Micro and Macro Resilience Measures of an Economic Crisis

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Abstract Using Italian Households Budget Survey data over the period 1997-2013, a Cragg model in a life-cycle context is specified to compare the consumption behaviour in the pre- and post-crisis time and develop different micro and macro measures of resilience against crisis shocks. Cohort profiles for participation in and for consumption of tourism services in the pre- and post-crisis time are determined for exploring the households' resilience by generations. Next, the households' resilience according to socio-demographic characteristics is addressed. As for the macro-resilience, combining individual expenditure elasticity, we examine whether and how Italian regions have responded to the recent economic crisis.

Keywords Resilience, Economic crisis, Tourism expenditure, Life-Cycle, Cragg model, Expenditure elasticity

JEL code: D12, R20, Z3, C24

1 Introduction

The recent recession and its related debt crisis have exerted a profound impact on the daily life of many people in Italy. The common and long-lasting decrease of disposable income has negatively affected the self-assessment of consumers about their ability to acquire a decent future income. This perception has consequently prompted cutbacks in the expenditure and/or a change in consumption patterns (Brandolini 2014; Rodano and Rondinelli 2014). However, it is likely that individuals do not only respond by changing or cutting their consumption in different ways depending on their personal characteristics,

but make also choices based on the economic context on which the consumer is embedded (Koos et al. 2017). Thus, understanding how the response to the crisis varies among individuals and among different economic contexts is a core issue. This brings us to the concept of resilience, as articulated by Gunderson and Holling (2002) who state that '*resilient systems can be as small as a family or as large as a nation*' (p. 107). As a consequence, the resilience or the ability of a 'system' to cope with economic crisis may be explored and assessed at different spatial scales, as individual or household, community and regional level (Modica and Reggiani 2015; Reggiani et al. 2002; Caschili et al. 2015; Griffith and Chun 2015). This reflects in the so-called notion of fractal resilience (Bergström and Dekker 2014), which may be examined separately or simultaneously. [1]

Reviewing geographically-oriented empirical studies on resilience to the recent economic crisis, it is noteworthy that they use mainly a macro-level approach, neglecting how individual response strategies might induce regional resilience and *vice versa* (Crescenzi et al. 2016; Fingleton et al. 2012; Martin et al. 2015; Masik and Rzyski 2014). Studies who have proposed a micro- and macro-combined approach to the analysis of regional resilience to the economic crisis are very rare. To our knowledge, the study by Doran and Fingleton (2015) represents the first attempt in resilience analysis that uses micro data combined with regional data to examine the impact of the 2008 economic crisis on individual wages in the USA. Another example may be a study by Bono et al. (2017), which – although it does not explicitly refer to the concept of resilience – uses a hierarchical approach to explore differences in consumption behavior at both household and regional level induced by the great recession.

[1] The term "resilience" was traditionally used in geology, biology and psychology, but it is now also gaining popularity in the regional studies. For a more extensive analysis of the development of the notion of resilience in regional and local economic studies, we refer to Martin and Sunley (2015) and Ösht el at. (2018).

In line with these recent studies, a combined approach integrating a micro- and macro-level analysis will be pursued as the main methodological contribution of this article. In the empirical part, we focus on the impact of the 2008 economic crisis and the debt-sovereign crisis on households' consumption in Italy. The study examines the resilience of household-level expenditure to the recent economic recession, controlling both for individual and context characteristics. To this purpose, a model of household expenditure behavior according to the framework of the life cycle theory and incorporating individual determinants and specific control variables to take into account regional differences is defined. This enables us to analyze the resilience at both individual and generational level (i.e., micro perspective) and at regional and national level (i.e., macro perspective).

The study presents some appealing novelties respect to previous studies on resilience measurement. Firstly, our approach to resilience is developed for and applied to tourism expenditures, as those are commonly considered a higher-order good that is able to better reveal inequalities in living standards in a stable period (Bernini et al. 2017, a). The choice of tourism expenditure, amongst other categories of luxury goods, is also justified by recent evidence showing that individuals improve their living standards or well-being significantly if they are able to spend on higher-order goods and services like tourism and leisure activities (see Bernini et al. 2013; Cracolici et al. 2013; Hill and Martin 2012). It is likely that is even more so in an economic recession climate.

Second, we propose a new specification of consumption function on the basis of the life-cycle background that enables us to measure directly the resilience at micro and macro level. Our approach inspired by Attanasio and Weber (1994) and Miniaci and Weber (1999), compares the tourism expenditure behavior in the control period, ranging from 1997 to 2007, to the treatment period, i.e. the period from 2008 to 2013. Since the response

variable is censored, a so-called Hurdle model specification will be used, viz. the Cragg model. Thus, we model a participation and consumption function over the control period whose basic specification consists of age and cohort variables plus year dummies for the control period. Then, we control for generational, socio-demographic and regional heterogeneity in the treatment period.

This enables us to specify a measure of individual resilience by both generations and different socio-demographic characteristics. This feature represents the third and main relevant novelty of this paper. As concerns the measurement of resilience by generations, the model enables us to examine if the cohort profile of participation in and the consumption of tourism services changes in the treatment period in comparison to the control period. By comparing the control and treatment cohort profile, we are able to explore how different generations adapt their consumption pattern to a crisis. In other words, we explore whether and how cohorts respond differently to the crisis. We call this household 'resilience by generation'. Furthermore, as the change in expenditure patterns may also depend on socio-demographic factors, a richer specification has to be presented in order to control for personal characteristics associated with the tourism participation decision. This specification strategy enables us to explore how households with different socio-demographic characteristics respond to the crisis. We call this the household 'resilience by demographic profile'.

Finally, taking inspiration from the idea of fractal resilience, the study examines the regional resilience in terms of expenditure elasticity by combining micro-level data. Since the impact of locations to economic crisis may be spatial heterogeneous (Capello et al. 2015; Palaskas et al. 2015; Modica and Reggiani 2015; Reggiani et al. 2002; Caschili et al. 2015), using a post-estimation analysis, we calculate the expenditure elasticity for

households as a whole (i.e., national elasticity) and for households grouped by NUTS1 regions[2] (i.e., regional elasticity) in order to investigate the spatial distribution of effects of the economic crisis on consumption of tourism services. We call this macro measure 'resilience by region'.

Finally, the study is performed on time series of cross-sectional data for the period 1997-2013 involving a mass sample of 387,765 households drawn from the Italian Household Budget Survey designed by the Italian Statistical Office (ISTAT).

Summing up, our study—focusing on domestic demand of tourism—will address the following questions: (1) Have households been resilient to the recent economic crisis? (2) Did the economic crisis impact uniformly on consumption behavior and patterns of households? (3) Did regional macro areas respond similarly to the crisis?

The paper is structured as follows. The next section contains a concise description of the Italian tourist market in the years after the great recession. The subsequent section proposes the econometric model of participation in the tourism market, followed by a presentation of statistical tools to model tourism consumption over the life-cycle (i.e., cohort techniques) and over the treatment period. In section 4, a presentation of the results will be offered, followed by some final remarks.

2 Framework of Analysis: Spatial Tourism Patterns

2.1 Tourism dynamics and spatial patterns during the great recession

During the recent crisis, the Italian tourism industry recorded a strict drop induced by two different types of dynamics: a decrease of the households' participation in tourism

[2] The North East and North West were jointly analysed, so through all the paper we refer them as North regions.

activities, and a contraction in the tourism expenditure of those households still having a holiday.

As regards the tourism participation, the impact of the crisis became evident only one year after the starting of the great recession, suggesting a non-instantaneous adjustment of the decision to have a holiday to the recession.[3] A possible explanation is that people did not expect that the crisis would have been so intense to cut their holiday plans dramatically. Since 2009, the percentage of Italian people having a holiday has declined considerably. In 2013, less than one fifth of residents declared to go on holiday (Table 1). Overall, the Italian citizens appeared to drop their domestic holidays as well as international travels with about the same percentage (30.3% and 31.9% reduction for the domestic and outbound tourism, respectively). The impact on tourism flows was dramatic: the overall number of trips and overnights staying for personal purposes declined with 43% and 41% respectively over the crisis period. From 2007-2013, on average, the number of trips declined more than the nights spent on holidays, thus slight increasing the duration of the trip (3.58% over 2007-2013). Individuals who went on holiday after 2008 have likely a higher disposable income that support a longer holiday, suggesting that the crisis had put out of the market the less wealthy people.

<<Table 1 about here>>

Besides, the effect of the recession across the Italian macro-areas was largely different (Figure 1). As for the number of holidays, people living in the South of Italy exhibit the

[3] Data is taken from the Trips and Holidays survey carried out yearly by ISTAT. It is retrieved at: http://dati.istat.it. The analysis has been limited to trips for personal purposes.

highest decline (49.33% over 2007-2013), while the cut for residents in the North and Center of Italy is lower and around 40%. The extent of the drop in the overnights spent during the holiday season appears to strongly increase, as we move to the South of Italy (viz., 33.46%, 42.06% and 59.21% in the North, Center and South, respectively), likely reflecting the difference in income levels across the national territory. Higher levels of income are usually found in the Northern regions, and this reduces progressively as we move to the South of Italy.

<<Figure 1 about here>>

The different dynamics of trips and nights spent during the holiday season appears to largely affect the duration of the holiday. People living in the North reduced the number of their trips, but on average extended the duration of the holiday during the crisis (14.50% over 2007-2013). Conversely, in the South the mean duration of the holiday registered an intense dip during the recession (19.49%). These findings suggest different tourism participation during the treatment period that is strongly related to the characteristics of the area of residence.

As for tourism consumption, the contraction during the crisis was on average of the 11.6%; the highest drop is recorded for the international segment (17.4%) that on average has a greater mean expenditure (Table 2).[4] On average, 29.9% of Italians desisted to have a holiday during the crisis with respect to the previous period, while those who continued to consume tourism services, reduced their expenditure by 11.6%. This dynamics may reflect differences in income levels of the two demand segments. During the control

[4] Data on the expenditure of Italian households has been drawn from the Household Budget Survey (HBS) that is carried out by ISTAT.

period, those households having a holiday show on average a total expenditure that is 1.6 times the total income of Italian households; during the crisis this percentage appear to rise to 1.8. To confirm this finding, the drop of total expenditure of people out of the tourism market is -18.4% higher than the reduction detected for households still making a trip (14.0%).

<<Table 2 about here>>

It should be added that territorial amenities may play a role in the decision to consume tourism services during the recession (Table 3). Overall, households living in the North seem to better react to the crisis, lowering their consumption of tourism with 10.4%. People in the South appear to cut on average 17.3% of their tourism consumption; the most drastic reduction was experienced by residents in the Centre of Italy. To some extent, this finding reflects the income differences among the macro regions and sustains the hypothesis of a strong correlation between income and propensity to spend on tourism.

<<Table 3 about here>>

In sum, our descriptive statistics suggest that tourism dynamics over the recession period is determined by two different factors: a reduction in the percentage of consumers and a lowering in the mean expenditure for tourism. The first effect has an important effect on the consumption, because the crisis may have put out of the market the relatively poorer households. Moreover, the effect is largely different across macro areas in Italy.

2.2 Tourism life-cycle profiles during the great recession

The tourism spending dynamics may be also different over the life cycle because of the different needs and budget constraints of households during their life. Moreover, households may differently react to the crisis with respect to the phase of the life they are experiencing.

A comparison of the age expenditure profile in pre- and post-crisis period (i.e., the 1997-2007 control period vs the 2008-2013 treatment period), reveales several points of interest (Figure 2). Firstly, the total household expenditure, both in the control and in the recession period, shows a bell-shaped profile with a hump at the middle-aged classes. Put differently, for total tourism expenditure and its subcategories (i.e. domestic and international tourism), the age profile has a different pattern: the expenditure increases with age and the oldest age classes have the highest tourism expenditure. A second point worth mentioning concerns the different levels of the expenditure profiles in the two periods considered. Specifically, for all consumption categories the levels of expenditure are below those of the control period highlighting that all age groups have considerably decreased the mean spending. A final point regards the different intensity of these reductions with respect to the age classes: it seems lower for the oldest people.

<<Figure 2 about here>>

Thus, it is highly relevant to estimate the effects of the crisis over the life cycle profiles of tourism expenditures, controlling for demographic, cohort and age effects. Since our comparison of life cycle expenditure patterns, both pre- and post-crisis, for total and

tourism expenditure has revealed significant differences, an investigation into the effects of the crisis should also include an investigation of the extent to which the crisis has affected not only participation in tourism activities, but also expenditure patterns across households. In the following section, we will describe how tourism participation and expenditure over the crisis time are modeled.

3 The model specification

3.1 The expenditure model

Following Attanasio and Weber (1994), Bernini and Cracolici (2015), and Bernini et al. (2017, a), we model tourism participation and expenditure over the household life-cycle controlling for household characteristics as well as disentangling age, cohort and time effects. In particular, a double-log specification for the tourism demand is presented, as follows:

$$\ln C_{it} = \beta_c \ln Cohort_{it} + \beta_t D_t + \beta_q Quarterly_t + \beta_a \ln Age_{it} + \beta_I \ln Income_{it} + \beta_{I2} \ln Income_{it}^2 + \varepsilon_{it} \quad (1)$$

where C_{it} is the tourism expenditure of household i at time t.

Age_{it} refers to the age of the head of household; $Cohort_{it}$ is the cohort of householder i (i.e., defined on the householder' year of birth) (Browning et al., 2016). D_t is a vector of normalized year dummies and *Quarterly* is a vector of quarter dummies. The sum of age, cohort and time dummies represents the life-cycle expenditure profile. To correctly isolate the cohort effects over the crisis, we follow standard practice in the consumption literature by attributing consumption growth to age and cohort effects and use year dummies to

capture cyclical fluctuations (Deaton 1997; Aguiar and Hurst 2013). In particular, following Deaton and Paxson (1994), the year dummy variables are included in the model in a normalized form; this transformation implies that all the year dummy variables sum to zero and makes the year effects orthogonal to a time trend. These normalized year dummy variables D_t are thus included for the control period 1999-2007.

Due to data availability, $Income_{it}$ is proxied by total expenditure of households in time t; the household's income enters the demand equation both in an absolute level and in a squared form (Bernini and Cracolici 2015; Bernini et al. 2017, b). Finally, ε_{it} is the error term of the model and is assumed to be white noise.

The baseline demand model in Eq. (1) has been extended to control for the effects of the great recession and the sovereign-debt crisis (Attanasio and Weber 1994; Miniaci and Weber 1999). In particular, we suggest specifying a life cycle model that is able to compare consumption in the *control period* of relative stability (i.e. the pre-crisis time 1997-2007) with the *treatment period* (i.e. the post-crisis time 2008-2013) affected by the crisis. Because we expect that changes in expenditure during the treatment period may be different within cohorts due to idiosyncratic shocks specific to a household (i.e., related to demographic factors, labor market conditions, and so on) and to unobservable changes in the economic environment (i.e., expected future income, perceived uncertainty, etc.), the baseline model is extended as follows:

$$\ln C_{it} = \beta_c \ln Cohort_{it} + \beta_t D_t + \beta_q Quarterly_t + \beta_a \ln Age_{it} + \beta_{demo}\pi_{it} \quad (2)$$
$$+ \beta_I \ln Income_{it} + \beta_{I2} \ln Income_{it}^2 + \gamma_{North}^{rec} \ln Income_{it}\, d^{2008/2013} d^N$$
$$+ \gamma_{Centre}^{rec} \ln Income_{it}\, d^{2008/2013} d^C + \gamma_{South}^{rec} \ln Income_{it}\, d^{2008/2013} d^S$$
$$+ \gamma_c^{rec} DCohort_{it}^{2008/2013} + \gamma_{demo}^{rec} \pi_{it}^{2008/2013} + \varepsilon_{it}$$

where a vector of specific cohort-dummies for the period 2008-2013, $DCohort^{2008/2013}$, is introduced; the coefficients γ_c^{rec} can be interpreted as the deviations of cohort c consumption in the recession period from the pre-crisis predictions. Then, γ_j^{rec} indirectly assesses aggregate effects that occur following a crisis, like expected future income, perceived uncertainty, wealth loss and so on. The use of cohort dummy variables for the control and treatment period enables us to explore changes in the shape of a cohort profile reflecting the households' resilience (i.e. micro-resilience) in terms of their ability to adapt to crisis consequences. We use the parameters γ_j^{rec} to assess the 'generational-resilience effects'.

The role of demographic variables in the expenditure model under uncertainty have been extensively investigated by Attanasio et al. (1999), who show that the hump-shaped age profile of consumption is partly driven by demographics, and partly by precautionary saving. In order to evaluate the expenditure profile of households, we introduce in Eq. (2) a set of socio-demographic variables[5] related to the households for both periods. In more detail, π_{it} is a vector including variables related to household characteristics; during the treatment period, and γ_{demo}^{rec} evaluates how households with different socio-demographic

[5] The selection of the socio-demographic variables has been driven by preliminary empirical evidence on the Italian context (see Brandolini 2104; Jenkins et al. 2013; Rodano and Rondinelli, 2014).

characteristics respond to the recession. Then, γ_{demo}^{rec} allows us to measure the 'individual or demographic-resilience effects'.

Moreover, in order to take into account of the relevant regional differences in the Italian context, we suggest controlling for the variation in consumption during the recession of households living in different areas (distinguishing between the North and Center-South of Italy). Thus, we extend the baseline specification (viz. Eq. (1)) to measure the effect of $Income_{it}$ during the crisis and for the regional macro areas by multiplying it with both year (i.e., $d^{2008/2013}$) and regional (i.e., d^N, d^C and d^S) dummy variables. Then, parameters $\gamma_{North\ (Centre,South)}^{rec}$ measure the 'macro resilience effects'.

Finally, from Eq. (2), the expenditure elasticity can be calculated for both the control and the crisis period as follows (see Bernini and Cracolici 2015):

$$elast_{it} = \beta_I + 2\beta_{I2}\ln Income_{it} + \gamma_{North\ (Centre,South)}^{rec} \qquad (3)$$

where the term $\gamma_{North\ (Centre,\ South)}$ is measured only for the crisis period.

As is known, the elasticity measures the relative income sensitivity of expenditure.[6] Thus, the analysis of the dynamics of elasticity over the years can be used to evaluate the resilience of Italian households. Especially, individual elasticity aggregates at regional level have been used here to evaluate how the response to the crisis changes among individuals living in different territorial contexts. Then, we use the aggregate elasticity to evaluate both the regional- and national-resilience effects.

6 As previously said, due to data availability, we use total household expenditure as a proxy of income, so the associated parameter measures the expenditure elasticity.

3.2 The zero-expenditure approach to demand model

Tourism is a censored good, that is, not all individuals participate in the tourism market. Consequently, the above model in Eq. (2) should be revisited to account for a large proportion of observations with a value of tourism expenditure equal to zero (i.e., a censored variable). In the applied model analysis, we adopt the Cragg approach to zero-expenditure model (Cragg 1971) because of its flexibility. The 'double-hurdle' model assumes that (i) an individual has to desire a positive amount of goods or services (first hurdle: the participation decision), and (ii) there must be favorable circumstances for a positive expenditure to occur (second hurdle: the consumption decision). Formally, our approach integrates the probit model to determine the probability of $y^* > 0$ and the truncated normal model for given positive values of y^*, as follows:

$$\text{participation decision: } d_i^* = \alpha' z_i + v_i, \text{ where } v_i \rightarrow N(0,1) \quad (4a)$$

$$d_i = \begin{cases} 1 & \text{if } d_i^* > 0 \\ 0 & \text{otherwise,} \end{cases} \quad (4b)$$

$$\text{and consumption decision: } y_i^* = \beta' x_i + u_i, \text{ where } u_i \rightarrow N(0, \sigma^2) \quad (5a)$$

$$y_i = \begin{cases} y_i^* & \text{if } d_i = 1 \text{ and } y_i^* > 0 \\ 0 & \text{otherwise,} \end{cases} \quad (5b)$$

where x and z are a different set of variables affecting the two decision stages, while the variables are assumed to be uncorrelated with their respective error terms; d_i^* is a latent variable that denotes binary censoring and y_i^* the unobserved latent value of expenditure. Eq. (5b) indicates that the observed expenditure y_i is zero, either when there is censoring at zero ($y_i^* \leq 0$) or when there is faulty reporting, due to some random circumstance. In

other words, a positive level of tourism consumption ($y_i = y_i^*$) is observed only if the individual is a potential tourist ($d_i = 1$) and actually consumes tourism services ($y_i^* > 0$).

An interesting feature of the Cragg model is that different sets of determinants affect the two hurdles. Separating the two decision stages is particularly relevant in modeling tourism consumption, since the decision to travel can be assumed to be mainly related to social factors, while the decision about how much to spend on a holiday depends on individual budget constraints.[7]

3.3 The two-step empirical specification

To identify the cohorts, we follow Attanasio and Weber (1994), Browning et al. (1985), and Deaton (1985) by grouping households on the basis of the age of the head of the household, using five-year age band cohorts, and track the cohorts over time. The age of each household head (i.e., "a") is defined as the mid-range age of the age-class which the household head belongs to, while cohort "c" is defined as $c = t - a$, where "t" is the year in which the household was interviewed. A description of data has been reported in Appendix A.

To investigate the role of the great recession on the tourism participation and consumption at the territorial level, a Cragg model is thus estimated. The related econometric models of tourism participation and consumption can now be represented as follows:

[7] For a discussion of the Cragg approach in tourism expenditure modeling, see Bernini and Cracolici (2015) and Bernini et al. (2017, b).

$$P_{it} = \beta_c \ln Cohort_{it} + \beta_t D_t + \beta_q Quarterly_t + \beta_a \ln Age_{it} + \beta_{demo}\pi_{it} + \gamma_c^{rec} \ln Cohort_{it}^{2008/2013} + \gamma_{demo}^{rec}\pi_{it}^{2008/2013} + \varepsilon_{it} \quad (6a)$$

$$\ln C_{it} = \beta_c \ln Cohort_{it} + \beta_t D_t + \beta_q Quarterly_t + \beta_a \ln Age_{it} + \beta_I \ln Income_{it} + \beta_{I2} \ln Income_{it}^2 + \gamma_{North}^{rec} \ln Income_{it}\, d^{2008/2013} d^N + \gamma_{Centre}^{rec} \ln Income_{it}\, d^{2008/2013} d^C + \gamma_{South}^{rec} \ln Income_{it}\, d^{2008/2013} d^S + \gamma_c^{rec} DCohort_{it}^{2008/2013} + \varepsilon_{it} \quad (6b)$$

In Eq. (6a) the determinants of tourism participation can be classified into three groups: (i) variables modeling tourism participation over the life-cycle, (ii) variables measured at family level in the control period, (iii) cohort dummies and households characteristics over the crisis. As regards the socio-demographic characteristics, π_{it} is a set of variables related to the family in terms of size (ln*Size*) and the percentage of children in the family (ln*Child*), allowing to explore whether participation in the tourism market is different for small and large families (Alegre et al. 2010; Nicolau and Más 2005; Eugenio-Martin and Campos-Soria 2011). As concerns the socio-demographic variables in the treatment period (i.e., $\pi_{it}^{2008/2013}$), we consider variables as the tenure status of the home ($Tenant^{2008/2013}$), the occupation status ($SelfEmpl^{2008/2013}$, $Occasional^{2008/2013}$, $Seeker^{2008/2013}$), the economic sector where householder works ($Trade^{2008/2013}$, $Construct^{2008/2013}$, $Accom^{2008/2013}$) and the region of

residence ($South^{2008/2013}$); also variables related to the family structure ($\ln Size^{2008/2013}$ and $\ln Child^{2008/2013}$) have been included (Alegre et al. 2013; Alegre et al. 2010; Bernini and Cracolici 2015; Jang and Ham 2009). The model specification for the tourism expenditure (Eq. (6b)) enables us to measure crisis effects on cohort consumption behavior as well as different responses across the Italian regions.

A detailed description of the variables used and some descriptive statistics are given in Table 4.

<<Table 4 about here>>

4 Consumption Behavior, Crisis and Resilience: Empirical Findings

4.1 Life cycle consumption behavior over the crisis: household resilience by generation

Estimates both for total tourism, and travelling domestically and abroad have been reported in Appendix B.

In Figure 3, the cohort profiles in the pre- and post-crisis period, obtained by the parameters of the Maximum Likelihood estimation of the Cragg models (see β_c and γ_c^{rec}) have been reported for the participation and consumption decision.

Specifically, Figure 3 (panel a) displays the cohort profiles for the general decision to take a holiday, and for the decision of travelling domestically or internationally. The significance of parameters β_c and γ_c^{rec} for the control and treatment period shows that the cohort variable strongly affects the participation in tourism. However, the cohort effect in the control and treatment period is diametrically opposed to one another. Similarly to previous studies, the cohort profile in the pre-crisis period, for the general decision to take a holiday and/or to travel domestically, presents a pattern that increases monotonically

(see Bernini and Cracolici 2015), which demonstrates that older cohorts are more inclined to participate in the tourism market than the younger generations. Clearly, the cohort profile for the decision to travel abroad is rather homogeneous across cohorts.

<<Figure 3 about here>>

Looking at the post-crisis period, we discover that all cohorts have coped with the crisis, as it is demonstrated by the monotonically decreasing pattern of cohort profiles. This performance concerns both the general decision to travel and the decision of travelling domestically or abroad. This observation suggests a low resilience of Italian households regarding tourism participation and change in habits of potential tourists.

Specifically, people participating in domestic tourism appear to be less crisis-resistant in comparison to households potentially making a trip abroad. Since domestic tourism demand consists mainly of summer holidays and short in-between trips, it is plausible to hypothesize that the drop by cohort in the participation is induced by a reduction of in-between holidays, which is consistent with the descriptive evidence, which recorded a strong decrease in the number of trips. However, the possibility of a substitution effect between tourism and other varieties of products being necessary consumer goods should not be ruled out (Smeral 2009). Anyway, both explanations indicate that domestic tourism can be positioned as being a 'less necessary' good (Papatheodorou et al. 2010; Smeral 2010); this observation reflects a worsening of living conditions of Italians for whom holidays are essential for individual and family well-being (Bernini and Cracolici 2016; Bernini et al. 2017, a; Dolnicar et al. 2012; Sirgy 2010). Clearly, this impact suggest that the

sacrifice of a summer holiday in well-being should be stronger than the extent of in-between holidays (Bronner and de Hoog 2016).

Next to the decision to make a trip abroad, a decreasing pattern of cohort profiles in the post-crisis period was detected, which signifies that households have reduced the number of times travelling internationally.

As far as the decision to spend on tourism is concerned, we observe that the cohort profile decreases monotonically over the lifetime in the pre-crisis period for the expenses on domestic tourism and total tourism (Figure 3, panel b). Furthermore, as for the decision to spend on a trip abroad, the cohort profile appears rather homogeneous across cohorts showing a very slight increase; but this evidence must be carefully interpreted, since the estimate is not significant.

Looking at the post-crisis period, the cohort profiles present a similar shape for total tourism and for the two sub-components of expenditure, i.e. domestic and international tourism. Also in the post-crisis time, it has been found that a cohort negatively affects the propensity to spend on tourism, which shows that Italian households have not been sufficiently able to respond to the recent crisis.

Specifically, in the post-crisis time the cohort profile of tourism expenditures decreases monotonically from the youngest to the middle cohorts, whereas it increases from early retirement age onwards. It follows thus that older cohorts tend to be more resistant to the crisis. As is to be expected, from the beginning of retirement, when there is no longer – a hardly - uncertainty in income expectation, the consumption pattern of households is rather stable. It is noteworthy that the more remarkable negative cohort effect by the younger and middle cohorts may reflect the strategy to give up holidays – the so-called

pruning strategy (Bronner and de Hoog 2014) – due to uncertainty to income and the future-related job insecurity characterizing the Italian labor market.

Finally, the expenditure resilience of households having a holiday abroad was unexpectedly higher than households travelling domestically, as pointed out by the upper position of the curve of the cohort profile. Since it is common that the decision to make a trip abroad concerns a market segment that consists mainly of people having a high-income level, this means that they would be less vulnerable to economic shocks such as the crisis. This finding may reflect the fact that people spending generally on foreign travels have on average a higher level of income than people travelling domestically; in other words, travelling abroad is a luxury good accessible only for a few people. Thus, people travelling internationally would be less vulnerable to the economic crisis. Nevertheless, the drop by cohort of the tourism expenditure for foreign travels in the post-crisis period points out that this segment had to cope with the crisis. As pointed at by the cohort profile in tourism participation, it is plausible that Italian households travelling abroad have adopted a 'partial' pruning strategy, viz. they have likely reduced the number of travels but they have not economized on holiday attributes.

Summing-up, the crisis has strongly influenced the decision to participate in and to consume tourism services of all generations, irrespective of the destination choice. Households that travel domestically are less crisis-resistant than those who travel abroad. The low resilience of this market segment – representing the main group of Italian travelers – discloses a worsening of living standards of Italian people in terms of the possibility to make a trip related to the individual well-being.

4.2 Who suffers from the crisis: household resilience by socio-demographic profile

As shown in empirical studies on tourism demand (among other: Alegre et al. 2010, 2013; Bernini and Cracolici 2015; Eugenio-Martin and Campos-Soria 2011), socio-economic variables affect the tourism behavior of households in different ways.

Table 5 reports the Cragg estimations of γ_{demo}^{rec} for the participation equation regarding the decision to participate in total, domestic and international tourism. As Table 5 shows, all variables with the exception of occasional workers are statistically significant; they influence the participation in tourism during the crisis time (i.e., in the period ranging from 2008 to 2013). The estimations show that the impact of socio-economic variables on total tourism mirrors the tourism behavior of households in the domestic market for which these variables are significant constraints in the probability to travel more than to travel abroad. The only exception is the variable self-employed whose positive effect is more remarkable for the decision of travelling abroad.

More specifically, as concerns the family size, the number of adult members exerts a positive effect on the participation in tourism. This may be due to the fact that more adults other than the breadwinner might need financial support to comply with the needs of the household. Clearly, even if the variable percentage of children presents a positive sign, the extent of its effect is low signifying that in a crisis time parents likely pay more attention to the basic needs of their children (i.e., health, education, etc.) rather than to save for the children's education (Bernini and Cracolici 2015; Smeral 2009).

As expected, the job status of the householder has a significant explanatory power; in particular, households whose main householder is unemployed are less prone to participate in tourism in a crisis time (Alegre et al. 2013). Also, households whose

householder is occupied in economic sectors like construction and hospitality are more likely to give up holidays.

Finally, one of the most relevant and interesting variables in explaining tourism participation in the post-crisis years is the residence place of the household (i.e., the South variable). Households from different Italian regions have reacted heterogeneously during the recent crisis. Households living in the North and Central region are more able to cope with the crisis, whereas households in the South regions are more likely to give up holidays. The effect of the origin place of the potential tourist is more remarkable for the decision to travel abroad.

<<Table 5 about here>>

The significance of the regional dummy variable (i.e. South) reflects differences in economic development across regions, but may also incorporate the effect of territorial differences in natural, economic, infrastructural and tourist attributes caused by constraint factors for families living in the southern regions (Pellegrini 2002; Percoco 2004; Bernini et al. 2017, b). For instance, high temperature, a favorable climate and relaxed contexts characterizing the Southern regions, may generally be constraint factors inhibiting tourism especially in a crisis time (Eugenio-Martin and Campos-Soria 2014). Hence, the ability of households to respond to the tourist market depends on individual characteristics, but also is strongly induced by regional factors. Conversely, this signifies that tourism may be a luxury or a basic good depending on the territorial context. Thus, regions may show different tourism expenditure resilience. This insight highlights the importance of setting

out an integrated micro and macro perspective for the analysis of tourism demand resilience.

4.3 Expenditure elasticity: regional and national resilience

To investigate regional resilience of tourism demand, a post-estimation analysis focusing on tourism expenditure elasticity has also been pursued. Starting from the estimations obtained by Eq. (6b), the household's expenditure elasticity has been calculated for households as a whole and for households by regional macro-areas. Table 6 shows that all Italian regions have recorded a rise of expenditure elasticity in the post-crisis period. However, the extent of the growth is different across macro-areas revealing a differential response of regions to the economic crisis. The rise of the expenditure elasticity is more pronounced for the Center and the South, irrespectively of the destination choice. Both macro-areas record an increase of expenditure elasticity for total tourism of about 13%, and a higher rise for the decision to spend on domestic tourism, viz., an increase of about 20%. However, the South appears to be the lowest crisis-resistant as shown by the overall elasticity growth rate over the period 2013-2007 (viz., 15.60% the South vs 19.36% of Italy). Conversely, in the North, the increase in tourism elasticity is lower than the national one (10.15% and 11.13%, respectively); the gap is slightly marked for the domestic segment (16.08% and 17.42%, respectively). These findings highlight a different sensitiveness of regional areas to respond to the crisis, reflecting their large difference in terms of economic conditions.

<<Table 6 about here>>

In Figure 4, the dynamic pattern of tourism expenditure elasticity across macro-areas (i.e. North, Center and South) and Italy as a whole is reported. The regional expenditure elasticity has been calculated for both the total tourism and for the decision to spend on domestic and trips abroad.

<<Figure 4 about here>>

Looking at the expenditure elasticity of total tourism (see Figure 4a), we observe that tourism – before the year 2008 – is a necessary good for all macro-areas showing a value of the elasticity lower than 1. However, it should be noted that the South generally presents higher values of elasticity over time than the North and Center. The great recession has induced an increase of the regional expenditure elasticity. This empirical fact has become more remarkable after the sovereign debt crisis (i.e. after 2011); that is, this has amplified regional differences. Figure 4a shows that Southern regions have been less crisis-resistant than other ones; for households living in Southern Italy tourism has become a luxury good as highlighted by the value of elasticity greater than 1. On the other hand, even though the North and the Center have recorded an increase of expenditure elasticity, they are more able to limit cutbacks of tourism expenditure maintaining the values of elasticity under 1 over the post-crisis period.

A similar trend of elasticity by Italian macro-areas has also been detected for the decision to spend on domestic or foreign trips.

As concerns the decision to spend on domestic travels, also then the great recession tourism appears to maintain its nature of a necessary good, even though the crisis has induced an increase of elasticity that is remarkable after the sovereign debt recession; that

is, this amplifies regional differences in tourism consumption behavior between the South and the North and Center.

Conversely, for the decision to spend on trips abroad, the effect of the economic crisis appeared to be more severe. During the last decade, before the beginning of the global recession, the possibility to spend on travelling abroad has generally been a basic need for households living in each part of Italy. The crisis has implied a change in households consumption patterns, whereas travelling abroad is mainly a luxury good primarily for households living in the South. These findings provide strong statistical evidence of heterogeneous effects on the regional tourism demand and indirectly on household's well-being pointing out that the regions that performed best in the pre-crisis period respond better to the crisis than the lagging regions with a local economy more vulnerable to economic shocks (i.e. the South).

Summing up, the recent crisis has strongly affected the participation in tourism by Italian households, irrespective of the residence place of the household. These effects are more pronounced for households living in the South of Italy who appear to be less crisis-resistant than those living in the North and Center. Likely, due to the job insecurity and inferior economic conditions characterizing the southern regions, households embedded in the South had to give up tourism to support the expenses for more necessary goods, such as child education, health, clothing etc. This means a worsening of quality of life that in the case of Southern regions may be been mitigated by enjoying the local natural resources and favorable climate in this part of Italy.

5 Conclusions

Using micro data on consumption, the paper examines the ability of Italian households to cope with the recent economic crisis. Pursuing a combined approach integrating a micro- and macro-level analysis, the study explores whether and how the response to the crisis varies among individuals and among different economic contexts.

To this aim, a theoretical model based on the life-cycle background has been estimated. It has enabled us to specify measures of individual resilience by both generations and different socio-demographic characteristics (i.e., micro perspective), and also a measure of regional resilience in terms of expenditure elasticity (i.e., macro perspective).

Specifically, the empirical analysis has been performed on tourism expenditure. Tourism is word-wide one of the most rapidly growing economic sectors. For some people tourism is a necessity, for others it is a luxury. It seems plausible that in a recession period – with declining options for consumption expenditures – the tourist sector will be negatively affected. But the degree to which depends on various background determinants, in particular, personal characteristics (i.e., income, education, culture, location) and contextual geographic factors (i.e., pull effects of tourism destination regions). The heterogeneous nature of tourist choices - in terms of frequency of visits, expenditure volumes and places of destination - calls for a thorough analysis of data on individual tourism behavior.

In the paper a censored (Hurdle) model, in particular the Cragg model, has been applied and tested for a large data set on tourism choices in major regions in Italy.

As concerns the micro measures of resilience, the analysis shows that all the generations reduce participation in and consumption of tourism services; and the effect is more significant for the decision of travelling domestically. The low resilience of this market segment comes to light a worsening of living standards of Italians being holidays

considered essential for individual well-being. As regards the demographic-resilience effects, the analysis disclosed, as expected, that the job status of the householder has a significant explanatory power and employees in economic sectors like construction and hospitality are less crisis resistant than other ones.

Additionally, as regards the macro measure of resilience, it has been observed that all the regions record an increase of expenditure elasticity; however, households living in the South appear less crisis resistant disclosing that for them to have a holiday has become a luxury good. The results are very interesting in that the traditional dichotomy in the Italian regional system (i.e. the North-South divide) is confirmed by our statistical analysis. The North-South dichotomy was even aggravated during the recent recession period.

Clearly, a deeper analysis still has to be undertaken. Next to a regional (macro-area) analysis, also heterogeneous crisis effects on tourism at sub-regional (i.e., local) should might have to be investigated in a more detailed fractal resilience analysis. There is also a clear need and scope to pursue a broader comparative study of tourism decisions in other countries and regions in Europe, to test whether the specific Italian context leads to biased dichotomic results. It would also be important to investigate whether, next to disposable income, frequency and region choice, also risk-avoiding factors such as 'home' tourism low-distance tourism or VFR tourism, have become more prominent in an economic crisis. A fact is that after the economic recession, in recent years at least foreign tourism has shown a turbulent and booming growth.

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APPENDIX A. Data description and cohort definition

The empirical analysis has been performed on the data from the Households Budget Survey (HBF), carried out by the Italian Office of Statistics (ISTAT). A sample of 400,473 households was collected over the period 1997 to 2013. With regard to tourism, HBF observes the monthly total amount of expenditure of the household on trips for personal purposes. Following the international standards, HBF records, both for na tional and international trips, expenditure on holiday, leisure and recreation, visiting friends and relatives, health treatment, religious activity and pilgrimages, etc. The survey does not provide information about the reason for the trip, so it is impossible to investigate how it affects tourism expenditure. We use 'tourism expenditure' below to refer to expenditure on trips for personal purposes. The respondent is a member of the householdwho reports the tourism expenditure of all members of the family. The survey does not provide information about the number of household members making a trip; but it does indicate if Italian families travel abroad or in the country and if they report an expenditure other than zero. Data on expenditure is supplemented by a rich set of economic, demographic, and sociological variables on Italian households. HBF survey is performed every year and involves a random sample of the population. A pool of time series of cross sectional observations can thus be set up and groups of households can be followed over time by means of cohort techniques (Deaton 1985). The cohorts have been identified by using the age of the head of the household.

Following Attanasio and Weber (1994), Browning et al. (1985) and Deaton (1985), we group households on the basis of the age of the head of the household, using five-year age band cohorts, and track the cohorts over time. The age of each household head (i.e. "a") is

defined as the mid-range age of the age-class[8] which the household head belongs to, while cohort "*c*" is defined as $c = t - a$, where "*t*" is the year in which the household was interviewed. In Table A1, the definition of cohorts, head of household's age in the first and last year of observation, and the size of the cohorts are reported.

< Table A1. About here>

[8] For each household member, HBF surveys the individual's age by using a categorical variable subdivided in 15 age-classes. We provide some robust checks to support the use of the mid-range age-class value as the householder's age. The distribution of individuals within each age-class is quite uniform, largely supporting the use of the median value. Results are available from the Authors on request.

APPENDIX B. Model estimates

< Table B1. About here>