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 for 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. Differences-in-differences estimates reveal that infiltrated local governments not only spend more on average on construction and waste management and less on police enforcement, but also collect fewer fiscal revenues. 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.

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

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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 increasing 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, country home to the first form of the organised crime, by using a unique yearly municipal-level dataset for the three Italian regions where organised crime is most widespread and rooted: Calabria, Campania and Sicily.[1]

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. Differences-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. For example, according to our estimates, infiltration leads to a 14% increase in the share of total investments in construction and waste management. This effect is economically sizeable since it translates into approximately an additional 180 euros per capita allocated to this spending component. In addition, infiltration leads to a 29% decrease in the annual share of investment in police force. In practice, considering that average investment in law enforcement across municipalities is relatively low (0.4% of total investment spending), during infiltration years such investments are nearly absent. Moreover, infiltrated municipalities exhibit a lower ability to collect fiscal revenues, with the effect primarily driven by a 15% decrease in revenue inflows from the waste and garbage tax, translating into a loss

[1] 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.

of 130 euros per capita in collected revenues on a yearly basis. We show that there is no statistical difference in pre-trends between treatment and control group and that our results are robust to changes in specification, Placebo tests, and 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. To address this issue, 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 probability of 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 differences-in-differences setting, we show that none of these factors have an impact on public spending or on revenue collection.

In the final part of the paper, we focus on the systematic correlation between collusion and elections won by right-wing parties, implementing a regression discontinuity design based on close elections. Our results show that the probability of infiltration increases when the right-wing party barely wins an election. 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. An important strand of the economic literature focuses on the impact of mafia-government linkages on political and electoral outcomes. For example, Alesina et al. (2016) 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 (2013) argue that the mafia sells votes to the party that has more core supporters and it is therefore expected to win. Buonanno et al. (2016) find a systematic correlation between the strength of Cosa Nostra and the proportion of votes for the main Italian conservative party.

The large majority of these studies have measured the presence and intensity of mafia activity by employing proxies such as the number of mafia-related crimes, murders, and violent attacks (Alesina et al., 2016; Daniele and Marani, 2011; Olivieri and Sberna, 2014; Barone and Narciso, 2015), historical or geological indicators (Bandiera, 2003; Dimico et al., 2012; De Feo and De Luca, 2013; Buonanno et al., 2015; Buonanno et al., 2016), or artificial constructs for counterfactual analysis (Pinotti, 2015). These measures aim to capture the impact of organized crime in a broad sense, encompassing the whole range of possible actions perpetrated by such criminal groups. They do not, however, take into consideration an important fact: organised crime in Italy 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*".[2] Criminal organisations use violence only as a last resort when previous strategies have failed. Indeed, violence is a suboptimal strategy in that it attracts too much attention from enforcement authorities, undermining the primary objective of influencing policy decisions. The use of violence may reveal the extent, but not the real strength, of organised crime. More importantly, the consequences of successful criminal strategies that do not employ violence have yet to be empirically identified. 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.[3] 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 et al., 2014; Daniele and Geys, 2015, 2016; Galletta, 2016).[4] 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 local public spending; section 3 focuses on the institutional setting used as a basis for the difference-in-differences analysis, as well as discusses our identification strategy and the quasi-natural experiment we rely on; section 4 discusses the data and section 5 presents the main results; section 6 reports a set of robustness tests so as to demonstrate that the estimated effects are truly driven by the mafia and studies in-depth the relationship between right-wing parties and infiltration; section 6 concludes.

[2]Interview with Giuseppe Borrelli, member of the Naples AntiMafia District Directorate *(Direzione Distrettuale Antimafia),* on the italian television program 'Report', May 5th, 2016.

[3]More specifically, the paper analysed the role of organised crime in the allocation of national public subsidies to businesses, with a focus on Sicilian Municipalities. Their dependent variable is both the probability of receiving funding (extensive margin) and the amount of the margin (intensive margin). Organised crime is measured by number of mafia related crimes. The case study is Sicilian municipalities. Results show that organised crime positively affects both the probability of obtaining funding and the amount of public funds.

[4]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 (2016) empirically investigates the presence of spillover effects resulting from the strengthening of law 164/1991.

2 Organised Crime and Political Capture

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

However, as stated by Schelling (1971), burglars may operate in the underworld, but they seek to govern the real world. In fact, 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 3 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, not just in Italy but also in the United States.

A very high share of criminal organisations' profits thus come from public investments. Indeed, public finances are seen in the literature as one of the areas most severely affected by the presence of corruption and collusive behaviour.[5] However, empirical evidence on whether and how government expenditures are conditioned by collusion between politicians and criminal organizations remains limited. This paper aims to fill this gap by studying a specific activity of criminal organisations: infiltration within local municipal governments.

According to Italian National Law 164/1991, *infiltration* occurs when organised crime captures local politicians 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*".[6] 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 mantain political control of the territory*".[7] 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 "t*he policy decisions of the municipal council were not made freely and without bias because local politicians were repeatedly intimidated and threatened by criminal organisations*".[8] 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

[5] While the effect of corruption on overall level of public spending has been reported as insignificant (Mauro, 1997), there is a substantial body of evidence emphasizing how collusion or corruption impact 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.

[6] 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

[7] 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

[8] Official Gazette (*Gazzetta Ufficiale*) – Decree of the President of the Republic: http://www.gazzettaufficiale.biz/atti/2014/20140194/14A06583.htm

direct or indirect link between criminal organisations and politicians.

Perhaps most importantly, the cases described above have in common the absence of violence. Violence can, in fact, be seen as the failure of an effective threat. More specifically, it is a suboptimal strategy in that attracts too much attention from enforcement authorities thus undermining criminal groups' main objective, that of influencing policy decisions. Criminal organisations are now less explicit, more subtle, and comparable to special interest groups (Grossman and Helpman, 2001; Dal Bo and Di Tella, 2006; Wolton 2016), who through use of intimidation and threats aim to protect and promote their interests by influencing and manipulating official policy makers to their own advantage.[9] The impact, however, of an effective and successful threat remains unclear and is thus precisely the empirical question we attempt to tackle in this paper.

We 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.[10] 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 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.

[9]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. Wolton (2016) argues that "only a strong pro change special interest group is willing to bear the cost of outside lobbying activities". In this paper, we argue that organised crime, with its range of strategies used to influence policy making, can be seen as a special form of outside lobbying.

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

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 end 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).[11] 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*".[12]

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.

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 and often make significant cuts to financial flows into public investment projects (Acconcia et al., 2014; Galletta, 2016). At the end of the transition period, regular elections are held.

As shown in figure 4, the large majority (and in some years all) of the dissolutions occurred in the three regions which form the focus of our study. Figure 5 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 4, 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

[11] 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.

[12] http://www.gazzettaufficiale.biz/atti/2001/20010223/01A10530.htm

provinces of Caserta and Naples – the area where the *Camorra* is traditionally strongest. 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 6, 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.[13] The control group is composed by all non-dissolved governments and by dissolved governments before the infiltration started and after it was ended. In this example, all years before 2002 and after 2007 make up the control period.[14] Crucially, due to the fact that external commissioners have specific duties regarding the administration of public finance, all years between the dissolution of a government and the subsequent elections are excluded from the sample. Therefore, in the case of Casoria, the years 2006 and 2007 are not considered in the estimations.

Unlike classic DiD strategies, our setting is based on a treatment period beginning at different points in time for the treated municipalities. This framework has the advantage 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 unobservable 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 dissolved municipalities of our sample). Performing this sample restriction is indeed important because as seen in figure 4, the geography of dissolutions reflects significant concentrations in specific provinces of the sample regions. More specifically, the figure indicates that there are provinces with very few or no dissolutions at all and that the intensity of mafia activities in these territories is lower with respect to the core areas where the criminal organisations are primarily based.[15] Finally, an additional peculiarity of our setting is that the treatment period turns on and the 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

[13] In both Daniele and Geys (2015; 2016) and Galletta (2016) the treatment period refers to the years **after** the enforcement of the policy.

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

[15] On a more technical note, this could present a concern for the other coefficients in the regression analysis. However, once controlled for municipality fixed effects, the coefficient of interest is not affected by never dissolved municipalities.

have been done erroneously if there was no real infiltration. Fortunately, these issues do not represent a concern for our estimation strategy. Infiltrated municipal governments that are not dissolved would indeed belong entirely to the control group, causing attenuation bias in the empirical results. 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.[16]

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 into treatment (*i.e. being dissolved by the national government*) would be correlated with the outcome variable *(i.e. public spending and revenue collection*). We tackle this important issue in Section 6 showing that our results do not change, when we exclude from 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.[17] This is an organisation composed of highly trained and specialised individuals from the three main polices 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.[18]

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.[19]In order, however, to provide as much evidence as possible, 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 A1, which refers to the restricted sample of dissolved municipalities in the 1998-2013 period, there is no statistically significant correlation

[16]For further discussion of this issue, refer to is results section.

[17]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 also study the characteristics, objectives, and methods of organised crime as well as examine the latter's domestic and international contacts.

[18]For example, the Italian Prosecutor Antonio Ingroia, who extensively investigated the Sicilian Mafia, was appointed Director of the United Nation-backed judicial watchdog in Guatamala, the International Commission against Impunity in Guatamala (CICIG). Another example is Judge Giovanni Falcone, who in 1989 established the AntiTerrorism 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 be strategically used by politicians.

[19]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.

between the colour of national or provincial governments and that of municipal governments. Indeed, given the political cost generated by a dissolution for the national government –e.g. 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 downwards, since strategically manipulated dissolutions would be coded as treated, causing 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. 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.[20] The full dataset is disaggregated into capital account and current account expenditures. These are further disaggregated into six specific spending categories.[21] 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 and municipal police.[22] This dataset is available for the 1998-2013 time period.

Table 1 and appendix A2.2 illustrate average per capita spending for the municipalities in our sample over the 1998-2013 period. The resources spent by the municipalities amounts 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

[20] In Reading Appendix A.2.1, we provide a short overview of the political system of Italian municipalities.

[21] 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.

[22] Refer to Reading Appendix A.2.2 for additional details.

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.[23] 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.

Mafia homicides and other 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.[24]

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:

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

Where $y_{m,t+1}$refers to public spending in municipality m at time *t+1*.[25]

More precisely, $y_{m,t+1}$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.[26]

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 β which captures the impact of the infiltration at time t on the public spending allocation at time *t+1*.

As our main aim is to identify the effect of a specific activity part of organised crime – the impact of

[23] Average spending for construction and waste management is €382 per year, €217 for the capital account and €147 for the current account. The second largest investment sector is transportation, the third is administration.

[24] See Appendix A2.3 for the descriptive statistics.

[25] 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*.

[26] $\frac{\sum_c PS_{m,t+1}}{pop_{m,t}}$ is the total per capita spending allocated by a municipal government

temporary infiltration on governments' spending decisions – we need to control for the underlying strength of the mafia groups across municipalities. This is necessary as, otherwise the observed effect on public spending allocation would not be driven by the mafia-government collusion but by some pre-existing trend. This issue is tackled in two ways. First, we include in the model a control variable $Mafia_{p.t}$, referring to mafia-related homicides and used as a proxy for the underlying strength of the mafia in the province of the municipality at time t. Second, we always test the results by performing a second estimation where we restrict our sample to municipalities that have seen their government dissolved at least once. This allows us to both reduce unobservable heterogeneity and conduct the analysis on a sample of more similar municipalities.[27] Hence, in the empirical analysis, we always perform two estimations: one with the full sample and one with the restricted sample.

Vector $X_{m,t}$ denotes a set of socio-economic and demographic characteristics of municipalities in the sample regions. The data are 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 (φ_m), and time fixed effects, controlling for year-specific shocks (τ_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). In columns (1) and (2) we focus our attention on total spending commitments per capita. The model is initially estimated for the full sample of 1,350 municipalities from Calabria, Campania and Sicily (column (1)). In column (2) we restrict the sample to a group of more homogeneous municipalities – those 182 having experienced at least one government dissolution for mafia infiltration. In the following columns, we sub-divide total overall spending into total capital account spending per capita (columns (3)-(4)) and total current account spending per capita (columns (5)-(6)). All estimations include municipality fixed effects, year fixed effects and control variables.

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

Our findings 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

[27] This estimation does not, however, rule out the possibility that in some municipalities the effect of infiltration is stronger because the presence of organised crime is also stronger in that particular location.

groups infiltrate local governments, they are not interested in forcing a modification of 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.[28] 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?

We test whether criminal infiltrations significantly affect the allocation of public resources by comparing each of the spending items of infiltrated governments with those of non-infiltrated governments before and after this infiltration is terminated ended.[29]

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

For each spending item, 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. Note that most of the current account spending components (Table 4) display insignificant coefficients. Particularly interesting is the administration spending component. If organized crime had invested in *patronage behaviour*, thus inflating the hiring of public administration personnel, the coefficient would have been positive and significant.[30] We do not observe this effect. The only significant effect is on municipal police.

When we turn our attention to capital spending (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)). These results are consistent across both specifications, remaining significant and with similar magnitude. A first look at these results indicates that upon infiltration, organized 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 Table 3, infiltrated governments increase investment spending on construction and waste management. The estimated effect is economically relevant: infiltrated municipalities increase spending on construction and waste management by 0.0448 percentage points, corresponding to about a 14% change compared to average spending on construction and waste management in non-treated municipalities (equal to 0.34).[31] This is a large figure if we consider that functions related to constructions and waste management already account for the largest part of the capital

[28] 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.

[29] As mentioned above, the six fundamental areas of municipal public finance are: administration, social sector, construction and waste management, transportation, public education, and local police.

[30] One of the strategies commonly employed by organized crime is to offer employment within the public sector in exchange for various forms of support (Gambetta, 1993)

[31] In appendix A 3.1 we replicate our analysis, gradually increasing the number and type of controls and including linear time trends. We then present the results for both the full and restricted sample over the period 1998-2013.

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 the average infiltration period in our sample of municipalities is 2.7 years.[32] 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 1,273 euro per capita, infiltrated municipalities redirect an additional 179 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. This represents a strategic sector for the interests of criminal organisations for many important reasons. First, mafia 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 7 shows the number of firms, disaggregated by business sector, confiscated by police due to collusion with organised crime. 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.

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 Table 3 report an annual reduction in the share of total capital account spending for municipal police.[33] 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

[32] 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.

[33] In appendix A 3.1 we replicate our analysis, gradually increasing the number and type of controls and including linear time trends. We present the results for both the full and restricted sample over the period 1998-2013.

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 0.2 percentage points, as per our estimates (column 11), 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 4, 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).

And yet, 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 building 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.[34]

In order to assess the performance of municipal governments, we follow Drago et al. (2014), constructing a measure of efficiency in revenue collection calculated as the ratio between collected revenues and the total amount of forecasted revenues that the municipality should collect within the budget year. We focus on the two main local taxes, i.e. *property tax* and *waste tax,* and on *total taxes* and *total collected revenues.*[35] As Figure A.11 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 including a measure of criminal violence. For each outcome variable, we estimate our model with the full and the restricted sample. In both cases, infiltrated local governments exhibit a lesser ability to collect fiscal revenues. Indeed, although (barely) not significant, the coefficients for Total_tax and Total_revenues are both negative.[36] More im-

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

[35]Our data come from Certificates on Financial Statements (*Certificati Consuntivi - 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.

[36]Although not significant, the direction of our coefficient is in line with results from Daniele et al. 2016. They focus on the period *post* dissolution and *after* commissioning, uncovering that a newly elected local government has a lesser ability to collect fiscal revenues.

portantly, the coefficient on *Waste Tax* (Column 7) 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), translating into a loss of approximately 130 euros per capita every year. The result is stable to the inclusion of our set of controls and to the restriction of the sample (Column 8). The interpretation of this result is twofold. First, the direct or indirect presence of criminal organisations within the municipal government is a silent metastasis that has a profound impact on the performance of the local government. 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.11, *Waste Tax* represents 22% of the municipal budget (total revenues are on average 2.8 million euros per year). Second, lower fiscal revenues correspond to a precise strategy on the part of criminal organisations (Barone & Narciso, Daniele & Geys, 2016; Trocchia 2009) who aim to weaken the presence and reputation of the State in order to open up the possibility of substituting it through a system of provision of private favours. Moreover, this result, together with the evidence on spending on construction and waste management uncovered in section 5.2, seems to confirm the well-known presence of criminal organisations within the waste management sector.[37]

Finally, we also exploit another measure of state efficiency. In 2007, the Italian government instituted a nationwide anti-evasion policy, the Ghost Buildings program. The program identified ghost buildings — properties not listed in the land registry and thus hidden from tax authorities — by overlaying aerial photographs and digital land registry maps (Casabury & Troiano, 2016).[38]Municipalities play a key role in identifying ghost buildings in their respective territories. The intensity of such identification varies significantly, however, across municipalities. 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.[39] 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 6. The negative coefficient reveals that, on average, infiltrated municipalities register and declare fewer *ghost buildings*. We interpret this result as in line with our previous findings. When local governments are captured by criminal organisations, the efficiency of the administration, its civic sense, and its compliance with rules decrease. This undermines the entire social welfare of the local community.

[37]The connection between the waste hauling industry and organized 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.

[38]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 identify the ghost buildings. Appendix Figures A.1A-A.1C summarize the identification steps. First, the aerial photograph of a particular location was created. Then, the pictures were matched with the official building map for the corresponding area. Finally, the ghost buildings were identified (Casaburi & Troiano, 2016).

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

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.3.[40]

Infiltration period starts with the elections. As discussed in section III, the starting assumption of our identification strategy is that the period of infiltration begins at the moment of the election of later-dissolved governments and ends with the dissolution. We test the validity of this assumption in Table 7, where we perform a placebo experiment on our full sample.[41] 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 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 4. Columns 2 and 3 introduce two new dummy variables taking value 1 respectively 1 year (Column 2) and 2 years (Column 3) immediately before the election of later-dissolved government. All years coded as 'infiltration years' – from election to dissolution – are excluded from the sample. We expect to find no significant correlation between pre-infiltration governments and any form of public spending or revenue collection distortion. All the coefficients in Columns 2 and 3 are insignificant, suggesting that the observed effects on public spending and revenue collection are significantly affected only during infiltration years.

Although we cannot reject with full certainty the possibility that 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 the case in Southern Italy where the political turnover is very high: 71% of local administrators leave local politics within 5 years and 93% within 10 years (Daniele and Geys, 2015). In this context, elections are crucial because they can constitute a turning point whereby the "*criminal interest groups*" select the political counter-parties 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

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

[41] The same analysis of the restricted sample can also be found in Table 7.

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 ρ represents the post-treatment effect and q represents the anticipatory effect.[42] We have thus re-estimated the model for the main dependent variables (capital account spending for construction and waste management and for municipal police) by including this set of leads and lags, again controlling for fixed-time effects and municipality time trends.Figures A4 in the Appendix display the result of the analysis for both public spending and for revenue collection.We assess the evolution of municipal spending: up to 2 years before the election of an infiltrated government, during the period in which the infiltrated government was in charge, and in the post-dissolution years. Each point in the Figures refers to the estimated coefficient for a given year. [43]

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

Selection into treatment correlated with outcome variable. Our results indicate that infiltrated local governments spend on average more 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 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.[45] Table A.10 provides the results, showing that reductions in police force investments and increases in construction

[42]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.

[43]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.

[44]Figure A4.1 shows a jump in investments in construction and waste management in the first year after local election. This may be due to the fact that the second budget year is also the last one in which governments can promote three-year investment plans of public works and hope to see the end of construction work 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.

[45]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 was begun. 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.

and waste management don't just remain significant but they also increase in magnitude. Columns 1 and 3 provide the point estimates for both capital spending in police and construction. The only coefficient that turns insignificant refers to the current account spending for municipal police.[46] 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 $DissNomafia_{m,t}$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.[47] If the results in section V 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 A6. We exclude all infiltrated governments and compare dissolved governments for mafia-unrelated reasons with other governments, before and after the dissolution takes place. We do so using the entire sample of municipalities from Calabria, Campania and Sicily from 1998 to 2013, including linear time trends and controlling for time and municipality fixed effects, and all other controls. Table A6.1 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.

In this section we tested the robustness of our estimates. In the section that follows, we further investigate the complex relationship between politics and organised crime.

7 Organised Crime and Politics

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 con-

[46] This does not come as a surprise because this result was very weak in the main analysis as well. We do not know if the loss of significance is simply due to the lower statistical power or if it is related to a bias in the selection into treatment.

[47] 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.

sequently 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.[48] 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 with the fact that mayors have no possibility of being immediately re-elected.[49] 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. [50]

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. [51] Political Factors is sub-divided into

[48] In such cases, the only condition necessary to valid the election is a voter turnout above 50%.

[49] While mayors can run for a third term after a term break, third-term candidacies are extremely rare.

[50] Recent evidence has shown that the mafia sells votes to the party that has more core supporters and it is therefore expected to win (De Feo and De Luca, 2013). In Sicily, the strongest political relationships developed by the mafia have been with the Christian Democrats (*Democrazia Cristiana*, DC) (De Feo and De Luca, 2013) 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 mNote: Clustered standard errors in parenthesis; *** p<0.01, ** p<0.05, * p<0.1. Infiltration refers to infiltration dummy; all municipalities for which the main reason for dissolvement was related to distortions in the balance sheets are excluded. Commissioning years excluded in all specifications.afia dissolutions, voters are more likely to vote for centre-left parties and less for civic lists.

[51] We exploit the same dataset used in the Section 3, augmented with data on election characteristics for all the municipalities

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*).[52] 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 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.[53]

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

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 A7 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.

[52]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.

[53]Political conditions may influence the allocation of public expenditures (Johnston, 1977; Besley and Coates, 1998). The expectations and resultsof 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).

section of the paper.

We do so by estimating the following models:

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

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

Where $Y_{m,t+1}$represents the main results of Section 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 $PartryColour_{m,t}$.

As in the previous empirical analysis, $Mafia_{p,t}$ represents a control variable for the underlying strength of the mafia. $NatGove_t$ is a dummy variable controlling for the political colour of the national government at time t – left or right-wing governments. $X_{m,t}$ is a vector of socio-demographic municipal control variables at the municipality level. φ_m and τ_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.[54] These crucially important 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

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

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 A9.1 in the Appendix provides evidence that key covariates (socio-economic variables, mafia strength, local election characteristics) are not significantly different in treatment and control groups used for the RDD.

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

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:

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

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

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

We estimate $\alpha = E[Pr(Inf)_{m,t}|R_{m,t} = 1] - E[Pr(Inf)_{m,t}|R_{m,t} = 0]$. α is estimated both parametrically and non-parametrically.[56] 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.[57] To this end, we perform a McCrary density test, making sure that there is no

[55] 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.

[56] 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.

[57] 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 disproportionally 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 A9 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

significant jump in the density of observations at the cutoff point. Figure A9.2 in Appendix A9 exhibits a very small discontinuity at the threshold, which is statistically insignificant (Table A9.4).

7.2.2 Results

Table 11 presents our main results, obtained with the full sample of municipalities from Campania, Calabria and Sicily, 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 8 illustrates these findings graphically, where observations are fitted with polynomials of order two, using Calonico et al.'s (2014) bandwidths, and adding confidence interval bands. A statistically significant increase in the number of infiltrated municipalities on the right-hand side of the threshold is evident, indicating that the probability of infiltration increases when right-wing parties 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 A9.5 and A9.6 in Appendix A9 confirm the robustness of these results by showing point estimates at different cutoff points and with different bandwidths. As expected, the effect is statistically insignificant at placebo cutoffs. The results remain significant when we increase the bandwidth and when we decrease the bandwidth to elections where the margin of victory was as low as 4%.

7.2.3 Partisanship and public spending

Such a significant relationship between right-wing parties and 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. We estimate:

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

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 9 reproduces the estimation results in

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%.

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. Moreover, infiltrated municipalities collect on average fewer revenues, in particular 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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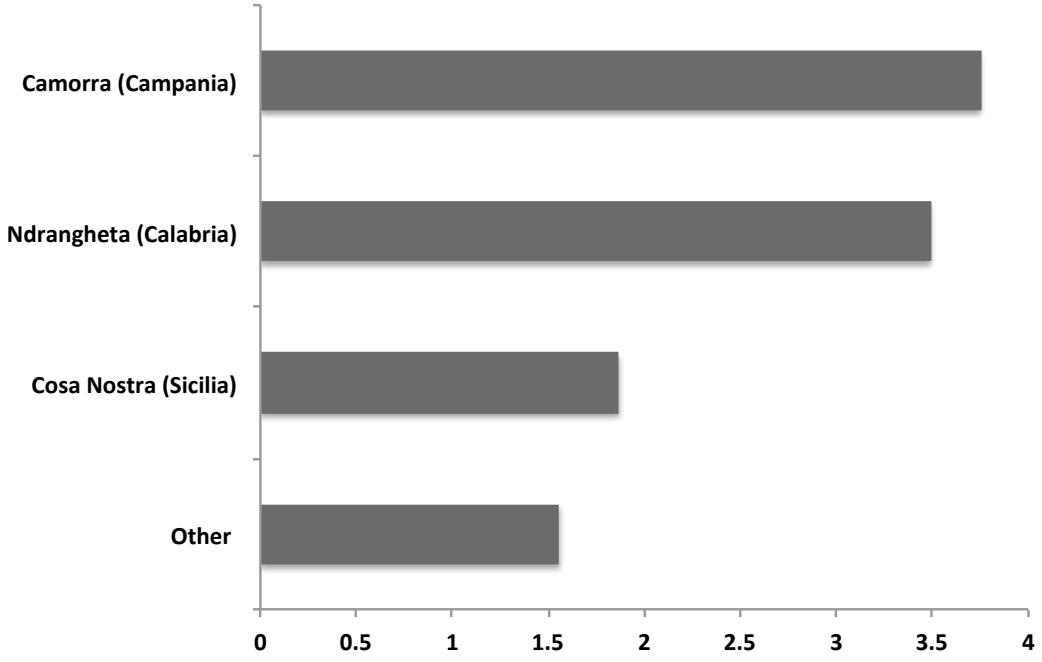
9 Figures and Tables

9.1 Figures (in the text)

Figure 1

Yearly earning (bn EUR) by mafia organisation



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

Figure 2

Mafia investments by sector

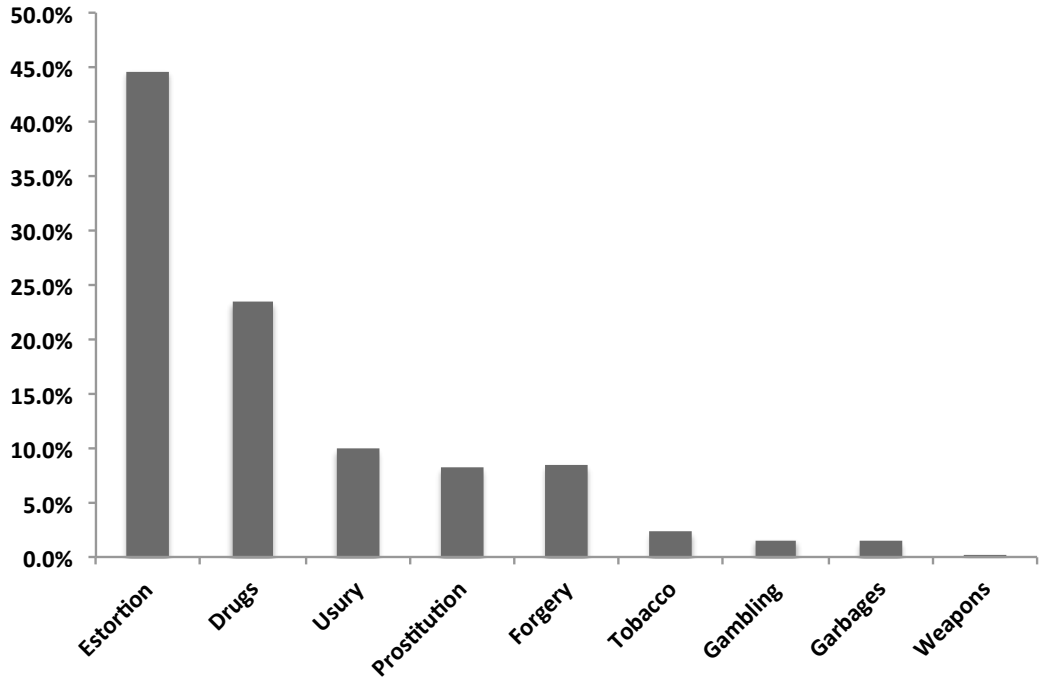
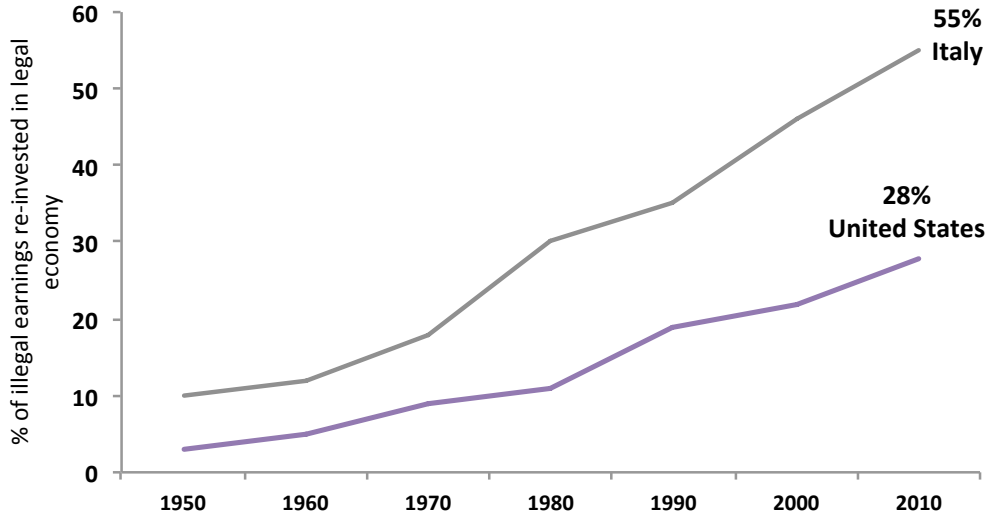


Figure 3

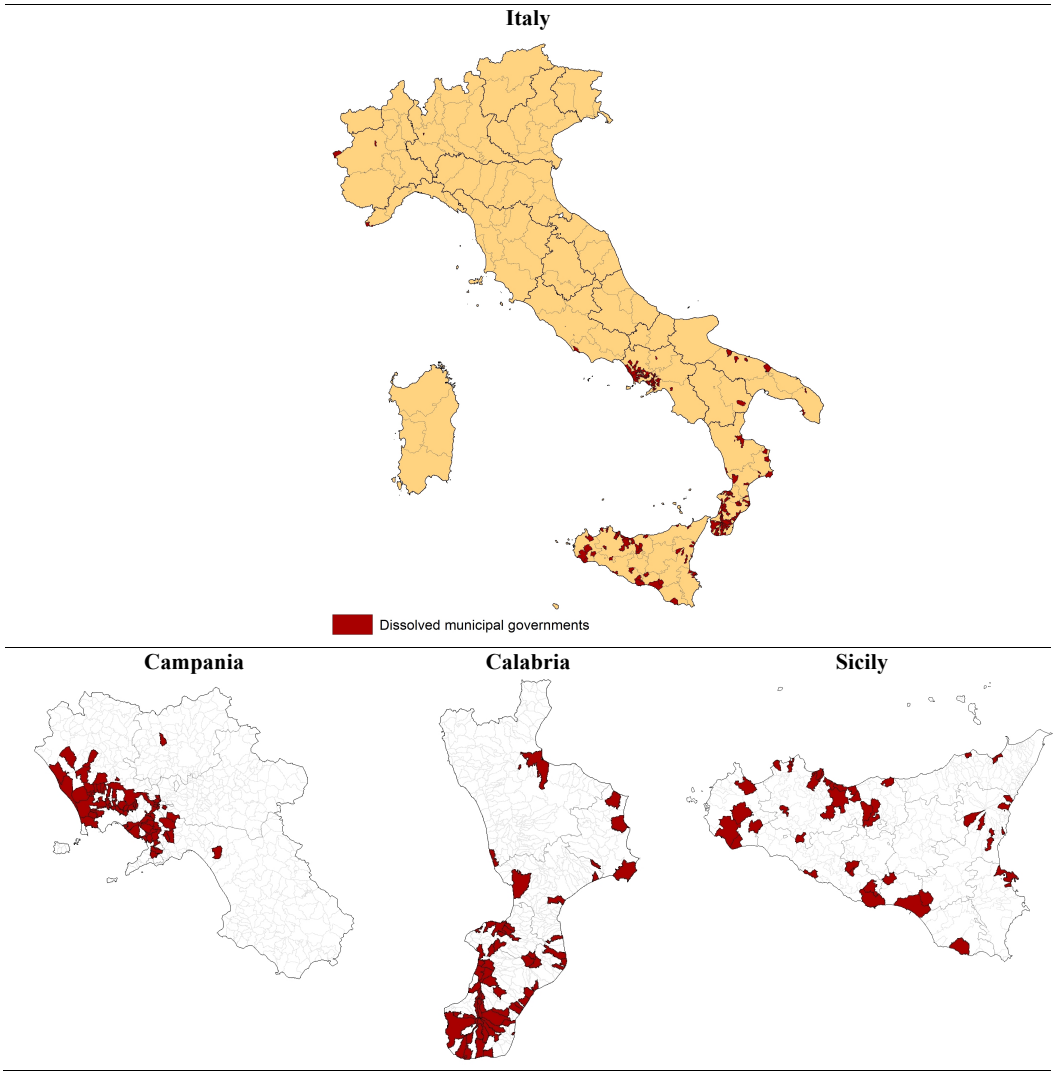
% Illegal profits re-invested into the legal economy



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

Figure 4

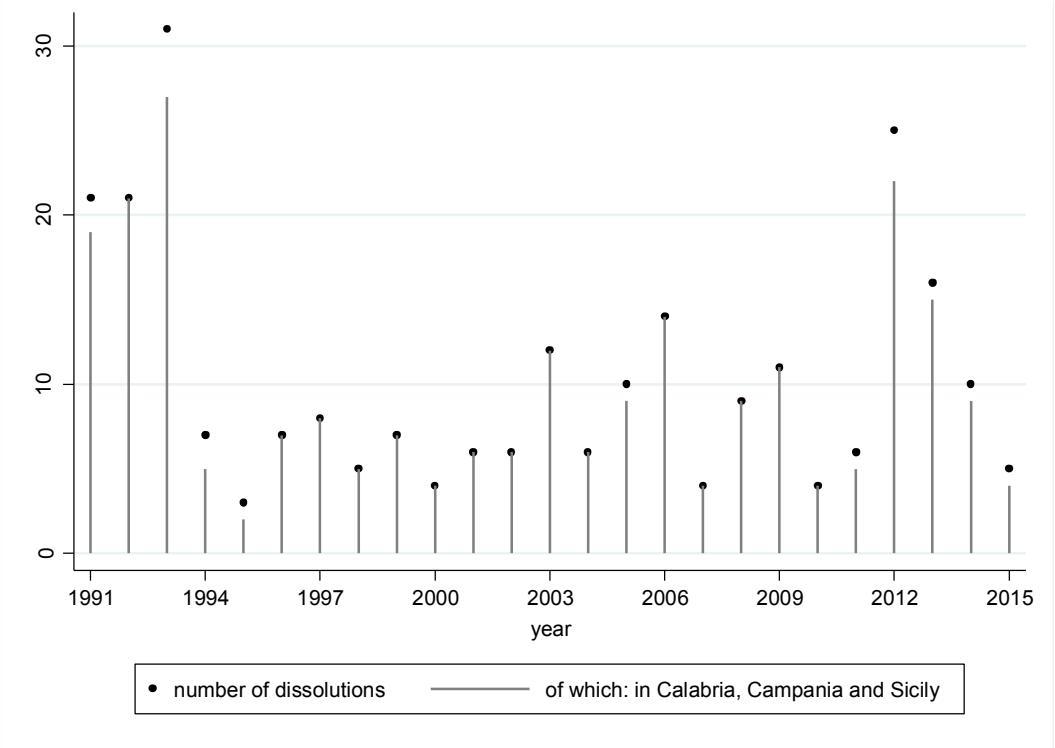
Geographical location of the dissolutions



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

Figure 5

Number of dissolved municipal governments for mafia infiltration



Source: Italian Ministry of Interior.

Figure 6

Identification of the treatment period

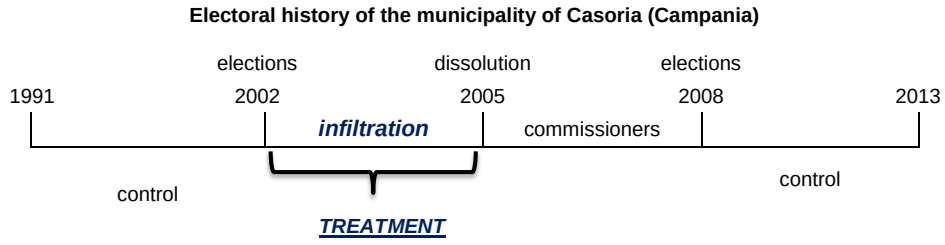
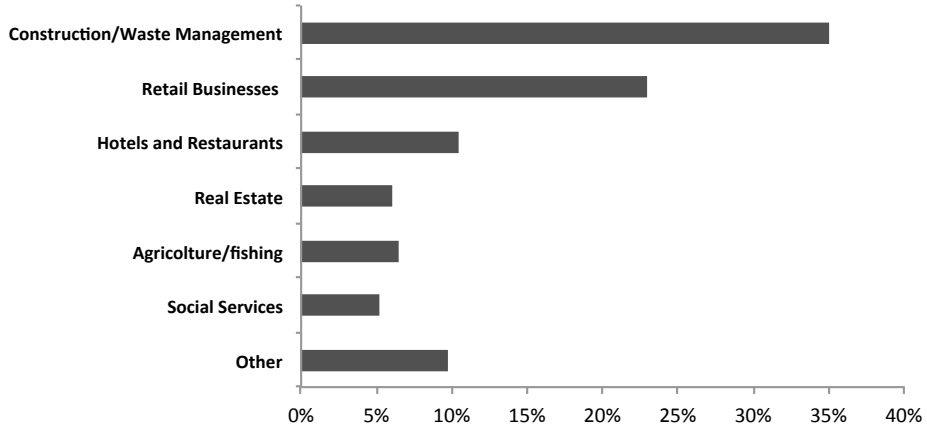


Figure 7

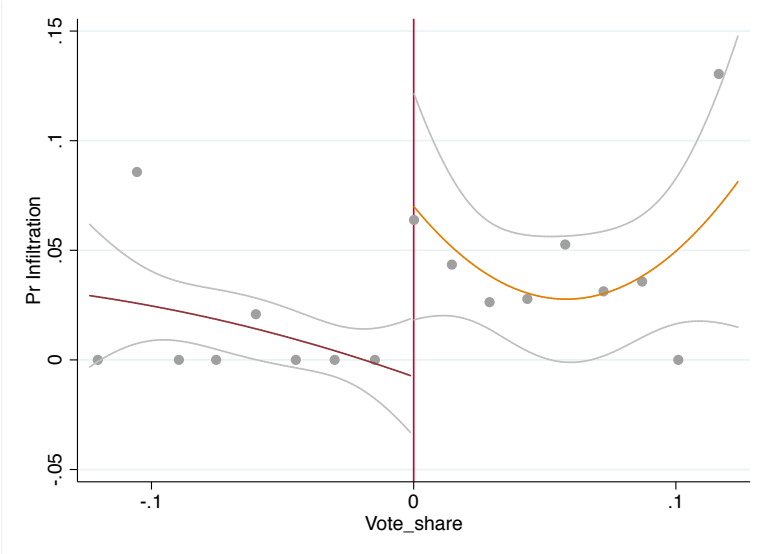
Organised crime controlled firms investments by sector



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

Figure 8

RDD – right-wing party victory and probability of infiltration

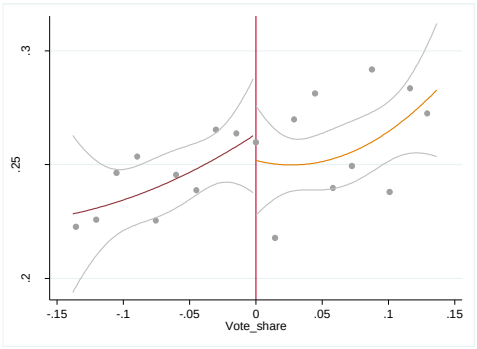


Note: Polynomial fit of order2. vote share>0 refers to elections won by right-wing parties; vote share<0 refers to elections barely lost by right-wing parties.

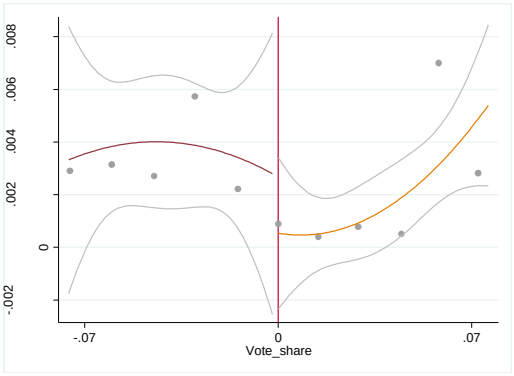
Figure 9

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

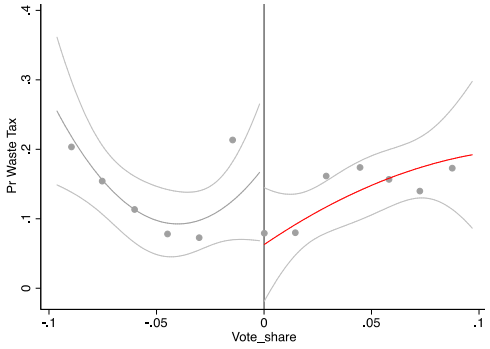
Construction and waste management



Municipal Police



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

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

Note: Full sample refers to all 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.

Table 2

Effect of infiltration on total public spending

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

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

Table 3

Effect of infiltration on capital account spending by component

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

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

Table 4

Effect of infiltration on current account spending by component

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

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

Table 5

The effect of the infiltration of local revenue collection, 1998 - 2013

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

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

Table 6

Ghost Buildings

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

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

Table 7

Robustness check: Timing of the Infiltration (Full Sample)

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

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

Robustness check: Timing of the Infiltration (Restricted Sample)

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

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

Table 8: Infiltrations and political factors, 1998-2013

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

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

Table 9

The effect of the infiltration on public spending controlling for political factors, 1998 -2013

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

Table 10

Political factors and public spending components, 1998-2013

	Dependent variable:								
	Public spending						Revenues collection		
VARIABLES	Construction and waste management			Municipal police			Waste tax		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Single candidate	-0.0647			-0.00044			0.0376		
	(0.0448)			(0.00239)			(0.0567)		
Last mandate		0.0015			0.00045			-0.00334	
		(0.0161)			(0.00136)			(0.0299)	
Right party			0.015			0.00014			-0.00198
			(0.0136)			(0.00203)			(0.0183)
Mafia homicides	✓	✓	✓	✓	✓	✓	✓	✓	✓
National government (Left)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality control	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	2,778	2,778	2,408	2,717	2,717	2,351	2,302	2,302	2,005
R-squared	0.225	0.224	0.233	0.234	0.234	0.239	0.451	0.451	0.465
Municipalities	182	182	182	182	182	182	182	182	182

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

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

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

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

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

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

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

10 Appendix

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

		National government	
no of dissolutions	**Municipal government**	Right	Left
67	Right[a]	-0.108	0.061
43	Left[b]	0.139	-0.047
6	Centre[c]	-0.068	-0.011

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

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

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

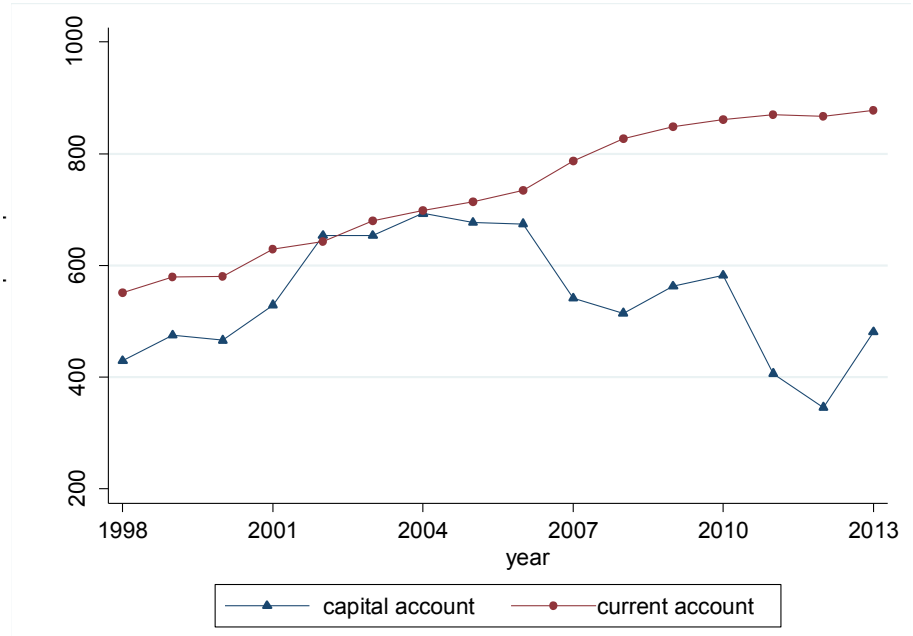
Note: no statistically significant coefficient. None of these provinces had governments from the 'Centre' over the 1998-2013 period. Vibo Valentia only had left-wing governments while Palermo only had right-wing governments. a / Right-wing municipal governments during infiltration period in given province.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

A2. Municipal institutional setting and public spending.

A2.1 Italian municipalities institutional setting. As of 2016, there were 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.

A2.2 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) transportation includes expenses to guarantee local public transportation, public lighting, provision of local road infrastructure; (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

Capital account - current account over time



Source: Ministero Interno, Divisione Finanza Locale

A2.3: Descriptive statistics – control variables

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

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

A3 Robustness Checks - Effect of Infiltration on Public Spending Results

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

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

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

Full Sample

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

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

Restricted Sample

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

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

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

Full Sample

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

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

Restricted Sample

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

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

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

Full Sample

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

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

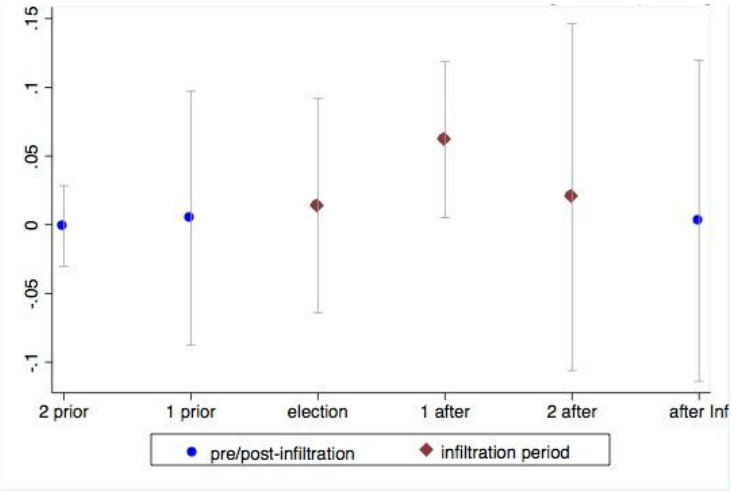
Restricted Sample

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

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

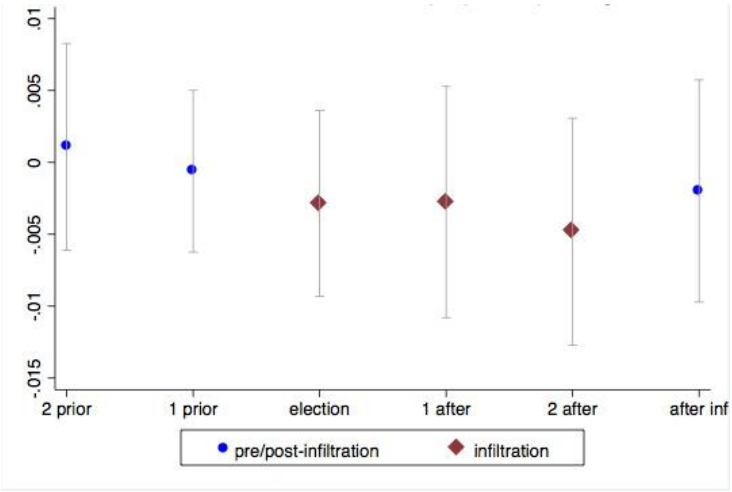
A4 Parallel Trend - Full Dynamic Model

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



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

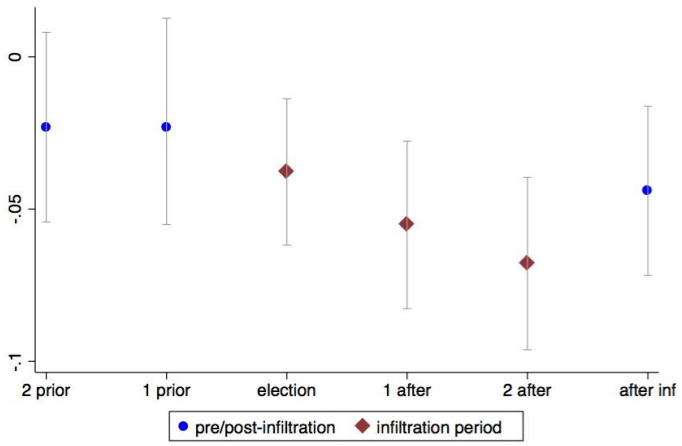
A4.2 Effect of Infiltration on capital account spending for municipal police



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

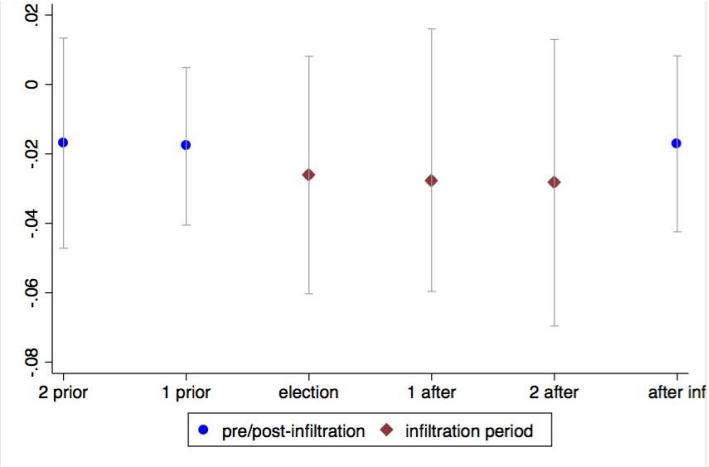
A4 Parallel Trend - Full Dynamic Model

A4.3 Effect of Infiltration on Waste Tax



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

A4.4 Effect of Infiltration on Total Revenues



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

A5 Effect of Infiltration on Capital Account Spending Components by Municipal Population, 1998-2013

Our analysis has unveiled that mafia infiltrations determine important modifications in the investment policies of local governments in Southern Italy. However, the impact of the mafia on public finance allocations is likely to vary according to some characteristics of the local context, which are more or less suitable to the development of mafia-government collusions. 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. As shown in Table A5 below, the data confirm our hypothesis. Inflations in capital account spending for construction and waste management are higher, the smaller the population of a municipality. The coefficient of the infiltration dummy is positive and significant for medium and small-size municipalities and the magnitude is larger for towns below 2,000 inhabitants. By using the same sub-division by population size, we replicate the estimates adopting the share of municipal police spending as the dependent variable. In this case, the reduction of the investment share is larger in cities with greater than 5,000 inhabitants (Table A5). This result can be explained by the fact that the investment budget for police forces managed by large cities is significantly larger than 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.

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

Dep. Variable:	CA spending for Construction and waste management			CA spending for Municipal Police		
	population:			population:		
	below 2000	between 2000 and 5000	above 5000	below 2000	between 2000 and 5000	above 5000
	(1)	(2)	(3)	(4)	(5)	(6)
Infiltration	0.0951**	0.0795**	0.0199	0.00283	-0.00183	-0.00338**
	-0.0425	-0.0331	-0.0219	-0.00259	-0.0018	-0.00168
Mafia homicides	✓	✓	✓	✓	✓	✓
Other controls	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓
Observations	6,817	6,514	7,447	6,564	6,299	7,258
R-squared	0.193	0.222	0.234	0.139	0.157	0.175
Municipalities	473	469	502	473	469	502

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

A6: Placebo – Dissolutions Unrelated to Organised Crime and Public Spending

A6.1: Organised Crime dissolutions and total public spending

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

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

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

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

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

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

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

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

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

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

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

A7: Descriptive statistics – political variables

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

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

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

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

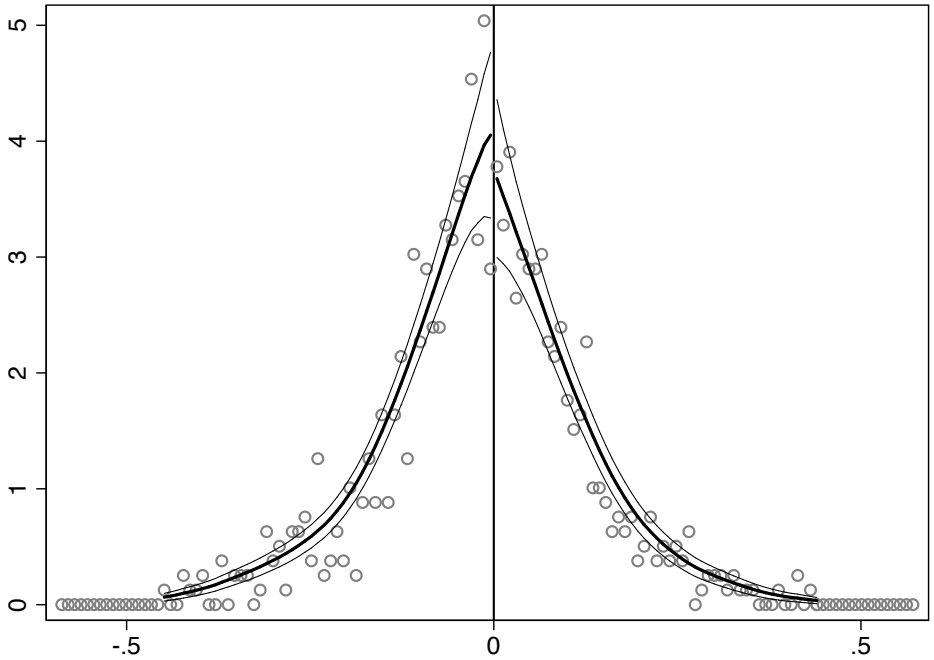
Note: Clustered standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Sample of infiltrated governments during 1998-2013.

A9 RDD – Effect of Electing Right-Wing Governments on the Probability of Infiltration

A9.1 Balance of covariates

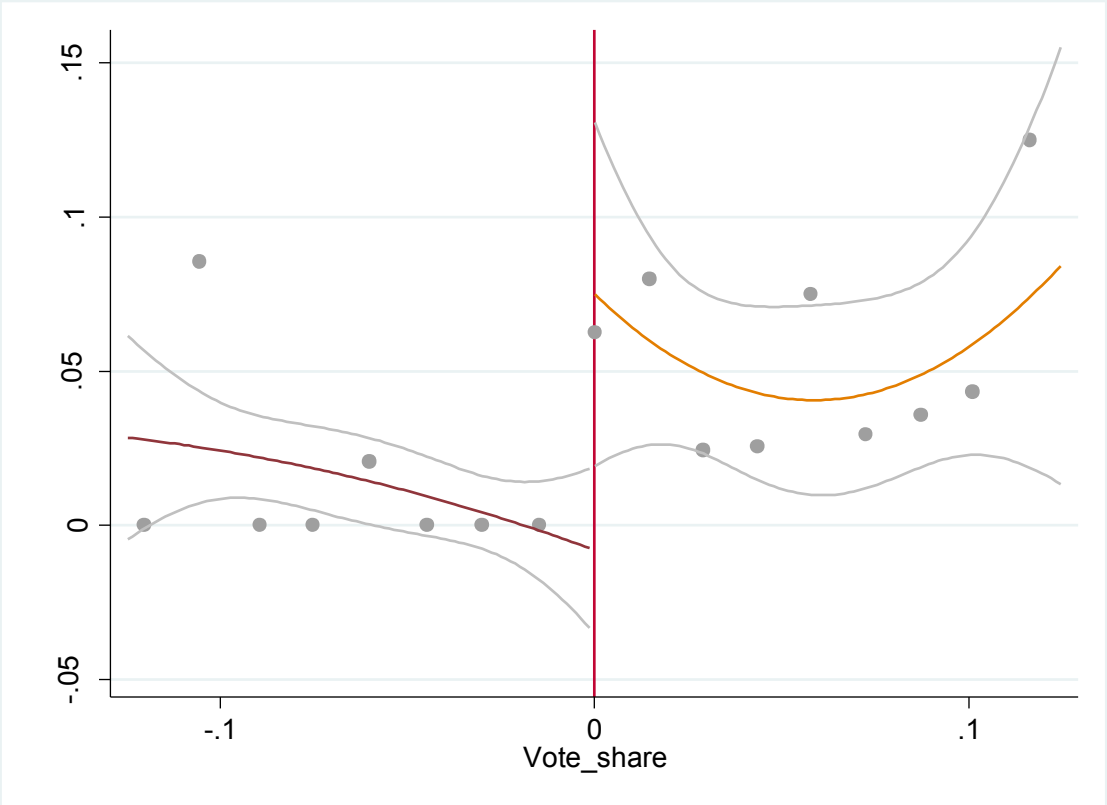
	Dep. Variable:								
	Unemployment	Industry employment	Human capital	Pop	Total spending	Mafia-related homicides	White ballots	Turnout	Non-valid ballots
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treatment vs.	-0.594	0.48	-0.0919	-0.269	-0.0195	5.45E-06	0.129	-2.397	0.8
	(0.795)	(0.551)	(0.670)	(0.364)	(0.0263)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

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



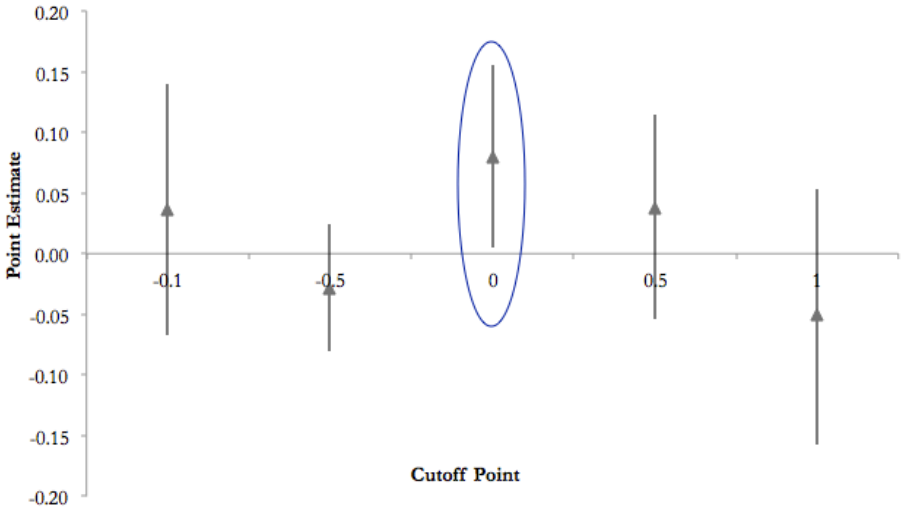
Note: Robust standard errors in parenthesis; *** p<0.01, ** p<0.05, * p<0.1. T student at the discontinuity -0.9782 with robust estimation. There is no presence of non - random sorting at the cutoff

A9.4 Restricted sample – RDD graph



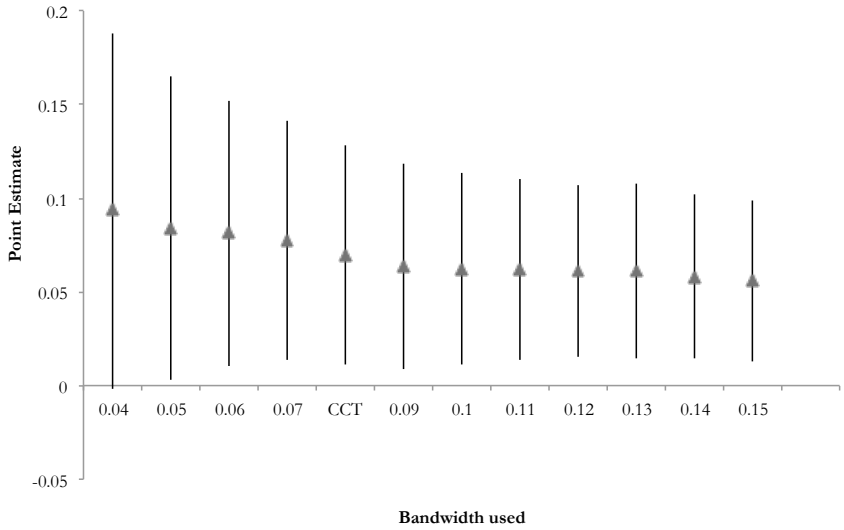
Note: Polynomial fit of order2. vote share>0 refers to elections won by right-wing parties; vote share<0 refers to elections barely lost by right-wing parties. For each municipalities, all years after the dissolutions are excluded. The control group is composed only by the years before the infiltration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

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



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

A9.6 Robustness checks – Moving bandwidths



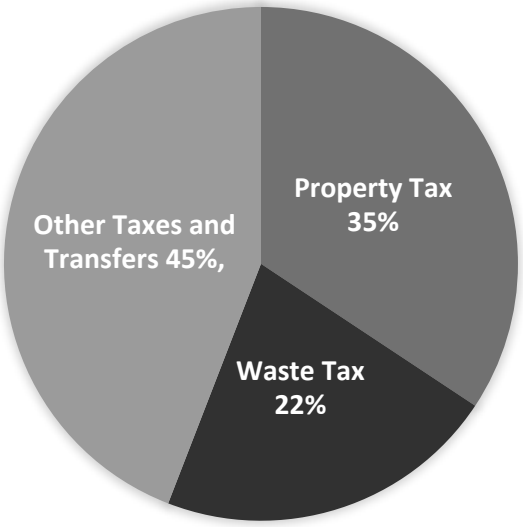
Note: Dependent variable is Probability of infiltration. The line extends from the lower bound to the upper bound. 90% confidence interval. CCT: optimal bandwidth.

A10: Selection into Treatment

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

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

A11: Local Fiscal Revenues Structure



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