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Abstract: We evaluate whether the adoption of a well-known transition management instrument in the tourism industry can support simultaneously economic growth as well as sustainability. We create a detailed dataset at the municipality level and use a recently developed policy evaluation technique to investigate the causal impact of the Blue Flag program on the local economies. Estimates show that this eco-label is not effective at enhancing the local economy; findings are homogeneous across destinations. This empirical result is in line with the recent theoretical literature arguing that a single policy does not suffice for transiting towards a sustainable economy.

Keywords: sustainability policy; eco-label; transition management; policy evaluation method; local economies

JEL codes: C23; Q56; R11; Z32

1. Introduction

The pursuit of economic sustainability is one of the most important goals of modern economies. A sustainable economy is expected to strike a balance between economic growth and sustainability by satisfying the needs of humans in a manner that sustains natural resources and the environment for future generations.

The need to push towards sustainable economic development is particularly pressing in the tourism industry, which has become a major player in the global economy and is growing at a high annual rate[1] (Paci and Marrocu, 2014). The growing relevance of the tourism industry is threatened by the strong link between the economic growth of tourism destinations and the huge socio-economic transformation of them, which disrupts various

[1] On average, over the period 1999-2009, the dynamics of tourism nights in the main European countries witnessed an overall annual average growth rate equal to 1.4% for the domestic component and 1.6% for the international one (Paci and Marrocu, 2014).

aspects of the quality of life for the area's residents. Additionally, a high-volume of tourists might lead to soil erosion, increased pollution and waste, and loss of natural habitat (GSTC, 2013). These issues are particularly relevant in coastal areas, which are characterized by a large marine biodiversity and aquatic phenomena, comprising some of the richest and fragile ecosystems (Martínez et al., 2007); at the same time, coastal destinations are already under very high population pressure due to rapid urbanization processes. Massive tourist influxes, often concentrated in small territories, further increase pollution, waste, and water, worsening the pressure on the local infrastructure and communities (Onofri and Nunes, 2013).

As well noted by Gössling et al. (2012), tourism is becoming unsustainable primarily because of the limited adoption of pro-environmentally actions on a global scale (Hall, 2011). The majority of tourism-related firms only introduce sustainable tourism practices that boost profits or develop public relations (Weaver, 2009). Therefore, there is an unquestionable necessity to enact changes in the tourism industry, but it is less clear which tools could be used to achieve sustainability, especially in the short-term (Gössling et al., 2012).

The transition management literature may provide new and useful insights in this regard. Sustainability transitions are long-term, multi-dimensional[2], and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption (Markard et al., 2012). Then, process management is needed to influence governance and actors' activities in such a way that they lead to accelerated change directed towards sustainability ambitions (Kemp et al., 2007; Loorbach, 2007). This literature is mainly interested in tourism because of its transition to a post-carbon or steady-state equilibrium and the effects that this may have on the industry and its markets (Hall, 2010). In this framework of analysis, the territorial, environmental, as well as the whole economic dimension of tourism destinations are relevant in terms of sustainable growth.

[2] As underlined in Rotmans et al. (2001, p. 22), multi-dimensional refers to a new thinking of transition management that involves more than one domain (multi-domain) and different actors (multi-actor) at different scale levels (multi-level).

In order to encourage greater sustainability in the tourism industry, a wide range of eco-labels and other initiatives have been created by supranational institutions and organizations (see, among others, UNEP, 2018; UNWTO, 2011; WTTC, 2017). Our study focuses on the Blue Flag program (BF), which is one of the most relevant tourism eco-label. In particular, we investigate the effect of the BF program which is recognized to encourage greater sustainability in tourism (see Zielinski and Botero, 2019), and thus can be considered as a relevant policy in managing the transition to sustainability in tourism.

The BF is conferred to coastal destinations that meet the high standards set by the Foundation for Environmental Education (FEE) in the four categories of water quality, environmental management, environmental education, and safety (Blue Flag, 2019). The BF program is a voluntary environmental initiative, where local tourism administrators must apply to receive the award and demonstrate that the coastal destination meets all necessary criteria set up by FEE. The program is widely recognized by the public, decision-makers, and tour operators and is run in 44 countries. The award of a tourism eco-label is expected to boost tourism flows; this, in turn, would favor an increase in the local supply of goods and services, leading to the growth of the local economy (Cagilaba and Rennie, 2005).

Even if the relevance of eco-labels for the environment is indisputable (Creo and Fraboni, 2011; Fraguell et al., 2016), less tangible benefits related to awareness of environmental impacts, community empowerment and increased credibility in the market are also common (Carlson and Palmer, 2016). However, the impact of eco-labels on tourism flows is still uncertain (Capacci et al., 2015; Cerqua, 2017; McKenna et al., 2011), while the existence of a causal link between them and economic growth is arguably an under-researched question. In this paper, we fill the gap by investigating whether adopting a far-reaching sustainable tourism policy boosts the economic growth of destinations, considering not only the tourism industry but also the business-related industries and other economic aspects of these destinations. Using comprehensive municipality level data and the nonparametric generalization of the difference-in-differences estimator recently developed by Imai et al. (2019), we compellingly estimate the average causal effect on a local economy receiving the BF award over the period 2006-2016. Results provide improved insight and knowledge on transition management in tourism by providing evidence of the causal effect of a sustainable policy in terms of economic growth.

2. Literature review

Transition management has been applied in various settings, such as energy (Loorbach, 2010), mobility (Kemp and Rotmans, 2004), and waste (Kemp et al., 2007). However, only rarely, researchers have empirically investigated the effectiveness of transition management policies on the growth of the local economic system. As underscored by Schmidt and Sewerin (2018), a number of theoretical studies on policy mixes have been recently published, while empirical researches are absent apart from case studies (see Kunapatarawong and Martínez-Ros, 2016) or small-sample size studies (see Kern et al., 2017).

While there is no direct evidence on the effectiveness of transition management in tourism, several activities implemented to achieve sustainable tourism may be comprised in the theoretical framework of transition management. The study by Gössling et al. (2012) is one of the first attempts to analyze a selection of initiatives meeting the framework requirements of transition management. The analysis considers the sustainability dimensions, the approach taken to initiate the change and the specific tools suggested to move towards sustainability. Creating awareness and adopting best practices seem the most common strategies suggested to make changes towards sustainability in tourism. Incentives and financing tools appear less common, while reporting, auditing, and certifications are lacking.

Logar (2010) provided another study exploring the potential use of different instruments to manage more sustainable tourism in coastal destinations. The policy tools are evaluated against three criteria: i) their effectiveness in mitigating the negative impacts and in improving the sustainability of tourism; ii) their acceptability to stakeholders; iii) their economic and technical feasibility. The author finds there is a general agreement for the use of policy instruments in tourism management. However, not every instrument examined satisfies all three criteria. For instance, financial incentives in the form of grants are found to be effective (Bernini and Pellegrini, 2013), highly acceptable but economically unfeasible. Eco-labels, on the other hand, can be applied to almost any tourism product that satisfies certain environmental criteria (e.g., accommodation, beaches, restaurants, tour operators).

This can be a powerful tool for stimulating the development of tourism products, creating an image of the environmental destination and increasing competitiveness (Mihalič, 2000).

Eco-labels in the tourism industry started in France in 1985 with the creation of the BF program for beaches and marinas, a program that satisfies all the criteria for an independent and objective environmental seal (Mihalič, 2000). Over time, the BF has become a widely accepted eco-label (Eijgelaar et al., 2016) with the dual aim of preventing environmental damage and attracting tourism (Lucrezi and Saayman, 2015).

The BF pushes local policymakers[3] and beach operators to achieve high standards in the following four categories: i) environmental education and information (e.g., litter removal); ii) water quality (e.g., bathing area water quality is monitored through weekly or fortnightly water sampling); iii) environmental management; iv) safety and services (Blue Flag, 2019). Some BF criteria are imperatives (i.e., water quality criteria), while others are simply guidelines (i.e., sustainable public transportation).[4] As for environmental aspects, the BF program imposes strict requirements about water and beach quality, measured by quantitative criteria; these restrictions avoid obtaining the award without satisfying the environmental conditions. Moreover, the final designation of the BF awards is made by the International FEE, limiting the possibility of networking with reviewers and, therefore, limiting the randomness of the assignment process. Finally, BFs are assigned based on the previous year's activity and must be re-earned every year.

The literature investigating the impact of a BF on various outcomes has seen a rapid increase. There has been some criticism concerning its actual impact on sustainability. The BF does not consider all relevant aspects of beach ecosystem functions (Lucrezi et al., 2015), and the BF foundations for bathing water quality are questionable (Schernewski and Sterr, 2002). Conversely, Logar (2010) shows the BF provides good incentives for improving the quality of beach services and raising environmental awareness. Local authorities and tourism agents use the BF as an incentive to involve all parties concerned with

[3] The procedure to obtain the BF is managed by the environmental office of the municipality, but it involves a part of local private stakeholders. In, particular, the beach operators of the destinations result to be the private stakeholder involved more frequently; hoteliers, environmental association and environmental educational centres are also involved but with a lower frequency (Pencarelli et al, 2015).

[4] Each year the criteria are revised and new recommendations may become imperative (Cagilaba and Rennie, 2005). A destination not satisfying one or more of the imperative criteria cannot receive the BF award.

environmental management, water quality and education activities (Nelson et al., 2000). Regarding tourism flows, in the literature, there is still no agreement on whether eco-labels increase tourism demand for a destination. McKenna et al. (2011) find evidence that tourists visiting beaches in Ireland, Wales, Turkey, and the USA are little aware of the presence of BFs; while other findings show that BF awards can boost investments and increase prices in hotels (Rigall-I-Torrent et al., 2011; Blackman et al., 2014). Zielinski and Botero (2015) find that the BF program differs from the other programs as it is the most effective in terms of institutional indicators, rather than biophysical ones. Capacci et al. (2015) evaluate the effectiveness of the BF award in attracting international tourists to the Italian coasts. By means of a dynamic panel data models and using province-level data, they show that the BF awarded to a province during a specific year has a negligible effect on the number of foreign tourists in that year, but has a positive effect on inbound flows during the following year. Cerqua (2017) analyses the presence of a causal link between receiving the BF award and the increase in tourism flows. Using the synthetic control method, the author finds that obtaining a BF has a moderate impact on the domestic flows for up to three seasons afterward. However, no effect on international flows has been detected. Exploring the mechanisms driving the results, the BF award only positively influences domestic tourism when it is used as a driver of organization, coordination and integrated management of the tourism supply.

To the best of our knowledge, no empirical analysis has been conducted yet to directly investigate the role of a coastal eco-label on the growth of the local economic system.

3. Model specification

In this paper, we estimate the causal impact of the BF program on the local economy by adopting a recent evaluation technique proposed by Imai et al. (2019), which consists of a nonparametric generalization of the difference-in-differences estimator. Their approach builds upon the synthetic control method (SCM) of Abadie et al. (2010) and the generalized SCM proposed by Xu (2017), providing a clear understanding of how counterfactual outcomes are estimated; however, it does not require data on many pre-treatment time periods and is more flexible than the generalized SCM. This estimator allows for a credible estimate of treatment effects, both in the short-term and medium-term average, for the treated municipalities (ATT), which is defined as

$$(1) \quad \delta(F,L) = E\{Y_{i,t+F}(X_{i,t}=1, X_{i,t-1}=0, \{X_{i,t-l}\}_{l=2}^{L}) - Y_{i,t+F}(X_{i,t}=0, X_{i,t-1}=0, \{X_{i,t-l}\}_{l=2}^{L}) | X_{i,t}=1, X_{i,t-1}=0\}$$

where the treated municipalities are those who are awarded the BF, i.e., $X_{i,t-1}=0$ and $X_{i,t}=1$. In this definition $Y_{i,t+F}(X_{i,t}=1, X_{i,t-1}=0, \{X_{i,t-l}\}_{l=2}^{L})$ is the potential outcome under a policy change, whereas $Y_{i,t+F}(X_{i,t}=0, X_{i,t-1}=0, \{X_{i,t-l}\}_{l=2}^{L})$ represents the potential outcome without the policy change, i.e., $X_{i,t-1}=0$ and $X_{i,t}=0$. In both cases, the rest of the treatment history, i.e., $\{X_{i,t-l}\}_{l=2}^{L} = \{X_{i,t-2}, \dots, X_{i,t-L}\}$, is set to the realized history. For example, $\delta(1,4)$ represents the average causal effect of the BF award on the outcome, one year after the treatment, while assuming that the potential outcome only depends on the treatment history up to four years earlier.

The estimation of the ATT requires four subsequent steps. In the first step, matching methods are used to match each treated municipality with control municipalities in the same time period that have the same treatment history and a similar covariate history from time t-L to t−1. In the following step, each matched set $M_{i,t}$ (the matched set for the treated municipality i at time t) is refined by using the inverse propensity score weighting method (see Hirano et al., 2003). The idea is to construct a weight for each control unit within $M_{i,t}$ where a higher weight is assigned to a more similar unit. In the third step, for each treated municipality, we estimate the counterfactual outcome using the weighted average of the control units in the refined matched set. Lastly, we compute the difference-in-differences estimate of the ATT for each treated observation and then average it across all treated observations. This final step adjusts for a possible unobserved time trend. Formally, the ATT estimator is given by,

$$(2) \quad \hat{\delta}(F,L) = \frac{1}{\sum_{i=1}^{N}\sum_{t=L+1}^{T-F} D_{i,t}} \sum_{i=1}^{N}\sum_{t=L+1}^{T-F} D_{i,t} \{(Y_{i,t+F} - Y_{i,t-1}) - \sum_{i' \in M_{i,t}} w_{i,t}^{i'} (Y_{i',t+F} - Y_{i',t-1})\}$$

where $D_{i,t} = X_{i,t}(1 - X_{i,t-1}) \cdot \mathbf{1}\{|M_{i,t}| > 0\}$, and $w_{i,t}^{i'}$ represents the non-negative normalized weight such that $w_{i,t}^{i'} \geq 0$ and $\sum_{i' \in M_{i,t}} w_{i,t}^{i'} = 1$. To compute the standard errors, Imai et al.

(2019) suggest using the block-bootstrap procedure specifically designed to match with time-series cross-section (TSCS) data (see Otsu and Rai, 2017).

The nonparametric generalization of the difference-in-differences estimator is primarily based on three assumptions:

ASS1. The limited carryover effects assumption. The potential outcome for unit i at time t+F does not depend on the previous treatment status of the same unit after L time periods, i.e., $\{X_{i,t-l}\}_{l=L+1}^{t-1}$. This implies that we allow for the possibility that past treatments affect future outcomes up to L years. In our application, this is unlikely to be an issue as only a few treated municipalities were previously treated. However, in the robustness section, we will make sure that results are not driven by the possible presence of carryover effects for more than L years.

ASS2. The no interference assumption. The potential outcome for unit i at time t+F does not depend on the treatment status of other units. This means that the assignment of an eco-label to a municipality does not affect the potential outcome of the untreated neighboring coastal municipalities. Such an assumption would then be violated if tourists decide to visit the treated municipality at the expense of the untreated neighboring coastal municipalities. In this case, it would mean that our ATT estimates would be upwardly biased. Given the magnitude of our estimates presented in Section 5, we argue that ASS2 is likely not to be violated.

ASS3. The parallel trend assumption after conditioning on the treatment, outcome, and covariate histories.

$$E[Y_{i,t+F}(X_{i,t}=0, X_{i,t-1}=0, \{X_{i,t-l}\}_{l=2}^{L}) - Y_{i,t-1} | X_{i,t}=1, X_{i,t-1}=0, \{X_{i,t-l}, Y_{i,t-l}\}_{l=2}^{L}, \{\boldsymbol{Z}_{i,t-l}\}_{l=0}^{L})] = E[Y_{i,t+F}(X_{i,t}=0, X_{i,t-1}=0, \{X_{i,t-l}\}_{l=2}^{L}) - Y_{i,t-1} | X_{i,t}=0, X_{i,t-1}=0, \{X_{i,t-l}, Y_{i,t-l}\}_{l=2}^{L}, \{\boldsymbol{Z}_{i,t-l}\}_{l=0}^{L})] \tag{3}$$

where $\boldsymbol{Z}_{i,t}$ is a vector of observed time-varying confounders for unit i at year t. Therefore, the conditioning set includes the treatment history, the lagged outcomes (except the immediate lag $Y_{i,t-1}$), and the covariate history. Choosing a relatively large value of L increases the credibility of a limited carryover effect and the parallel trend assumptions. In the main set of estimates, we will put L=4, but we will investigate the sensitivity of the results by using L=5 as well as L=3 in the robustness section.

This set of assumptions is arguably milder than those used by the most common methodologies adopted to analyze TSCS data, such as the linear regression models with fixed effects, dynamic panel models, matching methods, and the difference-in-differences estimator (Imai et al., 2019).[5] Differently from the above estimators, the nonparametric generalization of the difference-in-differences estimator is ideal for our evaluation as it also works well in situations with a small number of treated units.

4. Data

Our analysis is focused on Italian seaside destinations. Italy stands out among European countries as having a quarter of all bathing waters in Europe (European Environment Agency, 2015). The territorial level of interest is the municipality. This is the smallest territorial unit for which tourism- and local economy-related data are available; however, it has not been used by previous studies. We have used information from the Italian FEE to reconstruct the yearly history of the BF awards for each municipality. As primary outcome variables, we use the logged number of workers in accommodation and food service activities located in the municipalities and the logged number of accommodation and food service activities (i.e., Section I in the NACE Rev. 2). We decided to use tourism employment as primary dependent variable because it is one of the main indicators of tourism performance as well as because, being tourism a labor-intensive industry, employment can capture small changes in tourism performance (Naranpanawa et al., 2019). We also use the logged number of workers and the logged number of local units in sectors strictly linked with accommodation and food service activities. These sectors, identified by looking at the input-output matrix,[6] are manufacture of food products and beverages (i.e., Divisions 10 and 11 in the NACE Rev. 2), wholesale and retail trade (i.e., Divisions 46 and 47 in the NACE

[5] For instance, it is not possible to directly test the "no unobserved time-varying confounders" assumption when adopting the difference-in-differences or the two-way fixed effects models. See Imai and Kim (2019) for a detailed description of the main limitations of such models.

[6] We take advantage of the Italian input–output model representing the interdependencies between different branches. In particular, we select the tourism-related economic sectors as those industries with a multiplier higher than 0.06.

Rev. 2) and real estate activities (i.e., Section L in the NACE Rev. 2). The data come from the Statistical Register of Active Enterprises (ASIA) archive. ASIA is produced by the Italian National Institute of Statistics (ISTAT) and covers the universe of firms and employees of industry and services[7] in each municipality.[8] Finally, we have also collected data from the Italian Ministry of Economy and Finances (MEF) archive and from ISTAT's annual census survey "capacity of tourist accommodation establishments" to evaluate whether the BF award impacts the logged average income of the residents and on the logged number of beds available in hotels, B&Bs and other tourism accommodations.[9] The lagged values of the latter two variables are used as control variables when we evaluate the impact of the BF on the former four dependent variables.

We also collected other relevant variables: the logged population from ISTAT and the workplace employment rate from ASIA. By controlling for these variables, we make sure to compare treated municipalities with a set of municipalities having a similar demographic and economic structure. Lastly, we collected data on water quality from the EU Bathing Waters Directive, which requires the EU Member States to monitor bathing places for indicators of microbiological pollution throughout the bathing season. We created two dummies that tell us whether a municipality was sampled and whether the quality of the water was considered to be "excellent". Such proxies allow municipalities with a similar bathing water quality history to be compared (Cerqua, 2017). All control variables are lagged one period to make sure they are not affected by the treatment.

[7] Considering the NACE Rev.2, ASIA includes all plants with the exception of those classified as section A 'agriculture, forestry and fishing', section O 'public administration and defense, compulsory social security', division 94 'activities of membership organizations', section T 'activities of households as employers; undifferentiated goods- and services-producing activities of households for own use', section U 'activities of extraterritorial organizations and bodies', public institutions and non-profit institutions.

[8] This is possible by integrating information from both administrative sources, managed by public agencies or private companies, and statistical sources owned by ISTAT (Consalvi et al. 2008).

[9] The latter variable proxies the impact of the BF on the tourism flows at the municipality level. This is necessary as tourism flow data are released at the tourism area level in Italy, i.e. at a more aggregated level (see Cerqua, 2017).

4.1. Sample

In Italy, tourism is an important economic activity, especially in maritime and coastal regions. Even though municipalities located on the coastline make up about 8% of all Italian localities (645 of the over 8,000 Italian municipalities), in 2017 they offered 56.4% of the total bed places and hosted 53.1% of the total overnights spent in Italy (ISTAT, 2018).[10] In these destinations, seasonality is particularly high: at the coastal and maritime destinations, 70.8% of the overnights are concentrated in the summer season, versus 49.4% of the overnights observed in other Italian destinations in the same time period. The BF program was launched in Italy in 1987 when it assigned 37 BFs. In recent years the number of assigned BFs has increased sharply; for instance, in 2015, 280 Italian beaches, located in 147 municipalities, were awarded the BF banner.

The 645 coastal municipalities represent the starting point of our sample construction. We then drop 28 municipalities, which could attract tourists for reasons other than the seaside, meaning those municipalities considered to be cities of art or thermal localities by the typological classification of tourism municipalities used by the ISTAT. We further refine our sample by considering only those municipalities which were sampled at least once by the EEA during the period 2006-2016 and that had beds available in hotels and in the other tourism accommodations at the beginning of the period under analysis. Such refinements allow us to drop those municipalities which do not have the features to be awarded a coastal eco-label. We are then left with 534 municipalities. In the last step of the sample selection, we remove all those treated municipalities which continuously received the BF as they could be considered neither as treated or as controls. The final sample comprises 443 municipalities; 39 of them satisfy all requirements to be considered as treated in the empirical section and are flagged in the map presented in Figure 1.[11]

ADD FIGURE 1

[10] We focus our analysis on seaside destinations; therefore, we exclude lake shores which compete in an ad hoc section of the BF program.

[11] Figure A.1 in Appendix A reports the treatment variation plot.

5. Results

5.1. Main estimates

We explore the effect of BF on the six dependent variables described in the data section to assess whether such eco-label had a causal impact on the local economy. We first look at the trend of the dependent variables for treated municipalities in the pre-treatment year up to the two years after the BF award, which are reported in Table 1. These averaged values show a relatively flat, if not declining, trend for all dependent variables. Nevertheless, this descriptive evidence is not sufficient to conclude that the BF award did not bring about any positive effect on the local economy as it is possible that the apparent lack of impact is entirely driven by the negative effect of the Great Recession on the economy. Therefore, we require a valid counterfactual estimate.

ADD TABLE 1

To this aim, we adopt the nonparametric generalization of the difference-in-differences estimator described in Section 3. The estimates are presented in Table 2. Columns (1), (2), and (3) of this table report the impact of the BF award on the six dependent variables at the year of the award, the following year, and two years after the award, respectively. Overall, they confirm that the BF award had a negligible impact on the local economy. This result is stable across dependent variables and over time; indeed, none of the coefficients reported in Table 2 is different from zero at the 5% significance level, except for the negative impact on average income at time t and t+1. This means that treated municipalities did not manage to combine economic growth with environmental sustainability by using a sustainability policy mainly based on a single eco-label.[12]

ADD TABLE 2

[12] Although this finding implies the BF award does not effectively enhance the local economy, it is still possible that such a policy could produce a benefit on other "non-economic" aspects of the destinations, other than the environmental quality, such as public awareness about sustainability policies and safety. In addition, it is possible that this sustainability policy might be positively associated with the probability of local firms of introducing innovation (see D'Agostino and Moreno, 2019). The analysis of such aspects is out of the scope of our paper.

The nonparametric generalization of the difference-in-differences estimator allows examining the covariate balance between treated and matched control observations. This enables the investigation of whether the treated and matched control observations are comparable with respect to observed confounders (Imai et al., 2019). The covariate balance plot is reported in Figure 2. The solid line represents the balance of the lagged outcome, whereas grey lines show the balance of other covariates. It clearly emerges that the level of imbalance for all confounders is very limited, never exceeding the standardized mean absolute value of 0.1.[13] Besides, as the level of imbalance for the lagged values of our primary dependent variable, i.e., the logged number of workers in accommodation and food service activities, stays relatively constant over the entire pre-treatment period, this suggests that the assumption of parallel trend for the proposed difference-in-difference estimator is appropriate.

ADD FIGURE 2

5.2. Robustness

In this section, we subject our main results to a comprehensive set of robustness checks and summarize the results concerning the dependent variable "logged number of workers in accommodation and food service activities" in Table 3.[14] This table contains four blocks of results in a vertical dimension, numbered (I)-(IV). First, we check whether the estimates reported in Table 2 depend on the number of pre-treatment years we control for (L=4). Setting L=3 or L=5, we obtain the estimates reported in the first two rows of block (I). In the following two rows, we investigate whether using the covariate balancing propensity score (CBPS) of Imai and Ratkovic (2014) or Rosenbaum and Rubin (1983)'s propensity score matching to select the 5 most similar control municipalities leads to different estimates than those obtained by the inverse propensity score weighting method. The extent of these estimates suggests that our results are not very sensitive to the choice of L and to the matching method used. Also, in rows 5 and 6 of block (I) we confirm that our estimates do

[13] Figure B.1 in Appendix B clearly shows how the refinement of the matched set improves covariate balance.
[14] The same robustness checks were also carried out using the other dependent variables. They confirm the lack of impact of the BF on the local economy and are available upon request from the authors.

not change when restricting the control group to the same geographical area and are not driven by the few treated cases with less than 5 possible controls. Lastly, we check the robustness of our findings by adopting the basic difference-in-differences estimator. As reported in row 7, the estimates corroborate the results and discussion above.

ADD TABLE 3

In block (II) we carry out two robustness tests to check whether the addition of supplementary control variables affects our estimates. In the first check, we add two time-invariant variables, the municipal area, and length of the coast, which should allow us to improve the similarity of the matched units to the treated one. In the second check, we control for the per capita expenditure on tourism and environment by municipalities, as this variable proxies the willingness of the local authority to invest in tourism and the environment.[15] Both checks show that our main findings hold.

Block (III) reports four sensitivity checks concerning the selection process of the treatment and control group sample. We start by checking whether our results depend on the presence of five treated municipalities, which lost the BF award in one of the two years following the first BF award (treatment reversal). As such municipalities only received the award for one or two years, they could potentially lower the coefficient of the main estimates. We also evaluate the possible differential impact of the BF eco-label on municipalities, which received the BF for the first time in their history, as they might benefit to a more considerable extent from the award than previously awarded municipalities. We then reintegrate cities of art and thermal localities into the sample of treated and control municipalities to check whether the average impact changes. Lastly, we drop all municipalities which were not defined as "seaside localities" by ISTAT from the control group as they might not represent valid control units. All Block (III) checks confirm the negligible impact of the BF program on the local economy.

[15] The latter variable is obtained thanks to the "OpenBilanci" project financed by the European Regional Development Fund (ERDF). In addition, thanks to the "OpenCoesione" project also financed by ERDF, we can confirm that treatment and control municipalities received a similar average amount per capita of European funds for tourism-related activities.

The BF award can also be assigned to marinas, which are generally small harbors offering dockage and other services for yachts and small boats. They make up a sub-industry of nautical tourism (see Paker and Vural, 2016)[16] and it is possible that the eco-label obtained by marinas might also affect tourism flows. This is why in Block (IV) we assess whether our estimates change when using the "BF award, either to beaches or marinas" as an alternative treatment variable. However, even considering municipalities with awarded marinas as treated, we do not observe any statistically significant effect.

5.3. Is the BF impact heterogeneous across destinations?

Our estimates show that the BF, on average, did not have a significant impact on the local economy. Nonetheless, it is possible that this type of award might improve the local economy under certain conditions. In this section, we carry out three sub-analyses to investigate whether these conditions exist and whether they are determined by the structure of the local economy before the BF award. The estimates are reported in Table 4.

First, in Panel A of Table 4, we investigate whether the BF impact is stronger for destinations with a high share of employees in the accommodation and food industry. Indeed, it is possible that they were the only municipalities with the economic structure capable of benefitting from the BF award. Second, destinations with a number of accommodations per capita above the median might be better equipped to benefit from the BF award. The estimates concerning this analysis are reported in Panel B of Table 4. Lastly, ISTAT splits the Italian local labor market systems (LLMs) according to two dimensions related to the tourism industry (see ISTAT, 2015). The first is cultural and landscape heritage, which refers to the physical territorial presence of places, material goods, structures, institutions, and other resources of specific historical, artistic, architectural, and environmental value and interest. The second dimension relates to the productive / cultural fabric. This second component concerns the composite set of production, distribution and training activities of cultural interest. We use these dimensions to split municipalities into those located in LLMs that excel in the first and/or the second dimensions and those which do not (Panel C of

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[16] Marinas may be owned and operated by a private club, especially yacht clubs - but also as private enterprises or municipal facilities.

Table 4). It is possible that the latter group of municipalities benefit more from the BF award as they are not particularly strong in either dimension.

The small coefficient of the estimates reported in Table 4 and their lack of statistical significance at conventional statistical levels demonstrates that the negligible impact of the BF award on the local economy is quite homogeneous across coastal destinations.

ADD TABLE 4

6. Conclusions

The understanding of whether economic growth is compatible with sustainability is particularly relevant for coastal destinations that have experienced high growth in the number of tourists over the last decades. The most favored solution the literature proposes to tackle this issue consists of adopting a transition management approach to sustainable economic growth. We focus on the impact of eco-labels, from among the possible transition management instruments for tourism destinations.

Theoretically, tourism's capability to generate employment could be enhanced with the award of a well-known eco-label, and this, in turn, would favor an increase in the local supply of goods and services, leading to the growth of the local economy. However, the empirical evidence on their effectiveness is mixed. We aim to contribute to the literature by evaluating whether the BF program, which is one of the most critical worldwide sustainability policies for coastal destinations, stimulated a virtuous circle in the local economies of Italian treated municipalities over the period 2006-2016. We include several new elements in our analysis. First, we focus on the local economic system at tourism destinations, considering not only the tourism industry but also tourism-related industries and other destination aspects. Second, by using official municipality level data, we significantly reduce the identification and measurement problems affecting previous studies. Lastly, we use a nonparametric generalization of the difference-in-differences estimator recently developed by Imai et al. (2019), which allows us to estimate the average treatment effect on the treated coastal municipalities in the short- and medium-term.

Our results show a lack of economic impact from the BF award. The BF has no significant impact on the local economy of the awarded tourism destinations, nor on the tourism industry or other tourism-related economic sectors. This means that the treated municipalities did not manage to combine economic growth with environmental sustainability. We also show that this finding is robust to several checks and that the average negligible effect is quite homogeneous across coastal destinations. Results are also robust with respect to the possible transfer of the costs sustained to obtain the BF award to tourists (i.e., improved environmental quality offsets by higher accommodation prices or taxes).[17] Moreover, there is indirect evidence that the BF has effectively improved the environmental quality of the destination.[18]

Our findings suggest that managing the transition to sustainable economic growth for tourism destinations is very complex and a single policy does not suffice and confirm that it is hard for a single approach, technology, intervention or policy instrument to achieve transformative changes (Loorbach, 2010; Kern et al., 2017). As noted in a few recent studies (see, among others, Rogge and Reichardt, 2016), combining economic and sustainability aims might require the use of so-called policy mixes. Edmondson et al. (2018) suggest the use of multi-faceted processes, involving long time frames, multiple actors, and often a range of both competing and complementary technologies (Geels, 2004). There are a variety of ways that governments and private-sector operators can manage the transition of tourism to sustainability. In the short-term, some of the main requirements for implementing sustainable tourism could include creating awareness about how environmental damage can reduce the attractiveness of destinations as well as promoting an understanding of

[17] The BF involves primarily the local governance and beach operators: thus, it does not directly affect accommodation prices (see Cerqua, 2017). The cost for participating to the BF award is sustained by the municipality; thus, a municipality tax would be the only candidate to cover the budged costs related to BF. In Italy since 2011 a voluntary tourist tax has been introduced. It is a municipal tourist tax having the purpose of correcting the negative tourism externalities on a territory, based on the so-called polluter pays principle. However, as underlined by Conti et al. (2018), by 2016 only 11.6% of Italian municipalities introduced the tourist tax and these municipalities are mainly concentrated in the internal part of Italy.

[18] We tried to empirically investigate the impact of the BF award on environmental aspects of coastal destinations. Unfortunately, data at the municipality level are very limited. Following the ETIS (2016) recommendations, we use the "average satisfaction of foreign tourists concerning the environmental quality", provided by the Bank of Italy survey on "International Tourism in Italy", to evaluate environmental quality of coastal destinations. Results evidence that the BF award is associated with an increase in the subjective environmental quality of foreign tourists. Besides, treated municipalities receive, on average, a score which is 0.2 higher (on a scale between 1 and 10) than control destinations.

principles and methods of environmental management, including energy and water conservation strategies. Improving tourism firms' access to market information and financial resources and coordinating government departments dealing with tourism and the environment with private investors in the tourism sector may also support the transition to sustainability.

We believe this study could contribute to a new stream of research focused on evaluation analyses, allowing for a better understanding of how sustainability policies support and drive more sustainable modes in the tourism industry and at destinations. In this framework, future studies should empirically investigate the effects of a mix of different sustainable policies, with a particular focus on resident perceptions and well-being.

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Table 1: Descriptive evidence

	t-1	Treatment year (t)	t+1	t+2
Number of workers in accommodation and food service activities	640.53	640.97	639.81	650.12
Number of local units in accommodation and food service activities	166.18	169.21	172.77	173.23
Number of workers in tourism-related sectors	1,323.24	1,287.12	1,309.15	1,313.23
Number of local units in tourism-related sectors	539.46	531.49	527.41	526.38
Average yearly income	€16,398.56	€16,456.80	€16,644.33	€16,940.33
Number of beds available	4,136.23	4,100.13	4,023.64	4,068.10

Notes: The averages refer to the 39 treated municipalities.

Table 2: Main estimates

	Treatment year (t)	t+1	t+2
	(I)	(II)	(III)
Logged number of workers in accommodation and food service activities	-0.008 (0.013)	-0.014 (0.015)	-0.001 (0.019)
Logged number of local units in accommodation and food service activities	0.002 (0.008)	0.012 (0.011)	0.020 (0.016)
Logged number of workers in tourism-related sectors	-0.007 (0.009)	0.000 (0.010)	0.034 (0.029)
Logged number of local units in tourism-related sectors	-0.011 (0.008)	-0.010 (0.009)	0.005 (0.012)
Logged average income	-0.007 (0.003)**	-0.010 (0.004)**	-0.003 (0.005)
Logged number of beds available	-0.016 (0.018)	-0.037 (0.022)	-0.058 (0.053)

Notes: 39 treated municipalities, L=4, and 1,000 bootstrap iterations. Block-bootstrapped standard errors in parentheses. We used the software routines 'PanelMatch' in R (Imai et al., 2018) to implement the estimation procedure of the nonparametric generalization of the difference-in-differences method.

Table 3: Robustness checks

	Logged number of workers in accommodation and food service activities			
	Treatment year (t)	**t+1**	**t+2**	**Number of treated**
	(I)	**(II)**	**(III)**	
(I) Model specification				
L=3	-0.026 (0.017)	-0.018 (0.014)	-0.021 (0.025)	41
L=5	-0.021 (0.015)	-0.030 (0.017)*	-0.025 (0.022)	34
Method = CBPS	-0.014 (0.013)	-0.023 (0.017)	-0.024 (0.020)	39
Method = PS Matching	-0.012 (0.013)	-0.021 (0.016)	-0.026 (0.021)	39
Exact matching on geographical area	-0.001 (0.014)	-0.009 (0.016)	-0.004 (0.020)	35
Only treated municipalities with $M_{i,t} \geq 5$	-0.006 (0.014)	-0.005 (0.016)	0.000 (0.021)	33
Difference-in-differences estimator	0.008 (0.019)	0.006 (0.014)	0.021 (0.024)	52
(II) Supplementary control variables				
Add time-invariant covariates	-0.008 (0.012)	-0.013 (0.014)	-0.002 (0.018)	39
Add tourism-related per-capita investment by the municipality	-0.012 (0.012)	-0.017 (0.014)	0.001 (0.018)	39
(III) Treatment and control group sample				
Only treated municipalities without treatment reversal	-0.014 (0.014)	-0.018 (0.016)	0.003 (0.020)	34
Only first-time treated municipalities	-0.014 (0.018)	-0.017 (0.021)	-0.015 (0.024)	22
Keeping cities of art and thermal municipalities	-0.010 (0.012)	-0.017 (0.014)	-0.011 (0.018)	42
Only control group localities defined as "seaside localities" by ISTAT	-0.008 (0.012)	-0.015 (0.014)	0.025 (0.028)	39
(IV) BF to marinas				
Beach + Marina	-0.004 (0.014)	-0.005 (0.016)	-0.001 (0.018)	32

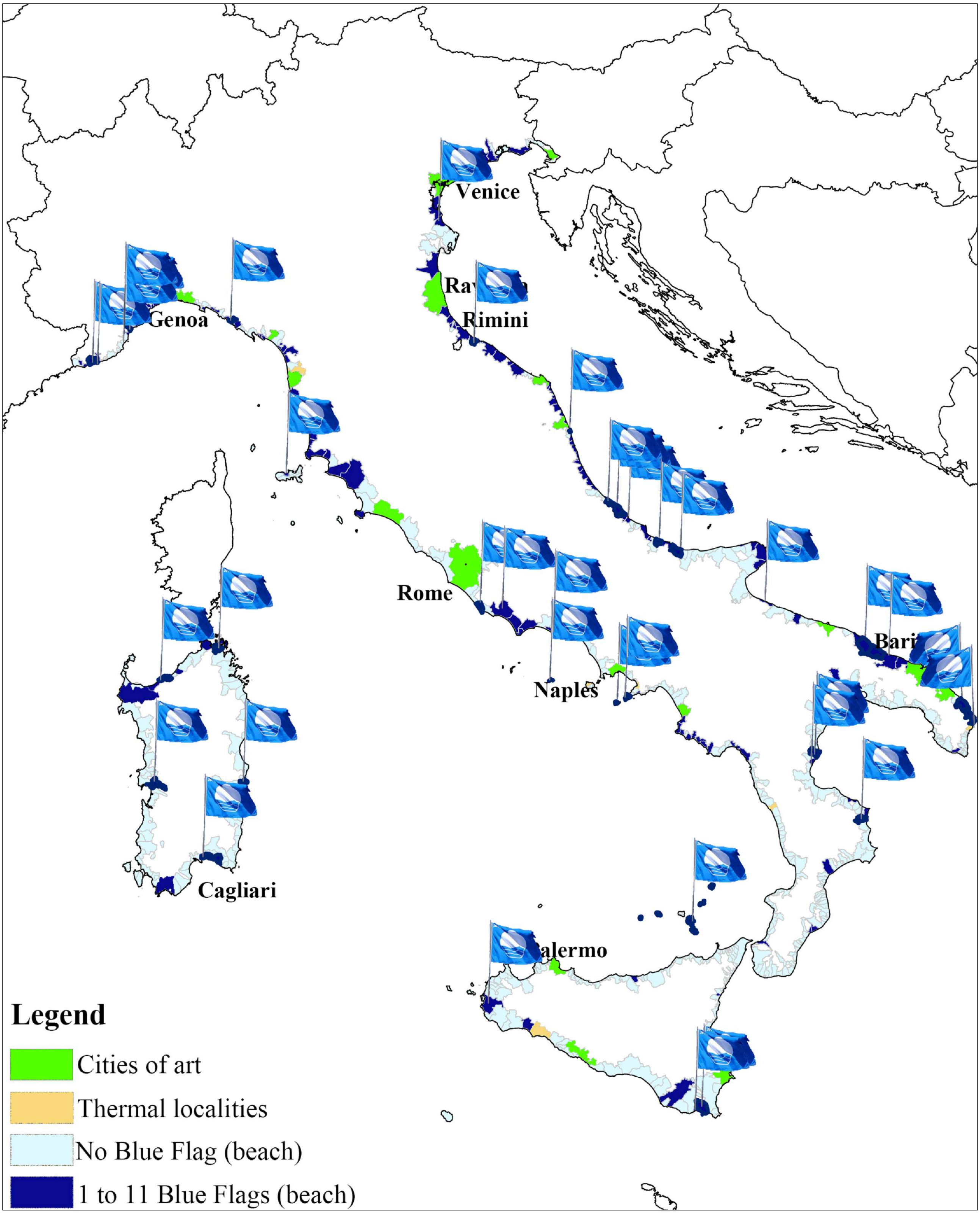
Notes: Block-bootstrapped standard errors in parentheses. The geographical areas used are North-West, North-East, Centre, South, and Islands.
***p<0.01, **p<0.05, *p<0.1

Table 4: Sub-analyses

		Logged number of workers in accommodation and food service activities			
		Treatment year (t)	**t+1**	**t+2**	**Number of treated**
		(I)	**(II)**	**(III)**	
Panel A	The ratio of employees in the Accommodation and Food industry below the median	-0.029 (0.019)	-0.019 (0.026)	0.018 (0.043)	19
	The ratio of employees in the Accommodation and Food industry above the median	0.013 (0.018)	-0.018 (0.018)	0.006 (0.028)	18
Panel B	Number of accommodations per capita below the median	-0.006 (0.014)	-0.009 (0.024)	0.015 (0.034)	18
	Number of accommodations per capita above the median	-0.022 (0.024)	-0.027 (0.023)	-0.012 (0.031)	18
Panel C	LLMs considered as having high-quality cultural and landscape heritage and/or a strong productive fabric	-0.006 (0.024)	-0.021 (0.042	-0.033 (0.049)	14
	LLMs not considered as having high-quality cultural and landscape heritage nor a strong productive fabric	-0.023 (0.021)	-0.001 (0.022)	0.009 (0.026)	19

Notes: L=4 and 1,000 bootstrap iterations. Block-bootstrapped standard errors in parentheses. Due to the split of the sample, a few treated observations cannot be matched with untreated observations.

Figure 1: Map of the treated municipalities



Notes: Treated coastal municipalities are selected according to the sample selection criteria reported in Section 4.1. The number of BF awards refers to the period from 2006 to 2016.

Figure 2: Covariate balancing