

# Organised Crime, Captured Politicians and the Allocation of Public Resources

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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 collusion between members of criminal organisations and 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 newly collected data on public spending, local taxes and elected politicians at the local level. Difference-in-differences estimates reveal that infiltrated local governments spend more on average for construction and waste management, less for municipal police, and collect fewer taxes for waste and garbage. In addition, we uncover key elements of local elections associated with mafia-government collusion. In particular, Regression Discontinuity estimates show that infiltration is more likely to occur when right-wing parties win local elections.

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# 1 Introduction

Organised crime is detrimental to the efficiency of any democratic or economic system (Gambetta, 1993; Pinotti 2015, Acemoglu et al., 2013). Its presence reflects institutional failure and has the potential to influence key aspects of legal economic activity, ultimately undermining the long run development of any society (Shleifer and Vishny, 1993; Mauro, 1995; Glaeser and Saks, 2006). Its strength, as well as its influence on the legal economy, relies on the diffused external complicity, i.e. an increasingly close relationship between organised crime groups and public officials such as national or local politicians and public administrators (Dickie, 2005). Thanks to the development of such networks, organised crime has become highly pervasive and fully integrated into 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 impact does collusion between members of criminal organizations and politicians have on the allocation of public resources and on the collection of fiscal revenues? In this paper, we tackle this question by investigating a particular aspect of organised crime activity: its '*infiltration*' within local governments. Such infiltration occurs when criminal groups manage to capture local politicians who in turn manipulate policy decisions in their favour. We study the case of Italy by using a yearly municipal-level dataset for the three Italian regions where organised crime is most widespread and rooted: 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 allows for 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 both the local political establishment and the organised crime group, given that its occurrence and timing is solely determined at the national level and kept secret until its implementation.

More specifically, we exploit the enforcement of this policy to identify and compare municipal governments with and without infiltration before and after such infiltration occurs. Difference-in-differences estimates reveal that the capture of local governments by organised crime does not affect the total level of public spending but does have consequences both for the allocation of public resources and 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

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<sup>1</sup>A focus on southern regions rather than on Italy as a whole 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 this country (Putnam, 1993). Municipalities are chosen as the unit of analysis because infiltrations often occur at the local level, where the central State's control over electoral and legislative processes is weaker (Cantone and Di Feo, 2014). The dataset is available from 1998 to 2013.

an additional 30 euros per capita allocated to this spending component, annually. In addition, infiltration leads to a 10% reduction in investment spending for public transport and lighting, as well as a 29% decrease in the annual share of investment in police force. Moreover, infiltrated municipalities exhibit a 15% decrease in revenue inflows from the waste and garbage tax. 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 the introduction of a full set of controls.

Our estimates could pick up some non-mafia related effects (e.g. low quality of politicians, unstable governments) or be determined by political characteristics of the municipal elections correlated with infiltrations. We perform a series of further tests, ensuring that our results are driven by mafia collusion and not by any of these potentially unobserved components. More specifically, we identify a set of political characteristics of municipal elections that could be correlated with the infiltration. Although descriptive, this exercise is noteworthy in that it uncovers several 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 difference-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 collusion and elections won by right-wing parties, implementing a regression discontinuity design (RDD) based on close elections. Our results show that the probability of infiltration increases when right-wing parties barely win local 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 in public spending is due to collusion between organised crime and politicians as opposed to any other unobserved factors.

We are not the first to empirically study the presence and effect of organised crime. A recent but growing literature has measured the presence and intensity of mafia activity by employing proxies such as the number of mafia-related crimes, murders, and violent attacks (Alesina et al., 2018; Daniele and Marani, 2011; Olivieri and Sberna, 2014; Barone and Narciso, 2015), historical or geological indicators (Acemoglu et al., 2018; Bandiera, 2003; Dimico et al., 2017; De Feo and De Luca, 2017; Buonanno et al., 2015; Buonanno et al., 2016), or artificial constructs for counterfactual analysis (Pinotti, 2015).

An important strand of these studies has focused on the impact of mafia-government linkages on political and electoral outcomes. For example, Alesina et al. (2018) and Daniele and Dipoppa (2017) investigate how criminal organisations strategically use violence to influence elections and get captured politicians elected. Pinotti and Stanig (2016) exploit as-if random variation in the presence of organised crime in northern Italy, so as to study its impact

on the quality of local governance. Other studies have examined how criminal organisations choose their political counterparts (Acemoglu, 2002; Dal Bo', 2006; Buonanno et al., 2015), uncovering different strategies. De Feo and De Luca (2017) 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. Most of these studies measure the presence of criminal organisations with proxies of violence. This is certainly a crucial, distinctive and important behaviour of criminal activities but, we argue, it only represents the tip of the iceberg of the real strength of these organizations. Particularly in developed countries, organised crime has evolved over time, progressively reducing the use of violence and becoming increasingly integrated within the boundaries of democratic society, to the point that mafia activities may no longer even be recognisable as criminal enterprises. While in conflict with the State, criminal organisations do not wish to displace the latter but rather to co-exist with it through the creation of a network based on mutual interests. As a magistrate member of the AntiMafia District Directorate (DDA) commented, “*Today’s mafia no longer kills, no longer makes noise, and this makes it less identifiable as a criminal group. Our fight against them has therefore never been so difficult*”.<sup>2</sup> In particular, criminal organisations use violence only as a last resort when previous strategies have failed. This implies that we still ignore the consequences of successful criminal behaviours that did not employ any use of violence. By focusing on collusion between organised crime and politicians, we aim to shed light on this more silent but equally dangerous phenomenon and in doing so, assess its impact on economic and political outcomes.

Although there exists a large body of evidence on the distortion 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; Coviello and Mariniello, 2014; Crescenzi et al., 2016), empirical research investigating the rent-seeking behaviour of organised crime is relatively scarce. A notable exception is the recent paper by Barone and Narciso (2015), which argues that the presence of organised crime affects the distribution of national public funds to firms. However, the degree to which the allocation of public resources is influenced by organised crime remains a puzzle. Our paper contributes to this literature by providing the first empirical analysis of the impact of collusion between organised crime and local politicians on public spending, showing that rather than aiming to affect the overall level of public spending, or engage in patronage by providing jobs in the public administration, the main objective of illegal organisations is to re-direct resources towards specific investment sectors.

The national law 164/1991 examined here has previously been employed in the empirical literature (Acconcia

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<sup>2</sup>Interview with Giuseppe Borrelli, member of the Naples AntiMafia District Directorate (*Direzione Distrettuale Antimafia*), on the Italian television program ‘Report’, May 5th, 2016.

et al., 2014; Daniele and Geys, 2015, 2016; Galletta, 2017).<sup>3</sup> Our approach differs, however, from previous studies in that we aim to capture the impact of organised crime infiltrations within local governments rather than evaluate the effect of the 1991 law. More specifically, 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 2 provides background on organised crime infiltrations and political capture; section 3 focuses on the institutional setting used as a basis for the difference-in-differences analysis, discusses our identification strategy and the quasi experiment we rely on; section 4 discusses the data and the estimating equation; section 5 presents the main results; section 6 reports a set of robustness tests for the key findings; section 7 analyses the link between organised crime infiltration and key political variables, studying in depth the relationship between right-wing parties and infiltration; section 8 concludes.

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<sup>3</sup>Acconcia et al. (2014) exploit 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, such as elected politicians' levels of education and turnout at local elections. Galletta (2017) empirically investigates the presence of spillover effects resulting from the strengthening of law 164/1991.

## 2 Organised crime and political capture

“*Organised crime has globalised and turned into one of the world’s foremost economic and armed powers*”.<sup>4</sup> Its illegal activities and illicit flows affect the entire world, and they generate revenues for \$870 billion. In Italy, according to recent estimates, the total combined annual earnings is about €10.7 billion (Figure A1), which generate a turnover of approximately 1.6% of the Italian GDP (Transcrime, 2013). The main sources of revenue are illegal activities such as drug trafficking, extortion and corruption (Figure A2).

However, burglars may operate in the underworld, but they seek to govern the real world (Schelling, 1971). Since the 1970s, organised crime groups have become increasingly sophisticated and their business model has 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 consequently also changed: rather than representing an enemy to fight, the government has instead become an opportunity to exploit. As Figure A3 shows, as a result of this shift a significant portion of the massive liquidity generated by illegal activities is then re-invested into the legal economy (Le Moglie and Sorrenti, 2017).

In spite of the pressing relevance of this phenomenon, empirical evidence on how government expenditures are conditioned by the collusion between politicians and criminal organisations remains limited. The political economy literature has mostly focused on the study of the illegal operations of criminal organisations or their violent behaviours and strategies to influence public officials.<sup>5</sup> However, and particularly in developed countries, violence is a suboptimal strategy in that it attracts too much attention from enforcement authorities thus undermining criminal groups’ main objective, that of influencing policy decisions. The focus of this paper is on the more subtle and less explicit angle of criminal organisations who, very similarly to interest groups (Grossman and Helpman, 2001; Dal Bo’ and Di Tella, 2006; Wolton 2016), aim to silently but continuously protect and promote their interests by influencing and manipulating policy makers to their own advantage.<sup>6</sup> We do so by studying a precise phenomenon: the criminal infiltration within local governments of Italian municipalities.

According to Italian National Law 164/1991, *infiltration* occurs when organised crime captures local politicians

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<sup>4</sup>Statement from Antonio Maria Costa, Executive Director of the United Nations Office on Drugs and Crime (UNODC) at the launch of a new UNODC report on The Globalization of Crime: A Transnational Organized Crime Threat Assessment: <https://www.unodc.org/unodc/en/press/releases/2010/June/organized-crime-has-globalized-and-turned-into-a-security-threat.html>

<sup>5</sup>In addition there are notable studies that have analysed the effect of mafia on public transfers (Barone and Narciso, 2015) or on political outcomes (Alesina et al., 2018; Daniele and Dipoppa, 2017, De Feo and De Luca, 2017 and Buonanno et al., 2016) by measuring the presence of Mafia with proxies of violence (Barone and Narciso also uses non violent measures). There is also a big literature, not related to criminal organisations as such, that emphasised how collusion or corruption impact the cost-effectiveness of public investments (Shleifer and Vishny, 1993; Tanzi and Davoodi, 1997; Cadot et al., 2006; Crescenzi et al., 2016) as well as the specific spending sectors in which governments decide to invest (Mauro, 1998; Ehrlich and Lui, 1999; Gupta et al., 2001; Rajkumar and Swaroop, 2008). Coviello and Mariniello (2014) exploit sharp discontinuities in the values of auctions to test whether publicizing a public procurement auction affects entry and the cost of procurement.

<sup>6</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 related theoretical models, see Dal Bo’ (2007).

in order to manipulate policy decisions in their favour. This criminal strategy can be perpetrated in different ways. It can, for example, occur directly, as in the case of Pompei (in 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 has also been arrested in the same investigation*”.<sup>7</sup> Alternatively, it can be indirect, such as through contamination of the electoral competition. This was the case in Plati’ (in the province of Reggio Calabria), where “*the party winning the electoral competition benefitted from electoral favours from the local mafia group, who was able to divert a large number of votes and aimed to maintain political control of the territory*”.<sup>8</sup> Finally, infiltration can occur simply through the use of threats and intimidations. To this regard, Africo (in the province of Reggio Calabria) was dissolved because “*the policy decisions of the municipal council were not made freely and without bias because local politicians were repeatedly intimidated and threatened by criminal organisations*”.<sup>9</sup> These examples are crucial to clarify just how infiltration is defined: 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 politicians.

We then test whether elections represent the main opportunity for criminal organisations to infiltrate local governments. Elections could be seen as a ‘recruitment process’ whereby a new bargaining table between criminals and politicians is established (Dal Bo’, 2006). This might particularly be the case in Southern Italy where 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 compliance with the mafia’s will is functional to the future political career of corrupt mayors (Cantone and Di Feo, 2014), it can be expected that collusions would bring about a system in which local politicians respond to the interests of criminal groups, rather than those of the local community of citizens. Control over local politicians facilitates the capture of public procurement contracts, in turn enabling criminal organisations to provide business opportunities to the firms they control as well as reinvest liquidity generated from illicit activities and, more broadly, strengthen their control over the local territory (Mete, 2015). Infiltration consequently has the potential to systematically distort policy-making throughout the entire period in which corrupt politicians are in power.

In this paper, we empirically estimate the impact of this distortion on local public finance and, in doing so, aim to gain a deeper understanding of the strategic behaviour of criminal groups when they infiltrate local governments. Does organised crime affect the overall level of public spending and the efficiency of the administration? Does mafia patronage inflate the hiring of new personnel within the public sector? Or do criminal organisations try to bias

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<sup>7</sup>Official Gazette (*Gazzetta Ufficiale*) – Decree of the President of the Republic no. 133 of June 2001: <http://www.gazzettaufficiale.biz/atti/2001/20010223/01A10530.htm>

<sup>8</sup>Official Gazette (*Gazzetta Ufficiale*) – Decree of the President of the Republic no. 119 of Marzo 2012: <http://www.gazzettaufficiale.biz/atti/2012/20120093/12A04237.htm>

<sup>9</sup>Official Gazette (*Gazzetta Ufficiale*) – Decree of the President of the Republic: <http://www.gazzettaufficiale.biz/atti/2014/20140194/14A06583.htm>

the allocation of investment expenditures towards specific sectors? It is difficult *a priori* to identify a mafia *modus operandi* and the impact of the latter on the allocation of public resources and on revenue collection at the local level. These are ultimately the empirical questions we aim to address in this paper.

### 3 Empirical strategy

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

The rise in mafia infiltration within local administrations throughout the 1980s led the Italian central government to introduce a tougher set of anti-mafia measures in the early 1990s. In an effort to tackle 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 upon evidence of ‘mafia infiltration’ within the local government; that is, electoral competition contaminated by the mafia and/or policy decisions taken by the government but clearly rigged by a criminal organisation (D.L. 31/05/1991 n.164).<sup>10</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 will of the electoral body and the sound functioning of the municipal administration*”.<sup>11</sup>

The dissolution of a local government requires a number of steps. First, a proposal for dissolution must be put forth by the provincial prefect, who has been informed by either magistrates or the police of the risk of infiltration of a municipal government. The prefect then establishes a commission composed of the vice-prefect and officials from different law enforcement bodies (the *Polizia di Stato*, the military *Carabinieri* and the *Guardia di Finanza*). The commission investigates the local government’s activity over a period of three to six months, producing a report which the prefect sends to the *Ministry of Interior*. Any proposal for dissolution signed by the *Minister* must also be approved by the *Cabinet* (Council of Ministers - *Consiglio dei Ministri*) and the *President of the Republic* before being implemented. Municipalities where the local government is dissolved are therefore those where the mafia infiltration has been attested to by the Italian judicial system and confirmed by multiple political institutions. Importantly, infiltrated municipalities are unaware that they are under investigation, as the process of dissolution is kept fully secret until its implementation. Once the investigation is concluded, both the members of the criminal organisation and the local politicians are arrested.

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<sup>10</sup>Some of the most common reasons for dissolving a local government under law 194/1991 include: administrators or bureaucrats having an affinity with/kinship relation to members of the criminal organisations or individuals with recurrent criminal records; permits awarded illegitimately due to bid rigging; severe infringement of building regulations; absence of rigorous inspections in the execution of public works; significant flaws in tax collection; cases of clientelism; illegal elections.

<sup>11</sup><http://www.gazzettaufficiale.biz/atti/2001/20010223/01A10530.htm>



Upon removal of the infiltrated local administration, the central government appoints three non-elected, external commissioners, who govern the municipality for a period of 12 to 24 months. Since non elected, the commissioners only take care of the ordinary management. They cannot neither approve a new budget nor make any investment (Acconcia et al., 2014; Galletta, 2017). At the end of the transition period, regular elections are held.

As shown in Figure 1, the large majority (and in some years all) of the dissolutions occurred in the three regions which form the focus of our study. Figure 2 illustrates the number of dissolved municipal governments due to mafia infiltration from the introduction of the law up until 2015. In total, there have been 258 detected cases of mafia infiltration into local governments over this period.

That said, within these three regions, the geographical distribution of dissolution varies significantly. As shown in Figure 1, detected cases of mafia infiltration tend to be clustered in several specific areas within these regions. In Campania, the large majority of dissolutions occurred in the north-west, particularly in the provinces of Caserta and Naples – the area where the *Camorra* is traditionally stronger. Similarly, in the region of Calabria most detected infiltrations were located in the south, in the provinces of Reggio Calabria and Vibo Valentia, where the ‘*Ndrangheta* is known to be centred. Finally, while dissolutions in Sicily are more widespread, the majority are concentrated in the province of Palermo, the heart of *Cosa Nostra*.

### 3.2 Identification strategy

We rely on law 164/1991 to identify cases of mafia infiltration within local governments of the municipalities in our sample regions. Our identification strategy is based on a difference-in-differences (DiD) setting and exploits the time and geographical variation of dissolutions over time. The impact of criminal infiltrations is estimated by comparing municipal governments with and without infiltration before and after such infiltration is ended by the national government. We use the dissolution of a municipal government to identify our treatment period. For example, as shown in Figure 3, the municipality of Casoria, in the province of Naples (Campania), 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 2008. Our treatment period thus ranges from the election in 2002 to the dissolution in 2005. This decision reflects our aim to identify the period of time during which organised crime was plausibly colluding with the local government. The control group is composed by never dissolved municipalities and by municipalities having experienced a dissolution, before the infiltration started and after it was ended. In this example, all years before 2002 and after 2008 make up the control period. Crucially, due to the fact that external commissioners have specific duties regarding the administration of public finance, the *commissioning* period between the dissolution of a government and the subsequent elections is excluded from the sample. Therefore, in the case

of Casoria, the years 2006 and 2007 are never considered in the estimations.<sup>12</sup>

As an alternative specification and robustness check we also always perform the analysis by limiting the control period to municipalities that have never been dissolved and, for the dissolved governments, only to the years before the election, i.e. excluding not just the commissioning years (as above), but also all the years after that. In the example of Figure 3, the years that will be part of the control groups are only before 2002 (when our treatment begins). This is done to account for the possibility that post-dissolution governments are somehow different from pre-infiltration governments in terms of spending decisions.

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 of allowing us to restrict the full sample to those municipalities that experienced at least one dissolution due to criminal infiltration. Such an approach makes it possible to obtain a sample of very similar municipalities, minimising unobserved heterogeneity. This is also the reason why we always run our analysis with both the full (all municipalities of all our regions) and restricted sample (only the municipalities of our sample having experienced one dissolution in history). Performing this sample restriction is important because, as seen in Figure 1, the geography of dissolutions reflects significant concentrations in specific provinces of the sample regions. The figure indicates that there the intensity of mafia activities in some territories is lower with respect to the core areas where the criminal organisations are primarily based. Finally, an additional peculiarity of our setting is that the treatment period turns on and off, i.e. municipalities remain infiltrated until they are dissolved.

**Threats to identification.** There are some potential concerns relative to our identification strategy. First, the application of law 164/1991 may be imperfect. Some municipalities could have been infiltrated but not dissolved because judicial authorities did not detect the collusion. Similarly, some dissolutions may have been done erroneously if there was no real infiltration. These issues should not represent a concern for our estimation strategy as infiltrated municipal governments that are not dissolved would belong entirely to the control group, determining attenuation bias in the empirical results.<sup>13</sup> Similarly, periods of erroneously detected infiltration would instead belong to the 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.

Econometrically, an additional concern for our analysis is that judicial investigators might start their investigations precisely in those municipalities that present anomalies on their balance sheets. In this case, selection

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<sup>12</sup>Commissioners sent from Rome only handle the ordinary management until new elections are held.

<sup>13</sup> This is a relevant point for the interpretation of our results. The likelihood of having some infiltrated municipalities that have not been caught might suggest that we may be measuring the effect of the 'low-skilled' mafia organisations, i.e. those that have been detected. We cannot discard this interpretation, which is indeed a limitation of our measure. However, conditional on heterogeneous treatment effects, we argue that the estimated coefficients indicating the impact of infiltrations represent a lower bound of the true effect.

into treatment (*i.e. being infiltrated and later dissolved by the national government*) would be correlated with the outcome variables (*i.e. public spending and revenue collection*) creating an endogeneity problem. We tackle this important issue in Section 6 showing that our results do not change when we exclude from the sample those municipalities for which the main motive driving the investigation and dissolution was related to either public spending or revenue collection.

Another potential issue for our estimates could 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, for example, the main party of the national government does not want to ‘lose’ the control of a local government ruled by the same party or an allied party of the same political coalition.

This distorted use of law 164/1991 is, however, unlikely to happen for several reasons. First, the dissolution process is initiated and carried forward by the Italian Anti-Mafia Investigation Directorate (*Direzione Investigativa Antimafia*), one of the most efficient investigative bodies of the Italian State.<sup>14</sup> This is an organisation composed of highly-trained and specialised individuals from the three main police forces (*Polizia di Stato*, *Carabinieri* and the *Guardia di Finanza*), whose experience is often valued and requested by other countries and institutions needing consults on the fight against organised crime.<sup>15</sup>

In addition, the multiplicity of actors involved in the dissolution decision, from national MPs to the Minister and the Cabinet to the President of the Republic, makes any form of manipulation of the law improbable.<sup>16</sup> However, in order to provide as much evidence as possible on this point, we perform a test to rule out the possibility of 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 A4, which refers to the restricted sample of dissolved municipalities in the 1998-2013 period, there is no statistically significant correlation between the colour of national or provincial governments

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<sup>14</sup>The Anti-Mafia Investigation Department (DIA) was founded in 1991, under the authority of the Minister of Interior and the coordination of the National Anti-Mafia Directorate (*Direzione Nazionale Antimafia*). The DIA’s operations include pre-emptive investigations and judicial investigations. They study the characteristics, objectives, and methods of organised crime as well as examine the latter’s domestic and international operations.

<sup>15</sup>For example, the Italian Prosecutor Antonio Ingroia, who extensively investigated the Sicilian mafia, was appointed Director of the United Nation-backed judicial watchdog in Guatemala, the International Commission against Impunity in Guatemala (CICIG). Another example is judge Giovanni Falcone, who in 1989 established the Anti-Terrorism Unit in Quantico, Virginia, in collaboration with then attorney Rudolph Giuliani. It is highly unlikely that these professionals, together with other judges and prosecutors, would allow their investigations to be strategically used by politicians.

<sup>16</sup>The only case where a dissolution did not follow the normal legislative process is that of Fondi. The local prefect, together with enforcement agencies, drafted a 500 page proposal for the dissolution of this municipality. The Ministry of Interior then opted for a political solution, asking the municipality to proceed immediately with new elections without sending any commissioners and therefore officially dissolving the government. Fondi does not, therefore, appear as a case of infiltration in our dataset. The case was covered by the Italian press and TV news for weeks. The large amount of attention it drew 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, given that the press and opposition parties were concerned that new elections would not be sufficient to get rid of the criminal infiltration, we would see an additional downward bias in our setting.

and that of municipal governments. Indeed, given the political cost generated by a dissolution for the national government – i.e., high national media coverage and political competitors exploiting the latter by asking for the government’s resignation – it is extremely unlikely that the national government would strategically choose to dissolve municipal governments governed by opposing parties. It is important to note, however, that even if this was true, our estimates would bias downward, since strategically manipulated dissolutions would be coded as treated and cause an attenuation bias of coefficients.

Moreover, as mentioned, Italian local governments can also be dissolved for reasons unrelated to mafia infiltration (e.g. resignation of the mayor, resignation of more than 50% of council members etc.). Hence, for politicians wishing to undermine the stability of a given municipality ruled by an opposing party, such routes would certainly represent cheaper and easier options than trying to establish a false mafia case.

A final 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 consists of infiltration years. This implies that the infiltration began at the moment of election of a later-dissolved government. While this hypothesis may be true for many infiltrated municipalities where electoral manipulation brought to power local governments subject to the conditioning of the mafia from the very moment they took office, it may not hold for 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.<sup>17</sup> 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 Italian Ministry of Interior’s Financial Statement Certificates (*Certificati Consuntivi*) database, which contains yearly statistics on the public finances of Italian municipalities for a number of different spending categories. The full dataset is disaggregated into capital account and current account expenditures. These are further disaggregated into six specific spending categories. These different categories reflect the services and functions to which the resources have been allocated and spent and include: general administrative functions, social sectors, construction and waste management, transportation, public education

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<sup>17</sup>It is equally important to check whether the infiltration started *after* the elections. The official documents motivating dissolutions (published by the Ministry of Interior) explicitly indicate the election of the dissolved governments as the key moment when the infiltrations take place. Additionally, by law, municipalities have to decide the budget allocation for major investment projects within the first year of each new legislature (policy report available here). Hence, criminal organisations have the possibility to condition such political decision only if already infiltrated from the first year of the new government.

and municipal police.<sup>18</sup> This dataset is available for the 1998-2013 time period.

Table 1 and appendix A5 illustrate average per capita spending for the municipalities in our sample over the 1998-2013 period. The resources spent by the municipalities amount to 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 these two figures we obtain the average total spending per municipality, €1,274 per inhabitant. As shown in Table 1, the spending function to which the most annual resources are allocated is construction and management, which makes up 34% of the annual capital account budget. As for the current account, spending is highest for 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 of carrying out the work.

**Infiltrated municipalities.** In order to measure the infiltration of organised crime within local governments, we identified all municipalities that experienced government dissolution due to mafia infiltration from 1991 to 2013, exploiting information on the date of the dissolution available from the Ministry of the Interior. The treatment variable was created as a dummy taking value 1 from the year of the last regular election before the dissolution until the moment in which the municipal government was dissolved, and zero otherwise. Data on the date of local elections before dissolutions were obtained from the Historical Archive of Local Elections, publicly available from the Italian Ministry of the Interior.

**Control variables.** Data on mafia-related homicides in each province and year of our sample were provided by the Italian National Institute of Statistics (ISTAT). The data were collected by the Ministry of Interior and classified according to the Italian Penal Code. A number of municipal level time-varying characteristics were also obtained from the ISTAT Censuses including unemployment rate, percentage of industry employment, percentage of agricultural employment, and percentage of tertiary education degree holders. Descriptive statistics for these variables are in Appendix A5.4

## 4.2 Estimating equation

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

We estimate various versions of the following model:

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<sup>18</sup>Additional details on the local public finance system of Italian municipalities in Appendix A5.

$$Y_{m,c,t+1} = \alpha + \beta Inf_{m,t} + \delta X_{m,t} + \varphi_m + \tau_t + \varepsilon_{m,c,t} \quad (1)$$

Where  $Y_{m,c,t+1}$ , refers to public spending in municipality  $m$  at time  $t+1$ .<sup>19</sup>

More precisely,  $Y_{m,c,t+1}$  is  $\frac{PS_{c,m,t+1}}{\sum_c PS_{m,t+1}}$ , i.e. the spending allocated to component  $c$  as a share of the total spending committed to the next financial year. Total spending is calculated per capita.<sup>20</sup>

The key variable in the model is  $Inf_{m,t}$ , a dummy taking value one if a municipality is led 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  $t+1$ .

Vector  $X_{m,t}$  denotes a set of control variables. This includes socio-economic and demographic characteristics of municipalities in the sample regions. In addition, we add in the list of controls a variable referring to mafia-related homicides, as a proxy for the violent activities of the mafia in the province of the municipality at time  $t$ .

In the empirical analysis we perform two types of estimations: one with the full sample of municipalities of Calabria, Campania and Sicily, and one with the restricted sample of municipalities having experienced at least one dissolution. The latter specification is our preferred one. Adopting this restricted sample allows us to focus on more similar municipalities and minimise any unobserved heterogeneity.

The data are drawn 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 the infiltration of organised crime 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). Panel A presents our main specification, comparing municipal governments with and without infiltration before and after such infiltration occurs. As explained above, the control group is composed by municipalities that have never been dissolved and by dissolved municipalities before and after the infiltration is terminated by the national government. Panel B presents an alternative specification, excluding all post-commissioning years of dissolved municipalities

<sup>19</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 reduces issues of reverse causation as our main variable of interest is measured at time  $t$ .

<sup>20</sup> $\frac{\sum_c PS_{m,t+1}}{pop_{m,t}}$  is the total per capita spending allocated by a municipal government

from the control group. In columns (1) and (2) we focus our attention on total spending 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. Outcome variables are expressed in logarithm.

Throughout all the different specifications, the coefficients of the infiltration dummy are not statistically significant. Hence, the results provide evidence that, other things equal, infiltration periods tend not to be 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).<sup>21</sup>

Our findings differ from those of Olivieri and Sberna (2014), who report a positive relationship between pre-electoral mafia violence and total public investment in local municipalities in Southern Italy. The difference may be due to the fact that we do not focus on violent attacks on the part of organised crime, but on criminal infiltration within politics. Accordingly, one interpretation of our results is that when mafia groups infiltrate local governments, they are not interested in affecting the overall aggregate spending. Indeed, if municipal governments were running constant budget deficits during infiltration periods, they would risk being taken over by the central government for reasons of financial instability, thus leaving the criminal organisation without reliable political connections within the local council.<sup>22</sup> Rather, a way to coercively condition the public financing of infiltrated governments may be to modify their investment policies precisely in those sectors that are strategic to protecting the interests of organised crime. One might thus ask, *when infiltrating local governments, does the mafia engage in patronage behaviours? Or does it bias the allocation of resources toward specific spending components?* In an effort to answer these questions, we break down total spending into different items of expenditure.

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

In this section, we test whether criminal infiltrations significantly affect the allocation of public resources. In Table 3, we compare each of the spending items of infiltrated governments with those of non-infiltrated governments before and after this infiltration is ended by the national government. Panel A reports estimates for capital expenditure components, while Panel B focuses on current expenditure chapters. Each spending item is measured as a share of

<sup>21</sup>While these are the observed results, we acknowledge that, as discussed in section 3, a number of measurement issues in the infiltration dummy may bias our estimates downward.

<sup>22</sup>Article 244 of the Unified Text Governing Local Authorities (*Testo Unico Enti Locali - TUEL*) foresees the possibility of declaring a municipalities as financially instable (*dissesto finanziario*) when they are unable to provide basic functions, services and public goods.

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 each spending category, the model is estimated both for the full sample of municipalities and for the restricted sample of municipalities who have had their government dissolved at least once. Most of the current spending components (Panel B, Table 3) display insignificant coefficients. Particularly interesting is the administration spending component. If organised crime had invested in *patronage behaviour*, thus inflating the hiring of public administration personnel, the coefficient would have been positive and significant.<sup>23</sup> We do not observe this effect. The only significant effect is on municipal police.

When we turn our attention to capital spending (Panel A, Table 3), 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)). In Table 4, we report alternative estimates excluding all post-commissioning years from the control group. All the previous findings are confirmed, and in addition we obtain a reduction in spending for public transport and lighting (column (8)).<sup>24</sup>

A first look at these results indicates that upon infiltration, organised crime's main strategy is to bias the allocation of resources towards specific sectors rather than affect total spending or engage in patronal behaviours. We provide a more comprehensive interpretation of these results below.

**Construction and waste management.** According to the estimates in Tables 3 and 4, infiltrated governments increase investment spending on construction and waste management.<sup>25</sup> The estimated effect is economically relevant: infiltrated municipalities increase spending on construction and waste management by 4.4 percentage points in column (6) of Tables 3 and 4. This corresponds to about a 14% change compared to the average spending on construction and waste management in non-treated municipalities (equal to 0.34). This is a large figure if we consider that functions related to construction and waste management already account for the largest part of the capital account budget (Table 1). Moreover, there is an average annual effect that is distributed over the entire period a government is in control. Municipal administrations can last up to five years, and, assuming that the infiltration starts with the election, the average infiltration period in our sample of municipalities is 2.7 years.<sup>26</sup>

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<sup>23</sup>One of the strategies commonly employed by organised crime is to offer employment within the public sector in exchange for various forms of support (Gambetta, 1993)

<sup>24</sup>In Appendix A.7 we replicate Table 3 expressing the spending categories in level (and measured in logs). Given that in Table 3 the outcome variables are expressed as shares of total spending with might be worried about multiple hypothesis testing and that we are therefore capturing a mechanical effect. Appendix A.7 report the estimates for both capital and current expenditure. The only coefficient that is losing significance is capital investment in police.

<sup>25</sup>In appendix A6.2 we replicate our analysis, gradually increasing the number and type of controls and municipal specific linear time trends. We then present the results for the restricted sample.

<sup>26</sup>At the end of each fiscal year, local governments must approve plans for the financing of public works, set to be realised either within the same year or part of a three-year plan. Annual plans include all projects below 100,000 euros, while three-year plans are for projects above this figure. While 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 these kinds of policy initiatives.



Therefore, any additional resources these governments allocate to this sector during a period of infiltration can be substantial. In per capita terms, given an average yearly total spending of 218 euro per capita, infiltrated municipalities redirect an additional 30 euros to construction and waste management (Table 1).

This particular spending item includes all expenses for waste collection and the construction of new buildings, bridges, streets and highways. As Section 5.4 will explain, this represents a strategic sector for the interests of criminal organisations for many important reasons. First, criminal groups need to find an outlet for profits obtained from illegal activities and the construction sector represents an easy and highly profitable option for money laundering. In addition, the technological and financial barriers to entry are relatively low, making this an ideal area for long-term investment. Second, the area of construction and waste management is associated with a set of activities that are deeply embedded within the local territory. Seizing control of these activities is crucial for the mafia, so as to establish and expand a wide network of relationships, allowing the latter not only to survive, but to prosper. The construction of new buildings and the collection of waste involve many agents: political leaders in charge of awarding public work tenders, contractor enterprises responsible for delivering the project, and a labour pool to carry out the work. Members of organised crime groups may be involved at all levels of this chain, and in the fashion of most traditional of interest groups, they exploit the political connections they have in order to rig public work bids to the advantage of the enterprises they control, or intend to favour. Moreover, access to privileged information on future bids and winning contractors allows the mafia to offer employment, therefore directly managing an important portion of the local labour market (Sciarrone, 2011).

This is thus the context in which infiltrations occur, and highlights the importance of being able to reproduce this cycle. Having political referents within local governments translates into the possibility of steering the outcomes of public work tenders and increasing the profits of affiliated firms. The more buildings to be constructed, the more contracts that will be awarded and the higher the potential gains for the criminal organisation. Figure 4 shows the number of firms, disaggregated by business sector, confiscated by police due to collusion with organised crime in dissolved municipalities. In line with the above estimates, the majority operate in the construction and waste management sector. The creation of collusive cartels between politicians, *mafiosi*, and entrepreneurs in the construction market not only causes distortion in the competition for public works, but also seriously inflates expenditures in this particular sector.

**Public transport and lighting.** The second significant variation in capital account spending is in public transport and lighting. The coefficient is significant at 10% level in our preferred sample, only focusing on municipalities having been dissolved (Table 4, column (8)). Our estimates indicate that, during infiltration periods, municipalities experience a reduction of capital spending for this sector by 3 percentage points. This change is

sizable, if we consider that, as shown in Table 1, every year an average of 23% of total capital spending is allocated to it in the analysed sample. This corresponds to an average 10% annual decrease in investment for this sector during infiltration periods.

Investment in this chapter of the balance sheet includes expenditures for local public transportation, public lighting, as well as any improvements in the management of road traffic. Reducing investment in this municipal budget item may be beneficial for captured politicians. As these public goods have little (if any) direct connection with the main activities of criminal organisations, they represent an ideal set of available resources for them to re-direct towards other spending sectors without running a budget deficit at the yearly level.

**Municipal police.** The second significant variation in the local public finances of infiltrated governments is spending on municipal police. A significant decrease is seen both for the capital account and for the current account spending in this sector. Our estimates in Panel A, Table 3 report an annual reduction in the share of total capital account spending for municipal police. While this might seem like a low figure, it should be compared to the average share of investment in local police forces made by municipal governments in our sample. As shown in Table 1, the proportion of capital account resources that local governments allocate to this sector is about 0.3% of the total for the full sample of municipalities, and 0.7% for the municipalities who had their government dissolved at least once. Therefore, an average annual reduction of about 0.3 percentage points, as per our estimates (column 12), represents a considerable change, equal approximately to 29%. In practice, given that police expenditures are typically low, they are thus nearly absent in infiltration years.

According to the estimates in Table 3, Panel B infiltrations also lead to a significant reduction in spending on municipal police as part of the current account. This corresponds, however, to a less radical change in budget decisions with respect to that reported for capital account, given the average share of current account expenditures allocated to municipal police (Table 1). Nevertheless, this result loses significance as we exclude post-dissolution years in Table 4.<sup>27</sup>

If we add up the current and the capital account effects, a clear pattern emerges indicating that infiltrated governments tend to refrain from making expenditures on local police forces. A reduction of resources directed towards law enforcement bodies such as the municipal police may directly benefit the criminal organisations, facilitating their illegal activities. Indeed, the local police are responsible for maintaining public order and security, a task shared with the national police (*Polizia di Stato*) and low-quality equipment may imply a lesser ability to fight crimes such as drug trafficking, usury and murders. Perhaps most importantly, local police are also responsible for so-called ‘administrative police’ functions, including surveillance over construction works and abidance with build-

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<sup>27</sup>In appendix A6.3 we replicate our analysis, gradually increasing the number and type of controls and municipality specific time trends. We present the results for the restricted sample.

ing regulations. Given that a lack of compliance with building regulations is one of the most frequent motivations for government dissolutions, allocating fewer resources to municipal police forces may also be one of the ways in which corrupt local politicians attempt to prevent dissolutions.

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

We now turn to whether infiltration also has 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 certain level of independence and autonomy in collecting their own financial resources. Hence, local taxes represent an important source of income for municipalities.<sup>28</sup>

In order to assess the performance of municipal governments, we follow Drago et al. (2014), constructing a measure of efficiency in revenues 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 two main local taxes, i.e. *property tax* and *waste tax*, and on *total taxes* and *total collected revenues*.<sup>29</sup> As Figure A8 shows, *property tax* and *waste tax* are the main source of income 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. The table is subdivided into Panel A, reporting our main specification, and Panel B, excluding post-commissioning years. For each outcome variable, we estimate our model with the full and the restricted sample.<sup>30</sup> The coefficient on *waste tax* (columns (3) and (4)) is negative and significant. The effect is economically 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). The result is stable to the inclusion of our set of controls and to the restriction of the sample. Panel B confirms these findings. The interpretation of this result is twofold. First, the direct or indirect presence of criminal organisations within the municipal government has an impact on the performance of the local government. Indeed, tax evasion generates significant losses and distortions in government revenues; the ability to efficiently enforce tax collection is one of the fundamental components of state capacity (Casaburi & Troiano, 2016). As shown in Figure A.8, *waste tax* represents 22% of the municipal budget (total revenues are on average 2.8 million euros per year). Second, lower fiscal revenues might correspond to a precise strategy on the part of criminal organisations who aim to weaken the presence and reputation of the State in order to open up the possibility of substituting

<sup>28</sup>Local revenues correspond on average to 52% of the entire budget for Italian municipalities (IFEL, 2014).

<sup>29</sup>Our data come from Certificates on Financial Statements (*Certificati Consumitivi - quadro 2*). This analysis is based on a panel dataset that began in 1999 and ended in 2012. Total taxes represent the total fiscal inflows for a municipality. Total revenues also include transfers from the National Government.

<sup>30</sup>In appendix A6.4 we replicate our analysis, gradually increasing the number and type of controls and including municipality specific time trends. We present the results for the restricted sample.

it through a system of provision of private favours (Trocchia, 2009). Together with the evidence on spending on construction and waste management uncovered in section 5.2, this result seems to confirm the well-known presence of criminal organisations within the waste management sector.<sup>31</sup> The reduction in waste taxes may determine a general reduction in fiscal revenues of municipalities. Indeed, Panel B, column (6) reports a negative significant effect of infiltrations on total fiscal revenues collection.

## 5.4 Interpretation

In the previous sections, we have provided evidence of the *modus operandi* of criminal organizations that, similarly to standard interest groups, aim to capture decision-makers in order to re-direct resources towards sectors of strategic interest for them. In this section, we further interpret our results and, in doing so, we aim to provide a descriptive evidence of the main reason for which criminal organisations have such a pressing urgency to capture local politicians. Mafias invest in local firms and, in order to generate profits, they need investment opportunities and public funding. This is indeed what emerges from the message of a *Camorra* lead figure to the Mayor of San Cipriano d’Aversa (August 2012): “ *I need the Mayor and the City Council to approve more public constructions projects and I need them to let me know in advance so that I can alert my firms.... Tell them that, in order to avoid misunderstanding [...], if there is any other public work they will let me know immediately. Right? Bye*”.

Unfortunately, we still do not have a full panel dataset of mafia – infiltrated firms. However, we have collected unique information on the municipal level location of firms connected to criminal organisations and on their disaggregation by sector. This cross sectional data allow us to provide a first descriptive evidence of the mechanism described above, i.e. organised crime redirecting resources towards sectors of strategic interest for them. Table 6A exhibits the correlation between dissolved municipalities and the presence of a firm seized because of connection with criminal organisations. The coefficient is positive, statistically significant and remains stable when we control for mafia-related violence and for a full battery of sociodemographic controls at the municipal level. Figure 4 breaks down mafia firms by their business sector. The majority of them operate in the sector where infiltrated municipalities re-direct resources: construction and waste management. Although purely descriptive, this exercise represents a first evidence of a precise *modus operandi*: control over local politicians facilitates the capture of public procurement contracts, in turn enabling criminal organisations to provide business opportunities to their controlled firms as well as reinvest liquidity generated from illicit activities and, more broadly, strengthen their control over

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<sup>31</sup>The connection between the waste hauling industry and organised crime dates back decades. In the U.S., *Cosa Nostra* has been part of New York’s commercial sanitation system since at least the 1950s (personal trash is hauled by the city’s Department of Sanitation). “Carters”, or trash haulers, have always been able to carve out and sell routes to one another, making the system vulnerable to strong-arm tactics. The *Camorra* is said to have controlled garbage in the city of Naples since the early 1980s. The poorly run system attracted worldwide attention when, back in 2008, uncollected garbage piled up on the city’s streets for more than two weeks because the Mafia had closed the dumps.

the local territory by offering employment opportunities and cheap services. This mechanism creates a dangerous vicious circle that might lead to a concrete substitution between the *de jure power* (state) and the *de facto power* (mafias) which has the potential to critically undermine state efficiency and civic sense particularly among local administrators.

We provide descriptive evidence of this by exploiting a nationwide anti-evasion policy, the Ghost Buildings program. The program identified ghost buildings — properties not listed in the land registry and thus hidden from tax authorities — by overlaying aerial photographs and digital land registry maps (Casabury & Troiano, 2016).<sup>32</sup> Following Casaburi & Troiano (2016), we use a measure of Ghost Building Intensity, or the number of land registry parcels with ghost buildings identified by the program, to measure the tax enforcement attitude of each municipality. More specifically, we use the number of identified *ghost buildings* as a proxy for the civic sense and civic duty of the local municipal government. Using our difference-in-differences setting, we present the results in Table 6B. The negative coefficient suggests that, on average, infiltrated municipalities report to the National Government less fewer *ghost buildings*. Although descriptive, 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 with rules decrease. This seems to undermine the entire social welfare of the local community.

## 6 Robustness checks

In this section, we present a selection of important tests used to verify the robustness of our design and our estimates. Additional robustness checks are presented in appendix A.6.

**Infiltration period starts with the elections.** As discussed in section 3, 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. If significant variation in both public investments and revenue collection starts in the period preceding infiltration, 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

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<sup>32</sup>The Regional Agency (Agenzia del Territorio) coordinated the effort. The Agency first juxtaposed land and building registry maps to obtain an Official Building Map. It subsequently compiled high-resolution (50 cm) aerial photographs of the entire country so as to identify the ghost buildings. 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). Municipalities play a key role in identifying ghost buildings in their respective territories. The intensity of such identification varies significantly, however, across municipalities.

placebo test verifies the spending behaviour and the revenue collection of those governments later 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 5. Columns 2 introduces a dummy variable equal to 1 in the year before the election of a later dissolved government. We expect to find no significant correlation between pre-infiltration governments and any form of public spending or revenue collection distortion. The “infiltration” coefficients in Column (2) are indeed not significant for all the 3 spending categories and waste tax. However, given that the average period of infiltration is longer than one year we might worry that the estimates are more precisely estimated for the period after infiltration compared to the period before. This would undermine the results of Column 2. To overcome this, in Column (3) we define a pre-infiltration period comparable in length to the actual infiltration period. Prior Legislature (P.L.) is a dummy variable equal to 1 for the legislature preceding the infiltration period. Reassuringly, none of the coefficients is significant in neither our estimation with the full sample nor with the restricted sample.

Although we cannot reject with full certainty the possibility that infiltrations begin before elections, the results of our placebo test seem to follow the theoretical framework of Dal Bo (2006), according to which elections constitute a “*recruitment process*” whereby a new bargaining table between crime and politics is established. This might particularly be true 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, elections are crucial because they can constitute a turning point whereby 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 members and politicians which in turn leads 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). More specifically, a Granger causality test (or full dynamic model) allows us to observe whether causes happen before consequences, or vice versa. It therefore provides an additional control for simultaneous causality that analyses the dynamic evolution over time of the local spending determined by the infiltration. In this specific context, Granger causality testing means checking whether there is any statistically 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  $q$  represents the post-infiltration effect and  $\rho$  represents the anticipatory effect.<sup>33</sup> We have thus re-estimated the model for the main dependent variables (capital account spending for construction and waste management, public transport and lighting, municipal police and waste tax) by including this set of leads and lags, again controlling for municipal fixed effect, time fixed effects and our municipal socio-demographic controls. In the analysis we always drop the commissioning years and we exclude the post-commissioning years from the control group. The omitted period is the year before the election of a later dissolved government (*1y prior*). Figure 5 displays the result of the analysis for both public spending and for revenue collection. We assess the evolution of municipal spending: up to 5 years *before* the election of an infiltrated government and for 4 years *after* the elections. Each point in the Figures refers to the estimated coefficient for a given year.<sup>34</sup>

Importantly, for all our results, the estimates reveal no statistical difference in the pre-infiltration trends between control and treatment group. In all the Figures, the 5 pre-treatment years show that, before the infiltrated governments, there is very limited and not significant variation in either the share of public investments (in construction and waste management, public transport and lighting 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. This is a fundamental test not just because it addresses an important criteria of the differences-in-differences estimation, but also because it provides the highest level of transparency of the dynamics of the effect before and after the beginning of the treatment.

In all the 3 spending figures, there is a significance change in spending investments in the first year after local elections. This is likely due to the fact that the second budget year is also the one in which a municipal government can promote its 3 years investment plan and hope to see the result of it while still in office. These medium-term investment initiatives are potentially very appealing to the mafia due to their higher monetary value as compared to single-year plans – as mentioned, three-year plans concern public works over 100,000 Euros.

**Test for selection into treatment.** Our results indicate that infiltrated local governments spend on average more on construction and waste management and less on municipal police. One concern, however, is that judicial investigators might choose to investigate precisely those municipalities that present anomalies in their balance

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<sup>33</sup>Given that some municipalities experienced more than one government dissolution, 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 that experienced a government dissolution prior to 1998, the post-treatment dummy takes value 1 for the entire period of analysis.

<sup>34</sup>5 years before the election is the entire duration of the previous municipal legislature. The number of years of legislature - and corresponding number of municipalities - before dissolutions are as follows: 1 year - 117 municipalities; 2 years - 110 municipalities; 3 years - 78 municipalities; 4 years - 49 municipalities; 5 years - 23 municipalities.

sheets. If this is the case, selection into treatment would be correlated with the dependent variable, and there would therefore 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 dissolution was related to distortion in the allocation of resources.<sup>35</sup> Table A.10 provides the results, showing that reductions in police investments and public transport and the increases in construction and waste management remain significant and stable. Columns 1 and 3 provide the point estimates for capital spending in police, public transport and construction. All the coefficients remain significant and similar in magnitude. Hence, according to the estimates in Table A.10 we can safely dismiss 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 the 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 exploit the fact that in Italy local governments can be dissolved for reasons unrelated to mafia infiltrations, including: failure to approve the financial budget, resignation of the mayor, resignation of more than 50% of the council members, vote of no confidence. These dissolutions are in fact relatively common in our sample and time-span – in the period from 1998 to 2013 there were 463 cases of municipal government dissolutions unrelated to the mafia within the three Regions of analysis. We use these dissolutions as proxies for unstable governments and for low quality of elected politicians, replicating the estimates of model (1) using  $DisNomafia_{m,t}$  as the main explanatory variable, a dummy taking value 1 for all years in which governments later - dissolved for mafia-unrelated reasons were leading the municipalities.<sup>36</sup> If the results in section 5 were driven by local government characteristics unrelated to the mafia - rather than by infiltrations - we would expect to obtain similar effects as those presented above.

The results of this placebo test are presented in Appendix A11. 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, controlling for time and municipality fixed effects, and all other controls. Table A11.1 includes our main results as outcome variables. There are no statistically significant coefficients, suggesting that the observed differences between infiltrated and non-infiltrated governments is truly produced by the presence of the mafia.

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<sup>35</sup>To perform this test, we exploit official statements on the dissolutions. These documents contain precise descriptions not only of the final reason for the dissolution, but also why the investigation started in the very first place. 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>36</sup>This type of dissolution is indubitably a bad outcome for a newly elected local government. When, in fact, the government is dissolved for non-mafia related reasons, the elected politicians cannot run again in the following election. Thus, they have every incentive to avoid this scenario.



**Test for spillover effects.** Previous research has demonstrated that municipalities neighbouring those dissolved for mafia infiltration tend to respond to their neighbours' dissolution by reducing the overall level of public investment (Galletta, 2017). If some municipalities artificially lower their spending as a response of the dissolution of a neighbouring municipality there is a risk of bias in the control group which may affect our results. In order to discard the possibility that our results are driven by such spillover mechanism, we replicate our estimates by excluding from the sample all municipalities having at least one neighbour dissolved for mafia infiltration at any moment during the 1998-2013 period. This entails dropping 268 municipalities from our full sample. The results are displayed in Table A12. The coefficient of total capital expenditures is larger (in absolute value) than that of Table 2. This suggests that indeed, on average, municipalities which are neighbours of dissolved local governments tend to exhibit a decrease in public spending. Yet, as in Table 2, the coefficient of the treatment dummy is not statistically different from zero, indicating that total capital expenditures during infiltrations is not significantly different from non-infiltrated periods. All other key results remain unaffected by the exclusion of neighbouring municipalities.

**Attacks to politicians.** If organised crime sees local politicians as instrumental for achieving their objectives, we should expect to observe no violence against them during and before the infiltration period. In order to test this hypothesis, we have collected municipal level data on violent attacks against local politicians and administrators perpetrated by organised crime groups.<sup>37</sup> We use this data in Table A13.1, where the variable *Attacks to Politicians* is an indicator equal to 1 if there has been violence against local administrators in a given municipality.<sup>38</sup> We then regress this measure on our standard *Infiltration* variable conditioning on socio demographic controls, municipal fixed effects and year fixed effects. The results confirm our above hypothesis: there is no statistical correlation between the capturing of local politicians (*Infiltration*) and mafias' attacks against them. Importantly, in Column 2 we also test whether there is any violence against politicians in the year before the infiltration to the municipal council. We do not find any evidence of it. For mafia groups, engaging in violent behavior when they are infiltrated in municipal councils is detrimental and counterproductive, because it undermines the potential to bias the allocation of public resources. This is indeed what we observe in Table A13.2 where, exploiting our difference – in – differences setting, we run our main specification (equation 1) measuring organized crime with our *Attacks to Politicians* variable. It is interesting to note that *Attacks to Politicians* does not have any effect on the spending components that are so strongly affected by the criminal infiltration in local councils.

<sup>37</sup>The dataset is constructed using information collected by Avviso Pubblico, an Italian NGO that systematically record news of attacks to local Italian politicians. The data covers the years 2010-2015. As studied by Daniele and Dipoppa (2017) the violence targeted at politicians is not sporadic. From 2010 to 2014 there were, on average, 277 attacks against Italian politicians.

<sup>38</sup>We are not exploiting the intensity of the attacks in this analysis. In some municipalities attacks are more than in others and they are different in typology ( from threatening letters to murders).

## 7 Organised crime and politics

In the previous section we tested the robustness of our estimates. In this section, we further investigate the complex relationship between politics and organised crime. Our results have thus far revealed that collusion between criminal organizations and politicians has a significant impact on both the allocation of public resources and on local taxes. Both public spending and revenue collection can, however, 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 truly driven by 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 fundamental question. In doing so, we inevitably investigate a new empirical relationship between organised crime and politics. This section consequently not only provides a crucial test for the validity of our results, but also offers further insight into 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 give 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 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 for mayor because no other electoral lists were presented.<sup>39</sup> A lack of electoral competition may be associated with infiltration if pre-electoral intimidation on the part of the mafia limits the participation of other candidates, or if the absence of political opposition within local councils facilitates opportunities for the mafia to find valuable political referents.

Another political element, which may be associated with infiltration, is the mandate limit of incumbent mayors. We look at different terms of office first or second term as mayor to examine when and if incumbents may be more likely to engage in collusion behaviours. The literature suggests that binding term limits 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 cases of corruption and collusion (Ferraz and Finan, 2011). We exploit the fact that up until 2014 all mayors had a maximum limit of two consecutive terms in office and examine whether infiltration is associated

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<sup>39</sup>In such cases, the only condition necessary to valid the election is a voter turnout above 50%.

with the fact that mayors have no possibility of being immediately re-elected.<sup>40</sup> A lower degree of accountability towards the citizens may facilitate the propensity to collude with organised crime.

Finally, infiltrations may be systematically correlated with the political colour of governments. We explore this relationship by verifying whether there is a particular political party recurrently chosen by the mafia when political support is offered 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 which differ from the traditional political parties and are often created *ad hoc* for the local election.<sup>41</sup>

In order to investigate whether any correlation exists between cases of criminal infiltration and the political characteristics of 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>42</sup> *Political Factors* is sub-divided into a set of variables referring to key political features of the local government, namely: only one candidate running for election (*Single Candidate*), incumbent running for the second and last mayoral mandate (*Last Mandate*) and political colour of the winning party (*Right Party*, *Centre Party*, *Civic List*).<sup>43</sup> Table 8 reports linear probability estimates from this 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 of this finding is that due to mafia-government agreements, the mafia operates to reduce political competition, 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 of 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

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<sup>40</sup>While mayors can run for a third term after a term break, third-term candidacies are extremely rare.

<sup>41</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, 2017). In Sicily, the strongest political relationships developed by the mafia have been with the Christian Democrats (*Democrazia Cristiana*, DC) (De Feo and De Luca, 2017) and then after the DC’s demise in 1994, with the conservative party Forza Italia (Buonanno et al., 2016). Daniele and Geys (2016) find that in the elections immediately following the dissolution, turnout is lower.

<sup>42</sup>We exploit the same dataset used in the Section 3, 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 experienced at least one dissolution for mafia infiltration between 1998 and 2013. Descriptive statistics for all political variables are displayed in Table A14 in the Appendix. The variables are reported for both the full sample of municipalities having experienced at least one dissolution, and for the infiltration years.

<sup>43</sup>When estimating the model with Party Colour variables, we excluded the few governments whose administration cannot be classified among these three categories of parties. In addition, commissioning years are excluded from the analysis, where the municipal government was taken over either for reasons due to mafia infiltration or for other motives. Civic List is a dummy variable taking value one if the winner of the election in municipality  $m$  and leading 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, they very frequently form multi-party coalitions made of groups of traditional parties.

certain types of parties. The result of a positive and significant coefficient for the Right Party dummy variable suggests that infiltration is significantly correlated with the probability of having a right-wing party winning the local election and controlling the infiltrated government. The coefficients for Left Party, Centre Party and Civic List are not statistically significant.<sup>44</sup>

Taken together, the estimated effects uncover some important empirical regularities 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 are either able to influence electoral outcomes (if collusions happen in pre-electoral periods), 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 the investment decisions of local governments. This is a very serious concern since it would imply that the estimated effect on the composition of the local budget in Section 5 may be the consequence of political elements such as strategic redistributions and pork-barrel politics, rather than the result of an infiltration. Hence, for any uncovered correlation between infiltration cases and political conditions, we need to verify that infiltrations, and 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:

$$Y_{m,c,t+1} = \alpha + \beta_1 Inf_{m,t} + \beta_2 PoliticalFactors_{m,t} + \delta NatGov_t + \vartheta X_{m,t} + \varphi_m + \tau_t + \varepsilon_{i,t} \quad (3)$$

$$Y_{m,c,t+1} = \alpha + \beta PoliticalFactors_{m,t} + \delta NatGov_t + \vartheta X_{m,t} + \varphi_m + \tau_t + \varepsilon_{i,t} \quad (4)$$

Where  $Y_{m,c,t+1}$  represents the main results of Section 5, 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 features of the local government, namely  $SingleCandidate_{m,t}$ , and  $PartyColour_{m,t}$ .

$NatGov_t$  is a dummy variable controlling for the political colour of the national government at time  $t$  – left or

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<sup>44</sup>Political conditions may influence the allocation of public expenditures (Johnston, 1977; Besley and Coates, 1998). The expectations 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 means 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).

right-wing governments.  $X_{m,t}$  is a vector of controls, including socio-demographic variables and a variable on mafia-related homicides.  $\varphi_m$  and  $\tau_t$  respectively represent municipality and time fixed effects.  $\varepsilon_{m,t}$  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 those of model (4) in Table 10. In Table 9, we run our main estimating equation from Section 5 but control for all the political factors correlated with the infiltrated local government. The infiltration dummy remains significant and confirms all of 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. These tests 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 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 collude 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 simple comparison of the probability of infiltration in municipalities with and without right-wing incumbent mayors may confound the effect of other municipal characteristics. We consequently cannot be fully certain that our main results on public spending are not driven by conservative parties winning the elections.

In order to address this issue, 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 A15.1 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 electoral races in which the right-wing candidate is

either the election winner (*treatment group*) or the runner-up (*control group*).<sup>45</sup>

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. We then 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>46</sup> We report estimates under two choices for the local polynomials: linear and quadratic.

In order to obtain reliable RDD estimates, we need to ensure that there is an absence of non-random sorting around the cutoff.<sup>47</sup> To this end, we perform a McCrary density test, making sure that there is no significant jump in the density of observations at the cutoff point. Figure A15.2 in Appendix A15 exhibits a very small discontinuity at the threshold, which is statistically insignificant (Table A15.4).

<sup>45</sup>As a robustness check, we replicate 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 those obtained when all non-right parties belong to the control group. Estimation results available upon request.

<sup>46</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. Very small bandwidths often, however, lead to small sample problems and imprecise estimates. To address this issue, we use the optimal bandwidth proposed by Calonico et al. (2014), which addresses the bias in the confidence interval and the point estimator.

<sup>47</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 example, 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 results of the tests reported in Appendix A15 suggest 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 victory to the preferred party by a small margin. Electoral manipulations normally come 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 proportion of 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%.

### 7.2.2 Results

Table 11 presents our main results, obtained with the full sample of municipalities from Campania, Calabria and Sicily, using both non-parametric and parametric estimation methods. Columns (1) and (2) present the results when using, respectively, a linear and quadratic functional forms. The optimal bandwidth used is 0.075, meaning that the sample is made up 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 when right-wing parties win local elections by a small margin over other parties.

Figure 6 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 marginally win the election. These findings nicely complement those of Buonanno et al. (2016) and Alesina et al. (2016) who focus on national elections rather than local elections and report a systematic correlation between mafia-plagued municipalities and the main Italian right-wing party during a similar period of analysis.

Figures A15.5 and A15.6 in Appendix A15 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 the probability of infiltration may imply that changes in public spending are not caused by mafia infiltrations but rather by right-wing local governments. To address this concern, we replicate RDD estimates by using capital account spending on construction and waste management and for municipal police as dependent variables. The test is conditional for municipalities that are infiltrated. 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 on construction and waste management or on 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 on the part of municipal governments ruled by right-wing parties that barely won the election. The same is valid for the Waste Tax, which reports a non-significant coefficient. Figure 7 reproduces the estimation results in graphical forms, providing evidence that no discontinuity around the threshold is present for either of the two key spending components or for waste tax. Hence, this test supports our hypothesis arguing that the significant variation in construction and waste management and police expenditures and waste tax in infiltrated municipalities are due to the presence of organised crime and not to other unobserved or confounding factors.

## 8 Conclusion

Collusion and corruption distort the correct functioning of democratic systems. Such institutional failures have the potential to influence key aspects of economic activity, undermining the long run development of any society (Shleifer and Vishny, 1993; Mauro, 1995; Glaeser and Saks, 2006). A particularly dangerous form corruption is that perpetrated by organised crime. Differently from the more common white-collar crimes, criminal groups seek profit through illegal business and frequently employ physical intimidation. Illegal and secretive agreements between elected officials and colluding parties may alter the legislative process, compromising the definition of policies aimed at the welfare of citizens. Yet the mechanisms through which this negative impact takes place are still unclear. In this paper, we explored one possible channel: collusion between organised crime and politicians. Our study is among the first in the literature to extensively study the phenomenon of infiltration, analysing both the conditions that make such 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 politicians affects the allocation of public resources and the ability of local governments to collect resources. Our analysis suggests that while the overall amount of financial resources that local governments spend remains 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 in construction and waste management and reduce annual investment shares in municipal police forces and public transport. Moreover, infiltrated municipalities collect on average fewer waste taxes. These results are robust to changes in specifications and to a series of robustness checks.

Furthermore, we have identified a set of political characteristics of municipal elections that are correlated with infiltrations. We find that both the absence of competition at local elections, as well as having a mayor running



for her second and last mandate, are linked with infiltrations. This seems to suggest that there may be some recurrent electoral patterns associated with mafia-government 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 parties of a specific colour, uncovering a positive and significant association between infiltrations and elections won by right-wing parties. This may imply a preference on the part of the mafia for Italian right-wing parties when looking for political referents. We further investigated 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 provides an assessment of the strategy of organised crime when it endeavours to take control of local politics and consequences for 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 the key and strategic sectors where the mafia has interests to protect. In addition, we show that there may be some political parties that are systematically more likely to collude with organised crime.

In sum, our analysis has unveiled the important distortionary effect that mafia infiltrations may have on politics and policy choices. Our study may help to gain a deeper understanding of such phenomena and possibly aid in the prevention of mafia infiltrations.

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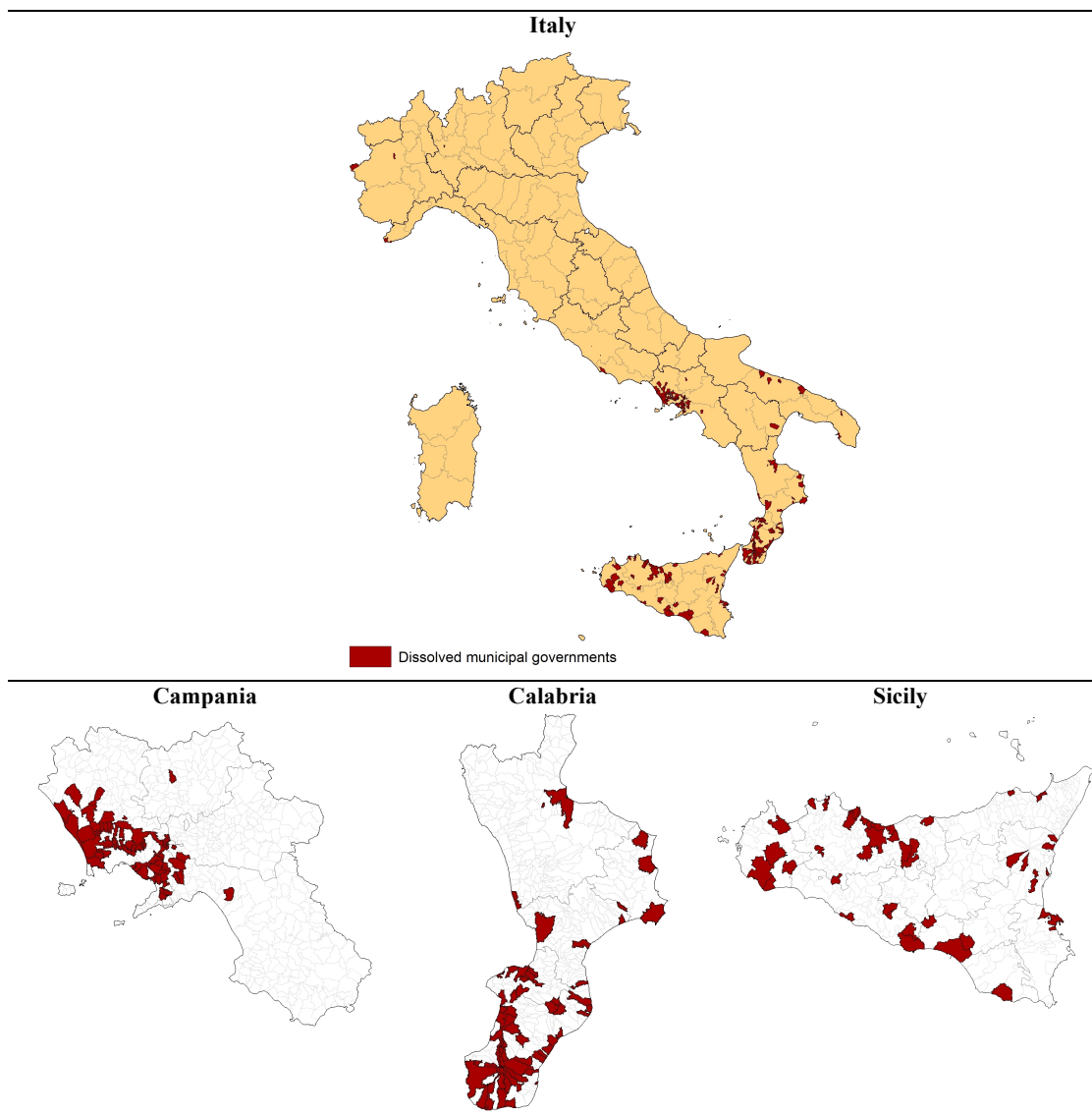
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## 9 Figures and Tables

### 9.1 Figures (in the text)

Figure 1

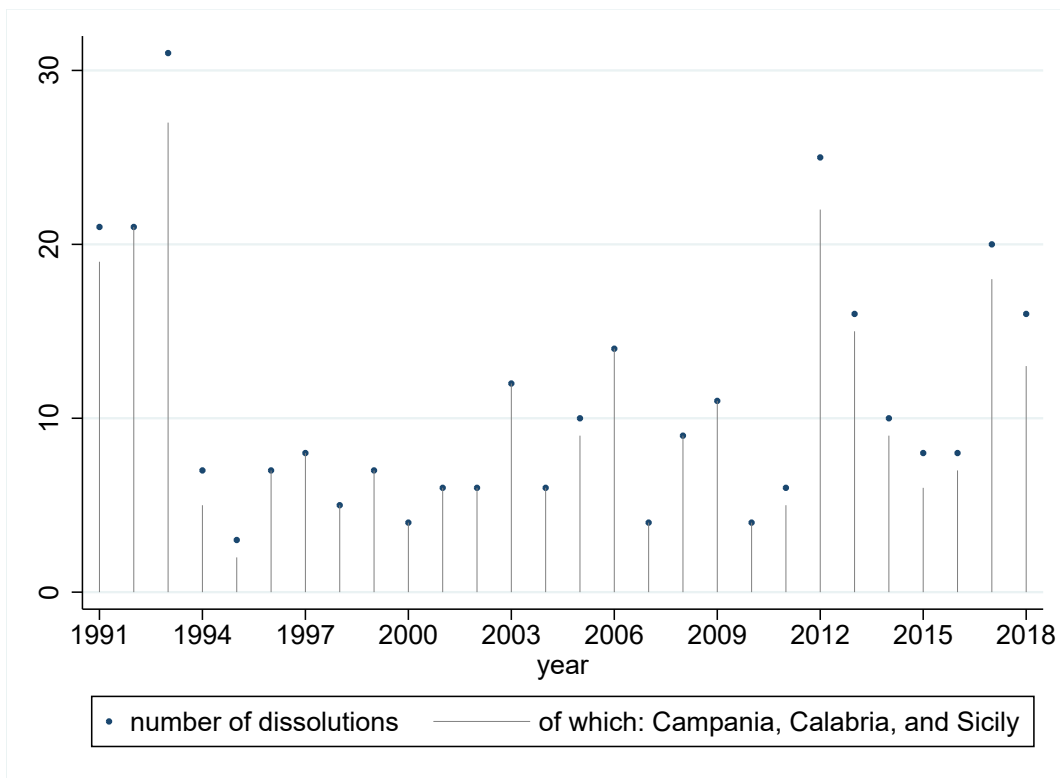
Geographical location of the dissolutions



Note: Source: Italian Ministry of Interior – maps are authors' own elaboration. The figure shows the geographical location of the dissolved municipalities. The first panel provides the locations at the national level. Most of the dissolvments took place in the 3 regions that we study. The second panel shows the geographical breakdown at the municipal level.

**Figure 2**

Number of dissolved municipal governments for mafia infiltration

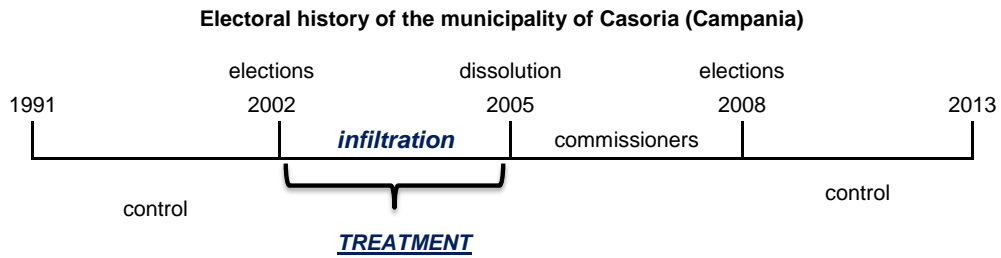


Source: Italian Ministry of Interior. The figure shows the yearly number of municipal dissolvments. The series stops at 2015, but since then 40 municipalities have been dissolved. To date, Calabria, Campania and Sicily ( 3 regions object of our study), have experienced the highest number of dissolutions. Precisely, 104 in Campania, 103 in Calabria and 72 in Sicily.



**Figure 3**

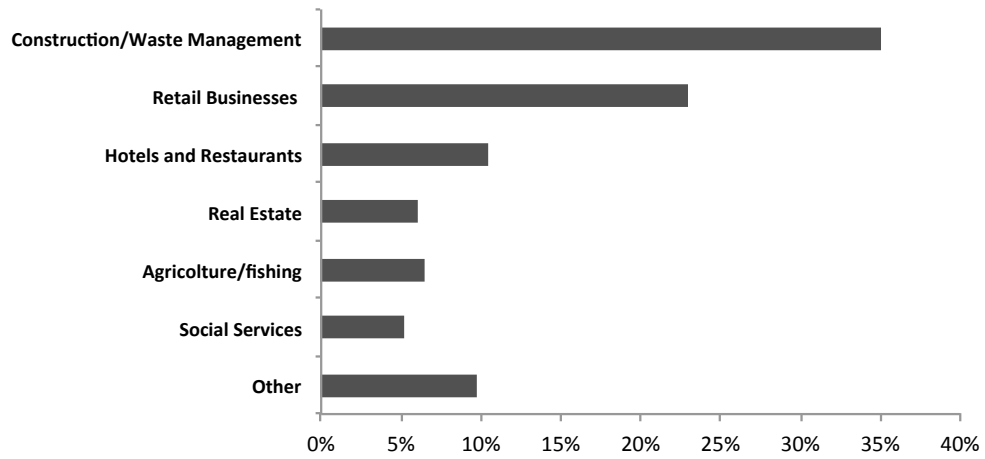
Identification of the treatment period



Note: The treatment period ranges from the elections in 2002 to the dissolutions in 2005. This is to identify a period of time during which organised crime was colluding with the local government.

**Figure 4**

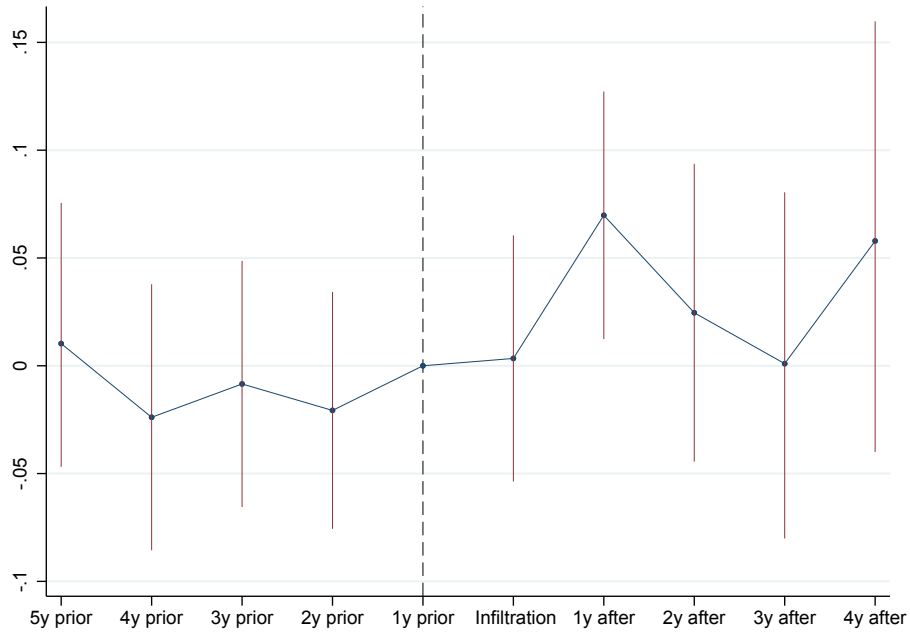
Organised crime controlled firms investments by sector



Source: Transcrimine – Gli Investimenti delle Mafie 2013 – authors' own elaboration. The figure shows the breakdown by sector of the firms seized because of infiltration with criminal organisations.

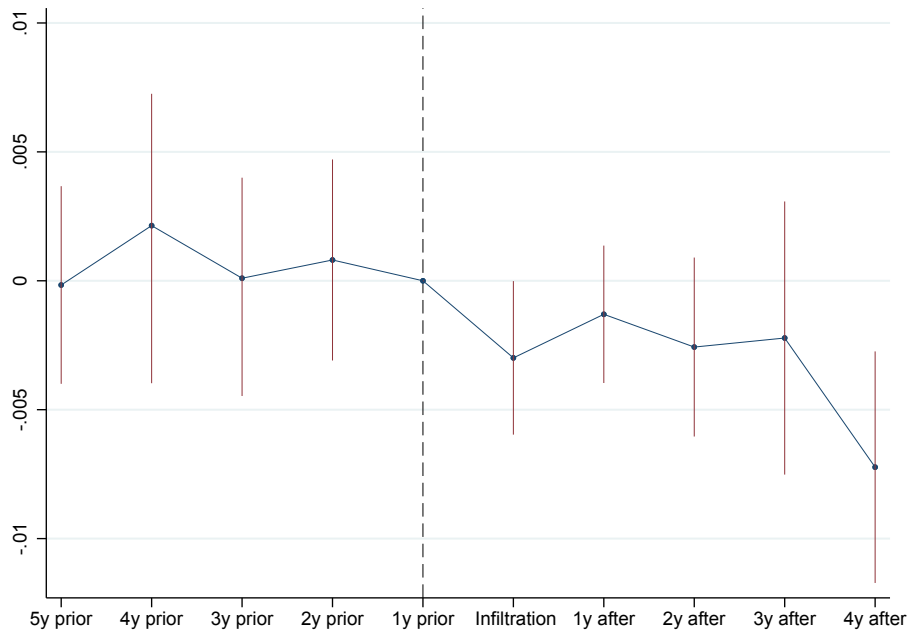
**Figure 5. Full dynamic model**

Event study - construction and waste management



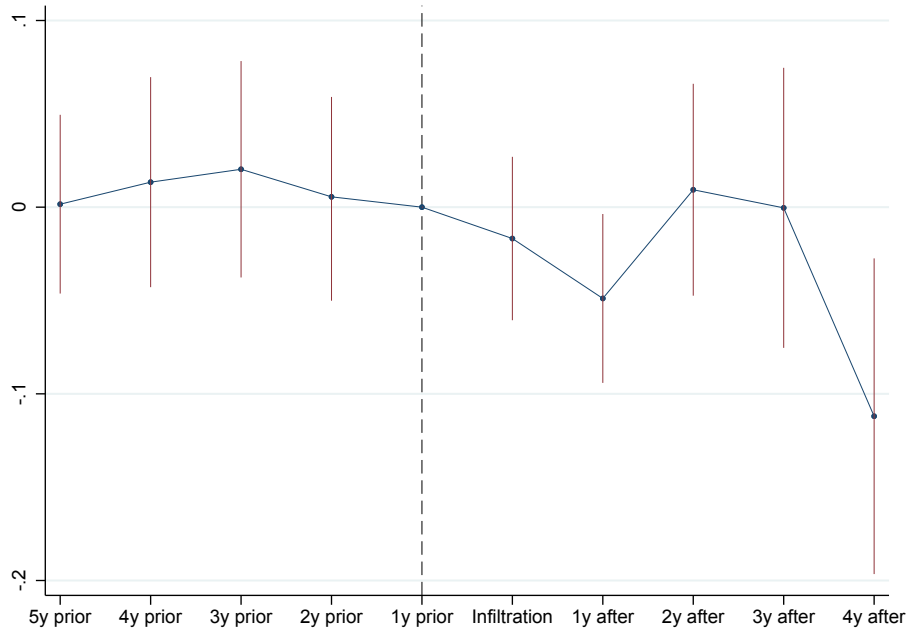
Note: Dynamic panel model. We include 5 years prior to the infiltration period (full legislature) and 5 years prior to the dissolution. The commissioning years are always excluded. Similarly to Table 4, the years *after* the commissioning period are excluded from the control group. The omitted category is 1 year prior to the infiltration. The estimation includes time and municipal dummies, socio-demographic controls and mafia murder. Standard errors clustered at the municipal level. Confidence intervals at 5%.

Event study - municipal police



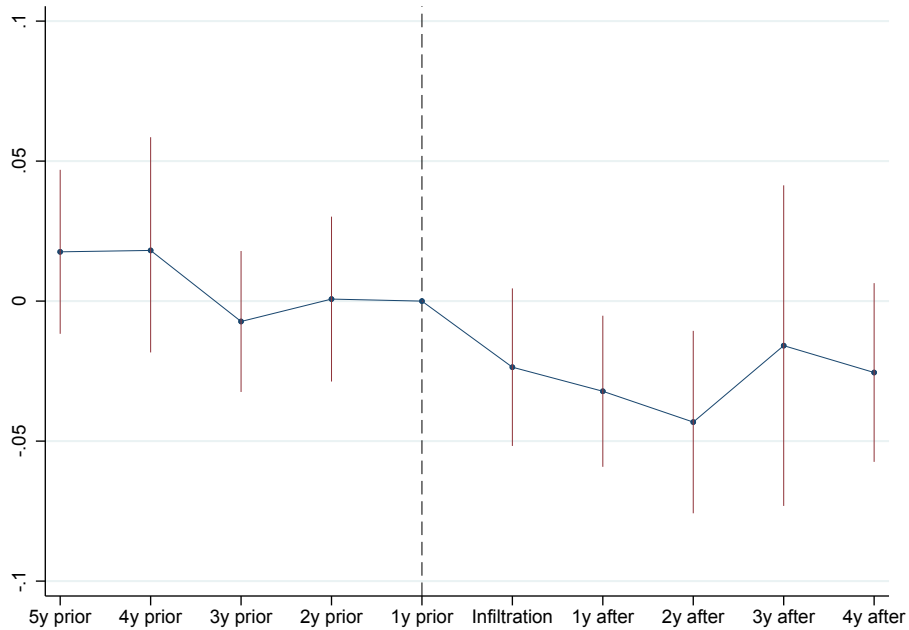
Note: Dynamic panel model. We include 5 years prior to the infiltration period (full legislature) and 5 years prior to the dissolution. The commissioning years are always excluded. Similarly to Table 4, the years *after* the commissioning period are excluded from the control group. The omitted category is 1 year prior to the infiltration. The estimation includes time and municipal dummies, socio-demographic controls and mafia murder. Standard errors clustered at the municipal level. Confidence intervals at 5%.

### Event study - public transport and lighting



Note: Dynamic panel model. We include 5 years prior to the infiltration period (full legislature) and 5 years prior to the dissolution. The commissioning years are always excluded. Similarly to Table 4, the years *after* the commissioning period are excluded from the control group. The omitted category is 1 year prior to the infiltration. The estimation includes time and municipal dummies, socio-demographic controls and mafia murder. Standard errors clustered at the municipal level. Confidence intervals at 5%.

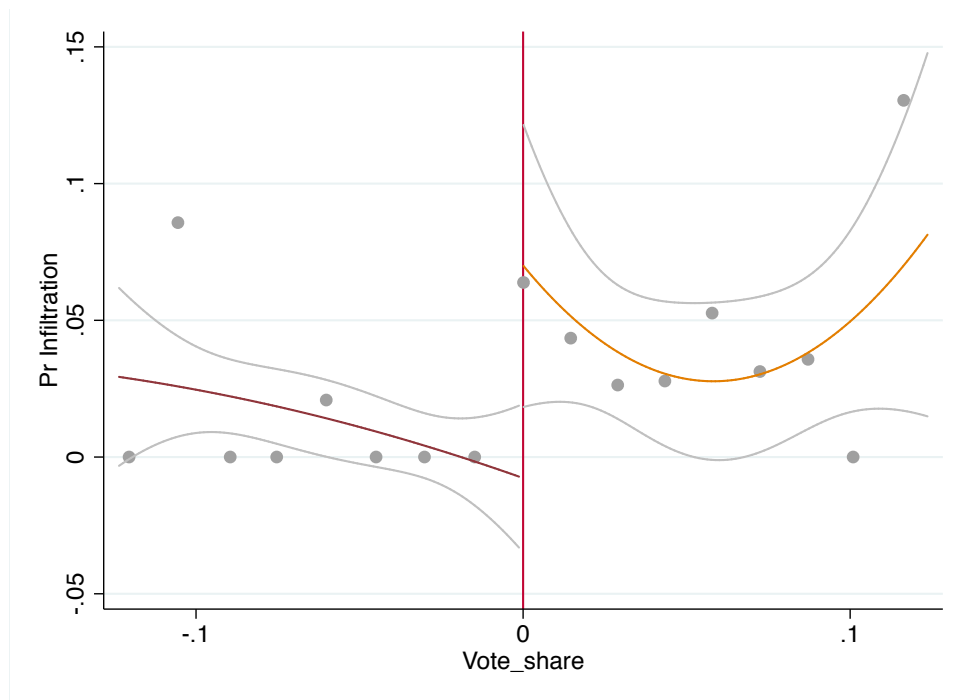
### Event study - waste taxes



Note: Dynamic panel model. We include 5 years prior to the infiltration period (full legislature) and 5 years prior to the dissolution. The commissioning years are always excluded. Similarly to Table 4, the years *after* the commissioning period are excluded from the control group. The omitted category is 1 year prior to the infiltration. The estimation includes time and municipal dummies, socio-demographic controls and mafia murder. Standard errors clustered at the municipal level. Confidence intervals at 5%.

Figure 6

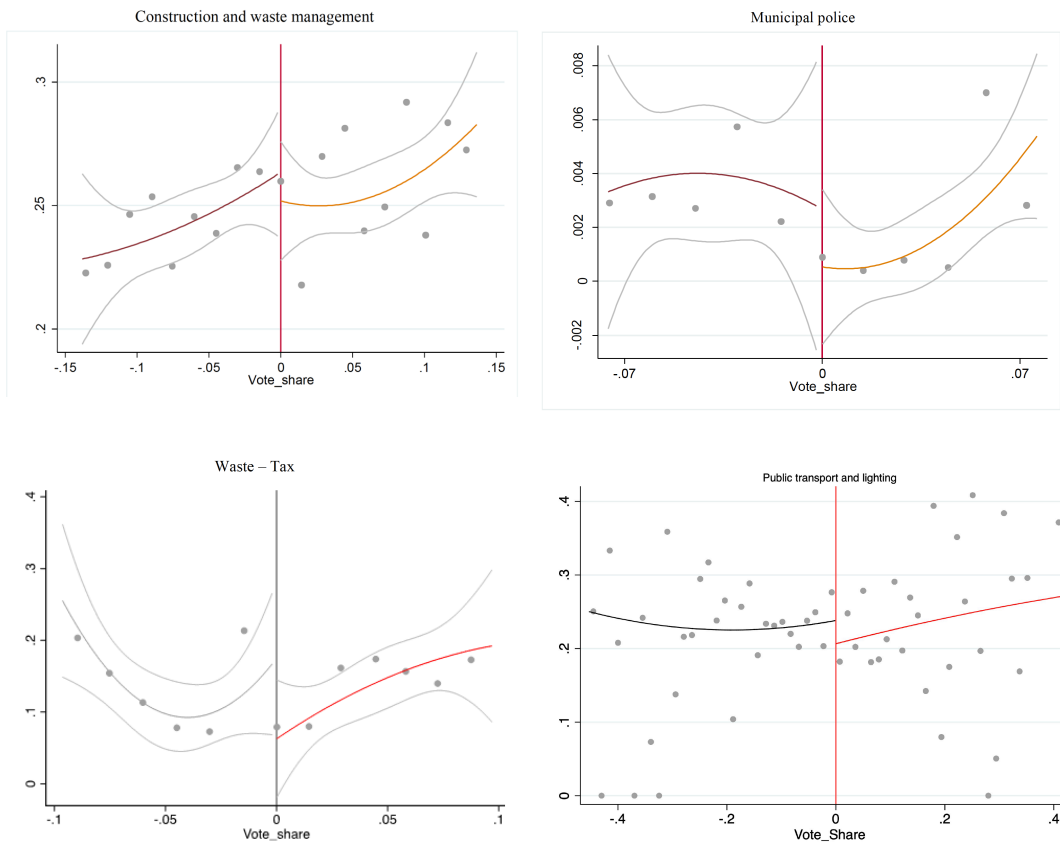
RDD – right-wing party victory and probability of infiltration



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 7

RDD – right-wing party victory, 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

Descriptive statistics - Public spending and revenues collection						
	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	2,813	0.164	0.211
Social sector	20,901	0.063	0.134	2,789	0.056	0.124
Construction and waste management	21,137	0.342	0.292	2,817	0.321	0.277
Public transport and lighting	21,090	0.232	0.242	2,818	0.228	0.233
Education	20,844	0.084	0.153	2,799	0.106	0.166
Municipal police	20,477	0.003	0.019	2,751	0.007	0.026
<i>Current Account component (share of total)</i>						
Administration	21,240	0.429	0.095	2,842	0.400	0.093
Social sector	21,243	0.073	0.058	2,842	0.086	0.061
Construction and waste management	21,239	0.228	0.085	2,842	0.269	0.090
Public transport and lighting	19,909	0.082	0.040	2,664	0.068	0.036
Education	18,557	0.083	0.041	2,480	0.075	0.038
Municipal police	21,239	0.059	0.027	2,842	0.058	0.023
<i>Municipal revenues (collected/forecasted)</i>						
Total revenues	17,596	0.494	0.362	2,381	0.478	0.425
Total taxes	18,692	0.573	0.192	2,524	0.563	0.157
Property tax	18,703	0.463	0.210	2,524	0.437	0.202
Waste tax	17,314	0.137	0.250	2,330	0.097	0.198

Note: Full sample refers to all the municipalities of Campania, Calabria and Sicily. Restricted sample refers to the municipalities of these regions that 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 items.

**Table 2**

Effect of infiltration on total public spending (log)

	(1)	(2)	(3)	(4)	(5)	(6)
	Total p/c spending	Total p/c capital spending	Total p/c capital spending	Total p/c capital spending	Total p/c current spending	Total p/c current spending
<i>Panel A - Main specification</i>						
Infiltration	-0.0126 (0.0198)	-0.001 (0.0199)	-0.0483 (0.069)	-0.0343 (0.0698)	0.0147 (0.0135)	0.0175 (0.0122)
Observations	20,888	2,582	20,889	2,582	20,890	2,582
R-squared	0.534	0.532	0.357	0.351	0.754	0.562
<i>Panel B - Excluding post dissolution years</i>						
Infiltration	0.00172 (0.0263)	-0.00523 (0.0297)	0.0201 (0.0762)	-0.0046 (0.0899)	0.017 (0.0205)	0.022 (0.0233)
Observations	20,380	2,074	20,381	2,074	20,382	2,074
R-squared	0.532	0.530	0.357	0.370	0.756	0.541
Municipal dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Full Sample	Yes	No	Yes	No	Yes	No
Restricted Sample	No	Yes	No	Yes	No	Yes

Note: Municipally clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The analysis compares the spending categories of non infiltrated government with infiltrated governments, before and after the infiltration is terminated by the national government. Commissioning period always excluded. Infiltration (Inf) is a dummy equal to 1 if the government is infiltrated by organised crime. The outcome variables are Total per capita pending; Total per capita capital expenditure; Total per capita current expenditure. These variables are all expressed in logarithmic. Controls: agricultural employment, industry employment, tertiary education degree holders, unemployment. The estimation includes municipal Fe and year Fe. Full sample: 1350 municipalities of Campania, Calabria and Sicily; restricted sample: municipalities that experienced at least one government dissolution for mafia infiltration. In Panel B, the analysis excludes the post commissioning years for the dissolved municipalities, i.e. the control group in the estimation are composed by municipalities that have never been dissolved and, for the dissolved municipalities, only by the years before the infiltration.



**Table 3**

Effect of infiltration on municipal spending categories

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Administration		S. sector		Construction waste management		Public transport lighting		Education		Police	
<i>Panel A - Dep. var.: Capital spending components</i>												
Inf	-0.01 (0.014)	-0.014 (0.014)	-0.0045 (0.007)	-0.007 (0.008)	0.0424** (0.017)	0.0443** (0.018)	-0.02 (0.013)	-0.022 (0.013)	0.0065 (0.011)	0.0094 (0.011)	-0.0025** (0.0013)	-0.0022* (0.0012)
Obs	20,676	2,554	20,545	2,535	20,777	2,559	20,729	2,559	20,484	2,541	20,120	2,496
R2	0.260	0.218	0.135	0.138	0.205	0.225	0.174	0.152	0.116	0.138	0.170	0.232
<i>Panel B - Dep. var.: Current spending components</i>												
Inf	-0.007 (0.005)	-0.0062 (0.005)	-0.0013 (0.004)	-0.0003 (0.004)	0.0064 (0.005)	0.0053 (0.0049)	-0.0005 (0.002)	-0.001 (0.002)	0.0002 (0.002)	0.0006 (0.002)	-0.0024* (0.0013)	-0.0022* (0.0012)
Obs	20,875	2,579	20,878	2,579	20,874	2,579	19,579	2,427	18,229	2,242	20,874	2,579
R2	0.739	0.698	0.651	0.612	0.733	0.687	0.753	0.752	0.816	0.787	0.623	0.660
M.Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Y.Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FS	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
RS	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Note: Municipally Clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The analysis compare the spending categories of non infiltrated government with infiltrated governments, before and after the infiltration is terminated by the national government. Commissioning period always excluded. Infiltration (Inf) it is a dummy equal to 1 if the government is infiltrated by organised crime. The dependent variables are respectively yearly capital and current expenditure spending on a) administration; b) social sector; c) constructions and waste management; d) public transport and lighting; e) education and f) police. This spending components are calculated as shares of total spending. For each outcome variables we perform two estimations: one with full sample (FS) of municipalities of our Regions and one with the restricted sample (RS), i.e. municipalities that have been dissolved, exploiting the temporal variation of the dissolutions. The estimation includes socio demographic controls (C) (which include agricultural employment, industry employment, tertiary education degree holders, unemployment); Municipal Fixed Effects (M.Fe), Year Fixed Effects (Y.Fe) . 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 municipal spending categories (*excluding post commissioning years*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Administration		Social sector		Construction waste management		Transports		Education		Police	
<i>Panel A - Dep. var.: Capital spending components</i>												
Inf	-0.009 (0.017)	-0.013 (0.019)	-0.004 (0.009)	-0.001 (0.01)	0.046** (0.021)	0.044* (0.024)	-0.023 (0.017)	-0.034* (0.019)	0.009 (0.013)	0.013 (0.014)	-0.0003 (0.0012)	-0.003** (0.002)
Obs	20,169	2,047	20,038	2,028	20,270	2,052	20,222	2,052	19,977	2,034	19,613	1,989
R2	0.261	0.219	0.138	0.169	0.208	0.251	0.176	0.169	0.118	0.166	0.161	0.243
<i>Panel B - Dep. var.: Current spending components</i>												
Inf	-0.006 (0.006)	-0.004 (0.006)	-0.0005 (0.005)	-0.002 (0.005)	0.008 (0.005)	0.008 (0.005)	-0.004* (0.002)	-0.003 (0.002)	-0.002 (0.002)	-0.0017 (0.002)	0.001 (0.001)	-0.001 (0.001)
Obs	20,367	2,071	20,370	2,071	20,366	2,071	19,142	1,990	17,791	1,804	20,366	2,071
R2	0.741	0.717	0.654	0.633	0.736	0.714	0.753	0.768	0.817	0.804	0.624	0.674
M.Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Y.Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FS	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
RS	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Note: Municipally Clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . This analysis excludes the post commissioning years for the dissolved municipalities, i.e. the control group in the estimation are composed by municipalities that have never been dissolved and, for the dissolved municipalities, only by the years before the infiltration. As in Table 3, Infiltration (Inf) it is a dummy equal to 1 if the government is infiltrated by organised crime. The dependent variables are respectively yearly capital and current expenditure spending on a) administration; b) social sector; c) constructions and waste management; d) public transport and lighting; e) education and f) police. These spending components are calculated as shares of total spending. For each outcome variables we perform two estimations: one with full sample (FS) of municipalities of our Regions and one with the restricted sample (RS), i.e. municipalities that have been dissolved. The estimation includes socio demographic controls (C) ( agricultural employment, industry employment, tertiary education degree holders, unemployment, mafia murders); Municipal Fixed Effects (M.Fe), Year Fixed Effects (Y.Fe). 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

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Property tax		Waste tax		Total taxes		Total revenues	
<i>Panel A - Main specification</i>								
Infiltration	0.0307 (0.0412)	0.0336 (0.0431)	-0.026*** (0.0086)	-0.0231*** (0.00859)	-0.00034 (0.0111)	-0.00016 (0.011)	-0.0124 (0.0111)	-0.0154 (0.0114)
Observations	17,383	2,170	17,106	2,125	18,475	2,299	18,464	2,299
R-squared	0.395	0.351	0.521	0.468	0.670	0.647	0.316	0.388
<i>Panel B - Excluding post dissolution years</i>								
Infiltration	-0.0112 (0.0219)	-0.0271 (0.0224)	-0.0491*** (0.0107)	-0.0246* (0.0143)	-0.0190 (0.0134)	-0.0263* (0.0136)	0.0007 (0.0124)	-0.00113 (0.0137)
Observations	17,045	1,832	16,742	1,761	18,088	1,912	18,077	1,912
R-squared	0.416	0.475	0.526	0.524	0.674	0.680	0.318	0.421
Municipal dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Full sample	Yes	No	Yes	No	Yes	No	Yes	No
Restricted sample	No	Yes	No	Yes	No	Yes	No	Yes

Note: Municipally clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . In Panel A, the analysis compare the revenues collection of non infiltrated government with infiltrated governments, before and after the infiltration is terminated by the national government. Commissioning period always excluded. Infiltration (Inf) it is a dummy equal to 1 if the government is infiltrated by organised crime. The outcome variables are respectively “Property tax”, “Waste tax”, “Total taxes”, and “Total revenues”. We control for socio demographic controls (Controls) at the municipal level. These include: agricultural employment, industry employment, tertiary education degree holders, unemployment. All estimations are conditional on year dummies and municipal dummies. For each outcome variable we provide two estimations, one with the full sample and one with the restricted sample. Full sample: 1350 municipalities of Campania, Calabria and Sicily; restricted sample: municipalities that experienced at least one government dissolution for mafia infiltration.

In Panel B, the analysis excludes the post commissioning years for the dissolved municipalities, i.e. the control group in the estimation are composed by municipalities that have never been dissolved and, for the dissolved municipalities, only by the years before the infiltration.

**Table 6A**

Correlation between mafia infiltrated firms and dissolved municipalities

	Mafia firms (1)	Mafia firms (2)	Mafia firms (3)
Municipal dissolution	0.438*** (0.0290)	0.349*** (0.0320)	0.320*** (0.0327)
Mafia murders	No	Yes	Yes
Other controls	No	No	Yes
Observations	1,356	1,356	1,350
R-squared	0.089	0.130	0.170

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The table shows the correlation between municipalities whereby there is a firm either seized or under investigation for mafia links and the dissolved municipalities. It employs a cross sectional data where mafia\_firm is a dummy variable equal to 1 if in a given municipality there is a firm linked to criminal organisations. Dissolution is a dummy variable which takes value 1 if the municipality has been dissolved. In column 2 we control for mafia murders at the municipal level. In column 3 we include the usual socio demographic controls at municipal level. Firms data are confidential and come from the Italian Antimafia Police.

**Table 6B**

Ghost buildings

	Ghost Buildings (1)	Ghost Buildings (2)	Ghost Buildings (3)
Infiltration	-4.885*** (1.449)	-2.524* (1.457)	-2.474* (1.458)
Municipal dummies	Yes	Yes	Yes
Year dummies	No	Yes	Yes
Mafia murders	No	Yes	Yes
Other Controls	No	No	Yes
Observations	2,667	2,667	2,667

Note: Municipally 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. We use a measure of Ghost Building Intensity, or the number of land registry parcels with ghost buildings identified by the program, to measure the tax enforcement attitude of each municipality. Ghost Building is expressed in logarithmic. Column 1 includes municipal fixed effects. Column 2 adds year fixed effect and mafia related violence. Column 3 adds a full battery of socio demographic controls.

**Table 7**

Robustness check: Timing of the infiltration

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Capital Spending Police			Construction-waste anagement			Public transport lighting			Waste tax		
<i>Panel A - Full sample</i>												
Inf	-0.002** (0.001)			0.042** (0.02)			-0.012 (0.013)			-0.03*** (0.008)		
(t-1)		0.0007 (0.002)			0.005 (0.03)			-0.004 (0.02)			0.007 (0.02)	
P.L.			0.0004 (0.002)			0.01 (0.02)			-0.01 (0.013)			0.012 (0.012)
Obs	20,120	20,120	20,120	20,777	20,777	20,777	20,729	20,729	17,103	17,103	17,103	17,103
R2	0.170	0.169	0.169	0.205	0.205	0.205	0.174	0.174	0.521	0.521	0.521	0.521
<i>Panel B - Restricted Sample</i>												
Inf	-0.002** (0.001)			0.043*** (0.02)			-0.022* (0.013)			-0.02*** (0.009)		
(t-1)		0.0013 (0.001)			0.005 (0.027)			-0.003 (0.0221)			0.011 (0.0175)	
P.L.			0.0015 (0.0015)			0.0057 (0.0182)			-0.0056 (0.0142)			0.0122 (0.012)
Obs	2,496	2,496	2,496	2,559	2,559	2,559	2,559	2,559	2,122	2,122	2,122	2,122
R2	0.232	0.234	0.234	0.225	0.224	0.224	0.152	0.151	0.472	0.472	0.472	0.472

Note: Municipally Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Inf refers to infiltration dummy, i.e. the election year; for each outcome variable, column 1 reports our full model as per Table 3 and Table 5. Columns 2 and 3 introduce two new dummy variables. In Column 2(t-1) is a dummy variable taking value 1 for the year immediately before the election of a later – dissolved government. In Column 3, Prior Legislature (P.L), is a dummy variable taking value of 1 for the entire legislature before the election of a 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 and it is conditional to Year FE (Y.Fe), Municipal FE (M.Fe) plus socio demographic controls (C) at the municipal level and mafia murders.

**Table 8:** Infiltrations and political factors

	Single Candidate	Last Mandate	Right Party	Left Party	Centre Party	Civic List
	(1)	(2)	(3)	(4)	(5)	(6)
Infiltration	0.047** (0.019)	0.189** (0.05)	0.091** (0.051)	-0.049 (0.049)	0.033 (0.0356)	-0.037 (0.0398)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
NatGov (Left)	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,471	2,515	2,471	2,471	2,471	2,466
R-squared	0.306	0.251	0.483	0.479	0.414	0.633

Note: Municipally Clustered standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Infiltration refers to the infiltration dummy. Outcomes variables are respectively whether only one candidate is running for elections (Single Candidate) whether the incumbent is running for the second last mayoral mandate (Last Mandate) and political colour of the winning party (Right Party, Centre Party, Left Party, Civic List). The omitted category is governments whose administration cannot be classified Sample of all municipalities from Campania, Calabria and Sicily that experienced at least one government dissolution for mafia infiltration. The estimations include socio demographic controls at the municipal level, municipal FE and year Fe. We also control for the colour of the national ruling party (LeftIta).

**Table 9**

The effect of the infiltration on public spending controlling for political factors

	Construction and W Management	Municipal police	Public transport - lighting	waste tax
	(1)	(2)	(3)	(4)
Infiltration	0.049*** (0.0163)	-0.0025* (0.00142)	-0.0236* (0.0131)	-0.0193* (0.0117)
Single candidate	-0.0883* (0.0486)	-0.000171 (0.00243)	0.0322 (0.0429)	-0.00133 (0.0334)
Last M.	-0.0064 (0.0157)	0.00097 (0.00136)	-0.00174 (0.0141)	-0.00079 (0.0211)
Right party	0.00528 (0.0140)	0.000356 (0.00198)	0.0182 (0.0126)	0.0355 (0.0537)
Municipal Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	2,808	2,736	2,780	2,301
R-squared	0.228	0.235	0.151	0.092

Note: See note below.

**Table 10**

Political factors and public spending components

	Capital Spending Police			Construction -Waste Management			Waste Tax			Public Transport Lighting		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Single C.	-0.075 (0.048)			-0.0007 (0.0025)			-0.0045 (0.035)			0.026 (0.042)		
Last M.		0.00068 (0.016)			0.0006 (0.00136)			-0.00014 (0.017)			-0.0017 (0.014)	
Right P.			0.0107 (0.014)			0.00011 (0.0019)			0.0330 (0.053)			0.0151 (0.0123)
Municipal Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,808	2,850	2,808	2,736	2,772	2,736	2,301	2,330	2,301	2,780	2,819	2,780
R-squared	0.224	0.221	0.223	0.234	0.233	0.234	0.092	0.092	0.092	0.149	0.148	0.150

Note: Clustered standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Both Table 9 and Table 10 exploits the sample of municipalities having experienced at least one government dissolution for mafia infiltration (restricted sample). In both tables the outcome variables are respectively capital expenditure in construction and waste management, capital expenditure in municipal police, capital expenditure in public transport and lighting and waste tax. In Table 9, the estimation reports in the first row the results of our main specification (Table 3 and 5) but controlling for the following political variables “single candidate” (one candidate running for elections), “last mandate” (whether the mayor is running for its last mandate) and “Right Party” (whether the elections have been won by the Right Wing Party). In table 10, we drop the infiltration dummy and each outcome variable is regressed on the following political variables “single candidate”, “last mandate” and “Right Party”. Both Table 9 and Table 10 include socio demographic controls at the municipal level, mafia murders, municipal Fe and year Fe.

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

	Non Parametric		Parametric		
	(1)	(2)	(3)	(4)	(5)
Right-wing winner	0.075*	0.0846*	0.0722**	0.0722**	0.101*
	(0.04)	(0.0524)	(0.0366)	(0.0365)	(0.0604)
Bandwidth	0.0751	0.0751	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

	Constructions and Waste Management	Municipal Police	Waste tax	Public transport and lighting
	(1)	(2)	(3)	(4)
Right wing winner	-0.02	0.048	0.0641	-0.0738
	(0.0263)	(0.0551)	(0.0564)	( 0.0524)
Bandwidth	0.0751	0.0751	0.0751	0.0751
Observations	620	620	620	620

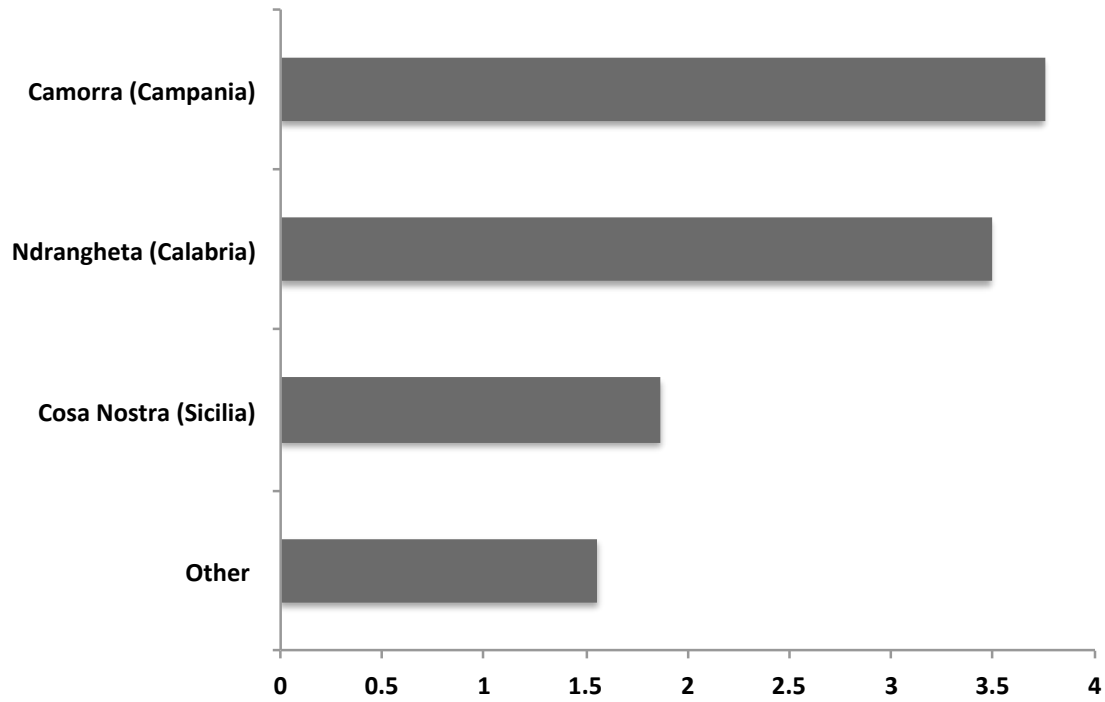
Note: Robust standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The outcome variables are respectively capital expenditure for construction and waste management, capital expenditure for municipal police and waste tax. Forcing variable coefficients not displayed. All columns are estimated with rddrobust linear.



## 10 Appendix

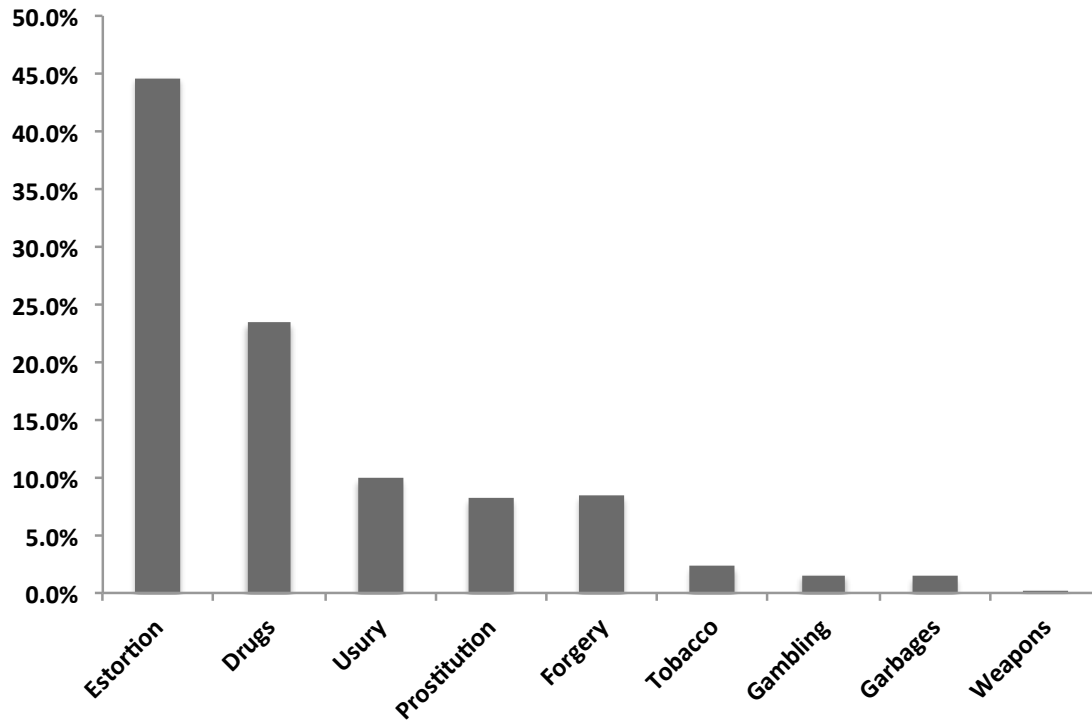
**Figure A1**

Yearly earning (bn EUR) by criminal organisation



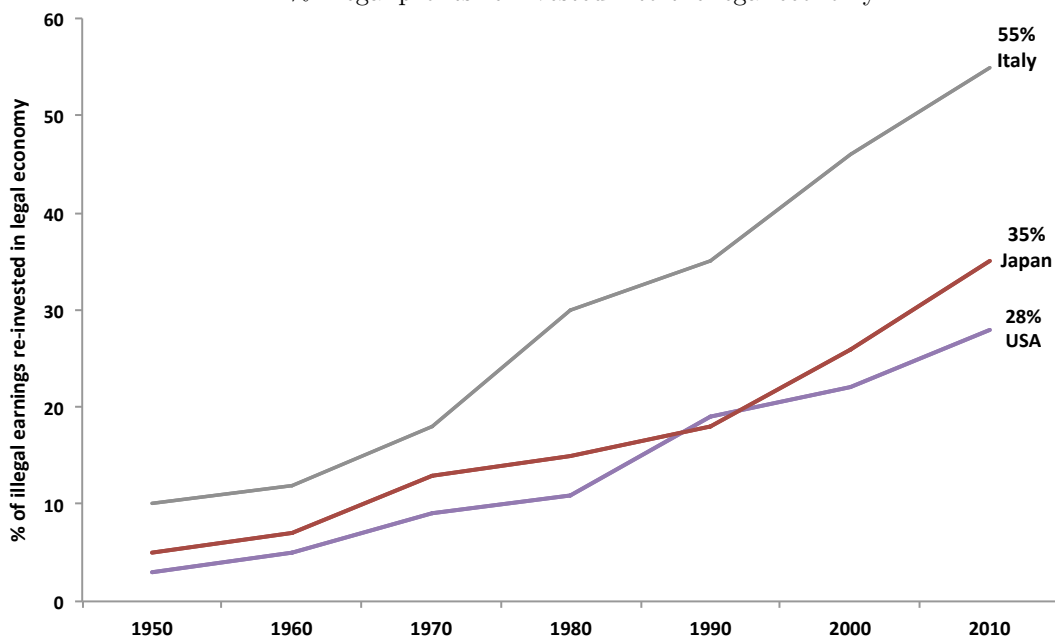
Note: Source: Transcrimine – Gli Investimenti delle Mafie 2013 – authors' own elaboration. The figure provides a descriptive estimate of the illegal yearly earnings of criminal organisations. They are measured in billions of Euro and they are calculated over 10 years period, 1994-2004.

**Figure A2: Organised crime investments by sector**



**Figure A3**

% Illegal profits re-invested into the legal economy



Note: Figure A2 -Source: Transcrime – Gli Investimenti delle Mafie 2013 – authors’ own elaboration. It provides a breakdown of the main illegal activities of criminal organisations. Figure A3 - Sources: Transcrime and Geo. L.O.C. of Financial Guards. The figure provides a descriptive estimate of the illegal profits re-invested into the legal economy. After the second world war the trend is constantly increasing. The figure shows a similar pattern (with different levels) for three important developed countries, Italy, US and Japan.

#### A4.1: Correlation between dissolved municipal governments and national government

Number of Dissolutions	Municipal Governments	National Government	
		Right	Left
67	Right	-0.108	0.061
43	Left	0.14	-0.047
6	Centre	-0.07	-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.

#### A4.2: Correlation between dissolved municipal governments and provincial governments

Municipal Government	Province and Provincial Governments									
	Caserta		Napoli		Reggio Calabria		Vibo Valentia		Palermo	
	(Right)	(Left)	(Right)	(Left)	(Right)	(Left)	(Right)	(Left)	(Right)	(Left)
Right	-0.143	/	0.28	/	0.233	/	N/A	/	-0.154	/
Left	/	-0.15	/	0.19	/	0.14	/	0.24	/	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.

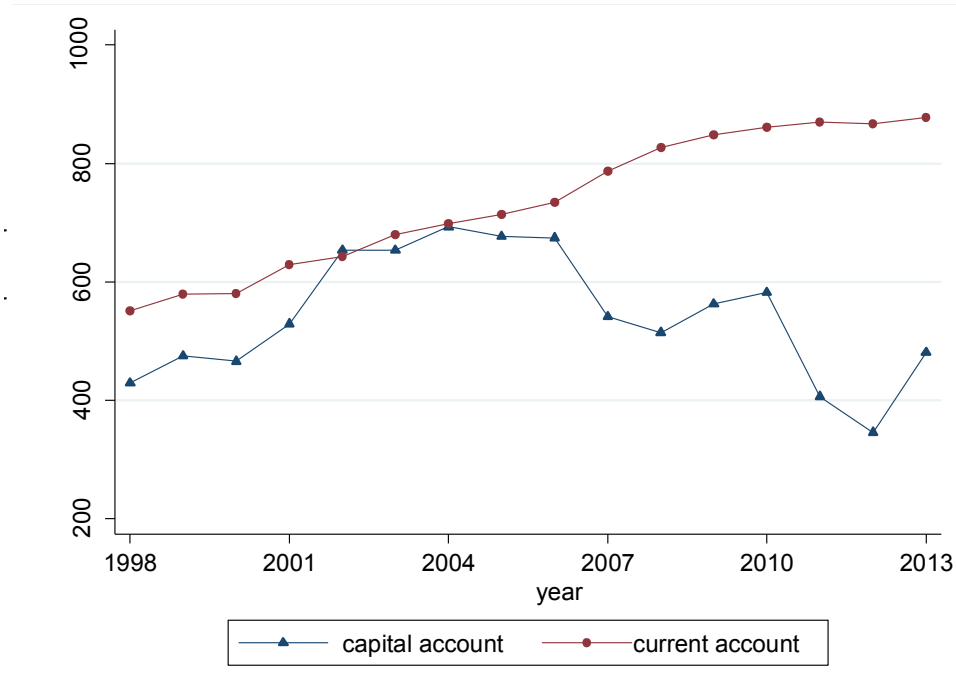
## **A5. Municipal institutional setting and public spending.**

**A5.1 Italian municipalities institutional setting.** As of 2016, there were 8,010 municipalities in Italy, 1,350 of which are found in the regions of analysis, varying considerably by area and population. The institutional setting of the municipalities is centred on the figure of the mayor, who heads the local government and leads along with the legislative body, the local council, and the executive body, the local *giunta*. The 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.

**A5.2 Public spending components.** General functions of administration include 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 to that aim (kindergartens, retirement homes, rehab centres); (3) construction and waste management refers to all expenses for urban planning – adoption of construction plans and building regulations, maintenance and construction of all new buildings (all part of capital account spending), waste collection and disposal (current account spending); (4) public transport and lighting includes expenses to guarantee local public transportation, public lighting, management of road traffic; (5) public education includes all expenses for all education infrastructure, school maintenance and school transportation; (6) functions of local police include the acquisition and maintenance of goods and equipment, cars and office structures

**A5.3 Public spending sections.** Capital account and current account are further sub-divided into three spending sections: spending decisions, year-over-year spending and residuals. Spending decisions correspond to the amount of financial resources a municipality plans to spend over the course of the following year, determined at the end of the current year. Year-over-year spending refers to that which the municipal government has actually spent, calculated at the end of the year. Residuals consist of the resources that have not been spent. Throughout our analysis, we adopt spending decisions as a spending proxy as data on residuals and year-over year spending is much more fragmented, less reliable and less homogeneous. In addition, in some cases year-over-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.

### Capital account - current account over time



Source: Ministero Interno, Divisione Finanza Locale

### A5.4: Descriptive statistics – control variables

Variables	Full Sample			Restricted Sample		
	Obs	Mean	Std. Dev	Obs	Mean	Std. Dev
Percentage 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 the 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 that experienced at least one government dissolution for mafia infiltration. Source: Istat and Ministry of Interior

## **A6 Robustness Checks - Effect of Infiltration on Public Spending Results**

**Gradually increase control variables.** From Table A6.1 to Table A6.4 we provide a series of robustness checks for our main results, i.e. total municipal spending (A6.1), capital expenditure (A6.2), current expenditure (A6.3) and taxes (A6.4). In all estimations, the sample is also restricted to the municipalities that have been dissolved. This is important because we control for unobserved heterogeneous effects that might be present across municipalities. In the first column, a parsimonious specification is presented, including municipal fixed effects and no other controls. The second column adds year fixed effects. The third column includes municipal socio-economic factors and mafia murders as controls. The fourth and last column include municipality specific time trends. In practice, the results in column (3) of table A6.1 – A6.4 replicate our main estimates in Tables 2, 3 and 5. In the fourth column of Tables A6.1 – A6.4, we include a full set of municipality specific linear time trends, accounting for any previously omitted factor potentially affecting the temporal development of municipal governments and correlated with infiltrations. Our estimates remain stable with the exception of the Public transport and lighting whose coefficient remains negative and maintain a similar magnitude but loses its significance. The estimate remains economically sizeable.

**A6.1:** Effect of infiltration on total public spending (log)

	(1)	(2)	(3)
<i>Panel A - Dep var: total p/c spending</i>			
Infiltration	0.0154 (0.0215)	-0.0058 (0.019)	-0.006 (0.02)
Observations	2,582	2,582	2,582
R-squared	0.482	0.518	0.512
<i>Panel B - Dep var: total p/c capital spending</i>			
Infiltration	-0.0226 (0.0786)	-0.0404 (0.072)	-0.073 (0.069)
Observations	2,582	2,582	2,582
R-squared	0.289	0.313	0.347
<i>Panel B - Dep var: total p/c current spending</i>			
Infiltration	0.042* (0.012)	0.0121 (0.0113)	0.014 (0.0121)
Observations	2,582	2,582	2,582
R-squared	0.448	0.550	0.556
Municipal dummies	Yes	Yes	Yes
Year dummies	No	Yes	Yes
Controls	No	No	Yes

Note: Municipally clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . We replicate Table 2 by introducing gradually municipal dummies, time dummies, municipal controls and municipality specific time trends. The analysis compare the spending categories of non infiltrated government with infiltrated governments, before and after the infiltration is terminated by the national government. Commissioning period always excluded. Infiltration (Inf) it is a dummy equal to 1 if the government is infiltrated by organised crime. The dependent variables are total spending, total capital and total current expenditure. Column 1 controls for municipal FE. Column 2 introduced year FE. In Column 3 we add socio demographic controls at the municipal level and mafia murders. Column 4 introduces municipality specific time trends. We perform the analysis the restricted sample.

**A6.2:** Effect of infiltration on capital account spending

	(1)	(2)	(3)	(4)
<i>Panel A - Dep. var.: administration</i>				
Infiltration	-0.0113 (0.0144)	-0.0143 (0.0144)	-0.0146 (0.014)	-0.0019 (0.0166)
Observations	2,554	2,554	2,554	2,554
R-squared	0.205	0.214	0.217	0.320
<i>Panel B - Dep. var.: Social sector</i>				
Infiltration	-0.00603 (0.0076)	-0.0056 (0.00763)	-0.0072 (0.00773)	-0.00854 (0.00934)
Observations	2,535	2,535	2,535	2,535
R-squared	0.131	0.136	0.138	0.229
<i>Panel C - Dep. var.: Construction and waste management</i>				
Infiltration	0.0407** (0.0175)	0.0469*** (0.0177)	0.0443** (0.0180)	0.0460** (0.020)
Observations	2,559	2,559	2,559	2,559
R-squared	0.209	0.220	0.226	0.333
<i>Panel D - Dep. var.: Public transport and lighting</i>				
Infiltration	-0.0199 (0.0134)	-0.0206 (0.0133)	-0.0218* (0.0131)	-0.0206 (0.0135)
Observations	2,559	2,559	2,559	2,559
R-squared	0.142	0.150	0.151	0.257
<i>Panel E - Dep. var.: Education</i>				
Infiltration	0.00559 (0.0112)	0.00807 (0.0111)	0.00985 (0.0108)	0.00903 (0.0131)
Observations	2,541	2,541	2,541	2,541
R-squared	0.117	0.133	0.139	0.218
<i>Panel F - Dep. var.: Police</i>				
Infiltration	-0.00256* (0.00130)	-0.00277** (0.00125)	-0.00213* (0.00115)	-0.0045* (0.0024)
Observations	2,496	2,496	2,496	2,496
R-squared	0.212	0.230	0.234	0.418
Municipal dummies	Yes	Yes	Yes	Yes
Year dummies	No	Yes	Yes	Yes
Controls	No	No	Yes	Yes
Time Trends	No	No	No	Yes

Note: Municipally clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. We replicate Panel A, Table 3 by introducing gradually municipal dummies, time dummies, municipal controls and municipality specific time trends. The analysis compare the spending categories of non infiltrated government with infiltrated governments, before and after the infiltration is terminated by the national government. Commissioning period always excluded. Infiltration (Inf) it is a dummy equal to 1 if the government is infiltrated by organised crime. The dependent variables are yearly capital expenditure spending. Column 1 controls for municipal FE. Column 2 introduced year FE. In Column 3 we add socio demographic controls at the municipal level and mafia murders. Column 4 introduces municipality specific time trends. We perform the analysis the restricted sample.



**A6.3:** Effect of infiltration on current account spending

	(1)	(2)	(3)	(4)
<i>Panel A - Dep. var.: administration</i>				
Infiltration	-0.00231 (0.005)	-0.00482 (0.005)	-0.007 (0.0045)	0.0035 (0.00504)
Observations	2,579	2,579	2,579	2,579
R-squared	0.672	0.691	0.694	0.782
<i>Panel B - Dep. var.: Social sector</i>				
Infiltration	0.000363 (0.00514)	-0.00184 (0.0051)	0.00031 (0.00483)	0.0046 (0.0045)
Observations	2,579	2,579	2,579	2,579
R-squared	0.585	0.602	0.606	0.744
<i>Panel C - Dep. var.: Construction and waste management</i>				
Infiltration	0.00803 (0.0055)	0.005 (0.00495)	0.00546 (0.00497)	-0.000584 (0.00515)
Observations	2,579	2,579	2,579	2,579
R-squared	0.631	0.685	0.687	0.778
<i>Panel D - Dep. var.: Public transport and lighting</i>				
Infiltration	-0.00272 (0.00203)	-0.00066 (0.0012)	-0.00103 (0.00195)	-0.0012 (0.0016)
Observations	2,427	2,427	2,427	2,427
R-squared	0.723	0.751	0.752	0.847
<i>Panel E - Dep. var.: Education</i>				
Infiltration	-0.00632** (0.00254)	0.00055 (0.00168)	0.000591 (0.00174)	-0.000846 (0.0018)
Observations	2,242	2,242	2,242	2,242
R-squared	0.395	0.786	0.787	0.874
<i>Panel F - Dep. var.: Police</i>				
Infiltration	-0.00272** (0.00129)	-0.00301** (0.00128)	-0.00228* (0.00125)	-0.000837 (0.00116)
Observations	2,579	2,579	2,579	2,579
R-squared	0.649	0.658	0.663	0.774
Municipal dummies	Yes	Yes	Yes	Yes
Year dummies	No	Yes	Yes	Yes
Controls	No	No	Yes	Yes
Time Trends	No	No	No	Yes

Note: Municipally clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. We replicate Panel B, Table 3 by introducing gradually municipal dummies, time dummies, municipal controls and municipality specific time trends. The analysis compare the spending categories of non infiltrated government with infiltrated governments, before and after the infiltration is terminated by the national government. Commissioning period always excluded. Infiltration (Inf) it is a dummy equal to 1 if the government is infiltrated by organised crime. The dependent variables are yearly current expenditure spending. Column 1 controls for municipal FE. Column 2 introduced year FE. In Column 3 we add socio demographic controls at the municipal level and mafia murders. Column 4 introduces municipality specific time trends. We perform the analysis the restricted sample.

### A6.4 Effect of infiltration on taxes

	(1)	(2)	(3)	(4)
<i>Panel A - Dep. var.: Property Tax</i>				
Infiltration	0.0164 (0.0490)	0.0288 (0.0413)	0.0339 (0.0419)	0.00934 (0.0266)
Observations	2,170	2,170	2,170	2,170
R-squared	0.155	0.349	0.351	0.489
<i>Panel B - Dep. var.: Waste Management</i>				
Infiltration	-0.0202** (0.00893)	-0.0234*** (0.00859)	-0.0231*** (0.00907)	-0.00244* (0.00133)
Observations	2,125	2,125	2,125	2,170
R-squared	0.451	0.468	0.468	0.489
<i>Panel C - Dep. var.: Total Revenues</i>				
Infiltration	0.000720 (0.0125)	-0.0149 (0.0113)	-0.0131 (0.0112)	-0.0082 (0.0121)
Observations	2,299	2,299	2,299	2,299
R-squared	0.263	0.383	0.388	0.488
<i>Panel D - Dep. var.: Total Taxes</i>				
Infiltration	0.0184 (0.0163)	0.000247 (0.0114)	-0.00656 (0.0108)	0.00077 (0.013)
Observations	2,299	2,299	2,299	2,299
R-squared	0.153	0.644	0.650	0.731
Municipal dummies	Yes	Yes	Yes	Yes
Year dummies	No	Yes	Yes	Yes
Controls	No	No	Yes	Yes
Time Trends	No	No	No	Yes

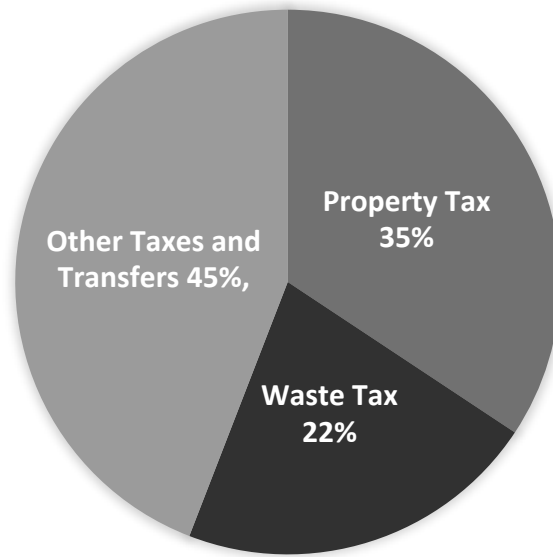
Note: Municipally clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . We replicate Table 5 by introducing gradually municipal dummies, time dummies, municipal controls and municipality specific time trends. The analysis compare the spending categories of non infiltrated government with infiltrated governments, before and after the infiltration is terminated by the national government. Commissioning period always excluded. Infiltration (Inf) it is a dummy equal to 1 if the government is infiltrated by organised crime. The dependent variables are respectively property tax, waste tax, total revenues and total taxes. Column 1 controls for municipal FE. Column 2 introduced year FE. In Column 3 we add socio demographic controls at the municipal level and mafia murders. Column 4 introduces municipality specific time trends. We perform the analysis the restricted sample.

**A7: Effect of infiltration on capital and current expenditure (level analysis)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Administration	S. sector	Construction waste management	Public transport lighting	Education	Police						
<i>Panel A - Dep. var.: Capital spending components (Log)</i>												
Inf	-0.19*	-0.19	-0.14	-0.12	0.2**	0.2**	-0.18*	-0.18*	-0.08	-0.07	-0.17	-0.17
	(0.11)	(0.12)	(0.15)	(0.15)	(0.1)	(0.11)	(0.11)	(0.11)	(0.12)	(0.12)	(0.18)	(0.18)
Obs	17,127	2,289	13,042	1,595	19,248	2,428	17,553	2,213	12,351	1,839	17,127	2,289
R2	0.469	0.495	0.381	0.348	0.391	0.426	0.394	0.420	0.342	0.398	0.579	0.574
<i>Panel B - Dep. var.: Current spending components (Log)</i>												
Inf	-0.01	-0.01	-0.002	0.002	0.026	0.006	-0.016	-0.016	-0.04	-0.031	-0.06*	-0.043
	(0.013)	(0.013)	(0.05)	(0.05)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Obs	20,877	2,577	20,828	2,573	20,874	2,577	19,554	2,424	18,198	2,243	20,572	2,564
R2	0.973	0.968	0.897	0.919	0.950	0.939	0.934	0.920	0.931	0.936	0.902	0.930
M.Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Y.Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FS	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
RS	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Note: Municipally Clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The analysis replicates Table 3, but expresses the spending categories in *level* and not as share of total spending. Commissioning period always excluded. Infiltration (Inf) it is a dummy equal to 1 if the government is infiltrated by organised crime. The dependent variables are respectively yearly capital and current expenditure spending on a) administration; b) social sector; c) construction and waste management; d) public transport and lighting; e) education and f) police. For each outcome variables we perform two estimations: one with full sample (FS) of municipalities of our Regions and one with the restricted sample (RS), i.e. municipalities that have been dissolved, exploiting the temporal variation of the dissolutions. The estimation includes socio demographic controls (C) (which include agricultural employment, industry employment, tertiary education degree holders, unemployment); Municipal Fixed Effects (M.Fe), Year Fixed Effects (Y.Fe). Full sample: 1350 municipalities of Campania, Calabria and Sicily. Restricted sample: municipalities having experienced at least one government dissolution for mafia infiltration.

**A8:** Local fiscal revenues structure



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

## A9 Effect of Infiltration on capital account spending components by municipal population

One aspect 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 the greater distance from the central State felt by the citizens. In the context of small localities where the presence of the mafia is more diffused, collusion is expected to lead to a stronger predatory behaviour – i.e., more public work tenders awarded to mafia-controlled firms. We test this by sub-dividing the entire sample into municipalities with less than 2,000 inhabitants, between 2,000 and 5,000 inhabitants, and above 5,000 inhabitants, replicating the main estimates.

**A9:** Effect of infiltration on capital account spending components by municipal population

	Population		
	Below 2000	Between 2000/5000	Above 5000
	(1)	(2)	(3)
<i>Panel A - Dep. var.: Construction and waste management</i>			
Infiltration	0.0963** (0.0430)	0.0797** (0.0329)	0.0196 (0.0218)
Observations	6,564	6,299	7,258
<i>Panel B - Dep. var.: Municipal police</i>			
Infiltration	0.00294 (0.00257)	-0.00174 (0.00176)	-0.00338** (0.00166)
Observations	6,817	6,514	7,447
<i>Panel C - Dep. var.: Public transport</i>			
Infiltration	-0.024* (0.0015)	-0.036 (0.024)	- 0.0127 (0.0175)
Observations	6792	6502	7433
Year dummies	Yes	Yes	Yes
Municipality dummies	Yes	Yes	Yes
Controls	Yes	Yes	Yes

Note: Municipally clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The Table replicate Panel A, Table 3 and provide a breakdown of the sample by population. Infiltration refers to infiltration dummy; The estimation includes socio demographic controls (controls) at the municipal level including agricultural employment, industry employment, tertiary education degree holders, unemployment. The estimation is conditional to municipalities fixed effects and year fixed effects. Commissioning years excluded in all specifications. Infiltrations in capital account spending for construction and waste management are higher, the smaller the population of a municipality. These resources might be taken from Public Transport and lighting, whose coefficient is indeed negative and significant in small municipalities. The reduction of the police investment is larger in cities with greater than 5,000 inhabitants. This result can be explained by the fact that the investment budget for police forces managed by large cities is significantly larger than those of small towns. The mafia has more interest in limiting expenses for law enforcement where the latter can affect the productivity of police investigations.

**A10: Selection into treatment**

	Municipal police CA	Public transport and lighting	Constructions Waste Waste Management	Waste Tax
	(1)	(2)	(3)	(4)
Infiltration	-0.00236*	-0.022*	0.0407**	-0.0185*
	(0.00125)	(0.0131)	(0.0199)	(0.0112)
Controls	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Municipality dummies	Yes	Yes	Yes	Yes
Observations	1,362	1,366	1,256	1,256

Note: Municipally Clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The analysis compare the spending categories of non infiltrated government with infiltrated governments, before and after the infiltration is terminated by the national government. Commissioning period always excluded. Infiltration (Inf) it is a dummy equal to 1 if the government is infiltrated by organised crime. Municipalities for which the the main reason for a) dissolution or b) for the police investigation in the first place was related to distortions in the balance sheets (anomalies in spending patterns) are excluded from sample. Hence, the analysis is based on all municipalities for which the investigation for dissolution started for reasons unrelated to public spending. Dependent variables by column: capital expenditure in Municipal police (column 1); capital expenditure in public transport and lighting (column 2); capital expenditure in construction and waste management (column 3); waste tax (column 4). Estimation based on the restricted sample (municipalities that have been dissolved at least once).

**A11:** Placebo – Dissolutions unrelated to organised crime and public spending

A11.1: Organised crime dissolutions and total public spending

	Total Spending	Total capital Account	Total Current Account
	(1)	(2)	(3)
Dissolution NoMafia	36.01	21.25	14.76
	(41.67)	(38.19)	(12.98)
Controls	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Municipal dummies	Yes	Yes	Yes
Observations	18,305	18,305	18,305

Note: Municipally clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Dissolution NoMafia refers to mafia-unrelated dissolved governments. The estimation includes socio demographic controls (“other controls”) at the municipal level including agricultural employment, industry employment, tertiary education degree holders, unemployment. The estimation is conditional to municipalities fixed effects and year fixed effects. Full sample of 1350 municipalities from Campania, Calabria and Sicily: infiltration and commissioning years excluded.

A11.2. Robustness check: dissolutions unrelated to organise crime infiltration.

	Construction and Waste Management	Capital Account Police	Waste Tax	Public transport and lighting
	(1)	(2)	(3)	(4)
Mafia-unrelated dissolution	0.018	-0.001	-0.0033	-0.014
	(0.011)	(0.0009)	(0.0086)	(0.009)
Municipal dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
R-squared	0.177	0.178	0.811	0.781
Observations	18,305	18,305	18,305	16,165

Note: Municipally clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Mafia-unrelated dissolution refers to mafia-unrelated dissolved governments. The estimation includes socio demographic controls (“controls”) at the municipal level including agricultural employment, industry employment, tertiary education degree holders, unemployment. The estimation includes municipalities fixed effects and year fixed effects. Full sample of 1350 municipalities from Campania, Calabria and Sicily: infiltration and commissioning years excluded.

A11.3: Mafia-unrelated dissolutions and capital account spending by component

	Administration	Social Sector	Constructions	Public Transport	Education	Police
	(1)	(2)	(3)	(4)	(5)	(6)
Dissolution NoMafia	0.0027	-0.0022	0.00085	-0.0012	0.0006	-0.00063
	(0.0023)	(0.0017)	(0.00213)	(0.00091)	(0.00112)	(0.00076)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Municipal dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,296	18,299	18,295	17,152	15,987	18,295

Note: Municipally clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Dissolution NoMafia refers to mafia-unrelated dissolved governments. The estimation includes socio demographic controls (“other controls”) at the municipal level including agricultural employment, industry employment, tertiary education degree holders, unemployment. The estimation is conditional to municipalities fixed effects and year fixed effects. Full sample of 1350 municipalities from Campania, Calabria and Sicily: infiltration and commissioning years excluded.

A11.4: Mafia-unrelated dissolutions and current account spending by component

	Administration	Social sector	Construction	Transports	Education	Police
	(1)	(2)	(3)	(4)	(5)	(6)
Dissolution NoMafia	0.0027	-0.0022	0.00085	-0.0012	0.0006	-0.00063
	(0.0023)	(0.0017)	(0.00213)	(0.00091)	(0.00112)	(0.00076)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Municipal dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,296	18,299	18,295	17,152	15,987	18,295

Note: Municipally clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Dissolution NoMafia refers to mafia-unrelated dissolved governments. The estimation includes socio demographic controls (“controls”) at the municipal level including agricultural employment, industry employment, tertiary education degree holders, unemployment. The estimation is conditional to municipalities fixed effects and year fixed effects. Full sample of 1350 municipalities from Campania, Calabria and Sicily: infiltration and commissioning years excluded.



A12: Test for spillover effect

	(1)	(2)	(3)	(4)	(5)	(6)
	Total per capita spending	Total p/c spending capital expenditures	Construction wast management	Public transport lighting	Municipal police	Waste tax
Infiltration	-0.0124 (0.0223)	-0.0665 (0.0784)	0.0533*** (0.0197)	-0.0281* (0.0145)	-0.00244* (0.00148)	-0.020** (0.0102)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Municipal Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16,740	16,741	16,648	16,622	16,112	13,658
R-squared	0.512	0.358	0.203	0.176	0.147	0.0530

Note: Municipally clustered standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . All municipalities sharing a border with those dissolved are excluded from the sample. The estimation includes socio demographic controls at the municipal level including agricultural employment, industry employment, tertiary education degree holders, unemployment. The estimation also controls for Mafia murders and it is conditional to municipalities fixed effects and year fixed effects. Full sample of 1350 municipalities from Campania, Calabria and Sicily; commissioning years excluded.

**A13.1: Violent attacks to politicians and infiltration**

	Infiltration	One year before infiltration
	(1)	(2)
Attacks to politicians	0.011 (0.014)	0.0075 (0.0146)
Controls	Yes	Yes
Municipality dummies	Yes	Yes
Year dummies	Yes	Yes
Observations	5,313	3,993

Note: Municipally Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. We test for the statistical correlation between violent attacks towards politicians (“Attacks to Politicians”) in infiltrated municipalities (“Infiltration”). Attacks to Politicians is an indicator equal to 1 if there has been violence against local administrators in a given municipality. Infiltration refers to infiltration dummy; Other controls include: agricultural employment, industry employment, tertiary education degree holders, unemployment. The estimation includes municipal Fe and Year Fe. We are using only the years 2010/2011/2012/2013 in the estimation because our main dataset stops in 2013. Given the data availability of violent attacks the analysis can potentially be extended until 2015. Note: we are not exploiting the intensity of the attacks in this analysis. In some municipalities attacks are more than in others and they are different in typology ( from threatening letters to murders)

**A13.2: Violent attacks to politicians and public spending**

	Capital spending police	Public transport lighting	Construction Waste management	Waste tax
	(1)	(2)	(3)	(4)
Attacks to Politicians	-0.003 (0.0028)	0.092 (0.0817)	-0.00011 (0.0255)	-0.336 (0.559)
Controls	Yes	Yes	Yes	Yes
Municipality dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	5,027	5,021	5,221	5,021

Note: Municipally Clustered standard errors in parenthesis; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. We exploit our difference – in – differences setting and we run our main specification (equation 1) on our main spending results, but measuring organized crime with a measure of violence of politicians. (“Attacks to Politicians”). Attacks to Politicians is an indicator equal to 1 if there has been violence against local administrators in a given municipality. The outcome variables are respectively Capital expenditure in Construction and Waste Management, Capital Expenditure in Municipal Police and Waste Tax. Other controls include: agricultural employment, industry employment, tertiary education degree holders, unemployment. The estimation includes municipal Fe and Year Fe. We are using only the years 2010/2011/2012/2013 in the estimation because our main dataset stops in 2013. Given the data availability of violent attacks the analysis can potentially be extended until 2015. Note: we are not exploiting the intensity of the attacks in this analysis. In some municipalities attacks are more than in others and they are different in typology ( from threatening letters to murders)

**A14:** Descriptive statistics – political variables

	All Municipalities			Infiltration Years		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev
Single Candidate	2,869	-0.023	0.149	437	0.059	0.059
Last mandate	2,869	0.023	0.402	437	0.327	0.470
Left party	2,869	0.320	0.467	437	0.316	0.465
Centre party	2,869	0.077	0.266	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 that experienced at least one government dissolution for mafia infiltration. Infiltration years: years classified as infiltration for these municipalities

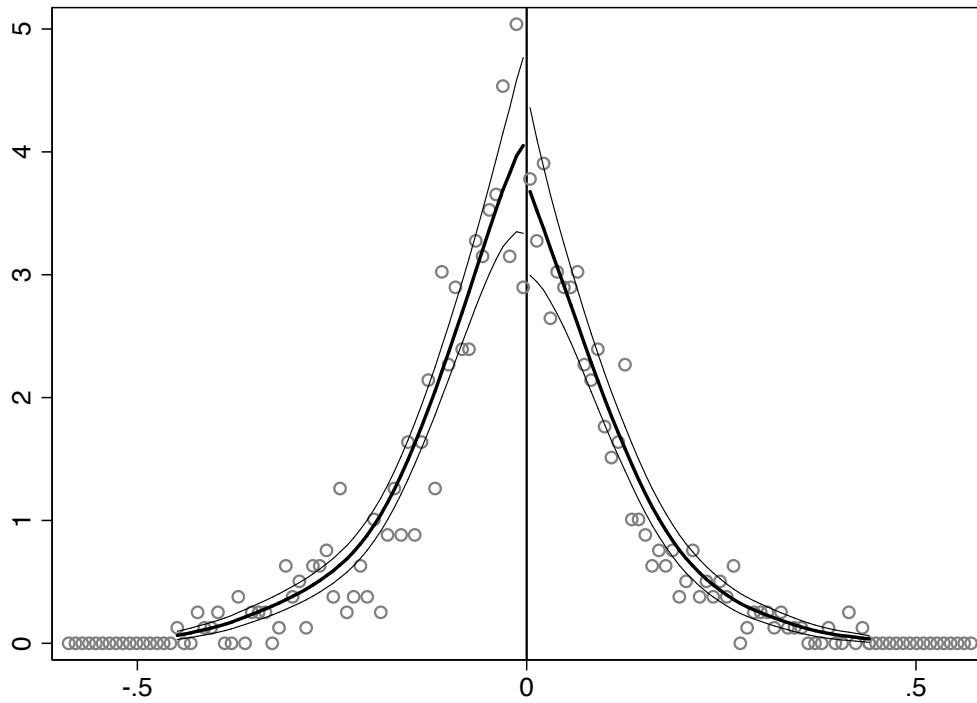
**A15 RDD** – Effect of electing right-wing governments on the probability of infiltration

A15.1 Balance of covariates

	Unemployment	Industry Employment	Human Capital	Population	Total Spending	Mafia Murders	White Ballots	Turnout	Non Valid Ballots
Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev				
Treatment vs.	-0.5940 (0.795)	0.48 (0.551)	-0.0919 (0.670)	-0.269 (0.364)	-0.0195 (0.0263)	0.00001 (0.00233)	0.129 (0.306)	-2.397 (2.428)	0.8 (0.520)
Observations	620	620	620	620	614	620	619	621	619

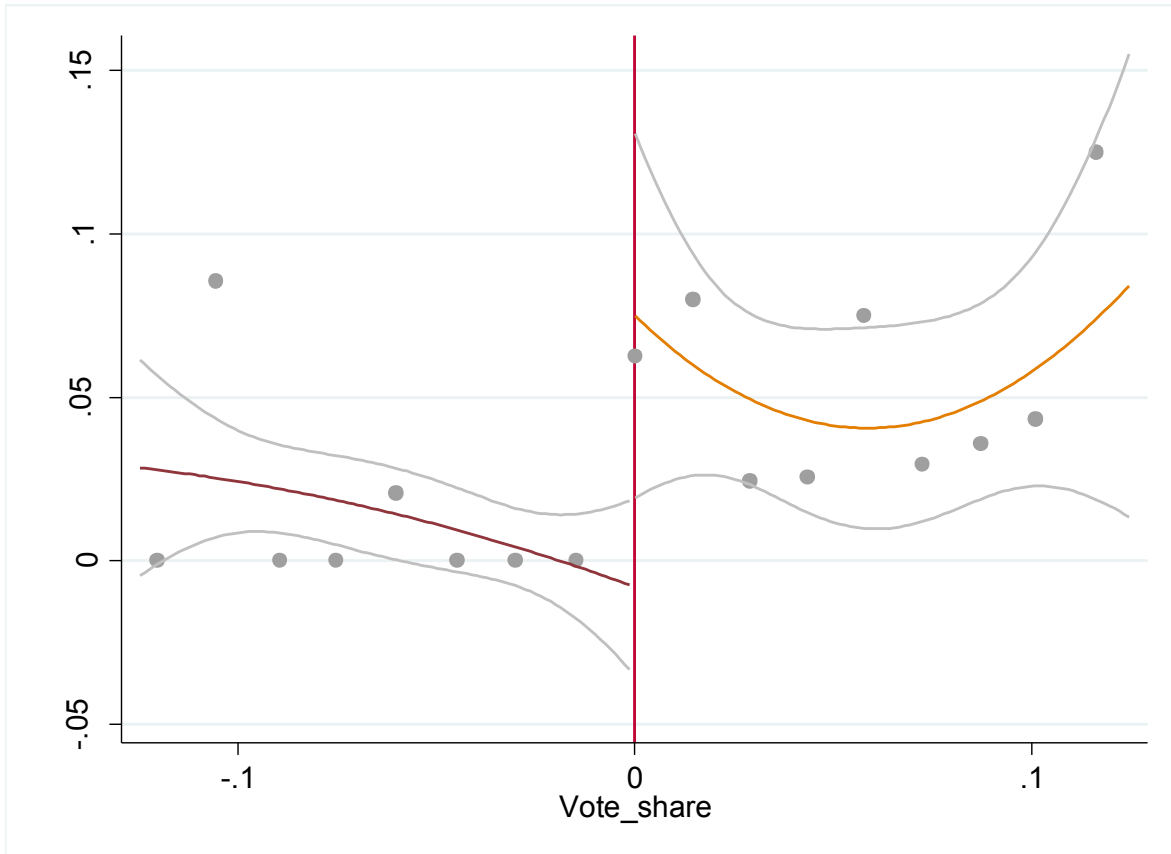
Note: Balance of covariates at the cutoff.

A15.2: Test for non random sorting around cutoff – McCrary test



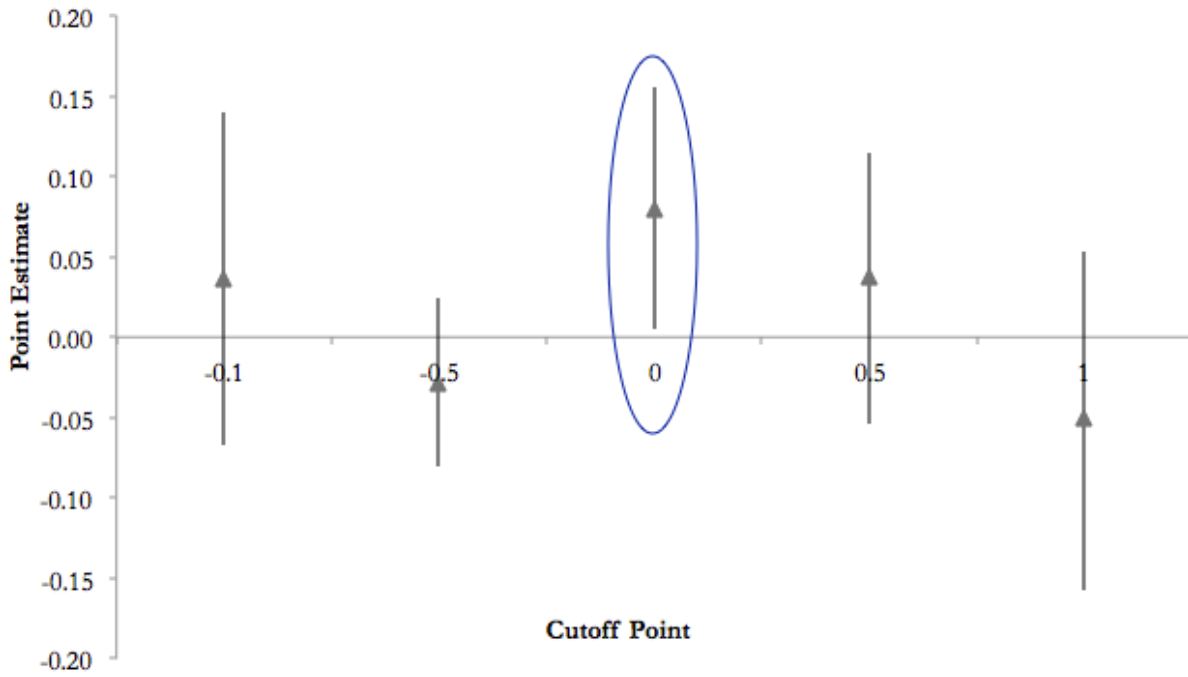
Note: Robust standard errors in parenthesis; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . McCrary test with t-student at the discontinuity -0.9782 with robust estimation. There is no presence of non - random sorting at the cutoff

A15.4 Restricted sample – RDD graph

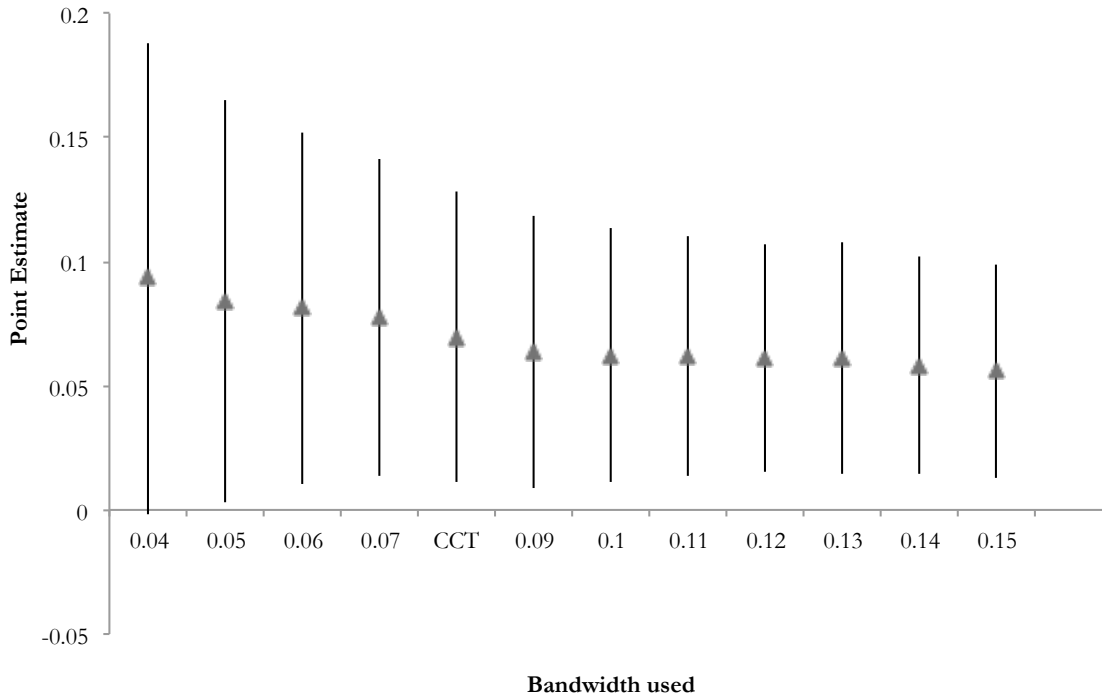


Note: Polynomial fit of order2.  $\text{vote share} > 0$  refers to elections won by right-wing parties;  $\text{vote share} < 0$  refers to elections barely lost by right-wing parties. For each municipalities, all years after the dissolutions are excluded. The control group is composed only by the years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

A15.5 Robustness checks – points estimates at different cutoff points



A15.6 Robustness checks – Moving bandwidths



Note. Figure A9.5 - 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 (Calónico et al., 2014). Figure A9.6 - Dependent variable is Probability of infiltration. The line extends from the lower bound to the upper bound. 90% confidence interval. CCT: optimal bandwidth.