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How much does satisfaction affect tourism expenditure during and post recessions?

(Article begins on next page)

HOW MUCH DOES SATISFACTION AFFECT TOURISM EXPENDITURE DURING AND POST RECESSIONS?

Abstract: This study concentrates on the relationship between tourism spending and satisfaction during crisis time, investigating the effect of satisfaction on different quantiles of the tourism expenditure distribution for Italian tourists traveling abroad during the period 2007-2017. Our analysis enriches the understanding of what determines heterogeneity in tourist spending behaviour, information which is significant for policymakers and destination managers. To obtain consistent estimates for the effect of satisfaction, we use an instrumental quantile approach, controlling for the presence of endogeneity. Results highlight a non-linear and significant effect of satisfaction on tourists spending, evidencing relevant differences in the impact of satisfaction across different recession periods. Moreover, we extend the analysis considering different expenditure categories and satisfaction domains.

Introduction

The great recession of 2008-2010 and the subsequent sovereign debt recession of 2011-2013 have had a considerable impact on the behaviour and decision-making process of European (Antonakakis et al., 2015) and Chinese tourists (Senbeto & Hon, 2020). For Italy, Bono et al. (2017) found that the economic crisis led to increasing income elasticity for each category of consumption, especially for the most essential basic goods; Bernini,

Cracolici & Nijkamp (2020) showed that the reduction in the disposable income of Italian households has negatively affected their expectations about future income; thus, this perception has led to drops in their spending and/or changes in their consumption decisions. Consequently, the number of households participating in tourism and the tourism expenditure of those going on vacation decreased (Bernini et al., 2020). In addition to affecting the propensity to participate in the tourism market, economic recessions have modified the destination choices of Italians generating a major reduction of domestic overnight stays than for international vacations. Compared to 2007, the number of trips for personal reasons within Italy decreased by 43% in 2013, while those to foreign countries fell by one third. In the long run (2000-2017), the contraction in domestic trips was -24%, while it remained substantially stable for the international ones (ISTAT, 2019).

Therefore, the economic trend and crises have changed the relationship between tourism industry development and tourist destinations, and a new pattern has emerged with regard to the two markets of domestic and outbound tourism. Within this framework, understanding the Italian growth in outbound tourism and its characteristics has important implications in terms of economic and tourism marketing policies.

In particular, the analysis of outbound tourism is significant for two main reasons. First, outbound tourism has a positive impact on tourists' satisfaction and/or on the development of the tourism sector and the country's welfare, encouraging the dissemination abroad of the culture and of the values of a country (Dai et al., 2017). Second, outbound tourism is a good measure of citizens' well-being, which is likely to decline during recessions, and it reflects their negative feelings and bad moods (Demir & Gozgor, 2018; Dragouni et al., 2017). In addition, economic recession leads tourists to the decision of reducing tourism expenditure differently for domestic and international

destinations. Eugenio Martin & Campos Soria (2014) show that the global economic crisis of 2009 produced a drop in international tourism, allowing new opportunities for domestic tourism. Bernini et al. (2020) highlight that the effect of the economic crisis appeared to be more severe for international than for domestic vacations showing that the crisis changed household consumption patterns and traveling abroad became a luxury good.

In this study we focus on the relationship between expenditure and satisfaction of Italian outbound tourists and on how this nexus was affected by the recession. Recent studies have analyzed the effect of satisfaction on tourism expenditure (Kim et al., 2010; Yeung et al., 2013; Perles-Ribes et al., 2020), showing that satisfaction is a determinant of tourist expenditure. In particular, most of Authors demonstrated that consumer satisfaction positively affects tourism expenditure (Zhang et al., 2010; Chen & Chang, 2012; Serra et al., 2015; Disegna & Osti, 2016; Jurdana & Frleta, 2017). Indeed, perceived satisfaction increases the willingness to pay of tourists and consequently, the level of expenditure at the destination, as hypothesized by Homburg et al. (2005): "when customer experience elevated states of satisfaction, they perceive a high outcome of an exchange and therefore are willing to pay more ... because this still results in an equitable ration of outcome to input".

In literature, several studies demonstrated that satisfaction is strictly correlated to crisis (see among others: Wolfers, 2003; Morgan, 2015; Bjørnskov, 2014; Deaton, 2011), and analyzed the effects of different types of crisis on tourist demand (among others: Afonso-Rodriguez, 2017; Bronner & de Hoog, 2014; Ho & McKercher, 2014). Recently, Senbeto & Hon (2020) showed that different crises influence tourists differently; in particular financial crisis tends to influence more consumption patterns because they are more related to price elasticity. Conversely, at our knowledge, no studies have yet analysed

whether the relationship between expenditure and satisfaction changes during recession periods.

However, as well emphasized by Mortazavi (2018), the models relating satisfaction to expenditure generate inconsistent estimates because of an endogeneity problem. Therefore, we suggest using an instrumental quantile estimator (IVQR) (Chernozhukov & Hansen, 2008). This approach allows us to obtain consistent estimates for the effect of satisfaction on total expenditure across different expenditure's quantiles and to detect possible non-linearities in the tourism expenditure – satisfaction nexus.

In detail, our research questions are the following: Hp1. Does satisfaction positively affect Italian outbound tourists' expenditure? Hp2. Does this impact change for different levels of tourism expenditure? Hp3. What changes in this relationship considering different expenditure categories? Hp4. Is the expenditure-satisfaction nexus affected by recessions?

This paper contributes to the literature in several ways. First, we deepen the understanding of the nexus between expenditure and satisfaction, investigating for both possible non-linearities and different intensities of this relationship over different recession periods. Second, as far as we know, very few studies have analysed the role of satisfaction on tourists traveling abroad, even if outbound tourists' satisfaction is a very important issue for policymakers. Moreover, none of the present works manage to control for the endogeneity of satisfaction, resulting in biased estimates for expenditure elasticity. Third, in line with Disegna & Osti (2016), we improve the analysis by also focusing on how the expenditure of Italian tourists for restaurants, accommodation, and shopping depends on their satisfaction with regard to meals, hotels, and shopping, respectively. The fourth novelty of this analysis concerns the statistical approach used in investigating the expenditure function; we suggest using an instrumental quantile approach to estimate the

effect of perceived satisfaction on the different quantiles of expenditure (Chernozhukov & Hansen, 2008). Indeed, quantile regression deepens the explanatory capacity achieved using ordinary least squares and ensures more robust results (Moreno-Izquierdo et al., 2020), allowing to obtain consistent estimates of the effect of satisfaction across different quantiles of the Italian outbound tourism expenditure. Lastly, we use a large and comprehensive database provided by the Bank of Italy, making use of some micro-information on the degree of satisfaction and expenditure expressed by Italian tourists who travelled abroad for personal reasons over the period 2007–2017 which had never been used before.

Literary Review

Determinants of tourist consumption behaviour

A large body of tourism literature has examined the determinants of visitor expenditure (see Brida & Scuderi, 2013 for an extensive review), while only recent studies consider satisfaction as a possible determinant. According to Wang et al. (2006), the consumption behaviour of tourists depends on a large set of determinants that can be classified into four categories: economic constraints, socio-demographic factors, trip-related factors, and psychographic characteristics.

The evidence on economic constraints mainly confirms a positive and significant effect of income on tourist spending (Eugenio-Martin & Campos-Soria, 2011; Sato et al., 2014; Bernini & Cracolici, 2015; Bernini et al., 2017). Other variables such as the ownership of economic assets, prices, indicators of financial difficulties, and healthcare expenses may have a significant impact on spending, thus, they contribute to form constraints on choices

related to leisure time (among others: Alegre et al., 2010; Hung et al., 2012; Belenkiy & David Riker, 2013).

Literature has highlighted the importance of household and householder characteristics. The size and composition of a household (Nicolau & Más, 2005; Alegre & Pou, 2004), home ownership (Hong et al., 1999), and the geographic location of households (Lin et al., 2015) affect the level of tourism consumption. Gender, age, and life cycle are used as proxies of individual preferences in tourism (Eugenio-Martin & Campos-Soria, 2011; Bernini & Cracolici, 2015). In addition, a higher education level has a positive effect on the decision to participate in tourism and to consume (Alegre & Pou, 2004; Nicolau & Más, 2005), as it reflects an economic advantage and an easier access to information. People with a stable job are more inclined to travel than unemployed (Alegre et al., 2010; Eugenio-Martin & Campos-Soria, 2011).

Different trip-related variables result in a frequently significant relation with spending, such as accommodation, activities, travel destination, means of transportation, type of intermediary for making reservations, travel distance, and time of the vacation (among others: Park et al., 2020; Jang et al. 2002; Pulido-Fernández et al., 2016). Length of stay and party size (Lew & Ng, 2012; Laesser & Crouch, 2006), as well as variables related to travel cost, information sources, and previous travel experiences may also have a role in influencing the participation in the tourism market and the amount of money spent (Alegre & Cladera, 2010; Marcussen, 2011b; Park et al., 2020).

Taking the psychographic characteristics of householders into consideration, there is evidence that self-concepts, lifestyle, attitudes, opinions, motivational factors and perceptions of the travel experience affect tourism spending (Lehto et al., 2002; Gholipour & Tajaddini, 2014; Brida & Tokarchuk, 2015; Bernini & Fang, 2020). Official surveys, however, rarely observe the psychological characteristics of the consumer

directly, and this may be one of the reasons for such a limited use. Conversely, the topic of tourist satisfaction has been largely discussed with the aim of improving tourism products and services, designing management and marketing strategies (Kozak & Rimmington, 2000; Munier & Camelis, 2013), and measuring the competitiveness and performance of destinations (Enright & Newton, 2004; Alegre & Garau, 2010; Munier & Camelis, 2013).

Regarding expenditure modelling, a stream of research has investigated tourism expenditure and its determinants using quantile regression (Pérez-Rodríguez & Ledesma-Rodríguez, 2019; Marrocu et al., 2015; Hung et al., 2012; Saayman & Saayman, 2012; Salmasi et al., 2012). Indeed, as suggested by Thrane (2014), quantile regression offers additional insights with respect to micro-level tourism expenditures modelling, because it allows to evaluate the impact of changes in the distribution of each explanatory variable on the quantiles of the conditional expenditure distribution. Moreover, investigating the spending behaviour of tourists using a quantile regression enriches the results of an OLS regression (Saayman & Saayman, 2012; Thrane, 2014). Nevertheless, none of these studies consider satisfaction as a determinant of tourism spending.

Effects of satisfaction on tourism expenditure

In the last decade, Authors have started considering satisfaction as a determinant of tourism expenditure (for a review see Cohen et al., 2014), identifying very interesting managerial implications for tourism policies (Homburg et al., 2005). Kim et al. (2010) show that satisfaction positively affects the participation in tourism market. Chen & Chang (2012) and Serra et al. (2015) find a positive impact of visitor satisfaction on the level of expenditure. Disegna & Osti (2016) show that satisfaction with different aspects of the visit influences spending. In particular, they observe how tourists' expenditure

depends on the different categories that define overall satisfaction, finding that there is a particularly significant relationship between the aspect with which the tourists are satisfied and the corresponding expense of the product category. Yeung et al. (2013) show that customer satisfaction plays a crucial role in determining consumption expenditure, and that this relationship is stronger in countries with greater economic freedom. In addition, Jurdana & Frleta (2017) find that only satisfaction having to do with the range of facilities offered, significantly contributes to increasing tourist's daily expenditure. Zhang et al. (2010) investigate the role of perceived satisfaction on the total expenditure for the meeting and convention industry, finding that hotel, food, and attraction factors are the most important predictors of attendee's overall expenditure. Recently, Perles-Ribes et al. (2020) investigate the relationship between satisfaction and expenditure at sun and beach destinations in the Spanish Mediterranean showing that, after controlling for tourists' and trip's characteristics, satisfaction does not affect tourists' expenditure in the destination.

Neither of these studies, however, discusses the issue of the possible endogeneity involved when tourism expenditure is regressed on tourist satisfaction (while satisfaction may influence spending, the latter may affect the former as well). The study by Mortazavi (2018) is the only contribution discussing this issue, explaining that the models relating satisfaction to expenditure generate inconsistent estimates because of endogeneity. Indeed, overall satisfaction is correlated with the error term (also, the level of satisfaction depends on total expenditure), finding that it occurs a severe overestimation of the effect of satisfaction if endogeneity is not taken into account.

Tourism expenditure and recessions

The tourism sector is particularly vulnerable to crisis and disasters of all kinds (Vargas-Sanchez, 2014). Therefore, a wide strand of tourism literature focused on analysing the effects of different crisis as financial crises, political instability, natural disasters, epidemic outbreaks, wars, terrorism and others, on the tourist demand (Chen et al., 2007; Lado-Sestayo et al., 2016; Afonso-Rodriguez, 2017). Indeed, crisis bring severe implications for the tourist market because they influence the tourism flow, the consumption behaviour of tourists, the destination choices, the activities to do at the destination, the travel distance, etc. (Floyd et al., 2004; Kozak et al., 2007; Bronner & de Hoog, 2014; Ho & McKercher, 2014). Moreover, in a recent contribution, Senbeto & Hon (2020) demonstrate that tourist expenditure patterns vary across the three phases of a crisis (before, during and after) and that different crises influence tourists differently. For example, pandemics affect travelling decisions regardless of the profile and purpose of tourists while financial crisis tend to influence more consumption patterns because they are more related to price elasticity. Using Italian households' expenditure data over the period 1997-2013, Bernini et al. (2020) compare the consumption behaviour of tourists in pre- and post-crisis time and develop different micro and macro measures of resilience against crisis shocks using a Cragg model in a life cycle context. Results show that all the generations reduced tourism participation and consumption of tourism services, and that the decision to travel domestically was the most affected by crises. Concentrating on Spain, Perles-Ribes et al. (2016), find that, due to the international economic crisis, the Spanish tourism demand and competitiveness were affected by a permanent economic shock. Likewise, the economic slowdown of 2008-2009 brought down the annual growth rate of domestic tourism expenditure generating a welfare loss in China (Li et al., 2010). Sánchez-Cañizares et al. (2020), analysing the effects of the current Covid-19 pandemic on the tourism sector, show that the perceived risk from travelling in the situation

generated by the pandemic negatively influenced the intention to travel and the perceived behavioural control of Spanish tourists. Nevertheless, at our knowledge, none of the current studies concentrated on analysing how the effect of satisfaction on tourism expenditure changes during and post different economic recession periods.

Data

The analysis is conducted on data collected by the Bank of Italy through the survey "International Tourism in Italy"[1]. Since 1996, tens of thousands of randomly selected inbound and outbound travellers are interviewed each year at border checkpoints and are asked questions on personal characteristics, on the features of their trip, on and perceived satisfaction (Alivernini et al., 2014).

In addition to the usual individual and trip-specific information, travellers are asked about their total expenditure and expenditure categories such as transport, accommodation, restaurant, shopping, and other kinds of expenses. Moreover, tourists are invited to evaluate their overall degree of satisfaction with their stay and with different aspects of their trip, on a 10-point Likert-type scale ranging from 1 (very dissatisfied) to 10 (very satisfied). In particular, tourists' satisfaction and expenditure refer to the whole holiday period and are measured at the end of the vacation when tourists come back to Italy, allowing to investigate the expenditure-satisfaction nexus and suggesting the presence of endogeneity. Of the 806,377 Italian tourists observed over the period 2007-2017, we focus on people traveling for leisure reasons, such as vacations or fun (40.76% of the

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[1] Further details on the Survey, on the data cleaning procedure and the data description are presented in Appendix A.

total). To better measure satisfaction and expenditure at each destination, data were also cleaned; thus, the final sample consists of around 282,751 Italian tourists.

Our analysis mainly concentrates on the relationship between tourists' expenditure and satisfaction; thus, it is useful to analyse their dynamics over the period 2007-2017. Figure 1 (first panel) shows that there was a very evident decrease (-14.30%) in mean expenditure in the years of the economic recession (2008-2012); in particular, the years between 2011 and 2012 showed the most pronounced annual decrease (-5.39%) in tourism expenditure due to the crisis of the sovereign debt. As the Italian economic conditions improved, the level of expenditure started to rise, confirming that international tourism is a luxury good for Italian households (Bernini & Cracolici, 2015). In fact, from the end of the crisis (2012-2013) to 2017, mean expenditure underwent a 30.38% increase at a quite constant annual rate. Mean overall satisfaction increased with time and the only period in which travellers experienced a drop in their level of overall satisfaction was from 2010 to 2013, the same years during which the average expenditure was at the lowest levels.

Figure 1. Expenditure and satisfaction dynamics

Figure 1 also shows the dynamics of expenditure and satisfaction for the other categories considered in the analysis (i.e., accommodation, restaurants, and shopping). In general, the dynamics observed for total expenditure are reproduced by the other expenditure categories; it should be noted that shopping is the expenditure category most affected by the crises (from 2008 to 2012 its decrease totalled 16.45%). Differently from overall satisfaction, all satisfaction's categories showed a reduction during the last years covered by the analysis.

Figure 2 shows how tourists' mean satisfaction changes across the different quantiles of tourism expenditure, differentiating among the different categories. Overall, tourists spending more money appear to be more satisfied than others. This evidence is also confirmed by satisfaction for accommodation and shopping, even though there are some exceptions for some quantiles. Only satisfaction with restaurants remains quite stable across the expenditure distribution. These results support our interest in studying the role of satisfaction across the tourism expenditure distribution.

Figure 2. Mean satisfaction and mean expenditure for the different quantiles of expenditure

Preliminary to the core analysis, we investigate the relationships among overall satisfaction and the different satisfaction domains, as well as to what extent total tourism expenditure depends on the different expenditure categories considered in the analysis. Results collected in Table B1 (in Appendix B) show that satisfaction with accommodation and with shopping equally affect overall satisfaction (0.21) while satisfaction with restaurants has a lower influence on the overall satisfaction score (0.11). Considering expenditures (Table B2), accommodation expenditure is the expenditure category with the highest elasticity to total expenditure (0.53), followed by restaurants expenditure (0.23) and shopping expenditure (0.18).

The Instrumental Quantile Regression Model

The analysis of the relationship between tourism expenditure and tourist satisfaction is based on the estimation of a quantile regression (QR) (Koenker & Bassett, 1978). The most appealing feature of QR is its ability to estimate quantile-specific effects that

describe the impact of covariates not only at the centre but also on the tails of the outcome distribution. This focus enriches the understanding of what determines heterogeneity in the spending behaviour of tourists, information which is significant for policymakers and destination managers.

We model the relationship between tourism expenditure (*Exp*) and satisfaction (*Satis*) of individual i in a double-logarithmic specification within a conditional quantile approach, as follows:

$$lnExp_i = \varphi(\tau) + \alpha(\tau)lnSatis_i + \beta(\tau)X_i + \gamma(\tau)D_{2008-10} + \zeta(\tau)D_{2011-13} + \varepsilon_i \quad (1)$$

where X_i refers to a set of socio-demographic and trip related characteristics (i.e., sex, age classes, student, macro-area of residence, staying in hotel, buying an inclusive package, traveling alone and dummies for the duration of the travel) observed for each tourist i. Since countries of destination may differ in many characteristics such as economic growth, relevance of the tourism sector for the economy, culture, weather conditions and political system, we control for these aspects including in the matrix X_i also dummy variables for the main Italian tourism destinations (i.e., Spain, France, USA, UK, and Austria). Moreover, since the role of the crises on the expenditure – satisfaction nexus is one of the main focus of this analysis, we include in the model two dummy variables ($D_{2008-10}$ and $D_{2011-13}$), capturing the impact resulting from the years of the economic recession through $D_{2008-10}$, and to the crisis of the sovereign debt through $D_{2011-13}$. Finally, ε_i is the error term; and τ represents the specific quantile considered, with *$0 < \tau < 1$*.

Rewriting Eq. (1) in general form as $Q(y_i|\boldsymbol{X_i}) = \boldsymbol{X'_i}\theta(\tau) + \varepsilon_i$, where $\boldsymbol{X'_i} = (\ln\text{Satis}_i, \text{X}_i, \text{D}_{2008-10}, \text{D}_{2011-13})$, the estimator $\hat{\theta}(\tau)$ is derived minimizing the function in Eq. (2) applying linear programming methods.

$$Q(\theta^\tau) = \sum_{i:y_i \geq X'_i\beta}^{N} q|y_i - \boldsymbol{X'_i}\theta(\tau)| + \sum_{i:y_i < X'_i\beta}^{N} (1-q)|y_i - \boldsymbol{X'_i}\theta(\tau)| \qquad (2)$$

To handle the endogeneity problem in Eq. (1), in this study we suggest using an Instrumental Variable approach (Chernozhukov & Hansen, 2008). The Instrumental Variable Quantile Regression (IVQR) estimator proposed by Chernozhukov & Hansen (2008) has several appealing features. First, it is a robust inference procedure for an instrumental variables model. Second, the asymptotic properties of the estimator are derived under suitable conditions. In addition, it is robust to weak and partial identification and it remains valid even in cases where identification fails completely. Moreover, it can be computed through a series of conventional quantile regression steps, and so it is computationally convenient in many cases encountered in practice.

To derive the IVQR estimator, we start defining the weighted ordinary QR objective function as follows:

$$Q_n(\tau, \alpha, \beta, \gamma) := \frac{1}{n}\sum_{i=1}^{n} \rho_\tau(Y_i - D'_i\alpha - X'_i\beta - Z'_i\gamma)V_i \qquad (3)$$

where D contains the endogenous variables (in our case satisfaction), X includes control variables, Z contains instrumental variables, V is a scalar weight, and ρ_τ is the asymmetric least absolute deviation loss. Therefore, we can define the instrumental variable or inverse quantile regression estimator as:

$$\left(\hat{\beta}(\alpha;\tau),\hat{\gamma}(\alpha;\tau)\right) \coloneqq arg_{\beta,\gamma}minQ_n(\tau,\alpha,\beta,\gamma) \tag{4}$$

To find an estimate for the effect of satisfaction on expenditure, represented by $\alpha(\tau)$, we choose the value that makes $\hat{\gamma}(\alpha,\tau)$ as close to 0 as possible.

The IVQR approach allows for particular tests that we use in the postestimation stage (Chernozhukov & Hansen, 2006), which are no effect test, location shift test, dominance test and exogeneity test (described in detail in Appendix C). Finally, we also test for the weakness of the instruments used in the model. We suggest using as instruments the satisfaction domain not included in the analysis; in particular, satisfaction for the environment results to be a valid instrument for all models, being strongly correlated with the endogenous variable but uncorrelated to the error term.

Results

The baseline results

First, we estimate the expenditure–satisfaction models over the whole period 2007-2017. Statistical tests for model specifications are presented in Table 1. The Hausman test for endogeneity shows that overall satisfaction is endogenous to total expenditure. Referring to the location shift test, we reject, at a confidence level of 1%, the null hypothesis that the effect of satisfaction is constant across all expenditure quantiles. This justifies the use of a quantile estimator that enables us to study the effect of perceived satisfaction for the different levels of tourists' expenditure. No effect test rejects the null hypothesis that the effect of satisfaction on total expenditure is equal to zero, while the dominance test does not reject the null hypothesis that the effect of satisfaction on total expenditure is positive

for all quantiles. Lastly, the robust test for weak instruments by Montiel Olea & Pflueger (2013) strongly rejects the null.

Table 1. IVQR Tests

Test results are similar for all the expenditure categories, confirming that satisfaction is endogenous in every model estimated, that the effect of satisfaction on expenditure is positive, and that it varies across expenditure's quantiles (with the only exception for restaurants expenditure). The IVQR estimator is then used to estimate the expenditure-satisfaction models, specified as in Eq. (1), for overall expenditure and for accommodation, shopping, and restaurants expenditure (Table 2)[2].

Satisfaction is found to be significant in affecting the amount of money spent by tourists within different expenditure categories and in the total budget spent (Figure 3). The elasticity of expenditure with respect to overall satisfaction is, on average, 0.76 (which is 0.50 percentage points higher than the OLS estimate). Specifically, for a one percent increase in overall satisfaction, we expect to see on average a 0.76% increase in total tourist spending. Over the entire distribution of tourism expenditure, however, the impact of overall satisfaction shows an inverted U-shape profile.

In line with Disegna & Osti (2016), we find that different satisfaction domains differently affect the corresponding tourism expenditure. In particular, satisfaction with accommodation exerts a positive but not linear effect on the propensity to spend for accommodation; this pattern is similar to the one detected for overall satisfaction. For shopping, results suggest that expenditure increases with satisfaction, but at a decreasing

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2 To safe space, in Table 2 only parameter estimates for satisfaction variables are reported. Complete model estimates for all expenditure categories are available in Appendix D.

rate. In particular, as in Zhang et al. (2010), shopping satisfaction is one of the most significant aspects in boosting tourism expenditure Conversely, the role of satisfaction with restaurants is quite homogenous over the expenditure distribution; and, as the location shift test evidence, the impact of satisfaction for restaurant on the corresponding expenditure does not significantly changes across quantiles.

Table 2. Expenditure's categories IVQR estimates

Figure 3. IVQR estimates of satisfaction parameters

Results referring to the socio-demographic characteristics in the overall satisfaction-expenditure model (Figure 4) show that young tourists and students tend to spend less than adults while people over 65 have a highly variable spending behaviour. Travelers originating from the North of Italy tend to spend less than other travellers and this effect rises in absolute value across the expenditure quantiles. Men tend to spend slightly more than women, even though the coefficients estimated are not significant for highest quantiles. In line with Lew & Ng (2012) and Chen & Chang (2012), increasing the number of nights spent at a destination increases the amount spent for the whole trip. However, this effect decreases moving to the highest quantiles of the expenditure distribution. Staying in hotel boosts total expenditure, but this effect decreases when the total expenditure for the vacation increases. Conversely, the purchase of an all-inclusive package has an increasing effect on expenditure across quantiles.

Figure 4. IVQR estimates of the total expenditure model

Tourists who are traveling alone largely reduce the total amount of expenditure, but this effect becomes negligible at the highest quantiles. Moreover, the shorter the distance between the place of residence and the place visited is, the lower is the amount of money spent for the whole trip. As expected, the two recessions had a negative effect on expenditure. In particular, the great recession (2008-2010) affected more tourists on the tails of the total expenditure distribution, while the crisis of the sovereign debt (2011-2013) mostly reduced the level of expenditure of tourists spending more money for their vacation. Similar effects of the socio-demographic variables are obtained considering the other expenditure categories.

To corroborate and support our results, we also provide two different robustness checks. First, we verify whether having previously visited the destination influences tourists' consumption behaviour. The rationale is that the level of satisfaction perceived in a previous visit may affect the spending behaviour of repeat tourists during the current visit, in a different way from first timers, who evaluate their experience during their first visit. Therefore, as first robustness check, we analyse separately tourists that visit the destination for the first time (41.4%) and tourists that had already visited it (39.8%). The results[3] of the IVQR tests for the first robustness check (Table F8) show that in both cases overall satisfaction is endogenous to total expenditure, that its impact on expenditure is positive, significant and that it varies across different quantiles. Moreover, the effect of satisfaction on expenditure for both repeat customers and first timers shows an inverse U-shape profile (as detected in the general case), even if with a different pattern. Results confirm that satisfaction plays a crucial role in determining the level of expenditure at the destination in particular for loyal tourists spending few money, and above all for medium

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[3] To safe space, the results for both the robustness checks are shown in Appendix F.

first-time spenders (see Tables F1 and F2). Therefore, the difference between first timers and repeat tourists with respect to the satisfaction – consumption nexus is negligible. Second, since our sample collects all outbound tourists from Italy, we investigate whether our results are still valid focusing on single tourist destinations. Therefore, in the second robustness check we estimate the overall model separately for the five major destinations of Italian outbound travellers: Spain (12.37%), France (10.10%), USA (9.72%), Austria (5.34%) and UK (4.71%). The results of the IVQR estimates and of the corresponding tests for the second robustness check confirm that, for all these destinations, overall satisfaction is endogenous to total expenditure and that the effect of satisfaction on expenditure is significant and positive. The effect of satisfaction differs significantly among the expenditure's quantiles for travellers reaching USA, Spain and UK, while it is negligible for those reaching France and Austria. In particular, the effect of satisfaction on overall expenditure tend to decrease among expenditure's quantiles for travellers going to USA and UK (Tables F5 and F7), while for those going to Spain, Austria and France the effect of satisfaction on expenditure shows an inverted U-shape profile (Tables F3, F4 and F6), as detected in the general case. Overall, results for single destinations reflect those obtained for the whole destinations.

Do recessions affect the expenditure-satisfaction nexus?

As underlined in the previous paragraph, the two recessions had a negative effect on expenditure in line with Bernini et al. (2020). To better investigate the impact that the two recessions had on the response of tourism expenditure to satisfaction, we examine the nexus in the different sub-periods. In particular, we split the overall period in three sub-periods, which are: the great recession occurred over 2008-2010, the crisis of the sovereign debt of 2011-2013, and the subsequent period of relative increase of Italian

GDP (2014-2017). For each sub-period, we estimate the tourism expenditure – satisfaction model in Eq. (1) for the different expenditure categories by mean of the IVQR estimator.

Tests reported in Table 1 confirm, with few exceptions, that in the different sub-periods, satisfaction is endogenous to expenditure, its effect significatively changes across expenditure quantiles, exhibiting a not null and positive effect for all quantiles and finally, the null hypothesis of weak instruments is rejected.

The expenditure-satisfaction nexus largely differs between crisis times and post-recession period (Table 3[4] and Figure 5), both in the intensity level and in pattern across quantiles. Considering overall satisfaction, its impact on total expenditure is approximately double during the post-recession period with respect to the one observed during the two crises; while it is very similar in the two recessions, even if they were caused by different economic drivers. These findings suggest that tourism consumers react in the same manner during recessions, when the crises affect their consumption decision-making process. Conversely, a favourable economic conjuncture allows expenditure to be driven not only by budget constraints but also by personal emotions and feelings. Moreover, the impact of satisfaction changes across the tourism expenditure distribution in the post-crisis period; in particular, a higher response to satisfaction is detected in the first three quantiles, while the impact reduces when we move to the last quantiles. This result suggests that tourists spending more money are less sensible to satisfaction, converging to tourists' behaviour during crises.

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[4] To safe space, in Table 3 only parameter estimates for satisfaction variables are reported. Complete model estimates for the overall model in the three sub-periods are available in Appendix E. Complete estimates for the other expenditure categories in the three sub-periods are available on request.

For accommodation, a similar pattern to the one observed for overall satisfaction is detected, even if it results a higher convergence for the impact of satisfaction on accommodation expenditure in crises and post-crisis period in the last quantiles of the distribution. Also considering shopping expenditure and satisfaction, we can note that the effect of satisfaction on expenditure tends to decrease across quantiles, but in this case the impact of satisfaction is very much higher than in the other domains. The two crises particularly affected the influence of satisfaction on restaurants' expenditure. Indeed, in the post-crisis period the impact of meals satisfaction on restaurant expenditure doubles the value observed during recessions. This is an interesting finding, which confirms the low relevance of consuming food away from home during recession periods (Griffith et al., 2015). Moreover, in the post-recession period, the effect of satisfaction for restaurants is higher in the first quantiles of the expenditure distribution; thus, lower spenders are more reactive to satisfaction for restaurants during holidays.

Table 3. IVQR estimates for expenditure categories in the sub-periods

Figure 5. IVQR estimates of satisfaction parameters across time

Conclusion

The main aims of this study are to analyse the impact of satisfaction with the different features and offerings of a destination on tourists' spending behaviour, and to determine to what extent this impact varies across the quantiles of the tourists' expenditure distribution and with respect to different economic crisis.

Satisfaction is found to have a positive and significant impact on tourists' expenditure behaviour at the destination (Hp1), and this effect differs among different expenditure's quantiles (Hp2). These results confirm that satisfaction is a predictor of expenditure, in

line with Bernini, Cerqua & Pellegrini (2020). In particular, the elasticity of expenditure with respect to overall satisfaction is equal, on average, to 0.76, but the impact of overall satisfaction over the tourism expenditure distribution shows an inverted U-shape profile. Moreover, the results shows that the effect of satisfaction on expenditure changes among different tourism expenditure categories (Hp3). In particular, satisfaction with accommodation exerts a positive but not linear effect on the propensity to spend for accommodation. For shopping, our results suggest that expenditure increases with satisfaction, but at a decreasing rate; furthermore, the more tourists are satisfied with the food and beverages offered at a destination, the more they will spend on restaurants. These results confirm that expenditure is significantly and positively related to the standard of the service offered, in line with Disegna & Osti (2016).

Besides, the analysis sheds light on the expenditure-satisfaction nexus in crisis times and in post-recession period (Hp4). As well underlined by Senbeto & Hon (2020), understanding tourists' reactions during and after crisis is particularly relevant for policymakers in order to manage the volatility of tourists' expenditure behaviour. Results evidence that the intensity of the impact of satisfaction on consumption behaviour changes across quantiles and over time. In particular, the crises affect tourists' consumption decision-making process similarly during different recessions, because of budget constraints, while better economic conditions enable satisfaction to become an effective driver of consumption. This effect is particularly evident for lower spenders, while for higher spenders, the role of satisfaction reduces regardless of the time period considered.

Therefore, destination managers and policymakers should enhance existing facilities at the destination, design new ones and develop high-quality and innovative services to make tourists overall more satisfied. First, since accommodation is the most relevant

factor in both affecting overall satisfaction and total expenditure, it should be of primary consideration for policy makers and tourism operators. In particular, hotel managers should mainly focus on tourists in the segment of low and medium quality accommodations, who are very sensitive in terms of satisfaction, proposing a diverse and competitive offering. In general, local governance should provide investments and founding directed to accommodation facilities, which may improve accommodations' quality and sustainability to support long term competitiveness of the destination. Second, restaurateurs should be advised that satisfaction, and therefore the standard of the food and beverages linked to price and customers' expectation, has a significant impact on Italian tourists, who are very sensitive to the quality of the services offered; however, this impact is more effective during post-crisis time. Finally, satisfaction with shopping has a relevant impact on overall satisfaction and thus, shopping should be another area of primary interest for decision makers. In particular, the expansion and improvement of the quality of local goods may be a useful strategy to take advantage of the role played by shopping satisfaction on the corresponding expenditure (Tosun et al., 2007). Indeed, local policy makers should invest in the promotion of typical and local products, which may lead to increase tourism expenditure (Lima et al., 2012).

At last, the positive impact of tourists' satisfaction should be exploited during periods of economic expansion because tourists are much more encouraged to spend if they feel satisfied, primarily referring to tourists spending less money. Nevertheless, during economic crisis, even if this effect diminishes, the impact of satisfaction remains positive and thus, it is important to make outbound tourists more satisfied with their vacations to take advantage of it.

Further research should aim to improve the understanding of the relationship between expenditure and satisfaction evaluating simultaneously the effect of different satisfaction

categories. Moreover, it would also be interesting to investigate whether the results obtained for international destinations are still valid for the domestic tourism and after the pandemic crisis.

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Figure 1. Expenditure and satisfaction dynamics
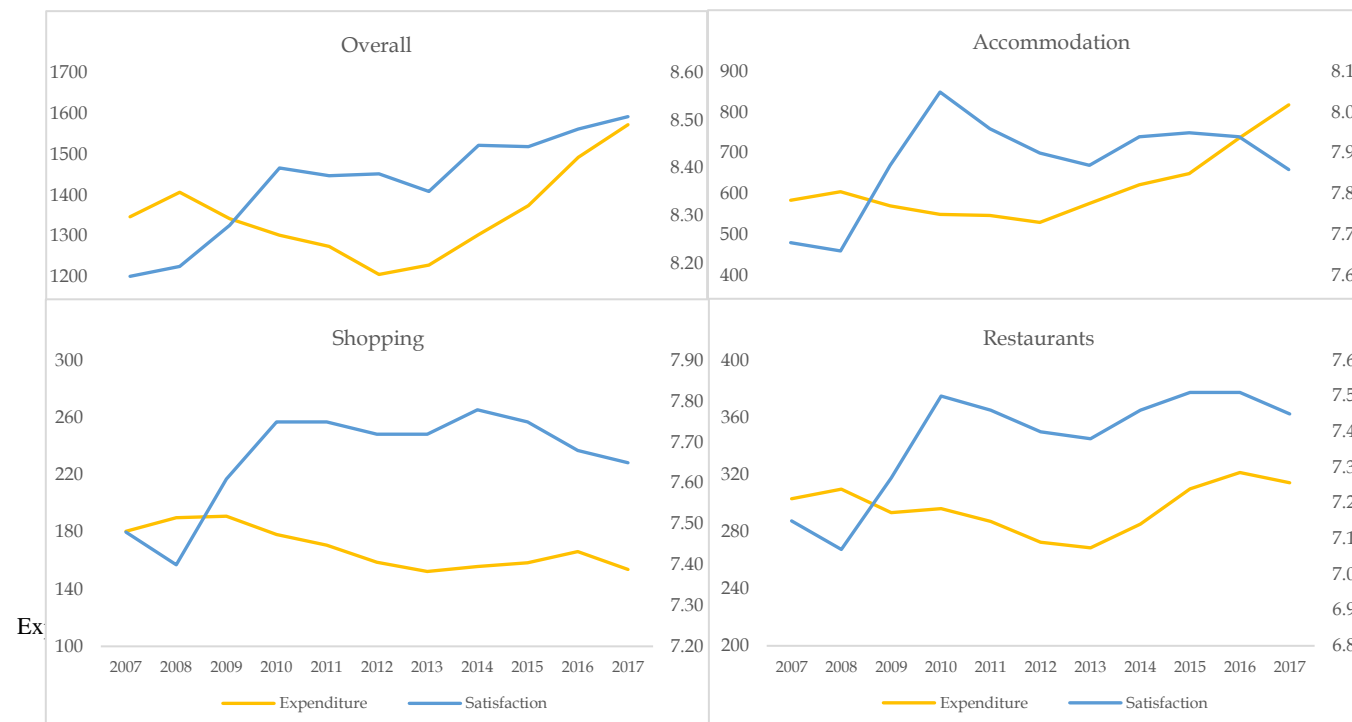
Ex

Figure 2. Mean satisfaction and mean expenditure for the different quantiles of expenditure
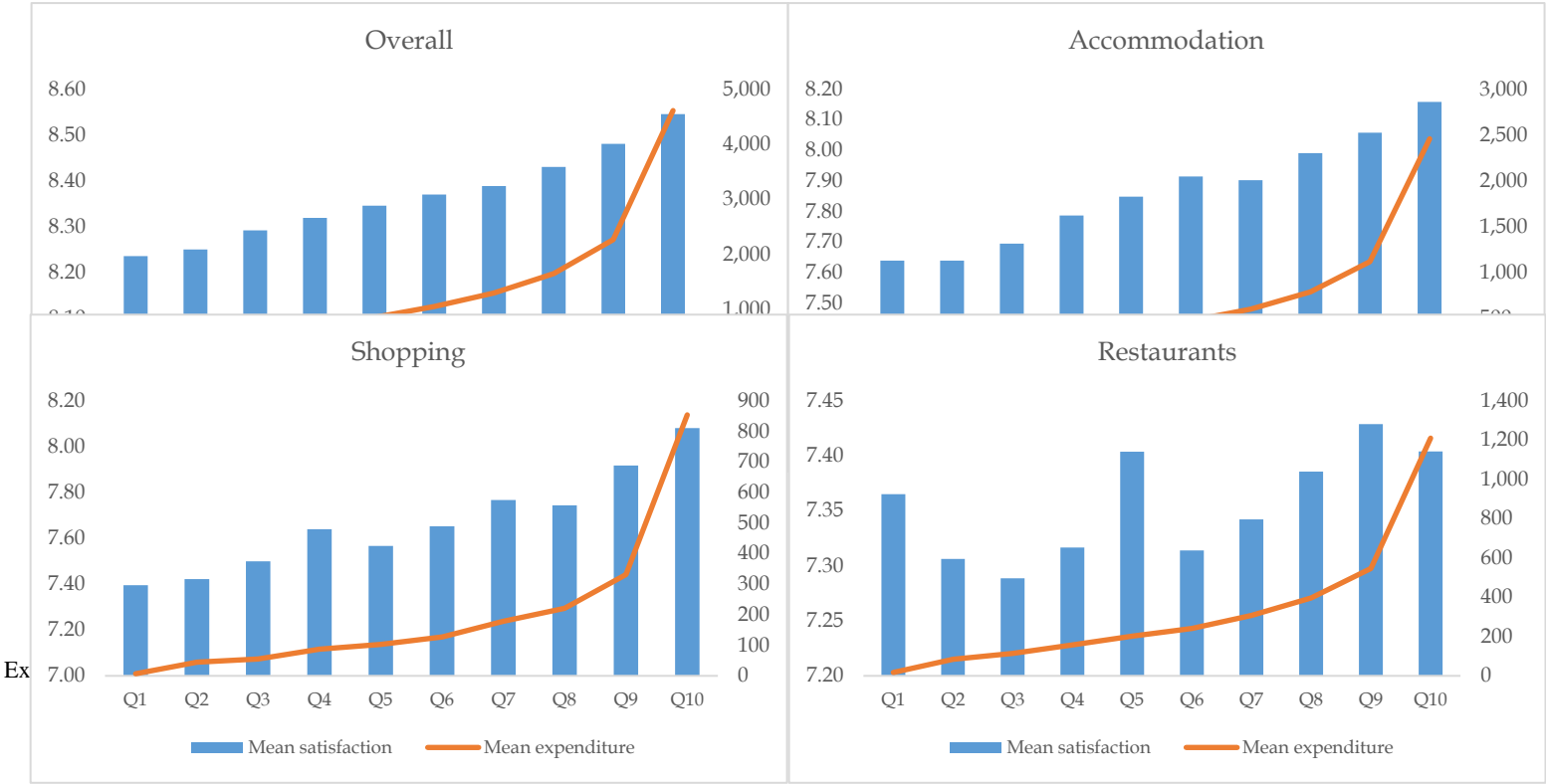
Figure 3. IVQR estimates of satisfaction parameters
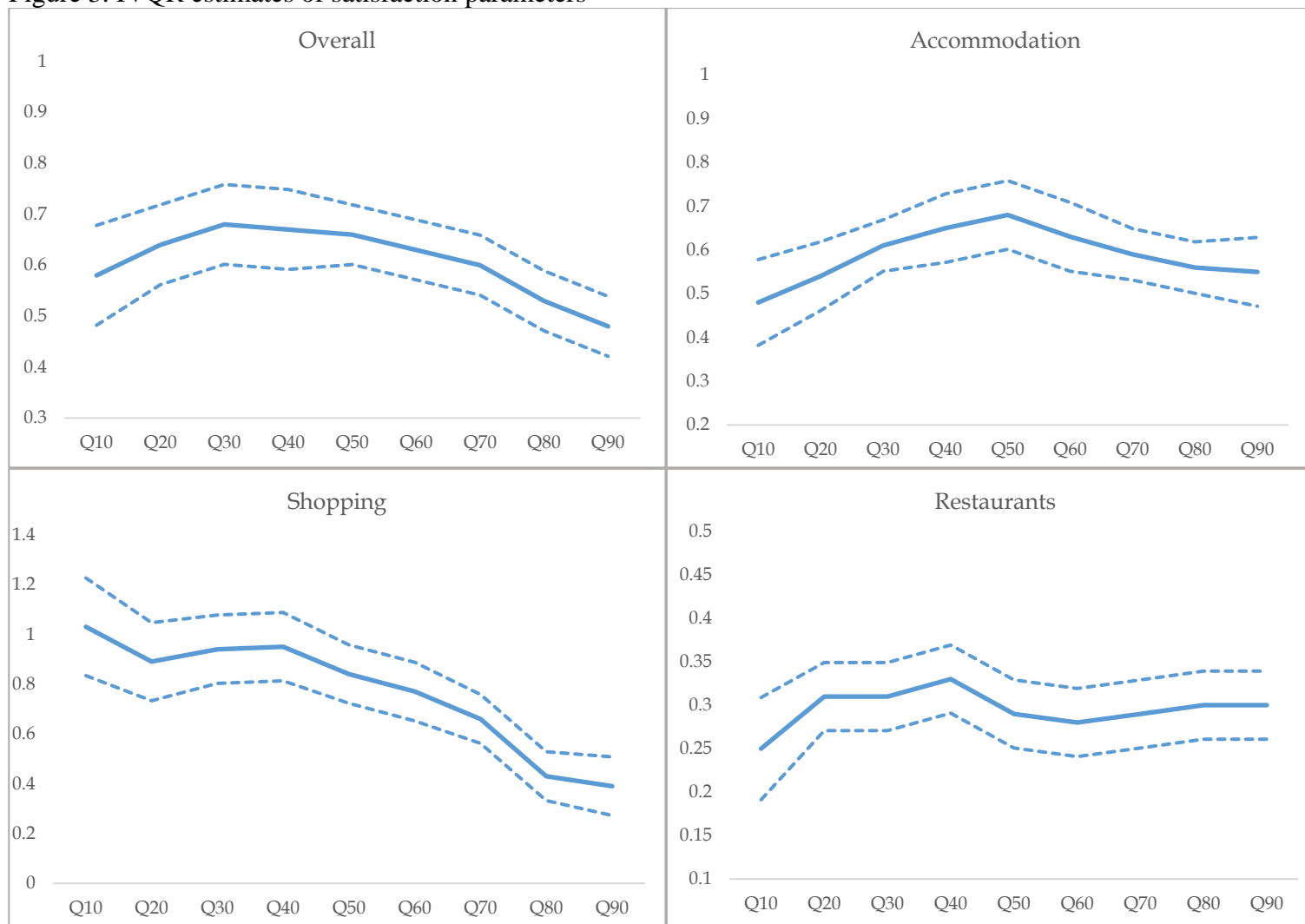
The continuous line represents IVQR estimates for the effect of satisfaction while the dotted line highlights the 95% confidence intervals

Figure 4. IVQR estimates of the total expenditure model

The continuous line represents IVQR estimates for the effect of satisfaction while the dotted line highlights the 95% confidence intervals

Figure 5. IVQR estimates of satisfaction parameters across time

Green continuous line: 2008-2010; Blue continuous line: 2011-2013; Yellow continuous line: 2014-2017. Dotted lines: 95% confidence intervals
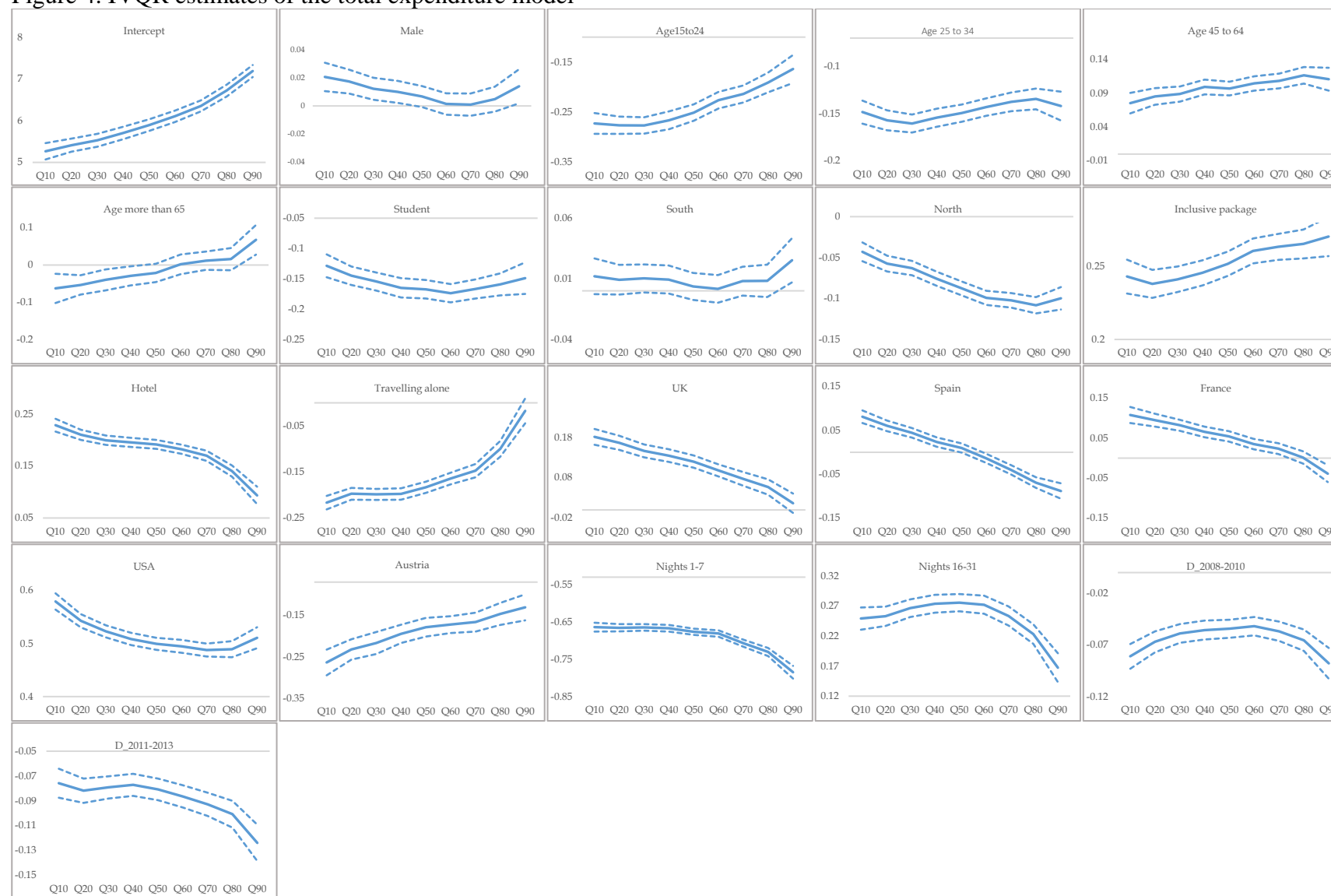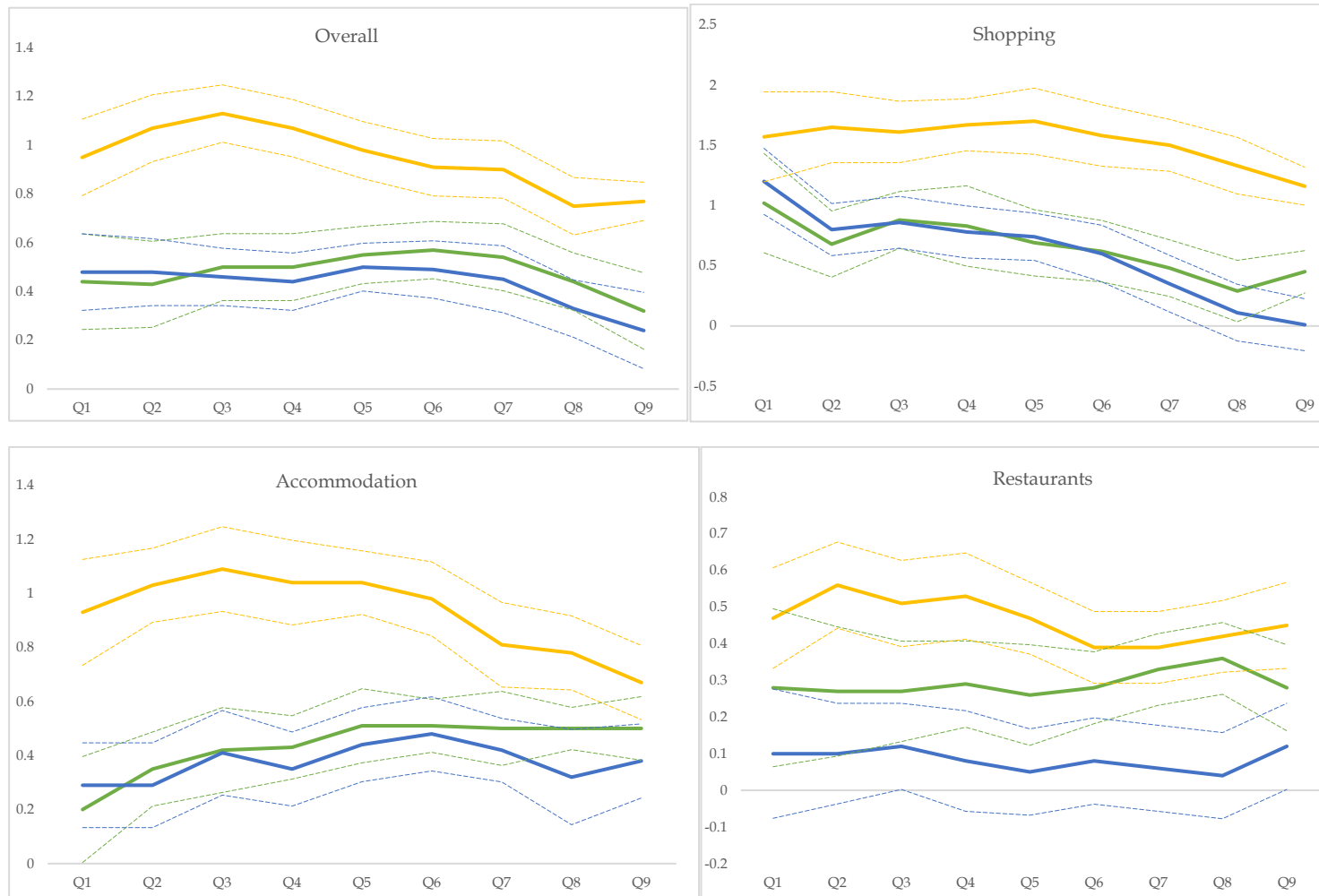
Table 1. IVQR Tests

OVERALL PERIOD	H0: No effect	H0: Location shift	H0: Dominance	H0: Exogeneity	H0: Weak Instrument
	Test statistic	Test statistic	Test statistic	Test statistic	Test statistic
Overall	19.97***	3.90***	0.00	14.22***	61526.9***
Accommodation	18.09***	3.69***	0.00	12.29***	20695.7***
Shopping	14.19***	7.27***	0.00	8.56***	9962.3***
Restaurant	11.29***	2.02	0.00	10.07***	15883.87***

SUB-PERIODS	H0: No effect	H0: Location shift	H0: Dominance	H0: Exogeneity	H0: Weak Instrument
	Test statistic	Test statistic	Test statistic	Test statistic	Test statistic
Overall 2008-2010	9.38***	2.64*	0.00	8.02***	13316.11***
Overall 2011-2013	8.96***	3.04**	0.00	5.61***	17805.35***
Overall 2014-2017	18.57***	3.71***	0.00	13.25***	26934.58***
Accomm. 2008-2010	10.52***	2.98**	0.00	6.36***	5753.50***
Accomm. 2011-2013	6.66***	2.11	0.00	3.50***	5715.85***
Accomm. 2014-2017	16.63***	4.55***	0.00	12.45***	6997.35***
Shop. 2008-2010	7.82***	3.00**	0.00	4.47***	2541.97***
Shop. 2011-2013	8.72***	5.66***	0.00	6.50***	3294.76***
Shop. 2014-2017	15.26***	4.10***	0.00	11.02	2863.64***
Rest. 2008-2010	6.58***	1.69	0.00	6.12***	4317.02***
Rest. 2011-2013	2.10***	1.38	0.00	1.76***	3827.05***
Rest. 2014-2017	9.83***	2.83***	0.00	10.07***	5790.28***

*:p-value<0.10; **:p-value<0.05; ***:p-value<0.01

Table 2. Expenditure's categories IVQR estimates

	OLS	IV	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
TotExp											
OverallSat	0.26***	0.76***	0.58***	0.64***	0.68***	0.67***	0.66***	0.63***	0.60***	0.53***	0.48***
	(0.01)	(0.02)	(0.05)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
AccommExp											
AccommSat	0.23***	0.56***	0.48***	0.54***	0.61***	0.65***	0.68***	0.63***	0.59***	0.56***	0.55***
	(0.01)	(0.02)	(0.05)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)
ShopExp											
ShopSat	0.33***	0.77***	1.03***	0.89***	0.94***	0.95***	0.84***	0.77***	0.66***	0.43***	0.39***
	(0.01)	(0.04)	(0.10)	(0.08)	(0.07)	(0.07)	(0.06)	(0.06)	(0.05)	(0.05)	(0.06)
RestExp											
RestSat	0.05***	0.39***	0.25***	0.31***	0.31***	0.33***	0.29***	0.28***	0.29***	0.30***	0.30***
	(0.05)	(0.02)	(0.05)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)

*:p-value<0.10; **:p-value<0.05; ***:p-value<0.01

Table 3. IVQR estimates for expenditure's categories in the sub-periods

TotExp	OLS	IV	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
TotSat 2008-2010	0.17*** (0.01)	0.49*** (0.04)	0.44*** (0.10)	0.43*** (0.09)	0.50*** (0.07)	0.50*** (0.07)	0.55*** (0.06)	0.57*** (0.06)	0.54*** (0.07)	0.44*** (0.06)	0.32*** (0.08
TotSat 2011-2013	0.21*** (0.01)	0.60*** (0.04)	0.48*** (0.08)	0.48*** (0.07)	0.46*** (0.06)	0.44*** (0.06)	0.50*** (0.05)	0.49*** (0.06)	0.45*** (0.07)	0.33*** (0.06)	0.24*** (0.08)
TotSat 2014-2017	0.30*** (0.01)	1.24*** (0.04)	0.95*** (0.08)	1.07*** (0.07)	1.13*** (0.06)	1.07*** (0.06)	0.98*** (0.06)	0.91*** (0.06)	0.90*** (0.06)	0.75*** (0.06)	0.77*** (0.04)

AccommExp	OLS	IV	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
AccommSat 2008-2010	0.09*** (0.01)	0.27*** (0.04)	0.20*** (0.10)**	0.35*** (0.07)	0.42*** (0.08)	0.43*** (0.06)	0.51*** (0.07)	0.51*** (0.05)	0.50*** (0.07)	0.50*** (0.04)	0.50*** (0.06)
AccommSat 2011-2013	0.12*** (0.01)	0.39*** (0.04)	0.29*** (0.08)	0.29*** (0.08)	0.41*** (0.08)	0.35*** (0.07)	0.44*** (0.07)	0.48*** (0.07)	0.42*** (0.06)	0.32*** (0.09)	0.38*** (0.07)
AccommSat 2014-2017	0.16*** (0.01)	0.97*** (0.04)	0.93*** (0.10)	1.03*** (0.07)	1.09*** (0.08)	1.04*** (0.08)	1.04*** (0.06)	0.98*** (0.07)	0.81*** (0.08)	0.78*** (0.07)	0.67*** (0.07)

ShopExp	OLS	IV	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
ShopSat 2008-2010	0.29*** (0.01)	0.51*** (0.07)	1.02*** (0.21)	0.68*** (0.14)	0.88*** (0.12)	0.83*** (0.17)	0.69*** (0.14)	0.62*** (0.13)	0.48*** (0.12)	0.29*** (0.13)**	0.45*** (0.09)
ShopSat 2011-2013	0.31*** (0.01)	0.68*** (0.07)	1.20*** (0.14)	0.80*** (0.11)	0.86*** (0.11)	0.78*** (0.11)	0.74*** (0.10)	0.60*** (0.12)	0.35*** (0.12)	0.11*** (0.12)	0.01*** (0.11)
ShopSat 2014-2017	0.38*** (0.01)	1.51*** (0.07)	1.57*** (0.19)	1.65*** (0.15)	1.61*** (0.13)	1.67*** (0.11)	1.70*** (0.14)	1.58*** (0.13)	1.50*** (0.11)	1.33*** (0.12)	1.16*** (0.08)

RestExp	OLS	IV	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
RestSat 2008-2010	0.02*** (0.01)	0.25*** (0.04)	0.28*** (0.11)	0.27*** (0.09)	0.27*** (0.07)	0.29*** (0.06)	0.26*** (0.07)	0.28*** (0.05)	0.33*** (0.05)	0.36*** (0.05)	0.28*** (0.06)
RestSat 2011-2013	- 0.01*** (0.01)	0.24*** (0.04)	0.10*** (0.09)	0.10*** (0.07)*	0.12*** (0.06)**	0.08*** (0.07)	0.05*** (0.06)	0.08*** (0.06)*	0.06*** (0.06)	0.04*** (0.06)	0.12*** (0.06)**
RestSat 2014-2017	0.00*** (0.01)	0.66*** (0.04)	0.47*** (0.07)	0.56*** (0.06)	0.51*** (0.06)	0.53*** (0.06)	0.47*** (0.05)	0.39*** (0.05)	0.39*** (0.05)	0.42*** (0.05)	0.45*** (0.0)

*:p-value<0.10; **:p-value<0.05; ***:p-value<0.01