

# Organised Crime within Politics: Evidence from Southern Italy

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September 20, 2016

**JOB MARKET PAPER.** Most updated version of the paper [here](#)

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## Abstract

What is the impact of organised crime on the allocation of public resources and on tax collection? This paper studies the consequences of the collusion between members of criminal organisations and local politicians in Italian local governments. In order to capture the presence of organised crime, we exploit the staggered enforcement of a national law allowing the dissolution of a municipal government upon evidence of collusion between elected officials and the mafia. We measure the consequences of this collusion by using a newly collected data on public spending, local taxes and elected politicians at the local level. Differences-in-differences estimates reveal that infiltrated local governments spend on average more on construction and waste management, less on policing, and collect fewer fiscal revenues. In addition, we uncover key elements of local elections associated with mafia-politics collusion. In particular, Regression Discontinuity estimates show that infiltration is more likely to occur when right-wing parties win local elections.

Keywords: Organized crime, Elections, Collusions, Public Spending, Italy

Jel Classification: K42; H72; D72

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# 1 Introduction

Organised crime is detrimental to the efficiency of any democratic and economic system (Gambetta, 1993; Pinotti 2015, Acemoglu et al., 2013). It represents an institutional failure with the potential to influence key aspects of legal economic activity, undermining the long run development of every society (Shleifer and Vishny, 1993; Mauro, 1995; Glaeser and Saks, 2006). Its strength, as well as its influence on the legal economy, rests on the diffused external complicity, i.e. the growing relationship between organised crime groups and public officials such as national or local politicians and public administrators (Dickie, 2005). Thanks to the development of this set of networks, organised crime has become highly pervasive and fully integrated in the everyday socio-economic and political life of many countries in the world (Trigilia, 2001; Allum and Sieber, 2003).

Yet, understanding the extent to which these dynamics condition the choices and activities of policy-makers is far from easy. What is the impact of the collusion between members of criminal organizations and politicians on the allocation of public resources and on the collection of fiscal revenues? In this paper, we tackle this question by investigating a particular activity of organised crime: its “infiltration” within local governments. The infiltration occurs, when criminal groups manage to capture local politicians in order to manipulate policy decisions in their favour. We study the case of Italy, the country where the first form of the organised crime was created, by using a unique yearly municipal-level dataset for the three Italian regions where the organised crime is more widespread and rooted, i.e. Calabria, Campania and Sicily.<sup>1</sup>

In order to measure the presence of organised crime, we exploit the staggered enforcement of National Law 164/1991, which imposes the dissolution of a municipal government upon evidence of collusion between elected officials and criminal organisations. Importantly, the enforcement of this law within a given municipality at a specific point in time represents a sudden shock to the local political establishment and organised crime group, since its occurrence and timing is fully determined at the national level and kept secret until its implementation.

Specifically, we exploit the enforcement of this policy to identify and compare municipal governments with and without infiltration before and after such infiltration occurs. Differences-in-differences estimates reveal that the capture of local governments by organised crime does not affect to total level of public spending but has consequences both on the allocation of public resources and on the collection of fiscal revenues. In particular, infiltrated local governments modify capital account expenditures in sectors that are strategic to the interests of organised crime. According to our estimates, infiltration leads to a 14% increase in the share of total investments in construction and waste management. This effect is economically sizeable since it translates into approximately an additional 180 euros per capita allocated to this spending component. The infiltration also leads to a 77% decrease in the annual share of investment for police forces. In practice, considering that the average of police investments across municipalities is normally low (0.4% of the total investment spending), during infiltration years investments in law and order are nearly absent. Moreover, infiltrated municipalities exhibit a lower ability to collect fiscal revenues, with the effect mostly driven by a 15% decrease in the revenue inflows from the waste and garbage tax, which translates in a loss in collected

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<sup>1</sup>Focusing on Southern regions rather than on the entire Italian territory has the advantage of restricting the sample to a relatively homogenous area in terms of unobservable elements such as culture or social capital, traditionally considered as highly diversified across the country (Putnam, 1993). Municipalities are chosen as unit of analysis because infiltrations often occur at the local level, where the control of the central State over electoral and legislative processes is weaker (Cantone and Di Feo, 2014). The dataset is available from 1998 to 2013

revenues of 130 euros per capita on a yearly basis. We show that there is no statistical difference in pre-trends between treatment and control group and that our results are robust to changes in specification, Placebo tests and to the introduction of a full set of controls.

Our estimates might be picking up some non-mafia related effects (e.g. low quality of the politicians, unstable governments) or be determined by political characteristics of the municipal elections correlated with infiltrations. To address this issue, we perform a series of further tests, making sure that our results are driven by mafia collusion and not by some of these potentially unobserved components. We identify a set of political characteristics of municipal elections that might be correlated with the probability of infiltration. Although descriptive, this exercise is noteworthy per se and uncovers some interesting empirical correlations, namely a relationship between infiltrations and elections where (1) there is just one candidate running for office, (2) the mayor is running for her second and last term, and (3) the right-wing party wins the election. Using our differences-in-differences setting, we show that none of these factors have an impact on public spending or on revenue collection.

In the final part of the paper, we focus on the systematic correlation between the collusion and elections won by right-wing parties and implement a regression discontinuity design based on close elections. The results show that the probability of infiltration increases when the right-wing party barely wins the elections. However, closely elected right-wing governments are not systematically related to variations in public spending during infiltration periods. These results further corroborate our main hypothesis that the observed variation on public spending is due to the collusion of organised crime within politics and not to other unobserved factors.

We are not the first to empirically study the presence and the effect of organised crime. An important strand of the economic literature focuses on the impact of mafia-politics linkages on political and electoral outcomes. Alesina et al. (2016) investigate how criminal organisations strategically use violence to influence elections in order to get captured politicians elected. Pinotti and Stanig (2016) exploit as if random variations in the presence of organised crime in northern Italy, to study its impact on the quality of local governance. Other works have studied how criminal organisations choose their political counterparts (Acemoglu, 2002; Dal Bo, 2006; Buonanno et al., 2015) uncovering different strategies. De Feo and De Luca (2013) argue that the mafia sells votes to the party that has more core supporters and it is therefore expected to win. Buonanno et al. (2016) find a systematic correlation between the strength of Cosa Nostra and the proportion of votes for the main Italian conservative party.

The large majority of these studies have measured the presence and intensity of mafia activities by employing proxies such as the number of mafia-related crimes, murders, and violent attacks (Alesina et al., 2016; Daniele and Marani, 2011; Olivieri and Sberna, 2014; Barone and Narciso, 2015); historical or geological indicators (Bandiera, 2003; Dimico et al., 2012; De Feo and De Luca, 2013; Buonanno et al., 2015; Buonanno et al., 2016); or artificial constructs for counterfactual analysis (Pinotti, 2015). These measures aim to capture the impact of mafia in a broad sense, encompassing the whole range of possible actions perpetrated by criminal groups. However, they do not take into consideration the fact that organised crime in Italy has evolved over time, progressively reducing the use of violence and becoming thoroughly integrated within the boundaries of the democratic society, up to the point that mafia activities may no longer be recognisable as criminal enterprises. Although in conflict with it, the criminal organisations do not want to displace the State but rather to co-exist with it through the creation of a network based on mutual interests.

Quoting a magistrate member of the AntiMafia District Directorate (DDA): “*In our days the mafia does not kill anymore, does not make noise, and this makes it less identifiable as a criminal group. Therefore our fight against them has never been so difficult*”.<sup>2</sup> Violence is a last resort that criminal organisations use only when previous strategies have failed. It is a suboptimal strategy that attracts too much attention from the enforcement authorities and therefore undermines their main objective, which is influencing policy decisions. The use of violence reveals the extent, but not the real strength of organised crime. The consequences of successful criminal strategies that do not employ violence have yet to be empirically identified. By focusing on the collusion between organised crime and politics we aim to shed light on this more silent but equally dangerous phenomenon, and, more importantly, to assess its impact on economic and political outcomes.

Although there exist a large body of evidence on the distortive effect of corruption and the quality of governance for government spending (e.g. Tanzi and Davoodi, 1997; Mauro, 1998; Gupta et al., 2001; Rajkumar and Swaroop, 2008; Bandiera et al., 2009; Gennaioli and Onorato, 2010; Crescenzi et al., 2016), the empirical research investigating the rent-seeking role of organised crime is relatively scarce. A notable exception is the recent paper by Barone and Narciso (2015) that has maintained that the presence of organised crime affect the distribution of national public funds to firms<sup>3</sup>. Yet, clarity on the degree to which the allocation of public resources is influenced by organised crime is still missing. Our paper contributes to this literature by providing the first empirical analysis of the collusion between organised crime and local politicians on public spending and by showing that, rather than affecting the overall level of public spending, or engaging in patronage by providing job in the public administration, the main objective of illegal organisations is to re-direct resources towards specific investment sectors.

The law 164/1991 has already been employed in the empirical literature (Acconcia et al., 2014; Daniele and Geys, 2015, 2016; Galletta, 2016).<sup>4</sup> However, our approach is different from previous studies because we aim to capture the impact of organised crime infiltrations within local governments rather than evaluating the effect of the 1991 law. Our focus is on the period *before* the enforcement of the law, i.e. *before* the dissolution of mafia-infiltrated municipalities took place.

The rest of the paper is organised as follows: section II introduces the background on infiltrations and local public spending; section III focuses on the institutional setting used as a basis for the difference-in-differences analysis, discusses our identification strategy and the quasi-natural experiment we rely on; section IV discusses the data and section V presents the main results; section VI reports a set of robustness tests to demonstrate that the estimated effects are really driven by the mafia and studying in depth the relationship between right-wing parties and infiltration; section VI concludes.

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<sup>2</sup>Interview to Giuseppe Borrelli, member of the *Direzione Distrettuale Antimafia* of Naples, ‘Report’ on May 5th, 2016.

<sup>3</sup>The paper analysed the role of organised crime in the allocation of national public subsidies to businesses. Their dependent variable is both the probability of receiving findings (extensive margin) and the amount of the margin (intensive margin). Organised crime is measured with number of mafia related crimes. The case study is Sicilian municipalities. Results show that organised crime positively affects the probability of obtaining funding and the amount of public funds.

<sup>4</sup>Acconcia et al. (2014) exploit the temporary contraction in public investment occurring in post-dissolution periods to obtain estimates of the fiscal multiplier for Italian provinces. Daniele and Geys (2015; 2016) provide an assessment of the impact of the 1991 law on different post-dissolution outcomes, including the level of education of elected politicians and the level of turnout at local elections. Galletta (2016) empirically investigate the presence of spillover effects resulting from the strengthening of law 164/1991.

## 2 Organised Crime and Political Capture

According to recent estimates, the total combined annual revenues of the Italian mafia is €10.7 billion, with the Camorra and the 'Ndrangheta being the most profitable organisations (Figure 1). The main revenues are obtained from illegal activities such as drug trafficking, extortion and corruption (Figure 2). These illegal activities generate a turnover approximately equal to 1.6% of the Italian GDP which, in per capita terms, translates in 400 euro per year.

However, as stated by Schelling (1971) burglars may operate in the underworld, but they seek to govern the real world. In fact, in the 1970s, organised crime groups became more sophisticated and their business model shifted from one based on *extortion* to one based on *entrepreneurship* (Gambetta, 1993; Mete, 2016; Varese, 2000). The nature of the relationship between the mafia and the State has changed: the government stopped being merely an enemy to fight and became instead an opportunity to exploit. As Figure 3 shows, the result of this shift is that a significant portion of the massive liquidity generated by illegal activities is then re-invested into the legal economy not just in Italy but also in the United States.

As a consequence, a very high share of criminal organisations' profits comes from public investments. Public finances are seen in the literature as being one of the areas more severely affected by the presence of corruption and collusive behaviour.<sup>5</sup> However, the empirical evidence on whether and how government expenditures are conditioned by the collusion between political authorities and criminal organizations is still limited. In this paper, we aim to fill this gap by studying one specific activity of criminal organisations: infiltration within local municipal councils.

According to the Law 164/1991, *Infiltration* occurs when organised crime capture local politicians in order to manipulate policy decisions in their favour. This criminal strategy can be perpetrated in different ways. It can be direct such as in the case of Pompei (within the province of Naples) where “*the speaker of the municipal council has been identified as the main link between the local administration and the local mafia boss, who was arrested in the same investigation*”.<sup>6</sup> Alternatively, it can be indirectly, through the contamination of the electoral competition. This is the case of Plati (within the province of Reggio Calabria), where “*the party winning the electoral competition benefitted from electoral favours from the local mafia group, which is capable of diverting a large number of votes and aimed at keeping the political control of the territory*”.<sup>7</sup> Finally, it can simply be through the use of threats and intimidations: Africo (in the province of Reggio Calabria) was dissolved because of “*the policy decisions of the municipal council were not free and bias because local politicians were repeatedly intimidated and threatened by criminal organisations*”.<sup>8</sup> These examples are crucial to clarify how infiltration is classified: it is not simply the physical presence of criminal members within the local government, but also any direct or indirect link between criminal organisations and politics.

Importantly, what is common across the cases described above is the absence of violence. Violence can be seen as the failure of an effective threat. It is a suboptimal strategy that attracts too much attention from

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<sup>5</sup>While the effect of corruption on the overall level of public spending has been reported as insignificant (Mauro, 1997), there is a substantial body of evidence emphasizing how collusion or corruption impact on the cost-effectiveness of public investments made (Shleifer and Vishny, 1993; Tanzi and Davoodi, 1997; Cadot et al., 2006; Crescenzi et al., 2016), and the spending sectors on which governments decide to invest (Mauro, 1998; Ehrlich and Lui, 1999; Gupta et al., 2001; Rajkumar and Swaroop, 2008).

<sup>6</sup>Gazzetta Ufficiale – Decreto del Presidente Della Repubblica n 133 del Giugno 2001: <http://www.gazzettaufficiale.biz/atti/2001/20010223/01A10530.htm>

<sup>7</sup>Gazzetta Ufficiale – Decreto del Presidente Della Repubblica n 119 del Marzo 2012: <http://www.gazzettaufficiale.biz/atti/2012/20120093/12A04237.htm>

<sup>8</sup>Gazzetta Ufficiale – Decreto del Presidente Della Repubblica: <http://www.gazzettaufficiale.biz/atti/2014/20140194/14A06583.htm>

the enforcement authorities and therefore undermines criminal groups' main objective, which is influencing policy decisions. Criminal Organisations are now less explicit, more subtle, and comparable to a special interest group (Grossman and Helpman, 2001; Dal Bo and Di Tella, 2006; Wolton 2016) which, through the use of intimidation and threats, aims to protect and promote its interests by influencing and manipulating official policy makers at their own advantage.<sup>9</sup> What is the impact of an effective and successful threat is still not clear and it is ultimately an empirical question that we attempt to tackle in this paper.

We test whether elections are the main opportunity for criminal organisations to infiltrate the local government. Election might be the “*recruitment process*” whereby a new bargaining table between crime and politics is established (Dal Bo, 2006). This might particularly be the case in Southern Italy where the political turnover is very high: 71% of local administrators leave local politics within 5 years and 93% within 10 years (Daniele and Geys, 2015). If the compliance with the mafia's will is functional to the future political career of colluded mayors (Cantone and Di Feo, 2014), it can be expected that collusions would bring to a system in which local politics responds to the interests of criminal groups, rather than to those of the local community of citizens. Controlling local politicians facilitate the capture of public procurement contracts, which enables criminal organisations to provide business opportunities to the firms they control, reinvest the liquidity generated from illicit activities and therefore to strengthen the control over the local territory.<sup>10</sup> Thus, the infiltration might potentially determine a systematic distortion of policy-making throughout the whole period in which colluded politicians are in charge.

In this paper, we empirically estimate the impact of this distortion on local public finance and, in doing so we aim to gain a deeper understanding on the strategic behaviour of criminal groups when they infiltrate within local governments. Does organised crime affect the overall level of public spending and the efficiency of the administration? Does it engage in patronage inflating the hiring of new personnel into the public sectors? Or do criminal organisations try to bias the allocation of investment expenditures towards specific sectors? *A priori* it is difficult to identify a mafia *modus operandi* and which would be its consequences on the allocation of public resources and on revenue collection at the local level. These are ultimately empirical questions that we aim to address in this paper.

### 3 Empirical strategy

#### 3.1 Law 164/1991: dissolution of municipal governments for mafia infiltration

The rise in mafia infiltrations within the local administrations throughout the 1980s led the Italian central government to introduce a set of tougher anti-mafia measures in the early 1990s. In order to contrast the cases of collusion between local politicians and members of organised crime, a new law was introduced in 1991, imposing the dissolution of a city council on evidence of ‘mafia infiltration’ into the local government, that is, electoral competition contaminated by the mafia and/or policy decisions taken by the government

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<sup>9</sup>The main difference between the Mafia and a “legal” interest group is the use of violence, intimidation and physical punishment. For a good review on the theoretical models behind this see Dal Bo, 2007. Wolton (2016) argues that “only a strong pro change special interest group is willing to bear the cost of outside lobbying activities”. In this paper, we argue that organised crime, with its set of possible strategies to influence policy making, can be seen as a special form of outside lobbying.

<sup>10</sup>Although the economic dimension of these organisations is global, the heart of their business model is still very much based on the social consensus and legitimisation they have at the local level (Mete, 2015).

concretely rigged by criminal organisations (D.L. 31/05/1991 n.164).<sup>11</sup> According to law 164/1991, the national government can decree the dissolution of a municipal government “*when evidence emerges regarding direct or indirect links between members of the local government and criminal organisations [...] jeopardising the free determination of electoral bodies and the good functioning of municipal administrations*”.<sup>12</sup>

The process of dissolution works in the following way. Any proposal for dissolution is put forth by the provincial prefect, who is informed by either the magistrates or the police of the risk of infiltration of a municipal government. The prefect establishes a commission composed by the vice-prefect and officials of different law enforcement bodies (*Polizia dello Stato*, *Carabinieri* and *Guardia di Finanza*). The commission investigates over the activity of the government for a period between three and six months and produces a report, which is sent by the prefect to the Ministry of Interior. Any proposal for dissolution signed by the Minister must be approved by the Cabinet of the National Government and the President of the Republic before being implemented. Therefore, municipalities having their government dissolved are those where mafia infiltration has been attested by the Italian judicial system and confirmed by multiple political institutions. Importantly, infiltrated municipalities are unaware of being under investigation, as the process of dissolution is kept fully secret until its implementation. Once the investigation is concluded, both member of criminal organisations and the local politicians involved in the collusion are arrested.

Upon the removal of the infiltrated local administration, the central government appoints three non-elected, external commissioners, ruling the municipality for a period of 12 to 24 months and typically committed to make significant cuts to financial flows into public investment projects (Acconcia et al., 2014; Galletta, 2016). After the end of the transition period, regular elections are held.

As shown in figure 4, the large majority (and in some years all) of dissolutions have occurred in the three regions subject of our study. Figure 5 illustrates the number of dissolved municipal governments for mafia infiltration from the introduction of the law until 2015. In total, there have been 258 cases of detected mafia infiltration into local governments over this period.

In fact, even within our sample the geographical distribution of dissolution varies significantly. As shown in figure 4, detected cases of mafia infiltration tend to be clustered in some specific areas of the regions. In Campania, the large majority of dissolutions have occurred in the north-west of the regions, particularly in the provinces of Caserta and Naples – the territory where *Camorra* groups are traditionally stronger. Similarly, in Calabria most detected infiltrations are located in the south side of the region, corresponding to the provinces of Reggio Calabria and Vibo Valentia, which are considered as the basis of *’Ndrangheta* groups. Finally, while in Sicily dissolutions are more widespread, the majority of them are concentrated in the province of Palermo, the heart of the *Cosa Nostra* organisation.

### 3.2 Identification Strategy

We rely on the law 164/1991 to identify cases of mafia infiltration in the local governments of municipalities of the sample regions. Our identification strategy is based on a Difference-in-Differences (DiD) setting and

<sup>11</sup>Some of the most common reasons for dissolving local governments using law 194/1991 have been: administrators or bureaucrats having affinity/kinships with mafia members or recurrent criminal records; construction permits awarded illegitimately due to bid rigging; severe cases of infringement of building regulations; absence of rigorous controls over the execution of public works; significant flaws in tax collection; cases of clientelism; illegal elections.

<sup>12</sup><http://www.gazzettaufficiale.biz/atti/2001/20010223/01A10530.htm>

exploits the time and geographical variation of the dissolutions over time. The impact of mafia infiltrations is estimated by comparing municipal governments with and without infiltration before and after such infiltration is terminated by the national government. We use the dissolution of a municipal government to identify our treatment period. An example may help clarifying the identification strategy. As shown in figure 6, the municipality of Casoria, in the province of Naples (Campania), has held local elections in 2002. The elected government was later dissolved at the end of 2005 and commissioners took over until the following elections, at the beginning of the year 2008. Our treatment period goes from the election in 2002 to the dissolution in 2005. This is because we want to identify the period in which organised crime was plausibly infiltrated in the local government.<sup>13</sup> The control group is composed by all non-dissolved governments and by dissolved government before and after the infiltration is terminated. In the example, all years before 2002 and after 2007 will make part of the control period.<sup>14</sup> Crucially, due to the fact that external commissioners have specific duties regarding the administration of public finance, all years between the dissolution of a government and the subsequent elections are excluded from the sample. Therefore, in the case of Casoria the years 2006 and 2007 are not considered in the estimations.

Unlike classic DiD strategies, our setting is based on a treatment period beginning at different points in time for the treated municipalities. This framework has the advantage to allow restricting the full sample to those municipalities that have experienced at least one dissolution for mafia infiltration. In such a way, it is possible to obtain a sample of arguably very similar municipalities, minimising unobservable heterogeneity. This is why we will always run our analysis with both the full and restricted sample. Performing this sample restriction is indeed important, because as seen in figure 4 the geography of dissolutions displays significant concentrations in some provinces of the sample regions. The figure indicates that there are provinces with very few or no dissolutions at all and the intensity of mafia activities in these territories is lower with respect to the core areas where criminal organisations are based<sup>15</sup>. An additional peculiarity of our setting is that the treatment period switches on and the off, i.e. municipalities remain infiltrated until the dissolution takes place.

**Threats to identification.** There are some potential concerns associated to our identification strategy. First, it might be that the application of law 164/1991 has been imperfect. Some municipalities may have been infiltrated but not dissolved because judicial authorities have not detected the collusion. Similarly, some dissolution may have been done erroneously as there was no real infiltration. Fortunately, these problems should not represent a concern for our estimation strategy. Infiltrated municipal governments that are not dissolved would indeed belong entirely to the control group, determining an attenuation bias to the empirical results. Similarly, periods of erroneously detected infiltration would instead belong to treated years, again biasing the estimated impact of infiltrations towards zero. This means that the point estimate of regression coefficients is likely to be larger (in absolute value) than the one observed.<sup>16</sup>

Econometrically, one additional concern of our analysis can be that the judicial investigators might, in a first place, start to investigate exactly those municipalities that present anomalies in their balance sheets. If this is the case, the selection into treatment (*i.e. being dissolved by the national government*) would be

<sup>13</sup>In both Daniele and Geys (2015; 2016) and Galletta (2016) the treatment period consists of the years **after** the application of the policy.

<sup>14</sup>We also perform an analysis where we limit the control to the years before the infiltration (i.e. excluding the years after the dissolution). Estimates are reported in appendix A.15

<sup>15</sup>More technically, this is a concern just for the other coefficients of the regression analysis. In fact, once controlled for municipality fixed effects, the coefficient of interest is not affected by municipalities never dissolved.

<sup>16</sup>Further discussion of this issue is in the results section.



correlated with the outcome variable (*i.e. public spending and revenue collection*). We tackle this important issue in Section VI by excluding from sample those municipalities for which the main reason of investigation and dissolution was related to either public spending or revenue collection.

Another potential problem for our estimates might arise if the dissolution of municipal governments has been manipulated politically. In other words, it may be that the decision over which local governments to dissolve – or not to dissolve – is driven by political considerations if e.g. the main party of the national government does not want to ‘lose’ the control of any local government ruled by the same party or an allied party of the same political coalition.

In fact, this distorted use of law 164/1991 is unlikely to happen for several reasons. First, the process of dissolutions starts and it is carried forward by the Italian Anti-Mafia Investigation Department (*Direzione Investigativa Antimafia*), one of the most efficient investigative bodies of the Italian State.<sup>17</sup> This is an organisation composed of highly trained and specialised individuals from the three main police forces (*Polizia di Stato*, *Carabinieri* and *Guardia di Finanza*), whose experience is often valued and requested by other countries and institutions needing consults on the fight against organised crime.<sup>18</sup>

Second, the multiplicity of the actors involved in the dissolution decision, from national MPs to the Minister and the Cabinet to the President of the Republic, makes any forms of manipulation of the law improbable.<sup>19</sup> However, in order to provide as much evidence as possible, we perform a test to rule out the possibility the systematic political manipulations. If dissolutions were manipulated, we would expect to observe that the political colour of provincial and national governments is significantly associated to the political colour of dissolved municipal governments. As shown in Appendix A1, referring to the restricted sample of dissolved municipalities and the 1998-2013 period, there is no statistically significant correlation between colour of national or provincial governments and municipal governments. Indeed, given the political cost generated by the dissolution for the national government – high national media coverage and political competitors exploiting it to ask for the government’s resignation – it is extremely unlikely that national governments would strategically choose to dissolve municipal governments governed by opposing parties. It is important to note, however, that even if this was occurring our estimates would be bias downwards, since strategically manipulated dissolutions would be coded as treated and constitute an attenuation bias of coefficients.

Moreover, as mentioned earlier, Italian local governments may be dissolved also for reasons unrelated to mafia infiltration (e.g. resignation of the mayor, resignation of more than 50% of council members etc.).

<sup>17</sup>The Anti-Mafia Investigation Department (DIA) was founded in 1991, under the authority of the Minister of Interior and the coordination of the Direzione Nazionale Antimafia (National Anti-Mafia Directorate). Its operations include preemptive investigations and judicial investigations. It investigates characteristics, objectives, and methods of the organised crime as well as its domestic and international contacts.

<sup>18</sup>Some examples are the Italian Prosecutor Antonio Ingroia, responsible for significant investigation into the Sicilian Mafia, who has been appointed Director of the United Nation – Central American country’s International Commission against Impunity (CICIG). Another example is Judge Giovanni Falcone, who in 1989 trained and set up the AntiTerrorism Unit in Quantico, Virginia, in collaboration with the Attorney Rudolph Giuliani. It is very unlikely that these professional individuals, together with judges and prosecutors, would let their investigations be strategically used by politicians.

<sup>19</sup>The only case where the dissolution has not followed the normal legislative process is in the case of Fondi. The local prefect, together with the enforcement agencies, drafted 500 pages of proposal for the dissolution of this municipality. However, the Ministry of Interior had opted for a political solution asking the municipality to proceed immediately with new elections without sending the commissioners and therefore dissolving officially the government. Therefore, it does not appear as a case of infiltration in our dataset. The case of Fondi has been covered by the Italian press and tv news for weeks. The large amount of attention received leads us to two considerations: a) the Government will try to avoid these situations and b) when they happen, they create so much noise, that it is very easy to correct for them in our dataset. Finally, and more technically, since the concern of the press and opposition parties was that the new elections were not sufficient to get rid of the criminal infiltration, this would constitute an additional downward bias in our setting.

Hence, for politicians that want to undermine the stability of a given municipality ruled by the opposite parties this represents a cheaper and easier option rather than trying to set up a fake mafia case.

Finally, another potential issue with our empirical setting is that the definition of our treatment and control observations is based on the assumption that the entire period between the election of a local government and its dissolution is made of infiltration years. This implies that the infiltration begins at the moment of the election of a later-dissolved government. While this hypothesis may be true for many infiltrated municipalities, where electoral manipulation has brought to power local governments subject to the conditioning of the mafia from the very moment they take up office, it may not hold for some other dissolved municipalities where the timing of the infiltration was different. It is therefore important to test whether we find any effect on our outcome variables in the years preceding the elections. We deal with this issue in the empirical analysis.

## 4 Data and Estimating Equation

### 4.1 Data

**Local public spending.** Our primary data source is the *Certificati Consuntivi* database of the Italian Ministry of Interior, which contains yearly statistics on the public finance of Italian municipalities for a number of different spending categories.<sup>20</sup> The full dataset is disaggregated into capital account and current account expenditures. These two are further disaggregated in specific spending categories.<sup>21</sup> The different categories of spending are the components (funzioni e servizi) in which the resources have been allocated and spent. More precisely, the six fundamental spending pillars are: general functions of administrations; social sectors; construction and waste management; transport; public education and municipal police.<sup>22</sup> This dataset is available for the 1998-2013 time period.

Table 1 and appendix A2.2 illustrate the average per capita spending for the municipalities in our sample over the 1998-2013 period. The amount of resources spent by the municipalities is a yearly average of €543 per inhabitant for the capital account (i.e. investments) and a yearly per capita average of €731 for the current account (i.e. salaries and services). Summing up these two figures we obtain the average total spending per municipality, €1274 per inhabitant. As shown in table 1, the spending function to which more annual resources are allocated is construction and management which makes up for 34% of the annual capital account budget.<sup>23</sup> As for the current account, the component on which most resources are spent is administration, followed by construction and waste management. The municipalities are also responsible for tendering and awarding public procurement contracts to the contractor company in charge or realizing the works.

**Infiltrated municipalities.** In order to measure the infiltration of organised crime within local governments, we have identified all municipalities having experienced cases of government dissolution for mafia

<sup>20</sup>In the Reading Appendix A.2.1, we provide a short overview of the political system of Italian municipalities

<sup>21</sup>Capital and Current account are further sub-divided into *sections of spending*. The three spending sections are: spending decisions, *year on year* spending and residuals. Spending decisions correspond to the amount of financial resources a municipality plans to spend during the following year, determined at the end of current years. Year on year spending refers to what the municipal government has actually spent, calculated at the end of the year. Residuals comprise the resources that have not been spent. Throughout our analysis we adopt spending decisions as spending proxy, due to the fact that data on residuals and year on year spending is much more fragmented, less reliable and less homogeneous. In addition, in some cases year on year spending includes expenditures planned by previous governments, while our intention is to capture the conditioning role of mafia infiltrations on policy decisions taken specifically by the infiltrated governments.

<sup>22</sup>Please refer to Reading Appendix A.2.2 for more details.

<sup>23</sup>The average spending for construction and waste management is €382 per year, €217 for the capital account and €147 for the current account. The second largest investment sector is transports, the third is administration.

infiltration from 1991 until 2013, exploiting information on the date of the dissolutions available from the Italian Home Office. The treatment variable has been created as a dummy taking value 1 from the year of the last regular election before the dissolutions until the moment in which the municipal government is dissolved, and zero otherwise. Data on the date of local elections before dissolutions are taken from the Historical Archive of Local Elections, publicly available from the Italian Home Office.

**Mafia homicides and other control variables.** Data on mafia-related homicides in each province and year of our sample have been provided by the Italian National Institute of Statistics (ISTAT). The data are collected by the Ministry of Interior and classified according to the Italian Penal Code.

A number of municipal level time-varying characteristics are obtained from the Censuses of the Italian National Institute of Statistics (ISTAT). We use the unemployment rate, the percentage of industry employment, the percentage of agricultural employment, and the percentage of tertiary education degree holders.<sup>24</sup>

## 4.2 Estimating Equation

We exploit a difference-in-differences setting to test whether mafia infiltrations have any impact on public spending allocations in the local governments of Campania, Calabria and Sicily. Thus, we compare municipal governments with and without infiltration before and after such infiltration is terminated by the national government through the application of law 164/1991.

We estimate various versions of the following model:

$$y_{m,t+1} = \alpha + \beta Inf_{m,t} + \gamma Mafia_{p,t} + \delta X_{m,t} + \varphi_m + \tau_t + \varepsilon_{m,t} \quad (1)$$

Where  $y_{m,t+1}$  refers to public spending in municipality  $m$  at time  $t+1$ .<sup>25</sup>

More precisely,  $y_{m,t+1}$  is  $\frac{PS_{c,m,t+1}}{\sum_c PS_{m,t+1}}$ , i.e. the spending committed to component  $c$  as a share of total spending committed for the next financial year. Total spending is calculated per capita.<sup>26</sup>

The key variable in the model is  $Inf_{m,t}$ , a dummy taking value one if a municipality is ruled by a government dissolved for mafia infiltration in year  $t$ , and zero otherwise. The coefficient of interest is  $\beta$  which captures the impact of the infiltration at time  $t$  on the public spending allocation at time  $t+1$ .

As our main aim is to identify the effect of a specific activity from organised crime – the temporary infiltration into local governments on governments' spending decisions – we need to control for the underlying strength of the mafia groups across municipalities, otherwise the observed effect on public spending allocation would not be driven by the mafia-politics collusion but by some pre-existing trend. This issue is tackled in two ways. First, we include in the model a control variable  $Mafia_{p,t}$ , referring to mafia-related homicides and used as a proxy for the underlying strength of the mafia in the province of the municipality at time  $t$ . Secondly, we always test the results by performing a second estimation where we restrict our sample to municipalities that have seen their government dissolved at least once. This allows to reduce unobservable heterogeneity and conduct the analysis on a sample of more similar municipalities.<sup>27</sup> Hence, in the empirical

<sup>24</sup>Descriptive statistics in Appendix A2.3.

<sup>25</sup>The time lead derives from the fact that our dependent variable is based on spending decisions defined at the end of the financial year. This allows reducing issues of reverse causation as our main variable of interest is measured at time  $t$ .

<sup>26</sup> $\frac{\sum_c PS_{m,t+1}}{pop_{m,t}}$  is the total per capita spending committed by a municipal government

<sup>27</sup>Although this estimation does not rule out the possibility that in some of these municipalities the effect of the infiltration is stronger because the organised crime is also stronger there.

analysis, we will always perform two estimations: one at full sample and one with the restricted sample.

Vector  $X_{m,t}$  denotes a set of socio-economic and demographic characteristics of municipalities in the sample regions. The data are from the 1991, 2001 and 2011 ISTAT Censuses interpolated over time.

The model is completed by municipality dummy variables, controlling for time-invariant unobservables correlated with the timing of the infiltration ( $\varphi_m$ ), and time fixed effects, controlling for year-specific shocks ( $\tau_t$ ). Finally,  $\varepsilon_{m,t}$  is an idiosyncratic error term. Throughout the empirical analysis we cluster standard errors at the municipal level.

## 5 Estimation Results

### 5.1 Does organised crime infiltration affect the overall level of public spending?

We begin by presenting the estimates of the effect of mafia infiltration on total municipal spending (Table 2). In column (1) and (2) we focus our attention to the total spending commitments per capita. The model is initially estimated for the full sample of 1,350 municipalities from Calabria, Campania and Sicily (column (1)). In column (2) we restrict the sample to a group of more homogeneous municipalities – those 182 having experienced at least one government dissolution for mafia infiltration. In the following columns, we sub-divide total overall spending into total capital account spending per capita (columns (3)-(4)) and total current account spending per capita (columns (5)-(6)). All estimations include municipality fixed effects, year fixed effects and control variables.

Throughout all different specifications, the coefficients of the infiltration dummies in Table 2 are not statistically significant. The highest point estimates (in absolute value) are obtained in column (1), a lower public spending for infiltrated municipalities by 28 euros per capita. Yet, as all other coefficients, this is not statistically different from zero. Hence, the results provide evidence that, other things equal, infiltration periods are not associated with significant variations in the total amount of local government expenditures, either for public investments (capital account) or for services and maintenance (current account).

Our findings are different from those of Olivieri and Sberna (2014), reporting a positive relationship between pre-electoral mafia violence and total public investment in local municipalities of Southern Italy. The difference can be due to the fact that we do not focus on organised crime violent attacks, but on criminal infiltration within politics. Under this perspective, an interpretation of our results is that the mafia, when it is infiltrated into local governments, is not interested in forcing a modification of overall aggregate spending. After all, if municipal governments were running constant budget deficits during infiltration periods, they would risk being commissioned by the central government for reasons of financial instability, thus leaving the criminal organisations without reliable political connections in the local councils.<sup>28</sup> Rather, a way to coercively condition the public finance of infiltrated governments may be to modify investment policy in those sectors that are strategic for protecting the interests of organised crime. *When infiltrated, does mafia engage in patronage behaviours? Or does it bias the allocation of resources toward specific investing components?* These are the questions that we tackle in this section by breaking down total spending into different items of expenditure.

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<sup>28</sup>Article 244 of the Testo Unico Enti Locali (TUEL) foresees the possibility to declare a municipalities non solvent (dissesto finanziario) when it is incapable to provide the basic functions, services and public goods.

## 5.2 Does organised crime infiltration affect specific spending components?

We test whether mafia infiltrations significantly affect the allocation of public resources by comparing each spending item of infiltrated governments with non-infiltrated governments before and after this infiltration is terminated.<sup>29</sup>

The estimation results are presented in Tables 3 and 4. Each spending item is measured as a share of the total annual spending. The main variable of interest is  $Inf_{m,t}$ , which takes value one if the municipality  $m$  is infiltrated at time  $t$ .

For every spending item, the model is estimated both for the full sample of municipalities and for the restricted sample of municipalities having had their government dissolved at least once. It can be noted that most of the current account spending components (Table 4) display insignificant coefficients. Particularly interesting is the administration-spending component. If organized crime had invested in the standard *patronage behaviour*, inflating the hiring of public administration personnel, the coefficient would have been positive and significant.<sup>30</sup> We do not observe this effect. The only significant effect is on municipal police.

When we turn our attention to capital spending, i.e. investments, we find that on average infiltrated municipalities spend more on construction and waste management (columns (5)-(6)) and less on municipal police (columns (11)-(12)). These results are consistent across both specifications, remaining significant and with similar magnitude. A first look to these results indicate that, when infiltrated, organized crime's main strategy is mainly in biasing the allocation of resources towards specific sectors rather than affecting total spending or engaging in patronal behaviours. We provide a more comprehensive interpretation of these results below.

**Construction and waste management.** According to the estimates in Table 3, infiltrated governments increase investment spending for construction and waste management. The estimated effect is economically relevant: infiltrated municipalities increase spending in constructions and waste management by 0.0448 percentage points, which correspond to about 14% change with respect the average spending in constructions and waste management of non treated municipalities (equal to 0.34).<sup>31</sup> This is a large figure if we consider that functions related to constructions and waste management account for the largest part of the capital account budget (Table 1). Moreover, this is an average annual effect that is distributed over the whole period a government is in charge. Municipal administrations can last up to five years, and the average infiltration period in our sample of municipalities is 2.7 years.<sup>32</sup> Therefore, the additional resources these governments put up on this sector of investment during the period of infiltration are substantial. In per capita terms, given an average yearly total spending of 1273 euro per capita, infiltrated municipalities redirect additional 179 euros to constructions and waste management (Table 1).

This particular spending item includes all expenses for waste collection and the construction of new

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<sup>29</sup>As mentioned above, the six fundamental pillars of municipal public finance are: functions of administration, functions in the social sector, functions related to constructions and waste management, functions in the sector of transports, functions of public education, and functions of local police.

<sup>30</sup>One of the strategies employed by organized crime is to offer employment within the public sector in exchange of various forms and supports (Gambetta, 1993)

<sup>31</sup>In appendix A 3.1 we replicate our analysis gradually increasing the number and type of controls and by including linear time trends. As usual, we present the results for both the full and restricted sample over the period 1998-2013.

<sup>32</sup>At the end of every financial year, all local governments must approve plans financing public works, which are either set to be realised within the same year or are part of three-year plans. Annual plans should include all projects below 100,000, while three-year plans list all projects above that figure. While the yearly plans are binding, three-year plans can annually be updated with new projects. Urban planning interventions represent a key prerogative of local administrations and regional or national level governments have little say over this kind of policy initiatives

buildings, bridges, streets and highways. This represents a strategic sector for the interests of criminal organisations for many important reasons. On the one hand, mafia groups need to find an outlet for all the resources obtained from their illegal traffics and the sector of constructions represents an easy and highly profitable option for money laundering. The technological and financial barriers to entry are relatively low, making this an ideal area for long-term investment. On the other hand, this sector is associated with a set of activities which are deeply embedded into the local territory. Seizing the control of these activities is crucial for the mafia, in order to establish and expand the wide network of relationships which allow its survival and prospering. The construction of new buildings and the collection of waste involves many agents: the political power in charge of awarding public work tenders, contractor enterprises responsible for delivering the project, and a labour pool carrying out the work. Organised crime groups may be involved at all levels of this chain, and as the most traditional of the interest groups, they exploit the political connections they have in order to rig public work bids at the advantage of the enterprises they control, or intend to favour. In turn, having access to privileged information over future bids and winning contractors allows the mafia to offer employment to the population, therefore directly managing an important portion of the local labour market (Sciarrone, 2011).

This is the context in which infiltrations occur, and why they can be crucial in order to reproduce this cycle. Having political referents in local governments entails having the possibility to steer the outcomes of public work tenders and increase the profits of affiliated firms. The more buildings are to be constructed, the more contracts will be awarded and the higher the potential gains for the criminal organisations. Figure 7 shows the number of firms, disaggregated by business sector, confiscated by the police because in collusion with organised crime. In line with the above estimates, the majority of them operate in the construction and waste management sectors. The creation of collusive cartels between politicians, *mafiosi*, and entrepreneurs in the market of constructions not only determines a distortion in the competition for public works, but also a serious inflation of expenditures in this particular sector.

**Municipal police.** The second significant variation in local public finances of infiltrated governments is on the spending component of municipal police. A significant decrease is obtained both for the capital account and for the current account spending in this sector. Our estimates in Table 3 report an annual reduction in the share of total capital account spending for municipal police.<sup>33</sup> While this might at first seem a low figure, it should be compared to the average share of investment for local police forces made by municipal governments in our sample. As shown by Table 1, the proportion of capital account resources local governments allocate to this component is about 0.3% of the total for the full sample of municipalities, and 0.7% for the municipalities having had their government dissolved at least once. Therefore, an average annual reduction of about 0.2 percentage points, as per our estimates (column 11), represents a large change approximately equal to 77%. In practice, considering that police investments are normally low, during infiltration years they are nearly absent.

According to the estimates in Table 4, infiltrations also lead to a significant reduction in spending for municipal police as part of the current account. However, this corresponds to a less radical change in budget decisions with respect to the one reported for capital account, considering the average share of current account expenditures allocated to municipal police (Table 1).

And yet, if we add up the current and the capital account effects, a clear pattern emerges indicating

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<sup>33</sup>In appendix A 3.1 we replicate our analysis gradually increasing the number and type of controls and by including linear time trends. As usual, we present the results for both the full and restricted sample over the period 1998-2013.

that infiltrated governments tend to restrain from making expenditures for local police forces. A reduction of resources to law enforcement bodies such as the municipal police may have direct beneficial effects for the mafia, facilitating their illegal activities. The local police is responsible for maintaining public order and security, a task shared with the national police (*Polizia di Stato*), and low-quality equipment may imply lower capabilities to contrast crimes such as drug trafficking, usury and murders. Most importantly, another important duty of the local police is related to so-called ‘administrative police’ functions, including surveillance over construction works and abidance of building regulations. Given that the lack of compliance with building rules is one of the frequent motivations for government dissolutions, allocating fewer resources to municipal police forces may also be one way in which local politicians attempt to prevent dissolutions.

### 5.3 Does organised crime infiltration affect the local revenue collection?

We now investigate whether the infiltration has also an impact on the ability of the local governments to collect fiscal revenues. Given the quasi-federal structure of the Italian State, municipalities are expected to maintain a level of independence and autonomy in collecting their own financial resources. Hence, local taxes represent an important source of income for municipalities.<sup>34</sup>

In order to assess the performance of the municipal governments, we follow Drago et al (2014) and we construct a measure of efficiency in revenue collection calculated as the ratio between collected revenues and the total amount of forecasted revenues that the municipality should collect within the budget year. We focus on the main two local taxes, i.e. *property tax* and *waste tax*, and on the *total taxes* and *total collected revenues*.<sup>35</sup> As Figure A.11 shows *property tax* and *waste tax* are the main source of incomes in the municipal budget.

Exploiting our Difference – in – differences setting, we present our analysis in Table 5. The estimation includes municipal fixed effects, time fixed effect and a wide range of control variables including a measure of criminal violence. For each outcome variables, we estimate our model with full and restricted sample. In both cases, infiltrated local government exhibit a lower ability to collect fiscal revenues. Indeed, although not barely not significant, the coefficients for *Total\_tax* and *Total\_revenues* are both negative.<sup>36</sup> More importantly, the coefficient on *Waste Tax* (Column 7) is negative and significant. The effect is economic sizeable: according to our estimates, infiltrated municipalities collect 15% less taxes on waste and garbage compared to the average of non – treated municipalities (baseline average is 0.14) and this translates in approximately a loss 130 euro per capita every year. The result is stable to the inclusion of our set of controls and to the restriction of the sample (Column 8).

The interpretation of this result is twofold. First, the direct or indirect presence of criminal organisations within the municipal government is a silent metastasis that has a profound impact on the performance of the local government. After all, tax evasion generates significant losses and distortions in government revenues and on the ability to enforce tax collection efficiently is one of the fundamental components of state capacity

<sup>34</sup>Local revenues on average correspond to 52% of the entire budget for Italian municipalities (Daniele et al., 2016, IFEL, 2014).

<sup>35</sup>Our data come from the Certificati Consuntivi (quadro 2). This analysis is base on a panel dataset that starts in 1999 and finishes in 2012. Total taxes represent the total fiscal inflows for a municipality. Total Revenues also include transfers from the National Government.

<sup>36</sup>Although not significant, the direction of our coefficient is in line with the result from Daniele et al. 2016. They focus on the period *post* the dissolution and *after* the commissioning and uncover that the new elected local government has lower ability to collect fiscal revenues.

(Casaburi & Troiano, 2016). As shown in Figure A.11, *Waste Tax* represents 22% of the municipal budget (total revenues are on average 2.8 millions per year). Second, lower fiscal revenues correspond to a precise strategy of the criminal organisations (Barone & Narciso, Daniele & Geys, 2016; Trocchia 2009) which aims to weaken the presence and the reputation of the state in order to have the possibility to substitute it through a system of provision of private favours. Moreover, this result, together with the evidence on spending on construction and waste management uncovered in section 5.2, seems to confirm the well-known presence of criminal organisations within the waste management sector.<sup>37</sup>

We also exploit another measure of state efficiency. In 2007, the Italian government instituted a nationwide anti - evasion policy, the Ghost Buildings program. The program identified ghost buildings—properties not included in the land registry and thus hidden from tax authorities—by overlaying aerial photographs and digital land registry maps (Casaburi & Troiano, 2016).<sup>38</sup> Municipalities have a key role in identifying the ghost buildings in their respective territory. The intensity of identification varied significantly across municipalities. Following Casaburi & Troiano (2016), we use a measure of Ghost Building Intensity, the number of land registry parcels with ghost buildings identified by the program to measure the tax enforcement attitude of each municipality.<sup>39</sup> Hence, we use the number of ghost buildings revealed as a proxy for the civic sense and civic duty of the local municipal government. Using our Diff – in Differences setting, we present the results in Table 6. The negative coefficient reveals that, on average, infiltrated municipalities register and declare less *ghost buildings*. We interpret this result as in line with our previous findings. When local governments are captured by criminal organisations, the efficiency of the administration, its civic sense, and its compliance to the rules decrease. This undermines the entire social welfare of the local community.

## 6 Robustness Checks

In this section, we present a selection of important tests in order to verify the robustness of our design and our estimates. More robustness checks are presented in appendix A.3.<sup>40</sup>

**Infiltration period starts with the elections.** As discussed in section III, the starting assumption of our identification strategy is that the period of infiltration begins at the moment of the election of later-dissolved governments and ends with the dissolution. We test the validity of this assumption in Table 7 where we perform a placebo experiment on our full sample.<sup>41</sup> If the significant variation in both public investments

<sup>37</sup>The connection between the garbage-hauling industry and organized crime goes back decades. In the U.S., La Cosa Nostra has been part of New York’s commercial sanitation system since the 1950s (personal trash is hauled by the city’s Department of Sanitation). Carters, as trash haulers are known, have always been able to carve out and sell routes to one another, making the system vulnerable to strong-arm tactics. The trend continues overseas. The Italian Mafia’s Camorra group is said to have controlled garbage in the city of Naples since the early 1980s. The badly run system gained worldwide attention back in 2008, when uncollected garbage piled up on the city’s streets for more than two weeks because the Mafia left the dumps closed.

<sup>38</sup>The Agenzia del Territorio coordinated the effort. The agency first juxtaposed the land and building registry maps to obtain the Official Building Map. It subsequently compiled high-resolution (50 cm) aerial photographs of the entire country to identify the ghost buildings. Appendix Figures A.1A-A.1C summarize the identification steps. First, the aerial photograph of a particular location was created. Then, the pictures were matched with the official building map for the corresponding area. Finally, the ghost buildings were identified (Casaburi & Troiano, 2016).

<sup>39</sup>Casaburi and Troiano (2016) use a difference-in-differences approach, to test the impact of the antievasion policy on the reelection of local incumbents by exploiting the cross-municipality variation in the Ghost Building Intensity

<sup>40</sup>Appendix A 3.1 presents for all our results the following tests. a) We present the analysis with both full and restricted sample; b) for each of this estimations, in column 1 to 3, we gradually increase the our controls and we include linear time trends; c) in column 4, we change specification and we let the infiltration dummy to enter with one year lag. Section A3 in appendix provides a full explanation of the estimations.

<sup>41</sup>The analysis with restricted sample can be found in Table 7



and revenue collection starts in the period preceding infiltrations, the decision to infiltrate a government might be taken as a result of this variation. This would occur if the criminal organisation were selecting municipalities where to extract rents on the basis of pre-determined variations in public expenditures or local taxes, made by governments with no links with organised crime. If this is the case, public spending decisions are the cause, not the consequence, of organised crime infiltrations. Our placebo test verifies the spending behaviour and the revenue collection of governments preceding those dissolved for mafia infiltration. In Table 7, for each of our outcome variables, Column 1 reports the result of our full model as expressed in Tables 3 and 4. Columns 2 and 3 introduce two new dummy variables taking value 1 respectively 1 year (Column 2) and 2 years (Column 3) immediately before the election of later – dissolved government. All years coded as ‘infiltration years’ – from the election to the dissolution – are excluded from the sample. We expect to find no significant correlation between pre-infiltration governments and any forms of public spending or revenue collection distortion. All the coefficients in Columns 2 and 3 are insignificant, suggesting that the observed effects on public spending and revenue collection are significantly affected only during infiltration years.

Although we cannot reject with full certainty the possibility that the infiltration starts before the elections, the results of our placebo test seem to follow the theoretical framework of Dal Bo (2006) according to which the elections constitute a “*recruitment process*” whereby a new bargaining table between crime and politics is established. This might particularly be the case in Southern Italy where the political turnover is very high: 71% of local administrators leave local politics within 5 years and 93% within 10 years (Daniele and Geys, 2015). In this context, the elections are crucial because they might constitute a turning point where the “*criminal interest groups*” select the political counterparties that best suit their interests. Hence, the striking difference in all the coefficients from column 1 to column 2 – 3 in Table 7, might be explained as a newly renovated agreement between mafia and politics which lead to a distortion in the allocation of public resources and revenue collection.

**Parallel Trend - Full Dynamic Specification.** When the sample includes many years, the DiD model lends itself to a test of causality in the spirit of Granger (Angrist and Pischke, 2009). The idea of the Granger causality test (or full dynamic model) is to see whether causes happen before consequences, and not vice versa. Therefore, it is an additional control for simultaneous causality that analyses the dynamic evolution over time of the local spending determined by the infiltrations. In this context, Granger causality testing means checking whether there is any statistical significant difference between infiltrated and non-infiltrated municipalities before the infiltration takes place. In order to do this, a set of dummy variables is created for each and every year of the treatment period, i.e. the period from the governments’ election to their dissolution. Similar dummy variables are also constructed for pre-treatment years, while one additional dummy is created for the whole post-treatment period.

Formally, we estimate the following equation:

$$Y_{m,t+1} = \varphi_m + \tau_t + \sum_{\tau=0}^{\rho} \delta_{-\tau} Inf_{m,t-\tau} + \sum_{\tau=1}^q \delta_{+\tau} D_{m,t+\tau} + X_{m,t}\beta + \varepsilon_{m,t} \quad (2)$$

Where  $\rho$  represents the post-treatment effect and  $q$  represents the anticipatory effect.<sup>42</sup> We have re-

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<sup>42</sup>Given that some municipalities have witnessed more than one government dissolutions, the post-treatment period cannot be codified as continuous in these cases. As a result, all municipalities with more than one infiltrated government in the 1998-2013 period have been excluded from the sample for this test. In the case of municipalities having had government dissolutions occurring prior to 1998, the post-treatment dummy takes value 1 for the entire period of analysis.

estimated the model for the main dependent variables (capital account spending for construction and waste management and for municipal police) by including this set of leads and lags, again controlling for fixed-time effects and municipality time trends. Figures A4 in the Appendix display the result of the analysis for both public spending and for revenue collection. The evolution of municipal spending has been assessed up to 2 years before the election of an infiltrated government, during the period in which the infiltrated government was in charge, and in the post-dissolution years. Each point in the figures refers to the estimated coefficient for a given year.<sup>43</sup>

Importantly, for all our results, the estimates reveal no statistical difference in the pre-treatment trends between control and treatment group. In all the figures, the 2 pre-treatment years show that, before the infiltrated governments, there is very limited and not significant variations in either the share of public investments (in construction, waste management and police) or in the collection of fiscal resources. Hence, there is no evidence that the significant change in the proportion of investments and revenues precedes the election of an infiltrated government.<sup>44</sup> This is a fundamental test not just because it addresses an important criteria of the Difference – in – Differences estimation, but also because it provides the highest level of transparency of the dynamicity of the effect before and after the beginning of the treatment.

**Selection into treatment correlated with outcome variable.** Our results indicate that infiltrated local governments spend on average more for construction and waste management and less for municipal police. One concern to our analysis is that the judicial investigators might, in a first place, start to investigate exactly those municipalities that present anomalies in their balance sheets. If this is the case, the selection into treatment would be correlated with the dependent variable and therefore it would be bias.

In order to tackle this issue, we reproduced our analysis excluding from the sample all those municipalities for which the main reason for the dissolution was related to the distortion in the allocation of resources.<sup>45</sup> Table A.10 provides the results. Our main findings, reduction in police investments and increase in construction and waste management, not just remain significant but they also increase in magnitude. Column 1 and Column 3 provide the point estimates for both capital spending in police and construction. The only coefficient that turns insignificant refers to the current account spending for municipal police.<sup>46</sup> Hence, according to the estimates in Table A.10 we can safely rule out the concern that our results were driven by a bias in the selection into treatment.

**Placebo Test: Organised Crime-unrelated dissolutions.** One concern related to the changes in public spending of infiltrated governments is that, rather than being caused by the mafia, they might be driven by some inherent characteristics of dissolved local governments. These may include the degree of political instability, or the quality of politicians governing these local councils. In order to test for this, we

<sup>43</sup>The number of years of legislature before the dissolutions are as follows: 1 year - 117 municipalities; 2 years - 110 municipalities; 3 years - 78 municipalities; 4 years - 49 municipalities; 5 years - 23 municipalities.

<sup>44</sup>Figure A4.1 shows a jump in investment for construction and waste management in the first year after local election. This may be due to the fact that the second budget year is also the last one in which governments can promote three-year investment plans of public works and hope to see the end of construction works while still in office. These medium-term investment initiatives are potentially very appealing for the mafia due to their higher monetary value as compared to single-year plans – three-year plans refer to public works worth more than 100,000 Euros.

<sup>45</sup>To perform this test, we exploit the official sentences for the dissolutions. In these documents there is a precise description of not just the final reasons for the dissolutions, but also on how the investigation started. We exclude from our sample all the municipalities for which a) the investigation started and/or b) the reason for the dissolution was due to spending related distortions. In doing so we excluded 14% of the sample.

<sup>46</sup>This is not a surprise because this result was very weak also in the main analysis. We do not know if the loss of significance is simply due to the lower statistical power or if it is related to a bias in the selection into treatment.

exploit the fact that in Italy local governments can be dissolved for reasons unrelated to mafia infiltrations, such as: failure to approve the financial budget, resignation of the mayor, resignation of more than 50% of council members, vote of no confidence. These dissolutions have been in fact relatively common in our sample and time-span – in the period from 1998 to 2013 there have been 463 cases of mafia-unrelated dissolved governments in the municipalities of the three regions of analysis. We use these dissolutions as proxies for unstable governments and for a low quality in the elected politicians, replicating the estimates of model (1) using  $DissNomafia_{m,t}$  as main explanatory variable, a dummy taking value 1 for all years in which governments later-dissolved for mafia-unrelated reasons were ruling the municipalities.<sup>47</sup> If the results in section V were driven by some mafia-unrelated characteristics of local governments, rather than by infiltrations, we should expect to obtain similar effects as those presented above.

The results of this placebo test are presented in Appendix A6. We exclude all infiltrated governments and compare dissolved governments for mafia-unrelated reasons with other governments, before and after the dissolution takes place. We do so using the entire sample of municipalities from Calabria, Campania and Sicily from 1998 to 2013, including linear time trends and controlling for time and municipality fixed effects, and all other controls. Table A6.1 only includes our main results as outcome variables. There is no statistical significant coefficients, suggesting that the observed differences between infiltrated and non-infiltrated governments is really produced by the presence of the mafia.

In this section we have tested the robustness of our estimates. In the next one, we will further investigate the complex relationship that exists between politics and organised crime.

## 7 Organised Crime and Politics

Our results have so far revealed that the collusion between criminal organizations and politics has a significant impact on both the allocation of public resources and on local taxes. However, both public spending and revenue collection can be affected by a multiplicity of factors. The most intuitive and important of which is politics. Hence, a legitimate question is whether our results so far are really driven by the criminal infiltration or simply by some unobserved political characteristics of the local elections of infiltrated municipalities?

The objective of this section is to provide an answer to this important question. In doing so, we inevitably investigate new empirical relationship between organised crime and politics. As a consequence, this section does not simply provide a crucial test to the validity of our results, but it also provides clearer picture on the infiltration phenomenon.

### 7.1 Robustness Check: Politics, Organised crime and State Capacity

**Politics and Organised Crime.** Theoretically, there are different political characteristics that might be associated with cases of collusion. One of which is certainly electoral competition. Electoral competition may help giving rise to opposition parties that can inform the electorate about corruption or collusion (Schleiter and Voznaya, 2014) or, alternatively, more competitive elections may make it more difficult for voters to identify who is responsible for government policy and to coordinate in selecting the best politicians, hence increasing collusion (Lewis-Beck, 1988; Anderson, 2000). We assess whether mafia infiltration is related to

<sup>47</sup>The dissolution is the worst outcome for a newly elected local government. When dissolved for non-mafia related reasons, the elected politicians cannot run again in the following elections. Thus, they have all the incentives to avoid this scenario.

the degree of electoral competition by exploiting the fact that there have been cases in which local elections in Southern Italy have been non-competitive, that is, only one candidate was potentially eligible as mayor because no other electoral lists were presented.<sup>48</sup> A lack of electoral competition may be associated with infiltration cases if mafia pre-electoral intimidations limit the participation of other candidates, or if the absence of political opposition within local councils facilitates the chances for the mafia to find valuable political referents.

Another political element which may be associated with infiltration is the mandate limit of the incumbent mayors. We look at the moment of their political office – first or second term as mayor – in which incumbents are more likely to engage in collusion behaviours. Binding term limit tend to affect the behaviour of politicians (Besley and Case, 2003; List and Sturm, 2006; Alt et al., 2011; Ferraz and Finan, 2011) and may increase corruption and collusion cases (Ferraz and Finan, 2011). We exploit the fact that up until the 2014 all mayors had a limit of maximum of two consecutive terms in office and examine whether the infiltration is associated with the fact that mayors have no possibility to be immediately re-elected.<sup>49</sup> A lower degree of accountability towards the citizens may facilitate the propensity to come to terms with organised crime.

Finally, infiltrations may be systematically correlated with the political colour of governments. We explore this relationship by verifying if there is any political party recurrently chosen by the mafia when offering political support in exchange for favours. To perform this test, we divide the political spectrum into three categories: left-wing parties, right-wing parties, and centre parties. A separate classification is used for civic lists, i.e. those electoral lists different from traditional political organisations and often created *ad hoc* for the local election.<sup>50</sup>

In order to investigate any correlation between the cases of criminal infiltration and these political characteristics of the municipal elections, we regress a set of indicators for our *political factors* on a dummy equal to one (*Infiltration*) if the municipal government is infiltrated.<sup>51</sup> Political Factors is sub-divided into a set of variables referring to key political features of the local government, namely having only one candidate running for election (*Single Candidate*), running for the second and last mayoral mandate (*Last Mandate*) and the political colour of the winning party (*Right Party*, *Centre Party*, *Civic List*).<sup>52</sup> Table 8 reports linear probability estimates from such regression. Each of the columns refers to different political variables of interest. The coefficient of Single Candidate (Column 1) is positive and strongly significant. One interpretation for this finding may be that due to mafia-politics agreements the mafia operates to reduce political competi-

<sup>48</sup>In such cases, the only condition for elections to be valid is a voter turnout above 50%.

<sup>49</sup>Even if this would allow mayors to run for a third term after a term break, third-term candidacies are extremely rare.

<sup>50</sup>Recent evidence has shown that the mafia sells votes to the party that has more core supporters and it is therefore expected to win (De Feo and De Luca, 2013). In Sicily, the strongest political relationships developed by the mafia have been with the Christian Democrats up until 1994 (De Feo and De Luca, 2013) and with the conservative party Forza Italia after that date (Buonanno et al., 2016). Daniele and Geys (2016) find that in the first elections after mafia dissolutions voters are more likely to vote for centre-left parties and less for civic lists.

<sup>51</sup>We exploit the same dataset used in the third section, augmented with data on election characteristics for all the municipalities of Calabria, Campania and Sicily from 1998 to 2013. Our primary data source is the Historical Archive of Local Elections of the Italian Ministry of Interior. We focus on the 182 municipalities that have experienced at least one dissolution for mafia infiltration between 1998 and 2013. Descriptive statistics for all political variables are displayed in Table A7 in the Appendix. The variables are reported both for the full sample of municipalities having had at least one dissolution, and for infiltration years.

<sup>52</sup>When estimating the model with Party Colour variables, we have excluded the few governments whose administration cannot be classified among the three categories of parties. In addition, commissioning years are excluded from the analysis. We exclude from the sample all years in which municipal governments were commissioned, not just for mafia infiltration but also for other reasons. Civic List a dummy variable taking value one if the winner of elections in municipality  $m$  and ruling the government at time  $t$  is a civic list, that is, a different political formation from any existing traditional party. Although civic lists are not incorporated in any party, very frequently they form multi-party coalitions with groups of traditional parties.

tion, up to the point that only their preferred candidate is running for mayor. Alternatively, it may be that infiltrations are more likely to occur if the local council lacks any political group potentially contrasting the decisions of the government.

Moving to Column 2, the coefficient of the Last Mandate dummy variable is positive and highly significant, suggesting that mayors in their last term in office are more likely to collude with organised crime (Besley and Case, 2003; List and Sturm, 2006).

In columns (3) to (6) we look for a ‘partisanship effect’, i.e. a systematic relationship between infiltrations and some types of parties. The result of a positive and significant coefficient for the Right party dummy variable suggests that the infiltration is significantly correlated with the probability of having a right-wing party winning local elections and controlling infiltrated governments. The coefficients for Left party, Centre party and Civic list are not statistically significant.<sup>53</sup>

Taken together, the estimated effects uncover some important empirical regularity of infiltrations and political and electoral factors. Although we cannot establish the direction of causality of the relationships discussed, the results seem to confirm the structural integration of organised crime groups within the political system and suggest that they either have the possibility to influence electoral outcomes (if collusions happen in pre-electoral times), or that infiltrations are more likely to occur under some specific political circumstances (if collusions happen after elections).

**Political Factors and Public Spending in Infiltrated Municipalities.** All the political and electoral elements discussed so far may not only be correlated with infiltrations, but also with investment decisions of local governments. This is a very serious concern since it would imply that the estimated effect on the composition of local budget in section 5 may be the consequences of political elements such as strategic redistributions and pork-barrel politics rather than being caused by infiltrations. Hence, for any uncovered correlation between infiltration cases and political conditions we need to make sure that infiltrations, not these political factors, are the drivers of the significant changes in public spending discussed in the previous section of the paper.

We do so by estimating the following models:

$$Y_{m,t+1} = \alpha + \beta_1 Inf_{m,t} + \beta_2 PoliticalFactors_{m,t} + \gamma Mafia_{p,t} + \delta NatGov_t + \vartheta X_{m,t} + \varphi_m + \tau_t + \varepsilon_t \quad (3)$$

$$Y_{m,t+1} = \alpha + \beta PoliticalFactors_{m,t} + \gamma Mafia_{p,t} + \delta NatGov_t + \vartheta X_{m,t} + \varphi_m + \tau_t + \varepsilon_t \quad (4)$$

Where  $Y_{m,t+1}$  represents the main results of section V, i.e. local public expenditures on capital account spending for construction and waste management, for municipal police and local fiscal revenues (waste tax and total tax). As above,  $PoliticalFactors_{m,t}$  is sub-divided into a set of variables referring to key political

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<sup>53</sup>Political conditions may influence the allocation of public expenditures (Johnston, 1977; Besley and Coates, 1998). The expectations for and results of electoral contests may be drivers of the territorial allocation of public investments if, for example, incumbent governments allocate public resources with the aim of extracting the highest electoral benefits (Cadot et al., 2006; Rodriguez-Pose et al., 2016), or if public investments are seen as a mean to reward voters for electoral support (Golden and Picci, 2008). While this is a possibility, there is substantial evidence suggesting that the distribution of public expenditures is not always influenced by pork-barrel politics or strategic electoral considerations (Larcinese et al., 2012; Luca and Rodriguez-Pose, 2015).

features of the local government, namely  $SingleCandidate_{m,t}$ ,  $LastMandate_{m,t}$ ,  $PartryColour_{m,t}$ .

As in previous empirical analysis,  $Mafia_{p,t}$  represents a control variable for the underlying strength of the mafia.  $NatGove_t$  is a dummy variable controlling for the political colour of the national government at time  $t$  – left or right-wing governments.  $X_{m,t}$  is a vector of socio-demographic municipal control variables at the municipality level.  $\varphi_m$  and  $\tau_t$  represent municipality and time fixed effects, respectively.  $\varepsilon_{m,t}$  is an idiosyncratic error term. Standard errors are clustered at the municipality level.

Exploiting our Difference – in – Differences setting we present the results of model (3) in Table 9 and of model (4) in table 10. In Table 9, we run our main estimating equation from section V but controlling for all the political factors correlated with the infiltrated local government. The infiltration dummy remains significant and confirms all our results. None of the political factors are significant. The same is true in table 10 where we provide the estimate for equation 4: again, none of the estimated coefficients report significant correlation between key political factors and the spending components on which government spending varies during infiltration periods.<sup>54</sup> These represents crucially important tests that confirm, as hypothesised, that the variations in public spending are not determined by any of the political elements linked with infiltrations.

## 7.2 Partisanship effect, organised crime infiltration, and public spending

### 7.2.1 RDD Setting

The previous section has uncovered a systematic correlation between criminal infiltrations and governments ruled by conservative parties. This may imply that the mafia is more likely to provide electoral support to right-wing candidates, or that candidates belonging to right-wing parties are more likely to come to terms with criminal organisations. Although interesting, this result cannot be interpreted causally. The electoral victory of a right wing candidate is plausibly correlated with a wide range of socioeconomic characteristics of the municipality. Thus, a naive comparison of the probability of infiltration in municipalities with and without right-wing incumbent mayors may confound the effect of other municipal characteristics. As a consequence we cannot be fully certain that our main results on public spending are not driven by the Conservative Parties winning the elections.

In order to address this, we implement a regression discontinuity design (RDD) based on close elections, investigating whether the probability of infiltration is a function of the electoral victory of right-wing parties. We compare municipalities where right-wing candidates won local elections by a narrow margin to municipalities where right-wing candidates lost by a narrow margin. The underlying identification assumption of this empirical exercise is that municipalities where right-wing candidates won or lost by a narrow margin are similar across all characteristics, except for the ideological leaning of the incumbent politician. Table A9.1 in the Appendix provides evidence that key covariates (socio-economic variables, mafia strength, local election characteristics) are not significantly different in treatment and control groups used for the RDD.

The empirical approach therefore focuses on the sample of races in which the right-wing candidate is either the election winner (*treatment group*) or the runner-up (*control group*).<sup>55</sup>

<sup>54</sup>As a further check that the relationship between infiltration and local public finances is not driven by political conditions, we restrict the sample to infiltration years and focus only on the governments that were dissolved for mafia infiltration during the 1998-2013 period. The results, shown in Table A8 in the Appendix, corroborate the hypothesis that political factors are not linked to expenditure shares of infiltrated governments.

<sup>55</sup>As a robustness check, we have replicated the RDD estimates comparing all the close electoral races where the right barely wins or loses against the left party only. The results are remarkably similar to the ones obtained when all non-right parties may belong to the control group. Estimation results available upon request.

Let  $X_{m,t}$  be the vote share of the right-leaning candidate minus the vote share of the non-right candidate,  $R_{m,t}$  be the treatment dummy variable referring to electoral victories of right-wing parties, and  $Pr(Inf)_{m,t}$  the probability of infiltration. Then we have  $R_{m,t} = 1$  if  $X_{m,t} > 0$  and  $R_{m,t} = 0$  if  $X_{m,t} < 0$ . We focus on the set of electoral races where  $X_{m,t}$  is lower than a bandwidth  $h$ , such that the outcome of those races can be considered as good as random. Our treatment effect is the average difference between  $Pr(Inf)_{m,t}$  of a municipality where the right narrowly wins and  $Pr(Inf)_{m,t}$  of a municipality where the right is narrowly defeated.

Formally:

$$Pr(Inf)_{m,t} = \alpha R_{m,t} + f(X_{m,t}) + \varepsilon_{m,t} \quad (5)$$

for all electoral races, such that  $-h < X_{m,t} < h$

with  $R_{m,t} = 1$  if  $X_{m,t} > 0$ , and  $R_{m,t} = 0$  if  $X_{m,t} < 0$

We estimate  $\alpha = E[Pr(Inf)_{m,t}|R_{m,t} = 1] - E[Pr(Inf)_{m,t}|R_{m,t} = 0]$ .  $\alpha$  is estimated both parametrically and non-parametrically.<sup>56</sup> We report estimates under two choices for the local polynomials: linear and quadratic.

In order to obtain reliable RDD estimates, we need to make sure that there is absence of non-random sorting around the cutoff.<sup>57</sup> For this, we perform a McCrary density test, making sure that there is no significant jump in the density of observations at the cutoff point. Figure A9.2 in Appendix A9 exhibits a very small discontinuity at the threshold, which is statistically insignificant (Table A9.4).

## 7.2.2 Results

Table 11 presents our main results, obtained with the full sample of municipalities from Campania, Calabria and Sicily and using both non-parametric and parametric estimation methods. Columns (1) and (2) present the results when using a linear and quadratic functional forms, respectively. The optimal bandwidth used is 0.075, meaning that the sample is made of governments whose election was characterised by a difference in votes between the right-wing party and other parties below 7.5%. We remove assumptions of linearity in columns (3)-(5). In all cases we find clear evidence of a positive and significant correlation, indicating that the probability of infiltration increases as right-wing parties win local elections by a small margin over other parties.

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<sup>56</sup>In the choice of optimal bandwidth ( $h$ ) we face a trade-off between efficiency and bias. With very small bandwidths we are more likely to approximate the quasi-experimental assignment of the treatment variable and to attain balance in the other observable covariates. However, very small bandwidths often lead to a small sample problems and imprecise estimates. To address this problem, we use the optimal bandwidth proposed by Calonico et al. (2014) that addresses the bias in the confidence interval and the point estimator.

<sup>57</sup>If the density of  $X_{m,t}$  for each municipality is continuous, then the marginal density of  $X_{m,t}$  over the sub-sample of municipalities used for the RDD study should be continuous as well (McCrary, 2008). If, for examples, close races are disproportionately resolved in favour of right wing parties – e.g. via manipulation of electoral outcomes, electoral fraud, etc. – this would challenge the idea that the outcome of these electoral races is as good as random, and indicate some degree of sorting around the threshold. While to a given extent mafia groups are indeed expected to manipulate electoral results by re-directing voting to their preferred candidates, the tests reported in Appendix A9 suggests that this is not the case in our sample of close elections. One possible interpretation may be that, if the mafia actively distorts electoral results, this is unlikely to bring to a victory of the preferred party by a small margin. Electoral manipulations normally comes with abnormal numbers of non-valid or white ballots. As a descriptive indication that electoral manipulation is not occurring in the RDD sub-sample, the average non-valid ballots in infiltrated municipalities won by the left is 4.4% whereas it is 3.8% when the right-wing party wins and the government is infiltrated. The number of white ballots are respectively 1.6% and 1.4%.

Figure 8 illustrates these findings graphically, where observations are fitted with polynomials of order two, using Calonico et al.'s (2014) bandwidths, and adding confidence interval bands. A statistically significant increase in the number of infiltrated municipalities on the right-hand side of the threshold is evident, indicating that the probability of infiltration increases when right-wing parties are marginally winning the elections. These findings complement well those of Buonanno et al. (2016) and Alesina et al. (2016), focusing on national elections rather than local elections and reporting a systematic correlation between mafia-plagued municipalities and the main Italian right-wing party during a similar period of analysis. .

Figures A9.5 and A9.6 in Appendix A9 confirm the robustness of these results by showing point estimates at different cutoff points and with different bandwidths. As expected, the effect is statistically insignificant at placebo cutoffs. The results remain significant when we increase the bandwidth and when we decrease the bandwidth to elections where the margin of victory was as low as 4%.

### 7.2.3 Partisanship and public spending

Such a significant relationship between right-wing parties and probability of infiltration may imply that changes in public spending are not caused by mafia infiltrations but rather by right-wing local governments. To rule out this concern, we replicate RDD estimates by using capital account spending for construction and waste management and for municipal police as dependent variables. We estimate:

$$Y_{m,t+1} = \alpha R_{m,t} + f(X_{m,t}) + \varepsilon_{m,t} \quad (6)$$

Where  $Y_{m,t+1}$  represents our main results: a) capital account expenditures for construction and waste management or for municipal police, as a share of total capital account spending and b) our measure of efficiency for Waste Tax.

Table 12 reports the results. The insignificant coefficients of right-wing parties reveal that there is no statistically significant variation in construction and waste management and police spending in municipal governments ruled by right-wing parties that barely won the elections. The same is valid for Waste Tax which reports a non significant coefficient. Figure 9 reproduce the estimation results in graphical forms, providing evidence that no discontinuity around the threshold is present for any of the two key spending components and for waste tax. Hence, this test supports our hypothesis arguing that the significant variation in construction and waste management, police investments and waste tax in infiltrated municipalities are due to the presence of organised crime and not to other unobserved and confounding factors.

## 8 Conclusion

Collusion and corruption distort the correct functioning of any democratic system. These institutional failures have the potential to influence key aspects of economic activity, undermining the long run development of every society (Shleifer and Vishny, 1993; Mauro, 1995; Glaeser and Saks, 2006). A particularly dangerous form corruption is the one perpetrated by organised crime. Differently from the more common white-collar crimes, criminal groups seek profit through illegal business and, very frequently, employ physical intimidation. Illegal and secretive agreements between elected officials and colluding parties may alter the legislative process, compromising the definition of policies aiming at the welfare of the citizens. Yet, the mechanisms through which this negative impact takes place are still unclear. In this paper, we explored one possible channel: the



collusion between organised crime and politics. Our study is among the first in the literature to study the infiltration phenomenon extensively, analysing both the conditions making collusions more likely and their possible consequences.

Using disaggregated municipal data from three regions of Southern Italy, we find that the collusion between organised crime and politics affect the allocation of public resources and the ability of local government to collect resources. Our analysis suggests that, while the overall amount of financial resources local governments spend remain unaltered, expenditures for specific components of public finance vary significantly as a result of infiltrations. In particular, difference-in-differences estimates reveal that infiltrated municipalities invest higher shares of resources for construction and waste management, and they reduce the annual investment shares for municipal police forces. Moreover, infiltrated municipalities collect on average fewer revenues and in particular waste taxes. These results are robust to changes in specifications and to a series of robustness checks.

Moreover, we have identified a set of political characteristics of the municipal elections that are correlated with infiltrations. We find that the absence of competition at local elections, and having a mayor running for the second and last mandate, are linked with infiltrations. This seems to suggest that there may be some recurrent electoral patterns associated with mafia-politics collusions. Importantly, we find no evidence of a correlation between these political conditions and spending decisions. This provides additional evidence in favour of the hypothesis that variations in public spending decisions are determined by infiltrations. In addition, we tested for a systematic correlation between infiltrated governments and political party of a specific colour, uncovering a positive and significant association between infiltrations and elections won by right-wing parties. This may imply a preference from the mafia for Italian right-wing parties when looking for political referents. We have looked deeper into this relationship by testing the effect of right-wing narrow electoral victories on the probability of infiltration. The evidence suggests that infiltrations are more likely to occur when governments are controlled by right-wing mayors.

In conclusion, this paper has provided an assessment of the strategy of the mafia when it takes control of local politics and on its consequences on the local state capacity. Criminal groups neither seem to impose generalised inflations of public expenditures, nor do they seem to be interested in conditioning the current account budget. Rather, local finances are modified only in key and strategic sectors on which the mafia has interests to protect. In addition, we have shown that there may be some political parties systematically more likely to come to terms with organised crime.

In sum, our analysis has unveiled important distortionary effect that mafia infiltrations may have on politics and policy choices. Our study may help in gaining a deeper understanding of these phenomena and possibly help in the attempt to prevent them.

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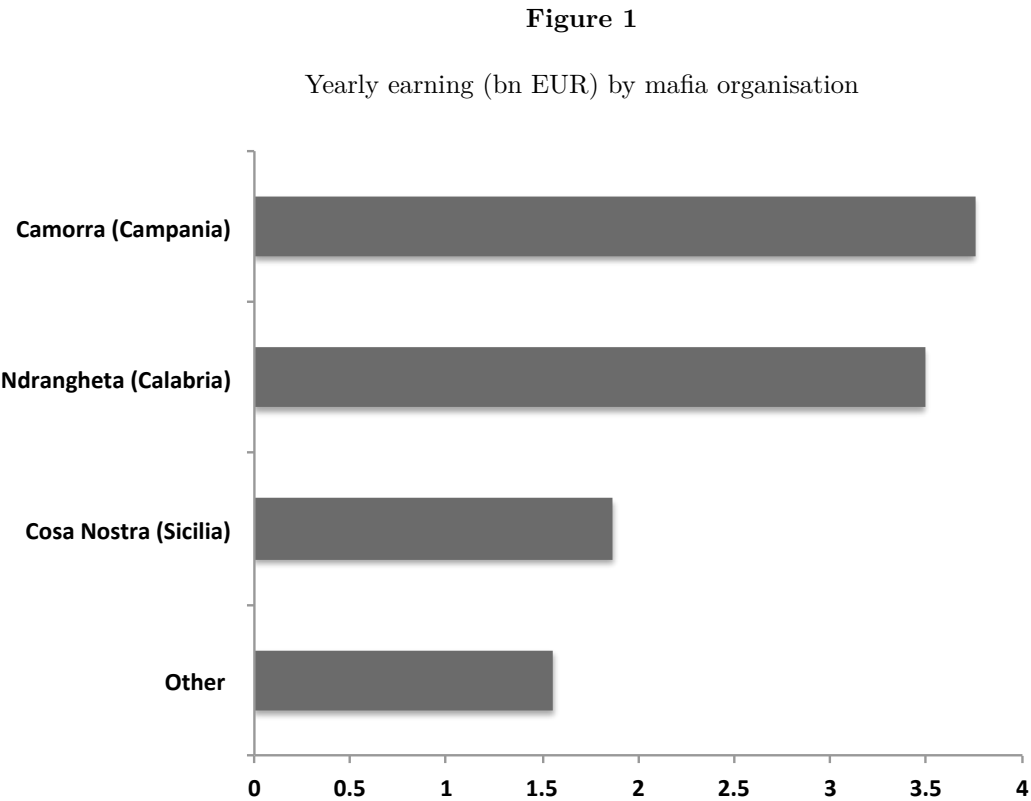
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# 9 Figures and Tables

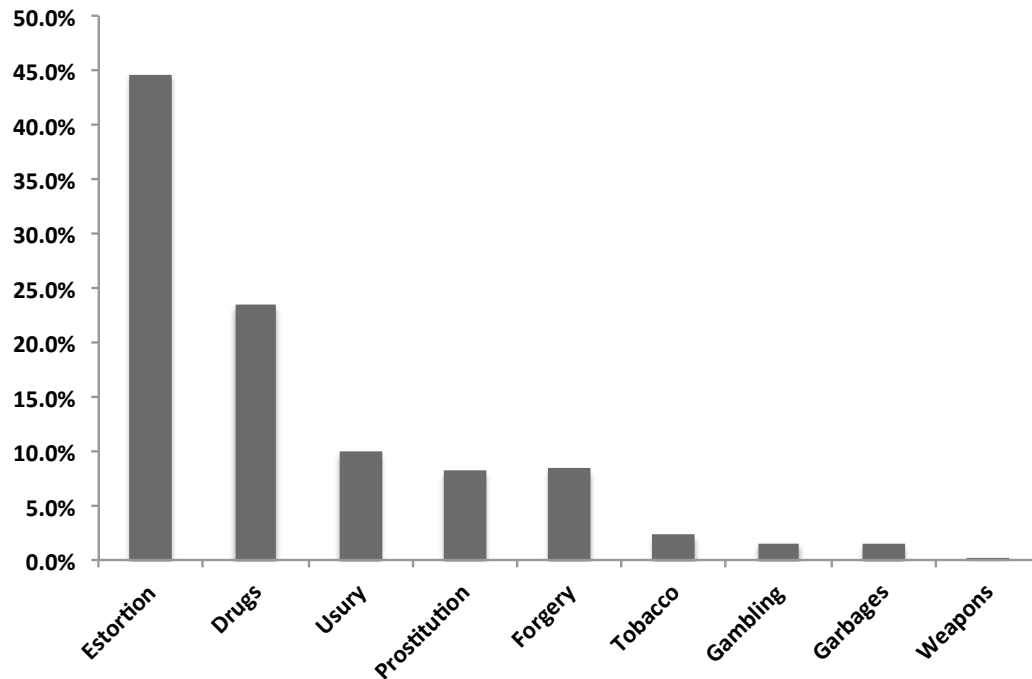
## 9.1 Figures (in the text)



Note: Source: Transcrimine – Gli Investimenti delle Mafie 2013 – authors’ own elaboration.

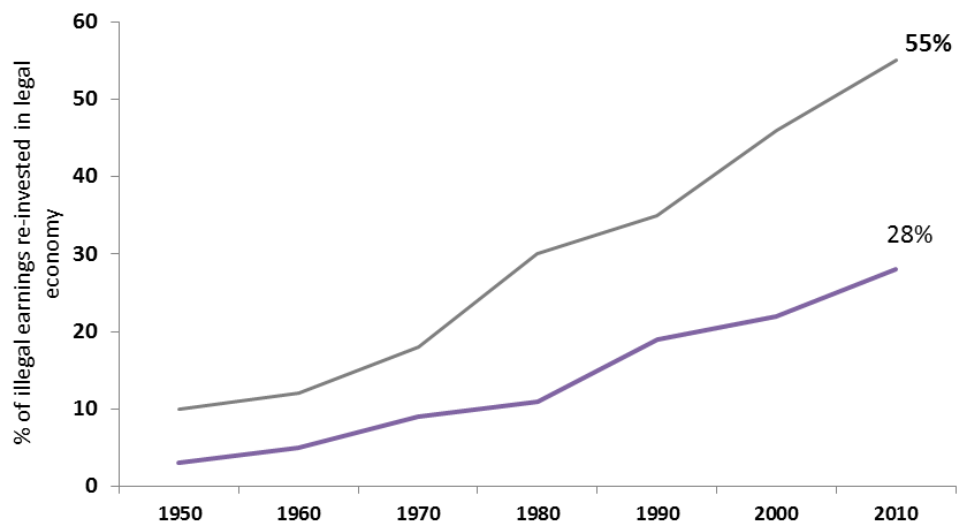
**Figure 2**

Mafia investments by sector



**Figure 3**

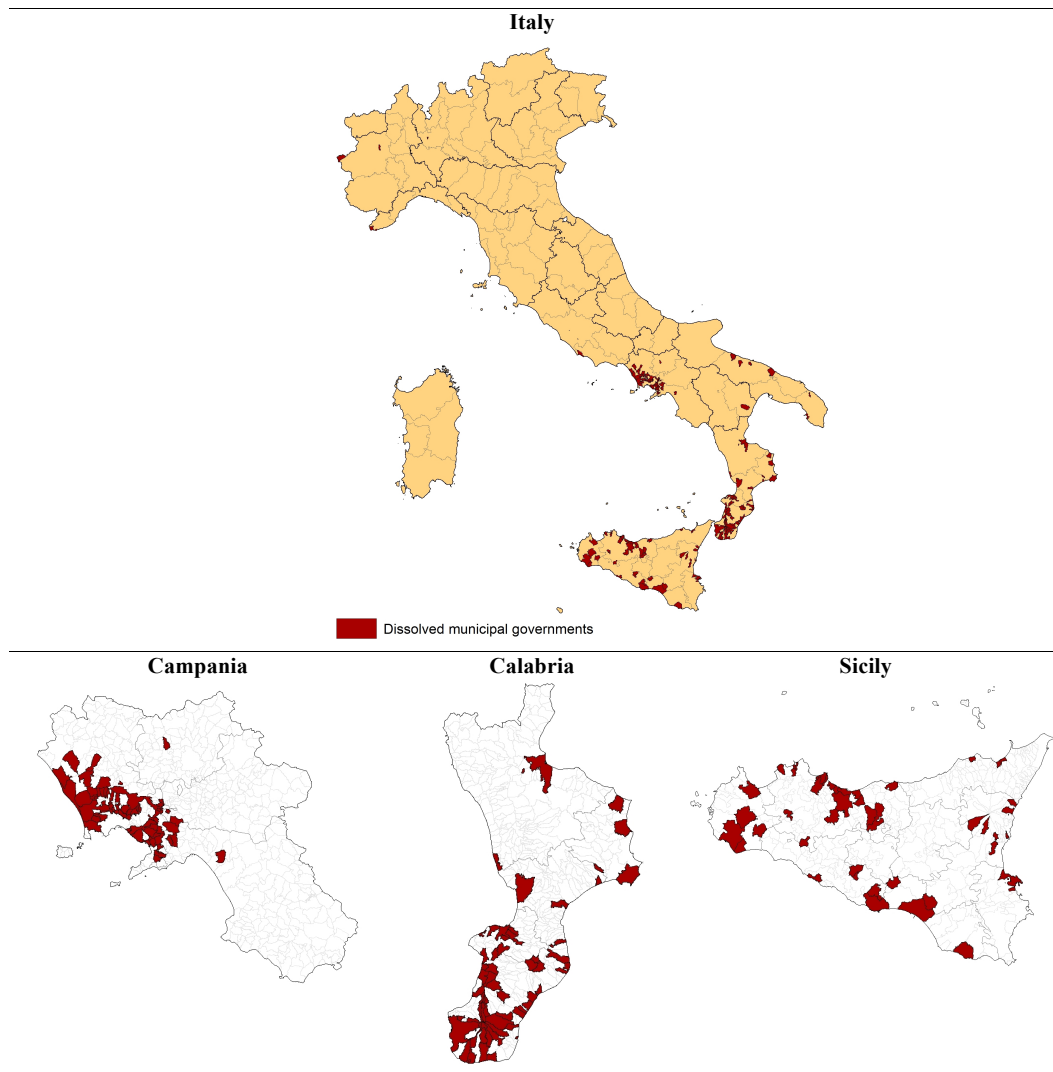
% Illegal profits re-invested into the legal economy



Note: Figure 2 -Source: Transcrimine – Gli Investimenti delle Mafie 2013 – authors' own elaboration. Figure 3 - Sources: Transcrimine and Geo. L.O.C. of Financial Guards

**Figure 4**

Geographical Location of the Dissolutions

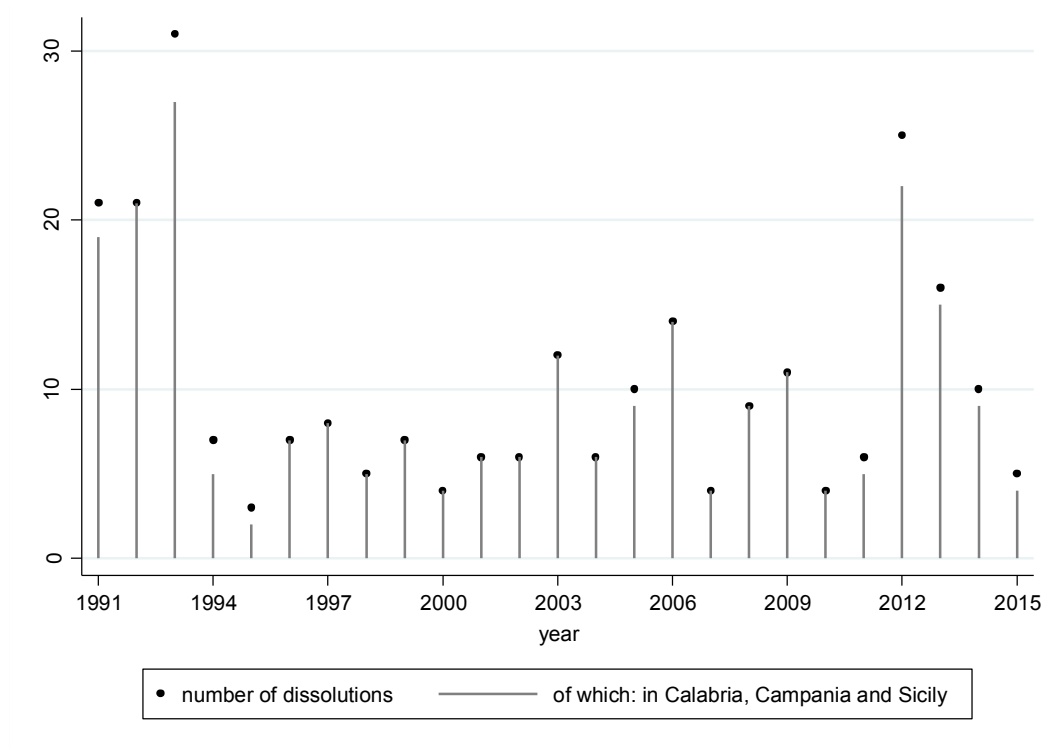


Note: Source: Italian Ministry of Interior – maps are authors' own elaboration.



**Figure 5**

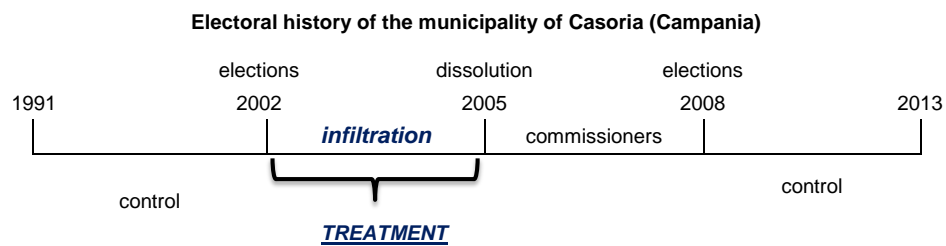
Number of dissolved municipal governments for mafia infiltration



Source: Italian Ministry of Interior.

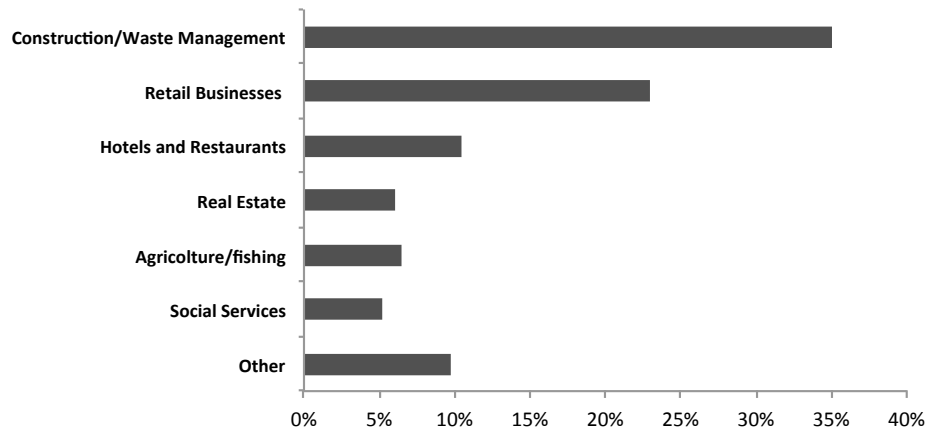
**Figure 6**

Identification of the treatment period



**Figure 7**

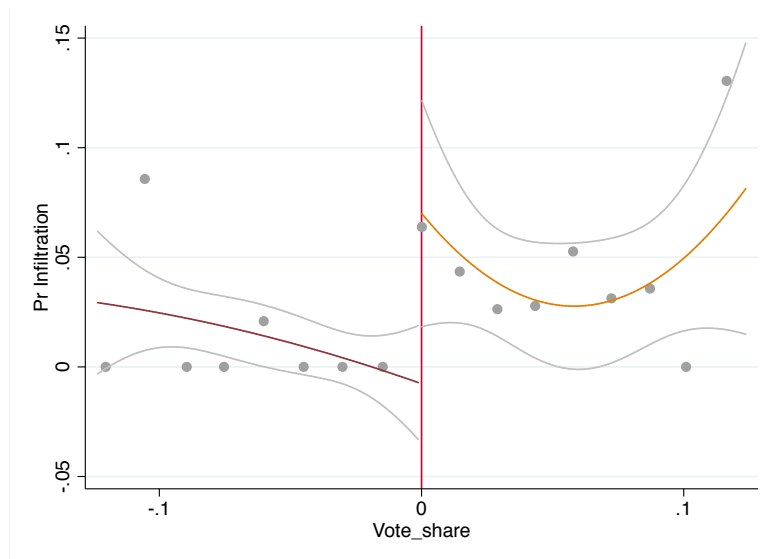
Organised Crime controlled firms investments by sector



Source: Transcrimine – Gli Investimenti delle Mafie 2013 – authors' own elaboration

**Figure 8**

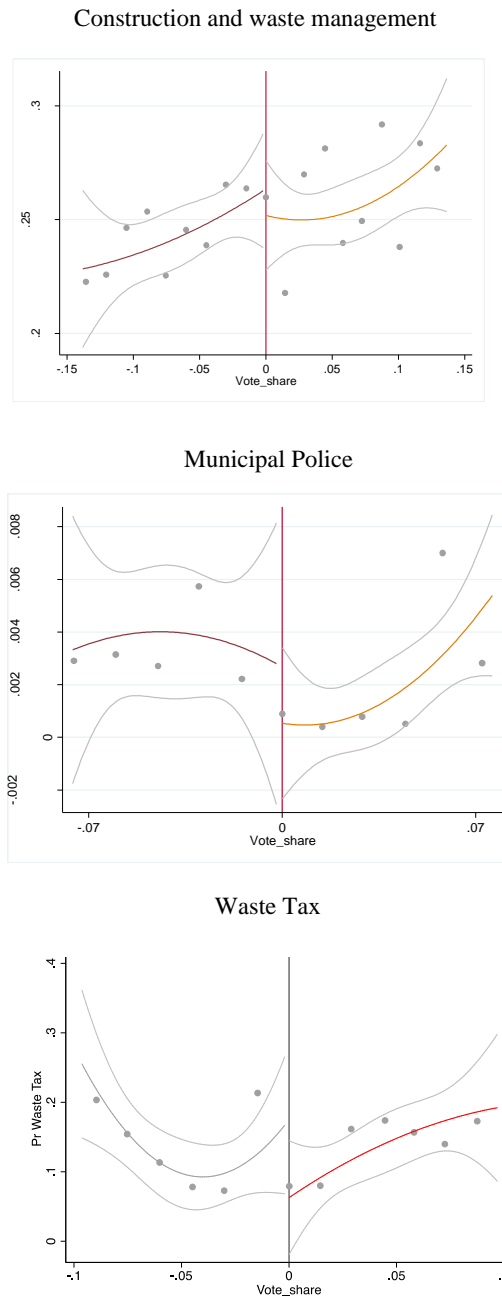
RDD – right-wing party victory and probability of infiltration



Note: Polynomial fit of order2. vote share>0 refers to elections won by right-wing parties; vote share<0 refers to elections barely lost by right-wing parties.

**Figure 9**

RDD – right-wing party victory and current account spending components and waste tax



Note: polynomial fit of order2. vote share $>0$  refers to elections won by right-wing parties; vote share $<0$  refers to elections barely lost by right-wing parties.

## 9.2 Tables (in the text)

**Table 1**  
Descriptive Statistics - Public Spending

Variable	Full sample			Restricted sample		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
<i>Total per capita spending</i>						
Total	21,156	1273.8	1129.9	2,678	1020.3	930.96
Capital Account	21,156	542.82	1002.7	2,678	354.98	821.98
Current Account	21,156	730.97	394.43	2,678	665.3	267.2
<i>Capital Account component (share of total)</i>						
Administration	21,037	0.152	0.217	2,648	0.168	0.214
Social sector	20,901	0.063	0.134	2,625	0.055	0.123
Territory and environment	21,143	0.342	0.292	2,660	0.320	0.277
Transports	21,090	0.232	0.242	2,653	0.228	0.233
Education	20,844	0.084	0.153	2,637	0.104	0.165
Municipal police	20,474	0.003	0.019	2,588	0.007	0.025
<i>Current Account component (share of total)</i>						
Administration	21,240	0.429	0.095	2,675	0.400	0.093
Social sector	21,243	0.073	0.058	2,675	0.086	0.061
Territory and environment	21,239	0.228	0.085	2,675	0.267	0.090
Transports	19,909	0.082	0.040	2,507	0.068	0.037
Education	18,557	0.083	0.041	2,335	0.074	0.038
Municipal police	21,239	0.059	0.027	2,675	0.058	0.024

Note: Full sample refers to all municipalities of Campania, Calabria and Sicily. Restricted sample refers to municipalities of these regions having experienced at least one government dissolution for mafia infiltration. The sum of the means of all capital account or current account spending components does not sum up to 1 due to the fact that there are some other minor spending

**Table 2**

Effect of infiltration on total public spending

	Dependent Variable:					
	Total per capita spending		Total p/c spending - Capital Account		Total p/c spending - Current Account	
	(1)	(2)	(4)	(5)	(7)	(8)
Infiltration	-28.55 (33.02)	-15.85 (34.55)	-27.30 (30.37)	-14.59 (34.53)	-1.249 (10.27)	-1.253 (8.236)
Mafia Homicides		✓		✓		✓
Other controls		✓		✓		✓
Year dummies	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓
Full sample	✓		✓		✓	
Restricted sample		✓		✓		✓
Observations	20,893	2,582	20,893	2,582	20,893	2,582
R-squared	0.356	0.441	0.290	0.305	0.604	0.783
Municipalities	1,350	182	1,350	182	1,350	182

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Inf refers to infiltration dummy; Inf before dissolution takes value one in the year before commissioning and zero otherwise. Other controls: agricultural employment, industry employment, tertiary education degree holders, unemployment. Full sample: 1350 municipalities of Campania, Calabria and Sicily; restricted sample: municipalities having experienced at least one government dissolution for mafia infiltration.

**Table 3**

Effect of infiltration on capital account spending by component

	Dependent variable: share of spending in the following component											
	Administration		Social sector		Constructions - Waste Management		Transports		Education		Municipal police	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Infiltration	-0.0115 -0.0143	-0.0146 (0.0139)	-0.00494 (0.00746)	-0.00674 (0.00764)	0.0448** (0.0175)	0.0442** (0.0181)	-0.0206 (0.0133)	-0.0220 (0.0133)	0.00633 (0.0111)	0.00949 (0.0109)	-0.00262** (0.00126)	-0.00222* (0.00118)
Mafia Homicides	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Other controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Full sample	✓		✓		✓		✓		✓		✓	
Restricted sample		✓		✓		✓		✓		✓		✓
Observations	20,682	2,554	20,551	2,535	20,783	2,559	20,735	2,559	20,490	2,541	20,126	2,496
R-squared	0.260	0.219	0.135	0.138	0.205	0.227	0.173	0.152	0.115	0.140	0.169	0.235
Municipalities	1,350	182	1,350	182	1,350	182	1,350	182	1,350	182	1,350	182

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Infiltration refers to infiltration dummy; other controls: agricultural employment, industry employment, tertiary education degree holders, unemployment. Full sample: 1350 municipalities of Campania, Calabria and Sicily; restricted sample: municipalities having experienced at least one government dissolution for mafia infiltration.

Table 4

Effect of infiltration on current account spending by component

	Dependent variable: share of spending in the following component											
	Administration		Social sector		Constructions - Waste Management		Transports		Education		Municipal police	
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Infiltration	-0.00538 (0.00497)	-0.00623 (0.00484)	-0.00163 (0.00512)	-0.000277 (0.00429)	0.00545 (0.00489)	0.00530 (0.00491)	-0.00105 (0.00193)	-0.000947 (0.00193)	0.000219 (0.00168)	0.000599 (0.00174)	-0.00256** (0.00130)	-0.00217* (0.00123)
Mafia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Homicides	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Other controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Full sample	✓		✓		✓		✓		✓		✓	
Restricted sample		✓		✓		✓		✓		✓		✓
Observations	20,881	2,579	20,884	2,579	20,880	2,579	19,582	2,427	18,235	2,242	20,880	2,579
R-squared	0.736	0.698	0.650	0.612	0.732	0.687	0.752	0.752	0.816	0.787	0.622	0.665
Municipalities	1,350	182	1,350	182	1,350	182	1,350	182	1,350	182	1,350	182

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Infiltration refers to infiltration dummy; other controls: agricultural employment, industry employment, tertiary education degree holders, unemployment. Full sample: 1350 municipalities of Campania, Calabria and Sicily; restricted sample: municipalities having experienced at least one government dissolution for mafia infiltration.

**Table 5**

The Effect of the Infiltration of Local Revenue Collection, 1998 - 2013

	Dependent variable:							
	Total revenues		Total taxes		Property tax		Waste tax	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Infiltration	-0.0127 (0.0111)	-0.0123 (0.0114)	-0.001 (-0.011)	-0.0069 (0.0107)	0.0349 (0.0412)	0.0337 (0.0421)	-0.0210** (0.00912)	-0.0185** (0.00961)
Mafia homicides	✓	✓	✓	✓	✓	✓	✓	✓
Other controls	✓	✓	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓	✓	✓
Full sample	✓		✓		✓		✓	
Restricted sample		✓		✓		✓		✓
Observations	18,464	2,299	18,475	2,299	17,383	2,170	17,103	2,122
R-squared	0.314	0.374	0.670	0.655	0.395	0.351	0.502	0.470
Municipalities	1350	182	1350	182	1350	182	1350	182

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Infiltration refers to infiltration dummy; other controls: agricultural employment, industry employment, tertiary education degree holders, unemployment. Full sample: 1350 municipalities of Campania, Calabria and Sicily; restricted sample: municipalities having experienced at least one government dissolution for mafia infiltration.

**Table 6**

Ghost Buildings

Ghost Buildings	
	(1)
VARIABLES	GhostBuildings
Infiltration	-402.7* (243.1)
Municipal Dummies	✓
Time Dummies	✓
Municipal Controls	✓
Observations	2,667
R-squared	0.516

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Infiltration refers to infiltration dummy; Commissioning years are excluded from the estimation. Ghost Buildings data are provided by the Agenzia dell'Entrate.

Table 7

Robustness check: Timing of the Infiltration (Full Sample)

VARIABLES	Capital Spending Police			Current Spending Police			Construction and Waste Management			Waste_tax		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Infiltration	-0.00252** (0.00126)			-0.00241* (0.0013)			0.0424** (0.0175)			-0.0199*** (0.00602)		
One Year Before Infiltration		0.00189 (0.00185)			-0.00185 (0.00160)			0.0183 (0.0309)			0.00380 (0.0204)	
2 Years Before Infiltration			0.00254 (0.00267)			-0.00160 (0.00159)			0.0192 (0.0253)			0.00113 (0.0161)
Mafia homicides	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Other controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	20,120	17,934	17,934	20,874	17,958	17,958	20,777	17,934	17,934	17,103	16,638	16,638
R-squared	0.170	0.172	0.172	0.623	0.646	0.646	0.205	0.227	0.227	0.521	0.521	0.521

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Infiltration refers to infiltration dummy; Column 1 reports our full model as per Table 3 and Table 4. Columns 2 and 3 introduce two new dummy variables taking value 1 respectively 1 year (Column 2) and 2 years (Column 3) immediately before the election of later – dissolved government. All years coded as ‘infiltration years’ – from the election to the dissolution – are excluded from the sample. The estimation exploits the full sample.

Robustness check: Timing of the Infiltration (Restricted Sample)

VARIABLES	Capital Spending Police			Current Spending Police			Construction and Waste Management			Waste_tax		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Infiltration	-0.00210* (0.00115)			-0.00211* (0.00122)			0.0453** (0.0181)			-0.0172** (0.00805)		
One Year Before Infiltration		0.00127 (0.00191)			-0.00152 (0.00128)			0.0165 (0.0326)			0.00765 (0.0190)	
2 Years Before Infiltration			0.00133 (0.00257)			-0.00239* (0.00135)			0.0128 (0.0231)			0.00426 (0.0154)
Mafia homicides	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Other controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	2,559	2072	2,072	2,579	2146	2,146	2,559	2133	2,133	2122	1,738	1,738
R-squared	0.226	0.256	0.256	0.665	0.664	0.664	0.226	0.255	0.255	0.471	0.474	0.474

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Infiltration refers to infiltration dummy; Column 1 reports our full model as per Table 3 and Table 4. Columns 2 and 3 introduce two new dummy variables taking value 1 respectively 1 year (Column 2) and 2 years (Column 3) immediately before the election of later – dissolved government. All years coded as ‘infiltration years’ – from the election to the dissolution – are excluded from the sample. The estimation exploits the full sample.



**Table 8:** Infiltrations and political factors, 1998-2013

	Dependent variable:					
	Single Candidate	Last Mandate	Right Party	Left Party	Centre Party	Civic List
	(1)	(2)	(3)	(4)	(5)	(6)
Infiltration	0.0474**	0.189***	0.0942**	-0.0682	0.0351	-0.0414
	-0.0194	-0.0506	-0.0516	-0.0464	-0.0327	-0.0383
Mafia homicides	✓	✓	✓	✓	✓	✓
NatGov (Left)	✓	✓	✓	✓	✓	✓
Other controls	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓
Observations	2,869	2,869	2,582	2,582	2,582	2,582
R-squared	0.259	0.22	0.455	0.468	0.417	0.63

Note: Clustered standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Sample of all municipalities from Campania, Calabria and Sicily having experienced at least one government dissolution for mafia infiltration.

**Table 9**

The effect of the infiltration on Public Spending controlling for Political factors 1998 -2013

VARIABLES	Constructions and Waste Management	Municipal Police	Waste Tax
Infiltration	0.0483* (0.0235)	-0.00222** (0.0010)	-0.0163* (0.0086)
Right Party	-0.00440 (0.0139)	0.000213 (0.0019)	0.0352 (0.053)
Last mandate	-0.00757 (0.0171)	0.000878 (0.00091)	-0.00106 (0.0185)
Single Party	-0.0862 (0.0515)	0.000218 (0.00199)	0.00700 (0.0317)
Mafia homicides	✓	✓	✓
National government (Left)	✓	✓	✓
Municipality control	✓	✓	✓
Municipality dummies	✓	✓	✓
Year dummies	✓	✓	✓
Observations	2,536	2,470	2,087
R-squared	0.231	0.237	0.093

**Table 10**

Political factors and public spending components, 1998-2013

Dependent variable:								
VARIABLES	Public spending			Revenues collection				
	Construction and waste management			Municipal police			Waste tax	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Single candidate	-0.0647 (0.0448)			-0.00044 (0.00239)			0.0376 (0.0567)	
Last mandate		0.0015 (0.0161)			0.00045 (0.00136)			-0.00334 (0.0299)
Right party			0.015 (0.0136)			0.00014 (0.00203)		-0.00198 (0.0183)
Mafia homicides	✓	✓	✓	✓	✓	✓	✓	✓
National government (Left)	✓	✓	✓	✓	✓	✓	✓	✓
Municipality control	✓	✓	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓	✓	✓
Observations	2,778	2,778	2,408	2,717	2,717	2,351	2,302	2,302
R-squared	0.225	0.224	0.233	0.234	0.234	0.239	0.451	0.451
Municipalities	182	182	182	182	182	182	182	182

Note: Clustered standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Sample of municipalities having experienced at least one government dissolution for mafia infiltration.

**Table 11:** Effect of right-wing close electoral victory on the probability of infiltration

	Dep. variable: probability of infiltration				
	Non - parametric		Parametric		
	(1)	(2)	(3)	(4)	(5)
Right-wing winner	0.0751* (0.0399)	0.0846* (0.0524)	0.0722** (0.0366)	0.0722** (0.0365)	0.101* (0.0604)
Bandwidth	0.0751	0.124	0.0751	0.0751	0.0751
Observations	911	911	911	911	911

Note: Robust standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Forcing variable coefficients not displayed. Column 1: rddrobust Linear; column 2: rddrobust Polynomial; column 3: linear regression with kernel weights; column 4: linear regression varying linear slopes; column 5: polynomial regression of order 2 with interaction with the forcing variable. All the estimations use Calonico, Cattaneo and Titiunik (2014) optimal bandwidth.

**Table 12:** Effect of right-wing close electoral victory on public spending

	Dep. variable: capital account spending in the following component		
	Construction and waste management	Municipal police	Waste_tax
	(1)	(2)	(3)
Right-wing winner	-0.0194 (0.0263)	0.048 -0.0551	-0.0641 (0.0564)
Bandwidth	0.0751	0.0751	0.0751
Observations	620	620	580

Note: Robust standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## 10 Appendix

### A1.1: Correlation between dissolved municipal governments and national government

no of dissolutions	<b>Municipal government</b>	<b>National government</b>	
		Right	Left
67	Right <sup>a</sup>	-0.108	0.061
43	Left <sup>b</sup>	0.139	-0.047
6	Centre <sup>c</sup>	-0.068	-0.011

Note: no statistically significant coefficient. Right-wing national governments: Berlusconi 2001-2005 and Berlusconi 2008-2011; Left-wing national governments: Prodi 1998, D'Alema 1999, Amato 2000, Prodi 2006-2007, Letta 2013; Centre national governments: Monti 2012. a / Right-wing municipal governments during infiltration period; b / Left-wing municipal governments during infiltration period; c / Municipal government ruled by a Centre party during infiltration period.

### A1.2: Correlation between dissolved municipal governments and provincial governments, 1998-2013

<b>Municipal government</b>	<b>Province and provincial government</b>									
	Caserta		Napoli		Reggio Calabria		Vibo Valentia		Palermo	
	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
Right <sup>a</sup>	-0.143	/	0.277	/	0.233	/	N/A	/	-0.154	/
Left <sup>b</sup>	/	-0.149	/	0.194	/	0.14	/	0.239	/	N/A

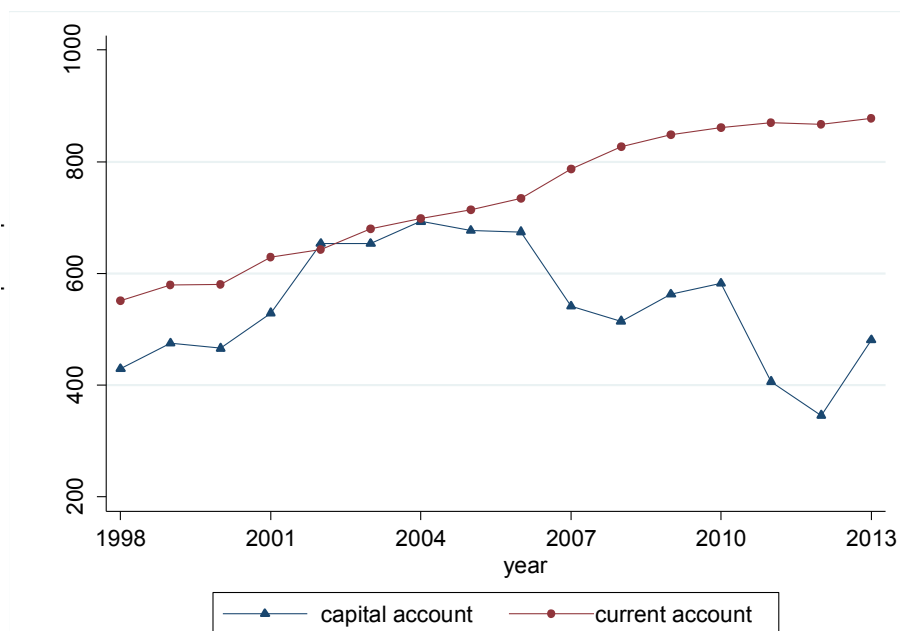
Note: no statistically significant coefficient. None of these provinces had governments from the 'Centre' over the 1998-2013 period. Vibo Valentia only had left-wing governments while Palermo only had right-wing governments. a / Right-wing municipal governments during infiltration period in given province. b / Left-wing municipal governments during infiltration period in given province.

## A2. Municipal institutional setting and public spending.

**A2.1 Italian municipalities Institutional Setting.** As of 2016 there were 8010 municipalities in Italy, 1350 of which in the regions of analysis, varying considerably in terms of area and population. The institutional setting of municipalities is centred on the figure of the mayor, who is the head of the local government and rules it with the legislative body, the local council, and the executive body, the local *giunta*. Mayor and members of the council are elected together by resident citizens. The *giunta* is chaired by the mayor, who appoints its members. Elections of local councils are staggered over time and not held at the same time for all municipalities.

**A2.2 Public Spending Components.** General functions of administration includes all expenses related to the management of offices coordinating the internal activities of the municipality; (2) social sectors include all expenses for the provision of social services and the creation of infrastructure with that aim (kindergartens, old age homes, rehab centres); (3) construction and waste management refers to all expenses for urban planning – adoption of construction plans and building regulations, the maintenance and construction of all new buildings (all part of capital account spending), waste collection and disposal (current account spending); (4) transports includes expenses to guarantee local public transports, public lighting, provision of local road infrastructure; (5) public education includes all expenses for all education infrastructure, school maintenance and school transports; (6) functions of local police includes the acquisition and maintenance of goods and equipment, cars and office structures.

Capital Account - Current Account Over Time



Source: Ministero Interno, Divisione Finanza Locale

### A2.3: Descriptive statistics – control variables

Variable	Full sample			Restricted sample		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Percentage of agricultural employment	21,594	4.592	3.382	2,912	4.303	4.066
Percentage of citizens holding tertiary education degrees	21,594	6.06	2.62	2,912	5.687	2.272
Percentage of industry employment	21,594	6.489	2.128	2,912	5.894	1.693
Unemployment rate	21,594	7.609	2.518	2,912	8.89	2.646
Mafia-related homicides at province level	21,600	0.0058	0.0082	2,912	0.0095	0.0092

Note: Full sample refers to all municipalities of Campania, Calabria and Sicily. Restricted sample refers to municipalities of these regions having experienced at least one government dissolution for mafia infiltration. Source: Istat and Ministry of Interior

### A3 Robustness checks - effect of infiltration on public spending results

**Gradually increase control variables.** From table A3.1 to table A3.3 we provide a series of robustness checks for our main results, i.e. capital spending on construction and waste management (A3.1) and on capital (A3.2) and current (A3.3) spending on municipal police. In all estimations, the sample is restricted to the municipalities having had at least one dissolution. This is important because we control of unobserved heterogeneous effects that might be present across municipalities. In the first column, a parsimonious specification is presented, including time-fixed effects and no other controls. The second column adds mafia-proxies and municipal socio-economic factors as controls. In practice, the results in column (2) of table A3.1 – A3.3 replicate the ones in columns (6) and (12) of table 3 and column (22) in table 4. In the third column of Tables A3.1 – A3.3, we include a full set of linear time trends for each municipality, accounting for any previously omitted factor potentially affecting the temporal development of municipal governments and correlated with infiltrations. This specification represents our preferred one and reports a coefficient for the infiltration dummy of similar magnitude of those in the previous columns. The effects are economically sizeable. The increase of investments for construction and waste management is by over 4pp of total spending per year that is equal to an increase of 12.5% over the average value of non-treated municipalities. The reduction of capital and current spending for police is respectively 0.004pp and 0.0007pp per year which is equal to 9.8% (capital spending) and 1.2% (current spending) over non-treated municipalities.

**Infiltration with One year lag.** We relax this assumption in column (4) of Tables A3.1 – A3.3 where the infiltration dummy enters with one year lag. This classifies infiltrations as if they were initiating in the year after the elections. This classification introduces one additional lag between the moment of infiltrations and the moment in which the financial resources are actually spent by local governments (recall that the spending variable is measured at period  $t+1$ ). As shown in Tables A3.1 – A3.3 this alternative definition of infiltration periods is even more robustly correlated with higher proportions of investment for construction and waste management and with a reduction of both current and capital spending in police forces. According to this result, governments infiltrated by the mafia invest annually 19% more in construction and waste management compare to the average spending of the non-infiltrated municipalities.

**A3.1:** Effect of infiltration on capital account spending in Construction and waste management, 1998-2013

**Full Sample**

Dep. Variable: Capital Account spending for Construction and waste management				
	(1)	(2)	(3)	(4)
Infiltration	0.0448** (0.0175)	0.0424** (0.0175)	0.0414** (0.0179)	
Lagged Inf				0.0668*** (0.0245)
Mafia homicides		✓	✓	✓
Other controls		✓	✓	✓
Year dummies	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓
Time trends			✓	✓
Observations	20,783	20,777	20,777	19,531
R-squared	0.205	0.206	0.296	0.306
Municipalities	1350	1350	1350	1350

Note: Clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Infiltration refers to infiltration dummy; Lagged Inf is the infiltration dummy lagged by one period. Commissioning years excluded in all specifications. Infiltration years excluded in specification (5). The estimation reports the results using the Full Sample. The change in magnitude of the coefficients can be explained by the fact that, even if infiltrations take place during elections, the largest effect on decisions over budget allocation is made from the second year of legislation.

**Restricted Sample**

Dep. Variable: Capital Account spending for Constructions and Waste Management				
	(1)	(2)	(3)	(4)
Infiltration	0.0469*** (0.0177)	0.0442** (0.0181)	0.0466** (0.0200)	
Lagged Inf				0.0674*** (0.0249)
Mafia homicides		✓	✓	✓
Other controls		✓	✓	✓
Year dummies	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓
Time trends			✓	✓
Observations	2,559	2,559	2,559	2,405
R-squared	0.220	0.227	0.333	0.348
Municipalities	182	182	182	182

Note: Clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Infiltration refers to infiltration dummy; Lagged Inf is the infiltration dummy lagged by one period. Commissioning years excluded in all specifications. Infiltration years excluded in specification (5). The estimation reports the results using the Restricted Sample (dissolved municipalities).

### A3.2: Effect of infiltration on capital account spending in Municipal Police, 1998-2013

#### Full Sample

Dep. Variable: Capital Account spending for Municipal Police				
	(1)	(2)	(3)	(4)
Infiltration	-0.00262** (0.00126)	-0.00254** (0.00126)	-0.00473*** (0.00157)	
Lagged Inf				-0.00341* (0.00212)
Mafia homicides		✓	✓	✓
Other controls		✓	✓	✓
Year dummies	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓
Time trends			✓	✓
Observations	20,126	20,120	20,120	19,539
R-squared	0.169	0.171	0.291	0.295
Municipalities	1350	1350	1350	1350

Note: Clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Infiltration refers to infiltration dummy; Lagged Inf is the infiltration dummy lagged by one period. Commissioning years excluded in all specifications. Infiltration years excluded in specification (5). The estimation reports the results using the Full Sample.

#### Restricted Sample

Dep. Variable: capital account spending for Municipal police				
	(1)	(2)	(3)	(4)
Infiltration	-0.00277** (0.00125)	-0.00222* (0.00118)	-0.00467* (0.00242)	
Lagged Inf				-0.00335* (0.00206)
Mafia homicides		✓	✓	✓
Other controls		✓	✓	✓
Year dummies	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓
Time trends			✓	✓
Observations	2,496	2,496	2,496	2,412
R-squared	0.230	0.235	0.419	0.431
Municipalities	182	182	182	182

Note: Clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Infiltration refers to infiltration dummy; Lagged Inf is the infiltration dummy lagged by one period. Commissioning years excluded in all specifications. Infiltration years excluded in specification (5). The estimation reports the results using the Restricted Sample (dissolved municipalities).



### A3.2: Effect of infiltration on Waste Tax, 1998-2013

#### Full Sample

Dep. Variable:Waste Tax				
	(1)	(2)	(3)	(4)
Infiltration	-0.0219** (0.00898)	-0.0203** (0.00908)	-0.001 (0.0109)	
Lagged Inf				-0.0202** (0.00938)
Mafia homicides		✓	✓	✓
Other controls		✓	✓	✓
Year dummies	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓
Time trends			✓	✓
Observations	17,106	17,103	17,003	15,747
R-squared	0.520	0.521	0.565	0.545
Municipalities	1350	1350	1350	1350

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Infiltration refers to infiltration dummy; Lagged Inf is the infiltration dummy lagged by one period. Commissioning years excluded in all specifications. Infiltration years excluded in specification (5). The estimation reports the results using the Full Sample.

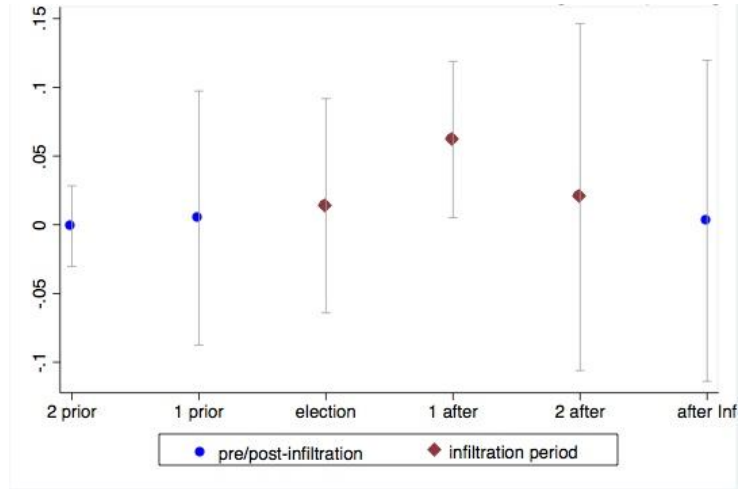
#### Restricted Sample

Dep. Variable:Waste Tax				
	(1)	(2)	(3)	(4)
Infiltration	-0.0190** (0.00896)	-0.0176* (0.00951)	-0.0025 (0.0309)	
Lagged Inf				-0.0192** (0.00957)
Mafia homicides		✓	✓	✓
Other controls		✓	✓	✓
Year dummies	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓
Time trends			✓	✓
Observations	2,122	2,122	2002	1,954
R-squared	0.472	0.472	0.388	0.488
Municipalities	182	182	182	182

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Infiltration refers to infiltration dummy; Lagged Inf is the infiltration dummy lagged by one period. Commissioning years excluded in all specifications. Infiltration years excluded in specification (5). The estimation reports the results using the Restricted Sample (dissolved municipalities).

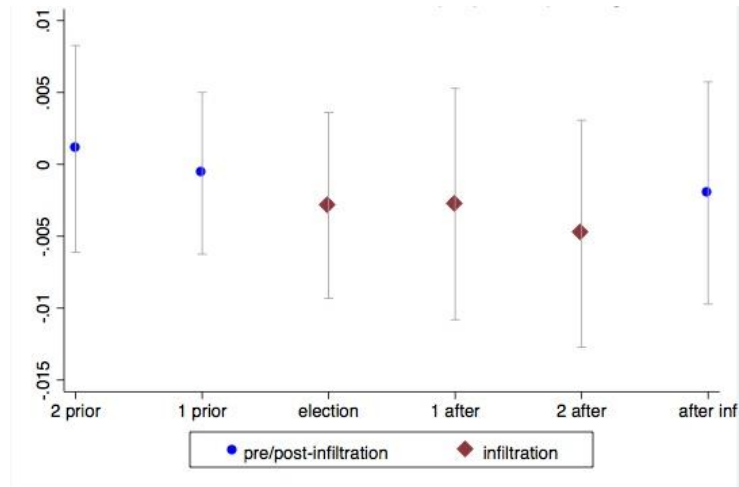
## A4 Parallel Trend - Full Dynamic Model

### A4.1 Effect of Infiltration on Constructions and Waste (Capital Account)



Note: Clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Inf refers to infiltration dummy; Lagged Inf is the infiltration dummy lagged by one period; Before Inf takes value one in the year before the election of infiltrated governments. Commissioning years excluded in all specifications. Infiltration years excluded in specification (5).

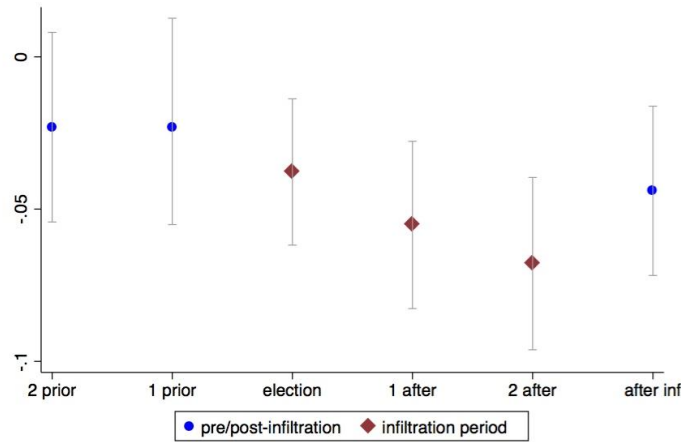
### A4.2 Effect of Infiltration on capital account spending for municipal police



Source: own elaboration with Ministry of Interior data. Granger Causality Test estimated with 2 leads and 2 lags. Municipalities dissolved more than once have been dropped from the sample. The estimation includes time and municipalities dummies, linear time trends, socio-demographic controls and mafia controls. Standard errors clustered at the municipal level.

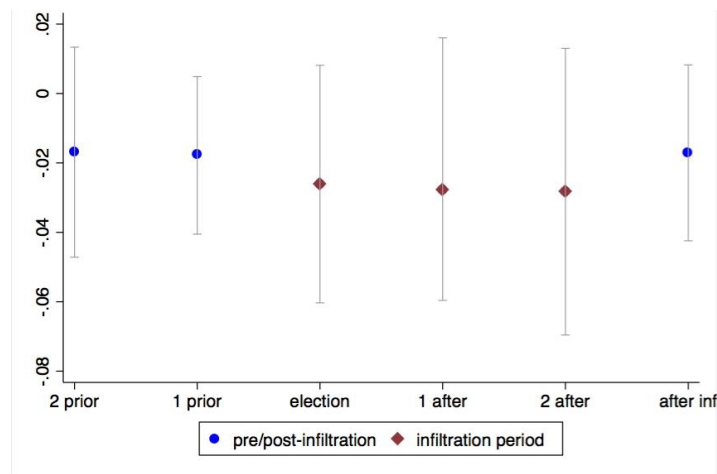
## A4 Parallel Trend - Full Dynamic Model

### A4.3 Effect of Infiltration on Waste Tax



Note: Clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Inf refers to infiltration dummy; Lagged Inf is the infiltration dummy lagged by one period; Before Inf takes value one in the year before the election of infiltrated governments. Commissioning years excluded in all specifications. Infiltration years excluded in specification (5).

### A4.4 Effect of Infiltration on Total Revenues



Source: own elaboration with Ministry of Interior data. Granger Causality Test estimated with 2 leads and 2 lags. Municipalities dissolved more than once have been dropped from the sample. The estimation includes time and municipalities dummies, linear time trends, socio-demographic controls and mafia controls. Standard errors clustered at the municipal level.

## A5 Effect of infiltration on capital account spending components by municipal population, 1998-2013

Our analysis has unveiled that mafia infiltrations determine important modifications of the investment policy of local governments in Southern Italy. However, the impact of the mafia on public finance allocations is likely to vary according to some characteristics of the local context, which are more or less suitable for the development of mafia-politics collusions. One aspect which we investigate in this section is whether the intensity of the effect depends on the size of the municipalities whose governments are infiltrated. We hypothesise that the largest absolute variation in spending allocations are found in smaller municipalities. Small towns are where the power of the mafia can be more pervasive, due to the high control of territory it exercises and to a higher distance from the central State felt by the citizens. In the context of small localities where the presence of the mafia is more diffused, a collusion is expected to lead to a stronger predatory behaviour – more public work tenders to be awarded mafia-controlled firms.

We test this by sub-dividing the whole sample into municipalities with less than 2000 inhabitants, between 2000 and 5000 inhabitants and above 5000 inhabitants, and replicate the main estimates. As shown in Table A5 below, the data confirm our hypothesis. The inflations in capital account spending for construction and waste management are higher, the smaller the population of a municipality. The coefficient of the infiltration dummy is positive and significant for medium and small-size municipalities and the magnitude is larger for towns below 2000 inhabitants. By using the same sub-division by population size, we replicate the estimates adopting the share of municipal police spending as dependent variable. In this case the reduction of investment share is larger in cities above 5000 inhabitants (Table A5). This result can be explained by the fact that the investment budget for police forces managed by large cities is significantly larger than the one of small towns. The mafia has more interest in limiting expenses for law enforcement when these can affect the productivity of police investigations.

**A5:** Effect of infiltration on capital account spending components by municipal population, 1998-2013

Dep. Variable:	CA spending for Construction and waste management			CA spending for Municipal Police		
	population:			population:		
	below 2000	between 2000 and 5000	above 5000	below 2000	between 2000 and 5000	above 5000
	(1)	(2)	(3)	(4)	(5)	(6)
Infiltration	0.0951**	0.0795**	0.0199	0.00283	-0.00183	-
	-0.0425	-0.0331	-0.0219	-0.00259	-0.0018	-0.00168
Mafia homicides	✓	✓	✓	✓	✓	✓
Other controls	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓
Observations	6,817	6,514	7,447	6,564	6,299	7,258
R-squared	0.193	0.222	0.234	0.139	0.157	0.175
Municipalities	473	469	502	473	469	502

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Inf refers to infiltration dummy; Commissioning years excluded in all specifications.

## A6: Placebo – Organised Crime-unrelated dissolutions and public spending

### A6.1: Organised Crime dissolutions and total public spending

	Total Spending	Total Capital Account	Total Current Account
VARIABLES	(1)	(2)	(3)
Dissolution_No_Mafia	-49.44 (53.74)	-41.92 (52.79)	-7.517 (6.745)
Mafia Homicides	✓	✓	✓
Municipalities dummies	✓	✓	✓
Year Dummies	✓	✓	✓
Socio_demographic Controls	✓	✓	✓
Time Trends	✓	✓	✓
Observations	18,305	18,305	18,305
R-squared	0.426	0.345	0.794

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. DIss\_nomafia refer to mafia-unrelated dissolved governments; other controls: agricultural employment, industry employment, tertiary education degree holders, unemployment. Full sample of 1350 municipalities from Campania, Calabria and Sicily: infiltration and commissioning years excluded.

### A6.2. Robustness check: Our Main Results and Organised crime non - related disollutions.

	Dependent variable:			
	Public spending		Revenues collection	
	Constructions and Waste Management	Capital account Police	Waste Tax	Total Tax
	(1)	(2)	(3)	(4)
Mafia-unrelated dissolutions	-0.00353 (0.0143)	0.000313 (0.000820)	-0.00469 (0.00782)	0.00698 (0.00561)
Mafia homicides	✓	✓	✓	✓
Other controls	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓
Municipalities dummies	✓	✓	✓	✓
Observations	18,218	18,010	18,170	17,943
R-squared	0.292	0.227	0.259	0.188
Municipalities	1350	1350	1350	1350

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. DIss\_nomafia refer to mafia-unrelated dissolved governments; other controls: agricultural employment, industry employment, tertiary education degree holders, unemployment. Full sample of 1350 municipalities from Campania, Calabria and Sicily: infiltration and commissioning years excluded.

### A6.3: Mafia-unrelated dissolutions and capital account spending by component

	Administration	Social Sector	Constructions	Transports	Education	Municipal Police
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Diss_nomafia	0.00606 (0.0102)	0.00836 (0.00749)	-0.00353 (0.0143)	-0.00892 (0.0119)	-0.00125 (0.00767)	0.000313 (0.000820)
Mafia homicides	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓
Other controls	✓	✓	✓	✓	✓	✓
Observations	18,122	18,010	18,218	18,170	17,943	17,624
R-squared	0.367	0.227	0.292	0.259	0.188	0.245

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Diss\_nomafia refer to mafia-unrelated dissolved governments; other controls: agricultural employment, industry employment, tertiary education degree holders, unemployment. Full sample of 1350 municipalities from Campania, Calabria and Sicily: infiltration and commissioning years excluded.

### A6.4: Mafia-unrelated dissolutions and current account spending by component

	Administration	Social Sector	Constructions	Transports	Education	Municipal Police
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Dissolution_No_Mafia	0.00183 (0.00211)	-0.00295* (0.00164)	0.000624 (0.00197)	-0.000238 (0.000743)	0.000673 (0.000988)	-0.000486 (0.000657)
Mafia homicides	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓
Other controls	✓	✓	✓	✓	✓	✓
Observations	18,296	18,299	18,295	17,152	15,987	18,295
R-squared	0.839	0.774	0.821	0.850	0.888	0.761

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Diss\_nomafia refer to mafia-unrelated dissolved governments; other controls: agricultural employment, industry employment, tertiary education degree holders, unemployment. Full sample of 1350 municipalities from Campania, Calabria and Sicily: infiltration and commissioning years excluded.

### A7: Descriptive statistics – political variables

Variable	All municipalities			Infiltration years		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Single candidate	2,869	0.023	0.149	437	0.059	0.237
Last mandate	2,869	0.203	0.402	437	0.327	0.470
Left party	2,869	0.320	0.467	437	0.316	0.465
Centre party	2,869	0.082	0.274	437	0.098	0.298
Right party	2,869	0.461	0.499	437	0.563	0.497
Civic list	2,869	0.510	0.500	437	0.584	0.494

Note: All municipalities: municipalities of Campania, Calabria and Sicily having experienced at least one government dissolution for mafia infiltration. Infiltration years: years classified as infiltration for these municipalities

### A8: Political factors and public spending components during infiltration years, 1998-2013

VARIABLES	Dependent variable:								
	Public spending						Revenues collection		
	Construction and waste management			Municipal police			Waste tax		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Single candidate	-0.0347 (0.190)			-0.00460 (0.00536)			-0.620 (0.0722)		
Last mandate		-0.0494 (0.177)			0.00687 (0.00569)			0.0553 (0.0541)	
Right party			0.169 (0.128)			0.00146 (0.00452)			-0.00198 (0.0183)
Mafia homicides	✓	✓	✓	✓	✓	✓	✓	✓	✓
National government (Left)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality control	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	432	432	432	425	425	425	382	382	382
R-squared	0.400	0.400	0.404	0.444	0.446	0.444	0.451	0.451	0.465
Municipalities	127	127	127	124	124	124	182	182	182

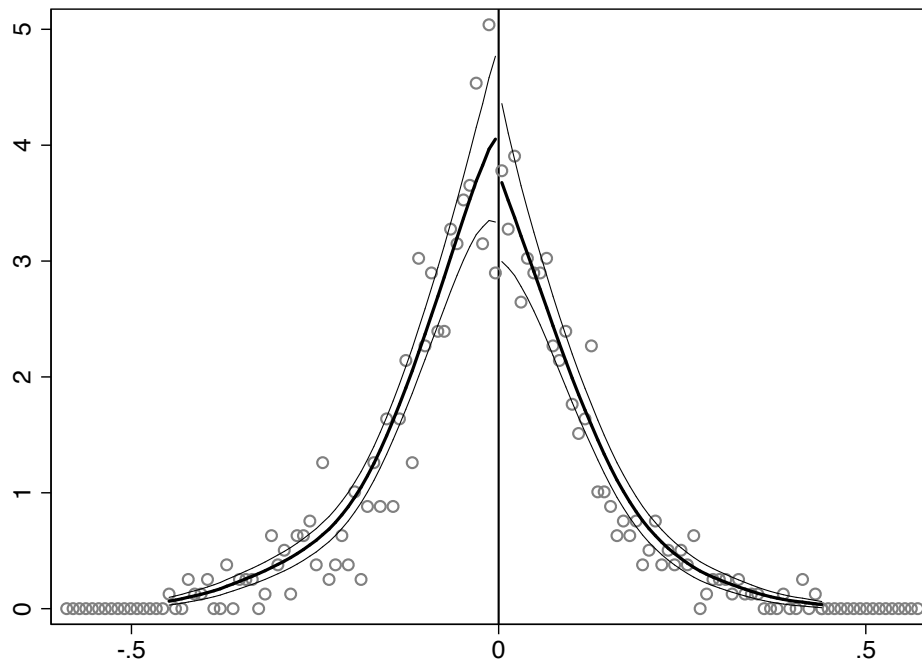
Note: Clustered standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Sample of infiltrated governments during 1998-2013.

## A9 RDD – effect of electing right-wing governments on the probability of infiltration

### A9.1 Balance of covariates

	Dep. Variable:								
	Unemploy- ment	Industry employment	Human capital	Pop	Total spending	Mafia- related homicides	White ballots	Turnout	Non-valid ballots
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treatment vs.	-0.594	0.48	-0.0919	-0.269	-0.0195	5.45E-06	0.129	-2.397	0.8
	(0.795)	(0.551)	(0.670)	(0.364)	(0.0263)	(0.00233)	(0.306)	(2.428)	(0.520)
Observations	620	620	620	620	614	620	619	621	619

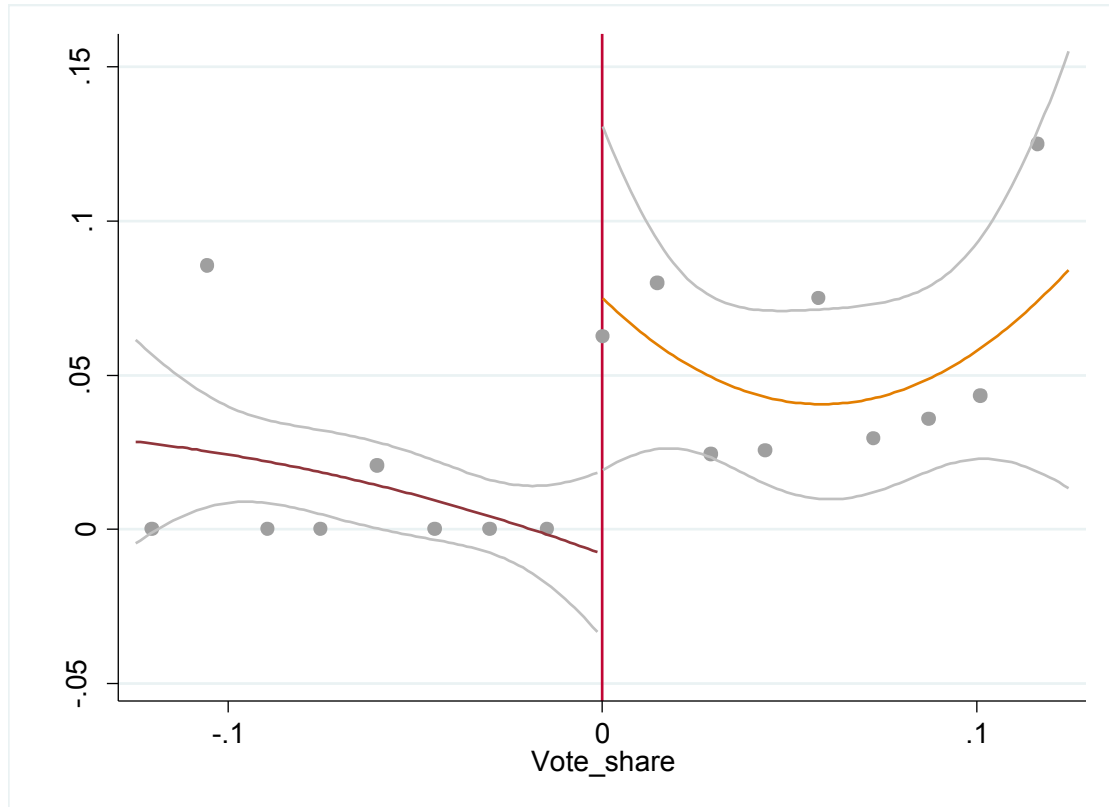
### A9.2: Test for non random sorting around cutoff – McCrary Test



Note: Robust standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . T student at the discontinuity -0.9782 with robust estimation. There is no presence of non - random sorting at the cutoff

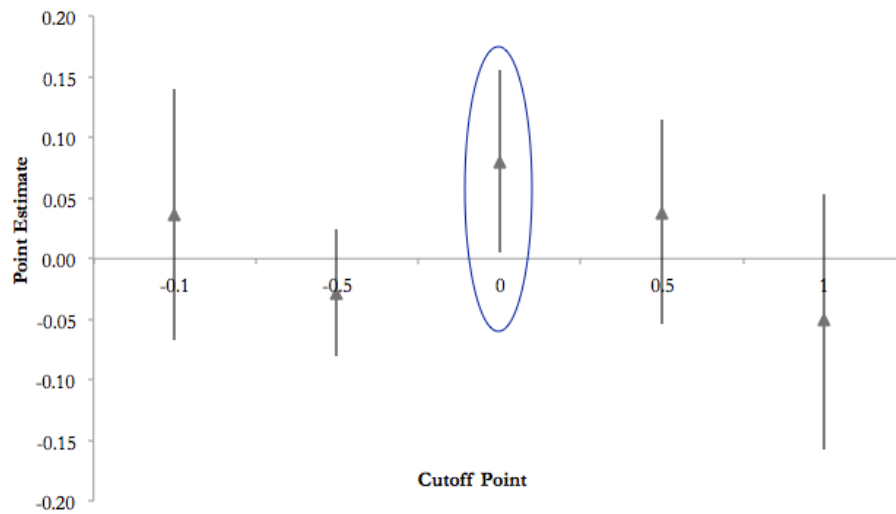


#### A9.4 Restricted sample – RDD graph



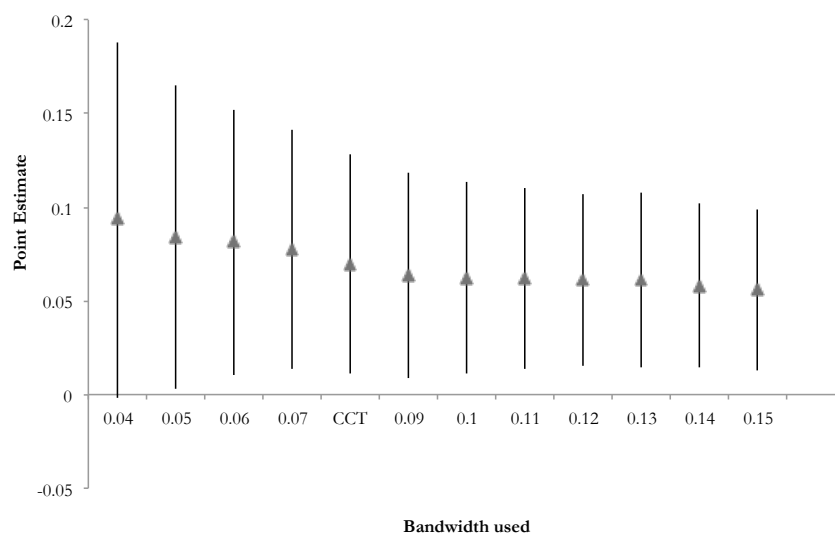
Note: Polynomial fit of order2. vote share>0 refers to elections won by right-wing parties; vote share<0 refers to elections barely lost by right-wing parties. For each municipalities, all years after the dissolutions are excluded. The control group is composed only by the years before the infiltration takes place

### A9.5 Robustness checks – points estimates at different cutoff points



Note: Dependent variable is Probability of infiltration. The line extends from the lower bound to the upper bound. 90% confidence interval. Non-parametric estimates with bias correction, robust standard errors, triangular kernels, linear local polynomials and optimal bandwidth (Calonico et al., 2014).

### A9.6 Robustness checks – Moving bandwidths



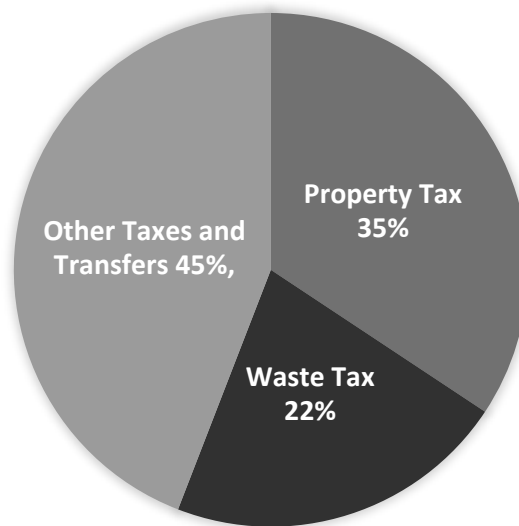
Note: Dependent variable is Probability of infiltration. The line extends from the lower bound to the upper bound. 90% confidence interval. CCT: optimal bandwidth.

### A10: Selection into Treatment

	Municipal Police_CA	Municipal Police_CR	Constructions and Waste Management	Waste Tax
VARIABLES	(1)	(2)	(3)	(4)
Infiltration	-0.00474* (0.00269)	-0.000967 (0.00119)	0.0609*** (0.0213)	-0.0165** (0.00921)
Mafia Homicides	✓	✓	✓	✓
Socio_Demographic Controls	✓	✓	✓	✓
Municipal Dummies	✓	✓	✓	✓
Time Dummies	✓	✓	✓	✓
Time Trends	✓	✓	✓	✓
Observations	2,236	2,308	2,298	2002
R-squared	0.423	0.774	0.335	0.401

Note: Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Infiltration refers to infiltration dummy; all municipalities for which the main reason for dissolution was related to distortions in the balance sheets are excluded. Commissioning years excluded in all specifications.

### A11: Local Fiscal Revenues Structure



Note: Authors Elaboration - data from the Ministry of Interior.