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An Unintended Consequence of Gender Balance Laws: Mafia Fuels Political Violence

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JEL Classification: C25, D73, D78, I38, K42.

Keywords: Organized Crime, Violence, Gender balance laws.

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Several studies document that women are more honest than men, so an increase in their political representation improves political institutions. However, greater honesty among politicians is an obstacle to mafias' influence, who may respond by escalating violence. We test this unintended consequence in Italy using Law 215/2012 whereby voters can express two preferences if they are of different genders. A Difference-in-Differences analysis documents an increase in violence probability of 0.6 times its mean (0.031). An alternative Differences-in-Discontinuities design yields similar results. These findings are not driven by the regions most plagued by mafias, and are validated by several robustness checks.

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1 Introduction

Politicians' honesty can be deemed as a barrier to the political influence of pressure groups that use bribe and violence to redirect public funds to their advantage (Dal Bó et al., 2006). In this regard, women play a key role as they are recognized to be instrumental in improving the quality of political institutions thanks to their higher honesty. Indeed, experimental studies document that women are more pro-social and less motivated by material incentives than men (e.g., Barfort et al., 2019). Accordingly, a number of studies show that increasing women's political representation reduces various measures of corruption in both developed and developing countries (Bauhr and Charron, 2021, Broilo and Troiano, 2016, Dimant and Tosato, 2018, Dollar et al., 2001, Jha and Sarangi, 2018, Swamy et al., 2001). Hence, an increase in women's political representation through gender balance policies is advocated as a way to improve the quality of political institutions (e.g., Epstein et al., 2005; Baltrunaite et al., 2014).

However, more honest politicians can be an obstacle to the political influence of organized crime, as they are less prone to accept bribe offers. This, in turn, may lead local clans to use violence as a reprisal. We extend Dal Bó et al. (2006)'s model, assuming that women are more honest than men. Indeed, women are less likely to condone bribe-taking (Swamy et al., 2001) and more prone to punish corrupt behavior (Cameron et al., 2009). We demonstrate that the increase in women's political representation due to gender balance laws increases the probability of rejecting a bribe offer, leading mafias to substitute violent intimidation for bribery. Consequently, this results in an overall increase in the level of violence against politicians of both genders.

This paper investigates the effects of the introduction of an electoral law for the Italian municipality councils aimed at improving the balance between genders on attacks of organized crime against local politicians. Law 215/2012 prescribes double preference voting conditioned on gender in the election of the councils of cities with population greater than 5,000. We focus on municipalities with population in the 5,000-15,000 range because they share the same single-ballot electoral rule while municipalities above 15,000 vote under the run-off rule.

We constructed a dataset of attacks against politicians at the municipal level in Italy from 2010 to 2019. The source is *Avviso Pubblico*, a non-governmental organization founded in 1996 to contribute to the safety of public administrators. Since 2010, the organization has been collecting daily media reports of threats and violence against Italian politicians, and their yearly reports are considered reliable information on criminal activities by institutional actors. Moreover, academic scholars (e.g., Daniele and Dipoppa, 2017; Pulejo and Querubín, 2023; Baraldi et al., 2023; Daniele et al., 2023) have started to investigate the determinants of violence against politicians using data based on *Avviso Pubblico* reports.

The primary innovation of this paper is to provide sound empirical evidence that the

215 reform unintentionally leads to an escalation in violent assaults targeting politicians by organized crime. This result is derived from the application of the Difference-in-Differences methodology, both static and dynamic.

Importantly, the Italian Constitutional Law establishes that, for geographical reasons (i.e., insularity and border position) and historical reasons (i.e., protection of ethnic minorities and containment of separatist movements), the five regions of Friuli Venezia Giulia, Sardinia, Sicily, Trentino-Alto Adige/Südtirol, and Valle d’Aosta can enjoy a special statute of legislative, administrative, and financial autonomy, which differs from the ordinary statute regions whose competences are uniformly established by the Constitution. Since Law 215 does not apply to special statute regions, we consider municipalities in those regions as our control group to be compared to the treatment group of municipalities in ordinary statute regions voting under Law 215.

Municipalities in special statute regions are a legitimate counterfactual because, before the introduction of Law 215, their specific characteristics do not result in a difference in the dynamics of criminal violence against politicians compared to ordinary statute regions. This is consistent with [De Paola et al. \(2010\)](#) and [Baltrunaite et al. \(2014\)](#), providing a Difference-in-Differences analysis of the effect of a gender quota law in force in the years 1993-1995 in Italian Municipalities.

We confirm our results by employing an alternative identification strategy that relies on the specification of a threshold for the application of Law 215 and apply a difference-in-discontinuities design ([Grembi et al., 2016](#)), where the forcing variable is municipal population, and the cut-off is 5,000 residents. Treated and control municipalities in ordinary statute regions are selected around the threshold using regression discontinuity methods. The gender balance electoral reform causes an increase in attacks on politicians, even when taking into account other policies that change the rules of local government when the number of residents is greater than 5,000.

We find strong evidence that the level of violence against local politicians increases after the first election under Law 215/2012. Specifically, the average treatment effect of the reform implies an increase in the probability that at least one attack occurs by 1.77 percentage points — i.e., about 0.6 times its actual mean (0.031) — and an increase in the total number of attacks by 1.44%. A complementary event study provides evidence of an increase in violence in all the years after the enforcement of Law 215. Moreover, it offers statistical evidence of common trends in both the probability of at least one attack and the total number of attacks against local politicians between the control and treatment groups of municipalities prior to Law 215, supporting the hypothesis of no anticipation effect of Law 215 on local clans’ violent activity. We also document that the results are not biased by the heterogeneity of the treatment effects by performing a test on negative weights ([Goodman-Bacon, 2021](#)). Regression results are corroborated by additional econometric evidence and several robustness checks.

As a second contribution, we examine whether the increase in the level of attacks by organized crime against politicians is *specifically* due to the increase in the percentage of female councilors subsequent to the introduction of Law 215. Since the percentage of female councilors may be endogenous to the number of attacks, we instrument it using Law 215/2012. The electoral reform provides a valid instrumental variable because it caused exogenous variation in the gender composition of the municipal councils (Baltrunaite et al., 2019), being entirely unrelated to organized criminal violence against politicians. The regression analysis applies the instrumented difference-in-differences method (Hudson et al., 2017) to a model where the probability of at least one attack against local politicians depends on the percentage of female councilors.

The estimates provide evidence that a 100% increase in female councilors generates an increase in the probability of attacks against local politicians by 2.86 percentage points. Interestingly, the effect of the increase in women’s political representation is not gender-specific, as we estimate a significant increase in the probability of attacks against both female and male councilors. However, in relative terms, the estimated effect is stronger for female politicians than for their male colleagues.

This study contributes to a substantial body of literature on organized crime’s use of violence to influence politics. The seminal contribution of Gambetta (1996) points out that mafias use violence to control citizens’ votes for the party they back. In a similar vein, Acemoglu et al. (2013) shows that paramilitary forces control votes through violent intimidation of opposing parties in specific regions of Colombia. The theoretical models developed by Dal Bó and Di Tella (2003) and Dal Bó et al. (2006) posit that organized crime uses violence also in the post-election period. With politicians already in office, organized crime uses intimidatory attacks to manipulate their actions. Dell (2015) offers empirical support for this prediction, finding that drug-related violence against Mexican mayors increases in the period immediately after a new local government takes office. Trejo and Ley (2021) provide evidence of lethal attacks by drug cartels against public officials in Mexico right after their election. Looking at the Italian scenario, several papers show that organized crime increases the level of violence against politicians around the elections (e.g., Pinotti, 2013; Alesina et al., 2019; Daniele and Dipoppa, 2017). Moreover, Pulejo and Querubín (2023) shows that the level of violence by organized crime increases with the remuneration of the mayor.

However, the literature on political violence does not address the role of gender. The only valuable exception is the study by Daniele et al. (2023) that investigates violence against female politicians as a barrier to women’s access to political office. Using an RD design around the win margin at zero in the election of mayors, they present causal evidence that women experience higher rates of attacks than men specifically due to their gender, rather than other possible factors.

Differently from the existing literature, we offer empirical evidence on the causal effect of a policy aimed at removing the barrier to women’s access to political office on the level of vi-

olence against politicians. The evidence we provide on the unintended consequence of gender measures — otherwise inspired by democratic principles of fair representation — highlights the need for a closer assessment on the part of the central government of possible side effects to mitigate their detrimental implications for the functioning of democratic institutions.¹ Moreover, our second result shows that the increase in the percentage of female councilors due to the gender balance Law 215 has an effect on the level of violence against politicians that is not gender-specific as clans’ violence targets both female and male politicians.

The rest of the paper is organized as follows. Section 2 describes the conceptual framework and Section 3 the institutional framework. In Section 4 we describe the construction of the dataset. Section 5 illustrates the empirical strategy and Section 6 presents the evidence of the effect of gender quota on mafia violence. Section 7 provides evidence on the possible mechanism explaining our results. Section 8 concludes.

2 Conceptual framework

The key hypothesis is that an increase in the overall honesty of the political system constitutes an obstacle to the political influence of local criminal clans, which may respond by escalating violence. A possible way of modeling this intuition builds on and modifies the well-known model of Dal Bó et al. (2006). This provides us with a coherent narrative that rationalizes the results of the empirical analysis.

We adapt Dal Bó et al. (2006)’s model by assuming that there are two groups of citizens, men (m) and women (w), each consisting of identical individuals.² A number z of political seats is exogenously distributed to q_m (men) and q_w (women) with $q_m + q_w = z$. Politicians have discretionary power over public resources π , which can be redirected to criminal groups. To acquire these resources, organized crime can corrupt politicians through bribery (b) and credible threats of punishment (p) when they reject the bribe offer.³

Politicians’ income is equal to their salary ω , but if the politician takes a bribe, this is supplemented by the amount of the bribe b and reduced by the costs of corruption c . We interpret the cost of corruption c — which is the key parameter in our model — as a moral cost of involvement and assume that women are more honest, cooperative and prosocial than

¹For instance, Baraldi et al. (2023) show that city council dissolution is effective in reducing organized criminal violence by cutting off the economic sources of local criminal activities.

²In Dal Bó et al. (2006), each citizen is indexed with an ability parameter a , distributed according to a function $F(a)$. This heterogeneity was needed to model the supply of politicians. Indeed, in Dal Bó et al. (2006), citizens decide whether to apply for public office or to enter the private sector, earning a wage in the private sector equal to their ability or an income in the public sector that depends both on the wage of the public sector and the behavior of an organized criminal group. Those whose private earnings are lower than or equal to what they expect to get in public office apply. For the purposes of our analysis, we refrain from modeling the supply of politicians.

³In Dal Bó et al. (2006), organized crime decides whether or not to be active in influencing politicians on the grounds of the profitability of bribery. For the purposes of our analysis, once again we abstract from this choice problem, but as long as π is sufficiently large, the criminal group is always active.

men, i.e. $c_w > c_m$.⁴ If, instead, the politician refuses the bribe, the salary will be reduced by the cost of punishment p . Hence the politician will accept the bribe if $\omega + b - c \geq \omega - p$. Accordingly, organized crime will set the optimal bribe equal to the difference between the cost to the politician of being corrupted and the cost of punishment $b_i^* = c_i - p_i^*$, where $i = w, m$.

To choose the optimal levels of bribes and threats, criminal groups maximize the following payoff function:

$$\text{Max}_{b_i, p_i} \Pi = \gamma(\pi - \beta(E(c))(q_m \Phi(b_m) + q_w \Phi(b_w))) - (1 - \gamma)(q_m \rho \Psi(p_m) + q_w \rho \Psi(p_w)),$$

subject to the constraints $b_i^* = c_i - p_i^*$. γ is the probability that politicians are corruptible and then choose between accepting and rejecting the bribe, while $(1 - \gamma)$ is the probability that the politicians are not corruptible — say, because the committee that must take the decision to assign the resources to the criminal organization is under the scrutiny of a third party (Dal Bó et al., 2006). This happens, for example, when a municipality is under investigation for suspected collusion between local politicians and criminal clans, under Law 164/1991.

$\beta(E(c))(q_m \Phi(b_m) + q_w \Phi(b_w))$ is the total cost for a criminal organization of bribing the politicians in charge of public resources, which depends on the number of politicians of gender i and on the cost of delivering a single bribe $\beta(E(c))\Phi(b_i)$. In turn, the cost of each bribe depends on the size of the bribe itself; that is, the function $\Phi(b_i)$ is increasing in b_i .⁵ The function $\beta(E(c))$ increases with the average honesty of the politicians, $E(c) = q_m c_m + q_w c_w$, meaning that the cost of a bribe for both genders increases as politicians get more honest. This can be thought of as a sort of *contagion effect*. Indeed, as the proportion of honest politicians grows, the likelihood of being exposed and held accountable for corrupt practices increases, making it harder to engage in acts of corruption, because, for instance, many decisions regarding the allocation of public funds are made collectively. This is in line with the empirical evidence that women are less likely to condone bribe-taking (Swamy et al., 2001); a result supported also by experimental inquiries showing that women are more prone than men to punish corrupt behavior (Cameron et al., 2009).

Finally, the total cost for criminal organizations of resorting to violence ($q_i \rho \Psi(p_i)$) depends on the number of politicians of gender i ; on the size of the punishment itself, that is $\Psi(p_i)$, which is increasing in p_i ; and on a parameter ρ that captures characteristics of law enforcement such as the severity of the sanctions, the size and effectiveness of police forces, ect.⁶

Summing up, when the politicians in charge of the public resources accept the bribe, the criminal group obtains the fraction of the public resources managed by the politician

⁴For simplicity we assume the absence of within-group heterogeneity, i.e. all women are more honest than men.

⁵ $\Phi(\cdot)$ is also assumed to be twice continuously differentiable; also, $\Phi(0) = 0$, $\Phi'(0) = 0$, $\Phi' > 0$, $\Phi'' > 0$.

⁶ $\Psi(\cdot)$ is assumed to be twice continuously differentiable; also, $\Psi(0) = 0$, $\Psi'(0) = 0$, $\Psi' > 0$ and $\Psi'' > 0$.

net of the expected cost of the bribes. Otherwise, criminals bear the cost of punishing the politicians who reject the offer. Recalling that organized crime will set the optimal bribe offer equal to the difference between the cost of being corrupted for the politician and the cost of punishment $b_i^* = c_i - p_i^*$, the problem becomes

$$\text{Max}_{p_i} \Pi = \gamma(\pi - \beta(E(c))(q_m \Phi(c_m - p_m) + q_w \Phi(c_w - p_w))) - (1 - \gamma)(q_m \rho \Psi(p_m) + q_w \rho \Psi(p_w)),$$

which has the following first-order conditions for an interior solution:⁷

$$\frac{\gamma}{(1 - \gamma)} \beta(E(c)) = \frac{\rho \Psi'(p_i)}{\Phi'(c_i - p_i)}. \quad (1)$$

The first-order condition entails that by increasing the number of women in politics, the gender quota increases the average honesty and cooperativeness of the pool of elected politicians $E(c)$, thereby raising the cost of bribes $\beta(E(c))$ and increasing the value of the left-hand side of equation 1. This, in turn, entails an increase of the right-hand side through an increment in the level of punishment p_i , for both men and women, leading to our main prediction:⁸

Hypothesis 1 *The gender quota increases the amount of organized criminal violence against politicians.*

In what follows, we provide an empirical test of the hypothesis that gender quota laws increase the level of violence against politicians, specifically through an increase in the percentage of women in local governments. Moreover, by documenting an increase in violence *also* against men, we offer suggestive evidence that the increase in women's political representation entails a kind of contagion effect on their male counterparts.

3 Italian Institutional Framework

Italy has three sub-national levels of government. The highest is the 20 regions, 15 ordinary-statute (OSRs)⁹ and 5 special-statute regions (SSRs).¹⁰ The latter can enjoy legislative, administrative and financial autonomy due to historical (e.g., protection of ethnic minorities and containment of separatist movements) and geographical reasons (e.g., insularity and border position). The competences of the 15 OSRs are, instead, uniformly established by the Constitution. The intermediate level of government consists of 97 provinces, the lowest of some 7,900 municipalities.

Municipalities are headed by a mayor; the legislative body is the municipal council (Consiglio Comunale) and the executive body (Giunta Comunale) is composed of aldermen.

⁷The second-order condition for a maximum is also satisfied.

⁸The result follows immediately due to the convexity of Φ and Ψ .

⁹Abruzzo, Basilicata, Calabria, Campania, Emilia Romagna, Lazio, Liguria, Lombardy, Marche, Molise, Piedmont, Puglia, Tuscany, Umbria, and Veneto.

¹⁰Friuli-Venezia Giulia, Sicily, Sardinia, Trentino-Alto Adige, and Valle d'Aosta.

The regular term for municipal elections is every five years. Municipal governments cannot alter this schedule except under specific circumstances that may result in the unscheduled termination of the local government and early elections. Such circumstances include a permanent impediment, removal, lapse of appointment, or death that prevents the mayor or the majority of the council from performing their duties, violation of the Constitution or national law, and failure to pass the budget.

Law 215/2012 contains provisions to foster gender balance in city councils (municipal council and executive body) and regional councils. It establishes that no gender can represent more than two-thirds of the total number of candidates on party lists for municipal councils in municipalities with more than 5,000 residents. This means that political parties must reserve at least a third of the total positions for female candidates. Additionally, for these municipalities it introduces double-preference voting conditioned on gender. This allows voters to vote for a list and express one preference for a candidate of either gender or two preferences for candidates of different genders, or not to express a preference for any candidate. These provisions apply only to the election of city councilors, not the mayor and aldermen. The first election under Law 215 took place in May 2013.

Law 215/2012 does not apply to the five special-statute regions of Valle d'Aosta, Friuli-Venezia Giulia, Sardinia, Sicily and Trentino-Alto Adige.¹¹

To choose the research design for the econometric evaluation of the electoral reform, it is critical to recall a number of legislative prescriptions dealing with Italian municipalities during the period of our study. The first is that the election rules differ according to town size, with a key threshold of 15,000 inhabitants. In municipalities below this cut-off, the mayor is elected by a single-ballot system, while in larger ones there is a run-off system.

The second is that the remuneration of municipal mayor increases by almost the 29% at the 5,000 residents cutoff with respect to their colleagues governing towns just below 5,000 inhabitants.¹² This larger pay affected also the members of the municipal cabinet.¹³

The third is that, until 2013, municipalities with populations below the 5,000 cutoff were exempt from the Domestic Stability Pact (DSP), a set of constraints on spending imposed by the national government.

The fourth is that Law 148/2011 establishes that the budgets of municipalities with more than 5,000 inhabitants must be reviewed by more experienced accountants. More precisely, for municipalities with less than 5,000 inhabitants, auditors must have been certified public accountants for at least two years. For municipalities between 5,000 and 15,000 inhabitants, the minimum experience for auditors is five years, and auditors must have been previously appointed as municipal auditors at least once. In the following sections we will refer to this

¹¹Since starting from June 16 2019 Sardinia voted under double preference conditional on gender, we drop the following election from the sample, losing 22 observations.

¹²The remuneration of local politicians is regulated by Law 266/2005

¹³As shown by [Pulejo and Querubín \(2023\)](#), better paid politicians have a lower propensity to favor corruption, thereby inducing criminal pressure groups to abandon bribes in favor of violence.

legislative context to specify both a DiD design and a diff-in-disc design.

4 Data and variables

We constructed a dataset of attacks against politicians at the municipal level in Italy from 2010 to 2019. The data source is *Avviso Pubblico*, a non-governmental organization founded in 1996 to enhance the safety of public administrators. Since 2010, the organization has been collecting daily media reports of threats and violence against Italian politicians. Their annual reports are considered reliable sources of information on criminal activities by institutional actors. Moreover, academic scholars (e.g., [Daniele and Dipoppa, 2017](#); [Pulejo and Querubín, 2023](#); [Baraldi et al., 2023](#); [Daniele et al., 2023](#)) have started to investigate the determinants of violence against politicians using data based on *Avviso Pubblico* reports.

Avviso Pubblico distinguishes 20 types of attack and 11 types of politician targeted. Table [A.1](#) in Appendix shows the distribution of attacks against politicians by municipalities with population in between 5,000 and 15,000 resident inhabitants (the sample analyzed), also sorted by the gender of the politicians, from 2010 to 2019. According to *Avviso Pubblico*, such regions count 968 attacks against politicians, concentrated on male politicians.¹⁴ The regions of Apulia, Campania and Calabria count the most attacks, accounting for 48% of the total.

Figures [B.1a](#) and [B.1b](#) in Appendix show the count of each type of attack and politician, respectively (Appendix B explains how attacks and threats have been aggregated). From 2010 to 2019, the most common attacks were arson (394) and threats (339), followed by physical assaults (110).

Figure [B.1b](#) shows that the attacks are mostly against mayors (392 attacks) or other institutions or institutional entities, including police officers and municipal or other public managers (216 attacks), city councilors (123) and aldermen (96). Attacks against regional presidents and councilors are far less frequent.

Figure [B.2](#) in Appendix shows the trend in the mean number of attacks, also sorted by gender. The figure shows a downward spike in 2012. However, it is important to note that the small number of attacks in that year is deceptive. According to the National Coordinator of *Avviso Pubblico*, in reality the plunge reflects the organization’s lack of human resources that year, resulting in data collection being done ex-post through internet searches only. Therefore, the figure does not accurately reflect the actual number of incidents.

[Daniele and Dipoppa \(2017\)](#) acknowledge that the reported attacks on local politicians surveyed by *Avviso Pubblico* may include instances of violence committed by private citizens rather than organized crime. We manually identified this specific kind of attack creating the variable private citizens that encompasses all individuals identified by competent authorities

¹⁴The sum of attacks on female and male politicians is different from the total number of attacks because the attacks are also against City Hall, cars, trees, etc.

(Appendix B explains in details how the variable was constructed). In our sample, attacks against politicians perpetrated by private citizens amount to 97. To focus on organized crime violence against politicians, we drop from the sample crimes against local officeholders perpetrated by private citizens.

In order to test our empirical hypothesis 1 — the gender quota law increases the amount of organized criminal violence against politicians — we use the attacks *not* perpetrated by private citizens against *all types* of politicians in the city council.

We also collect data on the gender composition of Italian city councils provided by the Italian Ministry of the Interior. Figure B.3 in Appendix shows the evolution of the (mean) percentage of women councilors, in the Italian municipalities with a population in between 5,000 and 15,000 resident inhabitants in the 2010-2019 period. The figure clearly shows the sharp increase in the share of females in city councils starting in 2013, the first full year when Law 215/2012 was in force.

In the empirical analysis, we consider female councilors, because the double preference voting conditioned on gender prescribed by Law 215/2012 refers only to the election of councilors. As Table A.3 in the Appendix shows, on average the percentage of female councilors in the sample period is about 29.5%.¹⁵

In the empirical analysis we control for a number of variables. Firstly, we incorporate a control variable for the municipal population (denoted *Pop*) to account for the size-related effects of municipalities. This control variable helps address any potential influence of population size on the variables under examination.

We control for the average age of municipal council members (denoted *Age*) in order to take into account the personal status of politicians linked to their age. Since the education level is a proxy for quality, and highly qualified politicians are more likely to manage a greater amount of public resources that organized crime may be interested in getting part of, we control for the average level of education in the city council (hereafter *Education*).¹⁶

We also control for the percentage of politicians elected in their province of birth (a dummy taking the value of 1 for those are elected in their birth-province and 0 otherwise). This gauges how close the politician’s place of birth is to that where she/he is going to govern (hereafter *Proximity*). This variable allows us to control for politicians’ territorial rooting, which could affect local clans corrupting activity and therefore their use of violence.

Another control is the employment status of the politicians, a dummy taking the value of 1 if at least one councilor was unemployed at the time of the election (hereafter *Unemployment*).

¹⁵In a complementary analysis, we also examine the representation of female aldermen in the executive body. On average, women aldermen account for approximately 32% of the executive body’s composition.

¹⁶We translate the qualitative information on the degrees attained by all city councilors into years of education. We also use the information on previous occupation of politicians to improve the criterion for attributing years of education. Specifically, we match the qualification and the previous occupation of each politician to attribute a more appropriate number of years of education. In this way, years of education range from 0 to 23.

Since a recent literature (e.g., [Acemoglu et al., 2013](#); [De Feo and De Luca, 2017](#)) argues that when electoral competition is high, organized crime might have stronger incentives to influence the electoral outcome (possibly using violence) we also include the Herfindahl index of political party concentration within the council; this is the sum of the squares of each party’s share in the council (hereafter *Herf*). The index ranges from 0 to 1 where 1 is maximum concentration or, in our case, when all the councilors belong to the same party.

A relevant branch of the literature shows that organized crime has stronger incentives to use violence against politicians around the elections (e.g., [Acemoglu et al., 2013](#); [Alesina et al., 2019](#); [Olivieri and Sberna, 2014](#); [Pinotti, 2013](#); [Dal Bó and Di Tella, 2003](#); [Dal Bó et al., 2006](#); [Dell, 2015](#); [Daniele and Dipoppa, 2017](#)). Therefore, the use of violence may be aligned with the electoral cycle. Considering that the whole electoral cycle normally lasts five years, we include four dummy variables from the election years up to three years after for all municipalities in the sample. The four dummies are the following: *Electoral cycle_0* taking the value of 1 in election year and 0 in other years; *Electoral cycle_1* taking the value of 1 in the first year after the election year and 0 in other years; *Electoral cycle_2* taking the value of 1 in the second year after the election year and 0 in other years; *Electoral cycle_3* taking the value of 1 in the third year after the election year and 0 in other years. [Table A.3](#) in Appendix A gives the descriptive statistics.

5 Empirical strategy

The empirical analysis investigates first the effect of the gender balance policy on attacks to politicians, and then it tests whether the increase in the level of attacks by organized crime against politicians is *specifically* due to the increase in the percentage of female councilors subsequent to the introduction of Law 215.

5.1 Estimation of the effect of Law 215/2012 on attacks against politicians

5.1.1 Difference in differences

In the first step we assess whether the introduction of Law 215/2012 affects the level of violence against local politicians. We first conduct two way fixed effect (*TWFE*) estimates exploiting the staggered implementation of Law 215/2012 over time and across Italian municipalities. We identify as the treatment group the municipalities with population between 5,000 and 15,000 inhabitants in the regions with ordinary statute (voting under Law 215) and as the control the municipalities within the same range of population in the regions with special statute (not affected by Law 215). We compare, over time, the attacks against politicians in municipalities in the treatment and control group.

Municipalities in the SSRs serve as a valid counterfactual because their establishment, driven by reasons such as the protection of ethnic minorities, containment of separatist movements, and their geographical isolation and border locations, is clearly unrelated to criminal violence against politicians. Furthermore, the subsequent legislation governing local political institutions does not warrant any significant differentiation between the municipalities in the two regional groups concerning the specific issue under investigation.

In the same spirit [De Paola et al. \(2010\)](#) and [Baltrunaite et al. \(2014\)](#) study the effects of a gender quota Law —introduced in Italian municipal council elections in 1993 and abrogated in 1995 — on stereotypes against women and on the quality of elected politicians. In the definition of treated and control municipalities both papers do not distinguish those in special statute regions from the others, entailing that municipalities in SSRs are a legitimate counterfactual. In our case, since Law 215 does not apply to SSRs and none of them could choose to adopt its electoral rules, we take municipalities in those regions as a valid counterfactual. Furthermore, the following empirical analysis will show that, before the introduction of Law 215, the specific characteristics of SSRs (i.e., legislative, administrative and financial autonomy) do not entail a difference in the dynamics of criminal violence against politicians.

The equation estimating the average treatment effect (ATE) of Law 215/2015 on the attacks against local politicians is the following

$$Y_{it} = \beta_1 Law215_{it} + \alpha_i + \delta_t + X_{it} + \epsilon_{it} \quad (1)$$

where Y_{it} is the measure of attacks against politicians at year t in municipality i . As [Table A.2](#) shows, there are very few cases of more than one attack in the same year within the same city (2.86% of the total); therefore, we firstly, estimate linear probability regression models where the dependent variable $Y_{i,t}$ is a dummy taking the value of 1 if (at least) one attack takes place in municipality i in year t and 0 otherwise.

As further estimation analysis, we use the total number of attacks in municipality i in year t as outcome variable and estimate a Poisson regression model — more suitable for count data — specified as [eq. 1](#) with fixed effects and robust standard errors clustered at the municipality level.¹⁷ In this case, the coefficient has to be interpreted as an elasticity according to the following formula: $e^{coef} - 1$ ([Cameron and Trivedi, 2013](#)).

The policy variable is $Law215_{it}$, a dummy which is equal to 1 for treated municipalities in all the years from the first voting under Law 215 up to 2019, and to 0 otherwise; for control municipalities, it is equal to 0 for the entire period 2010-2019.

α_i represents the set of municipality fixed effects that control for heterogeneity in the cross-section dimension and account for unobserved time-invariant factors that could engender omitted-variable bias. δ_t are the time fixed effects controlling for unobserved year-specific

¹⁷Assuming the exogeneity of the explanatory variables, the conditional quasi-maximum likelihood estimation of Poisson models ([Wooldridge, 2010](#); [Cameron and Trivedi, 2013](#)) is consistent even when the assumption of a Poisson distribution of events is not correct (i.e. over- or under-dispersion).

events that affect all municipalities. X_{it} is the vector of control variables listed above, namely resident population, the average age of municipal council members and their average education, their proximity to the place of birth, their status of employment/unemployment and political party concentration within the council. ϵ_{it} is the idiosyncratic error term.

Furthermore, we exploit a dynamic DiD research design to compare the trajectories of both the measures of attacks against politicians for treated and untreated municipalities in each year before and after voting under law 215. That is, we estimate two event-study models, linear and Poisson, that address the effect of enforcement of Law 215 year-by-year.¹⁸ These allow assessment both of the common trend assumption and of the dynamic effect of the gender quota measure on the mafia violence. The fully-dynamic linear regression equation is:

$$Y_{it} = \sum_{t=-n}^{+n} \nu_t \cdot D_{it} + \alpha_i + \delta_t + X_{it} + \epsilon_{it} \quad (2)$$

where Y_{it} is the outcome variable in municipality i at year t . D_t is the set of event-time dummies, which take the value of 1 only for treated municipalities (in ordinary status regions) with a population in between 5,000-15,000 inhabitants if year t is k periods before/after the election under Law 215. The omitted category, D_{-1} , is the year before the first election under Law 215; the remaining ν_t coefficients measure the difference in the outcome variables in the period before and after the application of Law 215 (t_0) in the treatment group compared to the control group of municipalities. In all the estimations we control for municipality fixed effects (α_i), time fixed effects (δ_t) and apply all the controls specified above. ϵ_{it} is the idiosyncratic error term. The same model specification has been used to estimate a Poisson model of the count number of attacks.

Depending on the month of the election, the year of election may be partially treated. For example, if the council is elected in January the whole event year t_0 would be treated. Instead, if the council is elected in December the whole event year t_0 would be untreated. To account for this monthly-staggered treatment, we multiply the event dummy t_0 by the fraction of the year that is treated. Therefore, when the variable t_0 is different from zero, it equals the fraction of the year that is treated.

5.1.2 Alternative design: Difference in discontinuities

The legislation of local political institutions in Italy offers the opportunity of implementing an alternative identification strategy to assess the impact of Law 215 on mafia's attacks against politicians: the regression discontinuity design (RDD) at the threshold of 5,000 inhabitants. Indeed, in municipalities with more than 5,000 residents city council is elected under Law 215/2012 while in municipalities below 5,000 residents Law 215 does not apply

¹⁸On staggered panel Poisson DiD event studies see [Azoulay et al., 2019](#) and [Wooldridge, 2022](#).

and, in the neighborhood of that threshold, the assignment of municipalities above and below that threshold could be close to random. This would allow the estimation of the causal effect of Law 215 on attacks to politicians by organized crime.

However, as already argued in Section 3, Italian municipalities are interested by other important legislative prescriptions at the threshold of 5,000 resident population. Of utmost relevance for the aim of our study, [Pulejo and Querubín \(2023\)](#) showed that an increase in the remuneration of Italian municipal cabinets prescribed at the same cut-off of 5,000 triggers a sizable and significant increase in criminal attacks against their members. Therefore, to estimate the effect of Law 215 — controlling for such policy changes at that threshold — we apply the difference-in-discontinuities design (diff-in-disc) leveraging two discontinuities, the first when Law 215/2012 went in force and the second at the population size of 5,000 ([Grembi et al., 2016](#)): In 2012 Law 215 changes the electoral rule for municipalities above 5,000 inhabitants, while other policies, already active in 2010, determine change only at the 5,000 inhabitants threshold. This difference allows the identification of the effect of Law 215 on mafia’s attacks.

Following the specification proposed by [Grembi et al. \(2016\)](#), we estimate the following model:

$$Y_{it} = \delta_0 + \delta_1 \tilde{x}_i + \text{Treat}(\gamma_0 + \gamma_1 \tilde{x}_i) + \text{After}(\alpha_0 + \alpha_1 \tilde{x}_i + \text{Treat}(\beta_0 + \beta_1 \tilde{x}_i)) + \varepsilon_{it} \quad (3)$$

where $Y_{i,t}$ is the outcome variables, namely a dummy of one or more attacks and the total number of attacks against politicians in municipality i at time t ; \tilde{x}_i is the resident population size in municipality i , centered on the 5,000 resident threshold; *Treat* is an indicator for municipalities with more than 5,000 residents and *After* is an indicator for the post-treatment period (i.e., it is equal to 1 for the elections from 2013 onward, when Law 215 went in force) and 0 for the previous election. We further complement the regression specification with municipality and year fixed effects. $\varepsilon_{i,t}$ is the idiosyncratic error term. β_0 is the coefficient of interest, which estimates the local average treatment effect of Law 215.

5.2 The effect of women in city councils on attacks against politicians

To shed light on the mechanism behind the effect of Law 215/2012 on the violence against politicians, we analyze the impact of female politicians in Italian municipalities on attacks against local politicians.

We consider the panel structure of our dataset, which consists of yearly observations from 2010 to 2019, first applying the least squares dummy variable (LSDV) estimator to the following model where subscript i refers to municipalities and t to time:

$$Y_{it} = \beta_0 + \beta_1 W_{it} + \beta_2 X_{it} + \gamma_i + \delta_t + \varepsilon_{it} \quad (4)$$

where $Y_{i,t}$ is the outcome variables (as defined above), and $W_{i,t}$ is the percentage of female councilors in the local government i in year t . As noted above, we consider only female councilors, since double preference conditioned on gender prescribed by Law 215/2012 refers only to city councilors elections. $X_{i,t}$ is the same set of controls (listed above), γ_i forms a vector of municipal dummies, δ_t are year fixed effects; $\varepsilon_{i,t}$ is the idiosyncratic error term. β_1 in eq. 1 is the parameter of interest, which measures the impact of a variation in the percentage of female councilors on the probability/number of attacks against politicians.

The regression model in eq. 4 would not address endogeneity issues in terms of 1) reverse causality (i.e., whether more/fewer attacks may affect voters' preferences regarding candidates' gender) and 2) omitted variable bias (if some unobservable characteristics at municipal level are correlated both with the gender of the members of the council and with the occurrence of attacks against politicians).

In this regard, the gender measure Law 215/2012, as described in Section 3, creates an exogenous source of variation in the gender composition of the municipal council (between municipalities and over time) that correlates with the gender of the elected politicians (Baltrunaite et al., 2019), but should not correlate with our outcomes of interest. Hence, it can be used to build a valid and relevant instrumental variable for female councilors.

Accordingly, we address the endogeneity of the percentage of women in municipal councils applying a DDIV regression approach for panel data with a 2SLS regression with two-way fixed effects, where eq. 4 is the second stage equation, and in the first stage the potential endogenous variable is a function of all the assumed exogenous explanatory variables and the instrument, in the same spirit of Acconcia and Ronza (2023).¹⁹ The first stage equation is the following (for municipality i at time t)

$$W_{it} = \alpha_0 + \alpha_1 Law\ 215_{it} + \alpha_2 X_{it} + \gamma_i + \delta_t + u_{it} \quad (5)$$

where $Law215_{it}$ is, as before, a dummy taking the value of 1 for treated municipalities in all the years from the first voting under Law 215 up to 2019, and to 0 otherwise; for control municipalities, it is equal to 0 for the entire period 2010-2019.

The efficacy of Law 215/2012 has been thoroughly documented in Baltrunaite et al. (2019). We have at least two reasons to uphold the instrument's validity. Firstly, the introduction of gender quotas was not considered in the text of the law or during parliamentary discussions as a means to address organized criminal violence against politicians. Secondly, local elections occur every 5 years, and municipalities cannot alter their scheduled timing. While exceptional circumstances may lead to the legislature concluding before the natural

¹⁹Acconcia and Ronza (2023) estimate the same first stage equation to evaluate the impact of females in Italian city council on the government early termination.

term, prompting early elections, the subsequent elections (still occurring every 5 years) will deviate from the regular election year in other municipalities. Consequently, it is practically implausible for a municipality to have manipulated the election schedule to vote either under or without the influence of the gender quota law. Thus, we posit that the substantial increase in female councilors post the enactment of Law 215/2012 can be regarded as a quasi-experimental setting.

Figure B.4 shows the mean (over years) of the percentage of female councilors in Italian municipalities in the treatment and the control group. It reveals several important features. First, prior to 2013 the figure displays a common trend between treatment and control groups. Second, after the introduction of Law 215 in year 2012, there is a sharper change in the trend in the percentage of female councilors in the treatment group compared to the control, documenting, once again, the effectiveness of this gender balance Law 215 in enhancing female political participation as in [Baltrunaite et al. \(2019\)](#).

6 Results

6.1 Average Treatment Effect of Law 215/2012 on attacks

First let us examine the average impact of Law 215 on the attacks against local politicians perpetrated by organized crime. We adopt two dependent variables: 1) a dummy taking the value of 1 if at least one attack occurs in municipality i at time t and 0 otherwise; it accounts for the probability of attacks (hereafter *Prob. Attacks*); 2) the total number of attacks in municipality i at time t (hereafter *No. Attacks*). Accordingly, we estimate a linear probability model and a Poisson model, respectively. The results of the estimations of eq. 1 are displayed in Table 1. Columns 1 – 3 show estimation results of the linear probability model while Columns 4 – 6 of the Poisson model. The coefficient of the treatment dummy Law 215 shows the ATE. In all the specifications in Table 1 we control for municipality and year FE; standard errors are clustered at municipal level.

At first glance the coefficient of Law 215 is positive and highly significant everywhere meaning that Law 215/2012 increases the level of organized crime violence against politicians. In terms of the magnitude of the effect, Column 1 suggests that the probability that at least one attack occurs averages just 1.77 percentage points (p.p.) higher in the years after the elections under Law 215, *ceteris paribus*, than it would have been in the absence of the treatment. The analysis shows that voting under Law 215 increases the probability of attacks by about 0.6 times of its actual mean (0.031).

The improvement of the specification through the inclusion of year FE increases its magnitude to almost 2 p.p. (Column 2). The same increase in violence as in Column 1 is confirmed including the control variables, as in Column 3.

Table 1: Average Treatment Effect

Dep. Var.:	Linear estimation			Poisson FE estimation			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>Prob. Attaks</i>	<i>Prob. Attaks</i>	<i>Prob. Attaks</i>	<i>No. Attacks</i>	<i>No. Attacks</i>	<i>No. Attacks</i>	<i>Prob. Attaks</i>
Law 215	0.0177*** (0.00270)	0.0193*** (0.00402)	0.0177*** (0.00494)	0.900*** (0.137)	1.037*** (0.186)	0.893*** (0.199)	0.0722*** (0.0209)
Pop			1.05e-05 (8.72e-06)			0.000556 (0.000363)	5.37e-05 (3.36e-05)
Age			-0.000312 (0.000620)			-0.0126 (0.0231)	-0.000293 (0.00303)
Education			-0.000964 (0.00229)			0.0737 (0.108)	-0.000402 (0.0115)
Proximity			-0.00511 (0.0285)			-0.823 (1.132)	-0.0749 (0.135)
Unemployment			0.0959 (0.0902)			0.819 (1.110)	0.217 (0.186)
Herf			0.0147 (0.0118)			0.0831 (0.446)	0.0199 (0.0495)
Electoral cycle_0			0.00591 (0.00477)			0.234 (0.184)	0.0317 (0.0211)
Electoral cycle_1			0.000392 (0.00421)			0.0412 (0.180)	0.0179 (0.0193)
Electoral cycle_2			0.000566 (0.00398)			0.0517 (0.176)	0.0158 (0.0181)
Electoral cycle_3			-0.000208 (0.00428)			-0.00276 (0.180)	0.00261 (0.0188)
	(0.00121)	(0.00272)	(0.0837)				(0.376)
Observations	16,738	16,738	16,738	3,174	3,174	3,174	3,174
No. Municipalities	1,726	1,726	1,726	323	323	323	323
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes	Yes

Note. The dependent variable is the *Prob. Attaks* in Columns 1 – 3 and *No. Attacks* in Columns 4 – 6. In Column 7 we estimate a linear probability model over the sample of Poisson estimates. Law 215 is a dummy taking the value of 1 for treated municipalities in all the years from the first voting under Law 215 and 2019, and to 0 otherwise; for control municipalities, it is equal to 0 for the entire period 2010-2019. Coefficients of municipality FE and year FE are not reported. Standard errors adjusted for clustering at the municipal level are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

Looking at the Poisson estimates, the coefficient of Law 215 in Column 4 estimates a 1.46% ($e^{0.900} - 1$) increases in the number of attacks (0.4 times the mean of the number of attacks). Improving the specification as in Column 6 the increase in the total number of attacks raises to 1.44%.

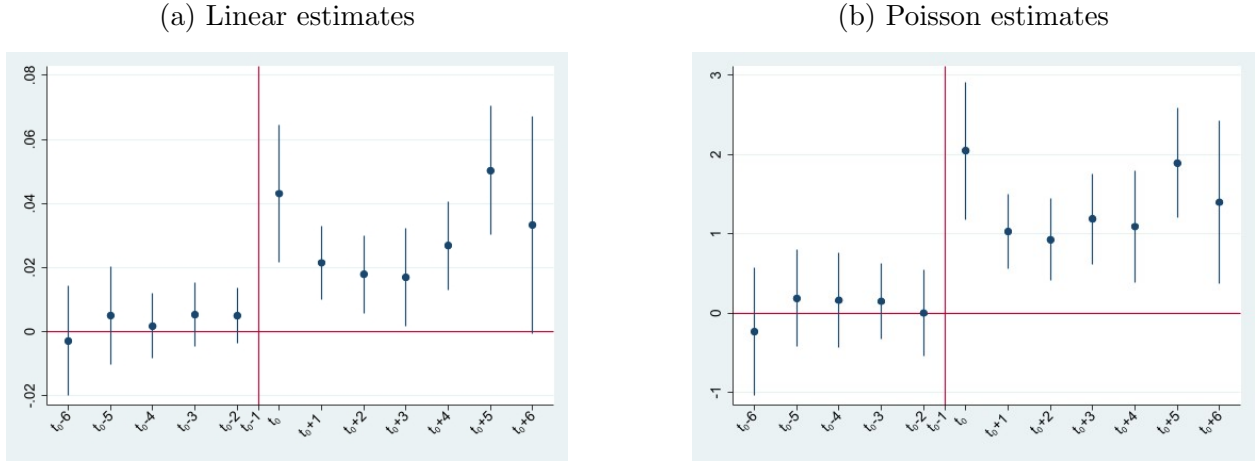
Finally, Column 7 shows estimation results of the linear FE model. The original sample should be of more than 16,000 observations. However, for the sake of comparability between the two estimation models, we run linear estimation over the same sample of Poisson estimation in Column 6 of more than 3,000 observations (Cameron and Trivedi, 2013).²⁰ The linear model shows increases of 7.2 p.p. in the treated relative to the control municipalities.

6.2 Dynamic specification

In this subsection we look at the causal effect of Law 215/2012 on attacks against local politicians in an event-study framework.

²⁰The substantial reduction in the number of observations is due to Poisson log-likelihood maximization, which in a model with fixed effects excludes the units that always have zero values of the dependent variable for the entire period.

Figure 1: Event-study model



Note. The graph reports coefficients and confidence intervals estimated according to eq. 2. The dependent variable is the dummy of the probability of attacks against local politicians in Graph 1a and the total number of attacks in Graph 1b. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE, year FE and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf*. Period: 2010-2019.

Figure 1 depicts the estimation results of eq. 2 according to the linear probability model (Graph 1a) and to the Poisson model (Graph 1b) respectively. The coefficients for the pre-treatment period are not significantly different from zero, suggesting the absence of any anticipation effect and of divergent patterns between the two groups of municipalities before the treatment (the enforcement of Law 215). Therefore, empirical evidence supports the assumptions of a common trend and the exogeneity of the electoral reform.

An examination of Figure 1 shows an interesting path after the first election under Law 215. In detail, at t_0 , there is a sharp increase in the probability of attacks as well as in the total number of attacks that remain significantly different from zero (at conventional levels) until $t_0 + 6$ (the last lead we are able to estimate). The effect of voting under Law 215 is lower between $t_0 + 2$ and $t_0 + 4$, and it raises again at $t_0 + 5$, when, presumably, new elections are held.

6.3 Negative weights

A recent econometric literature has shown that in a staggered DiD design with dynamic effects (as in our setting), the coefficient of the ATE (Law 215 in Table 1) is a weighted average of these dynamic effects with some weights that can be negative. Because of that, the estimates of the ATE can be biased (Goodman-Bacon, 2021).

When there is a temporal variation in the treatment effect, negative weights arise because the already-treated units are included into the control group, so that changes in their treatment effects over time are no longer factored into the DiD estimate. To address this issue, we employ the test by De Chaisemartin and d’Haultfoeuille (2020) that computes the

number of negative weights.²¹ The result of the test is reassuring as it documents that the number of negatively-weighted Average Treatment Effects on the Treated (ATTs) is quite small (i.e., 0.0024), suggesting that the heterogeneity is chiefly due to the difference between treated and never-treated municipalities, rather than to the temporal variation of the treatment effect.

Moreover, we show the diagnostic test σ_{fe} , which is equal to the ratio between the β_1 estimated with the TWFE procedure (as in eq. 1) and the standard deviation of the weights. Thus, σ_{fe} can be deemed as a proxy of the (unobserved) degree of heterogeneity in the ATE. De Chaisemartin and d’Haultfoeuille (2020) provides the “rule of thumb” to assess the goodness of the test results: i.e., if σ_{fe} is greater or equal to β_1 , then the ATTs and β_1 might be of the opposite sign only for an *implausible* amount of unobserved heterogeneity in the treatment effect. In our case, σ_{fe} is equal to 2.93, substantially greater than β_1 approximately equal to 0.018. This supports the validity of our empirical design and that the relative estimations are not biased by negative weights.

6.4 Difference-in-discontinuities

In this subsection we present the results of the estimates of the diff-in-disc regression model. The validity of the parallel trend assumption at the basis of the diff-in-disc analysis is supported by Figure B.5 in Appendix. Estimation results are displayed in Tables 2 and 3 for the probability that at least an attack occurs and the total number of attacks, respectively (we show only the coefficient of *After*Treat*).

Table 2: Difference-in-discontinuities — Linear

Dep. Var.: <i>Prob. Attaks</i>	(1)	(2)	(3)	(4)	(5)	(6)
<i>After*Treat</i>	0.00890** (0.00412)	0.0109*** (0.00416)	0.0134* (0.00721)	0.0172** (0.00754)	0.0153** (0.00741)	0.0189** (0.00778)
Observations	59,672	59,672	15,845	15,845	13,119	13,119
No. Municipalities	6,108	6,108	1,685	1,685	1,412	1,412
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes	No	Yes

Note. The table shows the results of diff-in-disc estimation. The dependent variable is the *Prob. Attaks*. *Treat* is an indicator variable for municipalities with more than 5,000 residents. *After* is an indicator variable for elections under Law 215. Only the coefficient of interest *Treat*After* is reported. The sample includes municipalities with less than 15,000 residents. In Columns 1 and 2 the sample includes all municipalities; in columns 3-6 the sample includes municipalities within the optimal bandwidth selected by two common MSE-optimal bandwidth selector (Calónico et al., 2017) around the cut-off of 5,000 residents. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

The coefficient of interest is positive and statistically significant, confirming the statistically significant effect of Law 215 even when controlling for the discontinuity in the mayor’s salary. Specifically, we present estimations over the total sample of municipalities (in Columns 1

²¹We use the *twowayfweights* Stata command, developed by De Chaisemartin and d’Haultfoeuille (2020), for linear DiD. We estimate a linear probability model where the dependent variable is a dummy taking the value of 1 if at least one attack against politicians occurs, and Law 215 is the main explanatory variable.

and 2) and restricting the sample to municipalities within the optimal bandwidth selected by two common MSE-optimal bandwidth selectors (Calonico et al., 2017) around the cut-off of 5,000 residents (Columns 3-6).²²

Examining Table 2, upon narrowing down the municipality sample to the optimal bandwidths, the impact of Law 215 surpasses more than half of the mean probability of at least one attack occurring.

Table 3: Difference-in-discontinuities — Poisson

Dep. Var.: <i>No. Attacks</i>	(1)	(2)	(3)	(4)	(5)	(6)
After*Treat	0.623*** (0.238)	0.862*** (0.253)	1.067** (0.486)	1.134** (0.510)	1.187** (0.499)	1.199** (0.523)
Observations	5,103	5,103	1,807	1,807	1,596	1,596
No. Municipalities	516	516	186	186	165	165
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes	No	Yes

Note. The table shows the results of diff-in-disc estimation. The dependent variable is the *No. Attacks*. *Treat* is an indicator variable for municipalities with more than 5,000 residents. *After* is an indicator variable for elections under Law 215. Only the coefficient of interest *Treat*After* is reported. The sample includes municipalities with less than 15,000 residents. In columns 1 and 2 the sample includes all municipalities; in columns 3-6 the sample includes municipalities within the optimal bandwidth selected by two common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 5,000 residents. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

Looking, instead, at Table 3 the coefficient in Column 6 shows that the effect of Law 215 amounts to 0.63 times the mean of the total number of attacks against politicians.

6.5 Further evidences and robustness

In this section we investigate whether the increase in the violence level due to the introduction of Law 215 differs across Italian macro-areas (i.e., Center-North and South) and in region most plagued by organized crime activities. Furthermore, we distinguish by type of attacks (i.e., threats and physical violence). While in Appendix C, we provide further evidence by controlling for the government repressive action, political parties and governments led by new politicians.

6.5.1 Regional differences

The socio-cultural-economic divide between the Center-North and the South of Italy is a well known feature of Italian society and history. The so-called “Mezzogiorno” (i.e., Abruzzo, Basilicata, Calabria, Campania, Molise, Puglia, Sardinia and Sicily) has been historically

²²Using diff-in-disc design, although it has the advantage of considering only municipalities within ordinary statute regions, has a cost in terms number of attacks. Indeed, by restricting the sample to municipalities around the optimal bandwidths, the mean of the percentage of attacks greater or equal than 1 is 1.48% and 1.71%, respectively.

characterized by a lower level of economic development than the rest of the country, because of low human capital, insufficient infrastructures and a backward industrial sector, but also the stronger presence of criminal organizations. In this respect, one might think that the results of our analysis apply only to Southern regions.

We, then, estimate both the ATE and the dynamic specification as in eq. 1 and 2, respectively, in the sub-samples of municipalities within the regions of the “Mezzogiorno” and the Center-North of Italy. Results of the ATE estimates are in Table A.5. The effect of the gender quota measure increases the probability of at least a mafia attack against politicians by 4.7 p.p. (Column 1) and the total number of attacks by 1.5% (Column 2) in the “Mezzogiorno”, while it increases the same measures of attacks in the Center-North by 0.7 p.p. and 1.27%, respectively.

The dynamic specification in Figures B.8 and B.9 shows that the common trend assumption continues to hold and provides evidence of a significant dynamic effect of Law 215 in both the “Mezzogiorno” and the Center-North of Italy. Therefore, our analysis shows that the increase in violence against local politicians due to the introduction of Law 215/2012 is not specific to the Southern regions.

6.5.2 Regions with similar presence of organized crime

Here, we focus our analysis on the four regions where organized crime originated: Campania, Calabria, Puglia and Sicily.²³ Since Sicily is a special-statute region that does not vote under Law 215/2012, we use it as the control group. This allows us to compare municipalities in control and treatment groups that differ in the application of Law 215/2012 but not in the presence of organized crime as well as in other (unobservable) characteristics shared with the other regions in the “Mezzogiorno”.

First of all, in Figure B.10 we perform an event study, whose results support the common trend requirement. Moreover, since the first election under Law 215, we document an increase in the probability of attacks in the three regions with respect to Sicily. Table A.6 shows the results of ATE of eq. 1 showing an increase in the probability of at least an attack due to the enforcement of Law 215 by 5 p.p. and an increase in the total number of attacks by 1.62% in the treatment group than in the control group.

6.5.3 Types of attacks

A possible concern is that the coefficients in Table 1 and in Figure 1 reflect differential reporting rather than an actual increase in attacks after 2013. To address this issues, we code the attacks against politicians into two macro categories, namely *Threats* and *Violence*

²³The criminal organization originating in Calabria is called *'Ndrangheta*, in Campania *Camorra*, in Puglia *Sacra Corona Unita* and in Sicily *Mafia*.

(see Figure B.1a).²⁴ As Daniele and Dipoppa (2017) rightly point out, the episodes of violence are more likely to be unaffected by under-reporting than threats.

Table A.4 shows the ATE estimates. As for threats, columns 1 and 2 show an increase in probability of 0.7 p.p. after voting under Law 215, while their number increases by 1.22%. Columns 3 and 4, instead, document that the probability and the number of violent attacks increase by 0.7 and 1.22%, respectively.

Figures B.6 and B.7 report the dynamic estimates as in eq. 2 of the effect of Law 215 on the probability and the number of threats and violent attacks. While the common trend assumption on the basis of our empirical design remains valid, we observe an increase in threats and violent attacks in the post treatment period in treatment group compared to the control group of municipalities.

7 The mechanism

In this section, we show that our results can be reasonably ascribed to a variation in the percentage of women in local political bodies due to gender balance measures.

7.1 Linear probability model estimates

Firstly, as explained in Section 5.2, we estimate a linear model of the probability that at least one attack occurs where the regressor of interest is the percentage of female councilors (for easier interpretation, we express the percentage of female councilors in natural log. This allows us to treat the coefficients as a semi-elasticity — hereafter *Female councilors*).²⁵ In all regressions, standard errors are clustered at the municipal level and robust to heteroscedasticity.

Table 4 reports the results of panel fixed-effect 2SLS with the first stage eq. 5 followed by the second stage eq. 4 where we use as instrumental variable for the percentage of female councilors the gender measure Law 215/2012. In line with the work of Baltrunaite et al. (2019),²⁶ in the first stage the coefficient of Law 215 along all the estimates is positive and highly significant, meaning that Law 215 is effective in increasing the percentage of female city councilors.

The upper part of Table 4 display a set of tests for the validity of the instrument for all the specifications. The F-test of weak identification assures that the instrument is very powerful indeed. The Kleibergen–Paap test rejects the null hypothesis of under-identification.

²⁴The category *Violence* comprises: setting cars on fire, setting City Hall on fire, setting houses on fire, physical assault, homicide and physical assault in public places. The category *Threats* groups all the remaining types of attack specified earlier.

²⁵Given a number of cases where the percentage of women councilors is zero, we calculate the natural log of the female percentage + 1.

²⁶Baltrunaite et al. (2019), using a RRD already showed a causal increase of female in city council due to the introduction of the gender quota measure Law 212/2012.

Therefore, the tests show no sign of a weak instrument problem. Finally, the endogeneity test rejects the null hypothesis that the endogenous regressor specified, *Female councilors*, can actually be treated as exogenous, meaning that 2SLS corrects the estimates for probable endogeneity bias.

The second stage estimates are reported in the lower part of Table 4. There is strong evidence that the level of violence increases with the percentage of women in local political bodies. Indeed, a 100% increase in the percentage of female councilors increases the probability of attacks by 1.95 p.p. (Column 1a); and considering increasingly complete models, as in Column 2a and 3a, the increase in the probability of attacks amounts to 2.63 and then to 2.86 p.p. In terms of the mean of the probability of attacks, a 100% increase in the percentage of female councilors increases the probability of attacks by almost its overall mean (0.031).

Table A.7 in Appendix A contains the second stage estimates where standard errors are clustered at province level.

Table 4: Panel fixed effect 2SLS estimates

Dep. Var.: Female councilors	First stage		
	(1)	(2)	(3)
Law 215	0.899*** (0.022)	0.734*** (0.028)	0.617*** (0.034)
No.Observations	16,727	16,727	16,727
No. Municipalities	1,715	1,715	1,715
Municipality FE	Yes	Yes	Yes
Year FE	No	Yes	Yes
Controls	No	No	Yes
F-test	1642.37	688.63	331.05
Chi ² Kleibergen-Paap test	753.02	464.43	265.47
Endogeneity test (p-value)	0.00	0.00	0.00
Dep. Var.: Attacks	Second stage		
	(1a)	(2a)	(3a)
Female councilors	0.0195*** (0.00297)	0.0263*** (0.00550)	0.0286*** (0.00806)
Observations	16,727	16,727	16,727
No. Municipalities	1,715	1,715	1,715
Municipality FE	Yes	Yes	Yes
Year FE	No	Yes	Yes
Controls	No	No	Yes

Note. Panel fixed effect 2SLS estimates. All regressions include municipality FE; coefficients are not reported. Column 2 includes year FE and Column 3 adds control variables as *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf* and dummies for electoral cycle; coefficients are not reported. Robust standard errors, clustered at municipal level, are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

7.2 Poisson model estimates

The foregoing econometric analysis relies on the dummy variable *Attacks* but we can also use the count of attacks on politicians to get a more precise measure. In this case, a more suitable approach for simple counts is a Poisson model with fixed effects and standard errors clustered at the municipality level.

We deal with the endogeneity issue in the context of the Poisson model by exploiting a control function approach (Blundell and Powell, 2003), which is common in the case of nonlinear models (Wooldridge, 2010). Accordingly, in a first stage we regress the potential endogenous variable (i.e., the percentage of female councilors) on all the exogenous explanatory variables and the instrument (Law 215). In the second stage, we estimate a Poisson fixed-effect model of the number of attacks and we add the predicted residuals of the first stage to the set of regressors including *Female councilors* and control variables (Lin and Wooldridge, 2019). The statistical significance of the coefficient of the predicted residual can be used to test the null hypothesis that the variable *Female councilors* is exogenous.

Table A.8 presents the results of Poisson maximum likelihood estimates under three different specifications assuming the endogeneity of *Female councilors*. First- and second-stage robust standard errors, clustered at the municipal level, were jointly calculated with bootstrap. The null hypothesis of a zero coefficient for first-stage residuals is rejected (see the coefficient of *Residuals* in Table A.8), providing further evidence of the endogeneity of the percentage of female councilors. The coefficients of *Female councilors* in Table A.8 are positive and highly significant. In Column 3 the increase in the rate of attacks associated with a 100% increase in the percentage of females in city councils amounts to about 1.04%.

7.3 Gender differences

In this section we show that increasing the number of women in local city councils, generates an increase in the level of organized criminal violence both against male and female politicians. We check this by estimating the linear probability model over two sub-groups: females and males politicians.

The results of the 2SLS estimates in Table A.9 show that an increase in the female presence within the city council increases the violence against *both* female and male politicians. This evidence is consistent with the narrative of our conceptual framework, according to which attacks on politicians of both sexes increase with the percentage of women because the cost of corruption depends on the honesty of the municipal council as a whole. More women in the council also implies fewer opportunities to bribe male councilors, hence a greater need for threats to councilors of both genders.

We show that a 100% increase in the percentage of female councilors is associated with an increase of 0.24 p.p. in the probability of attacks against female and an increase of 2.6 p.p. against male politicians. Since the average of the attacks against women is of 0.0021 while

against men is of 0.026, a 100% increase in the percentage of female officeholders generates an increase in violence against women which is 1.14 times the average (0.24/0.21) and an increase in violence against men equal to the average (2.6/2.6).

7.4 Councils with no female councilors

So far we have conjectured that an increase in the share of women has the unintended consequence of a higher level of violence against politicians. If this conjecture does not hold, we should still observe an increase in violence in the treatment group compared to the control group in those municipalities where the share of women is zero before and after 2013. Therefore, we run a test on the sub-sample of municipalities with 0 female politicians in city councils. The event-study analysis, comparing the dynamics of attacks against local politicians between treated and untreated municipalities before and after 2013 (Figure B.11) shows that there is no significant difference between the two groups of municipalities in the probability of attacks.

7.5 Behind the mechanism

Consistently with a relevant branch of the literature, we conjecture that the relationship between the increase in the number of women in local governments (due to Law 215) and the increase in the probability/number of attacks against politicians might be explained by the higher honesty of female politicians compared to male ones.

Swamy et al. (2001) and Dollar et al. (2001) show that female politicians are less inclined to take bribes and more likely to punish those who do; therefore, when women hold a larger share of parliamentary seats corruption is less severe. Moreover, Brollo and Troiano (2016) show that female mayors reduce an objective measure of corruption based on random government audits in Brazilian municipalities. And Jha and Sarangi (2018) document that the presence of female politicians is more effective in reducing political corruption when women hold positions of power. In the same spirit, Bauhr and Charron (2021) show that the election of female mayors in French municipalities reduces the risk of corruption. Beyond the political domain, the recent study by Decarolis et al. (2023) provides evidence that in Italy and China women bureaucrats are less likely to be investigated for corruption than their male counterpart.

These results have been confirmed by experimental analyses. In detail, Cameron et al. (2009), running an experiment in Australia (Melbourne), India (Delhi), Indonesia (Jakarta) and Singapore, show that women are less likely than men to be corrupted and are more willing than the male counterpart to lower their own payoffs in order to punish corrupt behavior. Moreover, Barfort et al. (2019) show experimentally that women are more honest than men and that they self-select into public service, providing a possible channel explaining the link between the presence of women and low levels of corruption in public services.

Moreover, political leaders perceive women as reducing corruption and place them strategically in government positions to enhance trust and support for the political system (Alvarez et al., 2008). In developing countries such as Peru, Uganda, and Mexico, this approach is recognized in the increasing presence of women as police officers and treasurers to combat corruption and promote responsible governance (Goetz, 2007, Tripp, 2001).²⁷

8 Conclusions

In this paper we showed an intriguing and unexpected pattern emerging with the implementation of gender balance Law 215. This law, designed to promote gender equality in political institutions, has inadvertently triggered a shift in the tactics of mafias, leading to an increase in violence against politicians. As the presence of women in political roles strengthens the integrity of political institutions, mafias adapt by substituting violence for traditional corrupt practices. Indeed, a cleaner political environment is less susceptible to corruption, inducing mafias to resort to more overt and forceful methods against both female and male local politicians.

The unforeseen consequences of gender balance laws on political violence present a pressing concern. This study underscores the imperative for the central government to be more vigilant in weakening the economic power of mafias and curbing their influence on local politics. The unintended consequences of such policies demand a nuanced response, one that safeguards gender equality in politics while simultaneously addressing political violence.

Certainly, further research is warranted to delve deeper into how the distinct characteristics of female politicians might impact the dynamics of collegial institutions like city councils. This exploration is essential to elucidate, at a more fundamental level, the reasons behind the escalation of organized crime violence against politicians with an increase in women's political representation.

²⁷The politicians' expectation about the honesty of women is supported also by voters' perceptions. Observational studies and surveys suggest that the presence of female politicians is associated with less popular suspicion of corruption and greater trust in government (Barnes and Beaulieu, 2014, Barnes and Jones, 2018, Tripp, 2001, Ulbig, 2007, Watson and Moreland, 2014). This is particularly evident in Latin America, where gender quota laws have increased women's representation and diminished popular perceptions of corruption (Schwindt-Bayer et al., 2010). Similar findings have been observed in sub-national data from Argentina (Barnes and Jones, 2018) and cross-country studies (Watson and Moreland, 2014). In Appendix C, we provide further evidence of a lower propensity to corruption of Italian female parliamentarians.

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Appendix

A *Tables*

Table A.1: Number of attacks by regions

Region	Number of attacks	Number of attacks against female	Number of attacks against male
Abruzzo	12	1	8
Basilicata	23	0	9
Calabria	188	7	115
Campania	107	6	75
Emilia Romagna	28	3	14
Friuli Venezia Giulia	1	0	1
Lazio	24	1	15
Liguria	16	1	13
Lombardy	58	4	43
Marche	7	1	5
Molise	4	1	2
Piedmont	9	0	5
Apulia	169	5	103
Sardinia	95	7	51
Sicily	191	8	115
Tuscany	12	0	16
Trentino Alto Adige	1	1	1
Umbria	1	1	1
Veneto	22	2	17
Total	968	49	609

Note. The table displays the number of attacks against local politicians, also by gender, in the period 2010-2019 in municipalities with population between 5,000 and 15,000 inhabitants. In Valle d'Aosta there are not municipalities with population between 5,000 and 15,000.

Table A.2: Distribution of attacks

No. Attacks (All)	Frequency	Percentage	No. Attacks (Perpetrators)	Frequency	Percentage
0	16,265	97.14	0	16,220	96.87
1	223	1.33	1	450	2.69
2	144	0.86	2	58	0.35
3	58	0.35	3	11	0.07
4	25	0.15	4	3	0.02
5	15	0.09	5	2	0.01
6	3	0.02			
7	2	0.01			
8	6	0.04			
9	2	0.01			
10	1	0.01			
Total	16,744	100	Total	16,744	100

Notes. Distribution of number of attacks against politicians in each municipality. *All* refers to attacks perpetrated by all; *Perpetrators* refers to attacks perpetrated by all less than private citizens. Period: 2010-2019.

Table A.3: Descriptive statistics

	Obs	Mean	Std.Dev.	Min	Max
Prob of attacks	16744	0.031	0.174	0	1
No. Attacks	16744	0.037	0.226	0	5
Female councilors	16744	29.528	14.804	0	80
Female aldermen	16744	32.809	20.028	0	100
Pop	16744	8531.892	2714.239	5001	14993
Age	16744	44.77	3.738	21.91	76.447
Education	16744	14.376	1.273	8	18
Proximity	16744	0.79	0.257	0	1
Unemployment	16744	0.011	0.038	0	1
Herf	16744	0.558	0.186	0.109	1

Notes. Descriptive statistics of variables. Period: 2010-2019. Ordinary-statute regions.

Table A.4: ATE — Threats and Violence

Dep. Var.:	Threats		Violence	
	(1) <i>Prob. Attaks</i>	(2) <i>No. Attaks</i>	(3) <i>Prob. Attaks</i>	(4) <i>No. Attaks</i>
Law 215	0.00725** (0.00357)	0.800*** (0.248)	0.0133*** (0.00371)	0.967*** (0.248)
Observations	16,738	2,065	16,738	2,175
No. Municipalities	1,726	210	1,726	222
Municipality FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

Note. The dependent variable is the *Prob. Attaks* in Columns 1 and 3 and *No. Attaks* in Columns 2 and 4. Columns 1 and 2 refer to the sub-sample of the *Threats*; Columns 2 and 4 refer to the sub-sample of the *Violence*. Law 215 is a dummy taking the value of 1 for treated municipalities in all the years from the first voting under Law 215 and 2019, and to 0 otherwise; for control municipalities, it is equal to 0 for the entire period 2010-2019. Estimations includes municipality FE, year FE and control variables; coefficients are not reported. Standard errors adjusted for clustering at the municipal level are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

Table A.5: ATE — “Mezzogiorno” vs Center-North

Dep. Var.:	“Mezzogiorno”		Center-North	
	(1) <i>Prob. Attaks</i>	(2) <i>No. Attaks</i>	(3) <i>Prob. Attaks</i>	(4) <i>No. Attaks</i>
Law 215	0.0470*** (0.0128)	0.921*** (0.221)	0.00737** (0.00308)	0.822** (0.391)
Observations	5,380	2,154	11,364	1,032
No. Municipalities	557	220	1,170	104
Municipality FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

Note. The dependent variable is the *Prob. Attaks* in Columns 1 and 3 and *No. Attaks* in Columns 2 and 4. Columns 1 and 2 refer to the sub-sample of the “Mezzogiorno”; Columns 2 and 4 refer to the sub-sample of the Center-North. Law 215 is a dummy taking the value of 1 for treated municipalities in all the years from the first voting under Law 215 and 2019, and to 0 otherwise; for control municipalities, it is equal to 0 for the entire period 2010-2019. Estimations includes municipality FE, year FE and control variables; coefficients are not reported. Standard errors adjusted for clustering at the municipal level are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

Table A.6: ATE — Mafia regions

Dep. Var.:	(1)	(2)
	<i>Prob. Attaks</i>	<i>No. Attaks</i>
Law 215	0.0503*** (0.0148)	0.964*** (0.248)
Observations	4,201	1,724
No. Municipalities	437	177
Municipality FE	Yes	Yes
Year FE	Yes	Yes
Controls	Yes	Yes

Note. The dependent variable is the *Prob. Attaks* in Column 1 and *No. Attaks* in Column 2. Estimations refer to the sub-sample of municipalities within Campania, Calabria, Apulia and Sicily with resident population between 5,000 and 15,000. Municipalities in Sicily are in the control group. Law 215 is a dummy taking the value of 1 for treated municipalities in all the years from the first voting under Law 215 and 2019, and to 0 otherwise; for control municipalities, it is equal to 0 for the entire period 2010-2019. Estimations includes municipality FE, year FE and control variables; coefficients are not reported. Standard errors adjusted for clustering at the municipal level are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

Table A.7: Two-way fixed effects 2SLS — Clustering at province level

Dep. Var.: Prob. of Attacks	(1)	(2)	(3)
Female councilors	0.0195*** (0.00328)	0.0263*** (0.00707)	0.0286** (0.0111)
Observations	16,727	16,727	16,727
No. Municipalities	1,715	1,715	1,715
Municipality FE	Yes	Yes	Yes
Year FE	No	Yes	Yes
Controls	No	No	Yes

Note. Panel fixed effect 2SLS estimates, second stage. All regressions include municipality FE; coefficients are not reported. Column 2 includes year FE and column 3 adds control variables as *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf* and dummies for electoral cycle; coefficients are not reported. Robust standard errors, clustered at province level, are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

Table A.8: Poisson estimates

Dep. Var.: No. Attacks	(1)	(2)	(3)
Female councilors	0.761*** (0.108)	0.614*** (0.216)	0.710*** (0.219)
Residuals	-0.663*** (0.145)	-0.498** (0.240)	-0.582** (0.241)
Observations	3,301	2,459	2,459
No. Municipalities	336	250	250
Municipality FE	Yes	Yes	Yes
Year FE	No	Yes	Yes
Controls	No	No	Yes

Note. Poisson estimates where *Female councilors* is treated as endogenous. The first stage estimates regress the percentage of female councilors on the Law 215 and on all the assumed exogenous regressors. All regressions include municipality FE. Estimation in Column 2 also includes year FE. Estimation in Column 3 also includes additional controls: *Pop, Age, Education, Proximity, Unemployment, Herf*; coefficients are not reported. Robust standard errors are in brackets clustered at municipal level and bootstrapped. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

Table A.9: Two-way fixed effects 2SLS — Gender differences

Dep. Var.: Prob. Attacks	(1) vs Women	(2) vs Men
Female councilors	0.00242** (0.00122)	0.0260*** (0.00765)
Observations	16,727	16,727
R-squared	0.002	0.000
No. Municipalities	1,715	1,715
Municipality FE	Yes	Yes
Year FE	Yes	Yes
Controls	Yes	Yes

Note. Panel two-way 2SLS estimates. All the test about the instrument show the validity of Law 215. All regressions include municipality FE. Estimation in column 3 also includes year FE electoral cycle dummies and additional controls: *Pop, Age, Education, Proximity, Unemployment, Herf*; coefficients are not reported. Robust standard errors, clustered at municipal level, are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

B *Figures*

Attacks and Victims. The complete list of attacks distinguished by *Avviso Pubblico* are: 1) Setting car on fire, 2) Setting City Hall or municipal property on fire, 3) Threatening letter, 4) Threatening letter containing bullets, 5) Verbal or telephone threats, 6) Physical assault, 7) Setting home on fire, 8) Shootings against City Hall, 9) Homicide, 10) Threatening messages on the family tomb, 11) Killing of domestic animals, 12) Delivery of an animal head in a box, 13) Shootings against car, 14) Leaving dead animals or their parts in front of home, 15) Damage or robbery in City Hall, 16) Felling of trees on private property, 17) Physical assault in public places, 18) Bullets left in front of home or City Hall, 19) Threatening messages on walls of home or City Hall, 20) Bombing of home or City Hall.

Moreover, the 11 types of politician targeted are: 1) Regional councilor, 2) Regional president, 3) Deputy mayor, 4) Former mayor, 5) Relative of politician, 6) Candidate, 7) Alderman, 8) City councilor, 9) City or municipal company managers, 10) Mayor, 11) Representative of other institutions or entities.

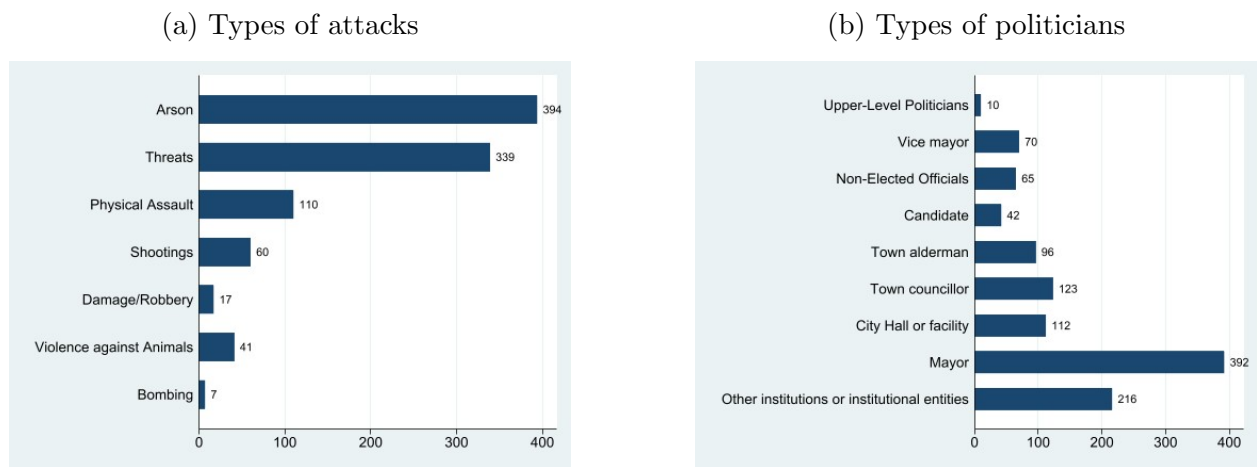
In Panel B.1a of Figure B.1, the category *Arson* contains the sum of Setting car on fire, Setting City Hall or municipal properties on fire, Setting home on fire; the category *Threats* contains the sum of Threatening letter, Threatening letter containing bullets, Verbal or telephone threats, Threatening messages on the family tomb, Threatening messages on the walls of the house or of the city; the category *Physical Assault* contains the sum of Physical assault, Homicide, Physical assault in public place; the category *Shootings* contains the sum of Shootings against City Hall, Shootings against the car, Bullets in front of the house or City Hall; the category *Damage/Robbery* contains the sum of Damages or robbery inside City Hall, Felling of trees of private property; the category *Violence against Animals* contains the sum of Killing domestic animals, Sending of a animal head in a box, Finding dead animals or their parts in front of the house; the category *Bombing* contains Bombing of the house or City Hall.

In Panel B.1b of Figure B.1 the category *Upper-Level Politicians* contains the sum of Regional councilor and Regional president; the category *Non-Elected Officials* contains the sum of Former mayor and Relative of politician.

Private violence. The variable private citizens encompasses all individuals identified by competent authorities. These individuals are described in the text by their age, sometimes their name, or the reason for the aggression, or the dynamics of the aggression. Typically, these are aggressions related to personal grievances, such as job loss, fines, requests for public housing, money, or requests for reemployment, which have not been addressed by institutions. This variable includes only those individuals who are explicitly identified as aggressors and who have been arrested/charged (in some way identified) for this reason. In addition to angry and violent citizens, street vendors, homeless individuals, individuals with

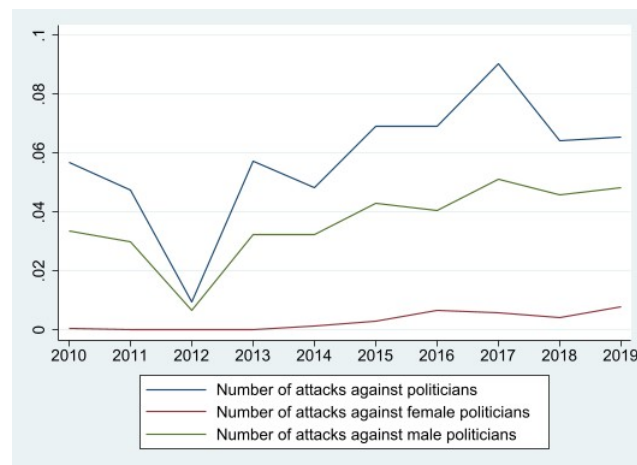
criminal records, and illegal parking attendants are also included.

Figure B.1: Types of attacks and politicians



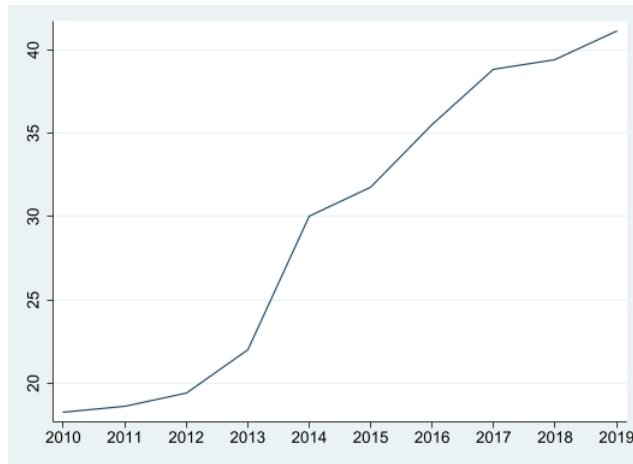
Note. The Figure shows the types of attacks and victim of mafia attacks. In Panel B, Upper-level politicians include provincial and regional politicians. Non-elected officials are former mayor and relative to politicians. 2010-2019.

Figure B.2: Number of attacks against politicians. 2010-2019



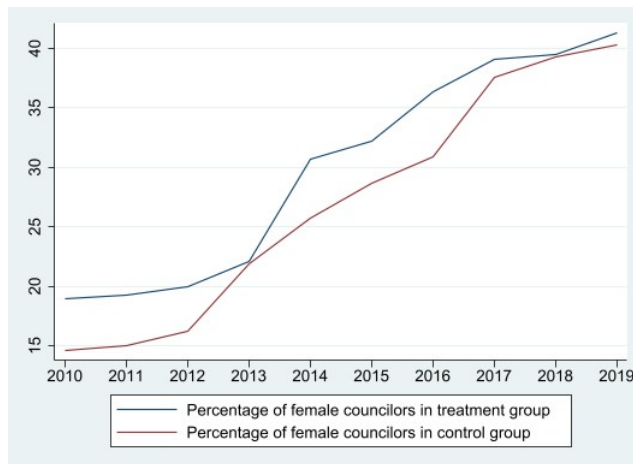
Notes. The Figure shows the yearly mean number of attacks against local politicians, also by gender. The sample is restricted to municipalities between 5,000 and 15,000 inhabitants. 2010-2019.

Figure B.3: Females councilors. 2010-2019



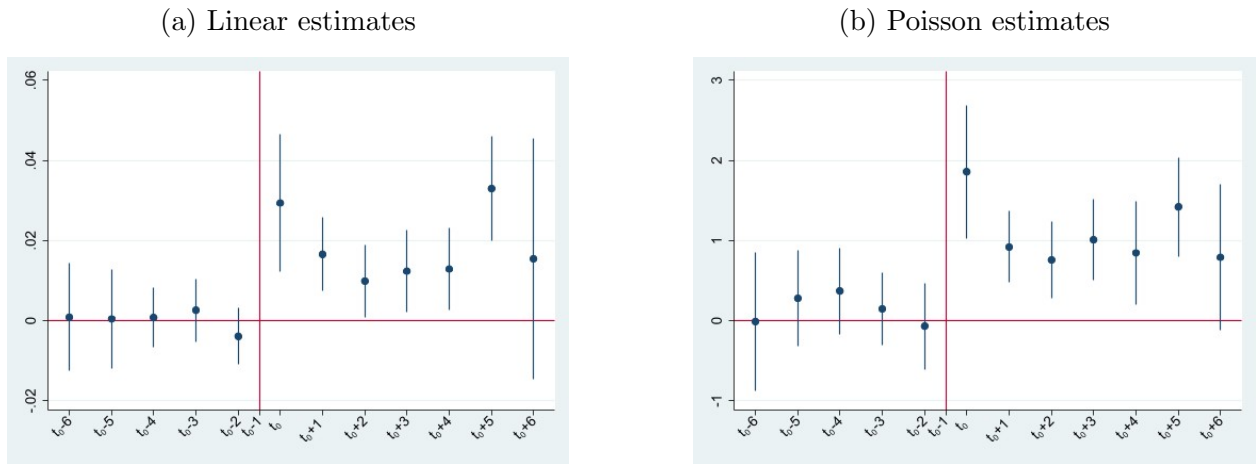
Notes. The Figure shows the percentage of women councilors for each year in 2010-2019. The sample is restricted to municipalities between 5,000 and 15,000 inhabitants.

Figure B.4: Percentage of female councilors in city council in treatment and control groups



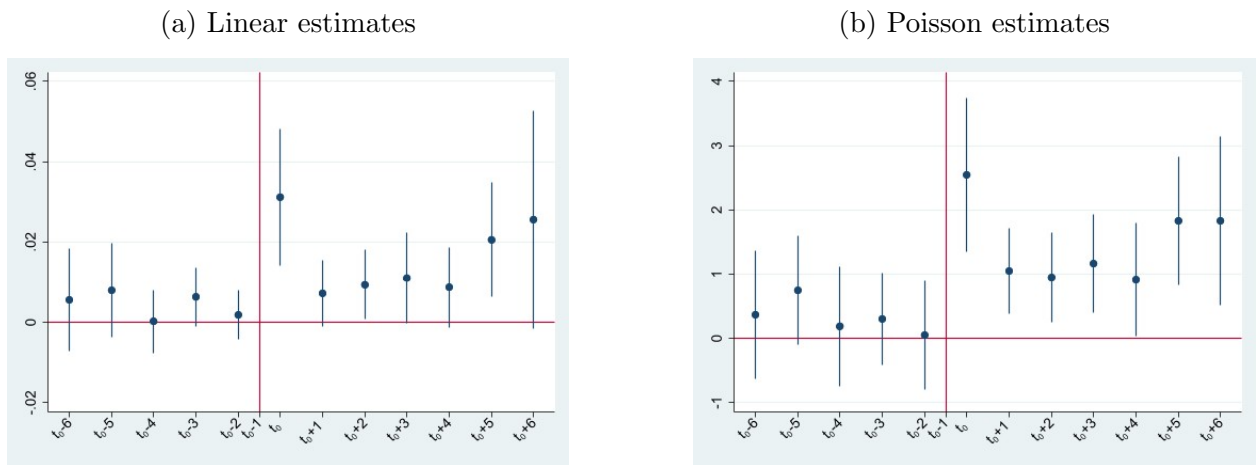
Notes. The graph reports the percentage of female city councilors in the treatment and control groups of municipalities between 2010 and 2019. We take all the municipalities in regions with population between 5,000 and 15,000 inhabitants. The treatment group is municipalities in regions with ordinary statute; the control group, municipalities in regions with special statute.

Figure B.5: Event study in the diff-in discontinuity design



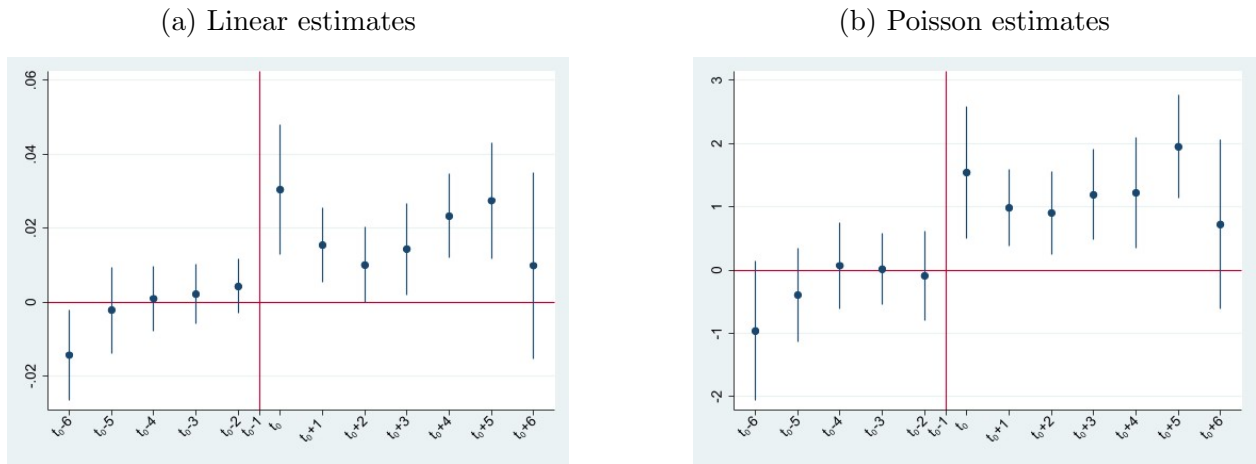
Note. The graph reports coefficients and confidence intervals estimated according to eq. 2. The dependent variable is the dummy of the probability of attacks against local politicians in Graph B.5a and the total number of attacks in Graph B.5b. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE, year FE and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf*. Period: 2010-2019.

Figure B.6: Event study — Threats



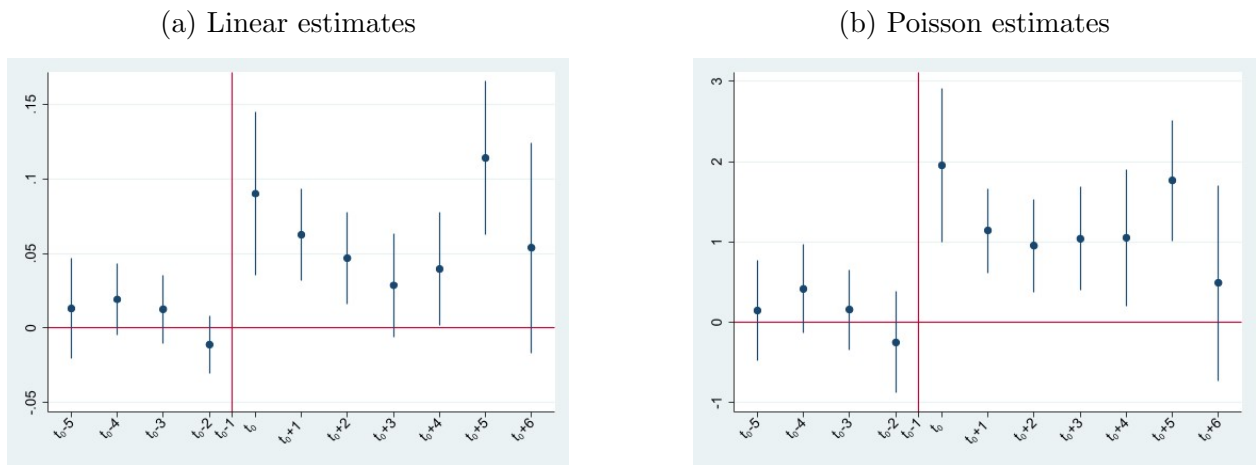
Note. The graph reports coefficients and confidence intervals estimated according to eq. 2. The dependent variable is the dummy of the probability of attacks against local politicians in Graph 1a and the total number of attacks in Graph 1b. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE, year FE and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf*. Period: 2010-2019.

Figure B.7: Event study — Violence



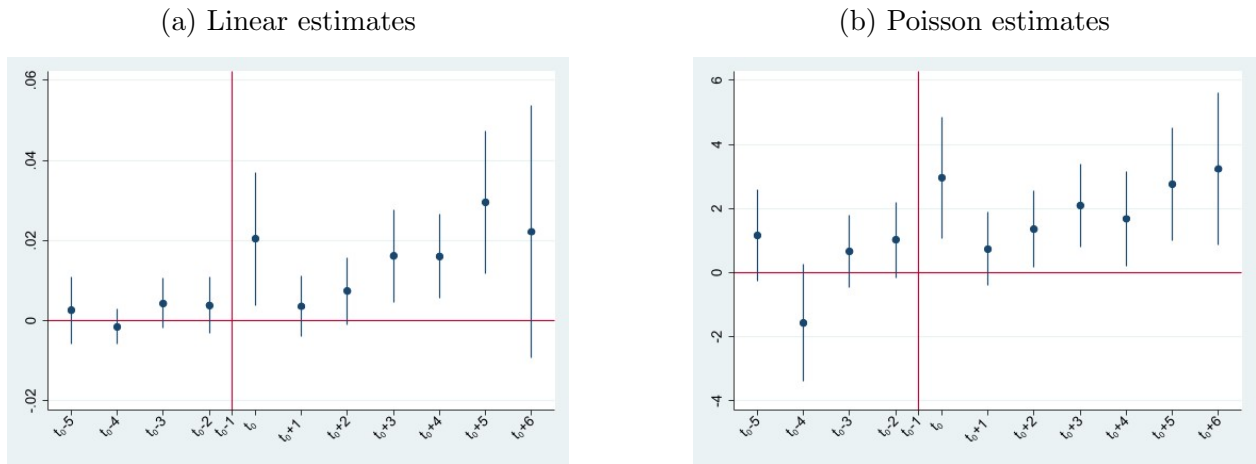
Note. The graph reports coefficients and confidence intervals estimated according to eq. 2. The dependent variable is the dummy of the probability of attacks against local politicians in Graph 1a and the total number of attacks in Graph 1b. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE, year FE and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf*. Period: 2010-2019.

Figure B.8: Event study — “Mezzogiorno”



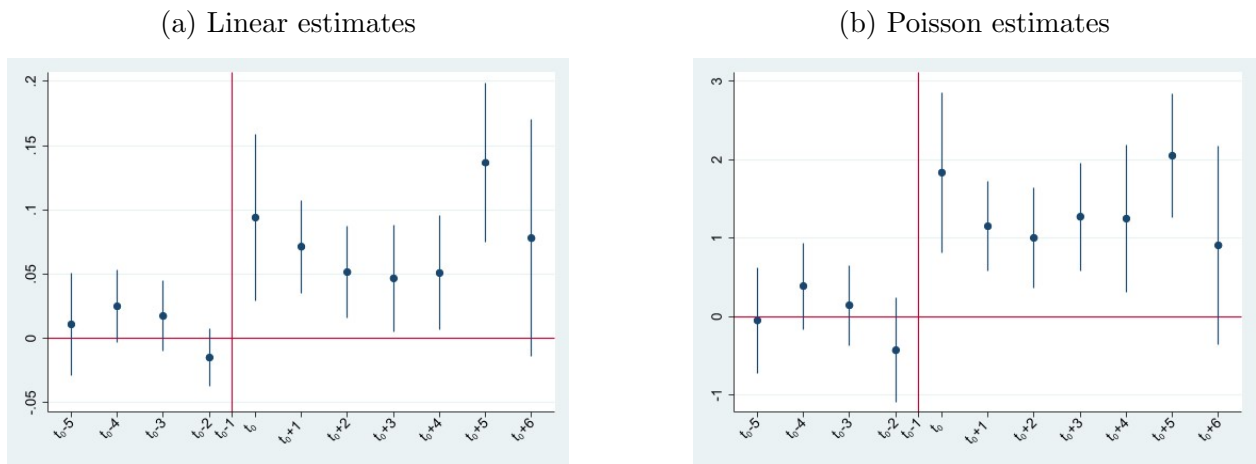
Note. The graph reports coefficients and confidence intervals estimated according to eq. 2. The dependent variable is the dummy of the probability of attacks against local politicians in Graph B.8a and the total number of attacks in Graph B.8b. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE, year FE and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf*. We restrict the sample to the 8 regions of the “Mezzogiorno” of Italy. Period: 2010-2019.

Figure B.9: Event study — Center-North



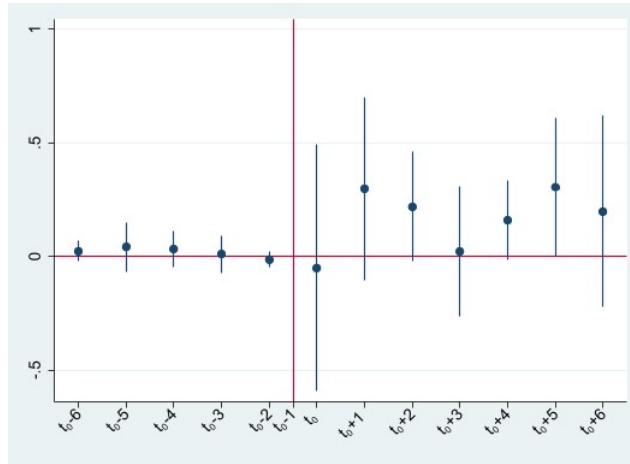
Note. The graph reports coefficients and confidence intervals estimated according to eq. 2. The dependent variable is the dummy of the probability of attacks against local politicians in Graph B.9a and the total number of attacks in Graph B.9b. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE, year FE and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf*. We restrict the sample to the 12 regions of the Center-North of Italy. Period: 2010-2019.

Figure B.10: Event study — Mafia regions



Note. The graph reports coefficients and confidence intervals estimated according to eq. 2. The dependent variable is the dummy of the probability of attacks against local politicians in Graph B.10a and the total number of attacks in Graph B.10b. Estimations restricted to the sub-sample of municipalities in the regions of Calabria, Campania, Apulia and Sicily. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE, year FE and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf*. Period: 2010-2019.

Figure B.11: Event study — Councils without female councilors



Notes. The graph reports coefficients and confidence intervals estimated according to eq. 4. Dependent variable is the dummy of the probability of attacks against local politicians. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE and year FE, electoral cycle dummies and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf*; coefficients are not reported. Robust standard errors are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

C Further Evidence

C.1 Government repressive action

Government repression of crime through police forces could be an important source of omitted variable bias. That is, our results could possibly be driven by a perception of lower risk of punishment after 2012, inducing organized crime to step up violence.

The police forces are managed at provincial level jointly by the *Prefect* and the *Questore*, who allocate police forces according to the needs of the territory. Therefore, since the relevant territorial area in this regard is the province, we looked at the data of the Ministry of Interior on a large number of crimes reported by police to the judicial authorities at province level, available from 2006 to 2019. These crimes — homicide, sexual abuse, fencing of stolen goods, extortion, smuggling, drug trafficking, etc. — can be considered as a good proxy for the deployment of security forces by the central government, against crime (Cingano and Tonello, 2020). We then estimated the main models as in eq. 1 and 2 controlling for the sum of all crimes — hereafter *Crimes*. Table C.1 and Figure C.1 reports estimation results that remain unchanged.

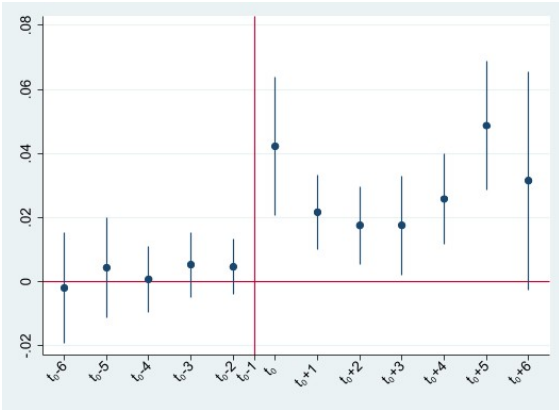
Table C.1: ATE — Government repressive actions

	(1)	(2)
Dep. Var.:	<i>Prob. Attacks</i>	<i>No. Attacks</i>
Law 215	0.0176*** (0.00513)	0.899*** (0.203)
Crimes	-1.08e-07 (2.49e-07)	-1.65e-05 (1.65e-05)
Observations	16,515	3,068
No. Municipalities	1,711	314
Municipality FE	Yes	Yes
Year FE	Yes	Yes
Controls	Yes	Yes

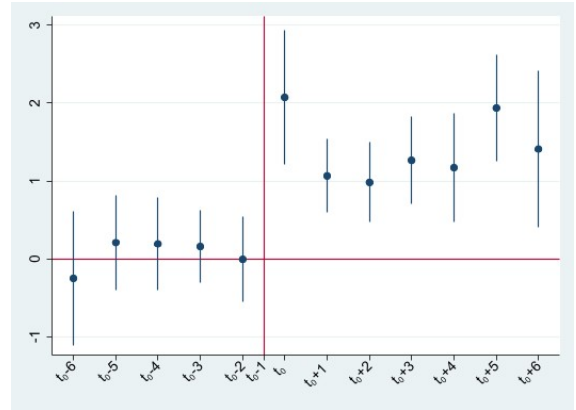
Note. The dependent variable is the *Prob. Attacks* in Column 1 and *No. Attacks* in Column 2. Law 215 is a dummy taking the value of 1 for treated municipalities in all the years from the first voting under Law 215 and 2019, and to 0 otherwise; for control municipalities, it is equal to 0 for the entire period 2010-2019. Estimations includes municipality FE, year FE and control variables; coefficients are not reported. Standard errors adjusted for clustering at the municipal level are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

Figure C.1: Event study — Government repressive action

(a) Linear estimates



(b) Poisson estimates



Note. The graph reports coefficients and confidence intervals estimated according to eq. 2. The dependent variable is the dummy of the probability of attacks against local politicians in Graph C.1a and the total number of attacks in Graph C.1b. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE, year FE and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf* and *Crimes*. Period: 2010-2019.

C.2 Entrants and violence

If a mafia-style organization tries to influence policy makers from the start of their political term (Daniele and Dipoppa, 2017), we should expect this to be more likely when a new politician is elected, as this is a possible new target for criminals with whom negotiations still need to be initiated. The enforcement of Law 215 might coincide with an increase in

the number of governments led by new politicians and this might drive the result.²⁸ To take this possibility into account, we include in the model a dummy (hereafter *Incumbency*) that takes the value of 1 when the incumbent government is re-elected and 0 if elections bring a new local government into office. The results in Table C.2 and Figure C.2, respectively for the ATE and the dynamic effect of Law 215 on organized crime attacks, are, once again confirmed.

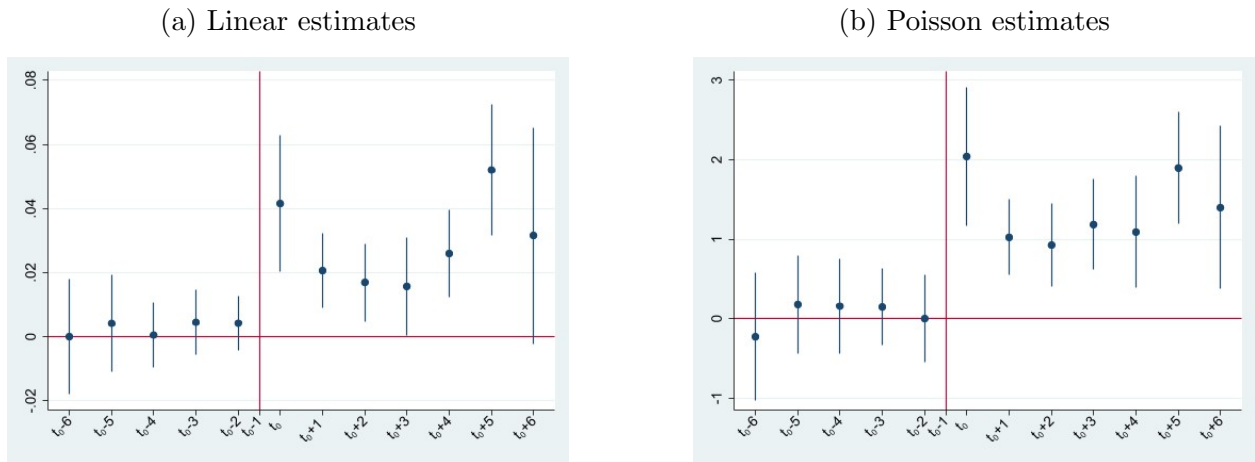
Table C.2: ATE — Incumbency

	(1)	(2)
Dep. Var.:	<i>Prob. Attaks</i>	<i>No. Attaks</i>
Law 215	0.0176*** (0.00494)	0.892*** (0.200)
Incumbency	0.00569 (0.00655)	-0.0107 (0.196)
Observations	16,738	3,174
No. Municipalities	1,726	323
Municipality FE	Yes	Yes
Year FE	Yes	Yes
Controls	Yes	Yes

Note. The dependent variable is the *Prob. Attaks* in Column 1 and *No. Attaks* in Column 2. Law 215 is a dummy taking the value of 1 for treated municipalities in all the years from the first voting under Law 215 and 2019, and to 0 otherwise; for control municipalities, it is equal to 0 for the entire period 2010-2019. Estimations includes municipality FE, year FE and control variables; coefficients are not reported. Standard errors adjusted for clustering at the municipal level are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

²⁸The local electoral law provides the possibility of multiple candidacies, thanks to the two-term limit for mayors.

Figure C.2: Event study — Incumbency



Note. The graph reports coefficients and confidence intervals estimated according to eq. 2. The dependent variable is the dummy of the probability of attacks against local politicians in Graph C.2a and the total number of attacks in Graph C.2b. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE, year FE and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf* and *Incumbency*. Period: 2010-2019.

C.3 Political parties

It is well known that some political parties are closer to organized criminal groups. Indeed, [Buonanno et al. \(2016\)](#) finds that the share of the vote going to the center-right *Forza Italia* is significantly correlated with gauges of the presence of mafias in southern municipalities, while [De Feo and De Luca \(2017\)](#) finds that the old Christian Democratic party (*Democrazia Cristiana*) captured more votes in the Sicilian municipalities where the mafia was most active.

At local level, only in the largest municipalities do elections involve national parties with a well-defined political orientation. In most municipalities, instead, the competition is between civic lists, often with no clear political orientation. Therefore, we divide the parties in local government into three categories: parties and civic lists of right and center-right (i.e., all those whose names contain words clearly ascribable to a rightist political group - *Center-right*), parties and civic lists of left and center-left (i.e., those with names containing words clearly ascribable to a leftist political group - *Center-left*), and parties and civic lists with no definite political orientation (*Civic lists*). In the estimation of eq. 1 and 2 we control for the dummies *Center-right*, *Center-left* and *Civic list*. The results in Table C.3 and Figure C.3 are consistent with the baseline, and they indicate that the mayor's political orientation does not affect the outcome variable.

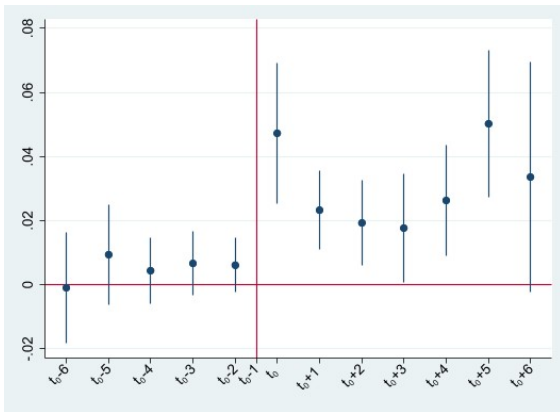
Table C.3: ATE — Political parties

Dep. Var.:	(1) <i>Prob. Attacks</i>	(2) <i>No. Attacks</i>
Law 215	0.0166*** (0.00565)	0.836*** (0.195)
Center-right	0.0108 (0.00805)	0.246 (0.340)
Center-left	-0.0145* (0.00826)	-0.746** (0.347)
Civic lists	-0.0118** (0.00568)	-0.496*** (0.188)
Observations	16,738	3,174
No. Municipalities	1,726	323
Municipality FE	Yes	Yes
Year FE	Yes	Yes
Controls	Yes	Yes

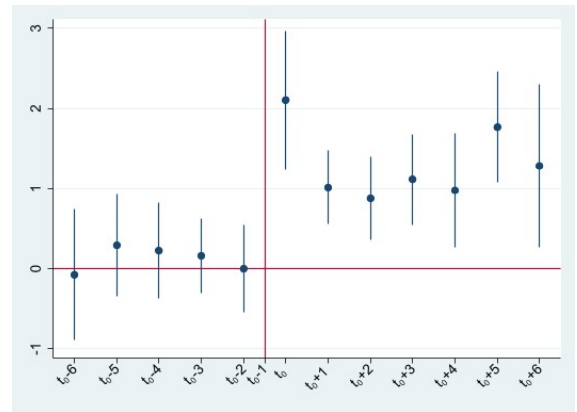
Note. The dependent variable is the *Prob. Attacks* in Column 1 and *No. Attacks* in Column 2. Law 215 is a dummy taking the value of 1 for treated municipalities in all the years from the first voting under Law 215 and 2019, and to 0 otherwise; for control municipalities, it is equal to 0 for the entire period 2010-2019. Estimations includes municipality FE, year FE and control variables; coefficients are not reported. Standard errors adjusted for clustering at the municipal level are in brackets. Period: 2010-2019. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

Figure C.3: Event study — Political parties

(a) Linear estimates



(b) Poisson estimates



Note. The graph reports coefficients and confidence intervals estimated according to eq. 2. The dependent variable is the dummy of the probability of attacks against local politicians in Graph C.3a and the total number of attacks in Graph C.3b. Standard errors are clustered at municipal level. Dots refer to point estimates, spikes to 90% confidence intervals. All regressions include municipality FE, year FE and additional controls: *Pop*, *Age*, *Education*, *Proximity*, *Unemployment*, *Herf* and dummies for political parties. Period: 2010-2019.

C.4 Evidence on Italian Parliamentarians.

The dataset developed by Miriam Golden (Golden, 2007) contains comprehensive data on members of the Italian Chamber of Deputies for the legislatures from 1948 to 1994 (Chang

et al., 2010). To corroborate our mechanism we look at cases of misconduct by parliamentarians, as revealed by judicial requests for permission to proceed (hereafter *Malfeasance*). First, 5.08% of female parliamentarians were prosecuted for malfeasance, compared with nearly twice as many male parliamentarians (10%). Moreover, with this data, we estimate the effect of the gender of parliamentarians (expressed by a dummy taking the value of 1 for female and 0 for male parliamentarians) on malfeasance charges over all the available legislatures (1948–1994).

The results, in Columns 1 and 2 of Table C.4, show that female parliamentarians have a substantially lower probability of malfeasance. The magnitude of the coefficient remains stable controlling for political party affiliation, education, region of birth and percentage of votes received by every politician.

Table C.4: OLS estimates - Honesty of female politicians

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var.:	Malfeasance	Malfeasance	Malfeasance	Malfeasance	Malfeasance	Malfeasance
Gender	-0.0551*** (0.00679)	-0.0577*** (0.0184)	-0.0343*** (0.00831)	-0.0429** (0.0212)	-0.1433*** (0.0158)	-0.1639** (0.0548)
Observations	16,480	7,075	13,261	5,793	1,617	647
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes

Note. OLS estimates. All regressions include year FEs for the legislatures. In Columns 2, 4 and 6 we control for political party affiliation, level of education, region of birth and the percentage of votes received; coefficients are not reported. Robust standard errors are in brackets. Period: 1948-1994 for estimations in Columns 1 and 2; 1948-1987 for estimations in Columns 3 and 4; 1994 for estimations in Columns 5 and 6. Significant coefficients are indicated by * (10% level), ** (5% level) and *** (1% level).

We test the robustness of this result by considering two radical developments in Italian politics in the '90s: the judicial Clean Hands movement (*Mani Pulite*) and the end of the First Republic. Clean Hands, starting in February 1992, was a campaign against political corruption that determined the disappearance of the main national parties and the end of the Parliament of the indicted. After Clean Hands, public opinion expressed strong disapproval of the parties' conduct and broad support for the judges fighting corrupt politicians. To take these changes into account, we drop from the sample parliamentarians elected in 1992 and 1994. Moreover, the parliamentary elections of 1994 marked the end of the so-called First Republic and the beginning of the current Second Republic. Therefore, we can imagine that the Parliament in 1994 is more similar to the current one and focus our analysis on Legislature XI.²⁹ The results in columns 3-4 (Clean Hands) and 5-6 (End of the First Republic) confirm our main findings.

²⁹In Legislature XI (1994) women accounted for 16.20% of the Parliament, but only 3.78% of the parliamentarians prosecuted for malfeasance.