

# Exploring the Connection Between European Capital of Culture, Tourism and Economic Growth

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**Abstract.** The designation of a city as the European Capital of Culture (ECoC) serves as a significant catalyst for cultural, social, and economic development. This paper explores the multifaceted impacts of the ECoC title on local tourism and economy. In detail, it explores the designation of Matera as the European Capital of Culture in 2019 and its subsequent impact on local tourism and the economy. By analyzing various data sources, including tourism statistics and economic data, the study highlights the transformative effects of this recognition on the city, and it aims to provide a comprehensive understanding of how the ECoC initiative can transform a city’s cultural landscape and boost its economic vitality.

**Keywords:** European capital of culture, economic growth, tourism

## 1 Introduction

The European Capital of Culture (ECoC) initiative, launched in 1985, has become a prominent platform for promoting cultural diversity and fostering a sense of European identity. Each year, cities across Europe vie for this prestigious title, recognizing its potential to enhance their cultural profile and stimulate economic growth. The ECoC designation not only attracts tourists but also encourages local communities to engage with their cultural heritage and invest in creative industries. In 2019 the title was awarded to Matera, a city in southern Italy, with a rich history that dates back thousands of years, characterized by its unique cave dwellings known as “Sassi.” This designation was not simply a ceremonial accolade but it was an opportunity for the city to showcase its historical significance while also promoting economic growth through tourism [1]; [4]. Following the announcement and especially during the event year, Matera experienced a notable surge in tourism, with millions of visitors drawn to its landscapes, traditions, and vibrant cultural programming. This influx had ripple effects across the local economy, particularly in sectors such as hospitality, retail, and services [5]. This preliminary study explores the economic impact of the ECoC designation by focusing on Matera’s experience. It evaluates changes

in tourism and local economic indicators before, during, and after the event. The analysis compares Matera with other Italian cities that were shortlisted but not selected for the ECoC title, aiming to isolate the causal effect of the initiative. Particular attention is given to the evolution of treatment effects over time - from candidacy to official designation, the implementation year, and the post-event period. The analysis is structured around four key reference years: 2008 (candidacy), 2014 (official nomination), 2019 (implementation of ECoC events), and 2022 (long-term impact assessment).

## 2 Data and Method

We used data from the Italian Statistical Agency (ISTAT), the Italian Ministry of Economy and Finance (MEF), and the Osservatorio del Mercato Immobiliare (OMI) for the years 2008, 2014, 2019, and 2022. Table 1 presents the selected variables, the time period covered, their respective sources, and the level of aggregation.

**Table 1.** Variables selection

	Time span	Source	Observations level
Population	2008-2022	ISTAT	NUTS-3
Hotel accommodations	2008-2022	ISTAT	NUTS-3
Non-hotel accommodations	2008-2022	ISTAT	NUTS-3
Total hotel beds	2008-2022	ISTAT	NUTS-3
Total non-hotel beds	2008-2022	ISTAT	NUTS-3
Income declared for tax purposes	2008-2022	MEF	NUTS-3
Income from employment	2008-2022	MEF	NUTS-3
Low total income	2008-2022	MEF	NUTS-3
Housing prices	2008-2022	OMI	NUTS-3
Commercial activity quotations	2008-2022	OMI	NUTS-3
Office quotations	2008-2022	OMI	NUTS-3

This study aims to identify the impact of the ECoC title on income, employment, and real estate prices in Matera, starting from the candidacy in 2008. To do so, we apply the Difference-in-Differences (DiD) methodology, widely used in the literature to estimate the causal effect of discrete interventions or events. Some applications include the assessment of the Olympic Games [6], the impact of new organizations such as Napster [3], and the effect of ECoC events on GDP [2]. The DiD approach is commonly employed in micro econometrics to estimate causal effects by comparing a treatment group - exposed to the intervention - with a control group - unexposed to it. In our case, the treatment group is represented by Matera, which was selected as ECoC for 2019. The control group includes the other finalist cities that were not selected: Cagliari, Lecce, Perugia, Ravenna, and Siena. Importantly, the treatment is considered to the year of the

event itself (2019).

The model can be formally represented as follows (Eq 1):

$$Y_{it} = \beta_0 + \beta_1 * TimePeriod_i + \beta_2 * Treated_i + \beta_3 * (TimePeriod_i * Treated_i) + \epsilon_{it}$$

where:

- $Y_{it}$  is the observed response for the  $i$ th observation at time  $t$ . It is the value being measured in each group before and after treatment;
- $\beta_0$  is the intercept of regression;
- $TimePeriod_i$  is a dummy variable that takes the value 0 or 1 depending on whether the  $i$ th measurement refers to the pre or post treatment period respectively;
- $Treated_i$  is a dummy variable that takes the value 0 or 1 depending on whether the  $i$ th measurement refers to an individual in the control group or the treatment group respectively;+
- $(TimePeriod_i * Treated_i)$  is an interaction term; it stores the multiplication of the two dummy variable values for the  $i$ th observation;
- $\epsilon_{it}$  is the error term associated with the  $i$ th observation and it captures the effect of all factors that the model was not able to adequately represent.

### 3 Main Results

In this section we report the main empirical results from the analysis. The parallel trends test in Table 2 for DiD methodology assesses whether the difference in outcomes between groups is constant over time before the treatment. This test is important to ensure the internal validity of DiD models.

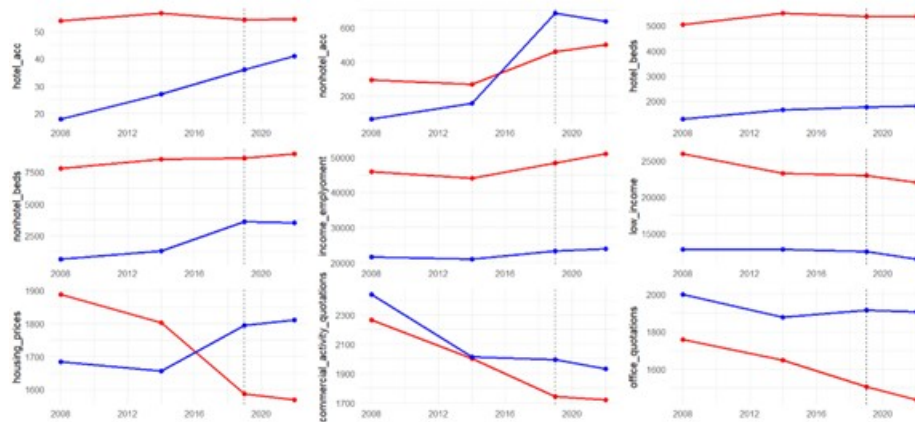
**Table 2.** Parallel Trends Test

Variables	Coeff p-value	
hotel-accommodations	6.40	<b>0.009</b>
nonhotel-accommodations	115.20	0.176
hotel-beds	-97.00	0.632
nonhotel-beds	-54.60	0.640
income-employment	1197.40	0.179
low-income	2629.00	<b>0.012</b>
housing-prices	57.36	0.758
commercial-quotations	-163.02	0.440
office-quotations	-12.94	0.918

The analysis of the placebo tests conducted to verify the Parallel Trends Assumption provides a partially reassuring picture but highlights some critical

issues for specific variables. Most of the analyzed variables satisfy the assumption of parallel pre-treatment trends, a necessary condition for the validity of the DiD model estimates. Specifically, the variables nonhotel-accomodations, hotel-beds, nonhotel-beds, income-employment, housing-prices, commercial-activity-quotations, and office-quotations show non-significant interaction coefficients between treatment and year during the pre-intervention periods. This indicates that, in the absence of the policy, the treatment and control groups followed similar trajectories, justifying the use of the standard DiD model for these variables. However, two variables clearly violate the parallel trends assumption: hotel-accomodation (p-value = 0.009) and low-income (p-value = 0.012).

As evident in Figure 1, hotel accommodations in Matera were already growing faster than in the control cities in the pre-treatment period, suggesting early investment or development strategies potentially unrelated to the ECoC title. Similarly, the trend in low-income populations diverges, with Matera showing a more pronounced decline even before the event year, possibly due to socioeconomic shifts already underway. These findings suggest that some of the observed post-2019 effects may partially reflect pre-existing dynamics rather than being fully attributable to the ECoC designation. Therefore, while the DiD model remains valid for most variables, caution is warranted when interpreting the treatment effects for hotel-accomodation and low-income, as their estimates may be biased by these pre-existing differences.



**Fig. 1.** Pre and Post-Treatment Trends for Treated and Control Groups.

Note: The blue lines represent Matera (treated group), while the red lines represent the control group. The vertical dashed line indicates the year 2019, corresponding to the event

The results in Table 3 show a statistically significant and robust impact on the non-hotel sector. In particular, the growth of non-hotel accommodations and non-hotel bed capacity demonstrates how the European recognition acted

**Table 3.** DID results

Variable	Coeff	DiD Std. Error	t-value	p-value	IC-95%
nonhotel-acc	351.00	61.71	5.69	0.00006	[230.05;471.95]
hotel-beds	206.70	252.72	0.82	0.427	[-288.62;702.02]
nonhotel-beds	1986.20	582.57	3.41	0.0042	[844.37;3128.03]
income-employment	-2382.30	1071.20	-2.22	0.043	[-4481.81;-282.79]
housing-prices	400.72	146.09	2.74	0.016	[114.38;687.06]
commercial-quotations	135.42	222.40	0.61	0.552	[-300.48; 571.32]
office-quotations	202.13	113.26	1.78	0.096	[-19.86;424.12]

as a catalyst for the development of widespread hospitality and forms of micro-entrepreneurship. This confirms a dynamic typical of areas that, while lacking a structured and extensive hotel infrastructure, react quickly to increasing tourist flows through more flexible and decentralized hospitality solutions. In contrast, the traditional hotel sector shows no statistically significant effects, suggesting a lower capacity to intercept or directly benefit from the increase in visitors. This result may reflect structural rigidities or a saturation of the existing hotel capacity, as well as lower responsiveness compared to the non-hotel sector. From a socio-economic perspective, potential critical issues emerge. The decline in employment income after 2019, although statistically significant, raises questions about the actual redistribution of the economic benefits generated by the event. The polarization of the effects may have favored property owners and those already integrated into the tourism circuit, at the expense of other segments of the population less directly involved in tourism development processes. Another relevant result concerns the increase in housing prices, confirming the pressure on the local real estate market. This phenomenon is frequently associated with gentrification and touristification dynamics in urban contexts characterized by rapid tourism expansion, with possible exclusion effects for less affluent residents. Finally, the absence of significant effects on commercial and office property values suggests that the event had a sectoral impact, mainly limited to the tourism sector without generating immediate positive spillovers on the broader economic and productive base of the city. In conclusion, the results outline a scenario where “Matera 2019” triggered a transformation, strengthening the non-hotel tourism sector but failing to produce a generalized multiplier effect on the city’s economy. This calls for a reflection on the accompanying policies necessary to manage the effects of major cultural events, in order to ensure an equitable distribution of benefits and preserve the social and economic balance of the territory.

## 4 Conclusions

This study investigates the causal relationship between hosting a mega cultural event, tourism, the local labor market, and broader economic development. Specifically, we estimate the impact of Matera being shortlisted for - and subsequently winning - the title of European Capital of Culture (ECoC). Our findings

demonstrate a clear positive effect of the event on the tourism sector. However, the analysis does not show a generalized impact on the city's overall economy. It is important to consider that in the year following the ECoC events, Matera - like all other Italian and global cities - was affected by the COVID-19 pandemic. The pandemic had significant repercussions on the local economy and labor market, potentially distorting the results of our analysis starting from 2020 and in the subsequent years. Additionally, the study has some limitations that we intend to address in future research. The main limitation concerns the dataset used: although we included the primary indicators commonly used in the literature, future work will incorporate additional indicators to capture other relevant dimensions - such as the unemployment rate or tourist demand - that were not considered in the current analysis.

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