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Micro-economic determinants of tourist expenditure: A quantile regression approach

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HIGHLIGHTS

- Linear and quantile regression analysis of individual tourist spending survey data.
- Large set of variables accounts for tourism product high degree of differentiation.
- Evidence provided on the high complexity of the tourism product.
- Income, foreigners, trip and psychographic variables relevant spending determinants.
- Relevant difference in spending behavior between light and heavy-spending tourists.

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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 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.

1. Introduction

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 (Brida & Pulina, 2010; Figini & Vici, 2010; Lee & Chang, 2008) and regional levels (Cortés-Jiménez, 2008; Paci & 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.

Over the past decades, several studies have investigated the characteristics and determinants of tourism demand using a broad range of theoretical and methodological approaches. The widespread interest in this issue among academic researchers is confirmed by two recent review articles on tourism demand modeling and forecasting (Song & Li, 2008) and on the determinants of tourist expenditure based on micro data (Brida & Scuderi, 2013).[1]

[1] The econometric methods applied in analyzing tourism demand range from time series approaches, mainly focused on forecasting, to microeconometrics approaches. A non-exhaustive list of recent studies includes methods based on vector autoregressive models (Chatziantoniou, Filis, Eeckels, & Apostolakis, 2013), cointegration (Tang & Tan, 2015), multivariate forecasting models (Gunter & Önder, 2015), almost ideal demand system models (Lee, Jee, Funk, & Jordan, 2015; Li, Song, Cao, & Wu, 2013), logistic transition regression models (Wang, 2014), dynamic multinomial logit models (Grigolon, Borgers, Kemperman, & Timmermans, 2014), hurdle models (Bernini & Cracolici, 2015), dynamic panel models (Capacci, Scorcu, & Vici, 2015) and panel system generalized method of moments models (De Vita, 2014).

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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 explanatory variables are grouped based on the taxonomy proposed by Wang, Rompf, Severt, and Peerapatdit (2006), which distinguishes among four main categories of determinants, namely, (1) economic constraints such as tourist income; (2) socio-economic characteristics such as age, gender, education, occupational status, and nationality; (3) trip related features such as the length of stay, the number of people in the holiday party, the number of destinations, the type of accommodation and transport used, and the time of the trip; and (4) psychographic characteristics such as repeated behavior and trip motivation. Specific sets of the listed variables have been used in various combinations in previous studies; in the present study, a wide-ranging set of 25 variables is considered together, with the expectation that the effects on tourist expenditures will be more rigorously assessed.

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 econometric tool to assess central tendencies present in the data 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 is expected to provide a more comprehensive picture of different spending behaviors because it allows the coefficients to vary over the whole spectrum of the tourist expenditure distribution.

The theory of QR was developed by Koenker and Bassett (1978) and it has been applied in many research fields, such as labor economics (see among many others, Buchinsky, 1994, 1997; Gosling, Machin, & Meghir, 2000), finance (Engle & Manganelli, 2004), and health economics (Atella, Pace, & Vuri, 2008). Recently the QR approach has also been adopted in tourism studies, these include the analyses in Hung, Shang, and Wang (2012) on tourism consumption behavior in Taiwan, Lew and Ng (2012) on Hong Kong visitors spending, Saayman and Saayman (2012) on three sport events in South Africa, and Chen and Chang (2012) on the influence of travel agents in Taiwan.

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, such as 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 1445 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.

The paper is organized as follows. In the next section, we briefly discuss the related literature. The survey methodology is presented in Section 3, and Section 4 presents the empirical model together with a detailed discussion of the explanatory variables. The econometric estimation is presented in Section 5, and the results are fully discussed in Section 6. Section 7 concludes.

2. Literature background

Tourist expenditure and its determinants have been widely investigated in the literature from the macro perspective, with the general aim of assessing the economic impact of tourism. On the other hand, the analysis of tourist expenditure at the individual level, which is the concern of this study, has received less attention (Craggs & Schofield, 2009); in particular, there is a lack of accuracy in the econometric methods employed (Brida & Scuderi, 2013). In general, researchers following a micro approach have mainly been interested in examining the factors that influence the three specific dimensions of tourist expenditure: (i) why consumers spend on tourism; (ii) how much they spend; and (iii) which goods they purchase.

Some authors have modeled more than one dimension simultaneously. For instance, Wu, Zhang, and Fujiwara (2013) employ a scobit model to analyze the choice to spend on tourism (dimension i) and the level of expenditure (dimension ii), which appear to be strongly correlated. As regards the first dimension, they found that the choice to travel is positively influenced by education and income, while being gendered male and having a large household size exert a negative effect. On the other hand, the level of tourism expenditure is negatively affected by household size and positively by income and travel distance. It should be noted that the authors admit they consider total expenditure for the entire holiday; thus, the positive effect of travel distance is probably due to travel costs and length of stay. Chang, Chen, and Meyer (2013) analyze the difference in the level and composition of tourist expenditure for first time and repeat visitors to Taiwan. They found that previous travel experience does not contribute to significant differences in visitors' preferences and expenditure patterns.

The second dimension – the determinants of tourist expenditure levels – is the most frequently investigated, and the majority of authors define the dependent variable as the per capita value of the expenses, often transformed in logarithms. The literature has included a large set of explanatory variables which, following Wang et al. (2006) and the recent survey by Brida and Scuderi (2013), may be grouped in four main categories: economic constraints, socio-demographic, trip-related and psychographic characteristics. Divergent findings have been found depending on the definition of the dependent variable (i.e., total expenditure, per day expenditure, personal spending, travel part spending) and its measurement (metric, categorical, natural logarithm, level-form), on the methodology employed and on the geographical scope. We will account for the findings of these previous studies in detail in Section 6 while discussing our empirical results.

As regards the third dimension, Divisekera and Deegan (2010) and Divisekera (2010) investigate the consumption behavior of foreign tourists by analyzing the major components of tourist expenditure, namely accommodation, food, transport, shopping and entertainment. Consumption behavior is also investigated by Craggs and Schofield (2009), who divided visitors into three segments according to their expenditure level and analyzed their characteristics and different spending patterns, similarly to the study by Mok and Iverson (2000).

Another crucial issue debated in the literature concerns the empirical methodology and the many different approaches – from descriptive statistics to econometric models – that have been used to investigate the relationship between tourist spending and its explanatory variables. Recently, Hung et al. (2012) argued that Ordinary Least Squares (OLS) estimations consider only the average response of tourist expenditure to changes in its determinants while possible differences among consumer segments, like heavy spenders and light spenders, are overlooked. Thus, following the