Organized crime, institutions and political quality: empirical evidence from Italian municipalities

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Empirical Evidence from Italian Municipalities [*]

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Abstract:

This article assesses how legal institutions affect the influence of politically active criminal organizations on the human capital of elected politicians using data from over 1500 Southern Italian municipalities in the period 1985-2011. It exploits municipal government dissolutions imposed by the national government for (presumed) mafia infiltration as a source of exogenous variation in the presence of politically active criminal organizations. The results support theoretical predictions that the average education level of local politicians significantly increases when active mafia infiltration of local politics is remedied through the implementation of a stricter legal-institutional framework.

Organized crime has become a popular subject among social scientists in recent years. One side of this emerging literature focuses on the *origins* of criminal organizations, and points to the distribution of natural resources and the weakness of the institutional environment as key determining factors (Gambetta, 1993; Bandiera, 2003; Dimico et al., 2012; Konrad and Skaperdas, 2012; Buonanno et al., 2014). Another branch analyzes the *consequences* of organized crime in terms of economic growth (Pinotti, 2014), firm productivity (Albanese and Marinelli, 2013), government efficiency (Godson and Williams, 1998; Allum and Siebert, 2003), credit access (Bonaccorsi di Patti, 2009), Foreign Direct Investment (Daniele and Marani, 2011), money laundering (Schneider, 2010) or electoral competition (De Feo and De Luca, 2013). Mastrobuoni (2014) takes an interesting alternative approach by studying the economic value of network connections within the Italian-American mafia in the 1960s. Given the clandestine nature of, and key role of reputation in, criminal organizations, this provides a particularly appealing setting to assess the importance of social networks for economic success.

Although often showing strong effects of criminal organizations on socio-economic outcomes, the mechanisms underlying these relations have received much less attention. One recent exception is the theoretical framework of Dal Bó et al. (2006). They show that the ability of 'pressure groups' to offer bribes to, or impart punishments on, politicians is inversely related to elected politicians' quality (measured by their ability). This clearly reflects one potential explanation for poorer economic outcomes in areas where organized crime (which represents one possible 'pressure group' that may resort to bribes and punishments) is most prevalent and politically active. Dal Bó et al. (2006) also illustrate, however, that the strength/weakness of the institutional framework is crucial. Indeed, the negative relation between pressure groups and political quality weakens when law enforcement strengthens – suggesting that the negative

political (and thereby economic) effects of organized crime can be mitigated by an appropriate institutional framework.

The former prediction – i.e. a negative relation between bribe-and-punishment pressure groups and politicians' quality – has obtained some empirical support. Acemoglu et al. (2013), for instance, use Columbian data to illustrate that political parties obtaining more votes in areas where paramilitaries are concentrated see more of their politicians arrested for illegal activities. Pinotti (2013) employs southern Italian data to show that increased activity of criminal organizations prior to elections is associated with lower human capital of elected politicians, and an increased probability that these politicians later become involved in scandals.[1] Relative to these articles, we provide two main contributions. First, although our analysis allows indirect inferences regarding the negative relation between organized crime and politicians' quality, our main focus lies on assessing whether improved law enforcement affects not only criminal organizations' development (discussed in the previous literature; see above), but also their societal impact. Second, we exploit arguably exogenous variation in law enforcement to identify the causal effect of organized crime on political quality.

Our empirical analysis relies on data from Italian municipalities over the period 1985-2011, which brings three crucial advantages. First, the presence and activity of organized crime varies across both time and space in Italy, which provides crucial geographical *and* temporal variation to be exploited (see also Pinotti, 2013). Second, since 1991, when there is the presumption of ties between local politicians and organized crime, Italian local governments can be dissolved by the national government and replaced by a group of three commissioners. These govern the

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[1] Pinotti (2013) uses the *general*, rather than the *mafia-related* homicide rate (which are collected separately in Italy; see below). This might, however, induce biased inferences since mafia and non-mafia related crime rates need not be positively correlated (see, for instance, Buonanno et al.'s (2014) use of non-mafia related crime rates as a falsification – rather than verification – test).

municipality for the next 12-24 months, after which a new local government is elected and takes office (i.e. law no. 164/1991). Since the effectuation of such dissolution reflects a strengthening of law enforcement and arguably weakens the political influence of organized crime, this legal framework allows a direct test of the Dal Bó et al. (2006) model. Finally, since any dissolution is imposed by the Italian *national* government, it can reasonably be treated as exogenous with respect to *local* jurisdictions (for a similar argument in a different setting, see Geys, 2006) and form the basis of a difference-in-differences identification strategy. In particular, we can assess politicians' human capital before and after a municipal government's dissolution, and compare this evolution with municipalities where no dissolution took place.

Our main results indicate that the dissolution of a local government due to mafia infiltration induces a significant upward shift in the average education level of local politicians *after* the commissioners step down and a new elected government takes office. This finding is robust to different specifications of the control group, and does *not* materialize in a placebo test using local government dissolutions unrelated to mafia infiltration. Interestingly, the effects are strongest for mayors ('*Sindaco*') and aldermen ('*Assessore*'), but only approach statistical significance at conventional levels for ordinary council members ('*Consigliere*'). This strongly suggests that mafia infiltration mainly affects those members of local governments that most directly hold the power to affect local public policy decisions. Finally, using Granger causality tests and information on *mafia-related* homicides (measured at the province level due to lack of more detailed statistics) over the period 2000-2010, we establish more firmly that causality runs from organized crime to political quality: i.e. the historical prevalence of mafia-related homicides significantly negatively affects the current education level of local politicians, but historical education levels of politicians have no significant effect on mafia-related homicides.

Overall, therefore, we find that the institutional framework – and, in particular, improved law enforcement – affects not only the *origins* of criminal organizations (Gambetta, 1993; Bandiera, 2003; Dimico et al., 2012; Konrad and Skaperdas, 2012; Buonanno et al., 2014), but also their political (and thereby economic) *consequences*.

The next section briefly discusses the theoretical background of our analysis. Then, we present the data and empirical strategy employed. Our main results are summarized in the penultimate section, while the final section provides a concluding discussion.

1. Theoretical Framework

In order to derive empirically testable hypotheses, this section briefly summarizes the main aspects of Dal Bó et al.'s (2006) *Plata o Plomo* model that are relevant for our empirical analysis (further details and proofs can be found in Dal Bó et al., 2006). Imagine a two-stage game where in the first stage individuals choose to run for public office or take up a private-sector job. This decision is determined by the relative payoff from working in the private sector (which equals a wage level determined by their ability) or the public sector (which depends on the public-sector wage, bribes, punishments and the cost of corruption to politicians).[2] In the second stage, politicians have discretionary power over public policies and can direct public resources to pressure groups – including, but not necessarily limited to, organized crime – via a lump sum transfer. To obtain such transfers, pressure groups can decide to influence (or not) politicians through bribes and/or threats of punishment, both of which are costly activities (reflecting, for instance, the quality of institutions and law enforcement, see also below) and are presented as a

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[2] The cost of corruption to politicians can be interpreted as deriving from fear of detection, moral doubts or secrecy costs (Dal Bó et al., 2006).

take-it-or-leave-it offer. For simplicity, politicians believe any offer of bribes and/or punishment to be fully credible (e.g., because of the reputation of the criminal organization; Konrad and Skaperdas, 1997).

In the absence of pressure groups or when these groups remain inactive, the payoff in the public sector is simply the public-sector wage. If there are active pressure groups, politicians' payoff may become supplemented with bribes, punishments and the cost of corruption to politicians. Realizing that the pressure group chooses the level of bribes and punishments to maximize its expected profit, the politician can predict his/her equilibrium payoffs in any conceivable situation (i.e. presence/absence of pressure group, and accept/reject bribe), and can employ this to decide whether or not to enter politics. Following this decision, there is a recruitment process (e.g. an election) under which the politician with the highest ability is selected from among the available candidates (Dal Bó et al., 2006). Clearly, the pressure groups will only be active if this brings positive expected profit. Note also that the 'tools' available to pressure groups in this model – i.e. bribes and punishments – make an interpretation in terms of organized crime (rather than, say, trade unions) realistic.

It is of interest to note at this point that pressure groups are assumed *not* to influence the (s)election process (Dal Bó et al., 2006). In reality, it appears unlikely that pressure groups would remain passive until the politician is (s)elected, but rather might try to actively support their preferred candidate through, for instance, vote buying, intimidation activities or bribing election officials (Binder, 2007; Sberna, 2011; De Feo and De Luca, 2013; Pinotti, 2013). Still, pressure groups are likely to prefer a politician that is sufficiently easy to bribe, but nonetheless has a sufficiently high probability to win. As the latter is related to the quality of the candidate, the selection function of the pressure group will be an increasing function of politicians' ability.

This is important since Dal Bó et al. (2006, p. 44*n*) state that their results "hold under any selection process where the expected ability of the selected politician depends positively on the highest ability among applicants".

In the absence of pressure groups, or when such groups remain inactive, the equilibrium public-sector payoff to potential political entrants will be higher than their expected equilibrium payoff in the presence of such an (active) pressure group. This is true regardless of whether the politicians accepts or rejects the bribe, because an active pressure group will optimally set the bribe equal to the cost of corruption to the politician minus the punishment. As a result, politicians will incur the same total cost from taking either the bribe (with the associated cost of corruption) *or* the punishment. As individuals with an ability level above the equilibrium public-sector payoff do not run for public office (since they can obtain a wage equal to their ability level in the private sector; see also Caselli and Morelli, 2004), active pressure groups – such as organized crime – depress the quality of elected politicians. This result is presented as Proposition 3 in Dal Bó et al. (2006).

Nevertheless, as mentioned above, a pressure group will not be actively engaging with politicians if bribes and punishments are not profitable. A strengthening of law enforcement arguably makes it more difficult, and thus more costly, to punish honest politicians who refuse bribes. In equilibrium, pressure groups then not only become politically active less often, but also reduce punishments and offer higher bribes. Both actions increase the expected payoff in the public sector, which improves the quality of elected politicians. This result is presented as Proposition 6 in Dal Bó et al. (2006).

2. Data and Estimation Strategy

2.1. Institutional Framework and Data

To assess the key theoretical prediction in section 1 – i.e. improved law enforcement against politically active criminal organizations increases the quality of elected politicians – we construct a dataset including yearly observations for more than 1500 Italian municipalities over the period 1985-2011. We thereby focus on municipalities in the four South-Italian regions where mafia organizations have traditionally been concentrated (i.e. Calabria, Campania, Puglia and Sicilia). This restricts the set of municipalities included to those that are sufficiently comparable *except* for the fact that organized crime became active, or remained inactive, in the political sphere in a given jurisdiction. This is not only critical from a theoretical perspective, but also because our identification strategy relies on the comparison of municipalities with active mafia infiltration in the political process to a sufficiently similar control group. By restricting the sample to Southern Italy, we effectively work with a "more homogenous sample for those unobserved characteristics (political culture, social capital) (…) that can affect the estimation" (Sberna, 2011, p. 15). We will, however, return to the selection of the control group in more detail below (see section 3.2.).

To measure active mafia infiltration in the political process, we rely on a unique emergency measure imposed by the Italian national government in 1991 (see also Buonanno et al., 2014). Following a period of intense mafia-related killings, the Italian government enacted a law aimed at preventing or breaking ties between organized crime and (local) politicians (i.e. law no. 164/1991). The law states that the national government can impose the dissolution of any local government whenever direct or indirect links emerge between local elected politicians and criminal organizations, or when there are undue pressures which influence or compromise the

normal functioning of the local administration. Any proposal to dissolve a local government derives from a parliamentary commission (the 'Commissione Parlamentare Antimafia') within the Ministry of Interior, and must be approved by the President of the Republic and the government cabinet. After formal approval, three commissioners are assigned to manage the local government during the next 12-24 months. At the end of this period, elections are organized to select a new local government. The inauguration of this new government brings about the discharge of the commissioners.

Since the introduction of the law, it has been invoked well over 200 times. As can be seen in figure 1, where we display the number of local government dissolutions per year since the law's initiation, the number of dissolutions shows substantial variation over time even though there is some clustering when the measure first became available (we return to this below). Note also that the law was invoked only four times in municipalities outside the four South-Italian regions included in our analysis. Within these four regions, however, just under 10% of all municipalities have witnessed at least one dissolution of their local government for mafia infiltration (31 municipalities faced two dissolutions).

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FIGURE 1 ABOUT HERE

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Municipalities seeing their government dissolved are those where the mafia is actively politically involved *and* law enforcement against such infiltration visibly strengthens. Hence, we rely on official information – publicly available from the Italian Parliament's *Commissione Parlamentare Antimafia* – regarding local governments' temporary dissolutions to set up a direct

test of whether there is an increase in politicians' human capital *after* the application of law no. 164/1991.

It is important to observe, however, that the application of the law is likely to be imperfect. On the one hand, some local governments with mafia infiltration may not be detected and dissolved. Fortunately, our identification does *not* require that all mafia-infiltrated governments are effectively dissolved. Unobserved relations between criminal organizations and local politicians imply that such municipalities remain in the 'control' group (i.e., those without government dissolutions). This will bias our estimates on the effect of increased law enforcement towards zero. On the other hand, some local governments without mafia infiltration may be dissolved erroneously. In this case, the government is reinstated as soon as the mis-identification is verified, and these temporary dissolutions are treated as if they did not occur in our dataset. Yet, as before, uncorrected erroneous dissolutions are unproblematic for our identification since, by remaining in the 'treatment' group, these will again bias our point estimates towards zero. In other words, to the extent that some mafia-infiltrated governments no doubt escape detection and dissolution, and others surely were dissolved without good grounds, this creates a strong test-case to uncover the (lower bound of the) structural effects of interest.

2.2. Estimation Strategy

As mentioned, our estimation approach is based on a difference-in-differences (DiD) framework. We compare municipalities with and without mafia infiltration before and after such infiltration is terminated by the national government to estimate the causal impact of tightened law enforcement against organized crime on politicians' human capital. Unlike the traditional DiD model, which relies on a shock at one point in time across all treated jurisdictions, we can

exploit the fact that dissolutions did not take place at the same point in time for each municipality (see figure 1) to further strengthen our identification (Angrist and Pischke, 2008). This indeed allows us to more rigorously separate the effect of the treatment – i.e. dissolutions due to (presumed) links to organized crime under law no. 164/1991 – from possibly unobserved time-specific events. We have the following baseline specification (with subscript *i* referring to municipalities and subscript *t* to time):

$$Y_{i,t} = \alpha_i + \beta_1 BeforeCommissioners_{i,t} + \beta_2 Year_t + \beta_3 Trend_{i,t} + \varepsilon_{i,t} \qquad (1)$$

The central dependent variable ($Y_{i,t}$) employed throughout most of the analysis below is the average number of years of education of *all* members of the local government – including council members ('*Consigliere*'), aldermen ('*Assessore*') and the (vice)mayor ('*Sindaco*') – within municipality *i* at time *t*. Nonetheless, as this may conceal possibly interesting heterogeneity of the studied effects across different subsets of local politicians, we also run equation (1) independently for council members, aldermen and the mayor. In this case, $Y_{i,t}$ equals the average number of years of education of local politicians within a given subgroup.

The use of politicians' education level follows previous work by, among others, De Paola and Scoppa (2010), Besley and Reynal-Querol (2011), Besley et al. (2011), Galasso and Nannincini (2011) and Pinotti (2013). It reflects the idea that human capital is a valid proxy for individuals' ability and skills, which is used as a measure for quality in the theoretical section (see also Dal Bó et al., 2006). While this is widely acknowledged in studies of private sector activities (Black and Lynch, 1996; Hitt et al., 2001), a similar connection is gaining increasing prominence also with respect to public sector activities (Besley and Reynal-Querol, 2011). The average education

level of local politicians is calculated on an annual basis using data provided by the Italian Ministry of Interior. The original dataset (available at *http://amministratori.interno.it/AmmIndex5.htm*) provides the highest degree a politician obtained. To calculate the average education level across all politicians in a given municipality and year, we follow De Paola and Scoppa (2010) and Baltrunaite et al. (2014) in translating degrees into the minimum number of years necessary to obtain them (assuming an uninterrupted education path): i.e. no education = 0 years; primary education = 5 years; lower secondary = 8 years; higher secondary = 13 years; university or more = 18 years. For missing values on politicians' highest degree (which occurred in just over 2% of the sample), we tried to infer their education level from their profession. Whenever this was impossible due to missing information, unemployment, etc. we coded the observation as missing (1.84% of the sample).[3]

In all specifications, $Year_t$ and α_i are a complete set of year and municipality fixed effects, the latter of which allow us to control for unobserved heterogeneity across municipalities – also among those dissolved for mafia infiltration (see also De Witte et al., 2014). Finally, $Trend_{i,t}$ reflects a complete set of (linear) municipality-specific time trends. The reason for their inclusion is that a key identifying assumption of the DiD approach used here is that the temporal development of each municipality would have been the same in the absence of any treatment. Including municipality-specific time trends controls for any potential differential temporal developments independent of the treatment. While we use a linear time trend in the main analysis, a more flexible functional form of the time trend including squared and cubed terms

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[3] In many cases, attribution of an education level to a given professional denomination was constrained by the fact that some professional categories were defined very broadly, and thus contained individuals from multiple education levels. We took two approaches to deal with this. First, and most conservatively, we left politicians' level of education in these cases as a missing value. These results are reported in the main text. Alternatively, we set politicians' level of education equal to the modal value of the level of education in that professional category in that year. The exact approach followed leaves our results unaffected (details upon request).

does not affect our inferences (and, if anything, strengthens our results both in terms of point estimates and statistical significance; details upon request).

The key variable of interest in the model is *BeforeCommissioners*, and we experimented with a number of different operationalizations to assess the robustness our results. In the main part of the analysis, this variable is set equal to one for municipalities put under commissioners in the entire period *preceding* the dissolution of the government, and zero otherwise.[4] This approach implies that *BeforeCommissioners* takes value one between 1985 (the starting point of our dataset) and the year prior to a municipal government's dissolution due to (presumed) mafia infiltration, and zero otherwise. Nevertheless, as this may introduce asymmetry across municipalities as years advance, our second operationalization sets *BeforeCommissioners* equal to one only in the five (or ten) years preceding the dissolution of the government, and zero otherwise.[5] This alternate approach still imposes that the effect of mafia infiltration is time-invariant, and estimates an average effect of mafia infiltration over the period taken into account (i.e. the entire period back to 1985, or the last five or ten years before government dissolution). Our third and final operationalization relaxes this assumption by introducing a set of year-specific dummy variables that take value one only for municipalities put under commissioners in the Tth year (with $T=1,\ldots,15$) preceding the dissolution of the government due to (presumed) mafia infiltration. This generates a more flexible functional form that allows for year-on-year variation in the estimated effect of mafia infiltration. Intuitively, one might expect stronger effects closer to the time of the government's dissolution, since this is the time when we can be

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[4] We exclude ten municipalities that saw their government dissolved in 2010 or 2011 to have at least one observation *after* the commissioners have left and a new government has been instated.

[5] We ran equation (1) using eleven cut-offs between five and 15 years preceding the dissolution of the local government. Since the results are unaffected by the actual cut-off employed, we decided to only report the five- and ten-year results (all other results are available upon request).

most certain that there is active involvement of the mafia in local politics (otherwise no intervention by the national government would occur). Given its coding, the coefficient β_1 under all three operationalizations estimates the reverse of the causal effect from strengthened law enforcement against mafia infiltration on $Y_{i,t}$, and the theoretical framework in section 1 suggests that $\beta_1 < 0$. Summary statistics for all variables are provided in Appendix A.

3. Empirical Results

3.1. Baseline Results

Our main findings are brought together in table 1. The first three columns present the baseline results from estimating equation (1), and only differ in the exact operationalization of *BeforeCommissioners*. In column (1), it is one for municipalities put under commissioners in the *entire* period preceding the government's dissolution. In columns (2) and (3), it is one for municipalities put under commissioners in, respectively, the five or ten years preceding the government's dissolution. Columns (1) through (3) ignore that government dissolutions were not always successful in breaking ties between criminal organizations and local politicians. This is illustrated most forcefully by the fact that 31 municipalities in our sample had their government dissolved twice since 1991 (though none witnessed more than two dissolutions). Clearly, these municipalities may be different from the remaining sample. In columns (4) to (6), which again only differ in the exact operationalization of *BeforeCommissioners*, we therefore exclude all 31 municipalities that witnessed repeated dissolutions from the analysis. In all cases, we report standard errors clustered at the municipality level (Bertrand et al., 2004).

TABLE 1 ABOUT HERE

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Throughout all estimations reported in table 1, the coefficient estimate of *BeforeCommissioners* is robustly negative and statistically significant at conventional levels. In terms of the size of the estimated effect, the results suggest that the average education level of local politicians is approximately three to four months lower in the period *preceding* the dissolution of the local government, *ceteris paribus*, compared to what it would have been in the absence of mafia infiltration. The analysis therefore strongly corroborates the idea that tighter law enforcement removing (or, at least, reducing) mafia infiltration from local politics improves the average human capital of subsequently elected local politicians (as hypothesized in section 1 above). This finding is unaffected when excluding observations in the period 1991-1993 (to account for the fact that these years witnessed a high number of dissolved governments) and when excluding each of the four regions included in our analysis one by one (details upon request).

Overall, our baseline results reported in table 1 thus are in line with the idea that *i)* the ability level of politicians is reduced where organized crime is active in the political sphere and *ii)* this effect is remedied via strengthened law enforcement. Still, the results thus far do not allow for heterogeneity across types of politicians, nor over time.[6] In table 2, we first tackle heterogeneity across subsets of local politicians by estimating equation (1) independently for the mayor ('*Sindaco*'), aldermen ('*Assessore*') and council members ('*Consigliere*'). Throughout table 2, our key explanatory variable (*BeforeCommissioners*) is set to one for municipalities put under commissioners in the *entire* period preceding the government's dissolution (though the alternatives discussed in table 1 provide qualitatively similar results; details upon request). As

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[6] We are grateful to an anonymous referee for pointing out a number of ways to incorporate this into our analysis.

before, columns (1) to (3) employ the entire sample, while columns (4) to (6) exclude the municipalities that witnessed repeated dissolutions.

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TABLE 2 ABOUT HERE

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Table 2 indicates that although we find a robust negative coefficient estimate for *BeforeCommissioners* among all three groups of politicians, this is statistically significant only for mayors and aldermen. The effect size for these two groups is also substantially larger than the overall effect estimated in table 1. In fact, the average education level of mayors as well as aldermen is estimated to be approximately one year lower in the period *preceding* the dissolution of the local government, *ceteris paribus*. For council members, the effect is constrained to between one and two months (and at best approaches significance at conventional levels). This indicates that the effects of mafia infiltration on politicians' human capital are predominantly related to those members of local governments that most directly hold the power to affect local public policy decisions. In light of the theoretical model in section 1, this suggests that politically active criminal organization may specifically, and strategically, target bribes and punishments to more powerful politicians – rather than rank-and-file council members.

In figure 2, we assess the extent to which our results are time-invariant by operationalizing *BeforeCommissioners* via a set of dummy variables that take value one only for municipalities put under commissioners in the Tth year (with T=1,…,15) preceding the government's mafia-related dissolution. For ease of exposition, we only display the results for *all* members of the local government even though we will discuss the results for our three subsets of politicians below as well (graphical representations for these groups are available upon request).

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FIGURE 2 ABOUT HERE

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Figure 2 illustrates that the drop in politicians' human capital due to mafia infiltration appears to be a relatively gradual process. The point estimates reflecting the effect of (presumed) mafia infiltration on local politicians' average education levels show a gradual decline starting about 10 years before the actual dissolution of the local government. The estimated impact becomes negative about six years prior to the government's dissolution, and it reaches statistical significance at conventional levels in the last three years. This pattern confirms the intuitive notion that the strongest effects should appear just before the government's dissolution, since this is the time when we can be most certain that there is active involvement of organized crime in local politics (see above).

The negative trend in figure 2 could arguably also reflect some degree of self-selection, whereby local governments are particularly likely to become dissolved when the human capital of politicians has fallen observably (or failed to rise as much as elsewhere). The latter may be interpreted at the national government level as a signal of mafia interference, or may simply reflect the fact that politicians with lower human capital are more likely to get caught when engaging in illegal activities. From this perspective, it is important to point out that the temporal pattern in figure 2 is *not* replicated for mayors and aldermen. For these groups, the effect of organized crime is not only stronger in absolute and statistical terms (as reported in table 2 above), but also largely constant over time. In light of our earlier observation that politically active criminal organization may be especially targeting more powerful politicians, the time-invariance of the mafia effect among these politicians indicates that any possible self-selection

issues in terms of the timing of local government dissolutions are only of minor concern. Moreover, any such self-selection would *not* affect our interpretation that a strengthening of law enforcement helps remedy the negative effects of mafia infiltration on local politicians' human capital.

3.2. Robustness Check using a Matched Sample of Municipalities

Even though we restrict our sample to southern Italy in order to work with a more homogenous set of jurisdictions, one source of potential concern is that the sample of dissolved municipalities differs in some meaningful dimensions from the control group (i.e. all non-dissolved municipalities). In this section, we address this via a matching approach (using *psmatch2* in Stata12; Leuven and Sianesi, 2010). Specifically, to match 'treated' and 'untreated' municipalities (with 'treatment' referring to the dissolution of the municipal government at any point in time), we ran a probit regression with (log) population size[7], the number of mafia-related homicides in the province, the municipal unemployment rate (in 2001), the ratio of young-to-old inhabitants (i.e. number of >65 for every 100 inhabitants under age 15; also in 2001), the share of men and entrepreneurs in the local government and the average year of birth of local government officials as explanatory variables (summary statistics provided in Appendix A).[8]

Then, we match the sample of municipalities where dissolution of the local government took place to a comparable sample where no such dissolutions took place, thereby linking each municipality only to its 'nearest neighbor' in terms of municipalities' propensity scores. This not

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[7]   Population size is only observed during census years (i.e. 1992, 2001 and 2010). It is linearly interpolated for other years.

[8] The coefficient estimates suggest that larger municipal population size, more mafia-related homicides, higher unemployment and older council members all significantly increase the probability of government dissolution. The share of young relative to old inhabitants has the reverse effect. The shares of men and entrepreneurs in the local government have no statistically significant effect.

only substantially restricts the size of the sample, but also induces the highest possible similarity in terms of the predicted probabilities of government dissolution. Importantly, the resulting sample displays no significant differences between the matched set of 'treated' and 'untreated' municipalities on the background characteristics included. Moreover, as can be seen in figure 3, the distributions of the estimated propensity scores for the treated group (i.e. all municipalities put under commissioners; right-hand side) and the control group (i.e. their 'nearest' neighbours as derived from the matching procedure; left-hand side) show substantial overlap. This indicates that for each treated municipality there is an untreated one with similar values for the background characteristics, which is a key requirement to obtain valid inferences (Wooldridge, 2010).

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FIGURE 3 ABOUT HERE

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The results in table 3 replicate the analysis in table 1 for this matched subsample of municipalities. The findings are broadly in line with those reported above. If anything, both the point estimates for β_1 and, despite the substantially reduced sample size, the precision with which these are estimated improve.

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TABLE 3 ABOUT HERE

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3.3. Placebo Test using Government Dissolutions Unrelated to Mafia Infiltration

One important concern related to our results thus far is that they might be driven by a local government's dissolution as such, rather than the mafia infiltration which this dissolution is meant to resolve. The reason is that education levels gradually increase over the 1985-2011 period. Assuming that politicians' education levels are fixed at the time they take up political office, this implies that the average education level of elected politicians in any public assembly (which remains constant between elections) tends to start lagging behind this upward societal trend. Moreover, although elections are likely to induce a partial re-adjustment,[9] a low replacement rate (i.e. few new politicians entering office during elections) would lead this 'quality gap' to gradually increase over time. When the dissolution of a local government induces an unusually high replacement rate – in the sense that fewer members of the 'old' political guard reappear in subsequent governments – our results thus far might arise simply from the 'catch-up' effect inherent in government dissolutions.

Two pieces of evidence suggest, however, that such catching up is *not* driving our results. The first comes from analysing the average tenure of politicians in South-Italian municipalities, and the rate at which these are typically replaced. Using information from all 135,457 local politicians active in our four southern Italian regions in the 1985-2011 period, we find that these generally have very short tenures. No less than 71.02% leave local politics within the space of one five-year term, while 90.88% leave within 10 years. Excluding politicians where the bounds of our observation period create uncertainty concerning their actual number of years in office

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[9]   Auxiliary regressions indicate that this indeed the case. The average education level of elected politicians in our sample increases with roughly 2.5 months after an election has taken place, *ceteris paribus*. It is important to note, however, that controlling for this post-election readjustment does not affect our main results (details upon request).

(N=95,540) provides similar results (i.e. 77.27% are politically active at the local level for five years of less, 94.34% for 10 years or less).[10] This low average tenure is *not* due to dissolutions for mafia infiltration, since excluding politicians from such municipalities (N=115,503) still indicates that 70.35% of local officials abandon local politics in five years or less (90.45% in 10 years or less).

These low tenures naturally correspond to a relatively high turnover rate: on average, 11.91% of local politicians resign from their position per year (mostly around elections, when the average municipality sees 47.51% of local officials replaced).[11] More importantly, however, *prior to* the dissolution of their government for mafia infiltration, the average turnover rate in mafia-connected municipalities (10.93%) is *not* significantly different from that in all other municipalities (11.74%) (p<0.10). These observations are important since low tenure / high turnover implies that the 'quality gap' between elected politicians and the upward societal trend in education is likely to remain reasonably small. This leaves little space for a 'catching-up' explanation of our main results.

The second piece of evidence derives from the fact that Italian local governments may be dissolved also for reasons unrelated to mafia infiltration (e.g., resignation of the mayor, resignation of more than 50% of council members, etc.). In fact, such dissolutions are fairly common. More than 1000 occurrences are recorded during our time period, and 616 of the municipalities in our sample (circa 38%) witness at least one dissolution of their local government unrelated to mafia infiltration. If our results are due to the dissolution of a local government as such, rather than mafia infiltration, one would expect to see an upward shock in

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[10] Mayors tend to be an exception, as tenures beyond 10 or even 20 years appear more common for them.
[11] Note that we removed the first election after any type of local government dissolution from this calculation as there are, strictly speaking, no politicians to be replaced in such circumstances.

political quality after *any* type of government dissolution. This is evaluated in table 4. Since we are unfortunately unable to distinguish between different reasons for government dissolution (beyond their link to the mafia), we here treat all non-mafia dissolutions as one group. Following, respectively, columns (1) and (4) in table 1, column (1) includes all available observations whereas municipalities with multiple non-mafia government dissolutions were excluded in column (2).

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TABLE 4 ABOUT HERE

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The results indicate that local government dissolutions due to factors unrelated to mafia infiltration have no significant effect on the average education level of politicians in that municipality. The same also holds when replicating these regressions separately for mayors, aldermen and councillors (details available upon request). This strongly suggests that the increase in politicians' human capital observed for dissolutions related to mafia infiltration in tables 1, 2 and 3 is *not* due to the dissolution of the local government as such.

3.4. Causality

While the theoretical discussion in section 1 predicts a link that runs from mafia activity to politicians' human capital, it might also be that causality runs from the human capital of politicians to mafia infiltration because human capital is often argued to play an essential role in the fight against corruption (Glaeser and Saks, 2005). In this section, we employ Granger causality tests with panel fixed effects to further assess the direction of the causal arrow (Hall et al., 2001).

Specifically, we regress each endogenous variable – i.e. mafia activity and politicians' human capital – on past values of the other endogenous variable, controlling for its own past values. As such analysis is by construction unfeasible using the indicator variable for the presence/absence of government dissolution (as it occurs at one fixed point in time), we here rely on a time-varying measure of mafia activity: i.e. mafia-related homicides as reported by the *Servizio di Indagine* (SDI) and downloaded from the website of the Italian Statistical Office (ISTAT).[12] We prefer this dataset to that reported by the Ministry of Justice as the latter only records crimes *prosecuted*, not all crimes *reported* by the three main Italian police forces. Moreover, as Italian police forces have recorded felonies committed by criminal organizations separately since 1983 (though we were able to obtain these data only from 2000 onwards), we can restrict attention to mafia violence and avoid measurement error due to up- and downswings in the homicide rate unrelated to mafia activity (see also Buonanno et al., 2014). Note also that we use the mafia-related *homicide* rate as this most clearly signals the presence of the mafia in a specific area (unlike, say, property seized from the mafia), and is less likely to be biased due to under-reporting (as occurs for indicators of theft, robbery and extortion; Sberna, 2011). It is also linked to the theoretical model in section 1, since – even though the mafia is sometimes argued to be strongest when it need not resort to violence – an increase in the mafia-related homicide rate may serve to buttress the credibility of bribe-and-punishment offers made to politicians (Konrad and Skaperdas, 1997; for evidence from Italian elections, see Sberna, 2011; Pinotti, 2013).

The estimation model here takes the following form:

$$\Delta Y_{i,t} = \alpha_i + \beta Y_{i,t-5} + \varphi \overline{X}_{i,(t-5;t)} + \vartheta Year_t + \omega_{i,t} \qquad (2)$$

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[12] http://giustiziaincifre.istat.it/Nemesis/jsp/dawinci.jsp?q=pl02a0030044200&an=2004&ig=1&ct=342&id=4A|18A

$$\Delta X_{i,t} = \delta_i + \gamma X_{i,t-5} + \theta Y_{i,t-5} + \rho Year_t + \mu_{i,t} \tag{3}$$

where $Y_{i,t}$ is the average education level of municipal politicians in province i at time t and $X_{i,t}$ is the mafia-related homicide rate. Both equations contain a complete set of time and province fixed effects, and we employ robust standard errors to control for heteroskedasticity. Note that we specify a five-year lag since new municipal elections normally take place every five years in Italy, such that a five-year lag guarantees that we do not include the same municipal government more than once in the estimation.[13] As a result, the dependent variables are $\Delta Y_{i,t} = Y_{i,t} - Y_{i,t-5}$ and $\Delta X_{i,t} = X_{i,t} - X_{i,t-5}$, respectively. The key independent variable is the average number of mafia-related homicides over the last 5 years in equation (2)[14] and the average education level of the previous government in equation (3).

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TABLE 5 ABOUT HERE

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The results are presented in table 5, and indicate that the historical prevalence of mafia-related homicides significantly negatively affects the current education level of municipal politicians (even after controlling for the historical level of politicians' human capital), whereas historical education levels have no significant effect upon mafia-related homicides. Consequently, mafia-related violence appears to cause, in the Granger sense, a decrease in politicians' human capital. These results are obviously constrained by the short time dimension (i.e. 2000-2010) and

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[13] Remember also that the replacement rate of politicians during elections is very high in South-Italian local politics (see section 3.3.), which helps our identification here.

[14] We introduce a five-year average to accommodate the five-year period between municipal elections, and to avoid that year-specific changes in the mafia-related homicide rate bias our findings.

relatively high level of aggregation of our data (i.e. province rather than municipality). Nonetheless, they provide at least suggestive initial evidence on the causal direction of the link between organized crime and the human capital of elected politicians.

3.5. Government Dissolution and Subsequent Government Composition

Finally, one might wonder whether other observable characteristics of politicians – beyond their education level – are likewise affected by government dissolutions for (presumed) mafia infiltration. In table 6, we therefore briefly look at three additional socio-demographic characteristics of the politicians in our sample: i.e. age (measured via politicians' year of birth), gender (1 if male) and professional activity as an entrepreneur. Age and sex are included to assess the intuitive idea that the existing political class (which, in our setting, is mostly male) tends to be replaced following a scandal by a new, 'untainted' set of politicians. While these new politicians are, almost by definition, likely to be younger, one might also expect a gender shift if male politicians are tainted much more by the revealed links to organized crime of some of their colleagues. The last characteristic – i.e. entrepreneurs – is included since recent work has indicated that businessmen and -women enter into politics more often in circumstances where they can more easily extract rents (Rosenson, 2006; Gehlbach et al., 2010).

While the average year of birth of local government members allows using the same DiD model as before (see equation (1)), the nature of the dependent variables for gender and entrepreneurs (i.e. their shares among local officials) requires an estimation technique that accommodates censoring. As panel tobit estimators do not allow the inclusion of municipality fixed effects, we rely on a random effects model and include a number of additional (largely time-invariant) control variables: namely, (log) population size, the municipal unemployment

rate and average education level (both in 2001), the ratio of young-to-old inhabitants (i.e. number of >65 for every 100 inhabitants under age 15; also in 2001) and a complete set of province indicator variables. We also include an indicator variable (*MafiaInfiltration*) for municipalities suspected of mafia infiltration sometime during our observation window (1985-2011), which is intended to capture any (un)observed way these towns may differ from all other municipalities.

TABLE 6 ABOUT HERE

The results are brought together in table 6. The dataset here contains only municipalities that have at some point been put under commissioners and their 'nearest' neighbour as derived from a matching procedure (as in table 3). The analysis indicates that local government dissolution due to mafia infiltration appears to have had a statistically significant impact on the average age of local elected politicians (column (1)). The substantive impact, however, is rather weak as the average age is lowered by approximately one year. We also observe a significant effect on the share of entrepreneurs in municipal politics (column (2)). Governments dissolved for (presumed) mafia infiltration appear to have weakly fewer entrepreneurs *before* the dissolution (0.070 – 0.149 = –0.079; p<0.10), but significantly fewer entrepreneurs after a new government is (s)elected and takes office (–0.149; p<0.05). Finally, and interestingly, a very similar effect is observed for the share of male politicians. That is, there is no statistically significant effect on the share of male politicians *before* the government's dissolution (0.073 – 0.110 = –0.037; p>0.10). However, following the (s)election and inauguration of a new government, the share of male politicians is significantly lower (–0.110; p<0.05) – even after controlling for the positive time trend in female representation in Italian local politics within our time period. One potential

explanation is that male politicians, who have traditionally dominated Italian politics (Baltrunaite et al., 2014), are tainted much more by the unveiled links to organized crime of some of their colleagues. Taken together, these findings suggest that the population in municipalities subjected to government dissolution tended to shift their votes to a larger degree than observed in other southern Italian municipalities towards younger, female and non-entrepreneurial candidates.

It is important to point out that these compositional changes are *not* driving the educational effects observed above. Indeed, when including the share of female politicians and entrepreneurs as well as the average year of birth of local politicians directly into the models presented in tables 1 and 3, the coefficient estimate of β_1 remains of similar magnitude and its statistical significance is unaffected (details upon request).

4. Conclusion

Although various scholars have investigated the *economic* effects of organized crime (Godson and Williams, 1998; Allum and Siebert, 2003; Bonaccorsi di Patti, 2009; Schneider, 2010; Daniele and Marani, 2011; Pinotti, 2014), analyses of their *political* consequences have remained scant (for recent exceptions, see Sberna, 2011; Acemoglu et al., 2013; Pinotti, 2013). Moreover, while research on the *origins* of organized crime has placed key significance to the institutional framework (see Gambetta, 1993; Bandiera, 2003; Dimico et al., 2012; Konrad and Skaperdas, 2012; Buonanno et al., 2014), such institutional focus has remained under-developed in the empirical literature assessing the economic and/or political *consequences* of organized crime.

This article exploited the theoretical work by Dal Bó et al. (2006) to evaluate how institutions – and, in particular, improved law enforcement – weaken the negative relation between politically active bribe-and-punishment pressure groups and politicians' human capital. Our main

results – using data on more than 1500 Southern Italian municipalities over the period 1985-2011 – confirm that the average education level of local politicians is significantly increased after law enforcement tightens (measured via local government dissolution due to active mafia infiltration in the political process under law no. 164/1991). This increase in politicians' education level is estimated at around 4 months, which represents approximately 2.5 percent of the average education level observed in the data (i.e. 13.11 years) or circa 20% of its standard deviation. Interestingly, however, the effect is substantially stronger – i.e. approximately one year of education – among mayors and aldermen, which are the groups of politicians that *de facto* hold most power in the local arena.

Using local government dissolutions unrelated to mafia infiltration as a placebo test, we verify that the above effect is specific to, and driven by, exogenously imposed mafia-related local government dissolutions. Hence, we provide strong support for the idea that institutions matter not only for criminal organizations' development, but also for their societal impact (e.g., in terms of the human capital of local office-holders). We also find that in response to the dissolution of their governments, populations of these municipalities tended to shift their votes to a larger degree than observed elsewhere in South-Italian municipalities towards younger, female and non-entrepreneurial candidates.

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Table 1: Baseline Estimation Results

	Dependent Variable: Average years of education					
	(1)	(2)	(3)	(4)	(5)	(6)
Before Commissioners	-0.323***	-0.265***	-0.209**	-0.337**	-0.277***	-0.205**
	(-2.58)	(-3.29)	(-2.44)	(-2.41)	(-3.11)	(-2.24)
Municipality FE	YES	YES	YES	YES	YES	YES
Municipal time trends	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
R^2 *within*	49.15	49.17	49.14	49.01	49.02	49.00
N	39040	39040	39040	38432	38432	38432
Municipalities	1572	1572	1572	1541	1541	1541

Note: The table shows the results from a difference-in-difference regression analysis using local elected politicians' years of education averaged over all council members and (vice)mayor as dependent variable. *BeforeCommissioners* takes three different forms. In columns (1) and (4), it is one for municipalities put under commissioners in the entire period preceding the government's dissolution, and zero otherwise. In columns (2) and (5), it is one for municipalities put under commissioners in the five years preceding the government's dissolution, and zero otherwise. In columns (3) and (6), it is one for municipalities put under commissioners in the ten years preceding the government's dissolution, and zero otherwise. t-statistics based on standard errors adjusted for clustering at municipality level in brackets. Complete dataset employed in columns (1), (2) and (3), while municipalities with two government dissolutions were removed in columns (4), (5) and (6). * $p<0.10$; ** $p<0.05$; *** $p<0.01$.

Table 2: Heterogeneity across Local Politicians

	Dependent Variable: Average years of education					
	(1)	(2)	(3)	(4)	(5)	(6)
	Mayor	Aldermen	Councilor	Mayor	Aldermen	Councilor
Before Commissioners	-1.046***	-0.933***	-0.131	-1.040***	-0.900***	-0.183
	(-2.94)	(-3.65)	(-0.99)	(-2.58)	(-3.14)	(-1.22)
Municipality FE	YES	YES	YES	YES	YES	YES
Municipal time trends	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
R^2 *within*	31.73	27.30	48.27	31.49	27.09	48.18
N	36595	37393	38479	36042	36809	37873
Municipalities	1572	1572	1572	1541	1541	1541

Note: The table shows the results from a difference-in-difference regression analysis using local elected politicians' years of education (averaged within each subset of politicians) as dependent variable. *BeforeCommissioners* it is one for municipalities put under commissioners in the entire period preceding the government's dissolution, and zero otherwise. t-statistics based on standard errors adjusted for clustering at municipality level in brackets. Complete dataset employed in columns (1), (2) and (3), while municipalities with two government dissolutions were removed in columns (4), (5) and (6). * $p<0.10$; ** $p<0.05$; *** $p<0.01$.

Table 3: A Sample of Matched Municipalities

			Dependent Variable: Average years of education			
	(1)	(2)	(3)	(4)	(5)	(6)
Before Commissioners	-0.377***	-0.310***	-0.236**	-0.396***	-0.321***	-0.237**
	(-2.69)	(-3.59)	(-2.54)	(-2.60)	(-3.47)	(-2.43)
Municipality FE	YES	YES	YES	YES	YES	YES
Municipal time trends	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
R^2 *within*	48.89	49.00	48.83	47.80	47.92	47.73
N	5742	5742	5742	5225	5225	5225
Municipalities	249	249	249	222	222	222

Note: The table shows the results from a difference-in-difference regression analysis using local elected politicians' years of education averaged over all council members and (vice)mayor as dependent variable. *BeforeCommissioners* takes three different forms. In columns (1) and (4), it is one for municipalities put under commissioners in the entire period preceding the government's dissolution, and zero otherwise. In columns (2) and (5), it is one for municipalities put under commissioners in the five years preceding the government's dissolution, and zero otherwise. In columns (3) and (6), it is one for municipalities put under commissioners in the ten years preceding the government's dissolution, and zero otherwise. t-statistics based on standard errors adjusted for clustering at municipality level in brackets. Municipalities with two government dissolutions were removed in columns (4), (5) and (6). * p<0.10; ** p<0.05; *** p<0.01.

Table 4: Dissolutions Unrelated to Mafia Infiltration

	Dependent Variable: Average years of education	
	(1)	(2)
Before Non-mafia Dissolution	0.047	0.018
	(0.79)	(0.25)
Municipality FE	YES	YES
Municipal time trends	YES	YES
Year FE	YES	YES
R^2 *within*	49.12	49.24
N	39191	34919
Municipalities	1609	1420

Note: The table shows the results from a difference-in-difference regression analysis using local elected politicians' years of education averaged over all council members and (vice)mayor as dependent variable. *Before Non-mafia Dissolution* is one in the entire period preceding a local government's dissolution for reasons unrelated to Mafia infiltration, and zero otherwise. t-statistics based on standard errors adjusted for clustering at municipality level in brackets. Complete dataset employed in column (1), while municipalities with multiple non-Mafia government dissolutions were removed in column (2). * $p<0.10$; ** $p<0.05$; *** $p<0.01$.

Table 5: Granger Causality Tests

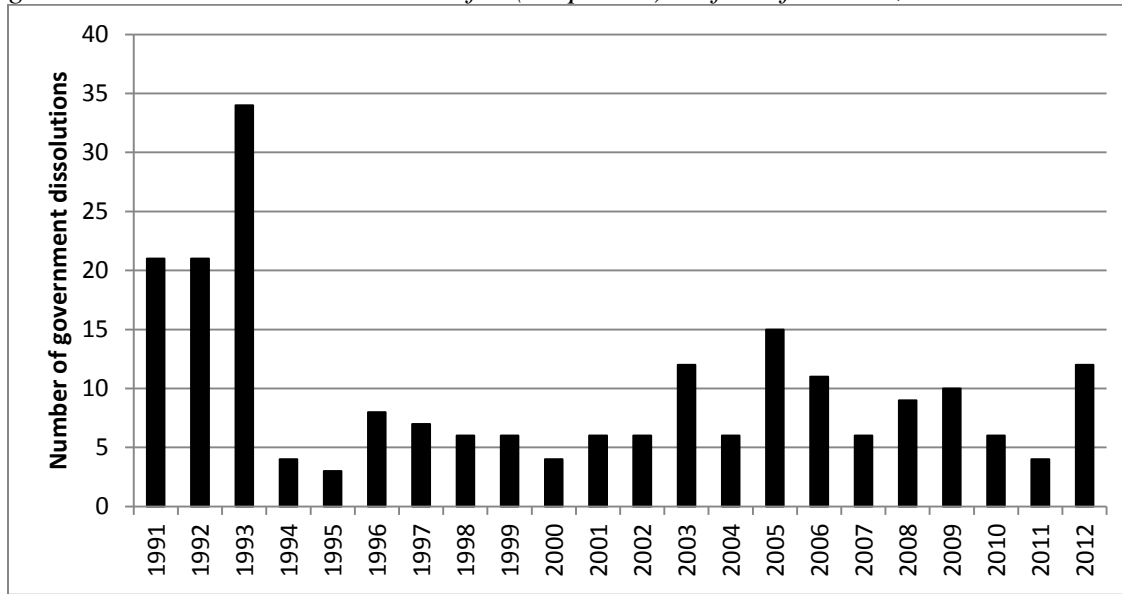|	5-Year change in average education level	5-Year change in mafia homicides
Mean mafia homicides (last 5 years)	-0.005***	-
	(-2.27)	
Mean education level (last 5 years)	-	0.096
		(0.06)
Education level (t-5)	-0.671***	-
	(-14.08)	
Mafia homicide (t-5)	-	0.618***
		(6.01)
Province FE	YES	YES
Year FE	YES	YES
R^2 *within*	36.19	31.20
N	250	269

Note: Dependent variables are indicated in the top row of the table. Heteroskedasticity-consistent standard errors are employed throughout. t-statistics between brackets:* $p<0.10$; ** $p<0.05$; *** $p<0.01$.

Table 6: Effect on Subsequent Government Composition

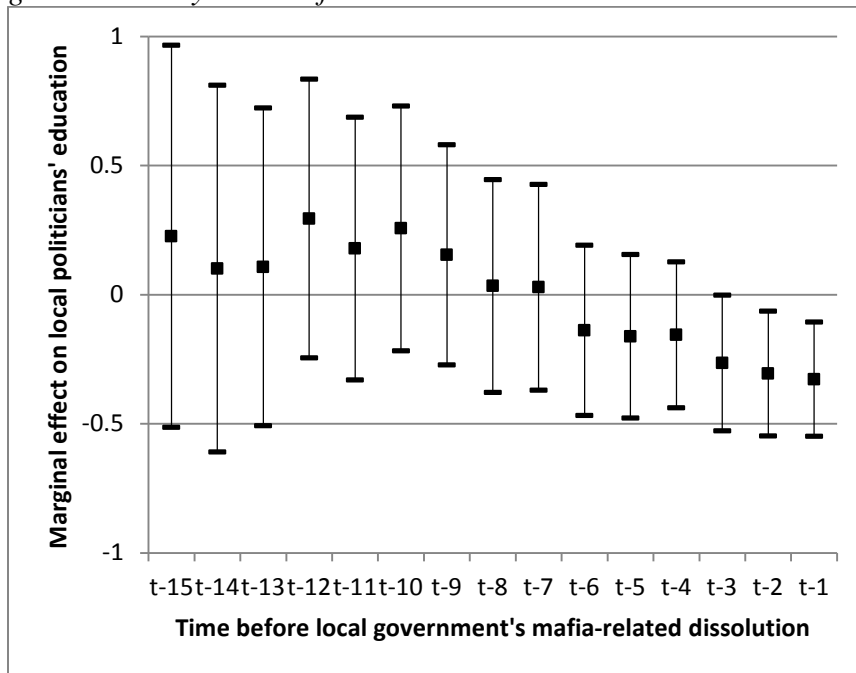|	Birth year	Share entrepreneurs	Share Male
	(1)	(2)	(3)
Before Commissioners	-1.170**	0.070*	0.073***
	(-2.30)	(1.94)	(2.69)
MafiaInfiltration	-	-0.149**	-0.110**
		(-2.33)	(-2.39)
Constant	-	-2.150	1.638***
		(-0.01)	(5.22)
Municipality FE	YES	NO	NO
Municipal time trends	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
R^2 within	63.01		
Wald		350.4***	562.9***
N	5495	5105	4651
Municipalities	249	249	249

Note: Dependent variables: Average birth-year of members of local government (column (1)), Share of entrepreneurs in local government (column (2)), Share of men in local government (column (3)). The variable of interest is *BeforeCommissioners*, which is one for municipalities put under commissioners in the entire period preceding the government's dissolution, and zero otherwise. *MafiaInfiltration* is an indicator variable for municipalities put under commissioners. *Controls* includes an indicator variable for province, (log) population size, municipal education and unemployment level and the share of young relative to old inhabitants. Dataset only includes municipalities put under commissioners and their 'nearest' neighbour as derived from a matching procedure. Due to the nature of the data, column (1) derives from a difference-in-difference regression with fixed effects and standard errors adjusted for clustering at municipality level , while columns (2) and (3) rely on panel tobit with random effects. t-statistics in brackets. * p<0.10; ** p<0.05; *** p<0.01.

Fig. 1: Local Governments Dissolved for (Suspected) Mafia Infiltration, 1991-2012
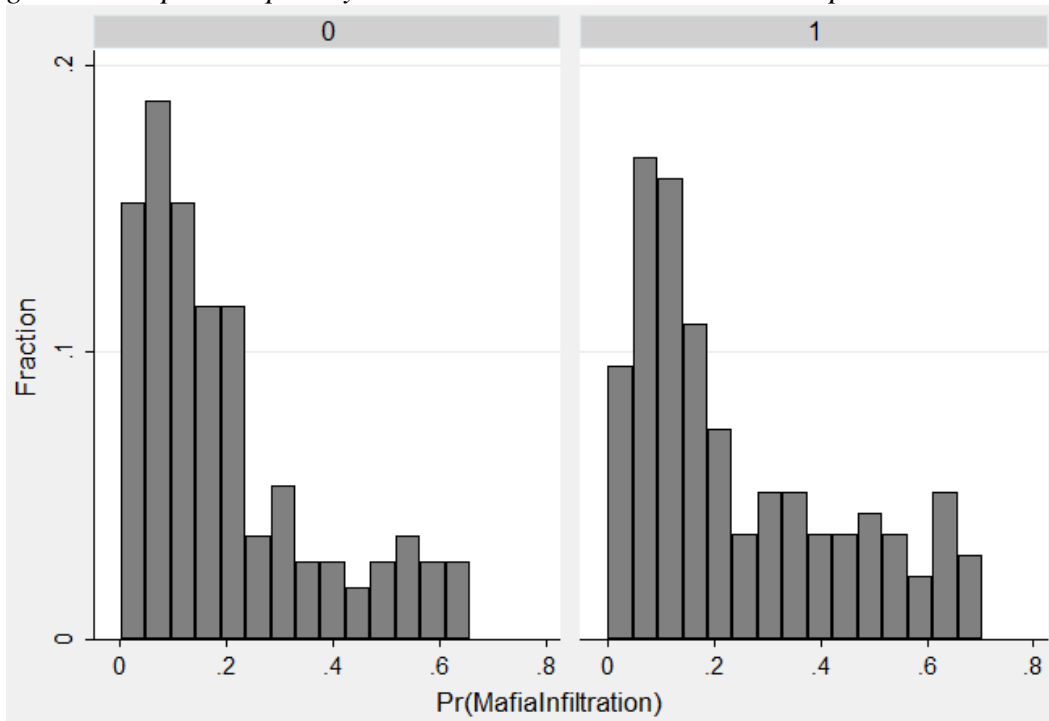

Note: Data up to 2007 derive from the website of the Italian Parliament *"Commissione Parlamentare Antimafia"* (http://www.camera.it/_bicamerali/leg15/commbicantimafia/documentazionetematica/23/schedabase.asp). The remaining years were manually collected by the authors.

Fig. 2: Results by Time Before Dissolution

Note: The figure shows the results from a difference-in-difference regression analysis using local elected politicians' years of education averaged over all council members and (vice)mayor as dependent variable. The key explanatory variables are a set of indicator variables equal to one for municipalities put under commissioners in year t-i (with i=1,…,15), where t is the year of the government's dissolution. This effectively provides a more flexible specification of equation (1), allowing for year-on-year variation in the variable measuring the effect of mafia infiltration (i.e., *BeforeCommissioners* in table 1). Coefficient estimates and 90% confidence intervals are provided.

Fig. 3: Overlap in Propensity Scores in Treated and Matched Samples

Note: The figure presents the distributions of the estimated propensity scores of mafia infiltration for the treated group (i.e. all municipalities put under commissioners; right-hand side) and the control group (i.e. their 'nearest' neighbor as derived from the matching procedure explained in section 3.2; left-hand side).

Appendix A: Summary statistics

Variable	Obs	Mean	St.Dev.	Min	Max
Dependent variables					
Education Politicians (average in local government)	39191	13.13	1.730	5.00	18.00
Education Mayor (average in local government)	36711	15.85	2.95	5.00	18.00
Education Aldermen (average in local government)	37523	13.15	2.65	5.00	18.00
Education Councilors (average in local government)	38625	12.85	1.74	5.00	18.00
Male (share in local government)	35790	0.911	0.157	0.14	1.00
Entrepreneurs (share in local government)	37780	0.028	0.095	0.00	0.75
Birth year (average in local government)	36623	1956.18	9.918	1909.30	1989.73
Independent variables					
Before Commissioners	40518	0.042	0.200	0.00	1.00
MafiaInfiltration	40366	0.096	0.295	0.00	1.00
Multiple Mafia Dissolutions	40366	0.019	0.137	0.00	1.00
Before Non-mafia Dissolution	40518	0.215	0.411	0.00	1.00
Multiple Non-mafia Dissolutions	40518	0.119	0.324	0.00	1.00
Population	40131	10352	36219.7	186	1000000
Education municipality	40313	7.742	0.690	5.81	12.83
Unemployment municipality	40078	22.555	7.560	1.49	51.32
Age Ratio municipality	40078	128.44	62.083	22.05	574.29
Granger Causality					
Mafia-related Homicides	270	8.933	19.937	0	146
Education Politicians	275	13.69	0.578	12.71	15.97