Strike One To Educate One Hundred: Organized Crime, Political Selection and Politicians' Ability[*]

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Abstract

A central question in terms of political (self-)selection relates to the incentives leading high ability individuals to enter – or abstain from entering – into politics. In this article, we use data from Italian municipalities over the period 1985-2012 to empirically assess how changes in individuals' expected payoffs affect political (self-)selection. Identification derives from murders of local politicians by the mafia, and indicates that such a negative shock to politicians' expected payoffs induces a strong decrease in first-time elected politicians' human capital. The effect is not limited to the municipality where a political murder takes place, but also extends to nearby municipalities.

Keywords: Political Selection, Organized Crime, Politicians' Ability, Human Capital, Spillover effects.

JEL codes: H7, D72, K42

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1. Introduction

Following Besley's (2005) pioneering study, economists have in recent years increased their interest in, and understanding of, the mechanisms driving political (self-)selection. An important topic thereby concerns the incentives leading high ability individuals to enter – or abstain from entering – into politics (and/or be selected as candidates by political parties). Previous work in this developing literature indicates that politicians' remuneration and the degree of electoral competition can be important drivers in the political selection process. For instance, Galasso and Nannicini (2011) show that electoral competition increases parties' incentives to select better candidates, while Gagliarducci and Nannicini (2013) find that higher wages tend to attract better educated individuals into politics. Besides these financial and political factors, the institutional framework of elections has also been found to play a critical role in modifying individuals' expected payoffs and, in turn, political selection. For instance, the temporary introduction of reservation quotas in Italian municipalities has not only strongly increased the share of female politicians (De Paola et al. 2010), but also significantly improved the education level of elected politicians (Baltrunaite et al. 2014) – with lasting effects even after the removal of the quotas.

In this paper, we investigate the impact on political selection of shocks in individuals' expected payoffs linked to the presence of active criminal organizations in the political arena. Criminal organizations are equipped with substantial economic, military and political resources, and their detrimental economic effects have been extensively documented in a variety of contexts (Pinotti 2015). One mechanism explaining such negative economic effects lies in distortions in the allocation of public funds achieved by criminal organizations (Barone and Narcisio 2012; Acemoglu et al. 2013). Alternatively, however, criminal organizations may also distort the political selection process and induce the (s)election of

lower-ability politicians. Dal Bó et al. (2006) highlight this effect in a two-stage model where individuals in the first stage decide whether to run for public office (where wages are fixed) or join the private sector (where wages reflect individuals' ability). In the second stage, elected politicians might direct a lump sum transfer to organized crime, which can use bribes and/or punishments to obtain such transfers. A central prediction of the model is that politically active criminal organizations reduce politicians' expected payoffs independent of individuals' decisions to accept bribes (and paying the cost of corruption), or reject them (and face punishment by the criminal organization).[1] Consequently, higher ability individuals will self-select into private sector jobs rather than take up public office (for further details, see Dal Bó et al. 2006; Daniele and Geys 2015)[2].

The key contribution of this article lies in an empirical assessment of this theoretical prediction – i.e. politically active criminal organizations affect political (self-)selection by leading to an equilibrium outcome with lower-ability politicians taking office. Our identification of this effect derives from non-monetary shocks to individuals' expected payoffs of entering politics due to murders of local politicians by criminal organizations in southern Italy. In the period 1975-2011, 132 Italian local politicians were murdered, most of them by criminal organisations (Lo Moro et al. 2015)[3]. The risk of being murdered represents an extreme case of 'punishment' in the context of Dal Bó et al.'s (2006) model, which can be credibly delivered by organized crime and arguably reflects a substantial negative expected payoff shock to (prospective) politicians. Matching this information on political murders to a detailed dataset on Italian local politicians' education levels in three Southern Italian regions

[1] The reason is that organized crime will set the bribe equal to the cost of corruption minus the punishment. Hence, politicians will have the same cost from taking the bribe or the punishment.

[2] Note that an alternative outside option might be to migrate to another geographical area less affected by organized crime.

[3] Political killings undertaken by criminal organizations are a serious concern also in other countries, especially in Central and South America (e.g. Schatz, 2012).

over the period 1985-2012, we can exploit variation across both time and space in political murders to derive inferences using a difference-in-difference approach. We thereby specifically focus on politicians in their first term in office (henceforth referred to as 'first-time' politicians) for two important reasons. First, compared to politicians already in power when a local politician is murdered, first-time politicians are less likely to be involved in any dynamic related to this murder. In fact, first-time politicians entering office during the first election *after* a political murder (our main 'treatment' group) simply were not politically active yet at the time of the murder, thus reducing endogeneity concerns. Second, Dal Bo et al.'s (2006) model focuses on individuals' choice to enter (or not enter) into politics, which makes first-time politicians an ideal test-case.[4]

In line with expectations, our results highlight a sharp decline in first-time politicians' average ability – as measured by their level of education (see also, for instance, Ferraz and Finan, 2008; Besley and Reynal-Querol, 2011; Besley *et al*., 2011; Galasso and Nannicini, 2011; Daniele and Geys 2015; Martinez-Bravo 2015) – following the murder of a politician by organized crime within a municipality. The observed effect is not only statistically significant, but also substantively large (i.e. up to 45% of a standard deviation in first-time politicians' average education level). Overall, these findings not only confirm that criminal organizations may distort the political selection process by inducing the (s)election of lower-ability politicians (Dal Bó et al. 2006). They also extend Gagliarducci and Nannicini's (2013) findings on the effect of individuals' expected *financial* payoffs for political selection to arguably *non-monetary* shifts in expected payoffs (i.e. life and death).

[4] It might also be that politicians already in office at the time of the murder are less affected by a change in political payoffs, since a hypothetical switch from politics to another sector might be costly. We will return to this in more detail below.

Although the murder of a politician represents an exceptional case, it is not a random event. This implies a challenge in terms of inferring causal claims. In the rest of the paper, we stress that other interpretations of our results are highly unlikely. Firstly, we show that the drop in human capital immediately *follows* a political murder and does *not* arise from any previous trend in politicians' ability in such municipalities. This is important to show that, on the one hand, the findings are not driven by a previously *decreasing* trend, which could be due to other events; on the other hand, the lack of a previously *increasing* trend allows excluding, for instance, that criminals were punishing politicians in cities experiencing an upward trend in political ability. Secondly, the impact of a political murder on political selection is *not* contained to the municipality where a murder takes place, but also extends to neighbouring municipalities. Particularly, first-time politicians' average education level in neighbouring municipalities shows a statistically significant decline after a political murder, which is about 40% of the effect uncovered in a municipality with a murder. The presence of such spillover effects helps rule out concerns of potential endogeneity issues in our main analysis. The reason is that a political murder in a neighbouring municipality cannot possible be ascribed to any event taking place within individuals' own municipality.

Finally, in an important extension to our main analysis, we illustrate that our results are unlikely to be driven by a change in the "demand side" (i.e. a change in voters' behaviour), and thus most likely reflect "supply side" decisions of the politicians themselves. Such demand side effects might arise if a political murder moves voters towards parties at the extremes of the political spectrum, which, in turn, might select less educated politicians. Our results indicate, however, that *i)* voters do not appear to change their voting patterns following a political murder, and *ii)* the findings are unchanged when controlling for the political party in power.

In Section 2, we present a brief description of the institutional framework, including descriptive statistics on politicians murdered by organized crime. Section 3 discusses our empirical approach, and assesses the hypothesised negative link between politically active organized crime and politicians' ability using mafia-murdered politicians as a source of identification. Section 4 provides a concluding discussion.

2. Institutional Background

2.1. Local political system

Local government in Italy is organised along a parliamentary system, and consists of a legislative branch (*Consiglio*, or local council) and an executive branch (*Giunta*, or local government). Both local political institutions are headed by the mayor. During municipal elections, citizens directly elect the councillors (*Consiglieri*) and – since 1993 – the mayor (*Sindaco*). Importantly, not all 8000 Italian municipalities hold elections at the same time, but they do operate on an electoral cycle of similar length (i.e. five years). After an election, the mayor is in charge of appointing a certain number of aldermen (*Assessori*) depending on the population size of the municipality. Municipal councils have important powers in terms of local taxes (particularly taxes on property) and the provision of public goods (for instance, culture and recreation, transport, economic development, education, waste management, local police and social welfare).

2.2. Mafia-related murders

In 2015, the Italian parliament undertook its first-ever survey of Italian local politicians killed since 1975. A parliamentary commission investigated the circumstances of all local politicians who suffered a violent death, and presented the results in a detailed report

including all main facts of each incident (Lo Moro et al. 2015). The report indicates that 132 local politicians were murdered in the period 1975-2011, with no less than 97 of these murders showing links to organised crime. 57% of the murders were directed towards councillors, 20% towards aldermen and 12% towards mayors (the remaining ones were directed towards candidates or other local politicians). The distribution of the murders seems to partially reflect the number of politicians in a certain office. In fact, councillors are the majority of the local politicians, while each city council has only few aldermen and one mayor. However, receiving 12% of the attacks, mayors have a relatively higher probability to be murdered[5].

Figure 1 shows the distribution over time of these 97 mafia-related murders. We focus on these murders in our analysis below because they most closely reflect the (extreme) 'punishment' by criminal organisations in Dal Bó et al.'s (2006) model, and as such can be expected to induce a substantial change in individuals' (expected) payoffs from their political activities. Figure 1 shows that most mafia-related murders occurred before 1994, even though political murders still occur in more recent years. The years between 1988 and 1992 witnessed a dramatic upsurge in mafia-related murders, which is linked to a period of dramatic conflict between Italian institutions and the mafia. Following the approval of a stricter national-level legislation aimed at fighting organized crime and the massive incarceration of high level criminals, violent attacks against institutions culminated in the murders of two popular anti-mafia judges – Giovanni Falcone and Paolo Borsellino – a few months apart in 1992 (Dickie, 2005).

[5] Based on our calculations, mayors represent only about 5% of the local politicians.

Figure 2 instead visualizes the geographical distribution of these murders across the 20 Italian regions. It is evident from figure 2 that most of the murders are concentred in Sicily, Calabria and Campania. This is unsurprising since these are the three southern Italian regions where organized crime has been strongly active in the last decades. The observed concentration of political murders in these three regions also motivates our choice to focus the empirical analysis on these regions (about 1.350 municipalities). Since our identification strategy requires a sufficiently similar 'control' group for the municipalities 'treated' with a mafia-related political murder, a focus on southern Italy is critical from a theoretical perspective because we effectively include only municipalities that are sufficiently comparable except for the fact that a mafia-related murder occurred in a given jurisdiction. Hence, it leads to a "more homogenous sample for those unobserved characteristics (political culture, social capital) (…) that can affect the estimation" (Sberna, 2011, p. 15).

Figures 1 and 2 about here

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3. Empirical Analysis

3.1 Estimation Strategy

As explained above, we expect mafia-related murders of a politician to induce a negative shock in individuals' expected payoffs from entering politics, which leads to a decrease in the average education level of politicians elected *after* the murder. Our empirical analysis to verify this hypothesis relies on a difference-in-difference approach comparing municipalities with/without a politician murdered before/after a murder, thereby focusing on municipalities in Sicily, Calabria and Campania in the period 1985-2012. The starting point of the dataset is determined by the availability of information on local politicians' socio-demographic

characteristics. No such information is available prior to 1985. Note that this restricts the number of murders in our sample to 43 (the total number is 97, see Section 2.1). This is due to the fact that several murders took place in the period 1975-1985.

In our specification, we consider only electoral years since the political selection process works through elections. Yet, given the quasi-randomly distributed five-year electoral cycle across Italian municipalities (see above), each year in our sample has a substantial number of municipal elections taking place. In our estimations, we specifically focus on the ten years before a murder (i.e. the two preceding electoral rounds) and on all the electoral years after a murder until 2012. We cannot include elections more than ten years before a murder as our sample starts in 1985 and most of the murders took place in the first years of the sample.

The baseline specification is:

$$Y_{i,t} = \alpha_i + \beta_1 AfterMurder_{i,t} + \beta_2 Year_t + \beta_3 Controls_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where *i* refers to municipality and *t* to year. *Y* measures local politicians' ability level via the average educational attainment among *first-time* elected politicians in municipality *i* at the end of a certain electoral year. Specifically, following De Paola and Scoppa (2010) and Daniele and Geys (2015), we measure education as the minimum number of years necessary to obtain a certain degree (i.e. no education = 0 years; primary education = 5 years; lower secondary = 8 years; higher secondary = 13 years; university or more = 18 years). The data on politicians' education are available on the website of the Italian Ministry of Interior.

Our main explanatory variable, *AfterMurder*, is an indicator variable set to one in municipalities hit by a murder only in the years after the murder (0 otherwise). To control for potential sources of heterogeneity across municipalities, we introduce municipality fixed

effects (α_i). We also include year fixed effects ($Year_t$) to control for time varying changes common to all municipalities. Furthermore, we introduce municipality-level time-varying variables to control for important socio-economic changes over the period of our analysis: i.e. population size, unemployment rate and the share of citizens with a university degree. As those variables are collected at the municipality level every ten years, we linearly interpolate them to obtain yearly observations (specifically, we use data from Italian census in 1981, 1991, 2001 and 2011). Finally, we furthermore introduce province-year fixed effects. This allows controlling for time-varying changes, which might take place at the provincial level. Standard errors are clustered at the municipality level (Bertrand et al., 2004) or at the provincial level depending on the specification.

3.2 Main results

Our main results regarding the impact of a political murder by criminal organizations on the average education level of first-time politicians elected *after* this murder took place are summarized in table 1. The top panel includes the entire sample. In the bottom panel, we again consider the entire sample, but now introduce separate indicator variables for elections taking place more or less than five years after a murder: i.e., *AftMurder(up to 5 years)* equals one only for the period within five years after the murder (0 otherwise), *AftMurder(5 to 10 years)* equals one only in between five and ten years after a murder (0 otherwise), and *AftMurder(more than 10 years)* equals one only more than ten years after a murder (0 otherwise). In most cases, there is only one election in these five year periods (since elections generally take place every five years). However, in some cases the early dissolution of the city council can lead to multiple elections in a five year period. In such cases, we include politicians elected for the first time during both these elections in our estimate sample. Columns 1 through 3 differ only in terms of the exact specification employed. In column 1,

we exclude municipality-level time-varying controls and we cluster standard errors at the city level. In columns 2 and 3, we introduce municipality-level time-varying controls. In column 2 (3), standard errors are clustered at the municipality (provincial) level.

Table 1 about here

The specifications in table 1 confirm a statistically significant and substantively large drop in the average education level of first-time politicians after a mafia-related political murder. The estimated effect size in the first two panels ranges from one to almost one and a half years of lower education. This is approximately 10% of the average education level of first-time politicians (i.e. 12.95 years) and corresponds to 40%-45% of a standard deviation in these individuals' education levels. These findings provide strong evidence in favour of the idea that criminal organizations distort the political selection process by inducing the (s)election of lower-ability politicians (Dal Bó et al. 2006). Furthermore, the bottom panel of table 1 indicates that this effect tends to be fairly persistent. Although the estimated effects are naturally more pronounced in the first election after a murder, they remain statistically significant and relatively large also for first-time politicians elected during the second election after a murder.[6]

Clearly, it is important to verify at this point that the drop in first-time politicians' human capital *follows* a political murder rather than reflects an already declining trend in education levels in the affected municipalities. Similarly, an upward trend in education before the murder might indicate that the mafia might target those who were more educated, and possibly more independent. To test this, we check for the presence of a preceding trend in

[6] To preserve space, we do not show the coefficients of the control variables. The only significant control variable turns out to be the level of education of the municipal population, which is positively associated with the average education of first-time politicians.

first-time politicians' education levels *before* the political murder takes place. Specifically, table 2 replicates the estimation model presented in the bottom panel of table 1, except that we now focus both on the periods *before* and *after* the murder. That is, we add an indicator variable equals to one only in the six to ten years before a murder *BefMurder(5 to 10 years)* (0 otherwise). The base (omitted) category is the period from five to one year before the murder, which generally corresponds to the last election before the murder. Absence of a trend in education levels prior to a mafia-related political murder would be reflected in an insignificant coefficient of *BefMurder(5 to 10 years)*.

Table 2 about here

The results from Table 2 are at odds with any decreasing (or increasing) trend in the education level of first-time elected politicians *before* the murder. In all estimations, the coefficient of *BefMurder(5 to 10 years)* remains substantively very small and statistically insignificant. This indicates that the drop in education documented in table 1 takes place only *after* the murder of a politician and is not catching any trend that started *before* the murder occurred.

Another potential concern might arise because our analysis includes only first-time politicians, who obviously represent a subset of all elected politicians. It is important to observe, however, that in our Italian municipal setting such first-time politicians represent a very significant share of the overall population. Indeed, in the average local election, 14% of all elected politicians are elected for the first time (see also Daniele and Geys 2015). Moreover, since the bottom panels of table 1 and table 2 indicate a significant degree of persistence beyond the first election after a political murder, the group of affected first-time

politicians will be even higher. Even so, one might wonder to what extent our results likewise arise when considering the average human capital of the entire group of elected politicians. Assuming that switching to another sector is costly once individuals have invested in a political career, politicians already in office at the time of the murder could be less affected by a change in political payoffs (see also note 4). To assess this, we replicate the analysis in Table 1 using the average education level of *all* elected politicians (rather than first-time politicians) as the dependent variable.

Table 3 about here

The top panel of table 3 indicates that there is also a statistically significant drop in politicians' human capital after a mafia-related murder when looking at the full sample of politicians. Yet, the estimate effect size is substantially smaller compared to our earlier results for first-time politicians – approximately two thirds of the effect size observed in table 1. This clearly implies that the main effects observed in table 1 are mostly driven by first-time elected politicians. This is in line with the idea that a political murder has a stronger impact on the expected payoffs from political office among individuals who have not yet entered into politics (compared to those already in office). Interestingly, the bottom panel of table 3 shows that the size of the coefficients – in this case – increases over time. This is not at odds with previous findings, as it is likely due to the fact that first-time politicians gradually replace previously elected politicians, reducing over time the overall level of education of the local political class.

Moreover, the focus on the overall population of elected politicians allows investigating whether the murder of a politician affects in the same way different types of local politicians,

i.e. councillors, aldermen and mayors. In fact, in our main analysis this would be unfeasible, as first-time elected politicians are mostly councillors – while mayors and aldermen are typically more experienced politicians, not at their first election –. In table 4, we replicate the top panel of table 3 restricting the sample to a specific type of politician.

Table 4 about here

The results in table 4 show that only mayors´ ability seems to not be affected by the murder of a politician. Conversely, human capital is significantly reduced for both aldermen and councillors. The effect corresponds to a reduction of one year of education for councillors and one and a half years for aldermen. A possible explanation might rely in the fact that mayors receive the highest payoff by being elected, therefore they might be less affected by a reduction in the expected payoffs due to political violence[7].

3.3 Spillover Effects

So far, our interest has been limited to documenting political selection effects within the municipality where a mafia-related political murder occurred. Prospective politicians in these municipalities are clearly most directly affected by a political murder, and changes in individuals' expected payoffs from a political career will therefore be largest within the affected municipality. Nevertheless, since the average municipality in southern Italy is fairly small (i.e. less than 4000 inhabitants), travel distances are limited and the presence of criminal organizations is widespread across Southern Italian regions, we might expect the

[7] Note also that we tested our model using different dependent variables which might capture other relevant dimensions of political selection, specifically: age, sex and political experience. When replicating previous models with such dependent variables, we did not find any statistically significant result. Finally, we also investigated whether our findings differ when considering a change in the local electoral law which took place in 1993 (Padovano and Ricciuti, 2007). This is not the case, as the results concerning murders post-1993 are not different from those in the period pre-1993. All such results are available upon request.

effects of a political murder to 'spill over' beyond the boundaries of the affected municipality. Citizens considering a political career might indeed take a political murder in neighbouring municipalities as a signal for the expected payoffs from politics also in their own municipality. In other words, they might infer from the occurrence of a local politician's murder nearby that such events may likewise occur with some positive probability in their own municipality.

To test this hypothesis, we again replicate the analysis in the top panel of table 1, but now focus on any effects of a political murder in neighbouring municipalities. The results are presented in table 5. The central variable of interest in the top panel (*After Murder Neighbour*) equals one for the period after a political murder occurring in a neighbouring municipality (0 otherwise). In the bottom panel, we simultaneously introduce *After Murder* and *After Murder Neighbour* in order to allow for a more direct comparison of their respective effects. Before turning to the results, it should be noted that, from a methodological perspective, the existence of any such spillover effects helps rule out concerns of potential endogeneity issues in our main analysis. The reason is that a political murder in a neighbouring municipality cannot be ascribed to any event taking place within individuals' own municipality.

Table 5 about here

The results in the top panel of table 5 show that a political murder in a nearby municipality negatively affects the average education level of first-time politicians elected after this murder occurs. The drop is statistically significant at the 90% confidence level throughout all specifications, and the estimated effect size equals approximately five to six months of lower education (which is about 40% of the effect observed in a municipality hit by a political

murder). The bottom panel of Table 5 confirms that, unsurprisingly, the spillover effect is substantively smaller than the main effect observed in a municipality where the murder occurs. Nonetheless, the existence of such spillover effect *per se* highlights that the detrimental effects of a political murder on political selection can spread across municipal borders. Hence, criminal organizations may distort the political selection process by inducing the (s)election of lower-ability politicians *both* within (table 1) *and* beyond (table 5) the jurisdiction of their actual activity.

3.4 Demand- vs. Supply-Side Effects

Our interpretation thus far effectively assumes that our findings are driven by a change in political selection: i.e. in the type of individuals entering in politics. We might call this the "supply side" of this market. However, changes might conceivably also take place on the "demand side": i.e. in voters' political preferences. For instance, a political murder may shift voters' preferences towards more extremist parties, which might select less educated politicians. If so, this could represent an alternative explanation for the observed drop in first-time politicians' human capital. We assess this possibility in two ways[8].

First, in table 6, we replicate the analysis of the top panel of table 1 (column (2)) using the probability of observing a certain political party in power. Specifically, the dependent variable in this case is an indicator variable equal to one if a certain political party is in power in a city *i* in year *t* (0 otherwise). We thereby consider four type of parties: civic lists, centrist parties, left-wing parties and right-wing parties. The results indicate that the coefficient of interest, *After Murder*, is not statistically significant in any specification. Therefore, there

[8] An alternative strategy might be to look at the change in education of the candidates running for election. However, such data are available only for mayors and only after 1993. Therefore, such data are not suitable to our analysis as most of the murders took place before 1993. Moreover, our main inferences do not seem to be driven by a change in mayoral level of education.

does not appear to be any observable shift in voters' political preferences following a political murder within the municipality.

Tables 6 and 7 about here

Second, in table 7, we replicate the analysis in the top panel of Table 1 while directly controlling for the political colour of the winning party in the election. Specifically, we include a number of indicator variables equal to one when civic lists, left-wing parties or right-wing parties, respectively, are victorious in the election. The results indicate that when a right-wing party gains power, the average level of education of first-time politicians is slightly lower compared to the control group represented by municipalities ruled by a centrist party. Yet, this results is not robust over the various specifications. More importantly, however, inclusion of these additional control variables leaves the statistical significance and the size of the coefficient estimate for *After Murder* qualitatively unchanged.

4. Conclusion

A central question in terms of political (self-)selection relates to the incentives leading high ability individuals to enter – or abstain from entering – into politics. While previous studies mostly focus on expected monetary payoffs, in this study, we empirically assess how changes in individuals' non-monetary expected payoffs affect political (self-)selection. The identification of this effect exploits exogenous shocks in individuals' expected payoffs of entering politics due to murders of local politicians by criminal organizations in southern Italian municipalities over the period 1985-2012.

Our results show that first-time elected politicians' ability (measured by their levels of education) is strongly (up to 45% of a standard deviation) reduced after a shock represented by the murder of a local politician by organised crime. This is in line with Dal Bó et al. (2006), as a murder of a local politician arguably might represent a sudden drop in politicians' expected payoffs, which, in turn, leads to relatively lower-ability individuals entering into politics. To strengthen our findings, we show that: i) the drop precisely follows a political murder and it is not catching up any pre-trend; ii) the results are not driven by a change in voters' behaviors as they do not change political preferences after the shock. Finally, we show that such detrimental effects spread to nearby municipalities where the education level of first-time elected politicians are significantly reduced.

Overall, our results can be read in a pessimistic light, as we show that the mafia has a meaningful negative impact on political selection which might spread in the surrounding geographical areas. However, in a recent study, Daniele and Geys (2015) show that law enforcement might be a useful tool to reduce organized crime's influence on political selection among Southern Italian municipalities. Specifically, following a law enforcement aimed at reducing the impact of criminal organizations on politics, the average education of the elected politicians substantially increase. Therefore, it appears that individuals, when deciding to enter in politics, take into account both negative *and* positive changes in their expected payoffs. This should motivate further studies exploring under which circumstances political selection can be improved, as "no society can run effective public institutions while ignoring the quality of who is recruited to public office and what they stand for" (Besley, 2005, p. 58).

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Table 1: Effect of a political murder on first-time politicians' human capital

	(1)	*(2)*	*(3)*
After Murder	-1.202	-1.233	-1.233
	(2.08)**	(2.14)**	(2.41)**
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R^2	0.17	0.17	0.17
N	6,333	6,301	6,301
	(1)	(2)	(3)
AftMurder(up to 5 years)	-1.384	-1.420	-1.420
	(2.14)**	(2.20)**	(2.23)**
AftMurder(up to 10 years)	-1.307	-1.341	-1.341
	(1.79)*	(1.84)*	(2.49)**
AftMurder(more than 10 years)	-0.719	-0.740	-0.740
	(0.95)	(0.98)	(1.18)
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R2	0.17	0.17	0.17
N	6,333	6,301	6,301

Note: The table shows the results from a difference-in-difference regression analysis using first-time elected politicians' years of education as dependent variable. *AfterMurder* equals one in municipalities where a politician is murder by organized crime in the period after the murder (=0 otherwise). *AftMurder(up to 5 years)*, *AftMurder(up to 10 years)* and *AftMurder(more than 10 years)* equal one in municipalities where a politician is murdered by organized crime in the years after the murder (=0 otherwise), respectively one to five years after the murder; five to ten years after the murder; more than ten years after the murder. *Controls* includes: *LogPop*, (the logarithm of the population), *Per_Degree* (the percentage of citizens with a university degree) and *Per_Unemployment* (the percentage of unemployed over the municipality population). T-statistics based on standard errors clustered at the municipality level (in brackets) in columns 1 and 2; at the provincial level in column 3. * p<0.10; ** *p*<0.05; *** *p*<0.01.

Table 2: Effect of a political murder on politicians' human capital: pre-trends

	(1)	(2)	(3)
BefMurder(up to 10 years)	0.155	0.188	0.188
	(0.12)	(0.14)	(0.10)
AftMurder(up to 5 years)	-1.344	-1.372	-1.372
	(2.03)**	(2.06)**	(2.87)**
AftMurder(up to 10 years)	-1.273	-1.299	-1.299
	(1.82)*	(1.85)*	(2.49)**
AftMurder(more than 10 years)	-0.690	-0.705	-0.705
	(0.95)	(0.97)	(1.54)
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R2	0.17	0.17	0.17
N	6,333	6,301	6,301

Note: The table shows the results from a difference-in-difference regression analysis using first-time elected politicians' years of education as dependent variable. *BefMurder(up to 10 years)* equals one in municipalities where a politician is murdered by organized crime five to ten years before the murder. *AftMurder(up to 5 years)*, *AftMurder(up to 10 years)* and *AftMurder(more than 10 years)* equal one in municipalities where a politician is murdered by organized crime in the years after the murder (=0 otherwise), respectively one to five years after the murder; five to ten years after the murder; more than ten years after the murder. LogPop is the logarithm of the population, Per_Degree is the percentage of citizens with a university degree; Per_Unemployment is the percentage of unemployed over the municipality population. T-statistics based on standard errors clustered at the municipality level in brackets in columns 1 and 2; at the provincial level in column 3. * p<0.10; ** p<0.05; *** p<0.01.

Table 3: Effect of a political murder on politicians' human capital (entire sample)

	(1)	*(2)*	*(3)*
After Murder	-0.788	-0.792	-0.792
	(3.22)***	(3.23)***	(2.39)**
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R^2	0.34	0.34	0.34
N	6,895	6,855	6,855
	(1)	*(2)*	*(3)*
AftMurder(up to 5 years)	-0.625	-0.651	-0.651
	(2.56)**	(2.73)***	(2.04)*
AftMurder(up to 10 years)	-0.747	-0.737	-0.737
	(3.02)***	(2.96)***	(2.15)**
AftMurder(more than 10 years)	-1.068	-1.063	-1.063
	(2.95)***	(2.92)***	(2.83)**
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R2	0.34	0.34	0.34
N	6,895	6,855	6,855

Note: The table shows the results from a difference-in-difference regression analysis using elected politicians' years of education as dependent variable. *AfterMurder* equals one in municipalities where a politician is murder by organized crime in the period after the murder (=0 otherwise). *AftMurder(up to 5 years)*, *AftMurder(up to 10 years)* and *AftMurder(more than 10 years)* equal one in municipalities where a politician is murdered by organized crime in the years after the murder (=0 otherwise), respectively one to five years after the murder; five to ten years after the murder; more than ten years after the murder. *Controls* includes: *LogPop*, (the logarithm of the population), *Per_Degree* (the percentage of citizens with a university degree) and *Per_Unemployment* (the percentage of unemployed over the municipality population). T-statistics based on standard errors clustered at the municipality level in brackets in columns 1 and 2; at the provincial level in column 3. * p<0.10; ** *p*<0.05; *** *p*<0.01.

Table 4: Effect of a political murder on politicians' human capital by type of politician

	Mayors		
	(1)	*(2)*	*(3)*
After Murder	0.669	0.592	0.592
	(0.73)	(0.66)	(1.24)
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R^2	0.14	0.14	0.14
N	4,814	4,804	4,804
	Aldermen		
	(1)	(2)	(3)
After Murder	-1.466	-1.389	-1.389
	(2.26)**	(2.08)**	(1.59)
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R2	0.14	0.14	0.14
N	4,005	3,999	3,999
	Councillors		
	(1)	(2)	(3)
After Murder	-1.018	-1.026	-1.026
	(2.73)***	(2.76)***	(2.07)*
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R2	0.31	0.31	0.31
N	6,783	6,745	6,745

Note: The table shows the results from a difference-in-difference regression analysis using elected politicians' years of education as dependent variable. *AfterMurder* equals one in municipalities where a politician is murder by organized crime in the period after the murder (=0 otherwise). *Controls* includes: *LogPop*, (the logarithm of the population), *Per_Degree* (the percentage of citizens with a university degree) and *Per_Unemployment* (the percentage of unemployed over the municipality population). T-statistics based on standard errors clustered at the municipality level in brackets in columns 1 and 2; at the provincial level in column 3. * p<0.10; ** *p*<0.05; *** *p*<0.01.

Table 5: Effect of a political murder on first-time politicians in nearby municipalities

	(1)	*(2)*	*(3)*
After Murder Neighbour	-0.506	-0.525	-0.525
	(1.88)*	(1.92)*	(2.50)**
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R^2	0.17	0.17	0.17
N	6,200	6,168	6,168
	(1)	(2)	(3)
After Murder Neighbour	-0.493	-0.512	-0.512
	(1.84)*	(1.89)*	(2.34)**
After Murder	-1.316	-1.354	-1.354
	(2.26)**	(2.33)**	(2.72)**
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R2	0.17	0.17	0.17
N	6,333	6,301	6,301

Note: The table shows the results from a difference-in-difference regression analysis using first-time elected politicians' years of education as dependent variable. *AfterMurder* equals one in municipalities where a politician is murdered by organized crime in the period after the murder (=0 otherwise). *AfterMurde Neighbour* equals one in the period after a political murder in municipalities neighbouring of the municipality where a political murder occurs (=0 otherwise). *Controls* includes: *LogPop*, (the logarithm of the population), *Per_Degree* (the percentage of citizens with a university degree) and *Per_Unemployment* (the percentage of unemployed over the municipality population). T-statistics based on standard errors clustered at the municipality level in brackets in columns 1 and 2; at the provincial level in column 3. * p<0.10; ** *p*<0.05; *** *p*<0.01.

Table 6: Effect of a political murder on parties' vote shares

	Civic	Left	Right	Centre
After Murder	-0.083	0.070	0.032	-0.006
	(1.13)	(0.92)	(0.78)	(0.10)
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Controls	YES	YES	YES	YES
Province-Year FE	YES	YES	YES	YES
R2	0.48	0.20	0.22	0.37
N	6,863	6,863	6,863	6,863

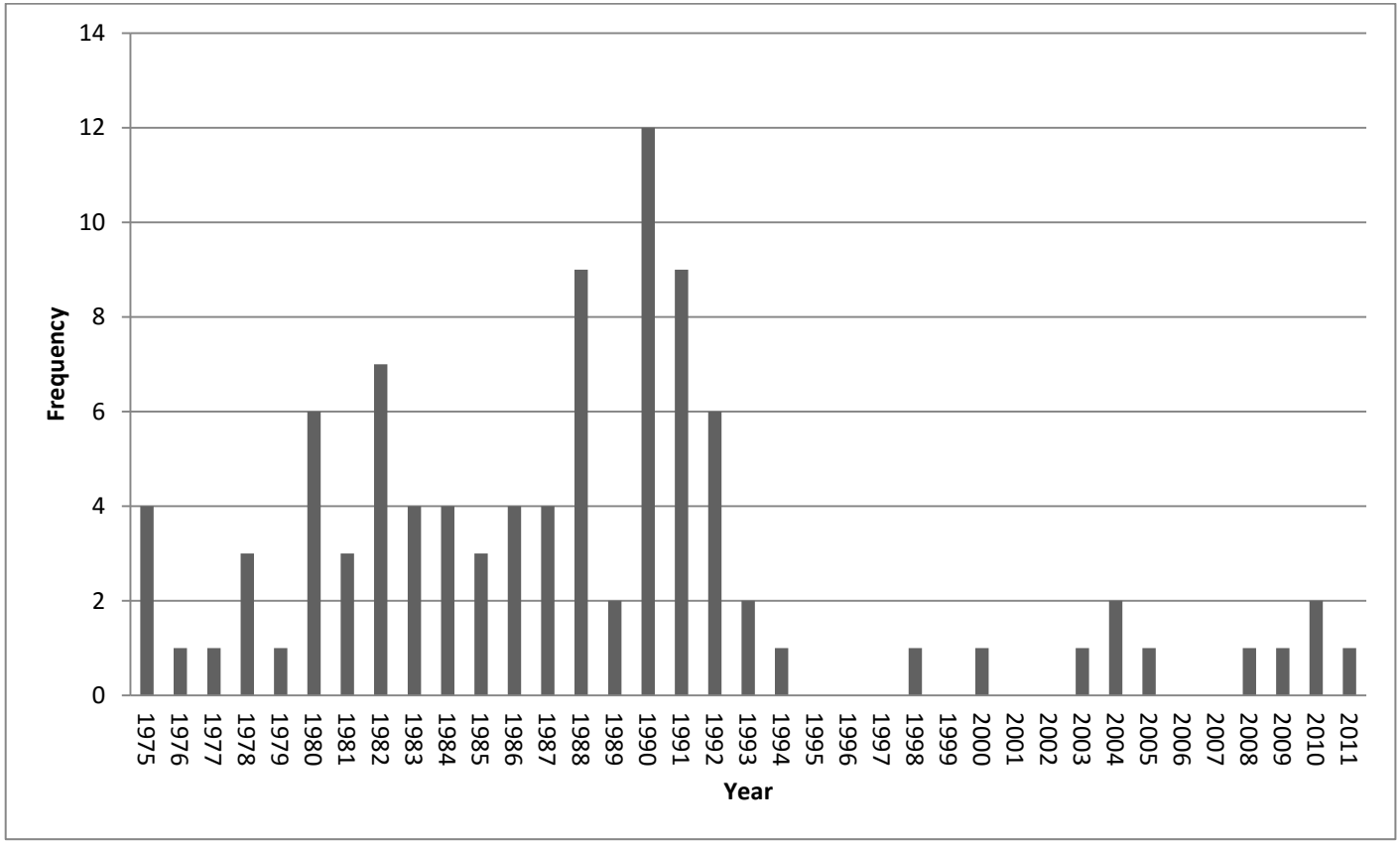
Note: The table shows the results from a difference-in-difference regression analysis using the political colour of the winning party at the municipal as dependent variable (i.e. Civic List, Left Pary, Right Party and Centre Party). *AfterMurder* equals one in municipalities where a politician is murdered by organized crime in the five years after the murder (=0 otherwise). *Controls* includes: *LogPop*, (the logarithm of the population), *Per_Degree* (the percentage of citizens with a university degree) and *Per_Unemployment* (the percentage of unemployed over the municipality population). T-statistics based on standard errors clustered at the municipality level in brackets. * p<0.10; ** *p*<0.05; *** *p*<0.01.

Table 7: Effect of a political murder on politicians' human capital: Control for winning party

	(1)	*(2)*	*(3)*
After Murder	-1.189	-1.222	-1.222
	(2.06)**	(2.12)**	(2.35)**
Civic	0.043	0.043	0.043
	(0.32)	(0.32)	(0.40)
Left	0.073	0.066	0.066
	(0.60)	(0.54)	(0.48)
Right	-0.177	-0.174	-0.174
	(1.16)	(1.14)	(1.53)
Municipality FE	YES	YES	YES
Year FE	YES	YES	YES
Controls	NO	YES	YES
Province-Year FE	YES	YES	YES
R2	0.17	0.17	0.17
N	6,288	6,256	6,256

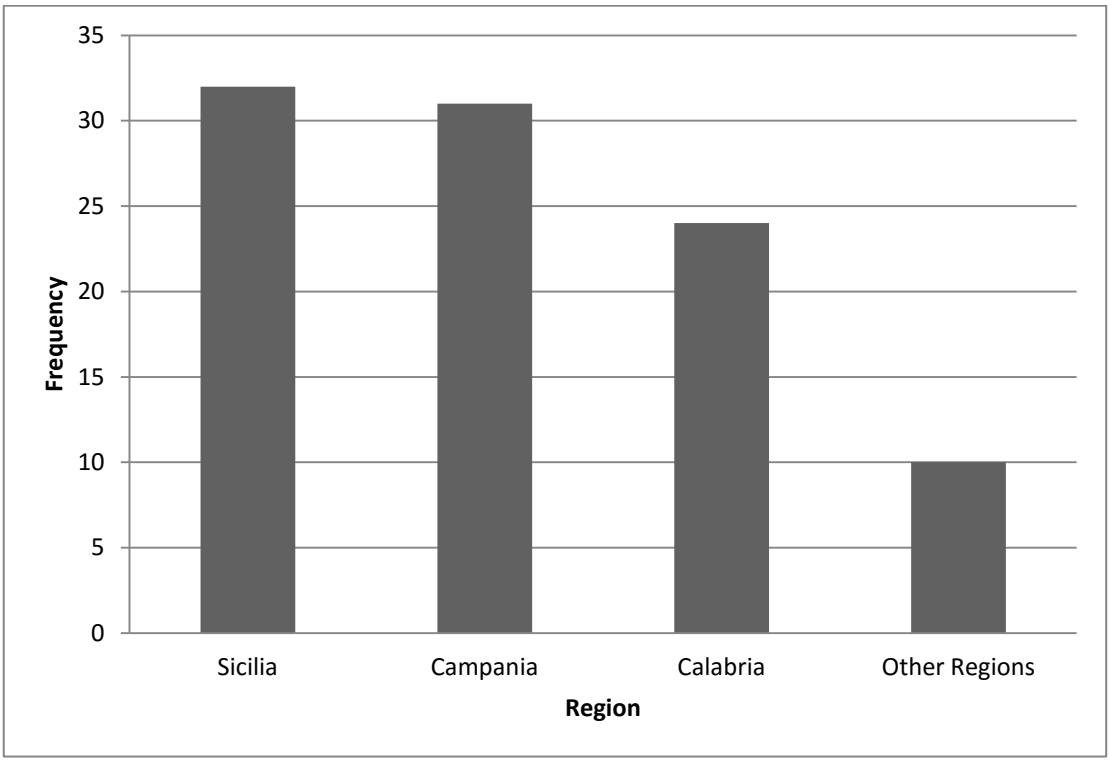
Note: The table shows the results from a difference-in-difference regression analysis using first-time elected politicians' years of education as dependent variable. *AfterMurder* equals one in municipalities where a politician is murdered by organized crime in the period after the murder (=0 otherwise). *Controls* includes: *LogPop*, (the logarithm of the population), *Per_Degree* (the percentage of citizens with a university degree) and *Per_Unemployment* (the percentage of unemployed over the municipality population). T-statistics based on standard errors clustered at the municipality level in brackets. * p<0.10; ** *p*<0.05; *** *p*<0.01.

Figure 1- Politicians killed by organized crime over time



Note: The figure presents the number of local politicians killed by criminals in the period 1975-2011 on yearly basis.

Figure 2- Politicians killed by organized crime across regions



Note: The figure presents the number of local politicians killed by criminals in the period 1975-2011 across regions.

Appendix A: Summary Statistics

Variable	*Obs.*	*Mean*	*Std. Dev.*	*Min*	*Max*
Education First-Time Elected	*6345*	*12.9486*	*2.934142*	*0*	*18*
Education All Elected	*6906*	*13.11656*	*1.73788*	*5*	*18*
After Murder	*6966*	*0.009331*	*0.0961525*	*0*	*1*
After Murder Neighbour	*6967*	*0.1197072*	*0.3246421*	*0*	*1*
Log Population	*6924*	*8.197016*	*1.10859*	*5.473111*	*14.0081*
Percent_Degree	*6924*	*3.68683*	*2.876289*	*0*	*42.37724*
Percent_Unemployment	*6924*	*5.938084*	*3.075562*	*0.0761615*	*41.7949*
Civic List	*6919*	*0.3285157*	*0.4697074*	*0*	*1*
Left Party	*6919*	*0.2548056*	*0.4357834*	*0*	*1*
Right Party	*6919*	*0.087874*	*0.283132*	*0*	*1*
Centre Party	*6919*	*0.210146*	*0.4074416*	*0*	*1*