American Economic Journal: Economic Policy 2017, 9(3): 134–167
https://doi.org/10.1257/pol.20150551

Mafia in the Ballot Box[†]

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We study the impact of organized crime on electoral results, analyzing in detail the national parliamentary elections in Sicily for the period 1946–1992. We document the significant support given by the Sicilian mafia to the Christian Democratic Party when the electoral competition by the Communist Party strengthened. We also provide suggestive evidence that, in exchange for its electoral support, the mafia obtained economic advantages in the construction sector. (*JEL* D72, K42, L74)

Politics and mafia are both powers which draw life from the control of the same territory; so they either wage war or come to some form of agreement.

— Paolo Borsellino[1]

Organized crime is detrimental to the functioning of a society. Its negative impact on growth and economic activity has been established in several recent studies (Dixit 2004, Daniele and Marani 2011, Pinotti 2015). The negative impact of organized crime is, however, not confined to the economy. One of the main features of mafias around the world is their relationship with political power. The strong control of territory achieved through the use of violence also challenges the functioning of democratic political institutions. For instance, criminal organizations can directly influence policymakers with bribes and violent threats so as to obtain policies favorable to their business or looser judicial prosecution. This was the case in Colombia during the period of the Medellin cartel and it is arguably occurring currently in Mexico and Brazil (Dal Bó, Dal Bó, and Di Tella 2006). The relationship between mafia and democracy is paradoxical because on one side its presence weakens the democratic institutions but on the other side it exploits democratic freedoms to strengthen its presence and weave a web of relationships with political power (Allum and Siebert 2003). The development of the mafia in transition economies

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[†]Go to https://doi.org/10.1257/pol.20150551 to visit the article page for additional materials and author disclosure statement(s) or to comment in the online discussion forum.

[1]Judge Paolo Borsellino was on the front line in the fight against the mafia in the 1980s. He was killed in a car bomb attack in Palermo on July 19, 1992, a few months after his colleague, Judge G. Falcone. This quotation is taken from Abbate and Gomez (2007, 36).

exemplifies this nexus: organized crime exploits the gaps opened up by the lift of totalitarian control on political institutions, as well as the inability of the transition countries to put in place strong institutions and rule of law (Varese 2001).

This paper addresses a far-reaching impact of organized crime: its intrusion into the electoral process, the heart of democratic institutions. There are several reasons to believe that a criminal organization, with a network of members who have infiltrated the social and economic fabric of the territory, and using violence to affirm their power, may shift votes to the party it supports. In his seminal work on the Italian mafia, Gambetta (1993) points out how criminal organizations find themselves in an ideal position to sell their services to politicians. Indeed, their tight hold over the territory enables the effective control of many votes. The market for votes, with its problems of verification and trust on both the buyer and the seller side, is an ideal setting for mafia operations. In the words of Abadinsky (2012, 116), "the Mafia is able to control votes because in the environment in which it operates there is always fear of reprisals. Intimidations, surveillance of polling places, and sometimes rigged elections guarantee an outcome favorable to the Mafia."

Beyond the rhetoric adopted by politicians, when elections approach there is a strong incentive for parties to negotiate with criminal organizations to secure their electoral support. A conversation between the president of the Parliamentary Committee on the Mafia and the former *mafioso* Leonardo Messina well exemplifies the behavior of politicians with respect to organized crime (CPM 1992, 552):

> Mr. Messina. *Usually, in public speeches, every politician claims to be against the mafia; you need to see what he actually does and the part he has to play. In Sicily, anyone who gets on the stage in an electoral rally is against the mafia.*
>
> President. *Is this something that worries you?*
>
> Mr. Messina. *No, it doesn't. The whole thing is a farce!*

It is worth stressing the difference between the electoral role of organized crime and the one played by other interest groups (e.g., trade unions, lobbies, and churches). As explained by Gambetta (1993), violence is the crucial resource used by organized crime to guarantee protection and contract enforcement. The illegal market for votes provides a clear opportunity for its services. Consistent evidence shows that criminal organizations use violence to establish their control of territory and develop their political influence, following a logic of building their reputation and credibility in a repeated game setting. For example, the Sicilian mafia is responsible for the killing of 353 individuals (not related to mafia organizations) in the period between the end of WWII and 1992 with a peak of 175 killings in the 1980s. Among those murdered, 56 were politicians, trade unionists, or journalists.[2] A recent parliamentary commission, investigating the killing of local politicians from the 1970s, reports that in the period from 1974 to 2013, 35 local politicians were murdered in

[2] Several NGOs provide web-based sources about innocent victims of criminal organizations in Italy. These data are reported in www.vittimemafia.it. See also www.progettolegalita.it for additional information about mafia victims.

Sicily, first among Italian regions in this inglorious ranking.[3] Alesina, Piccolo, and Pinotti (2016) further stress the crucial role of violence in the electoral services of organized crime by showing a significant increase in homicide rates in Italy during the 12 months before the elections, with the effect being particularly strong in Sicily for the murder of politicians.

The regular use of violence clearly differentiates organized crime from other interest groups like churches, trade unions, and lobbies. A church can induce its believers to *voluntarily* vote for its preferred party, but has little influence on those outside its community. Similarly, trade unions can command an influence on the votes *voluntarily* cast by their members, but have little influence on nonmembers. The implicit or explicit threat of violent retaliation instead gives criminal organizations the ability to also influence the voting behavior of nonmafia members, and to induce part of the electorate to vote against their genuine preference. This, in turn, makes their intrusion in the electoral process exceptionally damaging for a democracy, and therefore worth studying.

There is a large body of anecdotal evidence, court cases, political investigations, and press inquiries about the alleged existence of such underground electoral deals. The existing material, however, falls short of empirical investigation.

This leads to the contribution of the present work. This is the first study which examines the impact of organized crime on electoral outcomes. We use post-WWII (1946–1992) parliamentary elections in Sicily as a case, and document the support provided to the Christian Democratic Party (DC) by one of the most notorious criminal organizations, the Sicilian mafia.

To guide our empirical analysis we first develop a simple probabilistic model of policy competition which includes a criminal organization that can sell votes to the supported party. Adapting the theoretical framework developed by Acemoglu, Robinson, and Santos (2013) to the case of an electoral system with proportional representation and a single national constituency, we analyze the equilibrium of a game in which parties compete not only for voters but also for the support of the mafia present in one of the regions in which the country is divided. We show that the incumbent wins the competition for the mafia support and that support from the mafia increases when the advantage of the incumbent shrinks in the regions without mafia. The latter results constitute the cornerstone of our empirical strategy. Notice that, in line with the above discussion on the vote coercing ability of organized crime, we assume that the amount of votes delivered by the mafia changes depending on the demand for votes and the equilibrium price paid by the competing political parties.

The mechanism behind our identification strategy is relatively intuitive: the political rent generated by mafia-controlled votes becomes more valuable to the incumbent party when electoral competition strengthens. When the incumbent party loses ground with respect to its direct competitors, the mafia is therefore expected to engage more deeply in electoral matters.

[3] The vast majority of these murders were perpetrated during the period considered in this study. The commission was established by the Italian Senate in 2013 and submitted its final report in February 2015 (CPIAL 2015).

Using the change in electoral competition in the rest of Italy as a source of exogenous variation, we can then identify the impact of the mafia on electoral outcomes. Our results provide clear evidence of mafia involvement in electoral services: when electoral competition increased, the DC (the incumbent party) systematically captured more votes in Sicilian municipalities in which the mafia was operating.

The magnitude of the impact is far from negligible: according to our most trustworthy estimate, in which we instrument recent mafia presence with its 1900 distribution, the DC gained on average about 13 additional percentage points in mafia-ridden Sicilian municipalities as a consequence of the strong increase in the competition by the second largest party, the Communist Party (PCI), during the period studied.

What has the mafia gained from its electoral services? We provide evidence that, in exchange for its support, the mafia received economic advantages for its activities in the construction industry, a sector in which the influence of public authorities and politicians is quite strong. When electoral competition strengthened, the share of construction workers increased significantly more in mafia-ridden municipalities than in the rest of Sicily.

This paper speaks to two broad strands of research. First, we contribute to the literature on electoral fraud and vote coercion by shedding new light on a specific sort of electoral fraud, relatively neglected so far: vote coercion by criminal organizations.[4] Two recent papers addressing vote coercion are close to ours in several aspects. First, Baland and Robinson (2008), in their work on mid-twentieth century Chilean elections, show how landlords are able to influence electoral outcomes by inducing their tenants to vote for one particular party. The second paper, by Acemoglu, Robinson, and Santos (2013), explores the impact of the presence of nonstate armed groups on electoral outcomes in Colombia for the years 1991–2006: in areas with a strong paramilitary presence there was, after 2001, a significant increase in votes for candidates whose preferences were close to those of the armed groups.[5] With respect to the work of Acemoglu, Robinson, and Santos (2013), we base our analysis on a much longer period, including 12 elections, rely on a large set of time-varying controls, and implement an instrumental variable strategy to address the potential nonrandom distribution of the mafia. Another key difference between their paper and ours is the nature of the organization coercing voters we consider. Colombian paramilitary groups, the focus of Acemoglu, Robinson, and Santos (2013), were formed and sponsored by large landlords to counter the activities of the leftist guerrilla groups. Hence, from their very origin they were organizations with a strong political connotation. Accordingly, when they gained sufficient control of the territory, they influenced elections to support their political preference lying on the extreme right of the local political spectrum. Organized crime, and the Sicilian mafia

[4] Recent contributions to this literature test the importance of monitoring technologies that enable vote buyers to control voters' actions (Larreguy 2013; Larreguy, Montiel Olea, and Querubin 2014). For a review see Lehoucq (2003).

[5] See Fergusson, Vargas, and Vela (2013), who also study the impact of paramilitaries on Colombian elections and the unintended consequences of free press.

in particular, is a nonpartisan organization without any particular political agenda.[6] Its involvement in electoral coercion is purely driven by rent-seeking motives. Its control of territory, resulting from weak local institutions and the regular use of violence, enables extensive control of voters that can be used to obtain any sort of favors from politicians.

Second, this work complements the recent literature on the economics of organized crime. Besides the studies assessing the cost of organized crime mentioned above, the economic literature has mainly investigated its origins. Dixit (2004) investigated the emergence of extralegal arrangements and organizations in the absence of formal institutions (or when they are weak) and when laws are difficult to enforce. The coordination problems arising in a lawless society can potentially be alleviated with the emergence of a third party that is able to enforce agreements. Sometimes, this role is taken on by criminal organizations that use violence as their main feature (Gambetta 1993, Franchetti 1877). Other recent studies have focused on the peculiar conditions that may have favored the emergence of the Sicilian mafia (Bandiera 2003; Del Monte and Pennacchio 2012; Buonanno et al. 2015; Dimico, Isopi, and Olsson 2012). We extend this literature by exploring the effects of organized crime on electoral outcomes.

The rest of the paper is organized as follows. In the next section we develop our theoretical model, followed by a section providing the necessary background on Italian political competition and the interaction between politicians and the Sicilian mafia. We then describe the data and present the empirical results. The last section offers some concluding remarks.

I. Theoretical Framework

In the present section we model the effect on political competition of the presence of a criminal organization which can sell votes to a chosen party thanks to its control of the territory in one of the regions of a country.

We first set up a simple probabilistic model of electoral competition with a proportional representation electoral rule and a single national constituency, two regions (1 and 2), and two parties (A and B) competing for government. We standardize the total number of voters to 1 with the proportion n voting in region 1 and $(1 - n)$ voting in region 2, where we assume the mafia is active. We adopt a modified version of the model in Acemoglu, Robinson, and Santos (2013) and we adapt its multi-constituency structure to the present framework of a single national constituency with proportional representation.

[6]The report on the relationship between the Sicilian mafia and politics published by the Parliamentary Committee on the Mafia in 1993 (CPM 1993a) is very explicit on its ideological neutrality. "There is a general consensus on the fact that *Cosa Nostra* influences elections. This does not depend on an ideological stance, but by the aim to use in the best possible way their control of the territory and their social connections" (CPM 1993a, 64). "*Cosa Nostra* is not precluded to any party. And no party can consider themselves immune to the mafia" (CPM 1993a, 65). In fact, beyond the links with the Christian Democrats, the Sicilian mafia allegedly developed links with politicians in other parties, especially at the local level. The most relevant example is the strong support that *Cosa Nostra* gave to the anti-DC coalition which governed the Sicilian regional council between 1958 and 1961 with the Christian Democrats at the opposition (CPM 1993a, 52–53). The support provided in local elections to candidates coming from very different political backgrounds is also shown by the list of politicians under investigation or condemned for undue links with mafia organizations in Gomez and Travaglio (2008).

A. *The Political Competition*

As in the standard Downsian models, we assume that parties can commit to a policy while their ideological stand is fixed. So, denoting with $\tilde{\theta}^k$ the ideological stance of party $k = A, B$ and with q^k its (national) policy choice, as in Acemoglu, Robinson, and Santos (2013, 12–13) we will assume that the utility of a voter i in region j when party k is in government is

$$U_{ij}^k\left(q^k, \tilde{\theta}^k\right) = u_j\left(q^k\right) - \psi\left(\tilde{\theta}_j - \tilde{\theta}^k\right) + \epsilon_i^k.$$

The term $u_j\left(q^k\right)$ is the utility that the individual gains from the policy choice q^k, which we will interpret as a national public good provided to all the citizens by the government of party k. We denote by $\tilde{\theta}_j$ the ideological bliss point in region j and therefore the term $\psi\left(\tilde{\theta}_j - \tilde{\theta}^k\right)$ should be considered as the negative effect of the ideological distance between all the voters in region j and party k. The term ϵ_i^k is the individual-specific utility term which smooths the ideological preferences on the party in the region and it is such that

$$\epsilon_i^A - \epsilon_i^B = \epsilon_i,$$

which is assumed to be uniformly distributed on the interval $[-1/2, 1/2]$.

It is straightforward to see that the share of voters in region j voting for party A is

$$s_j^A = \frac{1}{2} + u_j\left(q^A\right) - u_j\left(q^B\right) + \theta_j^A, \tag{1}$$

where $\theta_j^A = \psi\left(\tilde{\theta}_j - \tilde{\theta}^B\right) - \psi\left(\tilde{\theta}_j - \tilde{\theta}^A\right)$ is the ideological advantage of party A in region j. We will assume throughout that party A is the incumbent and has an overall ideological advantage in the country.

In what follows we will make some simplifying assumptions which will help to identify a closed form solution to the policy competition game. In particular we will assume that $u_j(q^k) = q^k \ \forall j = 1, 2$ and $k = A, B$. We will also assume that q^k is the cost of delivering the policy party k is committed to.

B. *The Policy Competition Game in the Presence of the Mafia*

The effect of mafia presence in region 2 is to deliver a number of votes m to the chosen party.

The aim of both parties is to maximize their expected rent of being in power. Assuming for the time being that the mafia is supporting party A, the expected rents of party A and B are given by

$$\Pi^A = \left[ns_1^A + (1 - n)s_2^A + m\right]\left(G - q^A\right) - mp^A;$$

$$\Pi^B = \left[n\left(1 - s_1^A\right) + (1 - n)\left(1 - s_2^A\right) - m\right]\left(G - q^B\right),$$

where the probability of the party forming the government is given by the share of votes gained in the elections ($[ns_1^A + (1 - n)s_2^A + m]$ for party A).[7] Denoting by G the gross rent of being in office, the provision of public good q^k, $\forall k = A, B$ decreases the net rent of party k when in government. Finally, the party supported by the mafia pays a total amount mp^A for its service, whether or not the party forms the government.

We model the interaction between the political parties and this intermediary in the market for votes as a four-stage game of perfect information where, in the first stage, the two political parties compete for mafia services by offering a price per vote p^k. In the second stage, the criminal organization chooses the party to support by picking the most profitable offer. The third stage features the campaign competition where parties commit to a level of public good provision if elected, while in the fourth stage the mafia chooses the number of voters to divert in favor of the party it supports. This activity is costly for the mafia, which will choose the number of voters to divert optimally (i.e., maximizing its profits). We look for the subgame perfect equilibrium and solve the game by backward induction.

Starting from the fourth stage, the mafia maximizes its profits by choosing the optimal quantity of votes to switch, given the price offered by the party winning the competition in the first stage. Assuming a quadratic cost function for the mafia, its profits are defined as

$$\Pi_M = p^k m - \frac{m^2}{2e},$$

where p^k is the price per vote offered by the party $k = A, B$ winning the competition for mafia support, m is the number of votes moved by the mafia to the advantage of party k, and e is a cost parameter (the higher e is, the lower the marginal cost). The optimal number of votes provided by the mafia is therefore $m^* = ep^k$.

In the third stage, the two parties engage in the policy competition by simultaneously choosing the public good provision promises. However, one of the parties (party A) has the mafia on its side. Substituting the expressions for the share of votes of the two parties as in equation (1) and the equilibrium value of the votes provided by the mafia, the expected rents become

$$\Pi^A = \left[\frac{1}{2} + q^A - q^B + n\theta_1^A + (1 - n)\theta_2^A + ep^A\right]\left(G - q^A\right) - e\left(p^A\right)^2;$$

$$\Pi^B = \left[\frac{1}{2} + q^B - q^A - n\theta_1^A - (1 - n)\theta_2^A - ep^A\right]\left(G - q^B\right).$$

The equilibrium public good provision promises are given by

$$q_M^{A*} = G - \frac{1}{2} - \frac{n\theta_1^A + (1 - n)\theta_2^A + ep^A}{3};$$

$$q^{B*} = G - \frac{1}{2} + \frac{n\theta_1^A + (1 - n)\theta_2^A + ep^A}{3},$$

[7] See also Austen-Smith (2000); Baron and Diermeier (2001); Acemoglu, Robinson, and Santos (2013).

where the subscript M indicates the party supported by the mafia.

In the second stage, the mafia selects the best offer. The party offering the highest price per vote wins the mafia's support.

Moving to the first stage, the parties simultaneously choose the price per vote to offer to the mafia. Substituting the equilibrium values of the campaign competition strategies and the optimizing behavior of the mafia into the expected rent of parties, if the mafia supports party A, we obtain

$$V_M^A = \left(\frac{1}{2} + \frac{n\theta_1^A + (1-n)\theta_2^A + ep^A}{3}\right)^2 - e\left(p^A\right)^2; \tag{2}$$

$$V^B = \left(\frac{1}{2} - \frac{n\theta_1^A + (1-n)\theta_2^A + ep^A}{3}\right)^2, \tag{3}$$

where V_M^A and V^B are the expected rents gained by parties. If the competition for mafia support is instead won by party B offering the price p^B, the two expected rents are

$$V^A = \left(\frac{1}{2} + \frac{n\theta_1^A + (1-n)\theta_2^A - ep^B}{3}\right)^2; \tag{4}$$

$$V_M^B = \left(\frac{1}{2} - \frac{n\theta_1^A + (1-n)\theta_2^A - ep^B}{3}\right)^2 - e\left(p^B\right)^2. \tag{5}$$

In stage 1, the parties compete à la Bertrand, trying to outbid the rival by offering a higher price. There is an upper bound, however, on the price offered by the parties. By comparing V_M^k and V^k with $p^k = p^{-k} = p$, it is easy to show that

$$V_M^A \geq V^A \quad \text{if} \quad p^A \in \left[0, \bar{p}^A\right] \quad \text{with} \quad \bar{p}^A = \frac{2}{3} + \frac{4}{9}\left(n\theta_1^A + (1-n)\theta_2^A\right); \tag{6}$$

$$V_M^B \geq V^B \quad \text{if} \quad p^B \in \left[0, \bar{p}^B\right] \quad \text{with} \quad \bar{p}^B = \frac{2}{3} - \frac{4}{9}\left(n\theta_1^A + (1-n)\theta_2^A\right). \tag{7}$$

When the price offered by one party exceeds the upper bound, the other party prefers to lose the backing of the mafia to its rival.

There is also a minimum price the parties are willing to pay to the mafia. Since the price offered also determines the quantity of votes switched by the mafia, each party has an optimal (minimum) price that maximizes its expected rent when it is unconstrained by the rival party. The minimum price for party i is given by

$$\underline{p}^A = \frac{3}{2(9-e)} + \frac{n\theta_1^A + (1-n)\theta_2^A}{9-e}; \tag{8}$$

$$\underline{p}^B = \frac{3}{2(9-e)} - \frac{n\theta_1^A + (1-n)\theta_2^A}{9-e}. \tag{9}$$

The reaction functions of the parties in the first stage are depicted in Figure 1.

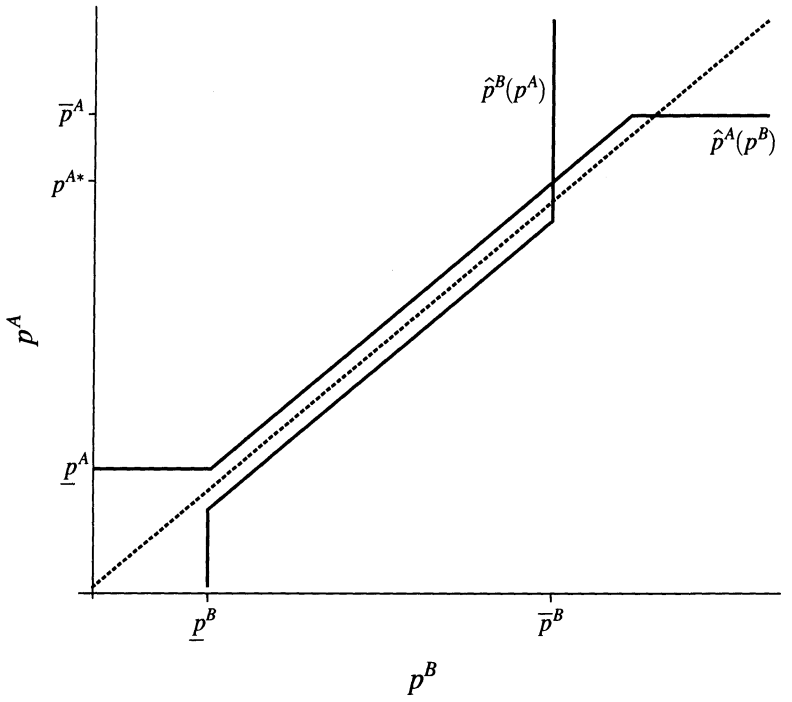

FIGURE 1. REACTION FUNCTIONS OF THE TWO PARTIES IN THE COMPETITION FOR MAFIA SUPPORT

The following proposition summarizes the outcome of competition for mafia support.

PROPOSITION 1: *The incumbent party always wins the competition to secure the backing of the mafia.*

The intuition behind the result is quite straightforward. Since the incumbent party with the ideological advantage chooses a lower electoral promise, its marginal rent $G - q^k$ is larger than its rival's and it is therefore willing to pay a higher price to the mafia for each vote.

The equilibrium price offers to the mafia in the first stage can be defined as follows:[8]

$$p^{A*} = \frac{2}{3} - \frac{4}{9}\left[n\theta_1^A + (1-n)\theta_2^A\right]; \tag{10}$$

$$p^{B*} = \epsilon, \quad \text{with} \quad \epsilon \in \left[0, \frac{2}{3} - \frac{4}{9}\left[n\theta_1^A + (1-n)\theta_2^A\right]\right). \tag{11}$$

The number of votes shifted by the mafia in region 2 is therefore

$$m^* = ep^A = \frac{2}{3}e - \frac{4}{9}\left[n\theta_1^A + (1-n)\theta_2^A\right]e. \tag{12}$$

[8] The proof is a straightforward application of the Bertrand competition solution. We also assume that the ideological advantage for party A is not too large and therefore the equilibrium price paid to the mafia is determined by the maximum price the weaker party is willing to offer.

From equation (10) it is clear that the price paid by the winning party A is decreasing in its electoral advantage. In the following proposition we derive from this simple intuition an empirically testable prediction which will guide our empirical analysis.

PROPOSITION 2: *The number of votes shifted by the mafia in region* 2 *to the advantage of the incumbent and the price paid to the mafia for its electoral services increase when the difference between the vote share of the two parties decreases in region* 1.

A formal proof is provided in the Appendix. The logic of the proof goes as follows. Holding the other variables constant, the closer the competition in region 1, the higher the price the challenger is willing to pay to have mafia support in region 2, and thus the higher the price the incumbent has to pay to outbid the rival. As the price increases, the mafia will optimally choose to increase the number of votes shifted to the incumbent party in order to increase its own profits. The intuition is quite straightforward: the relative value of the mafia electoral services in region 2 increases when electoral competition strengthens in region 1. The amount of votes delivered by the mafia and mafia profits derived from its electoral services increase accordingly.

II. Italian Politics from 1946 to 1992 and the Sicilian Mafia

A. *Italian Politics after World War II*

The postwar Italian political system between 1946 and 1992 was characterized by the constant presence of the Christian Democratic Party (DC) as the leading party in the government.[9] With an average of almost 40 percent of the votes in the period considered, this party dominated the government first in coalition with other small centrist parties and, from 1963, also with the Socialist Party. The primacy of the DC was never questioned and the expectation was for this party to rule indefinitely. At least, this was the general belief until the 1970s when the main opposition party, the Communist Party (PCI), became a much stronger competitor and the risk of a leftist government led by the PCI became more tangible. The difference between the support for these two parties in parliamentary elections decreased dramatically and during the 1970s and 1980s was on average below 5 percent. Interestingly, the reduction in the gap did not occur in Sicily. In the regional elections in 1970, the PCI won the right to govern major administrations in Italy for the first time. In the regional and local elections in 1975, the PCI became the first party in 7 out of 15 regions and in all of the 10 largest Italian cities except for Palermo and Catania, the only two located in Sicily.

[9] During the period considered, the electoral law established a proportional system with a single national constituency that was uninterruptedly used from 1946 to 1992 in parliamentary elections for the lower chamber, with the possibility for voters to vote for up to four candidates from the party lists. From 1994 the electoral rules changed, with 75 percent of MPs elected with a first-past-the-post system in each of the 475 electoral districts, and the rest of the MPs elected using a corrected proportional system favoring the representation of minority parties.

B. *The Relationship between the Sicilian Mafia and Politics*

The relationship between organized crime and the political and administrative powers in Sicily dates back to the origins of the mafia and the Italian state, in the nineteenth century.[10]

At the beginning of the fascist dictatorship, the mafia's relationship with the political power was interrupted by a tough repression that was started in 1925 by the prefect Mori, but the mafia was not entirely eradicated. After WWII, many old mafiosi who had survived the fascist era supported a Sicilian separatist movement, which did not succeed in the end. Meanwhile, a new political force was emerging as the leading Italian governing party, the DC, and several mafia bosses decided to move their political preference toward that party.[11]

Supporting the incumbent party guaranteed several advantages to the mafia, which could directly access important leading figures at the government level to defend its economic interests (e.g., the allocation of public procurement contracts in the areas of its activities) and lobby for softer legislation on mafia-related crimes, the protection of mafia members at different levels in judicial trials, and lower investment in mafia-controlling activities (Gambetta 1993).

Two important Sicilian DC politicians with established mafia connections, Salvo Lima and Vito Ciancimino, built their political careers in the city council of Palermo between the end of the 1950s and the beginning of the 1960s, the years of the so-called "Sack of Palermo," when thousands of instances of planning permission were released that benefited mafia families (CPMS 1976, 230–34). Close connections between the mafia and local politicians were recorded in the final report of the first Parliamentary Committee on the Sicilian Mafia, which noted that "the city council of Trapani numbered 15 relatives of identified mafia members, while there were 16 in the Caltanissetta council and 20 in the Agrigento council" (CPMS 1976, 217).

During the 1970s and the 1980s, partly as a result of the gradual increase in electoral competition at the national level, the relationship between the mafia and the DC became more solid (Arlacchi 2010, CPM 1993a, Paoli 2003). Discussing the behavior of the mafia on electoral matters in the 1980s, Baldassarre di Maggio explains that "there was an 'obligation' for all men of honor to vote for the Christian Democrats. The unanimous conviction was that we could usefully influence, through politicians, the courts' action and, furthermore, that the function of Sicilian politicians was imperative for 'Roman politics' concerning Sicilian matters and, especially, involving Cosa Nostra" (Paoli 2003, 202). Gaspare Mutolo provided an interesting account on the political role of the mafia in support of the DC when the threat of a strong Communist Party became more tangible: "[...] the DC was in trouble because the left parties were gaining strength and if we didn't make an effort

[10] See Dickie (2004, 87–130) for an interesting account of Palermo high society and its relationship with the mafia. Also, see Salvemini (1910) for a crude account of the relationship between the national political establishment and the mafia in the two decades from 1890 to 1910.

[11] For instance, two mafia bosses, Calogero Vizzini and Giuseppe Genco Russo, previous mayors of Villalba and Mussumeli respectively, became members of the DC in 1947; see Romano (1966, 316–17) and Lupo (1996, 232).

to gain votes... In fact, had it not been for Sicily and Southern Italy, DC would have lost its majority." (CPM 1993b, 1288).

There is considerable judicial evidence that the mafia was supporting the DC. For instance, it has been established in several trials that Salvo Lima, Vito Ciancimino, and Ignazio Salvo, some of the most relevant Sicilian DC politicians, were closely associated with or even members of the most important mafia families (Dickie 2004, 227, 253, 283). According to a court ruling, even the late MP Giulio Andreotti, seven times Italian prime minister, "made himself available to mafiosi in an authentic, stable, and friendly way until the spring of 1980" (Dickie 2004, 322–23).

III. Data

We gathered electoral data for all Sicilian municipalities from the Italian Ministry of Home Affairs.[12] The number of municipalities changed during the period considered, mainly because new municipalities were created. We aggregated the data back into the 370 municipalities existing in 1951. We focus on the 12 elections for the lower chamber from 1946 to 1992, the period referred to as the "First Republic." After 1992, a political earthquake took place in Italy, radically transforming both the spectrum of parties in the political arena and the electoral system. Therefore, any comparison between elections before and after 1992 would be extremely challenging and is beyond the scope of the present work.[13]

Our dependent variable is the share of votes obtained by the DC, the incumbent party throughout the period considered, computed for each election as the number of votes obtained in a given municipality, divided by the total number of valid votes expressed in that municipality.

The data on the distribution of the mafia across Sicily are taken from a report by the military police (*carabinieri*) submitted in 1987 to a parliamentary committee (CG Carabinieri 1987). The report analyzes the activities of organized crime in Italy and lists the *main* mafia families, providing for each of them the name of the boss and the town in which it was based.[14] Gambetta (1993, 82), uses the data provided by this report in a map to compare the mafia presence in the nineteenth and twentieth

[12] Available at: www.interno.gov.it.

[13] We focus on the election for the lower chamber since the electoral law stipulating a unique electoral district for the entire country lends itself well to our identification strategy. One vote lost in the rest of Italy could be "replaced" by one vote in Sicily delivered by the mafia, thereby strongly increasing the incentives for the incumbent to obtain the support of the mafia when the competition in the rest of Italy increases. For the senate the electoral law was radically different, featuring 22 electoral districts only for Sicily with a first-past-the-post system with a qualified majority. In districts where the qualified majority was not reached, votes were aggregated at the regional level and seats allocated according to a proportional rule. Hence, the electoral law for the senate elections does not map well into the logic of our theoretical model nor our identification strategy. In Appendix Tables A6 and A7 we replicate our main estimations also for the senate elections over the same period. Even though the sign of the effect remains consistent with our findings for the lower chamber, results are never statistically significant.

[14] In those years, the knowledge of the structure of *Cosa Nostra* was greatly enhanced by the testimony of several important *mafiosi* turned state's evidence. Their contribution was vital to the most important trial against the Sicilian mafia, the *maxiprocesso* (Maxi Trial), which started in 1986 and ended in December 1987 when 342 alleged *mafiosi* were sentenced to a total of 2,665 years in addition to 19 life sentences. In January 1992 the Italian Supreme Court largely confirmed the verdict of the Maxi Trial. A few months later, two of the prosecutors, Judges G. Falcone and P. Borsellino, were murdered in two separate bomb attacks.

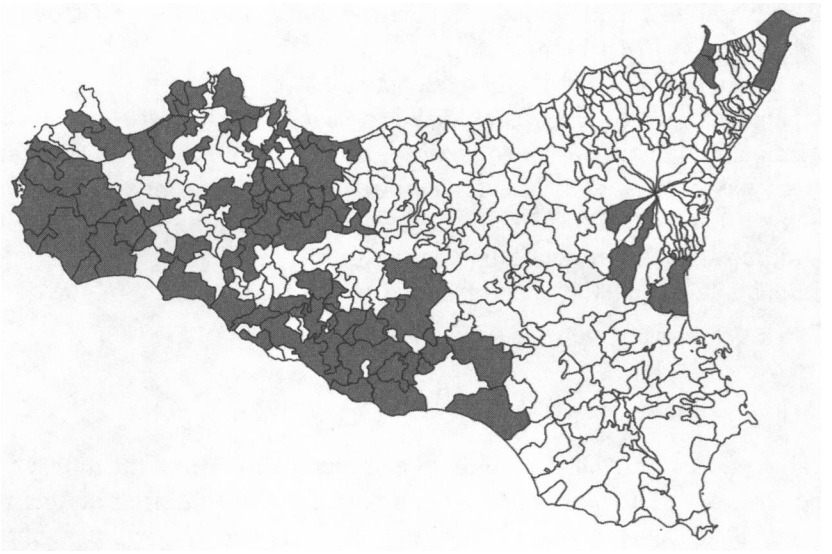

FIGURE 2. MAFIA DISTRIBUTION IN SICILY

Source: CG Carabinieri (1987)

centuries; however, these data have never been used in an empirical investigation. Eighty Sicilian municipalities are identified in the report as mafia strongholds of the main families, with the vast majority in the provinces of Palermo, Agrigento, and Trapani. We create the dummy variable *mafia*1987, which takes the value one when the municipality is listed in the report as a stronghold of a mafia family. In Figure 2 we display the mafia distribution according to CG Carabinieri (1987).

We also use two alternative measures for the mafia presence. First, a news-based measure of the presence of the mafia that has been compiled by the researchers of a research center on the mafia at the University of Messina (CSDCM, Universita di Messina 1994). They have produced a map with details of all the mafia families cited in the news, and the municipalities in which they have been reported to have had an influence. Based on this, we create a dummy variable, *mafia*1994, taking the value one for municipalities where the mafia operates. We use this measure as a robustness check of our preferred measure of the mafia.

Second, a measure of mafia prevalence in 1900, by municipality, is derived by Cutrera (1900), and it is used to instrument for more recent mafia distribution.[15] We create the variable *mafia*1900 with values ranging from zero (no mafia), to three (strong mafia presence). Instrumenting recent mafia presence with a measure of the geographical distribution of mafia in 1900, at least 50 years away from the period considered in this study, addresses potential reversed causality concerns. It is rather unlikely that the relationship between mafia and politics in the period 1946–1992

[15] Police Inspector Antonino Cutrera analyzed the origins and the characteristics of the mafia, its role in Sicilian history, its initiation rituals, and its structure. Based on his knowledge of the mafia both in Palermo and in the rest of the highland, he drew a map of the presence and intensity of the mafia in 289 municipalities and villages.

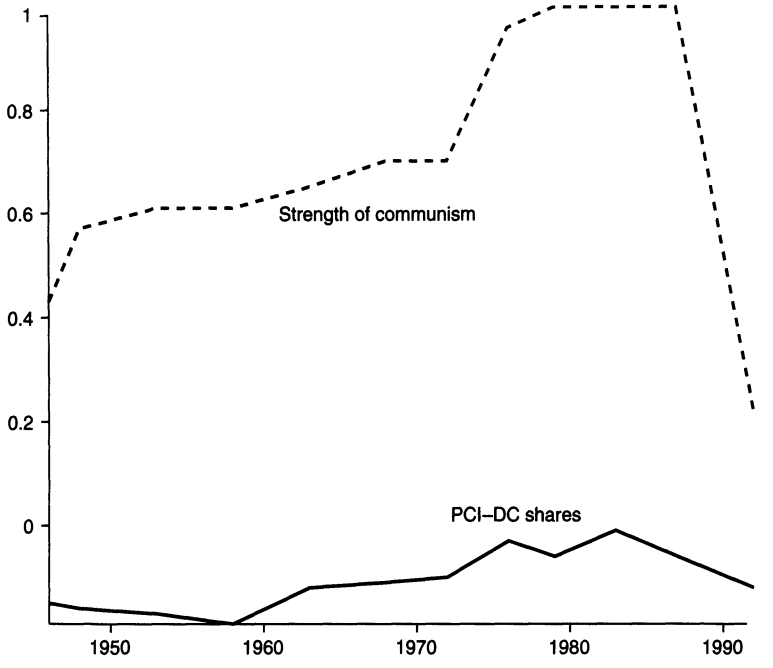

FIGURE 3. ELECTORAL COMPETITION FACED BY THE DC IN 1946–1992

may have affected the geographical distribution of the criminal organization at the start of the century.

In line with the historical pattern of Italian politics during the First Republic, our main measure of electoral competition is the difference between the votes gained by the PCI and the DC, the two largest parties across the period considered. We compute the difference between the PCI and the DC in parliamentary elections, excluding the votes coming from Sicily to avoid endogeneity. This provides the most appropriate measure, as it captures the incentives for the DC to accept mafia electoral services, given the margin of advantage it expects to enjoy at the national level.

As an alternative measure, less directly linked to Italian politics, we compute an index of the strength of communism at the global level. For each election year in our sample we record the number of national states ruled by a Communist regime. We then normalize this total, dividing it by the maximal number of Communist states recorded in the period considered. Even though the index is based on international politics, it clearly captures the relative strength of the major threat to DC primacy in Italian politics: the diffusion of the Communist ideology. Figure 3 clearly shows that the two measures of electoral competition are strongly correlated.

We collect an extensive set of socio-demographic and economic controls at municipality level, computed by interpolation for elections years, from the official censuses for 1951, 1961, 1971, 1981, 1991, and 2001.

To capture the level of public investment, we gather data on the net change in public capital stock divided by the population from Picci (2002) as a proxy for the (per capita) public investment, which is available only at the provincial level for the relevant period. We sum the public investment occurring in the electoral year and in the four years preceding each election to obtain a measure of total public investment.

We also control for the degree of remoteness and potential isolation of each municipality, using three geographic variables: the average slope (difference between maximum and minimum altitudes divided by area), the distance from the provincial capital, and the altitude of the main center of the municipality.

Finally, to control for the presence of the Catholic Church in Sicilian municipalities we add data on dioceses and parishes from the 1951 census. In particular, we compute the number of parishes for every 1,000 inhabitants at the municipality level, and a dummy variable that takes the value of 1 if the municipality was 1 of the 20 episcopal sees of the Catholic Church in Sicily in 1951. These are particularly important variables as we want to control for any factors influencing the voting for a party that clearly identified itself as representing the followers of the Catholic Church.

Both the church presence and geographic controls, which are time invariant, are interacted with a full set of year dummies to control for any time trends in political preferences related to these initial municipality characteristics. The full list of controls is described in Table 1.

IV. Empirical Strategy

In line with the results of our two-region model, we expect the electoral deal between the mafia and the incumbent party to be more salient in the region with the mafia when the competition by the second-strongest party gets tougher in the other region. In the context considered, this generates two testable predictions: when electoral competition with PCI in the rest of Italy is closer, the incumbent party DC should obtain more votes in mafia municipalities; and the mafia should derive higher profits from its electoral services.

To identify the first side of the deal, we compare the share of votes awarded to the DC ($Share\ DC_{it}$) in Italian parliamentary elections across Sicilian municipalities with and without mafia, using the closeness of elections in the rest of Italy as a source of exogenous variation. We therefore interact the difference between the PCI and the DC in the rest of Italy for each election in our database with our mafia measure. The empirical identification strategy relies on the comparison between the relative electoral performance of the DC across municipalities with and without mafia presence as a result of a change in political competition.

Formally, our base empirical model can be written as follows:

$$(13)\quad Share\ DC_{it} = \gamma mafia1987_i \times electoral\ competition_t + \alpha_i + \delta_t + \epsilon_{it},$$

where α_i controls for municipality fixed effects, δ_t is a set of year dummies capturing the time-specific variance in electoral outcomes, and ϵ_{it} is the standardized error term clustered at the municipality level. The coefficient of interest is γ, which captures the impact of the mafia on the electoral performance due to the change in electoral competition faced by the DC in the rest of Italy.

Identifying the second part of the electoral deal, and hence empirical evidence of a change in the "electoral" profits of the mafia, is much more challenging. There is a plethora of channels that may have been used by the DC to reward the mafia

TABLE 1—DESCRIPTIVE STATISTICS

Variable	Observations	Mean	SD	Min	Max
Panel A. Dependent variables					
Votes share of Christian Democrats in Sicily	4,440	0.445	0.129	0.039	0.938
in *mafia*1987 municipalities	936	0.427	0.120	0.079	0.938
in other municipalities	3,504	0.450	0.131	0.039	0.873
Construction workers over labor force	4,440	0.123	0.070	0.000	0.436
Panel B. Mafia measure					
*mafia*1987	370	0.211	0.408	0.000	1.000
*mafia*1994	370	0.278	0.448	0.000	1.000
*mafia*1900	308	1.396	1.145	0.000	3.000
Panel C. Electoral competition measures					
PCI–DC vote shares	4,440	−0.1133	0.539	−0.196	−0.019
International strength of communism	4,440	0.703	0.237	0.217	1
Panel D. Public expenditure controls					
Public investments per capita in the last five years	108	0.265	0.435	0.001	7.294
Panel E. Socio-demographic controls					
log(population)	4,440	8.685	1.055	5.579	13.460
Density	4,440	2.647	4.107	0.044	52.973
Share of population under 25	4,440	0.415	0.060	0.216	0.592
Share of population over 60	4,440	0.170	0.054	0.042	0.407
Share of homemaker over population	4,440	0.237	0.094	0.013	0.510
Houses without basic services per capita	4,440	0.034	0.065	0.000	0.460
Share of illiterate population	4,440	0.132	0.078	0.008	0.448
Share of population with university degree	4,440	0.010	0.009	0.000	0.098
Share of female population with university degree	4,440	0.004	0.004	0.000	0.043
Panel F. Economic controls					
Share of labor force employed in agriculture	4,440	0.471	0.218	0.022	1.000
Share of female labor force	4,440	0.215	0.128	0.000	0.505
Males in search of first occupation over labor force	4,440	0.071	0.057	0.000	0.536
Panel G. Geographic variables					
Slope (max height − min height divided by area)	370	0.283	0.336	0.007	3.711
Distance from the province capital	370	36.394	25.298	0.000	219.503
Altitude of the main center	370	0.399	0.275	0.001	1.275
Panel H. Church presence					
Number of parishes per 1,000 inhabitants in 1951	370	0.416	0.379	0.055	3.851
Episcopal see dummy in 1951	370	0.051	0.221	0.000	1.000

for its support: softer legislation on mafia-related crimes, direct intervention to protect mafia members at different levels in judicial trials, and lower investment in mafia-controlling activities are among the most relevant channels (Gambetta 1993). Unfortunately, these channels do not easily lend themselves to quantitative analysis.

An admittedly partial test is to look at the magnitude of typical *legal* economic activities of the mafia that can either be fostered or constrained by the public authorities. We focus on the construction industry. The mafia is known to infiltrate and capture a substantial share of public procurement, and to regularly reinvest much of the revenue from its illicit activities in private construction. Public authorities may allow wilder urban expansion, overriding existing regulations, or obscurely award public contracts to mafia-related entrepreneurs to reward the mafia's electoral support.

Once more, it is interesting to consider what mafiosi turned state's evidence have to say on the issue. Leonardo Messina, talking about the control of votes his family exercised in Caltanissetta, claims that they did it in exchange for money or other favors but "[...] the ultimate goal is public procurement contracts."[16]

We do not have data on public procurement contracts by municipality, nor do we have data on direct urban expansion. Instead, we use the share of workers in construction over the total labor force as a proxy for the intensity of construction activities. It is reasonable to assume that if more construction works were allowed in the municipalities in which the mafia operated, then a larger labor force would be employed in this sector. Also, if public construction contracts were awarded to mafia-controlled enterprises, we would expect these firms to employ a disproportionate number of workers from mafia stronghold municipalities, as they would give preference to mafia members, their families, and their friends.

We regress the share of workers in construction over the total labor force on the interaction term between the mafia proxy and our measures of electoral competition. Formally, we reestimate equation (13) by replacing the dependent variable with the share of workers in construction over the total labor force ($Share\ construction_{it}$).

We gradually augment our basic specification of the two models with the set of time-varying contemporaneous public expenditure, the sets of socio-demographic and economic controls, the time-invariant geographic controls, and the church presence controls interacted with the full set of year dummies.

A significant correlation in equation (13), however, may not represent a causal relationship. For instance, it may be explained by reverse causality: the mafia may have grown stronger as a result of blunt (DC-led) government repression policies adopted in exchange for the electoral support obtained. Moreover, our mafia variables are prone to measurement error since the mafia presence is captured with a dummy variable that only identifies mafia strongholds and not its areas of influence. To address these concerns, we turn to an instrumental variable (IV) strategy.

We instrument for our interaction term $mafia1987_i \times electoral\ competition_t$ using the interaction of electoral competition with a measure of mafia presence ($mafia1900$) recorded by Cutrera (1900) 42 years before the DC was even founded.[17]

To be a valid instrument, $mafia1900_i \times electoral\ competition_t$ should not be correlated with the error term in equation (13) and therefore with any omitted variables correlated with the electoral outcome. We believe that the mafia presence in 1900 can affect the electoral outcome 50 years later only through the instrumented variable $mafia1987$. Even though the Sicilian mafia may have influenced politics in 1900, the political system then changed dramatically, and the one arising from the ruins of the Second World War was radically different.[18]

[16] This is an extract from his testimony before a parliamentary committee (CPM 1992, 553).

[17] We also tried historical sulfur production at the municipality level as an alternative instrument, following Buonanno et al. (2015), who show that the presence of sulfur mines favored the early development of the Sicilian mafia. Unfortunately, sulfur seems to be a good predictor of the historical distribution of the Sicilian mafia ($mafia1900$), but it generates a very weak first stage with $mafia1987$. In the Appendix, we report our IV results using both $mafia1900$ and sulfur production as excluded instruments. All main results hold.

[18] In 1900, Italy was a monarchy in which only 6.78 percent of the population (12 percent of the adult population) had the right to vote, and members of parliament were elected through a first-past-the-post system in which parties played little role. Furthermore, in 1922 Mussolini took power, initiating a 20-year fascist dictatorship that

TABLE 2—THE IMPACT OF THE MAFIA ON DC ELECTORAL OUTCOME—OLS RESULTS

Dependent variable: Votes share of Christian Democrats	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1987 × PCI–DC shares	0.146	0.172	0.199	0.185	0.224	0.220
	(0.0936)	(0.0915)	(0.0885)	(0.0876)	(0.0944)	(0.0956)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	4,440	4,440	4,440	4,440	4,440	4,440
Municipalities	370	370	370	370	370	370
R^2	0.147	0.155	0.183	0.184	0.198	0.203

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

V. Empirical Results

A. *OLS Results*

Table 2 reports the results of estimating our equation (13).

The coefficient of interest, capturing the impact of electoral competition in mafia municipalities, is positive but not statistically significant in the first column, where we control only for municipality and elections fixed effects. With the inclusion of public expenditure controls in column 2, however, the coefficient increases in size and becomes statistically significant. This remains true in the further four columns in which socio-demographic, economic, geographic, and church controls, respectively, are included in the model. When the competition of the PCI increases in the rest of Italy, the vote share of the DC increases in Sicilian municipalities plagued by mafia. The magnitude of the impact is considerable: based on the results reported in column 6, where we control for our full set of controls, a decrease of the gap between the DC and the PCI of 1 percentage point translates into an average increase of the DC vote share by 0.2 percentage points in mafia municipalities. The largest drop in the DC–PCI difference witnessed within the period considered (about 17 percentage points between the 1958 and the 1983 elections), would then lead to an increase of DC vote shares in mafia municipalities of about 3.5 percentage points. This provides a first piece of empirical evidence on the impact of the mafia on electoral outcomes. Turning to the other side of the electoral deal, in Table 3 we report the results of

constituted a dramatic break in the Italian political system's evolution toward democracy. When the fascist dictatorship ended and Mussolini was executed, the monarchy was also abolished, and a Democratic Republic was established in 1946. The elections from 1946 to 1992 have all been characterized by universal suffrage and a purely proportional electoral rule with a single national constituency.

TABLE 3—THE IMPACT OF THE MAFIA ON CONSTRUCTION ACTIVITIES—OLS RESULTS

Dependent variable: Share of construction workers over labor force						
	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1987 × PCI−DC shares	0.0324	0.0348	0.0214	0.0878	0.101	0.0852
	(0.0527)	(0.0530)	(0.0480)	(0.0387)	(0.0405)	(0.0401)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	4,440	4,440	4,440	4,440	4,440	4,440
Municipalities	370	370	370	370	370	370
R^2	0.568	0.568	0.644	0.756	0.765	0.771

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

estimating our model with the share of labor force employed in construction as the dependent variable.

Again, the model in the first column of Table 3 includes municipality and elections fixed effects along with the interaction term of interest. We then gradually augment our model with the different sets of controls. The coefficient of interest is positive throughout the different specifications, and becomes significant after the inclusion of economic controls. When the competition by the PCI increases in the rest of Italy, the share of the labor force employed in construction (and therefore construction activities themselves) increases in Sicilian municipalities where the mafia operates. As for the magnitude of the impact, based on the results reported in column 6, where we control for our full set of controls, a decrease of the gap between the DC and the PCI of 1 percentage point translates into an average increase of the share of the labor force employed in construction by 0.08 percentage points in mafia municipalities. To help appreciate the magnitude of the impact, the largest drop in the DC–PCI difference witnessed within the period considered (about 17 percentage points) implies an increase of the share of the labor force employed in construction in mafia municipalities of about 1.4 percentage points. Since the average share of construction workers over the labor force in our full sample is 12 percent, this represents a substantial effect.

A potential concern is that the differential change in the composition of labor force may simply track party preferences toward construction activities. To address this concern, we show in Table A1 in the Appendix that the relationship between DC votes shares and the share of labor force employed in construction activities is always negative and never statistically significant across the period studied. Despite the comprehensive set of controls included in our complete models, the results in Tables 2 and 3 may still be prone to endogeneity bias. To address these concerns, in the next section we turn to our instrumental variable to establish the causality of the relationship uncovered.

TABLE 4—THE IMPACT OF THE MAFIA ON DC ELECTORAL OUTCOME—IV RESULTS

Dependent variable: Votes share of Christian Democrats	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1987 × PCI–DC shares	0.455	0.479	0.511	0.543	0.664	0.809
	(0.242)	(0.238)	(0.239)	(0.244)	(0.248)	(0.269)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	3,696	3,696	3,696	3,696	3,696	3,696
Municipalities	308	308	308	308	308	308
R^2	−0.008	0.183	0.200	0.201	0.212	0.219
Kleibergen-Paap *F*-statistic	70.36	70.33	69.83	64.63	68.70	60.33

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

B. *IV Results*

In Table 4 we show our IV results of the impact of the mafia on DC vote shares.[19] As for the OLS results, we report in the first column the results of the estimation of the most parsimonious model, in which only municipality and elections fixed effects are controlled for. In the further columns we gradually include the various sets of controls. The Kleibergen-Paap *F*-statistics confirm that the instrument is clearly relevant in all specifications.

The IV estimates confirm the pattern of OLS findings: when the gap between the DC and the PCI in the rest of Italy shrinks, the DC systematically obtains a larger share of the vote in the Sicilian municipalities where the mafia operates. The coefficient of interest is positive and significant across all specifications of the model. The estimates also substantiate our concerns about the potential endogeneity of the location of the mafia. Indeed, the magnitude of the effect is larger than that found using OLS. According to the results reported in column 6, where we include our full set of controls, a drop of the gap between the DC and the PCI in the rest of Italy by one percentage point implies an average increase of the DC vote share of almost 0.8 percentage points. Put differently, the presence of the mafia increased the share of votes gained by the DC by about 13 percentage points on average, as a consequence of the largest (17 percentage point) drop in the DC–PCI difference witnessed within the period considered in the rest of Italy. The larger IV coefficients may be explained partially by the measurement error in the recording of mafia presence, as *mafia*1987 is a simple dummy variable. The gap between OLS and IV results, however, may also suggest that the DC were particularly keen on having mafia support in municipalities in which they felt relatively politically disadvantaged. Over time, the mafia

[19] First-stage results are reported in Table A2 in the Appendix.

may have prospered and grown more exactly in those municipalities, i.e., where the DC on average obtained fewer votes. This interpretation is compatible with the downward bias of our OLS estimates. Interestingly, our estimation of the impact that the mafia had on electoral results lies in the same order of magnitude of the accounts of ex-mafia members. For instance, Antonino Calderone, a mafioso turned state's evidence, reported, "in the province of Palermo alone ... [the mafia can count on] ... 75,000–100,000 votes in favor of political parties and friendly politicians" (Arlacchi 2010, 183). The voters in the province of Palermo, an area with a high mafia presence, were between 460,000 and 786,000 in the period under scrutiny. The 13 additional percentage points awarded on average to the DC in mafia-ridden municipalities, as a result of the largest change in electoral competition faced by the DC in our sample, would imply that the mafia was able to move between 60,000 and 102,000 votes in that province!

The results presented so far document a dramatic increase in the electoral manipulation conducted by the mafia in favor of the DC in response to increases in electoral competition. A full investigation of the mechanisms through which the mafia was able to deliver votes lies outside of the scope of the present work. It is, however, interesting to question where the extra votes delivered to the DC were originating. In particular, referring to the common political spectrum, was the mafia "reorienting" votes from parties lying on the left or on the right of the DC? In Table A3 in the Appendix we show that there is some evidence that votes were moved from the left parties, which confirms that the development of strong leftist parties was perceived by the DC as the actual danger to its hegemony.[20] This further reinforces our identification strategy relying on the change in the relative competition by the PCI.

Let us now revisit the second part of the electoral deal within the context of our IV strategy. Table 5 reports the results of our IV models, investigating the effects of the electoral services of the mafia on (its) construction activities. As usual, we report in the first column the results of the estimation of the most parsimonious model, in which only municipality and elections fixed effects are included. In the further columns, we gradually include the other sets of controls. Again, the first stage F-statistics confirm that the instrument is clearly relevant in all specifications. The patterns found in our OLS results are confirmed: the coefficient of interest is positive and significant across all specifications of the model, meaning that reducing the gap between DC and PCI in the rest of Italy leads to an increase of the construction activities in mafia municipalities. The magnitude of the impact increases with respect to our OLS results. According to the estimate in column 6, a decrease in the DC–PCI difference in the rest of Italy by 1 percentage point translates into an increase of the share of labor force employed in construction in mafia municipalities by 0.23 percentage points. Looking at the impact of the largest drop in the DC–PCI difference witnessed within the period considered (about 17 percentage points), we obtain a stunning increase in the share of the labor force employed in construction

[20] Table A3 also shows that turnout does not change differently across mafia and other municipalities in response to changes in electoral competition.

TABLE 5—THE IMPACT OF THE MAFIA ON CONSTRUCTION ACTIVITIES—IV RESULTS

Dependent variable: Share of construction workers over labor force	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1987 × PCI–DC shares	0.267	0.270	0.301	0.284	0.285	0.231
	(0.129)	(0.129)	(0.124)	(0.107)	(0.105)	(0.111)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	3,696	3,696	3,696	3,696	3,696	3,696
Municipalities	308	308	308	308	308	308
R^2	−0.034	0.607	0.630	0.760	0.772	0.783
Kleibergen-Paap *F*-statistic	70.36	70.33	69.83	64.63	68.70	60.33

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

in mafia municipalities of about 4 percentage points.[21] Therefore, we can be fairly confident that the increase in construction activities in municipalities in which the mafia operated was at least partially the byproduct of the electoral deal linking the DC, which was constantly in government in the period considered, and the Sicilian mafia.

Overall, our IV results confirm and strengthen the results of the previous section. During the period considered, DC electoral dominance was supported by the Sicilian mafia. The extent of the involvement of the mafia in electoral matter is strongly associated with increases in construction activities in mafia municipalities, which is consistent with the mafia receiving preferential treatment in the construction sector from the public authorities as a tacit reward for its electoral services.

C. *Further Robustness Checks*

We run four sets of robustness checks and two falsification exercises.[22] The first set of robustness tests addresses a concern which may potentially affect our identification strategy. In the second set, we test whether the heterogeneity of the impact of mafia presence on electoral outcomes over time tracks the levels of competition brought about by the PCI. The third one aims at further refining our identification strategy. The fourth set replicates the estimation of our benchmark models adopting an alternative measure of mafia presence, collected by the University of Messina in 1994, and an alternative measure of electoral competition. The first falsification

[21] Tables A4–A5 in the Appendix replicate our IV estimates for DC vote shares and construction workers, using sulfur production in the 1860s as an additional excluded instrument interacted with our competition measure. Results remain qualitatively identical.

[22] We thank an anonymous referee for suggesting some of these tests.

TABLE 6—CONTROLLING FOR INITIAL PREFERENCES—IV RESULTS

Dependent variable: Votes share of Christian Democrats	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1987 × PCI–DC shares	0.632	0.642	0.624	0.597	0.655	0.590
	(0.182)	(0.184)	(0.188)	(0.185)	(0.185)	(0.192)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Before 1960 DC and PCI shares × year dummies	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	2,464	2,464	2,464	2,464	2,464	2,464
Municipalities	308	308	308	308	308	308
R^2	0.154	0.153	0.175	0.183	0.191	0.211
Kleibergen-Paap F-statistic	66.19	65.46	64.82	62.42	69.85	60.39

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

exercise replicates the analysis using the difference between the only two other sizable parties which participated in all elections throughout the period studied.[23] Finally, the second falsification exercise analyzes the impact of the change in electoral competition on the share of labor force employed in different sectors, to show that construction activities are indeed special due to their prominence among the legal economic activities by the mafia.

A potential concern may affect our identification strategy. Increasing electoral competition is known to mobilize inactive voters, thereby increasing turnout. If mafia municipalities were on average leaning more toward the DC for some preexisting reasons (unrelated to mafia presence), then the rise in turnout would imply an increase in DC vote shares in mafia municipalities, unrelated to the mafia electoral services. The data reported in Table 1 already provide a solid base to dismiss this potential concern. Mafia municipalities feature on average lower DC vote shares across our sample. So, according to this mechanism, an increasing turnout resulting from electoral competition should penalize the DC in mafia municipalities. We can test more explicitly for this mechanism by including in our main equation the average vote shares awarded by the DC and the PCI in the first four elections in our sample (run before 1960) interacted with year dummies. The model is then estimated on the sample of the remaining eight elections. The results, reported in Table 6, largely confirm our previous findings. The second test explores the heterogeneity of the impact of mafia presence on electoral outcomes over time. The electoral distance of the PCI from the incumbent DC varies over time, and in particular it becomes minimal at the end of the 1970s and during the 1980s. We therefore create

[23] We exclude the Socialist Party as it went through several reforms throughout the period and because it could theoretically have a similar effect to the competition by the Communist Party, although to a lower degree.

TABLE 7—EXPLORING THE IMPACT OF THE MAFIA OVER TIME

	DC votes share				Share of construction workers			
Dependent variable:	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)	OLS (7)	IV (8)
*mafia*1987 × 1960s dummy	0.0174	0.0596			0.00217	0.0288		
	(0.0123)	(0.0321)			(0.00417)	(0.0125)		
*mafia*1987 × 1970s dummy	0.0303	0.111			0.00829	0.0343		
	(0.0141)	(0.0394)			(0.00554)	(0.0172)		
*mafia*1987 × 1980s dummy	0.0443	0.134			0.0105	0.0253		
	(0.0155)	(0.0433)			(0.00593)	(0.0146)		
*mafia*1987 × post-1970 dummy			0.0312	0.102			0.00863	0.0203
			(0.0110)	(0.0322)			(0.00459)	(0.0123)
Public expenditure controls	✓	✓	✓	✓	✓	✓	✓	✓
Socio-demographic controls	✓	✓	✓	✓	✓	✓	✓	✓
Economic controls	✓	✓	✓	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓	✓	✓	✓
Church controls	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓
Observations	4,440	3,696	4,440	3,696	4,440	3,696	4,440	3,696
Municipalities	370	308	370	308	370	308	370	308
R^2	0.206	0.212	0.205	0.214	0.771	0.779	0.771	0.784
Kleibergen-Paap *F*-statistic		19.12		58.78		19.12		58.78

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

a set of interaction terms between *mafia*1987 and time dummies which identify the elections of different decades: 1960s, 1970s, and 1980s (which includes also 1992). We then estimate a model in which the interaction term between the mafia and the competition variable is replaced by these interaction terms. The results, in columns 1 and 2 of Table 7, confirm that the DC obtained substantially more votes in mafia municipalities particularly in the 1970s and 1980s, where PCI competition became stronger. Columns 3 and 4 of Table 7 report the results of estimating an alternative model in which we include only an interaction term between *mafia*1987 and a post-1970 dummy identifying all elections taking place after 1970. Again, the results show that the DC obtained substantially more votes in mafia municipalities after 1970. The rest of Table 7, in which we estimate the corresponding models for the share of construction workers, displays a relatively similar pattern.

The interpretation of all results presented so far hinges on a key assumption: mafia and nonmafia municipalities should be similar with respect to any unobservable which may trigger different DC vote shares in response to a decrease in the gap between the DC and the Communist Party.

In Table 8 we propose three alternative IV specifications which increase our confidence that this assumption is likely to hold. In the first column, we interact our (geographical and church) time invariant controls with the electoral competition measure, thereby controlling for the differential response voters may have to a decrease in the gap between the DC and the PCI depending on the degree of church presence in, and geographical remoteness/isolation of (i.e., elevation, slope,

TABLE 8—ALTERNATIVE IDENTIFICATION STRATEGIES—IV RESULTS

Dependent variable:	DC votes share			Share of construction workers		
	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1987 × PCI−DC shares	0.811	0.952	0.579	0.229	0.201	−0.0197
	(0.270)	(0.416)	(0.226)	(0.110)	(0.195)	(0.102)
Full set of controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓		✓	✓	
Time-invariant controls × PCI−DC shares	✓			✓		
Mafia and neighbors only		✓	✓		✓	✓
Neighbor-pair FE			✓			✓
Observations	3,696	2,112	1,668	3,696	2,112	1,668
Municipalities	308	176	139	308	176	139
R^2	0.196	0.229	0.597	0.772	0.791	0.821
Kleibergen-Paap *F*-statistic	61.59	17.25	6.092	61.59	17.25	6.092

Notes: Robust standard errors clustered at the municipality level are in parentheses. The full set of controls includes public expenditure, socio-demographic, economic, geographical, and church controls as listed in Table 1. Time-invariant controls include geographical and church controls as listed in Table 1. FE = fixed effects.

distance to provincial capital) the municipality. The coefficient of interest is barely affected.[24] In column 2 we minimize the difference in unobservables between mafia and nonmafia municipalities restricting our analysis on the sample of mafia municipalities and municipalities directly bordering with them. The results remain almost identical, which is particularly noteworthy, given the loss of almost half of the sample.

Finally, we replace municipality fixed effects with a full set of neighbor-pair dummies, each identifying a mafia municipality and a neighboring municipality, and the full set of neighbor-pair dummies interacted with our electoral competition measure.[25] The results of this exercise, reported in column 3, confirm the pattern: mafia municipalities experience a larger increase in DC vote shares in response to a decrease in the gap between the DC and the PCI as compared to neighboring mafia-free municipalities.

In the rest of Table 8 we implement the same three exercises in the context of the model studying construction activities. Interacting time-invariant controls with electoral competition does not affect the result (column 4). When we restrict the analysis to mafia and directly neighboring municipalities, we obtain an almost identical coefficient but not statistically significant, most likely due to the loss of almost half of the sample which substantially increases the standard error. Finally, the results disappear when we allow for neighbor-pair specific changes in construction activities in reaction to electoral competition. Beside the loss of more than half of the sample, a more likely explanation is that the impact of an increase of construction

[24] Interacting all time-varying controls produces very similar results.

[25] In particularly mafia-dense areas, we had to pair two mafia municipalities with the same neighboring mafia-free municipality, or with geographically close, but not directly neighboring municipalities.

TABLE 9—ALTERNATIVE MEASURES OF THE MAFIA AND ELECTORAL COMPETITION

Dependent variable:	DC votes share		Share of construction workers		DC votes share		Share of construction workers	
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)	IV (7)	IV (8)
*mafia*1994 × PCI–DC shares	0.148	1.015	0.0702	0.290				
	(0.0851)	(0.340)	(0.0358)	(0.145)				
*mafia*1987 × International					0.0208	0.130	0.0161	0.0525
					(0.0168)	(0.0453)	(0.00632)	(0.0180)
Public expenditure controls	✓	✓	✓	✓	✓	✓	✓	✓
Socio-demographic controls	✓	✓	✓	✓	✓	✓	✓	✓
Economic controls	✓	✓	✓	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓	✓	✓	✓
Church controls	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓
Observations	4,440	3,696	4,440	3,696	4,440	3,696	4,440	3,696
Municipalities	370	308	370	308	370	308	370	308
R^2	0.202	0.191	0.771	0.776	0.201	0.223	0.770	0.781
Kleibergen-Paap *F*-statistic		31.87		31.87		63.64		63.64

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

activities in mafia municipalities is likely to generate substantial positive spillovers in neighboring municipalities, typically located only a few kilometers away.

Moving to the fourth set of robustness check, the first two columns of Table 9 report the results of estimating our OLS and IV models with the alternative measure of the mafia, *mafia*1994. Columns 1 and 2 of Table 9 show the result of the model investigating the impact of mafia on DC vote shares, whereas columns 3 and 4 report the impact on construction activities. In both cases we include the full set of controls. Overall, the adoption of an alternative measure of mafia does not disrupt our main results and even the magnitude of the impacts is relatively similar.

In columns 5 to 8, we report the results of our OLS and IV full models when adopting an alternative measure of electoral competition faced by the DC, less directly linked with Italian politics: an index of the strength of communism at the global level, computed as the number of national states ruled by a Communist regime, normalized by the maximal number of Communist states recorded in the period considered. Since the main electoral concern for the DC was the growth of the PCI, the measure clearly captures the intensity of the threat to DC political hegemony. Again, while columns 5 and 6 focus on DC votes shares, columns 7 and 8 show the result of the OLS and IV models on construction workers, respectively.

The positive and significant coefficients for the presence of mafia interacted with the international strength of communism confirms the pattern found in Tables 2 and 4: the DC gained more votes in mafia municipalities when communism was relatively stronger internationally. This confirms that the growth of communism was indeed representing a capital concern for DC leadership. Similarly, the results in the last two columns of Table 9 confirm that when communism was stronger worldwide, the

TABLE 10—FALSIFICATION EXERCISE—THE IMPACT OF THE GAP BETWEEN PRI AND MSI VOTES

Dependent variable:	DC votes share		Share of construction workers	
	OLS (1)	IV (2)	OLS (3)	IV (4)
*mafia*1987 × PRI−MSI shares	−0.0769	0.355	0.0739	−0.312
	(0.231)	(0.591)	(0.0769)	(0.208)
Public expenditure controls	✓	✓	✓	✓
Socio-demographic controls	✓	✓	✓	✓
Economic controls	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓
Church controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Observations	4,440	3,696	4,440	3,696
Municipalities	370	308	370	308
R^2	0.201	0.233	0.770	0.783
Kleibergen-Paap *F*-statistic		62.26		62.26

Notes: Robust standard errors clustered at the municipality level are in parentheses. MSI = Italian Social Movement, PRI = Italian Republican Party, FE = fixed effects.

share of labor force employed in construction activities was higher in mafia municipalities. Overall, the results of this exercise strongly confirm the previous patterns.

Next, we present our two falsification exercises. In Table 10 we report the results of the first one, in which our measure of electoral competition is replaced by the difference between the vote shares obtained by the Italian Republican Party (PRI) and the Italian Social Movement (MSI) in the rest of Italy (excluding Sicily). Both parties were capturing substantial shares of votes (up to 9 percent) at the national level over the period considered. The first two columns of Table 10 study the impact on DC vote shares, whereas the last two columns focus on construction activities. Columns 1 and 3 report the OLS results, and columns 2 and 4 report the IV results. The difference between the PRI and the MSI did not spark any differential change in DC vote shares across mafia and nonmafia municipalities. The same holds true when considering the impact on construction activities. The second falsification exercise addresses a potential concern affecting our results on construction activities. The effect of electoral competition on construction activities in mafia municipalities may, in fact, capture a general trend in economic activities in mafia municipalities and have little to do with the electoral deal we are studying. To address this concern and highlight the peculiarity of the construction sector, characterized by a high degree of mafia activities, in Table 11 we report the results of a falsification test in which we assess whether the share of workers in the manufacturing, banking, and communications industries and the public sector are similarly affected by mafia presence in response to changes in electoral competition. No similar positive effect is found, except in the case of the public sector, for which our IV model suggests that public employment increases more in mafia municipalities following more contested elections. This could be due to public employment being used as a reward for mafia-related individuals in exchange for its electoral services, but may also flag that mafia municipalities are intrinsically

TABLE 11—FALSIFICATION EXERCISE—THE IMPACT OF THE MAFIA ON OTHER SECTORS

Dependent variable:	Share of labor force employed in:									
	Industry		Banking		Transportation		Public workers			
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)	OLS (7)	IV (8)	IV (9)	IV (10)
*mafia*1987 × PCI–DC shares	−0.0988	−0.232	0.0111	0.0456	0.00478	0.00216	0.00232	0.115	0.146	0.00294
	(0.0471)	(0.132)	(0.0193)	(0.0451)	(0.00366)	(0.00734)	(0.0180)	(0.0540)	(0.0972)	(0.0419)
Public expenditure controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Socio-demographic controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Economic controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Church controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Mafia and neighbors only									✓	
Neighbor-pair FE										✓
Observations	4,440	3,696	4,440	3,696	4,440	3,696	4,440	3,696	2,112	1,668
Municipalities	370	308	370	308	370	308	370	308	176	139
R^2	0.453	0.453	0.468	0.477	0.633	0.623	0.726	0.736	0.769	0.859
Kleibergen-Paap *F*-statistic		60.33		60.33		60.33		60.33	17.25	6.092

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

more prone to clientelism. We therefore replicate the test on the sample of mafia and neighboring municipalities only and in our neighbor-pair fixed effect specification, to test whether mafia municipalities differ with respect to their neighbors in the way public employment changes with electoral competition. We find (columns 9 and 10 of Table 11) that this is not the case. Since spillover effects are much less reasonable in the public sector, we interpret this as evidence that the level of clientelism is similar across mafia municipalities and their neighbors.

VI. Conclusions

In this paper we study the impact of organized crime on electoral outcomes. Using a two-region theoretical model we identify electoral competition as a key determinant affecting the incentives for an incumbent party to engage in electoral deals with a criminal organization present in one of the regions: deals with organized crime become more salient and more decisive in the presence of strong electoral competition. Guided by the predictions of the model and using Sicily as a case study, we document the impact of the Sicilian mafia on parliamentary elections in the period 1946–1992. We find evidence consistent with the existence of an electoral deal between the mafia and the Christian Democrats (DC): an intensification in the electoral competition faced by the DC in the rest of the country (mainly due to the dynamics of the Italian Communist Party, PCI) consistently increased its share of the vote in municipalities in which the mafia operated, as compared to

the other Sicilian municipalities. The results are robust to a variety of specifications including an instrumental variable strategy in which recent mafia presence is instrumented with its distribution in 1900, and to the adoption of alternative measures of mafia and electoral competition, one of which is entirely external to Italian politics. The magnitude of the impact is substantial: according to our preferred specification, the largest drop in the DC–PCI difference witnessed within the period considered (about 17 percentage points between the 1958 and the 1983 elections) would lead to an increase of DC vote shares in mafia municipalities of about 13 percentage points.

What did the mafia get in exchange for its support? This side of the electoral deal is more difficult to disentangle as the channels through which politicians may have paid the mafia back are multiple. We provide suggestive evidence that one channel has been through construction activities, either through the facilitation of private (legal and illegal) developments, or the awarding of public construction contracts to companies with close ties to the mafia.

Appendix

PROOF OF PROPOSITION 2:

The share of votes earned by the two parties at equilibrium in region 1 are

$$s_1^A = \frac{1}{2} + \frac{4}{9}e + \theta_1^A - \frac{2(9-4e)}{27}\left[n\theta_1^A + (1-n)\theta_2^A\right];$$

$$s_1^B = \frac{1}{2} - \frac{4}{9}e - \theta_1^A + \frac{2(9-4e)}{27}\left[n\theta_1^A + (1-n)\theta_2^A\right];$$

$$\Delta_1 = s_1^A - s_1^B = \frac{54 - 4(9-4e)n}{27}\theta_1^A - \frac{4(9-4e)(1-n)}{27}\theta_2^A - \frac{8}{9}e.$$

Rearranging the equation in terms of θ_1^A:

$$\theta_1^A = \frac{24e}{54 - 4(9-4e)n} + \frac{4(9-4e)(1-n)}{54 - 4(9-4e)n}\theta_2^A - \frac{27\Delta_1}{54 - 4(9-4e)n}.$$

Substituting the latter expression in the equilibrium value of m^* as defined in equation (12), we get

$$p^{A*} = \frac{6(3-n)}{27 - 2n(9-4e)} - \frac{12(1-n)\theta_2^A}{27 - 2n(9-4e)} - \frac{12n\Delta_1}{27 - 2n(9-4e)}.$$

Since the number of votes shifted by the mafia is ep^{A*},

$$\frac{\partial ep^{A*}}{\partial \Delta_1} = -\frac{12en}{27 - 2n(9-4e)} < 0,$$

which completes the proof. ∎

TABLE A1—THE IMPACT OF DC ELECTORAL OUTCOME ON CONSTRUCTION ACTIVITIES

Dependent variable: Share of construction workers over labor force						
	(1)	(2)	(3)	(4)	(5)	(6)
DC share	0.00240	0.00162	−0.0178	−0.0119	−0.0116	−0.0107
	(0.0142)	(0.0140)	(0.0116)	(0.00921)	(0.00936)	(0.00931)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	4,440	4,440	4,440	4,440	4,440	4,440
Municipalities	370	370	370	370	370	370
R^2	0.568	0.568	0.645	0.755	0.764	0.770

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

TABLE A2—FIRST STAGE RESULTS

Dependent variable: *mafia*1987 × PCI−DC shares						
	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1900 × PCI−DC shares	0.161	0.160	0.159	0.157	0.160	0.152
	(0.0192)	(0.0191)	(0.0190)	(0.0195)	(0.0192)	(0.0196)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	3,696	3,696	3,696	3,696	3,696	3,696
Municipalities	308	308	308	308	308	308
R^2	0.182	0.388	0.399	0.404	0.462	0.467

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

TABLE A3—THE ORIGIN OF EXTRA VOTES

Dependent variable:	Votes share *left*		Votes share *right*		Turnout	
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)
*mafia*1987 × PCI–DC shares	−0.124	−0.528	−0.0229	−0.0535	−0.0338	−0.117
	(0.0931)	(0.225)	(0.0723)	(0.180)	(0.0650)	(0.167)
Public expenditure controls	✓	✓	✓	✓	✓	✓
Socio-demographic controls	✓	✓	✓	✓	✓	✓
Economic controls	✓	✓	✓	✓	✓	✓
Geographic controls	✓	✓	✓	✓	✓	✓
Church controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	4,440	3,696	4,440	3,696	4,440	3,696
Municipalities	370	308	370	308	370	308
R^2	0.477	0.466	0.328	0.337	0.672	0.710
Kleibergen-Paap *F*-statistic		60.33		60.33		60.33

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

TABLE A4—THE IMPACT OF THE MAFIA ON DC ELECTORAL OUTCOME—IV INCLUDING SULFUR PRODUCTION

Dependent variable: Votes share of Christian Democrats						
	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1987 × PCI–DC shares	0.452	0.479	0.510	0.544	0.659	0.805
	(0.242)	(0.238)	(0.239)	(0.244)	(0.248)	(0.269)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	3,696	3,696	3,696	3,696	3,696	3,696
Municipalities	308	308	308	308	308	308
R^2	−0.008	0.183	0.200	0.201	0.212	0.219
Kleibergen-Paap *F*-statistic	35.24	35.21	35.13	32.74	35.19	30.97
p-value Hansen test	0.610	0.836	0.928	0.983	0.437	0.509

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects. Excluded instruments: *mafia*1900 × PCI–DC shares and sulfur production 1880s × PCI–DC shares.

TABLE A5—THE IMPACT OF MAFIA ON CONSTRUCTION ACTIVITIES—IV INCLUDING SULFUR PRODUCTION

Dependent variable: Share of construction workers over labor force						
	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1987 × PCI–DC shares	0.265	0.269	0.303	0.285	0.285	0.231
	(0.129)	(0.129)	(0.124)	(0.106)	(0.104)	(0.111)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	3,696	3,696	3,696	3,696	3,696	3,696
Municipalities	308	308	308	308	308	308
R^2	−0.025	0.610	0.634	0.761	0.773	0.783
Kleibergen-Paap *F*-statistic	35.24	35.21	35.13	32.74	35.19	30.97
p-value Hansen test	0.478	0.500	0.294	0.874	0.996	0.890

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects. Excluded instruments: *mafia*1900 × PCI–DC shares and sulfur production 1880s × PCI–DC shares.

TABLE A6—THE IMPACT OF THE MAFIA ON DC SENATE ELECTORAL OUTCOME—OLS RESULTS

Dependent variable: Votes share of Christian Democrats						
	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1987 × PCI–DC shares	0.0233	0.0442	0.1000	0.107	0.119	0.115
	(0.0815)	(0.0800)	(0.0814)	(0.0793)	(0.0848)	(0.0858)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	4,070	4,070	4,070	4,070	4,070	4,070
Municipalities	370	370	370	370	370	370
R^2	0.144	0.152	0.189	0.193	0.211	0.219

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

TABLE A7—THE IMPACT OF THE MAFIA ON DC SENATE ELECTORAL OUTCOME—IV RESULTS

Dependent variable: Votes share of Christian Democrats						
	(1)	(2)	(3)	(4)	(5)	(6)
*mafia*1987 × PCI−DC shares	−0.165	−0.157	−0.00852	0.0782	0.208	0.304
	(0.214)	(0.212)	(0.208)	(0.212)	(0.214)	(0.230)
Public expenditure controls		✓	✓	✓	✓	✓
Socio-demographic controls			✓	✓	✓	✓
Economic controls				✓	✓	✓
Geographic controls					✓	✓
Church controls						✓
Year FE	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Observations	3,388	3,388	3,388	3,388	3,388	3,388
Municipalities	308	308	308	308	308	308
R^2	−0.003	0.164	0.188	0.196	0.211	0.221
Kleibergen-Paap *F*-statistic	70.37	70.49	69.93	64.80	68.57	60.18

Notes: Robust standard errors clustered at the municipality level are in parentheses. FE = fixed effects.

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