MICRO-ECONOMIC DETERMINANTS OF TOURIST EXPENDITURE: A QUANTILE REGRESSION APPROACH

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ABSTRACT: We assess the effect of the main determinants of tourist expenditure by applying both linear and quantile regression models to individual micro data collected by a survey addressed to non-resident tourists who spent their holidays in Sardinia during the period April -October 2012. We find that, in addition to income and foreign nationality, tourist expenditure is crucially driven by trip-related (party size, stay length, accommodation, sea and sun typology and transport modality) and psychographic characteristics (repeated visits and holiday motivations). Moreover, our results indicate that the effects vary with respect to the expenditure component and the level of spending, thus confirming the high complexity of the tourism product. Higher positive effects were found for foreign heavy spenders, previous visits and notoriety-motivated holidays, while party size and the number of visited sites reduce the expenditure level for light-spending tourists.

KEYWORDS: Tourist expenditure, Micro data, Quantile regression, Sardinia.

1 Motivation and main results

The tourism industry is becoming one of the most relevant industries worldwide, and tourist expenditure make a considerable contribution to economic growth at both the national (Lee and Chang, 2008; Figini and Vici, 2010) and regional levels (Paci and Marrocu, 2014). Thus, for scholars, managers and policy makers, it is extremely important to identify which factors influence tourist consumption decisions and to measure the effect of those factors on tourist expenditures using appropriate econometric tools.

The widespread interest in investigating the determinants of tourism demand is confirmed by two recent review articles on tourism demand modeling and forecasting (Song and Li, 2008) and on the determinants of tourist expenditure based on micro data (Brida and Scuderi, 2013). Our study is performed within the latter framework and seeks to address some of the shortcomings usefully discussed by Brida and Scuderi (2013) in their survey article. More specifically, given that the “tourism good” is a highly differentiated product along both the demand and supply dimensions, we address the heterogeneity issue by analyzing a comprehensive set of factors that are expected to account for the major distinctive characteristics of tourists and the specific traits of destinations. The 25 explanatory variables
considered in this study are grouped according to the Wang et al. (2006) taxonomy: (1) economic constraints (income); (2) socio-economic characteristics (age, gender, education, occupational status, nationality); (3) trip related features (length of stay, party size, number of destinations, accommodation typology, transport modality, season) and (4) psychographic characteristics (repeated behaviour, trip motivation).

The second relevant element of our study is that the application of the widely used linear regression approach is complemented by the use of the quantile regression (QR) method. The first method is a useful to assess central tendencies and to provide a measure of the average response of tourist expenditure to changes in its determinants. When such a response exhibits strong patterns of heterogeneity, the QR approach provides a more comprehensive picture of different spending behaviors because it allows the coefficients to vary over the whole spectrum of the tourist expenditure distribution. Recently, the QR approach has been adopted in tourism studies (see, among others, Lew and Ng, 2012).

The third feature of our analysis is that, given that tourism is a complex product formed by different complementary elements, we also examine the determinants of the main components of visitor expenditure (accommodation, meals and restaurants, entertainment and shopping). The analysis of the various segments is relevant because it enables us to provide specific information to the different business categories involved in the tourism industry in addition to providing a general picture to destination managers.

Our study is based on a survey performed in Sardinia from April to October 2012 consisting of 1,445 interviews with non-resident tourists in the main ports and airports when leaving the island at the end of their vacations. Sardinia is an interesting case study because it is one of the most renowned tourist destinations in Italy and in the Mediterranean Sea more generally. Our results indicate that, in addition to income and foreign nationality, per person daily tourist expenditure is driven by trip-related and psychographic characteristics. Moreover, we found that the effects vary with respect to the expenditure component and the level of spending, thus confirming the high complexity of the tourism product. Higher positive effects were found for heavy spenders in the case of foreign nationality, previous visits and notoriety-motivated holidays, while party size and the number of visited sites contribute to reducing the level of expenditure for light-spending tourists.

Our detailed results obtained from the linear regression models indicate that, ceteris paribus, a tourist with a medium income level spends 6.9% more, while a high-income tourist increases her total expenditure by a sizeable 28.5% wrt to a low-income tourists (as in Agarwal and Yochum, 1999; Thrane and Farstad, 2011). Significant differences are found among income-related groups of tourists for accommodation costs (lodging spending highly sensitive to income). Expenditures related to food & beverages or to other activities do not exhibit any significant additional effect. Gender and age are not found to significantly influence holiday expenditure (Wang et al., 2006). As for occupation status, we find that students and the unemployed spend less than employed tourists. The findings are consistent with the unemployed and students having a more frugal attitude towards holidays. On the contrary, retired people tend to spend more than people still employed. No significant education effects were found: either because they are channeled by
income or because more educated people are better equipped to balance the increase in expenditures by taking advantage of saving opportunities.

Foreign tourists have a significantly higher level of expenditure wrt Italian tourists for almost all components. Given its relationship to the local culture and natural environment, food is one of the most important experience goods when visiting a foreign country and it represents an effective way to discover the destination’s traditions.

For Trip-related characteristics, we find evidence of a nonlinear relationship of tourist expenditure wrt the tourist group size and the number of days spent on holiday. Both factors contribute to reduce daily per person expenditure, but the saving effects decline in magnitude as the number of members of tourist group or the days of holidays increase: each additional traveling companion reduces total tourist expenditure by around 26% when the effect is calculated with respect to the sample mean value (2.5 persons). Similar effects are found for spending in other activities, while a larger reduction (-28%) was found for food & beverage and a smaller one (-21%) for accommodation spending.

In high season period (July and August) tourists tend to substitute other activities with accommodation. Accommodation costs are higher for tourists choosing lodging typologies other than their own or relatives’ or friends’ private houses. The highest effect is found for holidays spent in hotels, followed by rental houses, campgrounds and B&Bs. Compensating effects obtained by reducing food & beverages spending are detected only in the case of lodging at hotels.

The trip typology does not exhibit significant different effects on expenditure when contrasting the usual sea and sun holiday with all other kinds of vacations.

Air-related transport modality does not exert a significant effect on total expenditure, but it is associated with higher spending on accommodation (11%) and with a reduction in expenditure on food & beverages (-21%) and other activities (-30%). On the contrary, sizeable saving effects are attained by tourists who choose to fly with low-cost airline carriers (-21% overall). For the same tourists, we also detect a significant reduction in expenditure net of travel costs (-10%) and in accommodation spending (-11%): this indicates a significantly different attitude towards holidays, a more parsimonious consumption behavior.

Turning to the quantile regression results, it is interesting to first compare the estimated coefficient for the median with those obtained for the mean on the base of the linear regression model. As the median estimator is robust to the existence of outliers and peculiar behavior at the tails of the expenditure distribution, the mean vs. median comparison allows us to assess whether the linear model provides an adequate picture of the central tendencies featured in the data. This is revealed to be the case in our study. The estimates of the constant term show that the estimated level of expenditure for the reference group changes significantly throughout the distribution. QR estimation confirms the irrelevant contribution of gender, age, holiday typology, and trip intermediation to tourist expenditure. Medium level income, retired occupation status and tertiary education do not exhibit significant differential effects wrt the reference group over all the quantiles considered. The high level income estimates reveal a certain degree of variability, ranging from 0.16 (quantile, q=0.10) to 0.36 (q=0.90); however, the tests detect no significant
differences across quantiles. With respect to employed individuals, students reduce expenditure for all the quantiles with the exception of the highest one. Foreign tourists have significantly higher expenditure levels wrt Italian nationals at all the quantiles considered but the first. The effect for high spenders is significantly larger than the effects estimated at the lower quantiles. Both party size and length of stay are effective in reducing expenditure at all quantiles (just few cases of significant differences). The three accommodation categories considered show positive differential effects wrt the private house case, which decline in size as we move along the distribution, from low to high quantiles. Arriving in Sardinia by air shows an increasing effect on holiday costs for only the upper half of the distribution, with no significant differences between quantiles greater than the median. Low-cost flights reduce expenditures at all quantiles with respect to other transport modalities, with a larger effect for the higher quantiles (no significant differences across quantiles). The number of visited locations appears to have a positive effect on expenditure for the lowest quantile considered and only marginally for higher quantiles \((q=0.50\) and \(q=0.75\)). Finally, previous holidays spent in Sardinia contribute to increasing tourist expenditure for levels above the median, which are thus significantly different from the lower ones, but no relevant differences are detected among them. Light spenders tend to prefer environmentally-oriented holidays, while notoriety increases the expenditure levels for medium and heavy spenders (no significant differences across quantiles).

References