Land Use Policy 85 (2019) 114–120

Contents lists available at ScienceDirect

Land Use Policy

journal homepage: www.elsevier.com/locate/landusepol

UNESCO World Heritage sites and tourism attractiveness: The case of Italian provinces

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ARTICLE INFO

Keywords:
World Heritage List
Tourism demand
International tourists
Italian provinces
UNESCO
Panel data

ABSTRACT

This paper aims at investigating whether the inscriptions in the UNESCO World Heritage List (WHL) sites influence tourism attractiveness. An empirical analysis, based on dynamic panel data methodology, was implemented to study the effect of WHL cultural and natural properties inclusion on international tourist arrivals in Italian provinces in the 2000–2014 time span. Results suggest that being awarded with a World Heritage recognition, together with the province's wealth, environmental habits and the openness to external markets, may influence attractiveness, confirming a tourism-enhancing role of the List, beyond the simple heritage preservation.

1. Introduction

The inclusion of a cultural or natural site on the World Heritage List (WHL), which represents the universal recognition of the outstanding value of the site to humanity, should secure a better heritage preservation. The creation of the List, which dates back to the "Convention Concerning the Protection of the World Cultural and Natural Heritage", adopted by UNESCO in 1972, was aimed at the identification, protection and preservation of cultural and natural heritage. Nevertheless, a widespread belief seems to exist that UNESCO recognition is also able to generate monetary revenues. Indeed, a place on the list is very appealing to public decision makers since it gives prominence to the territory and increases its attractiveness (Frey and Steiner, 2011). In recent times tourism literature has started to explore the possible effectiveness of UNESCO recognition in fostering tourism attractiveness, without reaching unequivocal results. While some scholars demonstrate that having a site inscribed in the List can be beneficial for tourism attractiveness (Yang et al., 2010; Patuelli et al., 2013; Su and Lin, 2014), others do not conclude in favour of a positive and significant influence on tourism demand in the case of WHL sites (Cellini, 2011; Huang et al., 2012; Cuccia et al., 2016, 2017). This debate is extremely important in light of the relationship between tourism, sustainable planning and heritage conservation (Fyall et al., 2006). Indeed, in extreme cases, an excessive number of tourists can lead to the destruction of a cultural or natural site.

Through a GMM dynamic panel data model, we analyse the effect of cultural and natural WHL sites on international tourist arrivals in Italian provinces between 2000 and 2014. Italy represents a fruitful case for analysing the impact of WHL recognitions on tourism flows, as it is the country with the highest number of properties inscribed.[1] Italy also has also some of the world's most visited tourist attractions and it is included among the top 10 international tourism destinations (UNWTO, 2017). The empirical analysis considers a sample of 110 Italian provinces for a total of 1,376 observations. The basic relationship is enriched with a set of control variables, which in the literature are said to have an influence on tourist arrivals (e.g. Huang et al., 2012; Yang et al., 2010; Su and Lin, 2014). These variables are: real GDP per capita, as a proxy of wealth; trade openness, as a measure of the attitude toward foreign markets; the availability of hospital beds, as a measure of the level of health care; total differentiated waste as a percentage of total waste, as a proxy of pro-environmental behaviour; the level of crime per inhabitants, as a measure of the degree of safety, and the number of airports, as a measure of transport infrastructure. A dummy variable for the year 2007, when a sharp reduction of international tourist arrivals was registered, was included in the model to take into account the global shock of the financial crisis. Furthermore, the general model was replicated in two sub-sets of provinces: the first one obtained by excluding provinces endowed with more than one site rated of great cultural value – to account for the effect of reputation of certain famous heritage cities – and the second one obtained by excluding the so-called "autonomous provinces" – to account

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[1] The list is available at: http://whc.UNESCO.org/en/list/stat#s2)

https://doi.org/10.1016/j.landusepol.2019.03.037
Received 19 November 2018; Received in revised form 3 February 2019; Accepted 24 March 2019

for possible substantial differences in expenditure decisions (e.g. about heritage tourism planning and development) due to a higher degree of autonomy deriving from the special statute of the reference region.

Among the control variables, wealth, differentiated waste collection and trade have positive impacts, meaning that more positive attitudes toward the environment as well as openness to external markets are other factors promoting international arrivals.

Our analysis follows the theory that the presence of WHL properties influences tourism flows, choosing the number of international arrivals as interest variable, and providing stable results related to the positive effect of WHL sites inscription on international tourism flows. Moreover, the study also tests the hypothesis that economic wellbeing, and more generally the so-called "quality of life" of a territory, expressed by indicators related to the supply of hospital beds, the diffusion of crime and the spread of differentiated waste, also have a positive role in attracting tourists.

The novelty of this paper can be summarized in the following points: 1) first of all, the use of the NUTS-3 level of investigation: previous analyses were instead implemented at regional level or on a restricted sample of WH sites (Cuccia et al., 2016 and 2017; Patuelli et al., 2013; Ribaudo and Figini, 2017). As far as we know, the sole paper analysing the relation between international tourists' arrivals and the number of WHL sites in Italy using the whole provincial sample is De Simone et al. (2018), where the results of an estimation with cointegration techniques support the existence of a long run and stable relationship between the dependent and the independent variable. However, De Simone et al. (2018)'s univariate analysis, despite relying on cointegration, omits a number of determinants considered in the literature to be relevant in affecting international tourism. 2) The second novelty is the introduction of the set of control variables indicated above: they are all predicted to be relevant in defining international arrivals, and their significance in the estimate would translate into a reinforcement of the basic relationship, thus confirming and strengthening the results obtained in De Simone et al. (2018). 3) Finally, the third novelty is the robustness check for the two subsamples which takes account of the presence of sites of overwhelming importance in some provinces (e.g. the city of Rome) as well as of different spending policies across Italian regions.

Our results, while limited to the Italian case, can improve policymakers' knowledge of how a World Heritage designation might affect subsequent tourism flows, and can support policymakers in defining a policy agenda for tourism at heritage sites in the aftermath of UNESCO recognition. The present analysis constitutes a starting point for the elaboration of more specific management plans that have to be tailored to the characteristics and specificities of each site, according to their diversity and varying resource levels (Fyall et al., 2006).

The remainder of this article is as follows: section 2 synthetizes the literature on the relationship between UNESCO World Heritage inclusion and tourism attractiveness. Section 3 presents the data and methodology while section 4 describes the results. Section 5 discusses the main findings and concludes the paper.

2. UNESCO World Heritage recognition and tourism: a literature review

The declared mission behind UNESCO's 1972 decision to create a World Heritage List was to ensure the protection of outstanding heritage sites and preserve their state of conservation for transmission to future generations, as well as to provide assistance to World Heritage sites in danger. All countries are encouraged to become parties of the Convention in order to realize a "representative, balanced and credible World Heritage List" that is able to reflect "the world's cultural and natural diversity of outstanding universal value"[2] . However, both the submission process and the effects of inclusion in the List can be troublesome and may differ from declared UNESCO intentions.

An array of literature has demonstrated that certain institutional and economic features can influence the nomination of heritage sites. Behind the site selection process by the World Heritage Committee, which makes the decision to include a property in the List according to well defined criteria, a rent-seeking process can be found that suggests a high degree of politicization of the decisions made by the UNESCO's different bodies, and which may harm the worldwide representativeness of the List (Bertacchini and Saccone, 2012; Frey and Steiner, 2011; De Simone and Di Maio, 2012; Meskell et al., 2015; Bertacchini et al., 2016 and 2017).

As found in Kim et al. (2018, p. 126), "there is a wide recognition and belief that the designation of a World Heritage Site acts as a catalyst for tourism development", since UNESCO's WHL "endowment" of a site could influence the choice to visit that area, as well as visitors' behaviour while there. However, the literature has not reached unequivocal results concerning the impact of WHL inclusion on tourism demand, and there is thus still room for further investigation. The most relevant contributions can be sorted into "micro" and "macro" studies.[3]

"Micro" studies mostly rely on visitor surveys. Marcotte and Bourdeau (2006) examine the impact of Quebec City's designation as a World Heritage site on tourists' destination choice, and find that it influenced only 15% of interviewed tourists. Similarly, Reinius and Fredman (2007), in their study of the Swedish Laponian Area World Heritage site, find an even smaller percentage (5%) of surveyed visitors influenced by the World Heritage designation, while Yan and Morrison (2008) show a higher percentage of awareness and influence of WH status on the visiting decision of surveyed tourists in China (67.1%). Jimura (2011), analysing a World Heritage case study in Japan by means of descriptive statistics and questionnaire surveys distributed among local people and local specialists, finds that WHL designation has increased tourism attractiveness but has had both significant positive and negative effects on local communities (WHS designation moved local industry from declining sectors to tourism and increased residents' pride but, at the same time, it led to a deterioration in the level of preservation of heritage and, by fostering tourism, became a threat to local people's privacy and community spirit). Moy and Phongpanichanan (2014) study the case of the WH site of Melaka in Malaysia, and their survey shows little awareness of UNESCO recognition among interviewed visitors. Adie and Hall (2018) study the brand effectiveness of the WHL as a tourist attractor in three different cultural sites and argue that awareness of the List does not significantly affect tourists' site selection process.

"Macro" studies focus on the issues around the tourism-WHL relationship by means of cross-sectional as well as panel methodologies on macroeconomic data.

Earlier papers explored the impact of UNESCO listing on tourism, although only as descriptive analyses (e.g. Tisdell and Wilson, 2002). However, econometric literature started from the seminal contribution of Arezki et al. (2009): using the UNESCO World Heritage List as an instrument for tourism, they demonstrate a positive relationship between tourism specialization and economic growth in a sample of 127 countries. More recently, scholars have provided econometric analyses supporting or disproving the positive effect of WHL inclusion on tourism attractiveness.

A positive relationship can be found in the following papers: Yang et al. (2010); Yang and Lin (2014); Huang et al. (2012); Su and Lin (2014) and Patuelli et al. (2013 and 2014). In particular, Yang et al. (2010) search for determinants of international tourism demand in

[2] (http://whc.UNESCO.org/en/globalstrategy/).

[3] This classification aims to simplify the reference papers for this study. However, many scholars have studied the WH listing-tourism relationship using different approaches. For a partial review, see Leask (2016) and Ribaudo and Figini (2017).

China utilizing provincial panel data over the period of 2000-2005. They find that the inclusion of both cultural and natural properties of the WHL, together with relative income, the population of countries of origin, the exchange rate, infrastructure and accommodation facilities, better public health and foreign direct investments, are positively related to international tourist attractiveness, while geographical distance and the occurrence of the SARS epidemic negatively influence foreign tourism demand. Still relying on Chinese provincial-level data between 2000 and 2005, Yang and Lin (2014) use more sophisticated techniques mostly to overcome the problem of time invariant WH sites and conclude in favour of a positive relationship between WH sites and international tourists in China. Huang et al. (2012), focusing on the single inscription case of Macau between 1998–2009, find a difference between the short- and long-run effect of the WHL variable on international tourism demand. In particular, results from regression models, including wealth, population, distance, accommodation and leisure facilities as control variables, show that having a site included on the List is not always relevant for tourism demand.

Su and Lin (2014), relying on a sample of 66 countries between 2000–2009, find that WH inscriptions (both natural and cultural sites, with a larger effect for the latter), positively influence international tourism demand. This result is confirmed by empirical estimates on different subsamples.

Cellini (2011) questions the results found in Yang et al. (2010). He raises doubts about the effectiveness of WHL inscription in fostering tourism attractiveness by showing the outcomes of a cross-sectional analysis on Italian regional data over the period of 1996–2007, in which the dummy variable accounting for the presence of a WH property is not significant. Yang and Lin (2011) reply to Cellini by claiming the validity of their estimates and invite scholars to join the debate by providing further econometric analyses. A significant number of analyses concern the Italian case, due to its prominent role in terms of properties inscribed in the WHL. The majority of these studies concern regional-level (NUTS-2) data or a sample of selected WH sites. Lo Piccolo et al. (2012) study the relationship between tourism and planning at two WHL sites in two case studies in Sicily. By means of descriptive analysis, they do not support the hypothesis that WHL designation increases site popularity and attractiveness, as they do not observe any increase in tourists' arrivals as a consequence of the inscription. Patuelli et al. (2013) investigate the relevance of WH inscriptions on domestic regional tourism inflows and outflows and, at the same time, analyse whether tourists' choices are influenced by the spatial distribution of the WH properties between 1998-2009. The spatial econometric results confirm a positive influence of WHL inclusions on tourism inflows (and a negative effect on regional outflows), while a negative effect is observed related to sites inscribed in neighbouring regions, suggesting the presence of a competition effect.

Other papers investigate the effect of WHL inscriptions on the competitiveness of tourism destinations. Using a static approach, Cuccia et al. (2016) assess how cultural and natural WH sites impact the technical efficiency of tourism destinations. By means of data envelopment analysis (DEA) models applied to Italian regions over the 1995–2010 timespan, they underline that cultural and natural heritage positively influences the efficiency of Italian regions, while the reverse appears to be true for cultural endowments inscribed in the WHL, which exerts a negative impact on the occupancy rate of regional accommodation capacity that appears oversupplied. A related dynamic analysis (Cuccia et al., 2017) studies the relationship between WHL and change in efficiency over time in Italian regions, related technical efficiency determinants, as well as possible spatial effects in destination performance. The results provide support for the conclusion that the inscription of properties exerts a negative effect on the efficiency of regional tourism performance, both in the short and long run (as the effect is tested also on WHL cultural sites weighted for the number of years of inscription of each site). Moreover, no support for spatial effect is detected.

Ribaudo and Figini (2017), concentrate their analysis on fifty Italian WHL sites at municipal level with the aim of observing the performance of the different sites before and after inscription on the List, using a mobile range of 11 years (5 before and 5 after the inclusion). The results are mixed: they observe that some destinations did not experience a boost in tourism attractiveness, while others experienced better performance in terms of arrivals but not in terms of overnight stays. They conclude that far from being straightforward, the WHL-tourism destination linkage needs increased caution in its interpretation, and asks policy makers and tourism managers to carefully evaluate the possible consequences and risks of inscription in order to avoid false expectations.

As far as we know, only one paper has analysed the Italian case study using provincial (NUTS-3) data (De Simone et al., 2018). This is surprising, as relying on a narrower level of analysis can be preferable for two primary reasons. First, Italian regional territories are characterized by a high level of audience heterogeneity (where massively visited sites, such as the WHL Archaeological Areas of Pompeii and Herculaneum, coexist with lower volume attractions, as found in Ercolano et al., 2018). Second, there are significant differences in tourism attractiveness within regions since cultural sites are close to seaside resorts or religious places. Assigning inscriptions to provinces helps to reduce the bias of spatial misallocation of UNESCO sites by focusing on smaller statistical units.

However, De Simone et al. (2018) use the univariate cointegrated analysis between international tourist arrivals and the number of WHL sites: employing cointegration techniques, the authors show the existence of a long run and stable relationship between the dependent and the independent variable. Their results highlight that the number of inscriptions are highly relevant in conditioning international tourism demand, but the analysis does not include other determinants which previous literature considered relevant in affecting international tourism.

We fill this gap by using alternative dynamic panel estimation techniques considered to be robust in presence of endogeneity issues, and by including a set of control variables as possible factors explaining international arrivals.

3. Data and methodology

This paper aims to answer the question of whether international tourist arrivals in Italian provinces depend on the number of WHL recognitions. Following Su and Lin (2014), the estimated equation is the following:

$$Int\_Arr_{t,i} = \alpha_i + \beta_1 Int\_Arr_{t-1,i} + \beta_2 WHL_{t,i} + \beta_3 X'_{t,i} + \varepsilon_{t,i} \quad (1)$$

where *Int_Arr* is the number of international arrivals expressed in logarithmic form. The logarithmic form represents a monothonic transformation of the original dependent variable, allowing us to take into account possible non-linear relationships between the variables and preserve the linear form in the estimates. Furthermore, it allows us to compare variables of similar scales and – since the regressors are not transformed – interpret the coefficients in terms of percentages (Benoit, 2017). We consider only foreign (non-domestic) flows to avoid distortions caused by the different sets of variables affecting internal flows (Leask and Fyall, 2006). *WHL* is the number of sites included on the World Heritage List, $X'_{t,i}$ is a matrix containing the control variables, α_i is the province fixed effect, and $\varepsilon_{i,t}$ represents the error term. The suffix t indicates the time period, and i represents each province.

Data on international tourist arrivals are collected yearly by the National Institute of Statistics (ISTAT). Data on the WHL are retrieved from the UNESCO World Heritage List website.[4] Since each recognition occurs in a given year, the panel dataset is built assigning the value of 0 when no inscription on the WHL is observed and a positive value equal

[4] (http://whc.UNESCO.org/en/list/):

to or greater than one – depending on the number at the time of the inclusion – starting from the year in which the site(s) obtained the official inclusion. When inscriptions consist of a composite heritage (e.g. the city of Vicenza and the Palladian Villas of the Veneto; the Sacri Monti of Piedmont and Lombardy), and are included as a single site on the List, the property is assigned only once to the related province(s), even if the province's territory consists of more than one site. Attribution to the provinces of the WHL properties must be carefully interpreted, as it does not convey complete information on the whole consistency of their heritage.

The sample includes 110 Italian provinces, which corresponds to their number at present. Since the number of provinces changed during the period analysed (e.g., Monza e della Brianza, Fermo and Barletta-Andria-Trani provinces were determined in 2004), the observations are included in the dataset from their institutional origin, therefore generating an unbalanced panel. The aggregation of new provinces, following the old administrative divisions in order to have a balanced dataset, was not possible as the boundaries changed over time, with some municipalities moving from one administration to another. However, the dynamic empirical strategy accounts for this limitation since it uses the first observation available for each panel member, assuming independence among cross sectional units and preventing evaluation of the time-series operators that involve missing observations (Arellano and Bond, 1991).

A first look at the dynamics of the two main variables considered provides a first insight into the proposed relation. In Fig. 1, the panel mean of international tourists' arrivals in logarithmic form is measured on the left scale (this is just a way to make values that would be otherwise expressed in millions more easily readable), while on the right the WHL panel mean is represented.

Between 2000 and 2014 the variables follow a very similar path, as it is observable that they grow together. A quite sharp decrease in international tourist arrivals is detectable in correspondence with the year 2007, as a consequence of the global financial shock.

To reinforce the results and exclude the possibility that the common route is spurious, the following control variables were selected following the cited literature (Huang et al., 2012; Yang et al., 2010; Su and Lin, 2014). 1) Per capita GDP (GDP_PC) is supposed to positively affect the dependent variable because it conveys information about the level of economic development in the destination province. 2) The degree of market openness – calculated as the sum of imports and exports as a percentage of GDP (TRADE_OP) – also has a positive expected sign as the greater the volume of imports and exports, the greater the number of people travelling inward and outward in the province to enhance their exchanges. According to national accounts, the expenses incurred by international tourists are included as "exports", raising doubts about the independence of the variable from foreign tourism flows. However, the empirical technique considers lags in the independent variable, so that we can exclude circularity or dependence between past values of trade openness and current tourist arrivals. 3) The number of hospital beds as a percentage of the inhabitants (HBED_PC) is a proxy of health service availability and of the potential response of the territory in case of misadventures. The expected sign is positive. 4) The number of committed crimes as a percentage of the total population (CRI_PC) indicates the safety of the province and it is supposed to negatively affect incoming tourism. Finally, unlike previous literature, we decided to include a new control variable, namely differentiated waste as a percentage of total waste (DIFFW_TW), which should increase international tourist arrivals because it signals the provincial environmental habits and, relatedly, good or poor pro-environmental behaviour (Agovino et al., 2016). The decision to include a variable on the environmental concern at provincial level was taken in the light of the waste management issue which culminated in the garbage scandal which was prominently featured in the world news[5] .

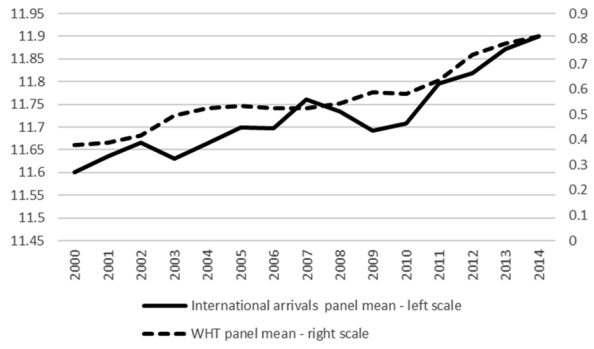

Fig. 1. International tourists' arrivals and WHL inscriptions in Italian provinces (2000–2014): panel mean.

The descriptive statistics of the variables are available in Table 1.

The supply of accommodation facilities (hotels, transport, restaurants, etc.) is not included among regressors since they are related to the supply side of the market, while we are investigating the demand side (Huang et al., 2012)[6] .

With the exception of hospital beds (drawn from the National Health Ministry (NHM) statistics) and waste collection (retrieved from the National Institute for Environmental Protection and Research (ISPRA)), all of the covariates are extracted from the online data warehouse of the National Institute of Statistics (ISTAT).[7] Finally, as a measure of transport infrastructure, the variable AIRPORT, which considers the number of airports per province, has been included in the estimates. To take into account the possible presence of global shocks affecting tourism arrivals year dummies have been considered. As can be observed from the graph presented in Fig. 1, in 2007 a sharp reduction of incoming tourism is registered, therefore suggesting to control for this year effect on the flow of international tourism.[8]

Equation (1) is estimated implementing GMM dynamic panel methodology, whose specification accounts for autocorrelation between dependent and explanatory variables (Arellano and Bond, 1991). This dynamic panel data technique is suitable in the case of a large N and small t, i.e., in the case of a number of observed individuals (110 provinces) much higher than the observations over time (11 years). This methodology uses moment conditions, in which the lagged differences of the dependent variable are used as instruments in the level equation. In addition, it eliminates the problem of heterogeneity across panel members. To avoid biases resulting from the differences among provinces, the two-step and the robust option are implemented (Windmeijer, 2005). With these options, the estimates can be considered reliable since they are robust and efficient in the presence of heteroscedasticity and autocorrelation (Roodman, 2009). Since the estimator must be free of autocorrelations in the idiosyncratic errors, the Arellano-Bond test for first- and second-order autocorrelation in the first-differenced errors is performed after the estimation; the Sargan-J test (Sargan, 1975; Hansen, 1982) is implemented to check for the validity of the over-identifying restrictions.

The GMM estimator employs instruments based on the past observations of the instrumented variables. The use of numerous

[5] https://www.reuters.com/article/us-italy-garbage-idUSTRE6AL3ZK20101122

[6] Information on other explanatory variables considered by the literature, such as the availability of railways and motorway infrastructure, public expenditures in recreational and cultural activities or the education level of the population/public spending on education, is not available for Italian provinces (or, as in the case of motorways, is available only for some years). Information on the Consumer Price Index, as a price variable, has been excluded for missing too many data.

[7] Notably, http://www.dati.salute.gov.it/; http://www.catasto-rifiuti.isprambiente.it/ http://www.dati.istati.it and asti.istat.it

[8] We also inserted dummies for each year in the timespan considered, but none of them resulted as being significant.

Table 1
Summary statistics of the variables used in the regression.

Variable	Description	Obs.	Mean	Std. Dev.	Min.	Max.	Source
ARR_int	International tourist arrivals	1,596	11.72702	1.477977	8.02027	15.71035	ISTAT
WHCentre	Number of WHL sites	1,596	0.5670426	0.8266056	0	4	
GDP_PC	GDP per capita	1596	23732.83	6312.151	10900	51500	ISTAT
TRADE_OP	Trade openness	1,596	0.3787748	0.2944812	0.0001657	3.04604	ISTAT
HBED_PC	Beds in hospitals per capita	1,596	0.0037102	0.001125	0	0.0161772	NHM
DIFFW_TW	Differentiated waste as % of total waste	1,596	0.2955212	0.1940204	0	1.428807	ISPRA
CRI_PC	Per capita number of crimes	1,593	0.0383215	0.013502	0	0.1331119	ISTAT
AIRPORT	Number of airports	1,596	0.4461153	0.5733725	0	3	ISTAT

instruments may overfit the instrumented variables and lead to bias in the coefficient estimates (Roodman, 2009). What is suggested is not a clear-cut rule but rather a rule of thumb: to use a number of instruments less than or equal to the number of groups.

The timespan is limited by the availability of data used as control variables, and ranges from 2000 to 2014. The estimates are implemented for the whole sample and, as a robustness check, for two further sub-samples. The first one is obtained by excluding the nine provinces that have more than one site that, according to the Italian Touring Club[9] (e. g. Genoa, Gorizia, Naples, Perugia, Pesaro e Urbino, Rimini, Rome, Salerno, and Siena) are rated of overwhelming importance ("great value") in terms of international tourism attractiveness. Following Ribaudo and Figini (2017, p. 525), the exclusion of *superstar* destinations can be justified if one considers that "the causal relation between WHS listing and tourism flows is weak for sites that were already major attractions prior to their designation".

The second sub-sample is obtained excluding the provinces that belong to "autonomous" regions (Valle D'Aosta, Trentino Alto Adige, Friuli Venezia-Giulia, Sardinia, Sicily), i.e. the regions that have a legislative structure with greater autonomy in managing funds for tourism which can, in turn, influence their tourism attractiveness policy.

4. Results

Table 2 presents the results obtained with the GMM methodology. It is worth remembering that the number of international tourist arrivals is expressed in logarithms, so that the coefficient values of the independent variables have to be multiplied by 100 to obtain the percentage effect on the dependent variable generated by one unit change in the independent variable, while the coefficient of the lagged dependent variable represents elasticity (Benoit, 2017). The first column reports the value and the significance of the coefficients for the estimates on the whole sample. The number of the WHL appears to increase the number of international tourist arrivals by 6.9% (0.069***), thus supporting the initial hypothesis of the positive influence of WHL recognition on the tourism sector. In regard to the other control variables, all of them show the expected signs, but with different results. The GDP_PC, though it has high significance, has very little positive influence on the dependent variable, while the TRADE_OP gives a positive contribution of 21% (0.212***) to incoming tourism. This relation of dependence can also be interpreted in the opposite sense (international tourism is classified as a component of exports) raising reasons for concerns about endogeneity issues. However, the empirical technique uses lagged differences as instruments of the level equation, so that the time delay solves the problem of reverse causality. The variable DIFFW_TW, though, increases international tourist arrivals by 27.2% (0.272**), showing the importance of environmental concerns in selecting destinations.

Concerning HBED_PC and CRI_PC, the absence of significance might suggest that travel decisions are not assumed on the basis of the principle of safety. This means that incidence and distribution of criminality is not a concern for international tourists. The non-significance of the variable AIRPORT could signal that international tourists do not necessarily choose the closest airport for travelling, but follow the flying companies' disposable (and cheapest) options. Finally, as predicted by Fig. 1, the DUMMY_07 variable is negative and significant (-0.022**).

The estimates implemented as a robustness check (columns II and III) report similar results. Both in the sample that excluded the

Table 2
International arrivals and World Heritage List sites in Italian provinces (2000–2014): GMM estimates.

Dependent variable: International tourist arrivals			
Independent variables			
	Whole sample	Robustness check	
	I	II	III
1.Arr_int	0.665***	0.688***	0.464***
	(0.055)	(0.056)	(0.010)
WHL	0.069***	0.070***	0.0673***
	(0.024)	(0.024)	(0.028)
GDP_PC	10.1e**	11.4e***	11.5e***
	(3.91e)	(4.18e)	(5.29e)
TR_OP	0.212***	0.216***	0.397***
	(0.073)	(0.070)	(0.129)
HBED_PC	−2.68	−2.730	0.822
	(7.631)	(7.971)	(7.716)
DIFFW_TW	0.272**	0.261**	0.400***
	(0.119)	(0.123)	(0.128)
CRI_PC	−1.15	−1.272	−0.601
	(0.996)	(1.107)	(1.381)
AIRPORT	0.043	0.0690	−0.054
	(0.051)	(0.761)	(0.046)
DUMMY_07	−0.022**	−0.023*	−0.302**
	(0.012)	(0.012)	(0.015)
Constant	3.54***	3.433***	5.737***
	(0.650)	(0.647)	(1.192)
AB test order 1	−4.798***	−4.750***	−3.363***
AB test order 2	−0.4589	−0.410	−0.839
Sargan test	107.048(pval 0.10)	98.941(pval 0.24)	75.607(pval 0.15)
N. instruments	100	98	70
N. provinces	110	101	86
N. observations	1376	1259	1088

Note: ***, **, and * reject the null at 1%, 5% and 10%, respectively.
Standard errors are presented below the estimated coefficients.
WHL is the number of inscriptions in the World Heritage List; GDP_PC is the per capita GDP; TR_OP is trade openness; HBED_PC is the per capita number of beds in hospitals; DIFFW_TW is differentiated waste as a percentage of total waste; CRI_PC is the per capita number of crimes; AIRPORT is the number of airports per province; and DUMMY_07 is the dummy variable for the year 2007.

[9] The Touring Club Italia is a well-known and authoritative institution that for years has identified and classified cultural heritage in the Italian territory. The ranking is the work of well-known experts in the artistic and cultural sector. The ranking has the following coding: "great interest", "very interesting", and "interesting". It is a ranking that can be found in many publications published by the Touring Club: the most widespread is *Guida Veloce d'Italia* (2016 edition consulted).

provinces whose touristic attractiveness is rated very highly and that which excluded the provinces belonging to regions with a higher degree of autonomy, the results are very close to those obtained from the general model.

Towards the bottom of the table, the autocorrelation and Sargan tests are reported. The result of the first shows the presence of autocorrelation of order one, and the absence of autocorrelation of order two. The results of the Sargan test show that in all three samples, the null hypothesis that the over-identifying restrictions are valid is accepted. Finally, the "rule of thumb" is respected, as the number of instruments is always below the number of provinces.

5. Discussion and conclusion

The possible effects of inclusion on the WH List have been at the centre of a heated debate in the literature, whose results are essential to the implementation of sustainable heritage management practices. According to Ho and McKercher (2004) a lack of assessment of the tourism potential of a site in terms of "attractiveness" and carrying capacity is one of the causes of unsuccessful cultural heritage tourism development plans.

We provide a further analysis on the effectiveness of WHL cultural and natural sites in fostering international tourist demand in Italian provinces between 2000 and 2014. Using dynamic econometric techniques, a positive and significant relationship is found between international tourism flows and the number of WHL properties inscribed. On the one hand, this work confirms, and adds more value, to the results obtained by a previous analysis on the provincial level data (De Simone et al., 2018). On the other hand, the empirical evidence also suggests that local economic wellbeing and environmental concerns play a role in attracting tourists, together with the degree of market openness of the province. It is worth mentioning that econometric analyses dealing with this issue are still not very widespread and open future avenues of research. Indeed, while results must be carefully interpreted and cannot be generalized as the relationship between tourism and World Heritage designation is characterized by heterogeneity of sites and management strategies, such studies can be an important starting point to better explore this relationship. Furthermore, these findings shed some more light on the possible effects of WH inscriptions, which do not appear to be limited to the conservation and preservation of heritage, even though these were the declared aims behind the List's establishment. It is clear that besides the conservation function, WHL inscriptions may represent a brand which is recognized all over the world. Far from providing a final response on the relationship between WHL status and tourism, our results open up further issues for discussion concerning how tourism impact may vary across WHL sites, to what degree it is desirable, and how to regulate it properly in the framework of a sustainable policy.

The results of such a study can provide information of value for policy makers, both at national and local level, in order to select sites to propose in the Tentative List for international recognition. Moreover, in countries, like Italy, characterized by a high spatial heterogeneity of cultural and natural sites endowment and related tourism attractiveness, successful heritage preservation and valorisation policies should focus not only on single sites, but on bigger areas, promoting and sustaining coordination among sites through the improvement of tourism services. Good connection of the sites located in different places through an efficient transport system, for example, could redistribute tourism flows, which usually tend to converge on the most renowned sites. However, the positive increase of tourism could turn to be uneven across sites: the risk of overestimating tourism demand (and related investments) can be reduced only by identifying the characteristics of tourists at single sites to target a multi-layered market segmentation. Future analyses will collect survey data at specific destinations with the aim of analysing possible different characteristics of the tourism demand at heritage sites, as well as the effectiveness of management responses to conflicting agendas and priorities arising from tourism development.

On the other hand, in very popular heritage sites, excessive tourism flows can threaten the objective of heritage preservation that underpins the UNESCO World Heritage Program. Alongside beneficial effects, unsustainable tourism development can generate adverse environmental and sociocultural consequences, such as climate change, population pressure, pollution, changes in residents' attitudes and behaviour, tourismification and overexploitation of heritage, deterioration in visitors' experience, and insufficient financing (Moscardo, 1996; Jimura, 2011)

The importance of sustainability at World Heritage sites appears to be an important challenge not only for famous "superstar" sites. Countries that decide to make efforts to include their heritage attractions on the WHL must consider that the World Heritage status may affect priorities and policies, at the national, regional, and local government level, as well as within the tourism industry, by generating a mechanism of crowding out between residents' and tourism needs. A recent paper on the management issues of UNESCO cultural heritage in Serbia (Maksić et al., 2018) shows that the institutional framework for the relationship between cultural heritage policies and land use policies is important, and that new institutional arrangements are required when multi-objective goals are sought and different actors – such as the public, private and civil sectors – are involved. In such cases, when dealing with management issues, it is desirable to carry out qualitative analyses on single case studies as well, which strengthen the institutional process of decision-making and the relation among all the actors involved. A sustainable management of heritage sites, however, must be able to balance the preservation of the sites and their use as a tourism resource through a regulatory system and a planning framework that involve both civil and private stakeholders in the decision-making process. Considering also the progressive reduction of state support due to budgetary constraints or political turmoil, policy makers and hospitality managers should secure a better allocation of local resources and expertise to implement successful sustainable tourism development plans. An example is the Amalfi coast, a WHL site, where the engagement of community residents has proved to be a fundamental ingredient for site promotion (Vollero et al., 2018); civic involvement by residents promotes community collaboration and cohesion among local people, improves the host-tourist relationship and a sustainable use of available resources. Residents' engagement in site promotion, by preserving community spirit, fights negative changes in local culture, and can be a guard against the deterioration of local assets provoked by tourism (Jimura, 2011).

Acknowledgments

Rosaria Rita Canale and Elina De Simone acknowledge financial support from Parthenope University, bandi di sostegno alla ricerca individuale e ricerca competitiva per il tirennio 2016-2018 titled "Institutional and Economic Imbalances in the Eurozone and European Union".

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