Social conflict, Mafia, and state capacity

Daron Acemoglu[1] Giuseppe De Feo[2] Giacomo De Luca[3]

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[1]Department of Economics, Massachusetts Institute of Technology.
[2]Department of Economics, University of Strathclyde
[3]Department of Economics, University of York

Aims of the paper

- Non-state armed actors can have various negative effects on long-term development.
- One important channel is that, via their competition against and collaboration with state institutions, they can weaken the capacity of the state to provide public services, resolve conflicts and regulate economic activity.
- In this paper, we focus on the effects of the Sicilian Mafia on local state capacity, economic outcomes and politics in Sicily in the medium and the long run.

Contributions of the paper

Our paper has two main contributions:

- We propose a new hypothesis on the rise of the Sicilian Mafia at the end of the 19th century, based on the landowners' willingness to use the Mafia against the nascent peasant socialist movement.

- Using the drought of 1893 that acted as an important impetus to the socialist movement, we develop an identification strategy to estimate the effect of the Mafia on medium-term state capacity, economic outcomes, and politics in Sicily. We find large and persistent effect of the Mafia on these outcomes.

Results (I)

1. **A new hypothesis on the development of the Sicilian Mafia**

The rise of the Mafia in the Sicilian countryside was a response to the socialist peasants movement starting in 1893.

- Following the very severe drought and agrarian crisis in 1893 the socialist movement *Fasci dei Lavoratori* spread swiftly among Sicilian peasants.
- Given the weakness to counter the socialist threat of the Italian government at the time, landowners and the managers of their large estates turned to the Mafia, which was until then more present in the urban and mining areas.
- The Mafia then became endemic in these rural areas with a long-lasting impact on state capacity.

Results (II)

2. **The presence of the Mafia dramatically decreased the capacity of the state to provide public goods in the medium run.**

Looking at the level of social and economic outcomes linked to state capacity we provide evidence of:

- a higher infant mortality rate measured in 1908-10;
- a lower level of literacy in 1921;
- a lower level of industrialization in 1911;

due to the presence of the Mafia.

Results (III)

3. **Mafia presence dramatically decreased the number of candidates and increased the share of the winning candidate in contested elections in the 1909 parliamentary elections.**

4. **Falsification exercises support our identification strategy:**
   - Outcomes before 1893 are not affected by drought in 1893.
   - Rainfall in other years does not predict our key outcome or Mafia variables.

Related literature (I)

The economics of organized crime

- Criminal organizations: The industry of private protection (Gambetta, 1993; Skaperdas, 2001).
  - Weak institution, poor law enforcement and lack of trust provide opportunity for criminal organization to arise.
  - When the state is unable (or unwilling) to provide protection and contract enforcement the Mafia can step in.
- Empirical investigation on the origins of the Sicilian Mafia: rich exports (citrus & sulfur) rise the demand for protection (Bandiera, 2003; Del Monte and Pennacchio, 2012; Buonanno et al., 2015; Dimico et al., 2012).
- recent work on the economic effect of organized crime (Daniele and Marani, 2011; Pinotti, 2015).

Related literature (II)

The historical literature on the Sicilian Mafia

- For most of 20th century historians linked the origins of the Mafia to rural Sicily as opposed to the more recent urban Mafia (Russo, 1964; Romano, 1966; Mack Smith, 1968; CPM, 1977).
- But more recent historical work (Lupo, 1996; Dickie, 2004; Marino, 2004) identifies the origins in the rich, export-oriented areas of Sicily.
- Our work provides a quantitative analysis bridging these different strands of historical literature.
- Our work is also consistent with a recent historical work (Benigno, 2015) which describes the rise of the Mafia as a tool of political repression used by political and social elites in the early years of the Italian unification.

Data

We assembled a novel dataset on the Sicilian population and economy, at municipality level:

- Use of the land from 1830s and Rural and urban rents from 1850s (Bourbon Cadastre at the end of the feudal era);
- Data on the Mafia presence in 1885 and 1900;
- Data on the presence of the socialist movement 1891-1894;
- Data on rainfall at weather station level from 1881 to 1941 (39 stations);
- Data on political elections from 1861 to 1913 at municipality level;
- infant mortality for the years 1869, 1870, 1908, 1909 collected from the death registers of all the Sicilian municipalities (80,000 death certificates per year);
- Literacy rates from 1911-1931 censuses;
- Industrialization data from the 1911 industrial census.

Reliability of data on Mafia presence

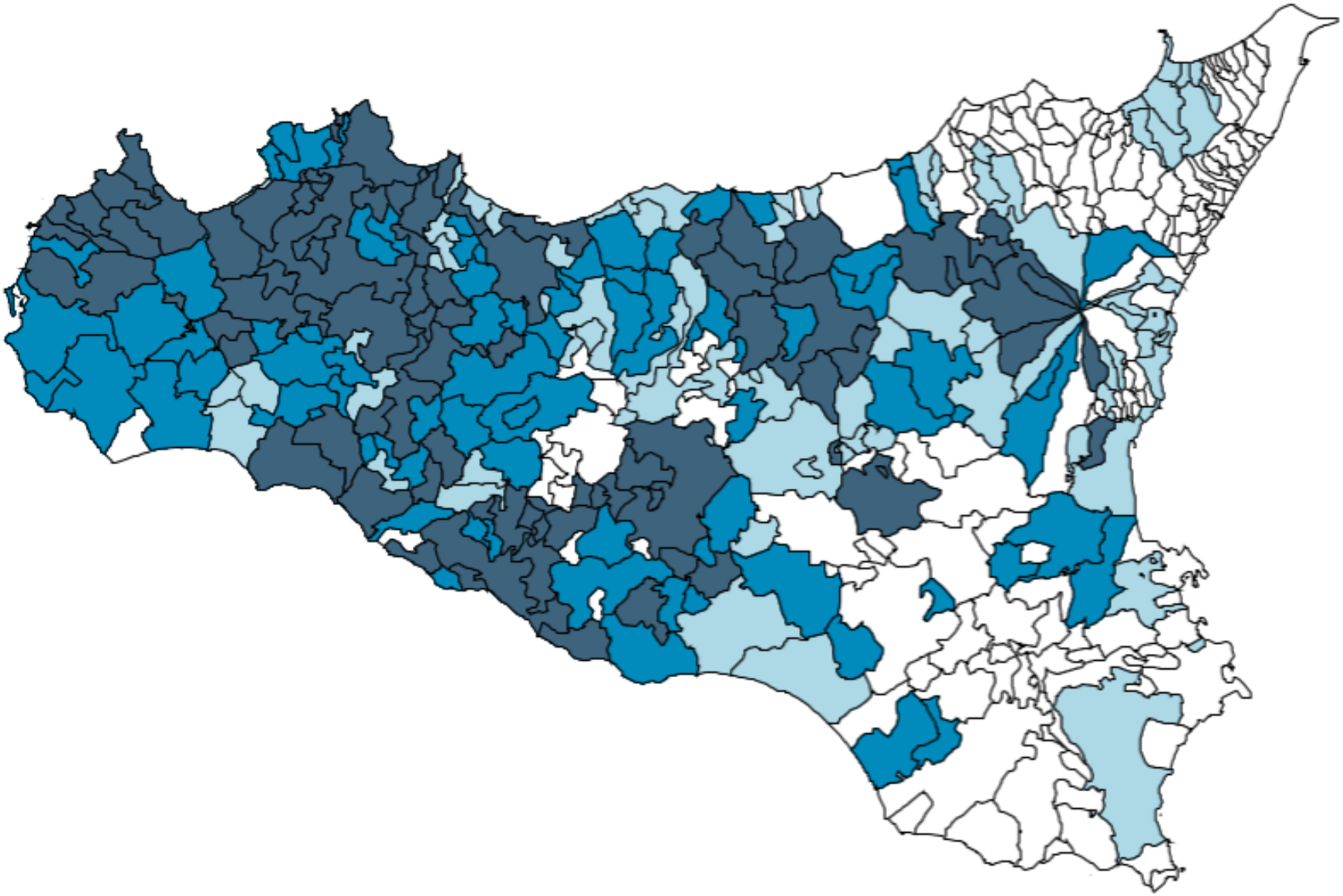
Data on Mafia presence is derived from Cutrera(1900):

- Police inspector Cutrera analyzes origins, characteristics and rituals of the Sicilian Mafia;
- it also depicted a map of the presence and intensity of the Mafia for 289 of the 357 Sicilian municipalities;
- this is not based on crime records but on his own knowledge of the phenomenon.

we believe that this is a very reliable source:

- The distribution is very similar to what we learned about Mafia presence from court cases in the late 20th century.;
- in De Feo & De Luca (AEJ:EP forth.) we use it as an instrument for the Mafia presence in late 20th century;
- we have an additional measure of the Mafia in 1885 from a parliamentary enquiry which we use as a control.

Mafia in 1900 (Cutrera, 1900)

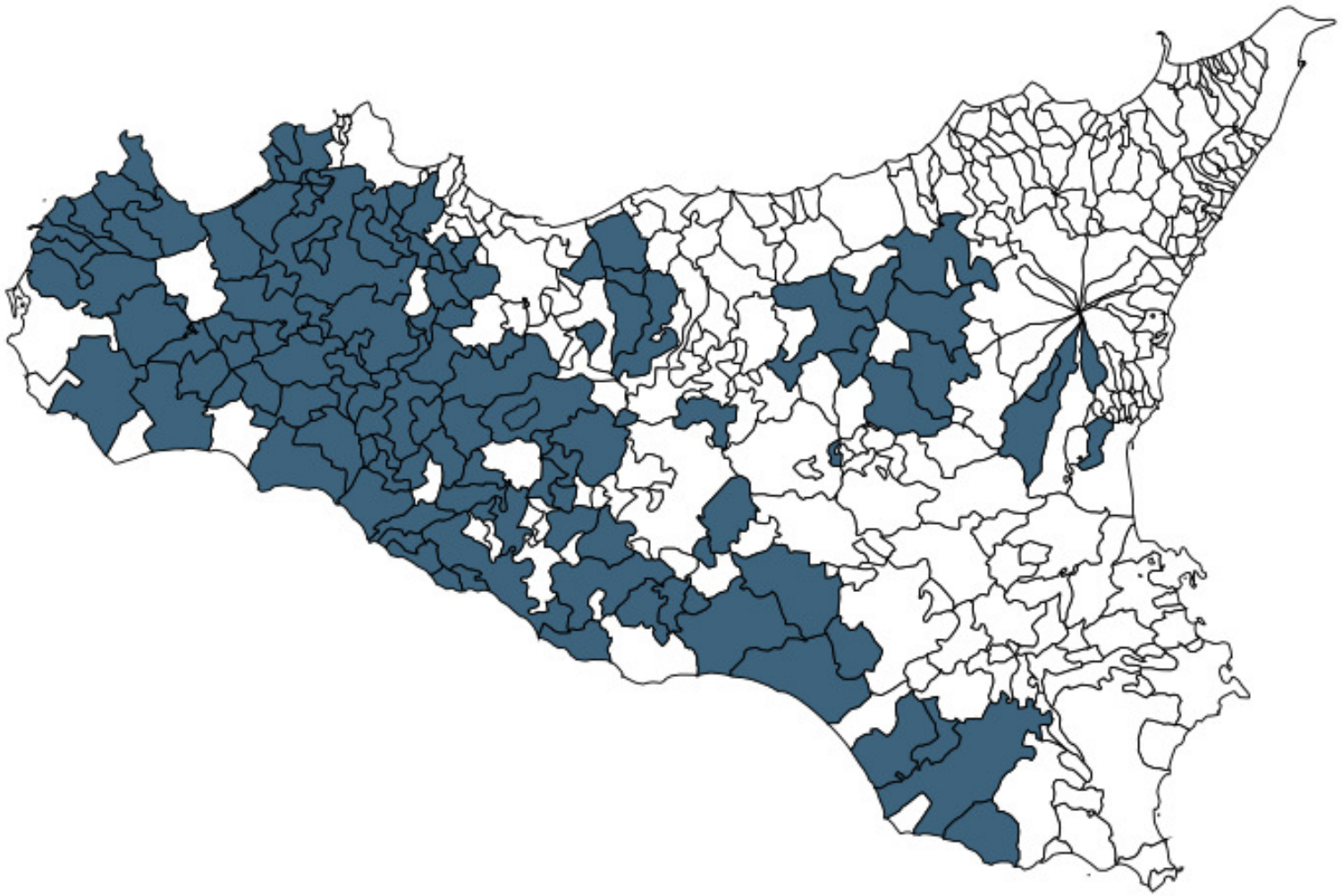


I Fasci dei Lavoratori

It was the strongest socialist movement in 19th century Italy.

- At the first Italian congress of the socialist party in 1893 half of the members were Sicilian;
- The first Fasci were formed by industrial workers in the cities (1891);
- Then the crisis in the rural Sicily and the spread of the socialist movement in the countryside (1893);
- The Italian PM Crispi estimated more than 350,000 *Fasci* members (10% of Sicilian population).
- Their demands:
  - Increase in wage;
  - New sharecropping agreements;
  - Division of latifundia and common land to landless peasants.

Peasants Fasci in 1893-4



Drought and agrarian crisis in 1893

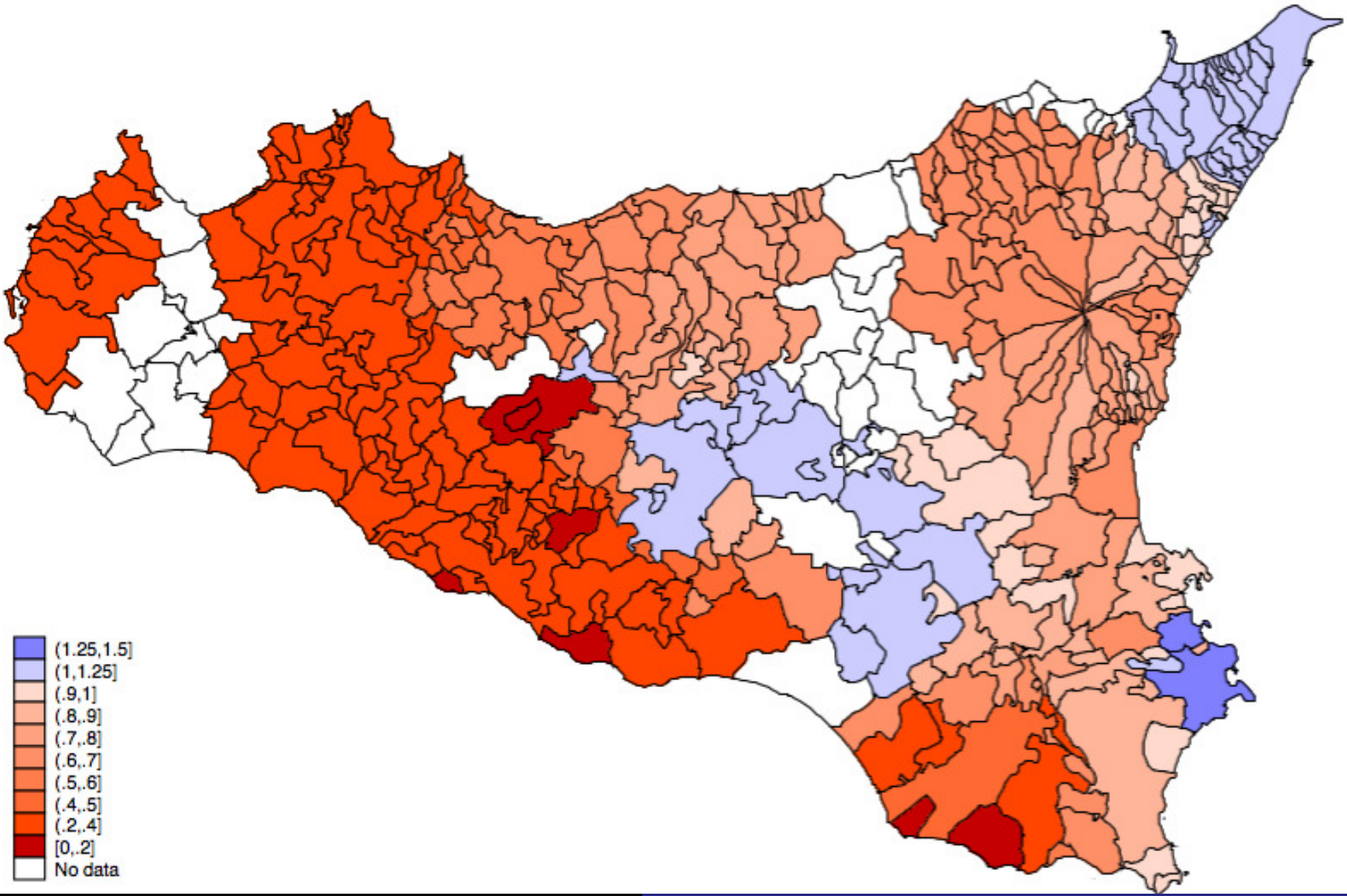
The agrarian crisis in1893:

- A very severe drought hit some parts of Sicily especially during the spring;
- Wheat production dropped from 7,750k to 4,365k tons;
- Wine, olive oil and citrus production were affected too;
- The drought hit an already weak Sicilian agriculture after years of falling international wheat prices, the commercial war between Italy and France, and the rise of protectionist policies all over Europe.

The drought gave rise to a widespread peasants movement:

- Peasants unrests were not unusual in Sicily, but generally very limited in time and space;
- The *Fasci* movement spread on an unprecedented scale in the Sicilian countryside;
- The *Fasci* were coordinated at regional level by the Socialist Party with representatives from each province.

Drought in spring 1893. Ratio of the rainfall in spring 1893 to long-run average spring rainfall.



The *Fasci*, the government, and the Mafia

The *Fasci* threatened the rural elites:

- Several months of peasants' strikes, with pacific rallies but also attacks to local authorities, landowners and estate managers.

The central government was unreliable:

- The Giolitti government did not adhere to the request by Sicilian landlords and MPs to send the Army to repress the *Fasci*;
- Eventually the government fell and the Sicilian Crispi became PM declaring Martial law in Sicily and the *Fasci* illegal;
- Dozens of *Fasci* members were arrested and sentenced to hundreds of years in jail, but a new government issued a collective pardon for the *Fasci* members in 1896.

Without a reliable government, rural elites turned to the Mafia:

- Several documented cases of Mafia armed intervention against peasants' rallies (Caltavuturo, Gibellina, Lercara, Giardinello);
- Several *Fasci* leaders killed in the following years.

Our empirical strategy

- Zeroth stage: Pasants' *Fasci* determined by drought in 1893.
- First stage: Mafia's presence determined by drought in 1893 [We do also the 2SLS for the effect of peasant fasci on Mafia, not reported here to save space].
- Second stage: state capacity, economic outcomes and politics as a function of the Mafia instrumented by drought in 1893.

Descriptive statistics

Variable	Obs	Mean	S.D.	Min	Max
Main Mafia measure:					
Mafia 1900	273	1.432	1.146	0	3
The Fasci movement:					
Peasants' Fasci (1891-94)	333	0.306	0.462	0	1
Socialist Fasci in June 1893	333	0.258	0.438	0	1
Presence of Fasci (1891-94)	333	0.471	0.500	0	1
Main rainfall variable:					
relative rainfall spring 1893 (interpolation with a 30km cutoff)	297	0.642	0.280	0.061	1.283
Alternative rainfall variables:					
log relative rainfall spring 1893 (interpolation with a 30km cutoff)	297	-0.572	0.559	-2.79	0.249
relative rainfall spring 1893 – censored at 1.00 (interpolation with a 30km cutoff)	297	0 .637	0.273	0.061	1.00
relative rainfall spring 1893 (interpolation with a 30km cutoff, min 2 stations)	195	0.690	0.272	0.061	1.283
relative rainfall spring 1893 (interpolation with a 25km cutoff)	262	0.651	0.293	0.061	1.283
relative rainfall spring 1893 (interpolation with a 35km cutoff)	319	0.637	0.275	0.061	1.283

Descriptive statistics (cont.)

Variable	Obs	Mean	S.D.	Min	Max
Other determinants of Fasci:					
rural centre in 1861	333	0.372	0.484	0	1
Rural rent per hectare in 1853	333	6.850	4.746	1.174	35.152
Urban rent per hectare in 1853	333	1.562	4.297	0	69.990
Other determinants of Mafia in 1900:					
Sulfur production 1868-70	333	5.591	23.501	0	210
Citrus groves (share in 1830s)	333	0.007	0.015	0	0.160
Mafia in 1885	333	0.565	1.006	0	3
Geographic and demographic controls:					
log population in 1861	333	8.371	0.945	5.875	12.190
log area	333	8.194	1.254	4.413	11.191
Altitude of the town centre	333	411.375	276.620	3	1265
Maximum altitude	333	944.159	274.870	48	3274
Average altitude	333	392.140	274.870	10	1627
Distance from Palermo	333	109.021	58.915	0	229
Distance from closest port	333	29.668	16.420	0	108.956
Average temperature	333	15.928	1.543	11	18.45
Long run average rainfall (1881-1941)	307	156.277	29.182	70.146	253.119
Long run variance of relative rainfall (1881-1941)	307	0.213	0.0728	0.118	0.473

Rainfall data interpolation

- For rainfall data we rely on Eredia (1915)
  - 39 private and public weather stations were active in Sicily at the end of the 19th century;
  - This is a fairly high number for an area of less than 10k square miles (1 station every 250 square miles).
- As measure of drought we use relative rainfall (e.g., rainfall in spring 1893 divided by long-run spring average rainfall);
- The relative rainfall at municipality level is obtained by interpolation of the relative rainfall at station level:
  - The interpolation is the weighted average of the relative rainfall of all the stations in a 30km radius;
  - The weights are equal to the inverse distance of the stations from the municipality centre;
  - Missing data are reported for the municipalities which don't have any station in a 30km radius;
  - the long run average is computed on the period 1881-1941.

The impact of drought in 1893 on the development of the *Fasci* movement.

Dependent variable: Peasant's *Fasci*					
	(1)	(2)	(3)	(4)	(5)
rainfall spring 1893	-1.003	-0.763	-0.836	-0.780	-0.753
(interp 30km cutoff)	(0.086)***	(0.141)***	(0.136)***	(0.136)***	(0.145)***
Province FE		✓	✓	✓	✓
Det. Fasci			✓	✓	✓
Det. Mafia				✓	✓
Geo/demo controls					✓
Observations	245	245	245	245	245
R-squared	0.357	0.390	0.425	0.465	0.474

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Det. Fasci: the dummy for rural centre in 1861, the rural rent per hectare and the urban rent per hectare.

Det. Mafia: sulfur production in 1868-70, citrus groves (share in 1830s), and Mafia presence in 1885.

Geo/demo: log population in 1861, log area, altitude of the town centre, max altitude, ave altitude, dist to Palermo, dist to the closest port, ave temperature, long-run ave rainfall, long-run var of relative rainfall.

Getting the right standard errors

There are two issues we need to tackle to get the right s.e:

- The s.e. may show spatial dependence;
- The s.e. may be correlated because of the interpolation process where data available at station level are linearly combined to obtain the rainfall at municipality level.

In the tables that follow we present the following models in order to address these concerns:

- OLS and GMM models with spatially corrected standard errors (Conley s.e.);
- OLS and 2SLS models with s.e. clustered according to the closest weather station. Since there are only 31 stations, we use a wild bootstrap procedure;
- OLS and 2SLS models with 2-way clustered s.e. according to the closest weather station and the district; since there are 31 weather stations and 24 districts we bootstrap along the two dimensions.

Getting the right standard errors

Dependent variable: Peasant's *Fasci*					
	(1)	(2)	(3)	(4)	(5)
rainfall spring 1893 (interp 30km cutoff)	-1.003	-0.763	-0.836	-0.780	-0.753
robust s.e.	(0.086)***	(0.141)***	(0.136)***	(0.136)***	(0.145)***
Conley s.e.	(0.123)***	(.165)***	(0.174)***	(0.182)***	(0.182)***
clust + wildboot on closest stn	(0.301)***	(0.269)***	(0.288)***	(0.249)***	(0.241)***
clust + boot on closest stn+district	(0.136)***	(0.206)***	(0.244)***	(0.261)***	(0.276)***
Province FE		✓	✓	✓	✓
Det. Fasci			✓	✓	✓
Det. Mafia				✓	✓
Geo/demo controls					✓
Observations	245	245	245	245	245
R-squared	0.357	0.390	0.425	0.465	0.474

Dependent variable: Mafia 1900					
	(1)	(2)	(3)	(4)	(5)
rainfall spring 1893 (interp 30km cutoff)	-2.057	-0.661	-0.844	-1.020	-1.094
robust s.e.	(0.222)***	(0.339)*	(0.324)***	(0.304)***	(0.312)***
Conley s.e.	(0.339)***	(0.297)**	(0.262)***	(0.247)***	(0.222)***
clust + wildboot on closest stn	(0.659)***	(0.291)**	(0.270)***	(0.326)***	(0.376)***
clust + boot on closest stn+district	(0.438)***	(0.306)**	(0.262)***	(0.290)***	(0.392)***
Province FE		✓	✓	✓	✓
Det. Fasci			✓	✓	✓
Det. Mafia				✓	✓
Geo/demo controls					✓
Observations	245	245	245	245	245
R-squared	0.255	0.441	0.492	0.543	0.593

Alternative measures for drought intensity in spring 1893

Dependent variable: Mafia 1900	(1)	(2)	(3)	(4)	(5)	(6)
log rainfall spring 1893 (30km)	-0.308	-0.362	-0.463			
censored rainfall spring 1893 (30km)				-0.867	-1.045	-1.124
robust s.e.	(0.155)**	(0.154)**	(0.148)***	(0.341)**	(0.320)***	(0.330)***
Conley s.e.	(0.138)**	(.140)***	(0.122)***	(0.273)***	(0.254)***	(0.233)***
clust + wildboot on closest stn	(0.122)**	(0.135)***	(0.204)**	(0.298)***	(0.334)***	(0.359)***
clust + boot on closest stn+district	(0.168)*	(0.184)*	(0.202)**	(0.289)***	(0.282)***	(0.419)***
Province FE	✓	✓	✓	✓	✓	✓
Determinants of fasci	✓	✓	✓	✓	✓	✓
Determinants of Mafia		✓	✓		✓	✓
Geo/demo controls			✓			✓
Observations	245	245	245	245	245	245
R-squared	0.485	0.531	0.586	0.492	0.542	0.592

Different interpolation cutoffs for spring rainfall in 1893

Dependent variable: Mafia 1900	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
rain spring 1893 (30km min 2 stn)	-1.081	-1.198	-1.318						
rain spring 1893 (interp 25km)				-0.794	-0.994	-0.945			
rain spring 1893 (interp 35km)							-0.764	-0.892	-0.931
robust s.e.	(0.497)**	(0.432)***	(0.389)***	(0.325)**	(0.291)***	(0.302)***	(0.326)**	(0.314)***	(0.332)***
Conley s.e.	(0.394)***	(0.360)***	(0.274)***	(0.379)**	(0.317)***	(0.245)***	(0.278)***	(0.257)***	(0.258)***
clust + wildboot on closest stn	(0.425)**	(0.429)***	(0.391)***	(0.465)*	(0.446)**	(0.347)***	(0.245)***	(0.268)***	(0.279)***
clust + boot on closest stn+district	(0.327)***	(0.284)***	(0.374)***	(0.573)	(0.454)**	(0.460)**	(0.316)**	(0.278)***	(0.352)***
Province FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Det. Fasci	✓	✓	✓	✓	✓	✓	✓	✓	✓
Det. Mafia		✓	✓		✓	✓		✓	✓
Geo/demo controls			✓			✓			✓
Observations	155	155	155	216	216	216	263	263	263
R-squared	0.558	0.631	0.677	0.478	0.536	0.592	0.480	0.521	0.568

Falsification test

IV estimation of the effect of the Mafia on pre-1893 outcomes.

Dep. variable:	Infant mortality in 1869-1870			Winning share in 1865 parliamentary elections			No. of candidates receiving votes in 1865		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Mafia 1900	0.005	0.007	0.003	-0.095	-0.082	-0.045	0.430	0.383	0.258
robust s.e.	(0.024)	(0.021)	(0.023)	(0.082)	(0.064)	(0.061)	(0.230)*	(0.178)**	(0.174)
Conley s.e.	(0.029)	(0.026)	(0.022)	(0.085)	(0.062)	(0.056)	(0.246)*	(0.188)**	(0.181)
clust + wildboot on closest stn	(0.024)	(0.035)	(0.025)	(0.111)	(0.084)	(0.089)	(0.347)	(0.277)	(0.298)
clust + boot on closest stn+district	(0.042)	(0.041)	(0.046)	(0.110)	(0.078)	(0.092)	(0.307)	(0.262)	(0.351)
Province FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Det Fasci	✓	✓	✓	✓	✓	✓	✓	✓	✓
Det Mafia		✓	✓		✓	✓		✓	✓
Geo/demo controls			✓			✓			✓
1st stage excluded instrument: rainfall spring 1893 (30km)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	217	217	217	227	227	227	227	227	227
R-squared	0.106	0.114	0.181	-0.024	0.042	0.157	-0.153	-0.059	0.198

Falsification tests for years 1900-1941

We run falsification tests with 42 years of rainfall to check that rainfall correlation is significant only for 1893 and random for other years.

Dependent variable: Mafia 1900		
	% signif. neg at 10%	% signif. pos at 10%
Drought variable:		
rainfall spring 19XX (30km)	0.01	0.03
log rainfall spring 19XX (30km)	0.01	0.02
censored rainfall spring 19XX (30km)	0.02	0.04

Notes: We report the % of a positive and negative coefficients for the drought variable (built for years 1900-1941) with a p-value$<$ 0.1 when we test the three main specifications of the model with 2-way clustered and bootstrapped standard errors on closest station and district.

The effect of the Mafia on state capacity: Infant mortality rate

2SLS estimation of the effect of Mafia 1900 on infant mortality in 1908-9.

Dep. variable:	Infant mortality in 1908-09		
	(1)	(2)	(3)
Mafia1900	0.059	0.052	0.052
robust s.e.	(0.027)**	(0.019)***	(0.019)***
Conley s.e.	(0.019)***	(0.014)***	(0.016)***
clust + wildboot on closest stn	(0.026)**	(0.022)**	(0.021)**
clust + boot on closest stn+district	(0.026)**	(0.020)***	(0.023)**
Province FE	✓	✓	✓
Det Fasci	✓	✓	✓
Det Mafia		✓	✓
Geo/demo controls			✓
1st stage excluded instrument: rainfall spring 1893 (30km)	✓	✓	✓
Observations	239	239	239
R-squared	-0.843	-0.541	-0.463

The effect of the Mafia on state capacity: Literacy rates in 1911-1921

2SLS estimation of the effect of Mafia 1900 on literacy rates for the population above 6 in 1911 and 1921 (stock variables, slower change).

Dep var: Literacy	in 1911			in 1921		
	(1)	(2)	(3)	(4)	(5)	(6)
Mafia1900	-0.060	-0.048	-0.051	-0.093	-0.075	-0.075
robust s.e.	(0.040)	(0.031)	(0.030)*	(0.047)**	(0.034)**	(0.033)**
Conley s.e.	(0.034)*	(0.028)*	(0.032)	(0.042)**	(0.033)**	(0.033)**
clust + wildboot on closest stn	(0.035)*	(0.029)	(0.031)	(0.041)**	(0.035)**	(0.034)**
clust + boot on closest stn+district	(0.049)	(0.043)	(0.054)	(0.047)**	(0.041)*	(0.044)*
Province FE	✓	✓	✓	✓	✓	✓
Det Fasci	✓	✓	✓	✓	✓	✓
Det Mafia		✓	✓		✓	✓
Geo/demo controls			✓			✓
1st stage excluded instrument: rainfall spring 1893 (30km)	✓	✓	✓	✓	✓	✓
Observations	245	245	245	245	245	245
R-squared	0.018	0.139	0.161	-0.485	-0.175	-0.098

Industrial development in 1911

2SLS estimation of the effect of the Mafia on industrialization in 1911. The dependant variable is a dummy that takes value 1 for the municipalities with a share of manufacturing workers on population above the average.

Dep var:	Industrial development in 1911		
	(1)	(2)	(3)
Mafia1900	-0.426	-0.366	-0.406
robust s.e.	(0.260)	(0.198)*	(0.192)**
Conley s.e.	(0.204)**	(0.167)**	(0.161)**
clust + wildboot on closest stn	(0.201)**	(0.174)**	(0.191)**
clust + boot on closest stn+district	(0.213)**	(0.188)*	(0.206)*
Province FE	✓	✓	✓
Det Fasci	✓	✓	✓
Det Mafia		✓	✓
Geo/demo controls			✓
1st stage excluded instrument:			
rainfall spring 1893 (30km)	✓	✓	✓
Observations	245	245	245
R-squared	-0.392	-0.238	-0.239

Mafia and politics

How did the Mafia affect state capacity?

- The influence of the Sicilian Mafia on politics represents a major channel for the effect on state capacity;
- One of the possible measures is related to the level of political competition;
- We can show that the Sicilian Mafia had a sizeable negative effect on the level of political competition;
- We use data on parliamentary election in 1909;
- It was a FPTP system with 54 electoral district in Sicily. We look at the share of the most voted candidate and the number of candidates in each municipality;
- Earlier we showed the falsification exercise for the parliamentary elections in 1865.

Winning share in parliamentary elections

2SLS estimation of the effect of the Mafia on the share of the most voted candidate in each municipality and the number of candidates in the 1909 parliamentary elections.

ep. variable:	Winning share in 1909 parliamentary elections			No. of candidates in 1909		
	(1)	(2)	(3)	(4)	(5)	(6)
Mafia1900	0.345	0.284	0.237	-0.826	-0.694	-0.584
robust s.e.	(0.147)**	(0.100)***	(0.081)***	(0.401)**	(0.286)**	(0.248)**
Conley s.e.	(0.118)***	(0.088)***	(0.072)***	(0.366)**	(0.277)**	(0.257)**
clust + wildboot on closest stn	(0.115)***	(0.111)**	(0.076)***	(0.387)**	(0.339)**	(0.272)**
clust + boot on closest stn+district	(0.149)**	(0.128)**	(0.114)**	(0.384)**	(0.340)**	(0.319)*
Province FE	✓	✓	✓	✓	✓	✓
Det Fasci	✓	✓	✓	✓	✓	✓
Det Mafia		✓	✓		✓	✓
Geo/demo controls			✓			✓
1st stage excluded instrument: rainfall spring 1893 (30km)	✓	✓	✓	✓	✓	✓
Observations	242	242	242	242	242	242
R-squared	-1.839	-0.960	-0.486	-0.870	-0.442	-0.153

Falsification tests for social, economic and political outcomes

- We run further falsification tests using rainfall for all the years 1900-1941;
- We first run the reduced form regressions of rainfall in 1893 on social economic and political outcomes (not reported);
- And then we use the data for the years 1900-1941 to check that the rainfall is significant only for the 1893, and random for all the other years.

Falsification tests for social, economic and political outcomes

Dependent variable:	Inf. mort. in 1908-9		Industr. develop. in 1911	
	% signif. neg at 10%	% signif. pos at 10%	% signif. neg at 10%	% signif. pos at 10%
Drought variable:				
rainfall spring 19XX (30km)	0.02	0.08	0.02	0.02
log rainfall spring 19XX (30km)	0.02	0.095	0.03	0.02
censored rainfall spring 19XX (30km)	0.03	0.07	0.03	0.02
Dependent variable:	**Literacy rate in 1911**		**Literacy rate in 1921**	
	% signif. neg at 10%	% signif. pos at 10%	% signif. neg at 10%	% signif. pos at 10%
Drought variable:				
rainfall spring 19XX (30km)	0.07	0.01	0.06	0.00
log rainfall spring 19XX (30km)	0.095	0.01	0.095	0.01
censored rainfall spring 19XX (30km)	0.07	0.00	0.06	0.01
Dependent variable:	**Winning share in 1909**		**No. of candidates in 1909**	
	% signif. neg at 10%	% signif. pos at 10%	% signif. neg at 10%	% signif. pos at 10%
Drought variable:				
rainfall spring 19XX (30km)	0.06	0.13	0.04	0.01
log rainfall spring 19XX (30km)	0.09	0.09	0.06	0.00
censored rainfall spring 19XX (30km)	0.01	0.07	0.00	0.03

Notes: We report the % of a positive and negative coefficients for the drought variable (built for years 1900-1941) with a p-value$<$ 0.1 when we test the three main specifications of the model with 2-way clustered and bootstrapped standard errors on closest station and district.

Further robustness checks

1. In order to tackle the problems introduced by interpolated data, we also have a ML estimation which uses the full weighting matrix of the interpolation to correct the standard errors (not reported).

2. Controlling for socialist (and peasants') organizations:
   - In the first part, drought in 1893 is an instrument for the peasants' movement which triggers the expansion of the Mafia;
   - In the second part drought in 1893 is directly used an instrument for the Mafia;
   - The exclusion restriction is satisfied only if drought in 1893 has no other direct or indirect effect on the outcomes;
   - A potential problem may arise if the socialist peasants' movement is still active in those municipalities and can affect the the capacity of the state;
   - In what follows we show that this is not the case.

Persistence of the socialist (peasants') movement

Here we show that the socialist (peasants') movement presence in 1908/1913 is not correlated to the drought in 1893 (the coefficient is not significant and has the opposite sign)

Dep. variable:	Socialist vote share in 1913			Peasants' Leagues in 1908		
	(1)	(2)	(3)	(4)	(5)	(6)
rainfall spring 1893 (30km)	0.282	0.280	0.180	0.002	0.002	0.005
robust s.e.	(0.088)***	(0.090)***	(0.086)**	(0.009)	(0.009)	(0.010)
Conley s.e.	(0.131)**	(0.132)**	(0.111)	(0.010)	(0.011)	(0.011)
clust + wildboot on closest stn	(0.219)	(0.228)	(0.196)	(0.011)	(0.011)	(0.009)
clust + boot on closest stn+district	(0.234)	(0.238)	(0.222)	(0.013)	(0.013)	(0.016)
Province FE	✓	✓	✓	✓	✓	✓
Det Fasci	✓	✓	✓	✓	✓	✓
Det Mafia		✓	✓		✓	✓
Geo/demo controls			✓			✓
Observations	292	292	292	297	297	297
R-squared	0.161	0.173	0.364	0.097	0.104	0.171

Notes: *** p<0.01, ** p<0.05, * p<0.1. The first dependant variable is the vote share for candidates belonging the two socialist parties in the parliamentary elections in 1913, which was the first one with universal manhood suffrage. The second dependant variable is the membership rate of peasants' leagues in 1908.

Controlling for the strength of the socialist movement in the early 20th century

The negative effect on state capacity and political competition is due to the Mafia and not to the socialist movement.

Dep. variable:	Infant mortality 1908-9	Literacy rate in		Industrial Developm. in 1911	Winning share in 1909	No of candidates in 1909
		1911	1921			
	(1)	(2)	(3)	(4)	(5)	(6)
Mafia 1900	0.047	-0.046	-0.062	-0.343	0.211	-0.537
robust s.e.	(0.019)**	(0.030)	(0.030)**	(0.175)*	(0.071)***	(0.207)***
Conley s.e.	(0.014)***	(0.028)	(0.028)**	(0.163)**	(0.064)***	(0.236)**
clust + wildboot on closest stn	(0.020)**	(0.029)	(0.030)**	(0.199)*	(0.063)***	(0.247)**
clust + boot on closest stn+district	(0.024)**	(0.052)	(0.035)*	(0.207)*	(0.094)**	(0.307)*
Socialist vote share in 1913	-0.018	0.036	0.083	0.368	-0.181	0.372
robust s.e.	(0.019)	(0.032)	(0.032)**	(0.186)**	(0.075)**	(0.217)*
Conley s.e.	(0.019)	(0.038)	(0.039)**	(0.208)*	(0.067)	(0.224)*
clust + wildboot on closest stn	(0.021)	(0.032)	(0.037)**	(0.207)*	(0.095)*	(0.225)
clust + boot on closest stn+district	(0.016)	(0.043)	(0.041)**	(0.235)	(0.100)*	(0.200)*
Province FE	✓	✓	✓	✓	✓	✓
Det Fasci	✓	✓	✓	✓	✓	✓
Det Mafia	✓	✓	✓	✓	✓	✓
Geo/demo controls	✓	✓	✓	✓	✓	✓
Observations	238	244	244	244	241	241
R-squared	-0.356	0.190	0.049	-0.121	-0.298	-0.077

Notes: *** p<0.01, ** p<0.05, * p<0.1.

Controlling for the strength of the socialist movement in the early 20th century

This is confirmed if we use an alternative measure based on the membership of peasants' leagues.

Dep. variable:	Infant mortality 1908-9	Literacy rate in		Industrial Developm. in 1911	Winning share in 1909	No of candidates in 1909
		1911	1921			
	(1)	(2)	(3)	(4)	(5)	(6)
Mafia 1900	0.052	-0.051	-0.075	-0.404	0.237	-0.583
robust s.e.	(0.021)**	(0.033)	(0.035)**	(0.195)**	(0.0816)***	(0.229)**
Conley s.e.	(0.016)***	(0.032)	(0.033)**	(0.160)**	(0.072)***	(0.256)**
clust + wildboot on closest stn	(0.021)**	(0.031)	(0.034)**	(0.188)**	(0.076)***	(0.273)**
clust + boot on closest stn+district	(0.024)**	(0.052)	(0.045)*	(0.223)*	(0.108)**	(0.341)*
Peasants' leagues membership on pop 1908	0.106	0.040	0.072	-0.931	-0.281	0.918
robust s.e.	(0.110)	(0.187)	(0.198)	(3.714)	(0.455)	(1.280)
Conley s.e.	(0.064)	(0.116)	(0.146)	(1.788)	(0.414)	(1.170)
clust + wildboot on closest stn	(0.055)*	(0.132)	(0.088)	(1.748)	(0.216)	(0.833)
clust + boot on closest stn+district	(0.0724)	(0.191)	(0.119)	(2.288)	(0.463)	(1.786)
Province FE	✓	✓	✓	✓	✓	✓
Det Fasci	✓	✓	✓	✓	✓	✓
Det Mafia	✓	✓	✓	✓	✓	✓
Geo/demo controls	✓	✓	✓	✓	✓	✓
Observations	239	245	245	245	242	242
R-squared	-0.467	0.161	-0.096	0.113	-0.482	-0.149

Notes: *** p<0.01, ** p<0.05, * p<0.1.

Conclusion

- We develop and empirical substantiate a new hypothesis on the development of the Mafia in Sicily: it expanded in the rural areas of Sicily to suppress the socialist movement started in 1893;
- The temporary rainfall shock had long term consequences on the distribution of the Sicilian Mafia.
- Based on this identification strategy we show the negative effect of the Mafia on state capacity by looking at the effect on infant mortality, literacy rates, and industrial development.
- We also discuss the effect of the Mafia presence on the political competition which substantially decreased in the areas where the Mafia expanded.
- The latter represents one of the possible mechanisms through which the presence of the Mafia affected state capacity in Sicily.