Participation in tourism of Italian residents in the years of the economic recession

Viaggi e vacanze degli Italiani negli anni della recessione economica

Chiara Bocci, Laura Grassini, Emilia Rocco

Abstract In this study an hurdle model is used to analyze the tourism behavior of Italian residents during the 2004-2013 period. Using the microdata from the quarterly survey on "Trips and holidays in Italy and abroad" carried out by the Italian National Institute of Statistics we investigate the factors that have influenced the tourism participation and the length of stay of residents in Italy in the years of the economic recession. The empirical results show that socio-economic characteristics of the individuals and of their families have an important effect on their tourism participation; that these factors, together with some trips-related characteristics, affect the total number of overnight stays; and that the economic recession impacted negatively on both aspects of tourism behaviour.

Abstract *In questo studio analizziamo il comportamento turistico dei residenti in Italia durante il periodo 2004-2013 mediante un modello hurdle. Utilizzando i microdati dell'indagine trimestrale "Viaggi e vacanze in Italia e all'estero" svolta dall'Istituto Nazionale di Statistica, esaminiamo i fattori che hanno influenzato la partecipazione turistica e la durata delle vacanze degli Italiani negli anni dell'ultima recessione economica. I risultati empirici mostrano che la scelta di fare o non fare un viaggio/vacanza è influenzata da caratteristiche socio-economiche degli individui e delle loro famiglie e che gli stessi fattori, insieme ad altri inerenti i viaggi stessi, influenzano anche il numero totale di giorni di vacanza. I risultati inoltre, mostrano l'impatto negativo della recessione economica su entrambe le fasi decisionali che caratterizzano le scelte turistiche degli italiani.*

Key words: microdata, hurdle models, truncated-at-zero count data models

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1 Introduction

The steady period of economic crisis has seriously affected Italian households that, from 2008 to 2013, have experienced six consecutive years of decrease in purchasing power (available income in real terms), with a -10.4% overall change between 2007 and 2013 [7]. During this recession period, Italian households have shown a reduction in tourism expenditure and a change in travel behavior, as well. In particular, household expenditure surveys show that the expenditure share devoted to hotels and accommodation facilities passed from 2.8% in 2010 to 2.3% in 2013. Household surveys on travel behavior rend us a even worse picture: the annual decrease in the number of trips of residents was nearly -12% in 2010, -19% in 2013. Only in 2015, for the first time after seven years, there has been an increase (+13.5%).

Since tourism is an important driver of economic development, the analysis of the tourism demand of Italian residents is of extreme importance: 1) from an historical perspective, we can be interested in knowing whether, how and why, they have changed their vacation behavior during the years of the economic crisis; 2) for forecasting purposes, the knowledge of the major determinants of household tourism behavior is of extreme usefulness for policy makers. This contribution is concerned with the tourism behavior of Italian residents in the period covering the last economic recession: it investigates whether and how the tourism participation and the total number of overnight stays of Italians have changed in this period. Data on households' and individuals' travel behavior are derived from the survey on *Trips and holidays in Italy and abroad*, currently carried out by the Italian National Institute of Statistics. In the following: Section 2 provides a brief description of the data and the methodology whereas Section 3 discusses the main findings of the analysis.

2 Data and method

From 1997 to 2013 the household survey on *Trips and holidays in Italy and abroad* was carried out quarterly on a national annual sample of about 14,000 households (about 3,500 per quarter for a total annual of about 32,000 individuals). Since 2014 it has become a focus included in the Survey on *Household expenses*, which is carried out monthly on a national theoretical sample of 28,000 families. Given this change, which has been accompanied by several others in the overall survey design, and considering the adoption of the euro currency occurred in 2002, we have limited our analysis to the years from 2004 to 2013. Each year data are observed for the following periods: January-March, April-June, July-September and October-December. In each quarter and for each individual information on vacation and business trips concluded during the quarter and with at least one overnight stay and some socio-demographic characteristic, are recorded. As we are interested in the analysis of the factors that may influence individual tourism choices, we considered only persons at least 15 years old and only the vacation trips. For each trip, the destination, the length of stay, the motivation (leisure and recreation, visiting friends and relatives,

and so on), the type of accommodation and the transportation mode are recorded. Available survey micro-data does not include information about the tourism expenditure and the socioeconomic status of the individuals, with the exception of the individual's occupation. Given the data characteristics and the fact that the reduction in the length of stay is one of the main characteristic of current tourism [1], this study examines whether and how the economic recession has affected the total number of overnight stays in a quarter by modelling it through an hurdle model. The hurdle model [5] is a modified count model in which the two processes generating the zeros and the positives are not constrained to be the same. A binomial probability governs the binary outcome of whether a count variate has a zero or a positive realization. If the realization is positive, the hurdle is crossed, and the conditional distribution of the positives is governed by a truncated-at-zero count data model.

The assumptions of the hurdle model are consistent with the phenomenon under study, in which firstly a person decides whether to have a vacation trip and then, conditionally to a positive decision, he decides the number of overnight stays. Therefore the binary process concerning the decision to have at least a vacation in a given quarter has been modelled through a logit regression model in which covariates at both individual level (age, gender, education, occupation, indicator of at least a business trip in the quarter, residential NUTS1 zone) and family level (size, number of children, number of income recipients included retired members) are included. Then the quarterly number of overnight stays, for those who had at least a vacation, has been modelled through a Truncated Negative Binomial regression model which includes, in addition to the variables involved in the first-stage model, trips-related covariates (number of trips for visiting friends and relatives, number of pleasure trips for specific destination: sea, mountain, historical cities, tours and others; number of free accommodation trips; dummy-indicator of at least a trip abroad, total number of vacation trips). Categorical variables for years and quarters are included in both models, as well. Since we consider the number of income recipients as a proxy for household income and we are interest in evaluating its effect on the decision on tourism participation throughout the years, we include a specific interaction term in the first model. Finally, in the second model we allow for different covariates effects on the number of overnight stays for those who only take long vacancies (more than 3 nights at a time) than the others. For this reason, all covariates in the second model are interacted with the dummy indicator *at least one short vacation*. Formally, let *y* be the number of overnight stays, and $\mathbf{X}$ and $\mathbf{Z}$ the covariates matrices included in the first and the second model respectively, then, the model is:

- I stage: a logit model for the tourism participation

$$P(y_i = 0|\mathbf{X}_i) = exp(\mathbf{X}_i'\beta_1)/(1 + exp(\mathbf{X}_i'\beta_1))$$

- II stage: zero-truncated Negative Binomial model for the number of overnight stays given that it is greater than zero

$$P(y_i = j|y_i > 0, \mathbf{Z}_i) = \frac{P(y_i = j \& y_i > 0|\mathbf{Z}_i)}{P(y_i > 0|\mathbf{Z}_i)} = \frac{P(y_i = j|\mathbf{Z}_i)}{[1 - P(y_i > 0|\mathbf{Z}_i)]} = \frac{f_{NB}(j)}{[1 - f_{NB}(0)]}$$

3 Results and discussion

Looking at previous empirical studies on tourism demand of individuals/households, which mostly investigate tourism expenditures, tourist's choice is conceived as a multi-stage decision process and three categories of travel determinants are generally identified: economic, socio-demographic and trip-related characteristics: they are influential in predicting both the visitors' intention to visit and their willingness to spend money on vacations [8]. According to [1], the same categories of variables affect also the tourist's choice about the vacation length.

Regarding socio-demographic variables our estimates confirm that gender and age may be considered as a proxy of travel preferences and determine travel motivations [8, 3]. Older age groups tend to be less likely to participate in tourism, but show a higher propensity to spent more time in vacation after the decision is make. Moreover, family size is negatively associated with both stages of the tourist's decision process, which can be due to family budget constraints; nonetheless, people with small children (at most 10 years old) seam to be more likely to participate to tourism and to take longer vacations.

Moving on to consider the effect of economic variables, income is one of the most influential and it positively affects all the stages of a tourist's decision process. Tourism individual behavior is also influenced by the business cycle: in an expansion period, people are more inclined to travel on more expensive trips (with greater length of stay) whilst during an economic slowdown more modest domestic trips are preferred [4, 6]. The empirical results, shown in Table 1, agree with these findings. The number of income recipients in a family, which indirectly reflects the household economic condition, have a positive association with the decision to travel and this effect, as shown in Figure 1(a), is more pronounced in the period of economic crisis. Since this variable is also directly related to the occupational status of each family member, it impacts negatively on the quarterly number of overnight stays due to the possible time constraints deriving from the work activity. This agree with the estimated dual effect of the individual occupational status: a stable occupation provide a secure income, increasing the probability of tourism participation, but it reduce the amount of days spent on vacations for those who only take long trips. Moreover, according with [2, 6], unemployed people are less inclined to travel.

Our findings confirm common knowledge that some types of trips strongly determine their length: having more beach holidays or at least one abroad vacation increase the number of total overnight stays for both long and short trips, whereas other motivations have a positive impact only on the total days of short trips. Analogously, most of the overnight stays in long vacations is taken in the Summer trimester, (Figure 1(c)) when the propensity to participate to tourism is higher (Figure 1(b)). This confirms that seasonality is a universal factor in tourism.

Figures 1(b) and 1(c) show that the economic crisis had a negative impact on both tourism participation and on the length of stay, particularly for those tourists that take only long vacations.

The hanging rootogram in Figure 1(d), which compare predicted and observed values, indicates an overall good fitting of the estimated hurdle model.

Table 1 Hurdle model estimates

Covariate	Coef.	Covariate	Coef.	Covariate	Coef.
First stage: Tourism participation					
Scaled age	−0.533***	(Scaled age)^2	−0.335***	Female	0.059***
Household size	−0.134***	# of children	0.213***	Univ. degree	0.730***
Business trips	0.424***	OCC:housewife	0.183***	OCC:student	0.912***
OCC:retired	0.442***	OCC:inabile	−0.279***	OCC:managerial staff	0.908***
OCC:office worker	0.612***	OCC:manual worker	−0.063*	OCC:self employed	0.325***
OCC:professional	0.735***	NUTS1:north-east	−0.151***	NUTS1:centre	−0.238***
NUTS1:south	−0.698***	NUTS1:islands	−0.764***	Quarter 2	0.361***
Quarter 3	1.388***	Quarter 4	−0.110***	2005	0.211***
2006	0.310***	2007	0.138**	2008	0.109*
2009	0.116*	2010	−0.034	2011	−0.360***
2012	−0.313***	2013	−0.566***	# income recipients (ir)	0.090***
# ir × 2005	−0.036	# ir × 2006	−0.080***	# ir × 2007	0.036
# ir × 2008	0.057*	# ir × 2009	−0.006	# ir × 2010	0.018
# ir × 2011	0.104***	# ir × 2012	0.073**	# ir × 2013	0.130***
intercept	-1.654***				
Second stage: Quarterly number of overnight stays					
Scaled age	0.160***	(Scaled age)^2	0.067***	Female	0.008
× short vac.	−0.090***	× short vac.	−0.060***	× short vac.	0.020
Household size	−0.017***	# of children	0.064***	Univ. degree	0.057***
× short vac.	−0.021**	× short vac.	0.042***	× short vac.	0.036*
Business trips	−0.069***	OCC:housewife	−0.023	OCC:student	−0.088***
× short vac.	0.080**	× short vac.	0.010	× short vac.	0.218***
OCC:retired	−0.006	OCC:inabile	0.008	OCC:managerial staff	−0.134***
× short vac.	0.057	× short vac.	−0.055	× short vac.	0.177***
OCC:office worker	−0.160***	OCC:manual worker	−0.200***	OCC:self-employed	−0.770***
× short vac.	0.167***	× short vac.	0.054	× short vac.	0.097*
OCC:professional	−0.156***	NUTS1:north-east	−0.080***	NUTS1:centre	−0.062***
× short vac.	0.223***	× short vac.	−0.009	× short vac.	−0.005
NUTS1:south	−0.076***	NUTS1:islands	−0.034*	Quarter 2	−0.036**
× short vac.	−0.040*	× short vac.	−0.120***	× short vac.	0.008
Quarter 3	0.399***	Quarter 4	−0.067***	2005	−0.077***
× short vac.	0.249***	× short vac.	0.024	× short vac.	0.086***
2006	−0.016	2007	−0.059***	2008	−0.074***
× short vac.	0.045°	× short vac.	0.038	× short vac.	0.053*
2009	−0.078***	2010	−0.088***	2011	−0.060***
× short vac.	0.045°	× short vac.	0.063*	× short vac.	−0.060*
2012	−0.115***	2013	−0.140***	# income recipients	−0.029***
× short vac.	−0.040	× short vac.	−0.024	× short vac.	0.011
# family visits	−0.210***	# beach holidays	0.011	# mount. holidays	−0.139***
× short vac.	0.261***	× short vac.	0.091***	× short vac.	0.195***
# visits art towns	−0.324***	# tours	−0.140***	other holidays[a]	−0.104***
× short vac.	0.390***	× short vac.	0.195***	× short vac.	0.155***
# free accom.	0.391***	total trips	0.324***	Abroad	0.120***
× short vac.	−0.441***	× short vac.	0.182***	× short vac.	0.265***
short vacation	−1.781***	intercept	2.052***		

Significance codes: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ° $p < 0.1$
Reference levels: Occupation (OCC): unemployed; NUTS1: north-west; Quarter 1; Year 2004
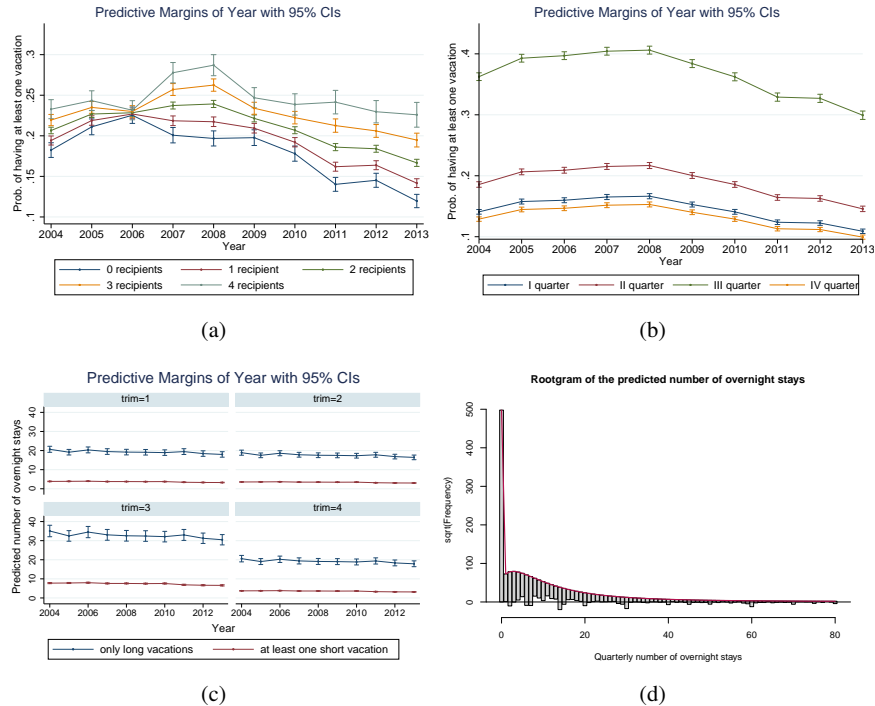[a] holidays for religious reasons or for health treatments

Fig. 1 Results of the hurdle model: (a) Predictive margins of *Year* and of *Number of income recipients* on tourism participation; (b) Predictive margins of *Year* and of *Quarter* on tourism participation; (c) Predictive margins of *Year* and of *Only long vacations* dummy on positive values of the quarterly number of overnight stays; (d) Comparison between predicted and observed values of the quarterly number of overnight stays.

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