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Cruise Tourism Externalities and Residents' Support: A Mixed Approach

Juan Gabriel Brida
Free University of Bolzano

Giacomo Del Chiappa, Marta Meleddu, and Manuela Pulina
University of Sassari and CRENoS

Abstract This paper investigates residents' preferences of investment in cruise tourism, taking its externalities into full account. The research involved data collection in the port of call of Messina (Sicily, Italy), during the peak cruise season in 2011. A mixed generalized ordered logit analysis, based upon a correspondence analysis, is run to examine what factors influence residents' perceptions about investing in cruise tourism. Potential positive and negative externalities produced by this economic activity, as well as socio-demographic and economic determinants are taken into account. Overall, residents in Messina, treated as a composite stakeholder, would invest a very high level of resources in cruising if their income depends on the cruise activity, if they had a cruise trip in the past, if they belong to a family with a high number of components, and if they believe this activity to exert positive welfare, cultural and social externalities. Conversely, residents in Messina are likely to prefer a low, or very low level of investment the farther they live from the port, if they are female, retired and if they perceive a deterioration of the environment. Implications for policy makers are drawn from these empirical findings.

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Keywords Cruise port of call; residents' support; externalities; correspondence analysis; generalized ordered logit.

Correspondence Manuela Pulina, Department of Economics and Business (DiSEA) & CRENoS, University of Sassari, Via Torre Tonda 34, 07100 Sassari, Italy, e-mail: mpulina@uniss.it

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1 Introduction

From 1990 to 2011, the cruise industry has experienced a 7.7% annual growth rate in terms of compound passengers (Cruise Market Watch, 2011). The total worldwide cruise industry is estimated at $29.34 billion for 2011, a 9.5% increase over 2010. This is the industry with the fastest growth rate in the last decades, where Europe accounts for $7.8 billion. As this sector becomes larger, several impacts ensue. Host communities have to bear with economic, environmental and socio-cultural effects deriving from ships and passengers' presence. The study of economic externalities produced by cruise tourism is still a field in expansion and residents' support for this industry can provide useful policy directions. To date, the impact of tourism has received much consideration by researchers attempting to investigate the attitude of the host population toward tourism development, mainly focusing on rural, coastal and urban areas. As noted by several authors, host communities' preferences towards tourism are fundamental for its development and sustainability, especially in the long run (e.g. Allen et al. 1988; Lankford and Howard 1994; Ap and Crompton 1998; Gursoy et al. 2002; Andriotis and Vaughan 2003). However, so far, very little research has been carried out on cruise tourism destinations.

In this study, the objective is to examine residents' support to investments in cruise tourism. This tourism activity is likely to exert several potential positive and negative externalities that may influence the level of investment that residents would like to undertake. Following the literature on community-based tourism (Gursoy et al. 2009; Gursoy et al. 2002; Perdue, Long & Allen 1990) to suit the context of cruise tourism (Brida et al., 2011; Diedrich 2010; Hritz & Cecil 2008), in this paper externalities are defined as 'the positive and negative economical, socio-cultural and environmental impacts as perceived by local community'. Further, a novel definition of residents is provided, who are defined as a composite stakeholder since they can represent both consumers and firms.

The research involved data collection in Messina, a port of call on the island of Sicily (Italy), during the summer peak of the 2011 cruise season. Through a random sample procedure, based on a stratification by gender and age, 1,500 face-to-face questionnaires were successfully administered to residents living at varying distances from the port and in different parts of the city. On this basis, a mixed quantitative approach is used which includes two distinctive steps of investigation.

The first step involves a correspondence analysis that allows one to identify a parsimonious set of externality variables and factors. The second step of the analysis entails running a mixed generalised ordered logit where not only socio-demographic and economic determinants are included, but also the perceptions of externalities, which are extracted by the correspondence analysis, including six dimensions overall.

The paper is structured in the following manner. In the next section, a literature review is provided. In the third section, the relevant methodology is presented. The fourth section puts forward the main findings and discussion. Concluding remarks are given in the last section.

2 A Literature Review on Externalities

The tourism activity can have either positive or negative impacts, and they will influence residents‘ perceptions. Several studies which analyse externalities summarize them into three categories: economic, environmental and socio-cultural effects (Murphy 1983; Gunn 1988; Gursoy et al. 2009). Economic externalities can have positive impacts on residents' welfare, such as the improvement of the local economy and the standards of living, higher employment, development and improvement of infrastructure and increased income levels (Liu and Var 1986; Akis et al. 1996; Tosun 2002). Examples of negative externality are an increase in prices of goods, services, land and housing. In terms of environmental impact, on the one hand, tourism may provide incentives to preserve and protect both natural and artificial systems (Lindsay et al. 2008), on the other hand, the tourism activity may lead to an increase in pollution and waste (Andereck et al. 2005). In the literature, examples of positive socio-cultural externalities are also highlighted; they relate to more and better leisure facilities and cultural exchanges (Liu and Var 1986). However, negative effects may also be detected in terms of an increase in crime, prostitution, alcohol and drugs (Ap 1992). Methodologically, these studies employ descriptive instruments whereas inference has rarely been adopted. More recently, Biagi and Detotto (2012) have proposed a methodological and empirical extension on the relationship between tourism and crime aimed at measuring the social cost of crime associated with tourism flows in Italy at a provincial level. A further empirical investigation has also been carried out by Biagi et al. (2012)

where it has been shown that agglomeration and urbanisation effects appear to be the main explanation for the impact of tourism on crime.

Some scholars find that the tourism activity tends to bring more costs than benefits to local economies (Chase and Alon 2002). Brida and Zapata (2010) categorise cruise tourism externalities the same way as general tourism externalities. Nevertheless, cruise tourism impacts are peculiar to this activity and somehow different from those of standard tourism. For example, the economic impact depends on whether the port is a homeport or a port of call. A homeport is a destination from which cruise trips begin and end; while a port of call is a midway stop. In general, those who supply goods and services to cruise vessels, cruise passengers and crew have the greatest economic benefits. Ports of call may have a different economic impact since greater investment in new infrastructure and associated maintenance costs (i.e. docking facilities and wharf) have to be accomplished.

Among the negative environmental externalities, Brida and Zapata (2010) mention large amounts of waste, erosion and degradation of vegetation, deprivation of historical and geological sites, which are caused mainly by physical and visual impacts produced by human behaviour. Further negative socio-cultural externalities may result from the fact that cruise passengers tend to "invade" the destination for just a few hours in a single day. This effect is particularly visible in small locations where cruisers compete for roads with the residents.

From an empirical perspective, residents' attitudes and perceptions towards cruise tourism have been investigated in the last decade (Gibson and Bentley 2006; Hritz and Cecil 2008; Diedrich 2010; Brida et al. 2011a). Gibson and Bentley (2006) examine residents' perceived social impacts associated with increased levels of cruise tourism in Falmouth in Cornwall (South West of England). Through a descriptive analysis, their results show a predominantly positive view of cruise tourism in the city. In an exploratory qualitative analysis in Key West (Florida), Hritz and Cecil (2008) interviewed seven stakeholders (i.e. business owners, city officials, individuals representing specialised markets, representatives of tourist attractions, and entrepreneurs) about their perception on cruise tourism. Residents reported their fear for the island's calmness and preservation. Diedrich (2010) assesses both locals' and tourists' perceptions of socio-economic and environmental impacts of different types of tourism development in Belize. Their qualitative analysis does not detect any specific difference in local perception for

cruise and overnight tourism. Brida et al. (2011a) apply a factor analysis to study residents' attitude and perception towards cruise tourism development in Cartagena de Indias (Colombia). The authors conclude that Cartagena residents perceive that tourism brings to the city much more advantages than disadvantages. Overall, a positive balance between the benefits and costs of cruise tourism emerges.

3 Methodology

3.1 The Economic Model: Host Communities as Composite Stakeholder

Several models have been developed to understand residents' perception towards the impacts of tourism activity. Doxey's Irridex model (1975), for instance, describes how the frustration of residents increases as the number of tourists increases, identifying four main stages: euphoria, apathy, irritation and antagonism. The Tourist Area Life Cycle (TALC), proposed by Butler (1980), analyses tourism activity through several distinctive stages: exploration, involvement, development, consolidation, stagnation and decline, which in some cases can turn into a rejuvenation phase. According to the theory, there is a correlation between residents' attitudes and the tourism life cycle phases. Initially, residents may have a positive attitude towards their guests, but as their number increases, the local community starts to be concerned about the long-term effects of tourism. This occurs either because tourism produces positive effects mainly for certain stakeholders or because benefits may be unrealistic. Concerns towards environmental and social costs also may emerge. Ap (1992) suggests adopting the so-called social exchange theory to analyse residents' response to tourism. The relationship between residents and guests is considered as a trade-off between costs and benefits for each party. According to this theoretical framework, individuals' attitudes towards tourism, and the level of support for its expansion, are influenced by community evaluation of the resulting outcomes, which in turn depend on the final full balance between costs and benefits.

The relationship between residents and tourism can be analysed through an economic perspective. Specifically, the behaviour of an economic agent is a matter

of trade-offs between positive and negative externalities deriving from economic activities (see Meleddu 2012). Bailey and Richardson (2010) define an "ecological economics framework" to analyse economic decision making in tourism. They include constraint factors such as physical, environmental and socio-cultural carrying capacities in a classical firm optimization problem, that is:

$$Max \prod = P.f(l,k) - wl - rk \; s.t. Y = f(l,k,m,h,v) \quad (1)$$

where P is the price, Y the output, l the labor, k the capital, w the wage rate, r the price of capital, m the physical carrying capacities, h the environmental carrying capacities and v the socio-cultural carrying capacities.

By expanding this theoretical framework, the host community can be also regarded as a composite stakeholder that may represent a producer and a consumer at the same time. On the one hand, by comparing costs and benefits expressed in terms of externalities, residents can increase the level of investment through public taxation. Resources obtained from the tax levy can be reallocated from less productive activities to more productive activities - such as the cruise industry. It is also possible that the Local Council raise further resources to invest in the cruise sector by taxing either residents or tourists, or even both. On the other hand, there may be local firms involved directly in the cruise sector, or indirectly within ancillary economic activities, that derive benefits from the cruise line, and are hence willing to invest more.

From an economic point of view, residents will maximize their profit (as producers), but also they will maximize their utility (as consumers), by choosing the combination that maximizes positive externalities and minimizes negative externalities. The composite stakeholder's acceptance of tourism development is a key factor for the long-term success and sustainability of this economic activity in any given destination. Residents have to bear externalities – be it positive or negative – exerted by the tourism activity, both as consumers and as producers, and share the local resources with tourists. Residents' latent preferences are determined not only by their socio-economic-demographic characteristics, but also by their perceptions of the externalities that ultimately influence their investment choices and their ability to maximize their utility/profits.

3.2 The Econometric Specification

This economic framework is made operational by applying an econometric analysis. To this aim, a 5-point Likert scale is used to assess residents' opinion about the level of investment in the cruise activity they would like to see in Messina. The response options are "very low", "low", "medium", "high" and "very high". Hence, an ordered logit model needs to be implemented, where both the ordinal nature of the dependent variable and the difference between a level and another are treated as a ranking. The model consists of the following latent regression:

$$\begin{aligned} y^* &= \beta_0 + \beta_1 x_i + \varepsilon \\ y &= 1 if\ y^* \le 1 \\ y &= 2 if\ 1 < y^* \le \mu_2 \\ y &= 3 if\ \mu_2 < y^* \le \mu_3 \\ y &= 4 if\ \mu_3 < y^* \le \mu_4 \\ y &= 5 if\ \mu_4 < y^* \le \mu_5 \end{aligned} \qquad (2)$$

where y^* is the unobservable latent variable, that satisfies a linear regression model, with β a vector of regression coefficients and ε, the disturbance term, that is assumed to have a standard logistic distribution. Since an opinion survey is run, the residents have their own intensity of feelings which depends on a set of factors x and certain unobservable determinants ε. y are the observed values, or indicators, and have a censoring specification. The μ_s are unknown category boundaries in the distribution of y^*. In this case, five options are given and respondents choose the indicator that most closely represents their own view on how much to invest in the cruise activity.

Model (2) is then calibrated on probabilities, leading to the following expression:

$$\Pr [y_i = j] = \Pr [y^* \text{ is in the jth range}] \qquad \text{where } J=1, \ldots,5 \qquad (3)$$

Hence, the probability that y will take on a particular value may be expressed in the following manner:

$$\Pr [y_i = j \mid x_i] = F[\mu_j - \beta' x_i] - F[\mu_{j-1} - \beta' x_i] \qquad (4)$$

where *F* is an exponential function.

The ordered logit specification assumes that the coefficients which express the relationship between the lowest indicator versus all higher indicators of the dependent variable are the same as those that describe the relationship between the next lowest category and all higher categories (and so on). In other words, since it is assumed that the relationship between all pairs of groups is the same, a sole set of coefficients is estimated. Under this condition, the parallel regression holds.
However, it is also possible that different regressions need to be estimated to explain the relationship between each pair of outcome groups. To assess this possibility two separate tests can be implemented. The first test is the likelihood-ratio test, where the null hypothesis is that no difference exists in the coefficients between models. The second test is the so-called Brant test where the null hypothesis is that the parallel regression assumption holds. If the condition is violated, then a generalized ordered logit (*gologit*) regression needs to be implemented (see e.g. Williams 2006). The *gologit* is characterised by *r–1* estimated coefficient vectors that express the effect of changing from one set of outcomes to a higher outcome which is not in the set. Specifically, the coefficient vectors are classified for the cut-off points. Hence, the *(r–1)th* coefficient vector expresses the separation of the outcomes into the sets *{1, ….., r–1}* and *{r}*. Furthermore, the coefficient vector is given by the following expression:

$$\beta\,\{1,\ldots..,\,k\}\;\;\{k+1,\ldots..,\,r\}\qquad \text{for } k=1,\ldots\ldots,\,r-1 \tag{5}$$

that allows one to draw the partition between outcome *k* and *k+1*. The sets of coefficient vectors correspond to a set of cumulative distribution functions that admit probabilities. These, in general terms, can be specified as follows:

$$\Pr[y_i = j \mid x_i] = F[\mu_j - \beta'_j x_i] - F[\mu_{j-1} - \beta'_{j-1} x_i] \tag{6}$$

where *F* is an exponential function. In this paper, the *gologit* is based on a logit function of *F* and consists of a simultaneous estimation of *r–1* logistic models, where each dependent variable is defined by collapsing the outcome variable into a new binary dependent variable as previously described (see Hardin and Hilbe 2007, pp. 257–258).

In a *gologit*, odds ratios greater than one indicate that higher values of the explanatory variable make it more likely that the respondent will be in a higher category of *y* than the current one. On the other hand, an odd ratio less than one

indicates that higher values on the explanatory variable increase the chance of being in the current category or lower. Marginal effects are also calculated to take into account the amount of change in the dependent variable due to a one-unit change in the explanatory variable, ceteris paribus.

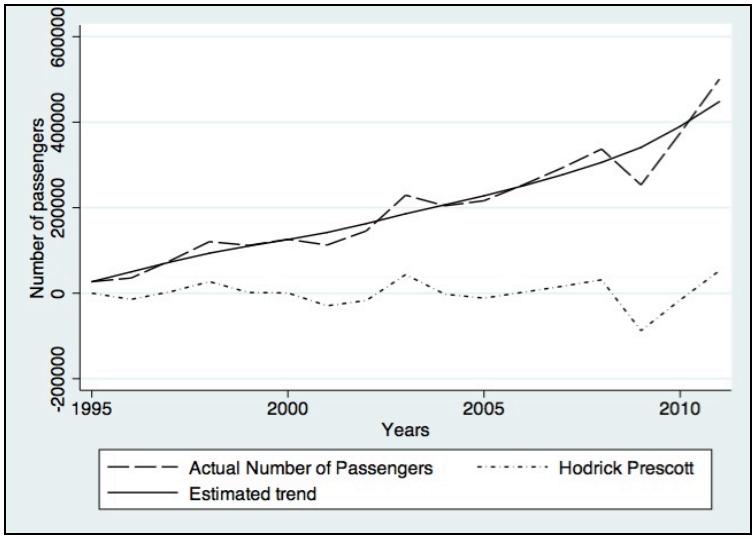
4 The Case Study and the Survey

Messina, the third largest city in Sicily (after Palermo and Catania), is the researched case study location. Cruise tourism is becoming a significant sector of the local economy. The number of cruise passengers increased from 126,023 in 2000 to 374,441 in 2010, thus making Messina the ninth cruise tourism destination in Italy. This substantial growth during the last sixteen years shows an increasing linear trend, as identified by the moving trend graphical representation proposed by Hodrick and Prescott (Figure 1). As far as the number of cruise ships is concerned, they increased from 165 ships in 2005 to 215 in 2010.

Cruise ship passengers spend five-six hours visiting the port of call of Messina. The harbour is located opposite the main city centre and it is fully integrated within the city. Recently, several studies have been carried out to evaluate the expenditure of cruise passengers (Observatory on Tourism on European Islands, 2009). Most of the expenditure is for tours, food and beverages and shopping. The average spending was around 50–70 Euros, with excursions taking 20-30 Euros on average (Del Chiappa and Abbate 2012).

The questionnaire constructed for this research was structured in five sections. The first one (question 1–5) was reserved to the interviewers, in order to note length, code, date and place of the interviews. The second section, from question 6 to question 22, focused on respondents' socio-demographic information, such as gender, age, education, employment, years of residence in Messina and other specific information about tourism in their local area. Questions 23 to 49 included 26 items selected on the basis of an in-depth review of the literature aimed at detecting residents' perceptions toward the economic, environmental and socio-cultural impact generated by the cruise tourism development. The items addressed specific statements about tourism externalities, where respondents were asked to rank their preferences. Section four (questions 50–54) was constructed to detect

Figure 1: Passengers flows (1995–2011)



residents' opinions about further investment options in the cruise tourism sector in Messina. The last section, from question 55 to question 58, asked respondents to rank a number of options for tourism investments that did not include the cruise sector (i.e. summer "sea and sand" tourism, sport and cultural tourism). A 5-point Likert scale was used (1 = completely agree; 5 = completely disagree) to evaluate respondents' answers in these three sections. This scale is widely used in empirical studies (e.g. Andereck et al. 2005; Kibicho 2008; Brida et al. 2011a).

The questionnaire was then tested via a pilot exercise with a sample of 30 residents. This was done to verify the validity of its content, whether the questions were easy to understand and whether the scale used to make the assessments was appropriate. No concerns were reported in the pilot tests. Respondents were selected with a quota random sampling procedure. The method requires selecting representative respondents out a subset of individuals within a population. Based on the official socio-demographic data published by the Italian National Institute of Statistics (ISTAT) for Messina's residents, the quotas were set on age (three classes were considered: 18–40, 41–65, over 65) and gender, as these are the only two characteristics that were observable "a priori". Even though this procedure

may lead to bias because not everyone gets a chance to be selected, it overcomes the potential bias derived from a random sample procedure, as this could over-represent specific demographic characteristics, such as gender or age. Data was collected through face-to-face interviews conducted by ten trained interviewers directly supervised by the authors. The sample size necessary for correctly representing Messina population at 1% level of statistical significance was set at 2,074 interviews. Interviewers were asked to administer the questionnaire to passers-by in public places, banks, etc. Only people aged 18 or above were asked to take part in the survey. A total of 1,500 successfully complete questionnaires were obtained thus making up a sample that is representative of Messina population at a 0,074% level.

5 The Empirical Results

5.1 Correspondence Analysis

As a preliminary step of the investigation, the factor scores that need to be included in the econometric specification are calculated. Specifically, a preliminary correspondence analysis was carried out to take into account the effects of a set of economic, socio-cultural and environmental externalities on the dependent variable, as this is the appropriate method when the relevant variables are defined as categorical variables. Here, the externality variables are defined by a 5-point Likert scale from one (complete disagreement) to five (complete agreement), rating the level of agreement by residents on each item.

A Principal Components Analysis (ACP) can be considered as preferable when the existence of a common process underlying the set of measures cannot be postulated; in other words, if one wants to analyse variables that are empirically related, but a priori no specific hypotheses are made on the conceptual domain of the variables. Hence, based on an in-depth literature review, a set of externality variables was considered. The first set relates to positive economics externalities, namely:

- increase in public investment (e1),
- improvement in public infrastructure (e.g. roads, communications, water pipes) (e2),

- increase in private investment (e3),
- increase in jobs opportunities (e4),
- increase in disposable income (e5),
- improvement in public services (e6),
- conservation and valorisation of urban and rural areas (e7),
- increased quality of catering services, accommodation and local shopping (e8).

A second set includes positive socio-cultural externalities as follows:

- improvements in the actual lifestyle (cs1) and quality of life (cs2),
- enhancement of other cultural and communities knowledge (cs3),
- increase in the number of cultural and recreational activities (cs4),
- enhancement of local tradition and authenticity (cs5),
- conservation and enhancement of the historic heritage (cs6),
- improvements in the safety standard of the destination (cs7),
- improved social and cultural life for the local community (cs8).

As a positive environmental externality, the variable 'improve the environment' (en1) is defined.

A further set of variables relates to negative socio-economics externalities, namely:

- crowding-out effects of the cruise activity over other relevant projects (se1),
- increase in traffic and road accidents (se2),
- increase in micro-crime (se3),
- higher costs of living for the local community (se4).

Finally, the last set of variables includes negative environmental externalities as follows:

- increased environmental and marine pollution (env1),
- increase in waste (env2),
- greater deterioration of the eco-system (e.g. sand erosion, damages to flora and fauna) (env3),
- increased congestion in public and recreational areas (env4).

By using SPPS (Version 15.0) correspondence procedure, two separate tests were run: the Bartlett's test of sphericity and the KMO test (Kaiser-Meyer-Olkin test) that helps assessing the appropriateness of the sample data (Kaiser 1974).

According to the statistical findings, in this case, the sampling adequacy is confirmed by the KMO showing a value close to one (i.e. 0.90) and the Bartlett's test (Chi2(351)= 16730.340 (0.000)), by failing to accept the null hypothesis, confirms that the correlation matrix is not an identity matrix.

The analysis in this paper further expands that provided in Brida et al. (2011b). First, in the present paper, and differently from Brida et al. (2011b), an Equamax rotation method is used as a combination of the popular Varimax rotation, which parsimoniously simplifies the variables, and the Quartimax rotation, which parsimoniously simplifies the number of factors. Secondly, the Anderson-Rubin method is employed to estimate factor score coefficients. The resulting scores are uncorrelated, have a mean equal to zero and a standard deviation equal to one. Furthermore, this method also ensures orthogonality of the estimated factors. In this manner, it is possible to include the main factors of interest as regressors into the relevant econometric specification (see also Huang and Lee 2011), also avoiding potential problems in the econometric estimation because of possible simultaneity issues between the set of externalities and the dependent variable.

Table 1 shows the mean and standard deviation for all the variables of interest that are retained from the correspondence analysis, as well as the frequency for each level of agreement (i.e. the 5-point Likert Scale from 'completely disagree' to 'completely agree'). Table 2 presents complete results from the correspondence analysis. Specifically, only variables with a factor loading equal to or higher than 0.70 are considered, which indicates a high correlation between the factor and individual items. Overall, six factors with eigenvalues greater than one are determined, which account for a total cumulative variance of 62.2%. The first factor is labelled as "positive welfare externality" and presents a reliability Cronbach's alpha of 0.80. The second factor is defined as "positive cultural externality" and explains 11.4% of the total cumulative variance with a reliability coefficient of 0.77. The third factor "negative environmental externality" accounts for 10.8% of the total cumulative variance and presents an alpha equal to 0.83. The fourth factor named "economic positive externality" explains 10.2% of the total cumulative variance and presents a reliability coefficient of 0.81. The fifth factor labelled as "negative economic externality" explains 9.1% of the total variance and presents a Cronbach's alpha of 0.74. Finally, the sixth factor labelled as "positive social externality" accounts for 8.0% of the total variance and presents an alpha equal to 0.70. It is worthwhile noticing that values of Cronbach's alpha equal to

0.70 and below 0.80 can be considered as “acceptable”; while values higher than 0.80 and below 0.90 can be regarded as “good”.

Table 1: Statistics and frequencies for the externality variables

Descriptive Statistics			Frequencies %				
Variables	**Mean**	**S.D.**	**1**	**2**	**3**	**4**	**5**
Factor 1 Positive welfare externality							
Public services improvement	2.84	1.20	15.8	25.5	25.5	25.4	7.9
Infrastructure improvement (roads, communication, water pipes, etc).	2.76	1.24	19.0	26.5	22.8	23.1	8.6
Urban and rural gentrification	3.03	1.17	10.9	23.4	27.5	27.9	10.3
Factor 2: Positive cultural externality							
Enhancement of other cultural and communities knowledge	3.56	1.14	5.4	12.9	24.6	33.9	23.2
Increase in the number of cultural and recreational activities	3.22	1.08	7.4	16.9	32.3	32.8	10.6
Valorisation of local tradition and authenticity	3.48	1.13	5.4	15.7	23.0	36.7	19.1
Factor 3: Negative environmental externality							
Increase of environment and marine pollution	2.87	1.26	18.2	21.9	25.5	23.8	10.6
Increase of waste	2.80	1.33	21.1	24.6	20.5	21.3	12.6
Deterioration of the eco system (sand erosion, damages to flora and fauna)	2.56	1.23	25.1	25.6	23.6	19.7	6.1
Increase of congestion in public and recreational areas	2.63	1.21	21.3	27.5	24.8	19.3	7.1
Factor 4: Economic positive externality							
Increase in public investment	3.14	1.22	10.8	21.6	25.0	28.0	14.6
Increase in private investment	3.26	1.12	6.2	21.5	25.9	33.0	13.5
Increase jobs opportunities	3.33	1.23	10.2	15.5	24.1	31.2	19.0
Factor5: Negative economic externality							
Cruise activity development has crowding out effects on other relevant projects	2.63	1.15	19.0	27.5	31.4	15.3	6.8
Increase in traffic and road accidents	2.45	1.19	25.9	29.4	25.3	13.3	6.2
Micro-crime increase	2.53	1.24	26.5	25.5	23.6	17.7	6.6
Increase costs of living for local community	2.67	1.23	20.2	28.4	24.5	18.5	8.4
Factor 6: Positive social externality							
Cruise activity changes actual lifestyle	2.23	1.25	38.8	23.6	19.9	11.5	6.3
Increase disposable income	2.96	1.15	13.4	19.6	33.6	24.8	8.6
Increase of quality of life	2.98	1.11	10.8	22.2	34.1	24.3	8.6

Table 2: Correspondence analysis

	Variable Contri-bution	% Variance Explained	% Cumulative Variance	Cron-bach's Alpha
Factor 1 Positive welfare externality		**12.48**	**12.48**	**0.80**
Public services improvement	0.75			
Infrastructure improvement (roads, communication, water pipes, etc).	0.74			
Urban and rural gentrification	0.65			
Factor 2: Positive cultural externality		**11.42**	**23.90**	**0.77**
Enhancement of other cultural and communities knowledge	0.74			
Increase in the number of cultural and recreational activities	0.72			
Valorisation of local tradition and authenticity	0.71			
Factor 3: Negative environmental externality		**10.79**	**34.79**	**0.83**
Increase of environment and marine pollution	0.85			
Increase of waste	0.79			
Deterioration of the eco system (sand erosion, damages to flora and fauna)	0.76			
Increase of congestion in public and recreational areas	0.75			
Factor 4: Economic positive externality		**10.46**	**45.16**	**0.81**
Increase in public investment	0.77			
Increase in private investment and infrastructure	0.76			
Increase jobs opportunities	0.73			
Factor 5: Negative socio-economic externality		**9.08**	**54.26**	**0.74**
Cruise activity development has crowding out effects on other relevant projects	0.73			
Increase in traffic and road accidents	0.72			
Micro-crime increase	0.64			
Increase costs of living for local community	0.62			
Factor 6: Positive social externality		**7.96**	**62.2**	**0.70**
Cruise activity changes actual lifestyle	0.77			
Increase disposable income	0.57			
Increase of quality of life	0.53			

Notes: values equal to 0.70 and below 0.80 are regarded as "acceptable"; values equal to 0.80 and below 0.90 are regarded as "good".

Table 3: Descriptive statistics

Variables	Mean	Std. Dev.
Dependent variable: support to cruise activity in Messina	3.4410	1.2019
Complete disagreement: Frequency (118); Percentage (8.82)		
Disagreement: Frequency (169); Percentage (12.63)		
Indifferent: Frequency (340); Percentage (25.41)		
Agreement: Frequency (431); Percentage (32.21)		
High agreement: Frequency (280); Percentage (20.93)		
Age = resident's age;	38.7383	23.3259
Ages = resident's age squared		
Gender: dummy, acquires value one if female; otherwise zero		
Ycroc: dummy, acquires value one if resident's income depends on cruise activity; otherwise zero		
Nfam = number family's components	3.5991	1.3258
Occupation = 8 separate dummies variables are created**: ocprim=** if the resident belongs to the primary sector (otherwise zero); **ocind=** if the resident belongs to the industry sector (otherwise zero); **ocserv=** if the resident belongs to the services sector (otherwise zero); **octur=** if the resident belongs to the tourism sector (otherwise zero); **ocstu=** if the resident is a student (otherwise zero); **ocret=** if the resident is retired (otherwise zero); **ocump=** if the resident is unemployed (otherwise zero); **ocoth=** if the resident does not belong to the working force (otherwise zero) – the latter is retained as a reference category.		
Kmport: how many km the resident lives from the port	6.9750	11.8871
Croc: dummy that acquires the value one if resident took a cruise trip; otherwise zero		

5.2 The Generalised Ordered Logit

Table 3 provides descriptive statistics – mean and standard deviation – of all the variables used to assess the residents' perceptions. The dependent variable measures to what degree residents in Messina would support further investments in the cruise activity; this is a categorical variable and takes values from one (i.e.

very low support) to five (i.e. very high support), based on a 5-point Likert scale. A set of socio-demographic and economic determinants are included in the specification, namely:

- gender (gen – male is the reference category);
- age and its square (ages);
- whether residents' income depends on the cruise activity (ycruis);
- number of family members (nfam);
- residents' economic sector of occupation (oc), that is further disaggregated into the primary sector (ocprim), industry (ocind) and services (ocserv), tourism sector (octour), students (ocstu), unemployed (ocump), retired (ocret) and others (ocoth, such as housekeepers - the reference category);
- whether they took a cruise trip in the past (cruis);
- how far they live from the port (kmport).

As previously stated, residents' perceptions on the externalities produced by the cruise activity, which are the extracted factors by the correspondence analysis, are also included into the econometric specification as determinants.

Tables 4 and 5 present marginal effects and odds ratio, respectively, obtained by running the mixed gologit model, by using the STATA package (Version 12.0). The number of observation is 1,338 and the Wald test indicates that the coefficients are jointly statistically significant. The generalized ordered logit specification is empirically better than the ordered logit specification which was found running both the Brant test, where the null hypothesis is rejected at the 5% level of significance, and the likelihood-ratio test, where the null hypothesis is rejected at the 10% level of significance.

The coefficients obtained for each group show some differences in terms of magnitude, signs and their statistical significance. In this case, one assumes that the effect of the explanatory variables on the dependent variable varies across the range of *Y*.

With respect to demographic characteristics, age does not affect the level of investment chosen by Messina residents. Women are likely to prefer a low level of investment in cruise activity in comparison to men. This finding is further confirmed by the odds ratio results, where females are more likely to prefer a low, or very low, level of investment in the cruise sector. This outcome is congruent with other studies, where women appear to have a greater sensitivity to the nega-

Table 4: Mixed generalized ordered logit results – marginal effects by level of investment

Variables	very low	low	medium	high	very high
Gen (Ref. Male)	-0.004 (0.014)	**0.042 (0.018)***	**-0.053 (0.026)****	0.005 (0.028)	0.010 (0.021)
Age	-0.012 (0.015)	0.002 (0.017)	-0.014 (0.002)	-0.002 (0.016)	0.003 (0.002)
Ages	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Ycruis	-0.018 (0.034)	-0.034 (0.038)	-0.069 (0.058)	-0.072 (0.067)	**0.193 (0.069)*****
Nfam	-0.006 (0.086)	0.002 (0.007)	**-0.026 (0.011)****	0.012 (0.011)	**0.018 (0.009)****
Occupation (ref. Primary)					
Ocind	-0.015 (0.028)	0.054 (0.049)	-0.049 (0.063)	0.038 (0.068)	-0.028 (0.046)
Ocserv	-0.017 (0.022)	0.040 (0.032)	-0.005 (0.051)	-0.010 (0.051)	-0.007 (0.039)
Octou	-0.039 (0.044)	-0.074 (0.045)	-0.036 (0.102)	0.067 (0.109)	0.083 (0.101)
Ocstu	**-0.044 (0.019)****	0.008 (0.339)	**-0.086 (0.053)***	-0.068 (0.060)	0.054 (0.052)
Ocret	-0.019 (0.025)	**0.072 (0.042)***	-0.039 (0.058)	-0.008 (0.059)	-0.005 (0.045)
Ocump	**-0.059 (0.015)*****	0.024 (0.039)	0.041 (0.062)	0.003 (0.063)	-0.010 (0.051)
Ocoth	-0.012 (0.033)	0.019 (0.046)	-0.097 (0.068)	0.044 (0.512)	0.045 (0.065)
Kmport	**0.001 (0.000)****	-0.000 (0.001)	0.001 (0.002)	0.002 (0.002)	**-0.003 (0.001)****
Cruis	**-0.036 (0.016)****	**-0.049 (0.018)*****	**-0.076 (0.026)*****	**0.076 (0.029)*****	**0.085 (0.023)*****
Fact1 Pos. Welf. Externality	-0.0117 (0.007)	**-0.022 (0.001)****	**-0.023 (0.013)***	**0.026 (0.014)***	**0.030 (0.011)*****
Fact2 Pos. Cult. Externality	**-0.015 (0.009)***	**-0.047 (0.009)*****	**-0.003 (0.014)*****	0.009 (0.014)	**0.056 (0.011)*****
Fact3 Neg. Env. Externality	0.007 (0.009)	**0.019 (0.009)****	**0.026 (0.013)***	-0.009 (0.014)	**-0.043 (0.011)*****
Fact4 Pos. Econ. Externality	**-0.031 (0.008)*****	**-0.015 (0.010)**	-0.013 (0.013)	**0.044 (0.014)*****	0.015 (0.011)
Fact5 Neg. Econ. Externality	0.000 (0.009)	-0.018 (0.009)	-0.010 (0.013)	**0.032 (0.014)****	-0.003 (0.011)
Fact6 Pos. Soc. Externality	-0.000 (0.008)	-0.013 (0.009)	**-0.033 (0.013)*****	**0.029 (0.014)****	**0.018 (0.011)]***
Number observations°	1,338				
Wald test	Chi2(80)=279.91***				
Pseudo-R2	0.0735				
Log-Likelihood test ^	Chi2(66) = 84.45*				
Brant test ^^	Chi2(60)=89.23***				

Notes: marginal effects in square parenthesis; standard errors from the *gologit* in parenthesis; *, **, *** 10%, 5% and 1% level of significance – in bold only statistically significance coefficients; ° the number of observations that initially was 1,500, is now 1,338 because of missing observations in some of the variables; ^ Log-likelihood test of proportionality of odds across response categories; ^^Brant test of parallel regression assumption.

Table 5: Mixed generalized ordered logit results – odds ratio

Variables	Very low vs. (low, medium, high, very high)	(Very low, low) vs. (medium, high, very high)	(Very low, low, medium) vs. (high, very high)	(Very low, low, medium, high) vs. (very high)
Gen (Ref. Male)	1.06 (0.212)	**0.78 (0.109)***	1.06 (0.125)	1.07 (0.158)
e	1.02 (0.022)	0.99 (0.013)	1.00 (0.005)	1.02 (0.016)
Ages	0.99 (0.000)	1.00 (0.000)	1.00 (0.000)	0.99 (0.000)
Ycruis	1.34 (0.820)	1.458 (0.523)	1.46 (0.523)	2.80 (0.865)
Nfam	1.09 (0.005)	1.03 (0.061)	**1.13 (0.055)****	**1.13 (0.069)****
Occupation (ref. Primary)				
Ocind	1.26 (0.559)	0.79 (0.275)	1.04 (0.301)	0.82 (0.289)
Ocserv	1.29 (0.455)	0.86 (0.220)	0.93 (0.086)	0.95 (0.260)
Octou	2.16 (2.655)	2.80 (2.353)	1.89 (0.964)	1.63 (0.867)
Ocstu	**2.18 (0.927)***	1.28 (0.392)	**1.66 (0.410)****	1.41 (0.443)
Ocret	1.35 (0.571)	0.72 (0.212)	0.95 (0.234)	0.96 (0.303)
Ocump	**3.62 (1.867)****	1.28 (0.428)	0.97 (0.263)	0.93 (0.335)
Ocoth	1.20 (0.656)	0.96 (0.362)	1.44 (0.465)	1.33 (0.512)
Cruis	**1.71 (0.439)****	**1.78 (0.275)*****	**1.93 (0.237)*****	**1.76 (0.264)*****
Kmport	**0.99 (0.004)****	0.99 (0.006)	0.995 (0.007)	**0.97 (0.010)****
Fact1 Pos. Welf. Externality	1.17 (0.128)	**1.24 (0.089)*****	**1.25 (0.074)*****	**1.23 (0.093)*****
Fact2 Pos. Cult. Externality	**1.23 (0.155)***	**1.49 (0.117)*****	**1.30 (0.083)*****	**1.46 (0.117)*****
Fact3 Neg. Env. Externality	0.90 (0.116)	**0.84 (0.067)****	**0.81 (0.049)*****	**0.74 (0.057)*****
Fact4 Pos. Econ. Externality	**1.58 (0.219)***	1.36 (0.101)	**1.27 (0.076)*****	1.11 (0.086)
Fact5 Neg. Econ. Externality	0.99 (0.129)	1.13 (0.087)	**1.12 (0.069)***	0.98 (0.072)
Fact6 Pos. Soc. Externality	1.01 (0.120)	1.09 (0.079)	**1.21 (0.071)*****	1.13 (0.085)
Number observations	1,338			
Wald test	Chi2(80)=279.91***			
Pseudo-R2	0.0735			
Log-Likelihood test ^	Chi2(66) = 84.45*			
Brant test ^^	Chi2(60)=89.23***			

Notes: standard errors from the *gologit* in parenthesis; *, **, *** 10%, 5% and 1% level of significance – in bold only statistically significance coefficients; ^ Log-likelihood test of proportionality of odds across response categories; ^^Brant test of parallel regression assumption.

tive impacts exerted by tourism activity, especially from an environmental point of view. This attitude has been dubbed "women environmentalism" (e.g. Uysal et al. 1994; Zelzny et al. 2000; Theodori and Luloff 2002; Hunter et al. 2004).

Respondents whose income depends on the cruise activity tend to prefer a very high level of investment, more so than residents whose income depends on other economic activity. Moreover, a unitary increase in the number of family members leads to an increase in the probability of observing residents willing to invest a very high level of economic resources in the cruise industry. The odds ratio findings also indicate that the higher the number of family members the more likely the choice of a level of investment from high to very high.

The present study also took into account several labour market conditions. Students and unemployed are less likely to prefer a very low level of investment in comparison to the primary sector group; this effect is stronger for those who are unemployed. Also, residents who are retired are more likely to prefer a low level of investment in the cruise sector in comparison to the reference category. Considering the odds ratio (Table 5), it appears that students, in particular, would prefer high level investments in the cruise activity in Messina. This outcome seems consistent with the fact that local youth may tend to regard this activity as a drive for growth and a job creation opportunity.

The distance from the port also affects the level of investment that residents in Messina would undertake. Specifically, a unitary increase in the distance between respondents' home and the port leads to a decrease in the probability of investing in the cruise sector at a very high level. The odds ratio further reveals that residents who live far away from the port would invest a very low amount of resources, and this is confirmed also by the positive marginal effect obtained at the "very low level". Following prior research (Del Chiappa and Abbate 2012), it could be argued that people who live far away from the port tend to perceive lower benefits arising from the cruise tourism development and, as a consequence, are less prone to invest.

A completely different picture emerges if the residents in Messina had cruise experience in the past. First of all, the coefficient of this dichotomous variable is always statistically significant. Second, the coefficient shows a consistent positive sign that indicates that a direct cruise experience leads to the likelihood to invest a very high level of resources in this economic sector.

The analysis of the factors that synthesise a set of positive and negative externalities produced by the cruise activity in Messina, as perceived by the representative sample of residents, also yields interesting results. Overall, these factors present highly statistically significant coefficients. Table 4 indicates that if residents perceive positive welfare, cultural, or social externalities, they are more likely to invest a very high level of resources in the cruise sector. Also, if they perceive this industry to produce positive economic externalities they are more likely to invest at a high level. Conversely, Messina residents seem to have greater awareness of the negative environmental externalities than of the (negative) economic externalities, and when this is the case, they are more likely to invest at either a medium or a low level than at a very high level. These results are also confirmed by the odds ratio test.

6 Discussion and Conclusions

This study has analysed residents' preferences towards cruise tourism development, expressed in terms of their intensity of feelings for varying levels of investment in this economic activity. The case study is Messina, a Mediterranean port of call in the island of Sicily (Italy). To this aim, a sample of 1,500 face-to-face interviews was gathered during the summer 2011. Empirically, a generalized ordered logit analysis was run to investigate what socio-economic and demographic variables, as well as potential positive and negative externalities, influence residents' perceptions.

As a first step of the empirical investigation, a correspondence analysis was carried out in order to obtain a set of factors to capture the correlation between a wide range of externality variables. Specifically, an Equamax rotation method was employed to obtain a parsimonious number of factors and variables. These orthogonal factors were then included into the generalized ordered logit specification.

As far as the externalities are concerned, the econometric findings have revealed that, on the one hand, residents in Messina are more likely to invest at a very high level in the cruise activity if they perceive :

- positive welfare externalities (i.e. public services improvement; infrastructure improvement – such as roads, communication, water pipes; rural and urban gentrification),
- positive cultural externalities (i.e. enhanced knowledge of other cultures and communities or an increase in the number of cultural and recreational activities or valorisation of local tradition and authenticity)
- positive social externality (i.e. cruise activity changes actual lifestyle; increases disposable income; increases quality of life).

Moreover, residents in Messina, treated as a composite stakeholder, would invest a very high level of resources if their income depends on the cruise activity, if they had a cruise trip in the past and if they belong to a family with a high number of components.

Conversely, it is more likely that residents in Messina prefer a very low, or low level, of investment the farther they live from the port, if they are female and retired. The same is true if they perceive a deterioration of the environment, that is an increase of environmental and marine pollution, increase in waste, deterioration of the eco-system and an increase of congestion in public and recreational areas. On balance, residents are more concerned about negative externalities affecting the environment rather than the economy (for example crowding-out effects on other relevant projects, increase in traffic and road accidents, increase in micro-crime and an increase in costs of living for local communities).

Overall, the findings of the present study show that the local community has positive perceptions and feelings towards cruise tourism development in this Mediterranean port of call. However, some caution may be required. The present research may overstate a desire for high levels of investment because Messina is a port-of-call. Furthermore, the cruising activity might have caused some degree of population movement, with residents who did not want to experience the impact of cruise tourism leaving the area and those attracted by the prospect of tourism-related employment moving to Messina - especially near the port. Unfortunately, this type of information is not available and, as a consequence, this population phenomenon cannot be closely analysed.

The empirical outcomes can be used as a guide in planning the future of this cruise tourism destination. They are a useful reminder for destination managers and policy makers of the importance of involving the local community before

tourism actions are taken. In other words, policy makers need to truly understand and monitor over time how resident perceive the impacts of cruise tourism development and they should consider residents and stakeholders' expectations in their decision-making. Further, in an effort to increase favourable residents' attitudes toward tourism, policy makers should run internal marketing and communication activities delivering tailored messages which "bring home" the positive balance between the positive and negative impacts of tourism (Perdue et al. 1990; Brida et al. 2011a). This should be done with the contribution of impartial sources of information (e.g. university, research centres) so that the local community can trust the delivered messages to be fact-based rather than "politically-minded" (Lindberg and Johnson 1997).

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