

# Origins of the Sicilian Mafia: The Market for Lemons

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7<sup>th</sup> October 2018

# Introduction

- Study emergence of an extractive institutions that hampered economic development
- Main hypothesis: growth and consolidation of the Mafia is strongly associated with exogenous shock in the demand for lemons after 1800
- Using historical data from Sicilian towns, results indicate that mafia presence in the 1880s is strongly associated with the prevalence of citrus cultivation.
- Combined hypothesis of resource boom under a weak rule of law complements existing theories of mafia emergence, consistent with the timing of the rise of the mafia and explains the cross-regional variation across Sicily

# History of Sicily

- Strategic location ⇒ Continuous **foreign domination** ⇒ Strongly shaped its social development ⇒ Lagging region in Italy
- **Bourbons** (1734-1860): weak and distance governance, barons dominated local affairs
- **French** (1805-1815): abolished feudal privileges  
⇒ Made situation worse...
  - 1812-1860: popular revolts and spread of **brigandage**
  - Feudal lords fled delegating responsibility to *gabellotti*
  - *Gabellotti* hired private guards (*campieri*) from the brigands
  - Estate secured against attacks from *campiere's* former companions
  - Who could not afford to hire a *campiere* became target of brigands  
⇒ System of **corruption** and **intimidation**

# The Market for Lemons

- Lemon trees have very poor tolerance for extreme climatic conditions
- Introduced in Sicily by the Arabs in 10th century, considered aristocratic symbol
- **International demand** started to increase end of 18th century as treatment against scurvy (Lind's discovery)
- After 1815, international demand for lemons **boomed**:
  - From 250,000 quintals in 1850 to 949,000 in 1880
  - Area of citrus production from 7,695 hectares in 1853 to 26,840 in 1880
- Very **profitable** sector: daily revenue per worker of 85 lire, daily wage of 1.5 lire ⇒ Much more than any other plantation
- Landlord hired a *castaldo* on a fixed wage responsible for farming the land and for soil preparation
- Presence of brokers (*sensali*) to connect producers with exporters. Introduction of spot and future contracts

# The Rise of the Mafia

- **Pre-Unification:** *mafioso* man who gained respect of the local population by standing up against brigands ⇒ Legitimization of the *mafioso* ⇒ Support of the population: almost everyone became directly or indirectly involved with the mafia
- **Post-Unification:** formation of secret society to overcome the collective action problem ⇒ *Mafiosi* recruited from different occupations ⇒ Main activity: **protection** of businesses ⇒ Protection become **extortion** when producer refuse to pay protection money
- Reasons for importance of the lemons:
  - Market value and profitability unusually high
  - Large fixed costs of production ⇒ Producers sensitive to predation
  - Technology of predation on lemons relatively easy and cheap

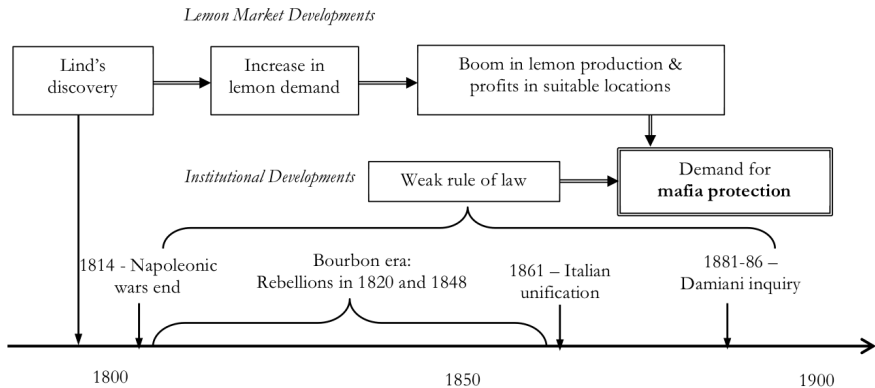


FIGURE 1  
MODEL OF MAFIA EMERGENCE

- **Damiani Inquiry** (1886): aiming at assessing conditions of agricultural sector and conditions of peasantry in every Italian region
- In Sicily: 143 observations at town and district level
- Two main sections of interest for this work:
  - Situation of the **agricultural sector** (sent to mayors)  
⇒ *“Which is the dominant crop produced in the city?”*
  - Moral and social **conditions of peasants** (sent to lower court judges)  
⇒ *“What is the most common form of crime in the district? What are their causes?”*  
⇒ 36% of towns strongly affected by mafia
- Additional explanatory variables:
  - **Fractionalization policies**: mayors provided effectiveness of certain policies in increasing land fragmentation
  - **Large scale plantation**: *“What is the dominant scale of plantation?”*

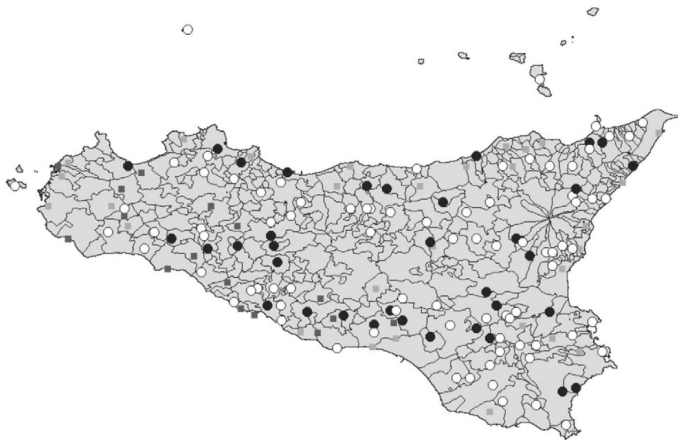


FIGURE 2  
MAFIA AND NON-MAFIA TOWNS IN SICILY IN 1880S (DAMIANI SAMPLE)

*Notes:* Black circles represent municipalities with mafia and lemon production, white circles represent municipalities with no mafia and no lemon production, squares represents municipalities with no mafia and lemon production (light grey) and with mafia and no lemon production (dark grey).

*Source:* Damiani (1886).



# Empirical Analysis

- **Main specification:**

$$M_{i,p} = \beta_0 + \beta_1 \text{Citrus}_{i,p} + \beta_2 Z_{i,p} + \eta_p + \mu_{i,p}$$

Presence of mafia significantly determined by the **citrus production**, effect of **fractionalization policies** and by **scale of the plantation**

- **IV:**

- Instrument Citrus with a measure of the **frost-free period**
- **Identification:** lemon production in towns with shorter frost period
- Citrus increases probability of mafia presence by 54%

- **Robustness:**

- Uses data from Cutrera (1900) with measure of **mafia intensity**
- Same results

TABLE 4  
MAFIA OLS MODEL

	Dependent Variable: Mafia (in 1880)					
	(1)	(2)	(3)	(4)	(5)	(6)
Citrus	0.201** (0.086)	0.224*** (0.085)	0.225** (0.086)	0.213*** (0.076)	0.200** (0.078)	0.219*** (0.082)
Grape	0.030 (0.105)	0.136 (0.105)	0.124 (0.105)			
Olive	0.006 (0.091)	-0.037 (0.089)	-0.027 (0.092)			
Wheat	0.039 (0.095)	-0.028 (0.094)	-0.012 (0.095)			
Sulphur	0.198 (0.125)	0.022 (0.119)	-0.071 (0.127)			
Fractionalization policies	0.271*** (0.085)	0.262*** (0.087)	0.242*** (0.087)	0.252*** (0.086)	0.247*** (0.088)	0.268*** (0.091)
Large scale plantation	0.251*** (0.090)	0.257*** (0.086)	0.283*** (0.086)	0.255*** (0.083)	0.258*** (0.088)	0.251*** (0.087)
Population density					0.041 (0.079)	
High land fractionalization						0.072 (0.082)
Provinces fixed effects	No	Yes	Yes	Yes	Yes	Yes
R-squared	0.160	0.280	0.311	0.288	0.281	0.261
Observations	119	119	109	120	119	112
Provinces	All	All	Without Caltanissetta	All	All	All

Notes: The estimator is OLS in all specifications. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Source: Authors' calculation.

# Conclusions

- **Mechanism:**

- Positive shock on the demand for citrus + comparative advantage in climatic conditions ⇒ Dominant position in the market for lemons
- ⇒ Larger profits for some Sicilian producers in a weakly institutionalized setting (political insecurity + weak rule of law)
- ⇒ Demand for the mafia that provided protection and acted as intermediaries

- **Critiques:**

- They prove causation between lemon production and mafia presence but this could be only one channel through which the mafia grew, not the main reason of its birth
- No data on the mafia prior to 1880
  - ⇒ We don't know how it was distributed before
  - ⇒ They are not really showing the effect of the demand shock

*“La mafia è una montagna di merda”*

**Peppino Impastato**

(January 5, 1948 - May 9, 1978)

Journalist and activist, born into a Mafia family

Murdered by the Mafia