies on the exclusion restriction. A better research design would be to exploit any exogenous ban or moratoria that constrained second-home acquisition. This could be a valuable avenue for future research. Nonetheless, note that this sort of policies (e.g., Hilber and Schöni, 2020) are generally developed in desirable tourist locations, thereby also suffering from selection bias for the purpose of analysing tourism expenditure.

Thirdly, we do not have information on the annual costs of second homes for their owners nor the time they have owned the property. Our analysis has relied on the assumption that they are sunk costs that should not affect summer expenditure decisions. However, new owners could face tight budget constraints through acquisition of reparation costs that explain their lower expenditure. Fourthly, it is possible that part of the second-home segment translates their accommodation savings to other non-tourism goods or even additional trips throughout the year. Further studies are needed in this direction since the lower expenditure per trip might be compensated with a greater frequency of visit. Finally, our analysis covers the case of domestic trips by Spanish residents. Future studies could expand our work by considering second-home tourism by travellers from abroad and in other countries.

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ENDNOTES

[1] Volo and Giambalvo (2008) note that official aggregate statistics usually ignore tourists lodged at second residences, thereby underscoring their relevance.

[2] Studies in economics have documented that vacation homes growth rates are also affected by fiscal stimulus in the form of property tax changes (Johnson and Walsh, 2013).

[3] An overview of the positive and negative effects of second-home tourism on destinations can be found in Müller and Hoogendoorn (2013).

[4] Consumers' utility functions have a 'tree' structure (Pollak, 1971) so their demand for goods within each branch is conditional on the income and money previously allocated to each category.

[5] These variables do not only capture heterogeneity in the marginal rate of substitution between commodities (preferences) but also heterogeneity in the disposable income allocated to each one.

[6] The consideration of which goods and services to include among each category follows international practices. In cases when the respondent does not provide complete information, the corresponding values are inferred using imputation methods (see INE, 2022 for details).

[7] Length of stay is specified in logs following practical recommendation by Thrane (2014) to handle its potential nonlinear effect on expenditure.

[8] As shown by Drukker (2017), the coefficients are consistent estimates of the partial association of a covariate and the dependent variable because the potential unobservable parameter is multiplied by zero.

[9] The Heckman model assumes zeroes are the result of censoring and is typically used when the aim is to model potential outcomes rather than actual outcomes. One drawback is the need for exclusion restrictions for model identification (Puhani, 2000), which in this case are not available.

[10] There are 1,833 individuals in the sample that have a second residence in property but stay at a market-based accommodation. Similarly, 14,137 individuals do not own a second residence but stay at one (friends' or relatives'). This creates sufficient variation for parameter identification.

[11] This is consistent with the literature that treats travellers as an outcome in a particular service production process using accommodation supply as a variable input. See Assaf and Josiassen (2015).

[12] Nonetheless, the endogeneity of LOS is an *empirical* matter. From a theoretical perspective, conditional demand functions based on utility tree structures (Pollak, 1971) and the staged nature of tourists' decision-making process (Eugenio-Martín, 2003) allow researchers to take length of stay as conditionally exogenous given traveller and trip characteristics.

[13] Equations (6) and (7) are estimated by OLS. Although SH is binary and length of stay is typically modelled using count data models, the control function approach requires a linear regression in the first stage.

[14] The province fixed effects are not reported to save space but are presented in Table A4 in Supplementary Material.

[15] The model has been estimated using *churdle* module in Stata 16. The *twopm* module developed by Belotti et al. (2015) offer the same results.

[16] Because of the IHS transformation, the formulas for the AME of a given variable x_c on the expected percentage change in expenditure for the intensity equation are presented in Supplementary Material.