The effect of being a European Capital of Culture: Evidence from Matera

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Overview: Investigating economic returns from becoming the 2019 European Capital of Culture for Matera

Research question

- This paper investigates **economic returns** of being selected to host a massive, European-wide, **year-long series of cultural events** in a previously not so touristic area.
- **Matera**, culturally rich yet largely underrated, was selected as the **2019 European Capital of Culture** (ECoC).
- Our research question explores the impact of being selected as European Capital of Culture on Matera's:
  - **Tourism** figures
  - **Labour market** outcomes
  - **Housing market**

Data

- Tourism
- Labour market and income
- Firms and workers
- Real estate

Identification strategy

- Differences-in-differences, event **study approach**
- Methodology to accommodate a setting with **one treated** and **many controls**: randomization inference and placebo tests

Results preview (1/2): From tourism to economic development

Main takeaways

- Remarkable rise in **tourism** (+115% tourists and +52% nights spent in Matera) leads to:
  - Hike in local taxable **income (+9.7%)**
  - Decrease in the **unemployment** rate **(-7.74 pp)**
  - Growth in number of **firms and workers** across several sectors (**hospitality**, **culture, real estate** and **infrastructure**-related sectors benefited the most)
  - Boost in **real estate** market with rises in number of **transactions** (+77%), sale **prices** mostly in housing (+43%) and retail units (+30%) in historical city centre

Results preview (2/2): Evidence of a spotlight effect

Main takeaways

- Evidence of a **spotlight effect** → touristic **rediscovery** of Matera begins **way before the event year**, following the massive media exposure during the selection process. We argue that effects for Matera should be analysed starting from shortlisting date (2013) rather than considering the event year as the only treated period:
    - This suggests that studies evaluating the impact of mega events, considering event year only as treated, would **miss an important part of treatment effects**. Indeed, we find evidence of **larger effects** with respect to previous related literature.
    - This also allows us to appreciate **dynamic treatment effects building up over time** in the years leading up to the event
- Overall **credible way to development** for culturally rich yet underrated cities

Setting (1/2): The European Capital of Culture is an EU policy to promote culture and support long term development

The European Capital of Culture

- The **European Capital of Culture (ECoC)** was **set up in 1985** with the aim of placing cities at the **heart of cultural life** across Europe
- One of the most popular initiatives of the EU, ECoC provides selected cities with the **opportunity to regenerate** and showcase their cultural profile in the hope that it will turn into a **long-term development tool**
- EU law nominates **two member states every year** to host the title. Each nominated member state issues a **competitive call** to appoint a European Capital of Culture. Cities applying to host the title are selected by an **independent panel** of 13 members: 6 national and 7 European experts
- **Budget:** Funding from all levels of government, from the European Commission to the Municipality
  - **54.8 million** euros for **operating expenditure**.
  - **650 million** euros for **capital expenditure** → Capital expenditure **already planned** regardless of ECoC competition.

Bidbook comparison

Setting (2/2): Matera was a city lagging behind in economic opportunities despite a formidable cultural potential

Matera

- **Matera** is a city in **Southern Italy**, **culturally rich** and endowed with the peculiar Sassi area, yet **off-beat and poorly connected**
- Matera **overcame extreme conditions** for which it was notorious in the past but was still **unable to provide credible opportunities:**
  - **Unemployment rate:** 15.3% MT, 12.9% Basilicata, 8.4% Italy
  - **GDP per capita:** 17,500 MT, 19,200 Basilicata, 26,900 Italy
- In 2014 **Matera** is **awarded** the 2019 **European Capital of Culture** → envision **culture** as the **way out and forward** for the area.

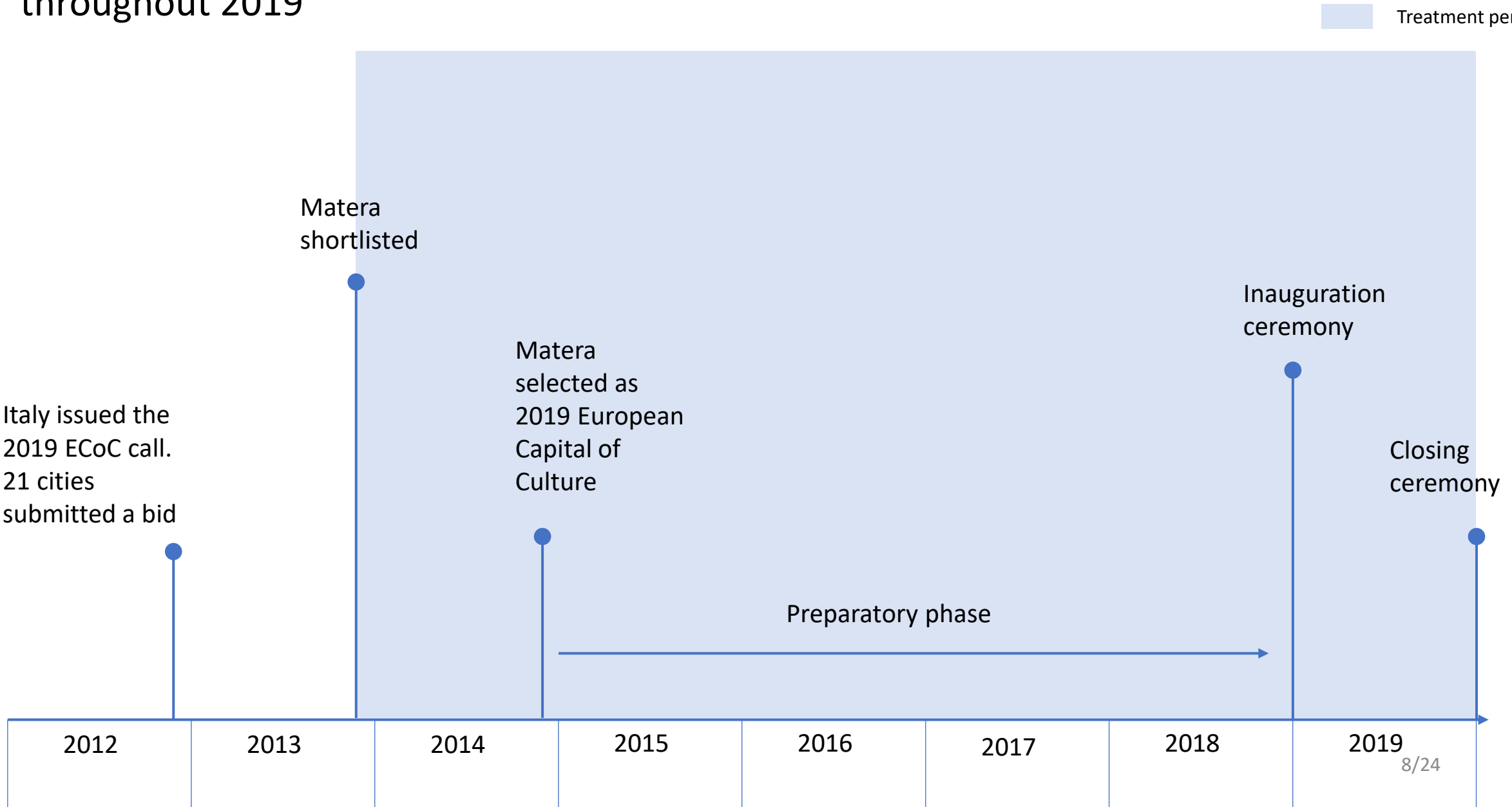
ECOC

In 2019:

- **Culture centred year:** 1,300 events and projects
- **Urban revitalization:** More hotels and restaurants built in historical centre, upgraded train station

Note: GDP (euros) and unemployment (ppts) refer to 2012. Basilicata is the NUTS2 region where Matera is located

Timeline (1/2): Matera shortlisted in 2013, title awarded 2014 and event hosted throughout 2019



Timeline (2/2): Strong growth in interest towards Matera starting from shortlisting date in 2013

More on Google searches

Description

- **Selection was largely unexpected**:
  - 21 cities participated to the bid
  - 6 cities were shortlisted
  - panel **selected** Matera by **one-vote majority**
- Evidence of a **spotlight effect: disruption in search patterns** beginning in **2013**, that is when Matera was **shortlisted** as finalist and **peaking in 2019** (event year)

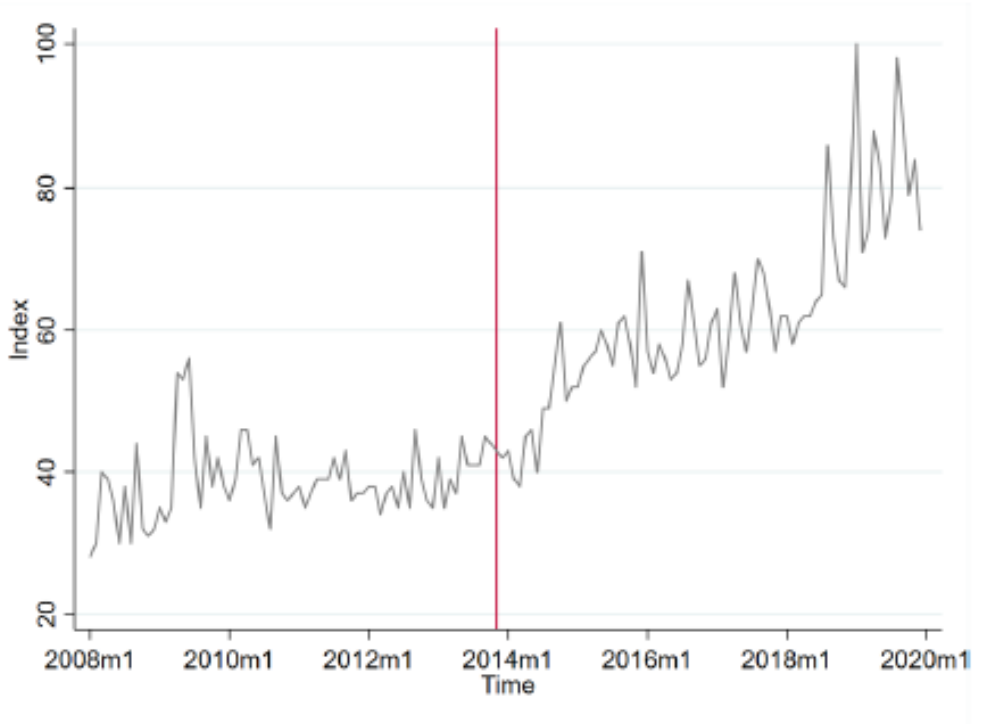


Figure 1: Google search for "Matera", entire world. 2008-2020.

Literature and contribution: Contribute to several strands of the literature

Strands and contribution

- **Tourism** and **economic development** (Balaguer and Cantavella-Jorda 2002 for Spain, Faber and Gaubert 2019 for Mexico, Nocito et al. 2021 for Italy)
  - **Contribution** → **Massive cultural intervention** promotes **tourism** and forges as a path to **local development**. Evidence of a **spotlight effect** with tourists and economic gains since the hike in media attention due to shortlisting

- **Tourism** and the **housing market** (Koster et al. 2021, Garcia-Lopéz et al. 2020 and Peralta et al. 2020)
  - **Contribution** → Analyse number of **firms**, **transactions** and **prices** in the real estate market from a shock in tourism activities

- **Mega events** (Firgo 2021, Zimbalist 2020) and the **European Capital of Culture** (Steiner et al. 2015, Srakar and Vecco 2017, Gomes and Librero-Cano 2018)
  - **Contribution** → Clear evidence of an **effect on tourism** which reverberates through **labor market and tourism-related industries**. **Drill down** on a wide range of **outcomes** which allows for a more detailed analysis

Data: Diverse set of outcomes across several dimensions of economic development

More on data

Tourism

- Touristic presence
- Accommodation facilities

Source: Italian Statistical Agency (ISTAT)
Time span: 2008 – 2019
Level of observation: NUTS3

Labour market

- Unemployment

Source: Italian Statistical Agency (ISTAT)
Time span: 2008 – 2019
Level of observation: NUTS3

Economic indicators

- Firms by sector (ATECO 3 digits)
- Workers by sector (ATECO 3 digits)

Source: Italian Statistical Agency (ISTAT)
Time span: 2008 – 2018
Level of observation: NUTS3

- Income declared for tax purposes

Source: Italian Ministry of Economy and Finance (MEF)
Time span: 2008 – 2019
Level of observation: Province capital

- Housing market: transactions and sell prices

Source: Italian Revenues Agency (OMI data)
Time span: 2008(11) – 2019
Level of observation: Province capital, neighbourhood

Identification strategy: DiD methodology, event study approach

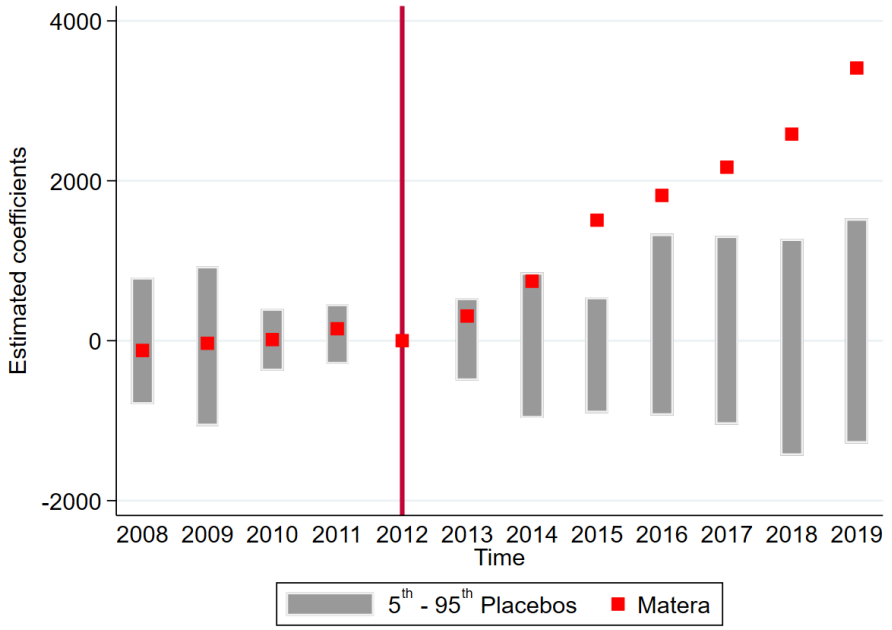
$$Y_{pt} = \beta_0 + \sum_{\substack{\tau=2008 \\ \tau \neq 2012}}^{2019} \beta_\tau MT_{p\tau} + \delta_p + \gamma_t + \epsilon_{pt} \qquad (1)$$

We estimated equation (1) where:

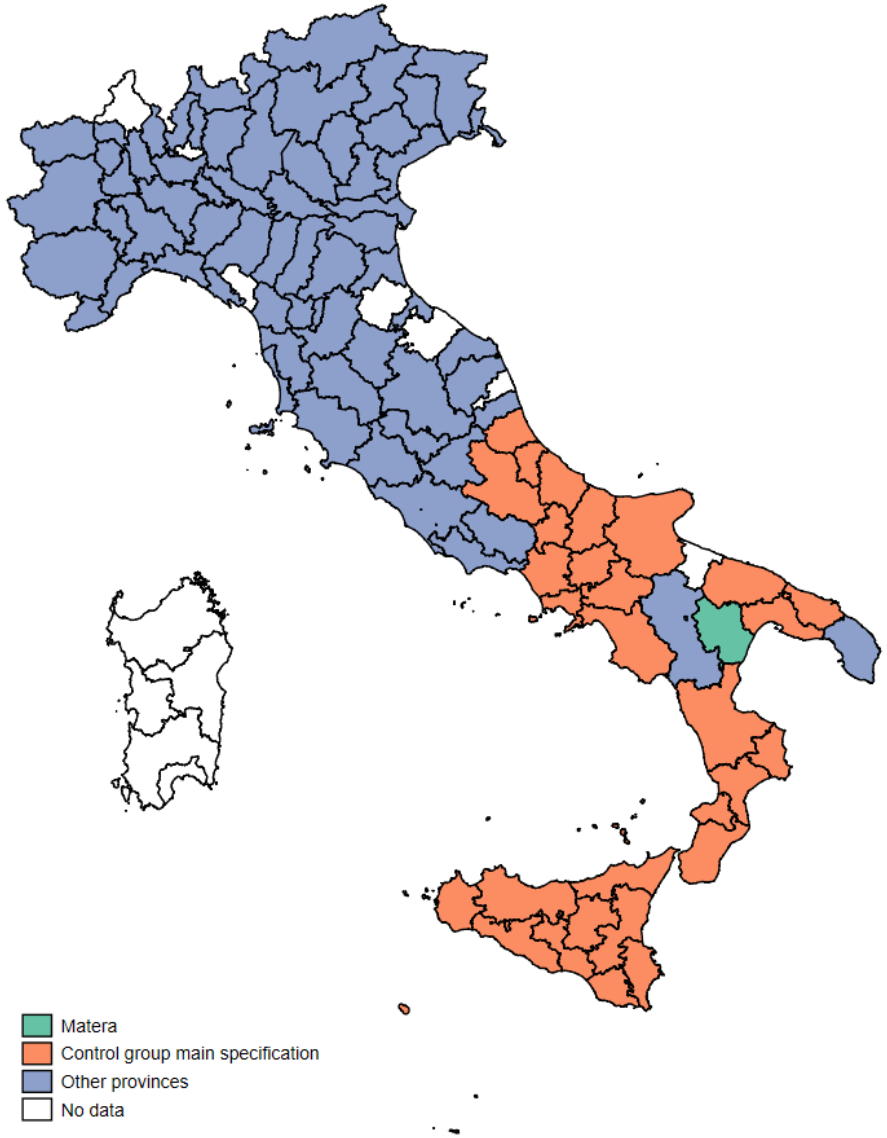
- y_{pt} is the **outcome variable** (here, hotel nights per thousand inhabitant as of 2009) in province *p* at time *t*
- $\sum_\tau Mt_{p\tau}$ are a set of **dummies equal to 1 for Matera in year τ** and 0 otherwise
- δ_p and γ_t are **province** and **time FE**

We set as **control group** provinces in **Southern Italy**

Changes in data definition prevent us from applying a Synthetic Control Method Go



Control group

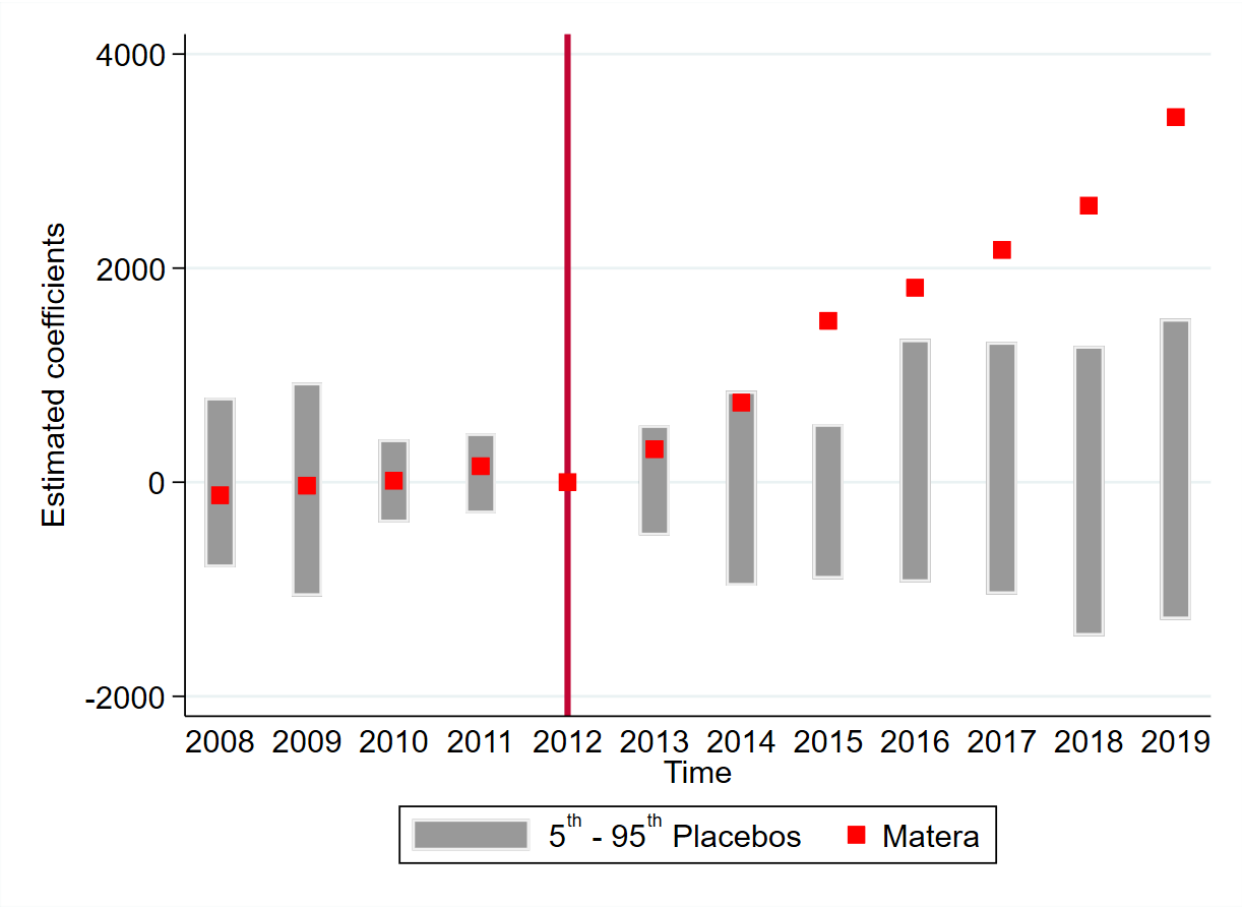


Description

- We consider provinces with **stable borders** and a single province capital in the period of analysis
- **Southern Italian provinces** (in orange) and province capitals serve as control group in the main specification, excluding Potenza and Lecce as partially treated
- **All Italian provinces** (in grey) and province capitals serve as control group in a **robustness check**

More on control groups

Permutation tests

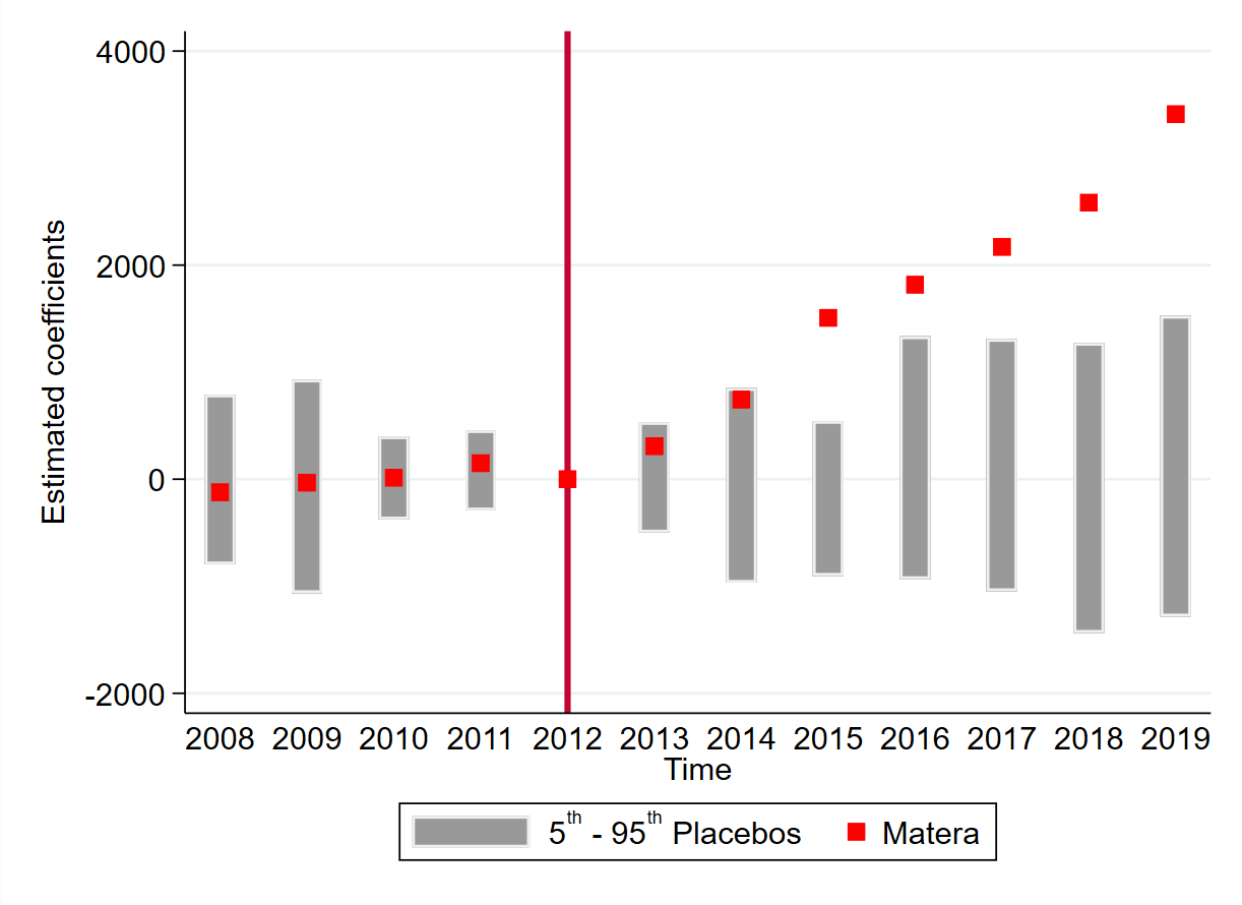


Number of nights spent by tourists in the province of Matera per thousand inhabitants.

Description

- Our setting: **One treated** unit and possibly **serially correlated** outcomes.
  - **Bertrand et al**. (2014) **allow for** arbitrary **serial correlation** (cluster robust). Cluster-robust standard errors lead to an **over-rejection** with only a few treated clusters (MacKinnon and Webb 2017)
  - **Buchmueller et al. (2011)** argue how SEs rely on **asymptotic approximations**, unrealistic in a setting of one treated unit and making statistical inference difficult

Permutation tests



Number of nights spent by tourists in the province of Matera per thousand inhabitants.

Description

More on permutation tests

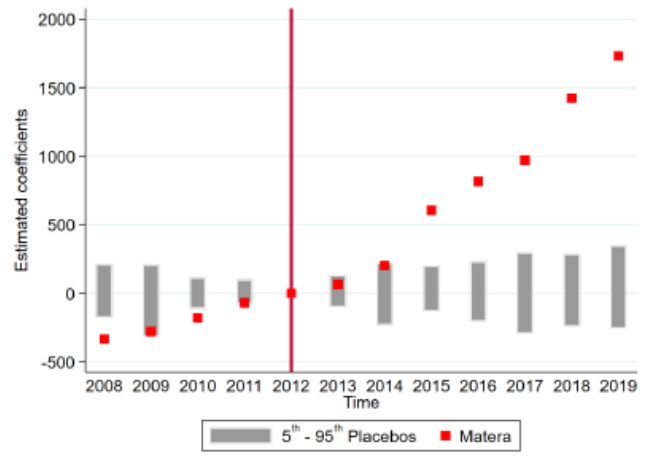
- We follow Buchmueller et al. (2011) and perform **permutation tests:**
  - Estimate our **event study** specification (1) for **each province in the control group** excluding Matera
  - **Grey boxes** represent **placebo** effects: the range of estimated coefficients for the 5th and 95th percentile of the placebo distribution
  - The effects reported for **Matera** are **shown in red**. The estimated coefficients stand out of the distribution suggesting statistically significant results at 10%

Selected results

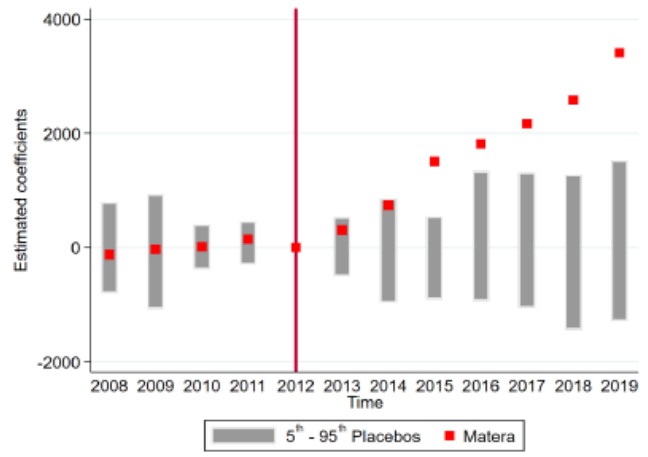
Tourism | Taxable income and unemployment | Firms and workers | Housing market

Tourism

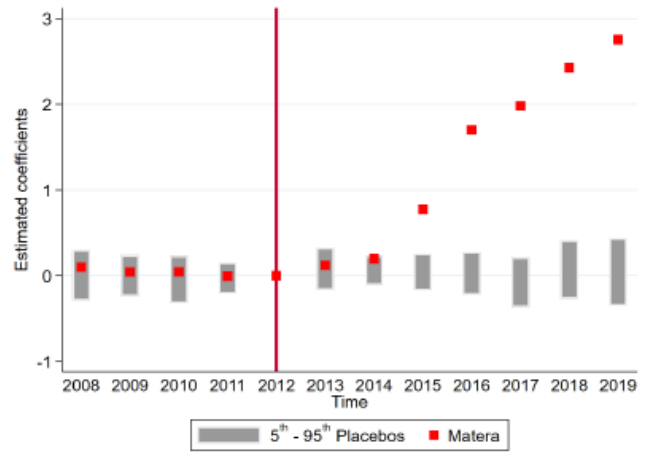
- **Hotel clients:** +1,723 check-ins per thousand inhabitants (+115%)
- **Overnight stays:** +3,390 nights spent in Matera per thousand inhabitants (+52%)
- **Accommodations facilities:** + 2.76 establishments per thousand inhabitants (+181%)



(a) Hotel clients



(b) Overnight stays



(c) Accommodation facilities

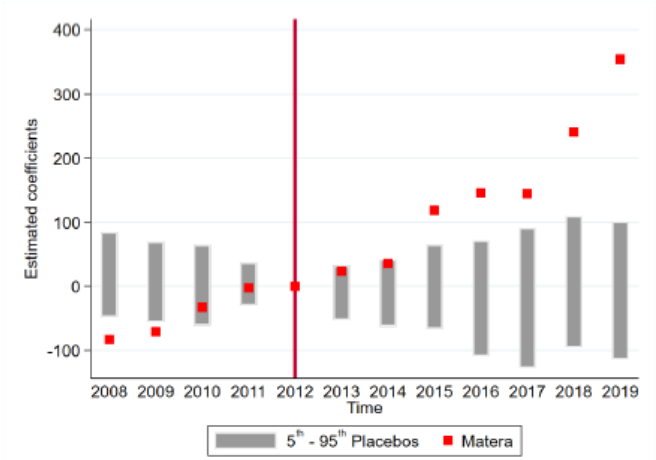
Matera inhabitants in 2009: 200,893

Selected results

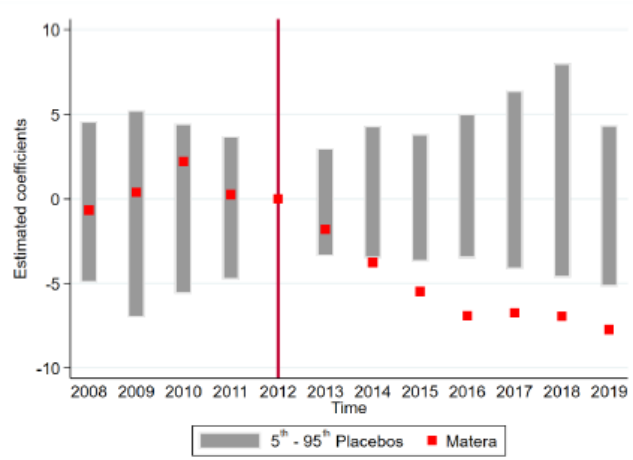
Tourism | Taxable income and unemployment | Firms and workers | Housing market

Taxable income and Unemployment

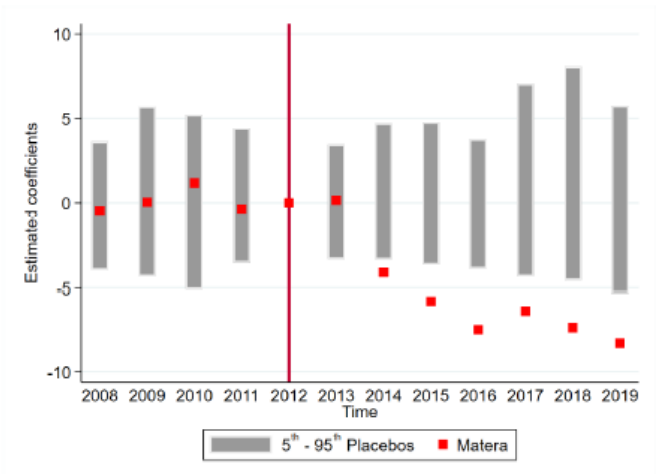
- **Taxable income:** +354 thousand euros per thousand inhabitants (+9.7%)
- **Unemployment:** -7.74 percentage points



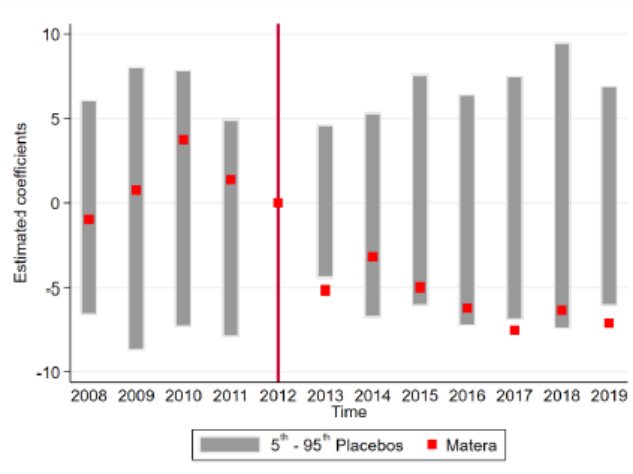
(a) Income declared for tax purposes



(b) Unemployment: Overall



(c) Unemployment: Male



(d) Unemployment: Female

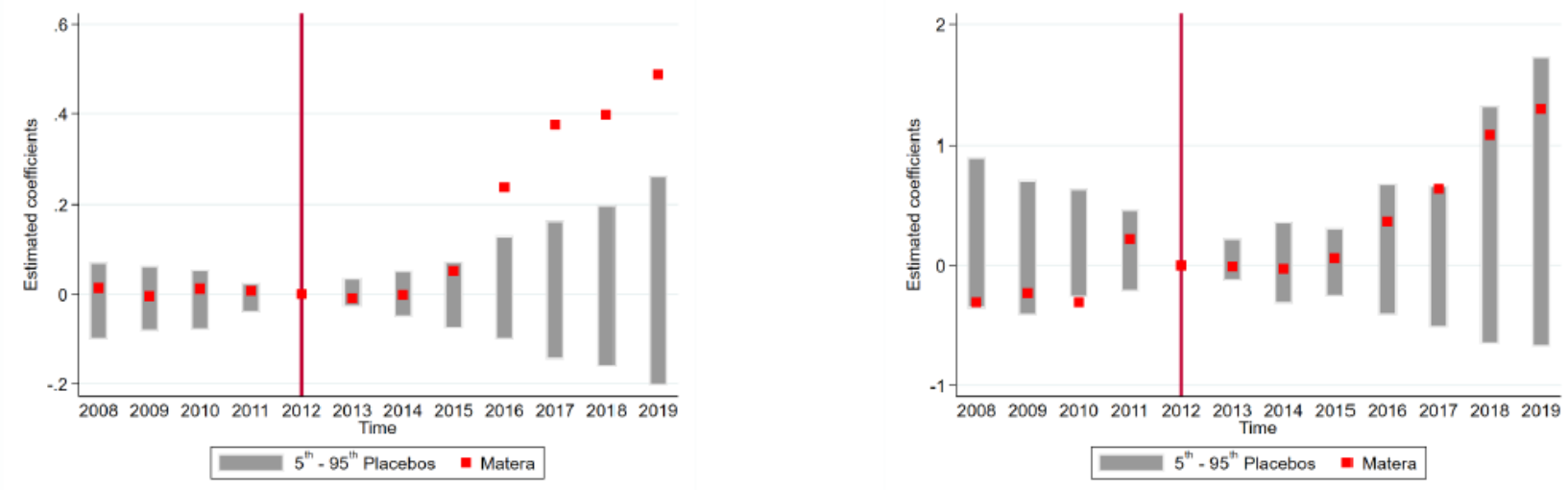
Matera inhabitants in 2009: 200,893

Selected results

Tourism | Taxable income and unemployment | Firms and workers | Housing market

Firms and workers

Holiday and other short-stay accommodation



(a) Firms (b) Workers

Firms
- **Cultural** activities: +33%
- **Hotels** and other short-stay accommodation: +29%
- Other **reservation services** and related activities: +193%

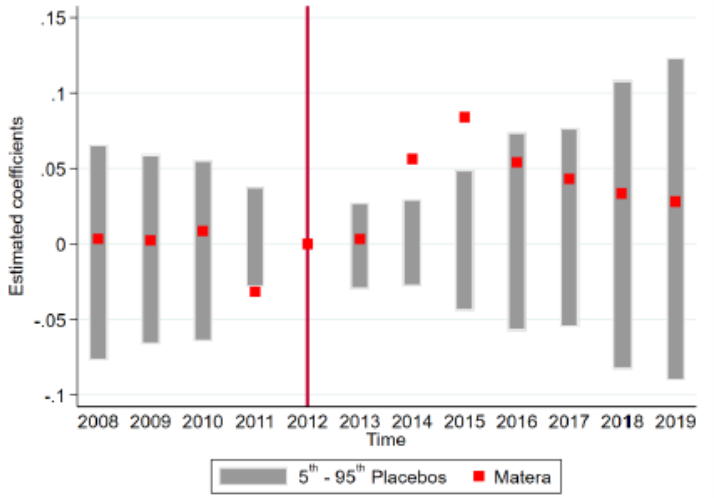
Workers
- **Restaurants**, mobile food and event catering: +24%
- Demolition and **construction** activities: +49%
- **Architectural** and engineering activities: +43%

Selected results

Tourism | Taxable income and unemployment | Firms and workers | Housing market

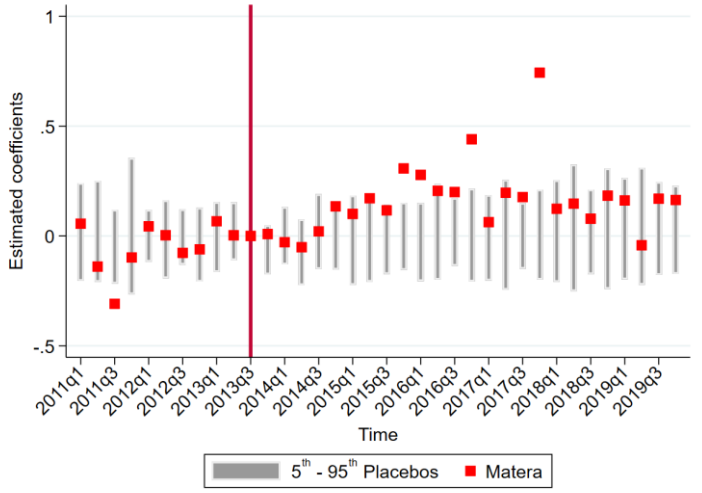
Housing market

More on OMI data



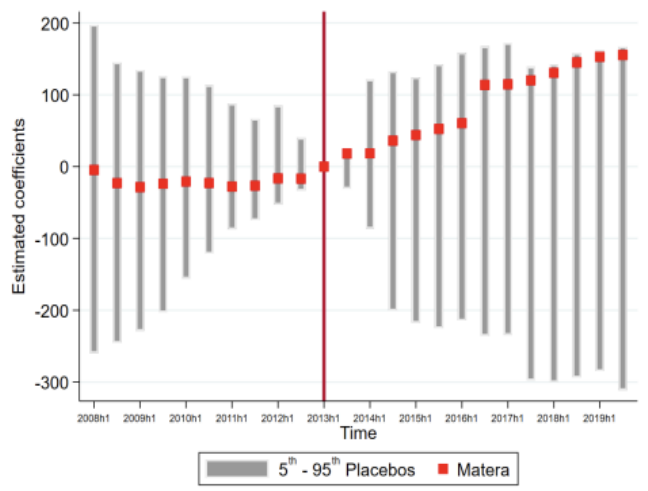
Firms in real estate

Real estate activities: + 30% in 2015



Real estate transactions

Overall **transactions**: +172% in 2017



Sell price

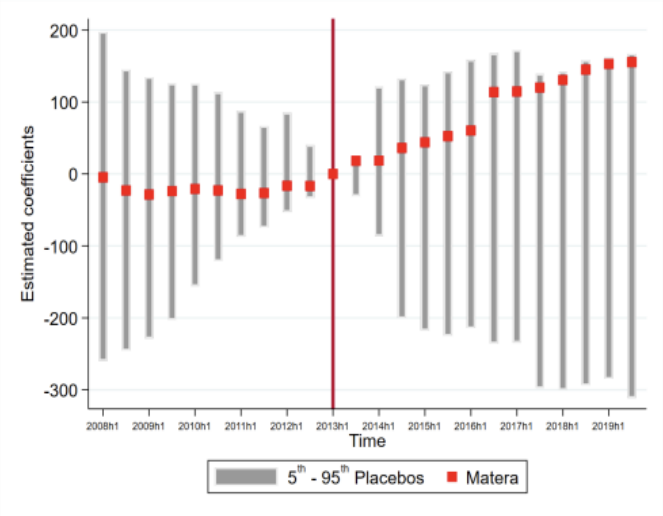
Overall **sell prices**: +13% (+155 €/m^2)

Selected results

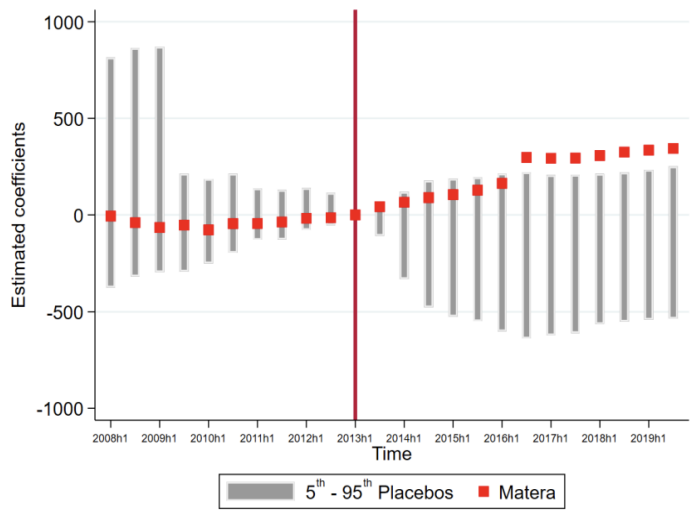
◯ Tourism ◯ Taxable income and unemployment ◯ Firms and workers ● Housing market

Housing market

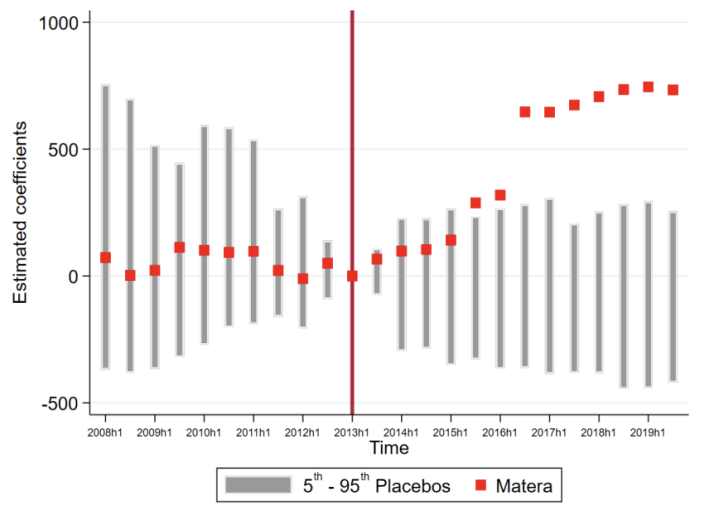
More on OMI data



Sell price: overall



Sell price: city centre



Sell price: residential units in the city centre

Data allows us to **zoom in** further and look at areas (collection of neighbourhoods) and building categories within a city:

Average sell prices **by area** within the city:

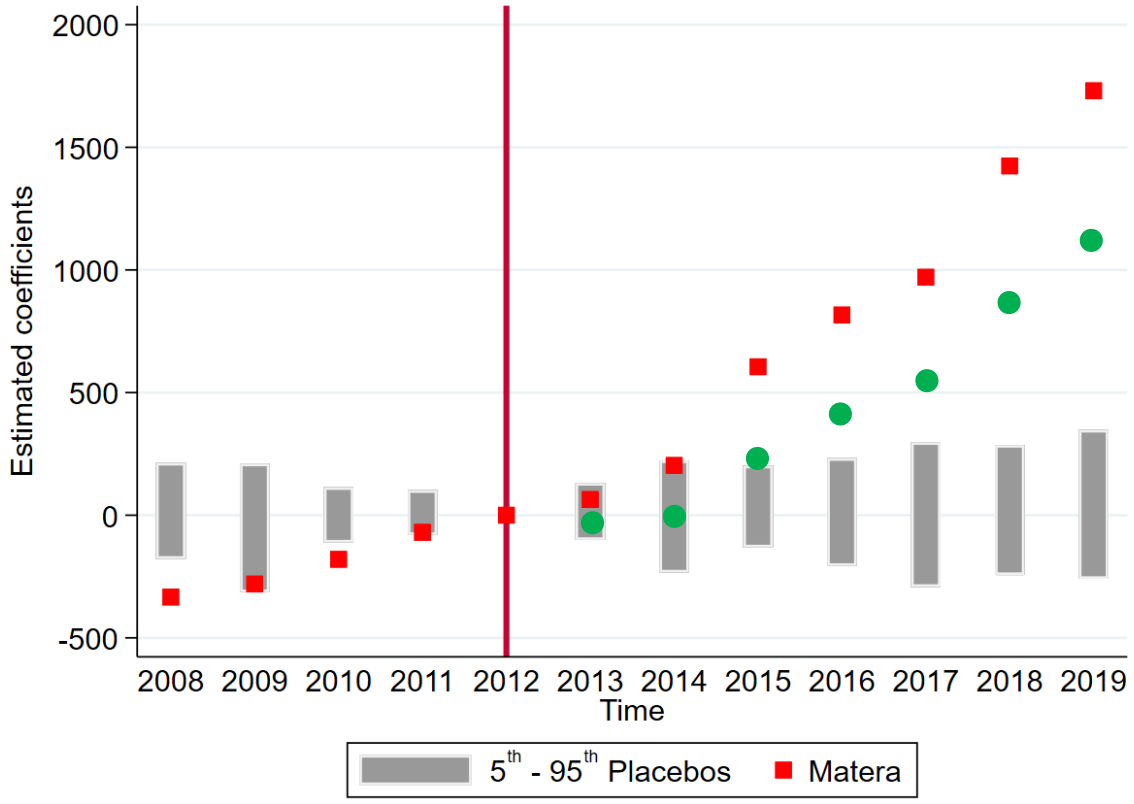
- City centre: +344 €/m^2 (+24%)
- Close to the city centre: +147 €/m^2 (+13%)

Average sell prices **by building category** within an area:

- Residential units in the city centre: + 733 €/m^2 (+43%)
- Retail units in the city centre: +856 €/m^2 (+30%)

Robustness checks (1/3)

Unit specific time trends ◯ Changes in control group ◯ Early treatment dates



Our estimates are robust to:

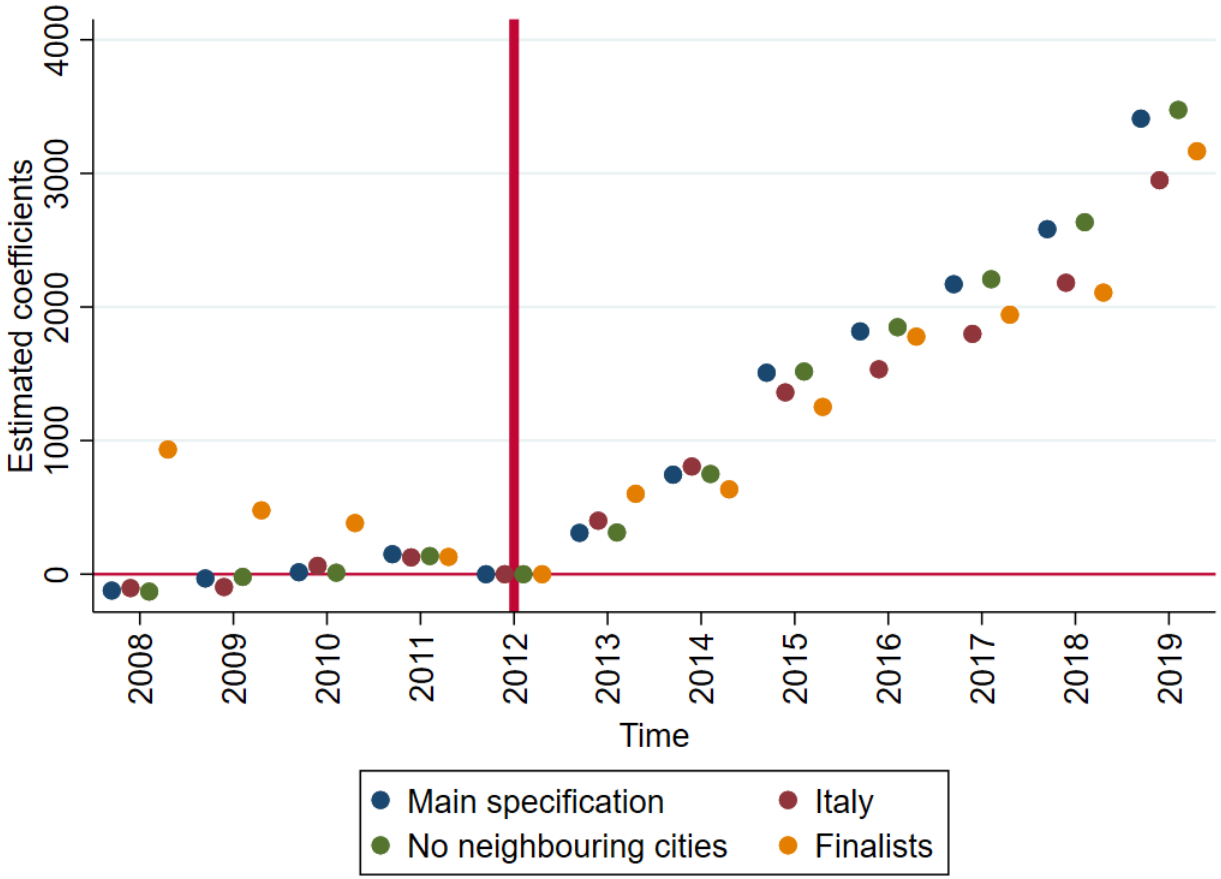
- Adding **province-specific linear (and quadratic) time trends** to correct for possible province-specific time trends whenever pre-trends cannot be ruled out
- Re-run main specification adding linear/ quadratic **province-specific time trends** (Wolfers 2006) as in equation (2)
- **Coefficients** estimated for Matera while **adding** province-specific linear **time trends (•)** are shown for hotel clients.

$$(2)\quad Y_{pt} = \beta_0 + \sum_{\tau=2013}^{2019} \beta_\tau MT_{p\tau} + \delta_{0m} + \gamma_t + \delta_{1p}t + \delta_{2p}t^2 + \rho_{pt}$$

Outcome	Model	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Hotel clients N=360	**Main specification**	-327.99	-276.97	-179.14	-71.00	-	62.74	176.74	581.68	795.69	952.27	1411.16	1723.09
	P-value: H1 Beta > 0	100.00	93.10	100.00	93.10	-	17.24	6.90	0.00	0.00	0.00	0.00	0.00
	t prov trends						-24.83	2.98	321.72	449.54	519.93	892.62	1118.35
	P-value: H1 Beta > 0						65.52	41.38	3.45	0.00	3.45	0.00	0.00

Robustness checks (2/3)

◯ Unit specific time trends ◉ Changes in control group ◯ Early treatment dates



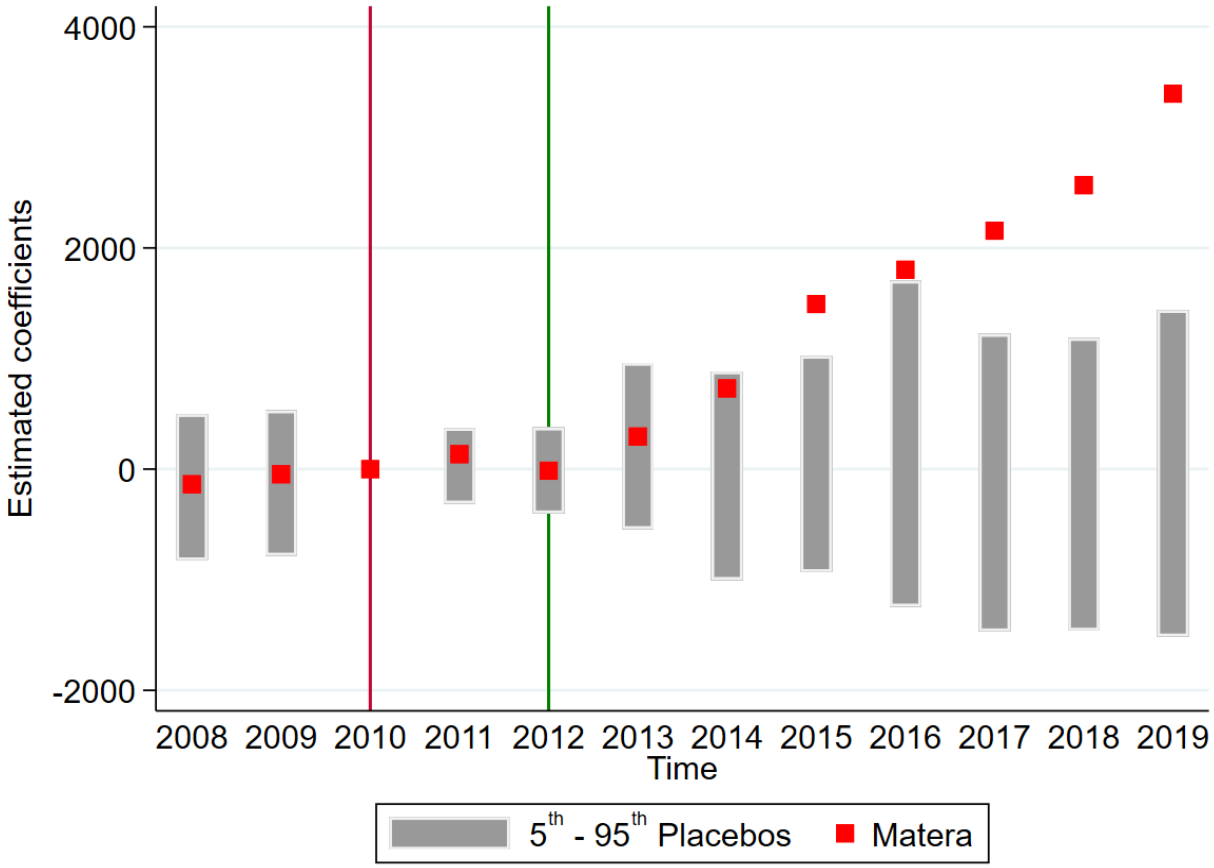
Our estimates are robust to:

- Changes in **control group** composition:
  - Excluding neighbouring provinces, which could suffer from spillover effects **(•)**
  - Extending the control group to include all Italian provinces **(•)**
  - Selecting shortlisted cities **(•)**

More on control groups

Robustness checks (3/3)

◯ Unit specific time trends ◯ Changes in control group ● Early treatment dates



Our estimates are robust to:

- **Placebo treatment** starting in 2011 to reassure about:
  - Parallel trends assumption
  - Absence of lead effects as they city was getting ready to present their bid

Conclusions

- This paper investigated the **causal link** between hosting a **mega cultural event**, **tourism** and **economic development**. We estimate the impact of being shortlisted for, and subsequently winning, the **European Capital of Culture** title for Matera, a previously not-so-touristic city.

- We find a boost in **touristic presence** (+115% in check-ins and + 52% in the number of nights spent), which leads to a -7.74 percentage points reduction in **unemployment** and a 9.7% increase in **taxable income**. We also find an increase in economic activity in **tourism-related industries** and **housing market**.

- We document evidence of a **spotlight effect**: Matera's showcase as a finalist led to tourists rediscovering the city even before it hosted the event or even won the title → **dynamic effects** over time, building up from the shortlisting

- Our finds suggest that the European Capital of Culture event could be a **viable way** for culturally endowed yet underrated destinations to showcase their attractions.

Thank you

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Annex (1/11): Finalist cities already known attraction, disruption in attention mostly for Matera

Back

Description

- **Finalist cities** already were **renown attractions** (unlike Matera) and not new to media attention
- **Spotlight effect:** hike in media attention **only** applies to **Matera** and not to other finalist cities

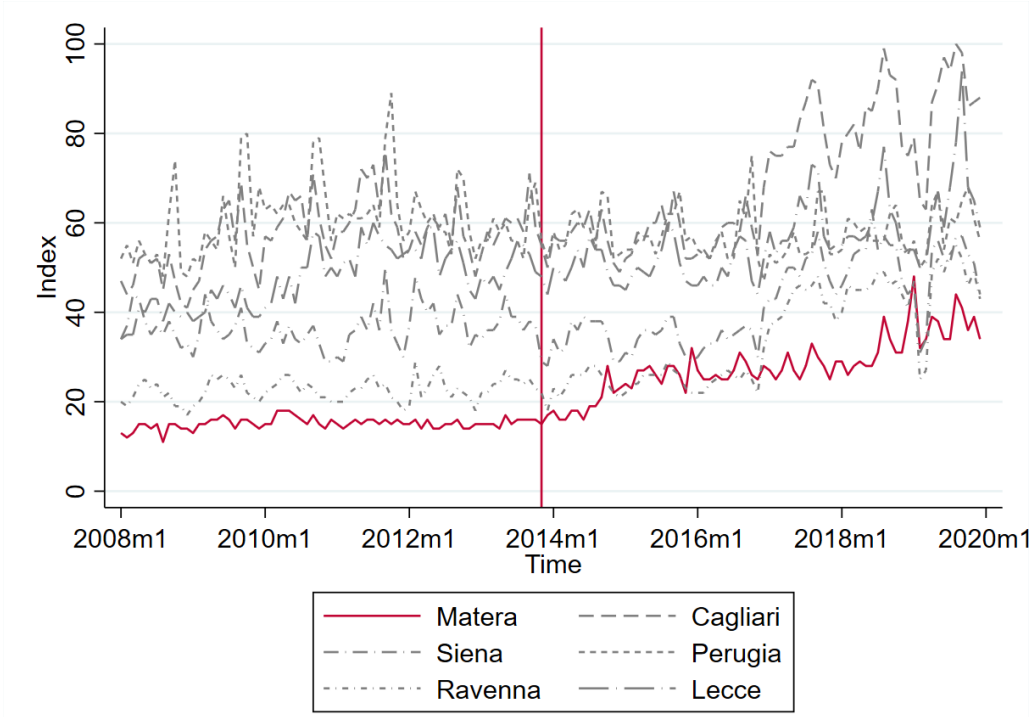


Figure 2: Google search for each finalist city, entire world. 2008-2020.

Annex (2/11): Data sources

Back

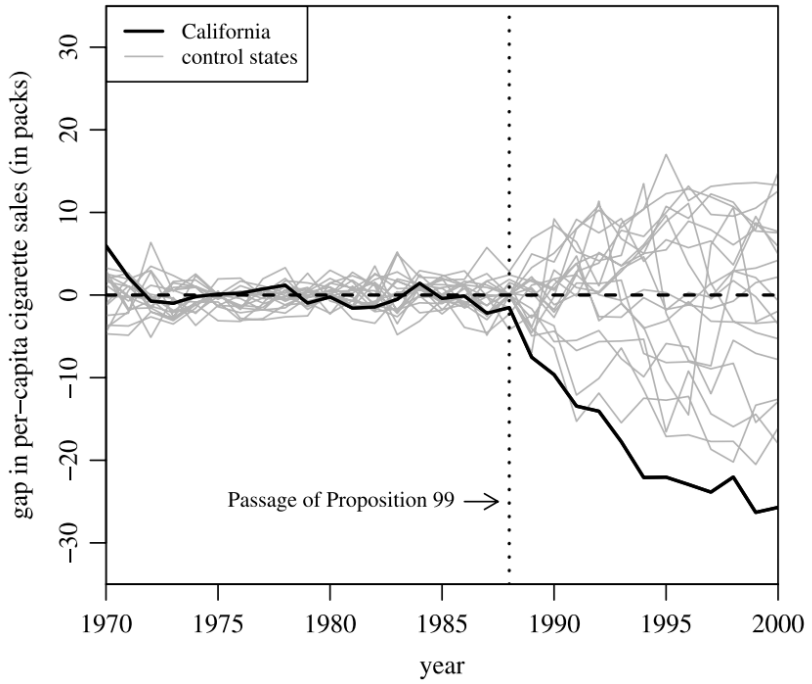
Variable	Time span	Frequency	Sources	Observation level
Touristic flows and accommodations	2008 - 2019	Yearly	ISTAT	NUTS3
Unemployment rate	2008 - 2019	Yearly	ISTAT	NUTS3
Resident firms and staff (by ATECO)	2008 - 2018	Yearly	ISTAT	NUTS3
Population	2008 - 2019	Yearly	ISTAT	NUTS3
Income declared for tax purposes	2008 - 2019	Yearly	MEF	City head of province
Housing transactions	2011 - 2019	Quarterly	OMI	City head of province
Housing prices	2008 - 2019	Biannual	OMI	LAU[13] and lower[14]

Annex (3/11): Synthetic control method

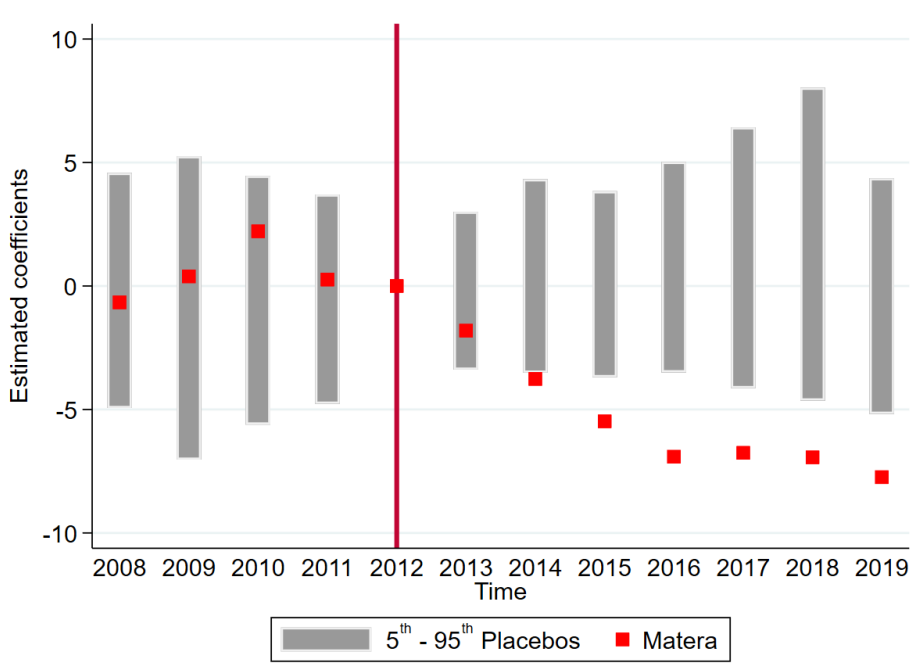
Back

Unfeasible

- Long time series necessary to implement SCM are not available because of changes in variable definition by statistical bodies.
- However, our empirical strategy is similar in spirits in that it compares placebo effects for each component of the control group and shows that the estimated effect for Matera lies at the tails of the distribution.

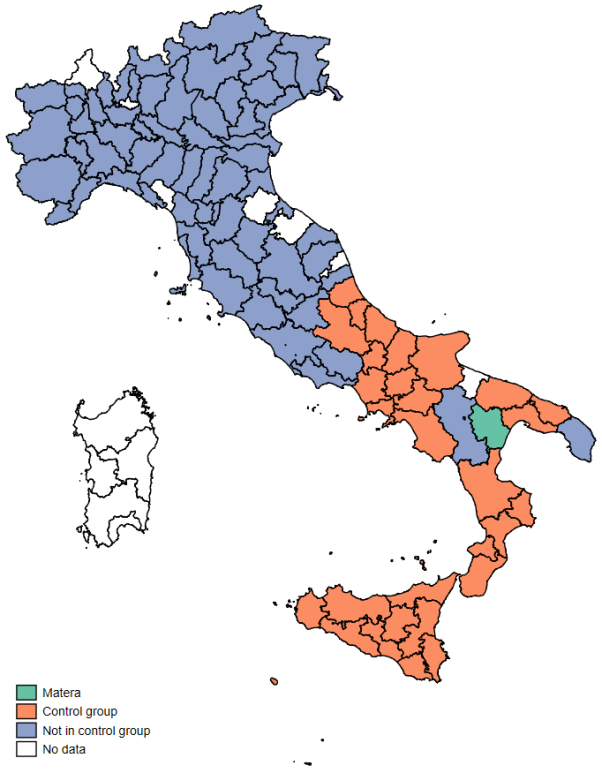


Abadie, Diamond and Hainmueller 2010

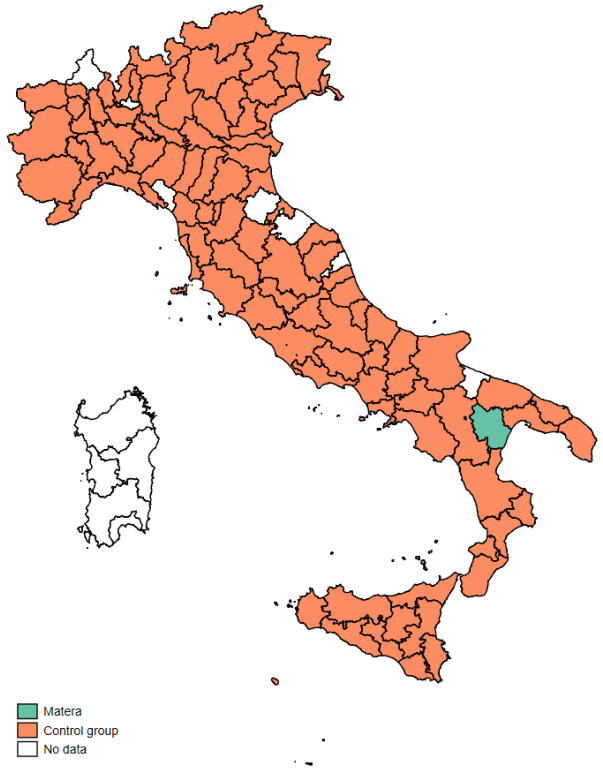


Annex (4/11): Changes to the control group

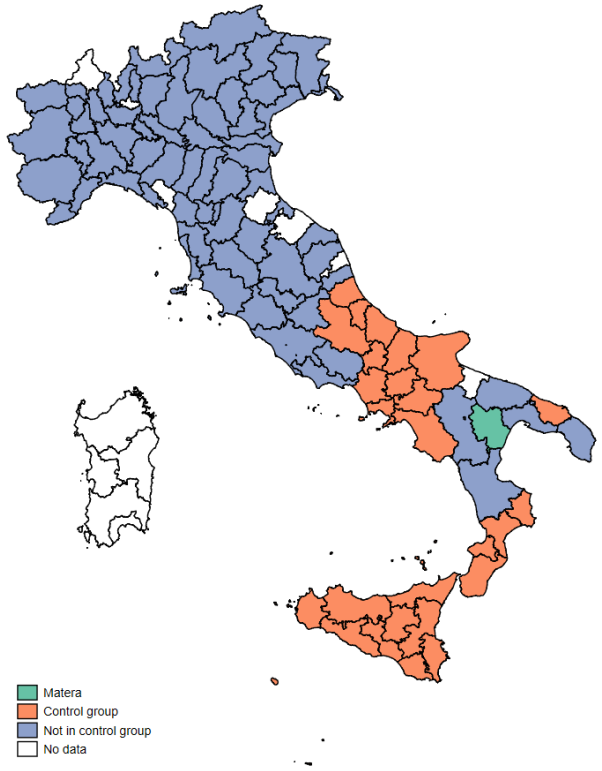
Back



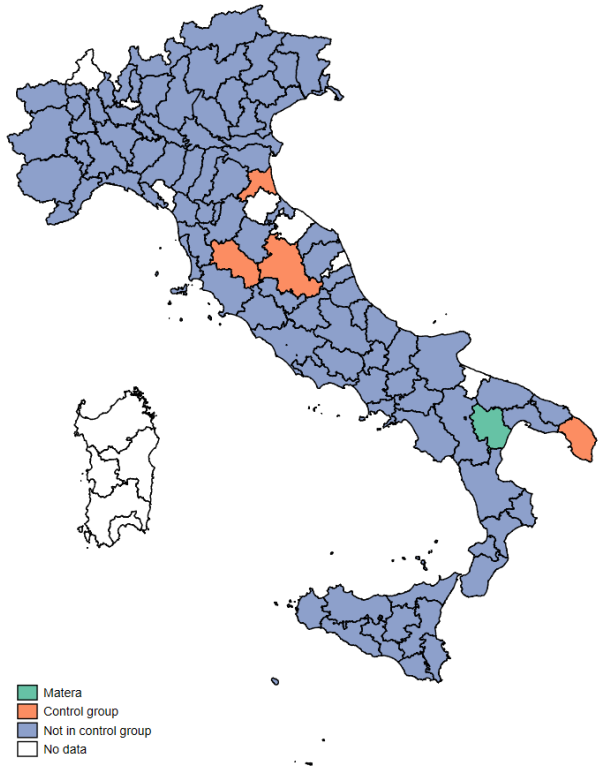
Main specification



All Italian provinces



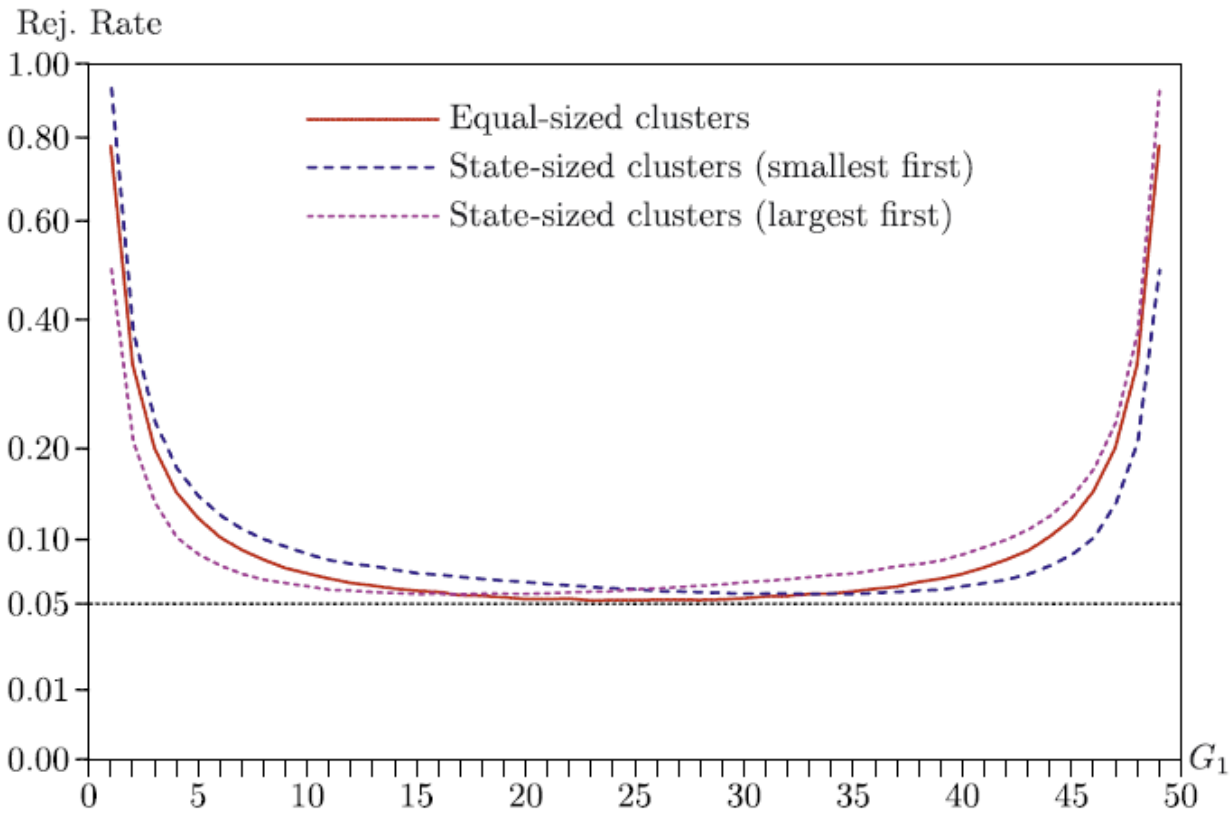
No neighbours



Finalists

Annex (5/11): Clustering standard errors when there is only one treated cluster leads to overrejection of the null hypothesis

Back



Note: Rejection rates and proportion treated, DiD, t(G -1). G1 indicates the number of treated clusters

Description

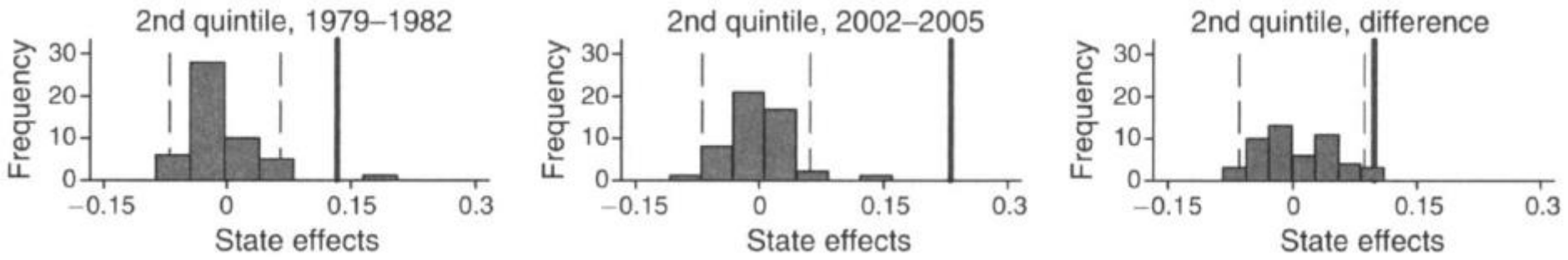
- We should cluster our standard errors when working with long time series, positively serially correlated dependent variables (labour market) and a treatment variable that changes very little over time (Bertrand et al. 2014).
- However, MacKinnon and Webb 2017 discuss **pitfall to cluster robust inference**, even with large sample size and when the "rule of 42" is satisfied
- **Over-rejection if the number of treated (untreated) clusters is small**
- The number of treated clusters (G1) matters even more than cluster size in the context of DiD models → The **rejection rate approaches 0.8** for the case of **one treated cluster** and equal sized clusters (our case for Matera)

Annex (6/11): We decided not to rely on SEs to draw statistical significance as they are likely to be misleading given our settings

Back

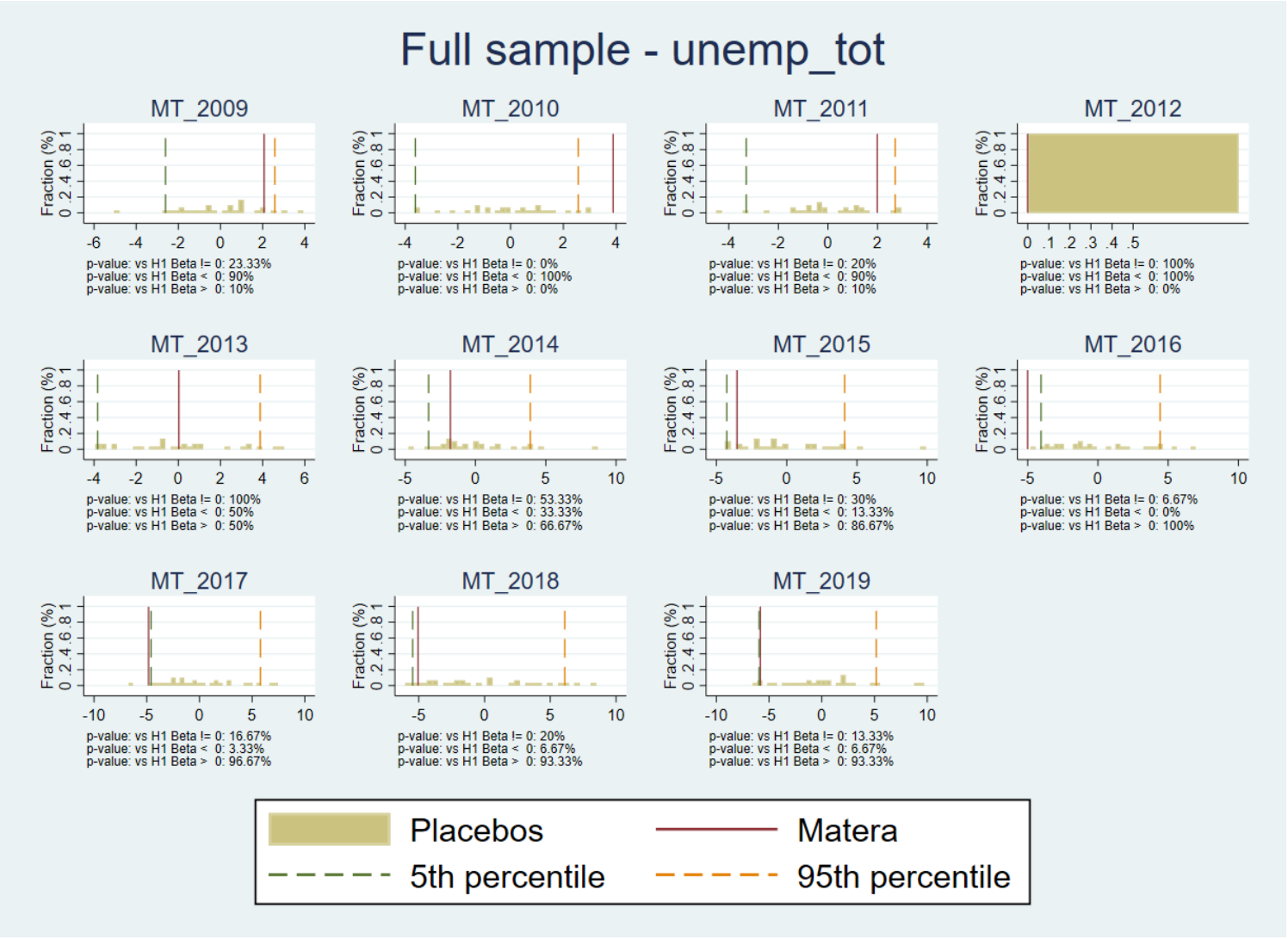
Description

- Buchmueller, DiNardo and Valletta (2011) ran into a **similar problem to ours** when analysing the effect of an employer health insurance mandate which was active **only in Hawaii** using Current Population Survey data for all US states from 1979 to 2005 → Their proposed solution is to rely on **permutation tests** (or randomization tests, Fisher 1935)
    - **Intuition** of permutation tests: **Compare** the treatment effects found for the treated group (Hawaii) to the **distribution of** treatment effects for the **"placebos"** (all other states). Check whether the effects for the treated group lays on the tails of the placebo distribution



Annex (7/11): Clustering standard errors when there is only one treated cluster leads to overrejection of the null hypothesis

Back

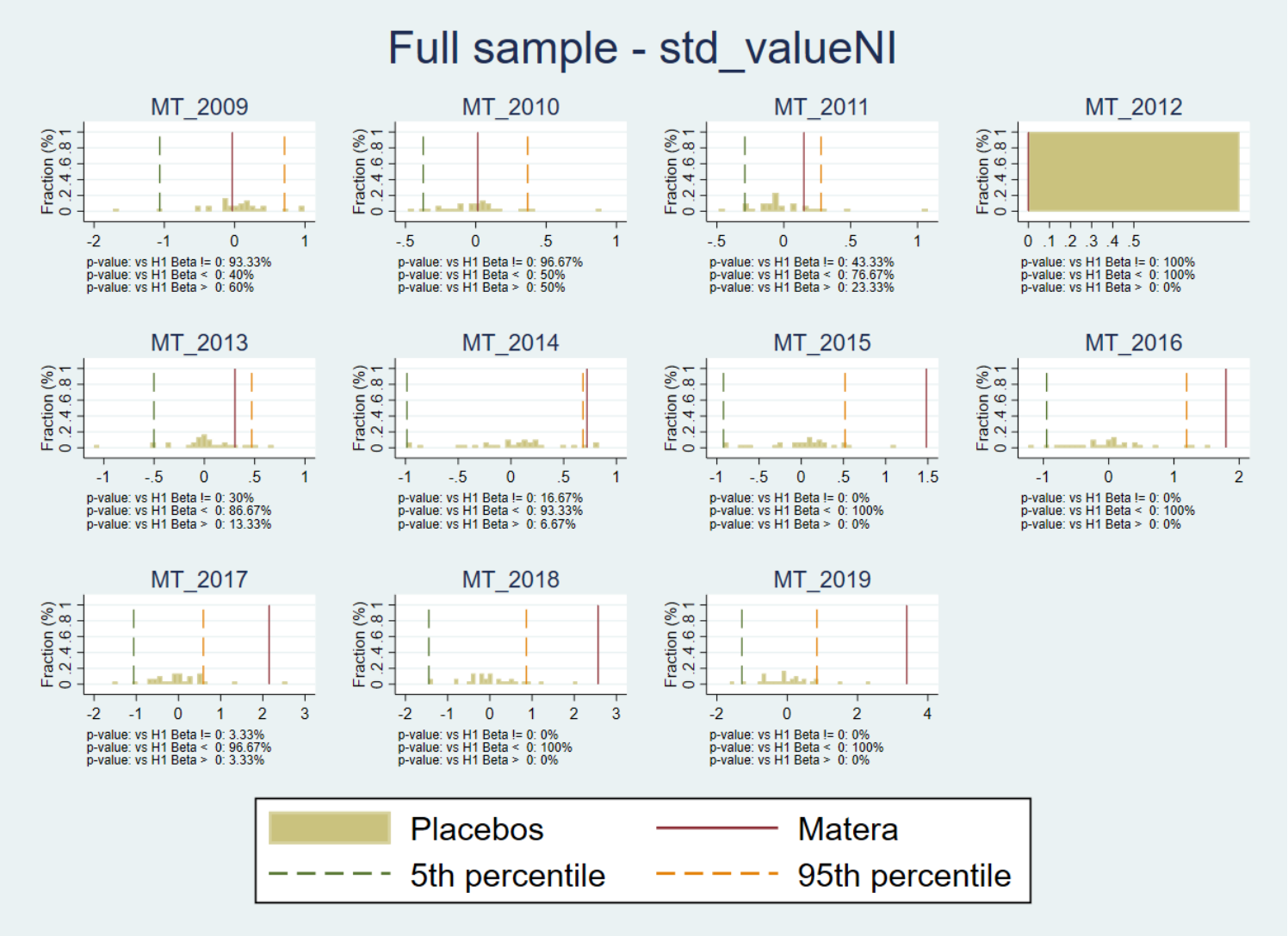


Note

- The **histogram** shows the distribution of **coefficients** for all placebo provinces from event study estimation (**permutations**)
- Coefficients represents **estimates from event studies** where MT is excluded from the estimating sample
- **MT** is shown by the **red line**
- We compute **exact p-values** and report observations from the permutation distribution for **5th and 95th percentiles**

Annex (8/11): Clustering standard errors when there is only one treated cluster leads to overrejection of the null hypothesis

Back



In practice

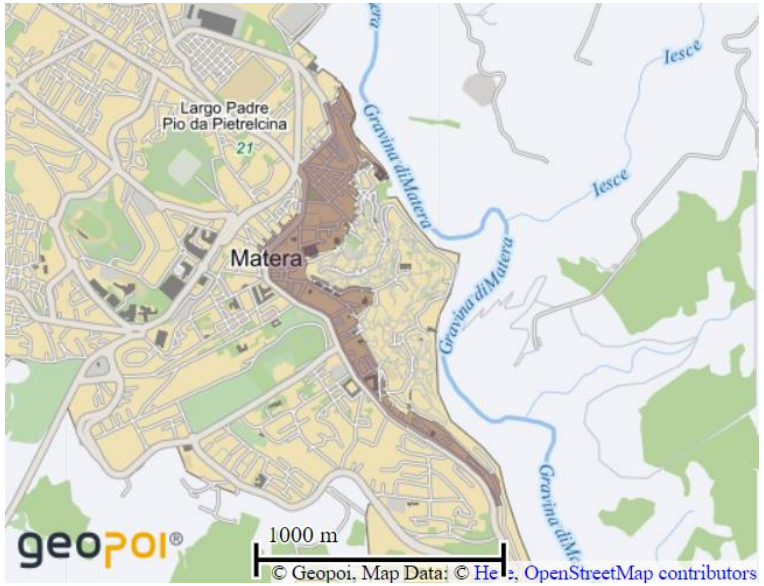
- Estimate Equation (1) as normal: Matera is treated
- **Placebo** estimate: estimate Equation (1) multiple times, **setting as treated one province in the control group at a time**. Exclude Matera from control group.
- Order the $\hat{\beta}$, compute 5% and 95% percentiles. Significance is given by $\beta\_\widehat{Matera}$ lying at the **tails of the placebo distribution**. At 10%, this means being more extreme than the 5% and 95% thresholds.

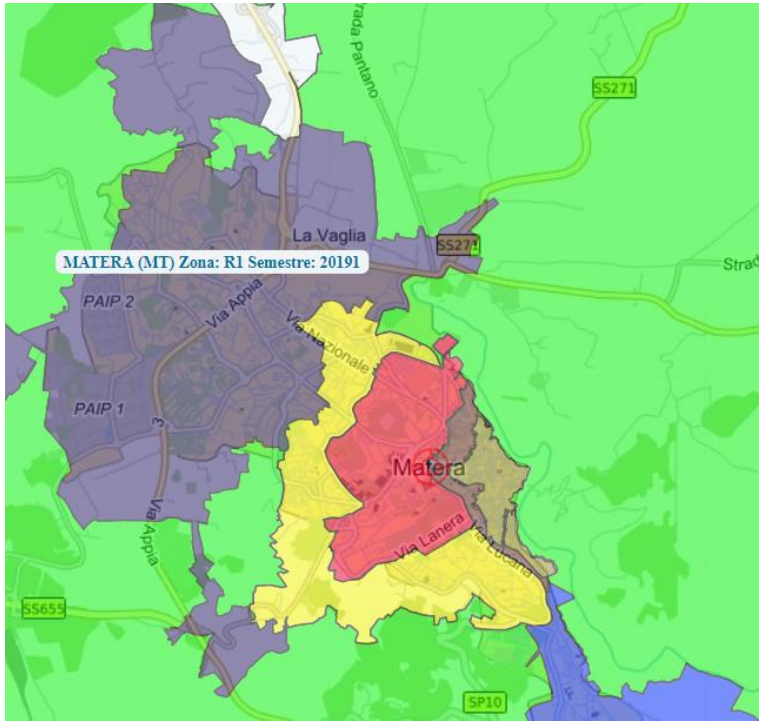
Annex (9/11): OMI data

Housing market data

- Within each **neighbourhood (OMI zone)**, we access average sell price by **building category**: residential, retail space, industrial, among others.

- Starting from the city center and moving towards the outskirts of each city, neighbourhoods are grouped into **areas**. Neighbourhoods in the same area are similar in characteristics and equally distant from the city centre.





Back

Annex (10/11): Similar capital expenditure planned across bidding cities, many projects already under construction, agreed a long time before or never implemented

Back

City		Total budget	Operating	Capital
Matera	*Euros* (€)	701,830,000	51,980,000	649,850,000
	Prop (%)	100%	7%	93%
Cagliari	*Euros* (€)	490,324,730	32,510,000	457,814,730
	Prop (%)	100%	7%	93%
Lecce	*Euros* (€)	40,000,000	40,000,000	0
	Prop (%)	100%	100%	0%
Perugia	*Euros* (€)	163,759,323	38,619,000	125,140,323
	Prop (%)	100%	24%	76%
Ravenna	*Euros* (€)	490,000,000	50,000,000	440,000,000
	Prop (%)	100%	10%	90%
Siena	*Euros* (€)	1,175,588,392	79,080,000	1,096,508,392
	Prop (%)	100%	7%	93%

Annex (11/11): Similar capital expenditure planned across bidding cities, many projects already under construction, agreed a long time before or never implemented

Back

City		Total budget	Operating	Capital	Summary from Bidbook
Matera	*Euros* (€) *Prop (%)*	701,830,000 100%	51,980,000 7%	649,850,000 93%	52 million (€) extra for current spending over the ordinary culture budget. Almost 650 million (€) set aside for investment costs. Infrastructure spending is already committed, many of the works will be carried out whether or not Matera is to be selected as next ECoC
Cagliari	*Euros* (€) *Prop (%)*	490,324,730 100%	32,510,000 7%	457,814,730 93%	Capital spending includes all planned investments including spending amounts already underway regardless of the bid and according to city planning
Lecce	*Euros* (€) *Prop (%)*	40,000,000 100%	40,000,000 100%	0 0%	The bidbook mentions infrastructural spending for 214,464,872 (€) related to infrastructural projects in the cities of Lecce, Brindisi and the Province of Lecce. These funds will be integrated with additional capital spending for projects under feasibility study. Funding is not listed under budget because it will be managed directly by the public authorities concerned
Perugia	*Euros* (€) *Prop (%)*	163,759,323 100%	38,619,000 24%	125,140,323 76%	Capital expenditure will be managed by the local authorities. The city decided to include in the bidbook only funding for projects which could be concluded in time for the event.
Ravenna	*Euros* (€) *Prop (%)*	490,000,000 100%	50,000,000 10%	440,000,000 90%	The bidbook also makes reference to a bypass, completion depending on national funds, and to the E45/E55 European road route enhancement work for which, given its high cost (estimated at over one billion euro) and the many lenders expected to be involved, it was impossible to provide an assessment on feasibility and timeline.
Siena	*Euros* (€) *Prop (%)*	1,175,588,392 100%	79,080,000 7%	1,096,508,392 93%	All capital expenditure will be managed by the public authorities dealing with infrastructural spending. Investment spending also includes national funding for new highways, railway connection and a new runway for the airport in Florence.