Organized Crime, Captured Politicians, and the Allocation of Public Resources

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What is the impact of collusion between members of criminal organizations and politicians on local public finances, in contexts in which organized crime is well-rooted? This article addresses this question by focusing on local governments of Southern Italy, over the period 1998–2016. In order to capture the presence of organized crime, we exploit the enforcement of a national law allowing the dissolution of a municipal government upon evidence of collusion between elected officials and the mafia. We measure the consequences of this *infiltration* of mafia groups within local governments by using data on local public finances at the municipality level. Difference-in-differences estimates reveal that captured municipalities commit on average more resources for investments in construction and waste management and are less effective in collecting taxes for waste and garbage. This indicates that organized crime groups exploit the collusion with local politicians in order to distort the allocation of public resources toward key sectors of strategic interest for the criminal business (*JEL* K42, H72, D72).

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1. Introduction

Organized crime is detrimental to the efficiency of any democratic or economic system (Gambetta and Reuter 1995; Acemoglu et al. 2013; Pinotti 2015). 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). Its strength, as well as its influence on the legal economy, relies on the diffused external complicity, that is, an increasingly close relationship between organized crime groups and public officials such as national or local politicians and public administrators (Alesina et al. 2018). Thanks to the development of such networks, organized crime has become highly pervasive and fully integrated into the everyday socio-economic and political life of many countries in the world (Allum and Siebert 2003; Le Moglie and Sorrenti 2020).

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 contexts in which organized crime is well-rooted? In this article, we tackle this question by investigating a particular aspect of organized crime activity: its *infiltration* within local governments. Such infiltration occurs when criminal groups manage to capture local politicians, who in turn may manipulate policy decisions in their favor. We study the case of Italy by using a yearly municipal-level dataset for the three Italian regions where organized crime is most widespread and rooted: Calabria, Campania, and Sicily, over the period 1998–2016.[1]

In order to measure the presence of organized crime, we exploit National Law 164/1991, which imposes the dissolution of a municipal government upon evidence of collusion between elected officials and criminal organizations. The enforcement of this policy is used to identify cases of plausible criminal infiltration. In particular, we classify as infiltrated (treated) the last municipal legislature before a city council is dissolved through the implementation of Law 164/1991, from the moment of its election until the moment of its dissolution. The control group is composed of local governments that have never experienced a dissolution and, for treated municipalities, only by the legislatures preceding the beginning of the infiltration. All post-dissolution years are excluded, in order to avoid any contamination in the control group (Fenizia and Saggio 2020). We then estimate a difference-in-differences (DiD) model comparing municipal governments with and without infiltration, before and during the

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1. A focus on southern regions rather than on Italy as a whole has the advantage of restricting the sample to a relatively homogeneous area in terms of unobservable elements such as culture or social capital, traditionally considered as highly diversified across this country (Putnam 1993). Moreover, as outlined in Section 2, city council dismissals are rare in the north of the country.

infiltration. We provide evidence on the parallel trends assumption and on the validity of the treatment definition.

The analysis reveals that the capture of local governments by organized crime does not affect the total level of public spending, but does have consequences both for the allocation of public resources and for the collection of fiscal revenues. In particular, infiltrated local governments modify capital account expenditures in sectors that are strategic to the interests of organized crime. This effect is economically sizeable. According to our estimates, infiltration leads to around 14% increase in the share of total investment allocated for construction and waste management. Moreover, infiltrated municipalities appear to be less effective in collecting fiscal revenues from the waste and garbage tax. Specifically, they exhibit a reduction of approximately 20% in the outcome variable, which is defined as the amount of collected revenues divided by the forecasted revenues on a yearly basis.

We also found some, albeit weaker, evidence of the consequences of infiltration on other public finance items. Infiltrated municipalities exhibit a reduction in the number of resources dedicated to capital expenditures for transport and lighting, possibly reflecting an attempt of local administrators to keep the budget in order during infiltrations after the increase in investment for construction and waste management. In addition, other characteristics of infiltrated local governments include a lower capacity to collect fiscal revenues—a result likely driven by waste taxes—and a higher municipal debt toward third parties.

Since the presence of organized crime is clearly not random, our empirical analysis has to deal with the presence of potential confounders. We discuss them in detail in the article and show that the results are robust to exogeneity checks, changes in specification, and placebo tests, thus minimizing endogeneity concerns. Moreover, since our estimates could pick up some nonmafia-related effects (e.g., low quality of politicians and unstable governments) or be determined by political characteristics of the municipal elections potentially correlated with infiltrations, we provide evidence to ensure that the results are driven by mafia collusion and not by any of these components.

All in all, our findings suggest that criminal organizations exploit the capturing of local administrators in order to distort the allocation of resources toward sectors of strategic interest for their business. The increase in resources dedicated to capital expenditures for construction and waste management appears to be associated with a higher amount of resources tendered out via public procurement contracts in this specific sector. In spite of the higher expenses for waste management, waste collection services provided by municipalities do not seem to improve during infiltrations, possibly contributing to make citizens less willing to pay taxes for the service. This evidence confirms the existence of rooted interests of criminal groups in the waste management and construction sector.

This article contributes to different strands of the literature. First, a recent but growing literature has measured the presence and intensity of mafia activity by employing proxies such as the number of mafia-related crimes, murders, and violent attacks (Daniele and Marani 2011; Barone and Narciso 2015; Alesina et al. 2018), historical or geological indicators (Bandiera 2003; Buonanno et al. 2015, 2016; De Feo and De Luca 2017; Dimico et al. 2017; Acemoglu et al. 2020), or forced displacement policies (Scognamiglio 2018). An important strand of these studies has focused on the impact of mafia-government linkages on political and electoral outcomes.[2] Most of these works measure the presence of criminal organizations with proxies of violence. While this is certainly a distinctive behavior of criminal activities, it might represent the tip of the iceberg of the real strength of these organizations. The consequences of more subtle criminal actions that do not employ any use of violence are still underexplored in the literature. By using a measure of organized crime activity reflecting the collusion between organized crime and politicians, we contribute to shed light on this more silent but equally dangerous phenomenon and, in doing so, to assess its impact on the allocation of public resources.

Second, the study of local criminal capturing of politicians naturally relates to the vast literature studying the consequences of corrupted public officers and of anti-corruption policies on the allocation of public spending (Shleifer and Vishny 1993; Bandiera et al. 2009), public procurement (Coviello and Mariniello 2014; Tulli 2019; Decarolis et al. 2020), economic and labor market outcomes (Fenizia and Saggio 2020; Colonnelli and Prem 2021), as well as to the set of works measuring the elite capture of public resources or public service delivery (Ferraz and Finan 2008, 2011; Slutzky and Zeume 2019). To this literature, we contribute by exploring the consequences of a very peculiar typology of corruption—the criminal capturing of local politicians while in power. In addition, while many empirical works have analyzed how powerful interest groups interfere with government choices through corruption (Tanzi and Davoodi 1997; Mauro 1998; Gupta et al. 2001; Rajkumar and Swaroop 2008; Crescenzi et al. 2016), much less evidence exists on the resource allocation induced by the rent-seeking behavior of *organized crime*. A notable exception is the work of Barone and Narciso (2015), arguing that the presence of organized crime affects the distribution of national public funds to firms.

Finally, this article also relates to a more recent empirical literature attempting to measure the economic effects of organized crime and the

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2. For example, Alesina et al. (2018) and Daniele and Dipoppa (2017) investigate how criminal organizations strategically use violence to influence elections and get captured politicians elected. Other studies have examined how criminal organizations choose their political counterparts (Dal Bó et al. 2006; Buonanno et al. 2015), uncovering different strategies. De Feo and De Luca (2017) argue that the mafia sells votes to the party that has more core supporters and it is therefore expected to win. Buonanno et al. (2016) find a systematic correlation between the strength of *Cosa Nostra* and the proportion of votes for the main Italian conservative party.

consequences of its infiltration within the legal economy (Pinotti 2015; Tulli 2019). Mirenda et al. (2019) claim that the infiltration of the Calabrian mafia within firms has negative long-run effects on local economic growth. Le Moglie and Sorrenti (2020) show that Italian territories where criminal organizations are more rooted suffer less during economic downturns. Our article contributes to this effort of understanding the attempt by organized crime to take control of portions of the legal economy by exploring how criminal organizations exploit political capturing to bias the allocation of public resources toward sectors of strategic interest.

The Law 164/1991 examined here has been previously employed in the empirical literature (Acconcia et al. 2014; Daniele and Geys 2015, 2016; Galletta 2017; Fenizia and Saggio 2020).[3] Our contribution is the attempt to capture the impact of organized crime *during* its infiltration within local governments. More specifically, our focus is on the period *before* the enforcement of the law, that is, *before* the dissolution of mafia-infiltrated municipalities took place.

The rest of the article is organized as follows: Section 2 focuses on the institutional setting and provides background on organized crime infiltrations and political capture; Section 3 discusses our identification strategy; Section 4 illustrates the data and the estimating equation; Section 5 presents the main results; Sections 6 and 7 present a set of exogeneity tests and robustness tests, respectively; Section 8 concludes.

2. Institutional Setting

"Organised crime has globalised and turned into one of the world's foremost economic and armed powers."[4] Its illegal activities and illicit flows affect the entire world, and they generate revenues of around $870 billion. In Italy, according to recent estimates, its total combined annual earnings generate a turnover of approximately 1.7% of the Italian Gross Domestic Product (GDP) (Transcrime 2013).[5] The main sources of revenue are illegal activities such as drug trafficking, extortion, and corruption. However, as Schelling (1971) would put it, *"burglars may operate in the*

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3. 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 Law 164/1991 on different post-dissolution outcomes, such as elected politicians' levels of education and turnout at local elections. Galletta (2017) investigates the presence of spillover effects resulting from the application of Law 164/1991 and shows a reduction of public investment in municipalities neighboring dissolved ones. In a compelling paper, Fenizia and Saggio (2020), studies the post-dissolution period and shows that firms winning tenders before dissolutions are significantly less likely to do so afterwards.

4. Statement from Antonio Maria Costa, Executive Director of the United Nations Office on Drugs and Crime (UNODC): unodc.org/unodc/en/press/releases/2010/June/organized-crime-has-globalized-and-turned-into-a-security-threat.html

5. Report available at https://www.transcrime.it/wp-content/uploads/2014/02/Sintesi-Pon.pdf

underworld, but they seek to govern the real world." Organized crime has evolved significantly in recent decades. In many countries, mafia groups have become increasingly sophisticated and their business model has shifted from one based on extortion to one based on entrepreneurship (Le Moglie and Sorrenti 2020). Criminal organizations have realized the importance of re-investing substantial portions of their profits within the legal economy. In light of this transformation, the nature of the relationship between the mafia and the State has also changed. Rather than representing an enemy to fight, the government has become an opportunity to exploit. Italy has experienced this change *prima facie*. Since the 1980s, the country has been witnessing a rise in cases of collusion of the mafia with politics, particularly at the local level. This led the central government to introduce a tougher set of anti-mafia measures in the 1990s.

2.1 Law 164/1991

In an effort to tackle cases of collusion between local politicians and members of organized crime, a new law has been introduced in 1991, imposing the dissolution of a city council upon evidence of "mafia infiltration" within the local government. Law 164/1991 states that 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."*[6] The dissolution of a local government requires a number of precise and rigid steps. First, a case 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 maximum of 3 months at the end of which the investigators draft a report. The provincial prefect has 45 days to send the report to the Ministry of Interior. Upon signature of the Minister of Interior, the dissolution's proposal must be approved by the Cabinet (Council of Ministers—*Consiglio dei Ministri*) and the President of the Republic.[7] Municipalities, where the local government is dissolved, are therefore those where the mafia infiltration has been attested by the Italian judicial system and confirmed by multiple political institutions. Once the investigation is concluded, the current municipal administration is removed and both the members of the criminal organization and all the local politicians involved are arrested. Upon the removal of the infiltrated

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6. D.L. 31/05/1991n.164: gazzettaufficiale.biz/atti/2001/20010223/01A10530.htm

7. Most of the investigations end up in the dissolution of the city council. Since 2009, when the Ministry of Interior decide to publish information on investigations initiated by the authorities: 70% of them resulted in a dissolution of the city council.

local administration, the central government appoints a team of non-elected, external commissioners, who govern the municipality for a period of 12–30 months. Since nonelected, the commissioners only take care of the ordinary management. They cannot approve a new budget, nor make any substantial investment (Acconcia et al. 2014; Galletta 2017). At the end of the transition period, regular elections are held.

As shown in Figure 1, the large majority of the dissolutions occurred in the three regions which form the main focus of our study: Campania, Calabria, and Sicily. Figure 2 illustrates the number of dissolved municipal governments due to mafia infiltration from the introduction of the law up until 2020. In total, there have been 327 detected cases of mafia infiltration into local governments over this period and 293 of these took place in Calabria, Campania, and Sicily.[8] Figure 2 reports in dark the dissolutions over our period of analysis, 1998–2016.

2.2 Main Reasons Behind Dissolutions

The capturing of local institutions can be perpetrated in different ways. For an investigation to be initiated, investigators need evidence of alleged connections between the criminal organizations and local governments. The reports of infiltration cases produced by police forces provide anecdotal evidence on this. We leverage on them to identify a set or recurring reasons behind a city council dismissal. As descriptively illustrated in Table B1, in about 27% of the cases elected officials turned out to be organized crime affiliates. For example, this was the case of the municipality of Nardodipace (Calabria), where the investigation revealed "*the presence in the municipal administration, as deputy mayor first and later as councillor, of the son of the local Mafioso.*" We label these instances as *direct infiltrations*.

The dissolution reports reveal that, in the majority of cases, criminal organizations do not directly place one of their members within the local government, but they still manage to exert a decisive influence on its composition and strategic decisions. These cases are labeled as *indirect infiltrations*. This form of capturing is heterogeneous and it can take a variety of forms. For example, a connection may develop between members of the city council and criminal groups, as in Cinisi (Sicily) where "*it was clear that a councillor was the link between* [. . .] *the mafia and the local administration,*"[9] or in Gricignano di Aversa (Campania) where "*the mayor has concluded a pre-election agreement in which he promised future financial benefits to the local camorra clan in exchange for electoral support.*"[10] Another recurrent strategy is constituted by vote buying, as in the case of

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8. In recent years few local governments have been dissolved in the North of the country. However, these instances are quite sporadic, particularly when compared to Southern regions. These took place in Piedmont (3), Lombardy (1), Liguria (1), Emilia Romagna (1), and Valle d'Aosta (1). Number of dissolutions calculated in April 2021.

9. Full report available at: gazzettaufficiale.it/eli/id/2001/09/25/01A10531/sg.

10. Full report available at: gazzettaufficiale.it/eli/id/2010/08/21/10A10389/sg
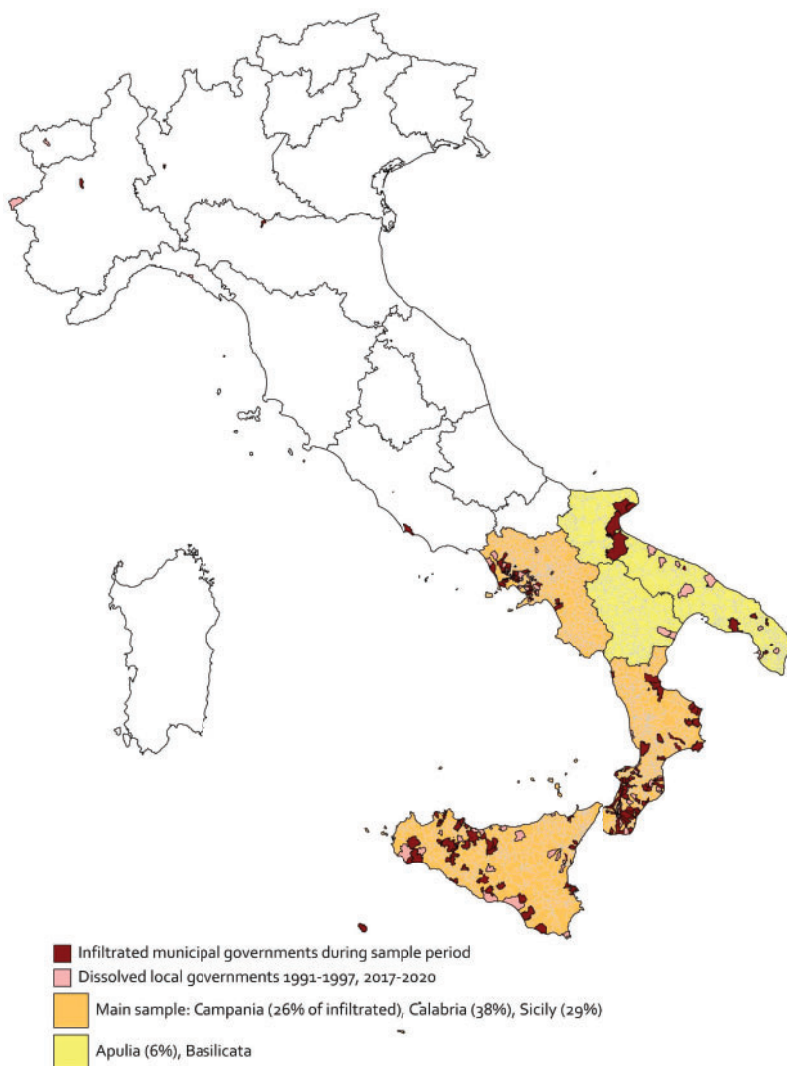
Figure 1. Map of Infiltrated Local Governments.
Note: Source: Italian Ministry of Interior, authors' own elaboration. Number and location of the city council dismissals calculated in April 2021.

Seminara (Calabria) where "*the mafia clan's commitment continued throughout the election through standard vote-buying behaviours.*"[11]

Finally, while less common, the capturing of local institutions can take place through the use of threats and intimidations. To this regard, Africo (Calabria) was investigated because "*the policy decisions of the municipal*

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11. Full report available at: gazzettaufficiale.it/eli/id/2008/01/31/08A00616/sg
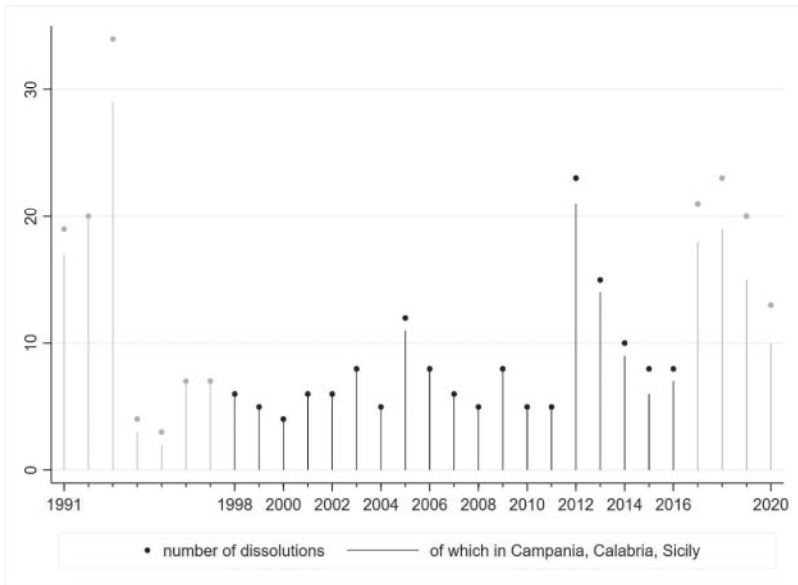
Figure 2. Number of Dissolved Municipal Governments for Mafia Infiltration, 1991–2020. *Source*: Italian Ministry of Interior. The figure shows the yearly number of municipal dissolutions. Calabria, Campania, and Sicily (the main sample of our study) have experienced the highest number of dissolutions. Black: sample period 1998–2016; light grey: years not in sample. Number of dissolutions calculated in April 2021.

council were not made freely and without bias because local politicians were repeatedly intimidated and threatened by criminal organisations."[12]

These examples are crucial to exemplify how the infiltration works. It is not simply the physical presence of criminal members within the local government, but also any direct or indirect link between criminal organizations and politicians. Importantly, for our study, dissolution reports suggest that the investigations are very rarely triggered by poor municipal performance or anomalies in balance sheets. Appendix B reports additional evidence on Law 164/1991.

3. Research Design
3.1 Identification Strategy and Estimating Sample

Our main sample is composed by the 1350 municipalities of Calabria, Campania, and Sicily over the period 1998–2016. The empirical strategy is based on a staggered DiD design that exploits the time and geographical variation of dissolutions over time. Our aim is to identify the period of time during which organized crime has plausibly colluded with the local government. For that, we rely on Law 164/1991, which allows us to classify cases of local governments that have been infiltrated by the mafia.

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12. Full report available at: gazzettaufficiale.biz/atti/2014/20140194/14A06583.htm

Electoral history of the municipality of Casoria (Campania)

Figure 3. Identification of the Treatment Period.
Note: In this example (Casoria), the treatment period begins with the election of Casoria's local government in 2002 to its dissolution in 2005. During this period, organized crime was colluding with members of the local government. Importantly, the commissioning period (during which the municipalities are under the administrators sent from Rome), and the years afterward are excluded in the analysis. As explained in Section 3, this is to avoid any post-treatment bias that might contaminate the control group.
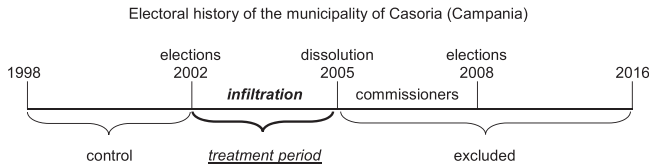
That is, we use the dissolution of a municipal government to identify and construct our treatment. A timeline helps to clarify our approach. Figure 3 shows the case of the municipality of Casoria, in the province of Naples (Campania), which has held local elections in 2002. The elected government was later dissolved at the end of 2005. After that, commissioners sent from Rome took over until the following elections, at the beginning of 2008. In the case of Casoria, the treatment period ranges from the election in 2002 to the dissolution in 2005.[13]

The definition of the control group is crucial in this type of design (Borusyak and Jaravel 2021). Our control group is composed of never-dissolved local governments and by municipalities having experienced a dissolution, before the infiltration started (i.e., with reference to Figure 3, the period before 2002). For treated municipalities, we exclude from sample all post-dissolution years (in Figure 3, all years after 2005). The reasons are two-fold. First, the commissioning years (2005–2008 in Figure 3) must be excluded because during this period no investment can be made, since nonelected commissioners can only handle the ordinary management until new elections are held (Acconcia et al. 2014). Second, the years after the commissioning period need to be excluded too because such period might be inherently different from the pre-treatment years, precisely as a result of the enforcement of the dissolution policy (Daniele and Geys 2015; Fenizia and Saggio 2020).

Our sample period goes from 1998 to 2016. As depicted in Figure 2, there have been many dissolutions before 1998 in Calabria, Campania, and Sicily, 94 of which took place before 1998. To avoid any contamination in the control group, in line with the explanation above, the municipalities in which these dissolutions occurred are dropped from the sample.

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13. While our sample period is 1998–2016, to construct our treatment we collect and use information on the dissolution of local municipalities up to 2020. This is to account for the fact that some of municipalities have been dissolved after 2016 but the treatment years are within our sample period. For example, the municipality of Cropani has been dissolved on the July 31, 2017. However, since the latest election before the dissolution dated May 25, 2014, the Years 2015 and 2016 are coded as treated for the municipality of Cropani.

Moreover, some municipalities have been dissolved twice, once pre-1998 and once after 1998. To avoid any post-treatment bias in our control group, these municipalities are dropped too. If municipalities are dissolved twice during our sample period 1998–2016, we will keep the infiltration years but use as control only the years before the first infiltration. This means that all the period after the first dissolution is dropped, except the years of the second infiltration.[14] The resulting estimating sample includes 124 treated municipalities.

3.2 Matched Sample

Despite Calabria, Campania and Sicily are similar regions along many different dimensions, treated and nontreated municipalities might still be different. To take this into account, as an alternative way to construct the control group, we follow a matching strategy. We employ a nearest neighbor propensity score matching (Rosenbaum and Rubin 1983; Greenaway and Kneller 2009) and pair-treated municipalities with the most similar control municipalities across a set of prespecified characteristics. We match with common support and without replacement, identifying a unique control municipality for each treated one. In performing the matching analysis, all municipalities dissolved before 1998 and municipalities which are coded as treated (i.e., infiltrated) in 1998 are excluded.[15] Table A1 reports the variables used to perform the matching algorithm, employing a set of covariates related to: socio-demographic characteristics, local public expenditure, and geographical features. These are taken at baseline (i.e., 1998) to avoid any post-treatment bias. Table A1, reporting the post-matching balancing test between treated and matched control units, demonstrates that for all covariates no significant difference is observed between treated and control municipalities. The matched sample is made of 232 municipalities, half of which experienced infiltrations and dissolutions.

3.3 Threats to Identification

Our identification strategy needs to account for a number of potential endogeneity issues, determined by the fact that organized crime infiltration within local governments is not random. First, the application of Law 164/1991 may be imperfect. Some municipalities may have been infiltrated but not dissolved because judicial authorities did not detect the collusion. Similarly, some dissolutions may have been done erroneously if there was no real infiltration. As observed by Daniele and Geys (2015, 2016) and Galletta (2017), this should not represent a concern for our estimation strategy as infiltrated municipal governments that are not

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14. There have been instances of city council dismissals which have subsequently been revoked. These case are not coded as treated, they are part of our control group.

15. When a municipality is infiltrated only in the year 1998 and then again later in the sample period, we drop the first infiltration (1998) and keep only the second event.

dissolved would belong to the control group, determining attenuation bias in the empirical results. However, this suggests a word of caution in the interpretation of our results. The likelihood of having some infiltrated municipalities that have not been caught might suggest that we may be measuring the effect of the "low-skilled" mafia organizations, that is, those that have been detected. We cannot discard this interpretation, which is indeed a limitation of our measure.

Another empirical challenge arises from the possibility that our measure of infiltration correlates with local public finances, our outcome. This may occur through at least two channels. First, if criminal groups decide to infiltrate municipalities exhibiting a particular spending pattern, this would generate a problem of simultaneous causality. To tackle this concern, Section 6 shows that infiltrated and noninfiltrated governments were on parallel trends with respect to the outcome variables of interest, prior to the election of the infiltrated government. Second, judicial authorities might start their investigations over risks of infiltration precisely in those municipalities displaying anomalies in their balance sheets. In this case, selection into treatment (i.e., being infiltrated and later dissolved by the national government) would be correlated with the outcome. We minimise this issue in Section 6 by showing that our results do not change when we exclude from the sample those municipalities for which the main motive driving the investigation and dissolution was explicitly related to either public spending or revenues collection.

Another potential issue with our empirical setting is that it assumes infiltrations as binary objects, that switch on during the election and off when the government is dissolved. While our 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 all of them. Criminal infiltrations can be continuous in time and, as a consequence, be already present in some form before the elections. Statistically, this should generate contamination in the control group. We empirically test for this by investigating whether any effects of infiltrations are visible in the years preceding the election of dissolved governments.[16] We deal with this issue by estimating event studies and by running a set of placebo tests in Section 6.

A final potential concern could arise if the dissolution of municipal governments has been manipulated politically. While we cannot rule this out, we have implemented a set of steps to discard this as a possible bias to our estimates. First, we have tested our results to the exclusion of the

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16. It is equally important to check whether the infiltration started *after* the elections. This is something we cannot rule out. Our dynamic panel model provides an overview of the unfolding of the effect across time. Anecdotally, in the majority of the cases, the official documents motivating dissolutions (published by the Ministry of Interior) often indicate the election of the dissolved governments as the key moment when the infiltrations take place.

Year 2012, when Italy was ruled by a technocratic government and an abnormal number of dissolutions have been carried out (Figure 2). Second, a version of the model controls the political color of the regional government and that of the provincial government. This allows controlling for any layer of government above municipalities potentially more (or less) likely to be correlated with dissolutions and infiltrations. This is particularly important given that dissolutions are proposed at the provincial level. Another way to control for this is to include in the model province-year fixed effects, accounting for a higher or lower propensity of provinces to be linked with cases of infiltration and dissolution.

4. Data and Estimating Equation
4.1 Data
The article combines multiple data sources.

4.1.1 Municipal Public Finance
Our primary data source is the Italian Ministry of Interior's Financial Statement Certificates *(Certificati Consuntivi)* database, which contains yearly statistics on (a) public spending, (b) revenues collection, and (c) accounting indicators. These data were collected for all the municipalities of Calabria, Campania, Sicily, Basilicata, and Apulia from 1998 to 2016.[17]

Public Expenditures. We gathered information on total aggregate expenditures, capital expenditures, and current expenditures. Capital and current expenditures are further disaggregated into six specific spending categories, reflecting the services and functions to which the resources have been allocated and spent. They include: general administrative functions, social sectors, construction and waste management, transportation, public education, and municipal police. Appendix C reports additional information on each expenditure item. The *Certificati Consuntivi* report expenditures' decisions made by municipalities during a year and it is subdivided into three categories of spending: spending decisions (*impegni*), year-over-year spending (*conto competenza*), and residuals (*residui*). Spending decisions correspond to the number of financial resources a municipality approves to spend for the current year. Year-over-year spending is the amount of money the municipal government has actually spent, calculated at the end of the year. Residuals consist of the resources that have been allocated in previous years but not yet spent. Throughout our analysis, we adopt spending decisions as our main measure because our goal is to capture solely the conditioning role of criminal infiltration on the allocation of resources across different expenditures. Moreover, data on

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17. Data for the Years 1998–2013 have been received directly from the Ministry of Interior. We have then complemented the dataset for the Years 2014, 2015, and 2016 with information collected directly from the website of the Ministry of Interior, finanzalocale.interno.gov.it/apps/floc.php/in/cod/4. See Appendix C for more information.

residuals and year-over-year spending are more fragmented and less reliable.[18]

Revenues Collection. As explained in Appendix C, Italian municipalities have independence in the collection of two types of taxes: housing property tax and waste tax. Taken together, these taxes cover the majority of total tax revenues, respectively, and represent 35% and 22% of the total revenues budget. We collect information on housing property tax, waste tax, total taxes and and total revenues. For each of these taxes, we then construct measures of efficacy in revenues collection of municipal governments calculated as the ratio between collected revenues and the amount of forecasted revenues the municipality expects to collect within the budget year (Drago et al. (2014)).[19]

Debt and Deficit. While data on total municipal debt are not publicly available, we have adopted the total amount of municipal debt toward third parties as a proxy for it. Although imperfect and not ideal, this indicator generally correlates with total debt.[20] We measure deficit with an indicator equal to 1 if the difference between total revenues and total expenditure is negative.[21]

4.1.2 Local Government Dissolutions Due to Mafia Infiltration

Information on the dates of local government dissolutions is obtained from the decrees of application of Law 164/1991 from the Presidency of the Republic.[22] To construct our treatment over the sample of analysis, 1998–2016, we exploit information on local government dissolutions from 1998 to 2020 (see footnote 13). As described in Section 3, we code as treated the years from the last election before the dismissal of the city council and the date of the dissolution.[23]

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18. Spending decisions are the finalized official amount of resources allocated for a given expenditure item. This is binding by law (Art.183, *Testo Unico Enti Locali*). Year-over-year spending captures the municipal efficiency in actual disbursement of the financial resources allocated. While interesting, this diverge from our main focus and it is not the object of our study.

19. In the Financial Certificates this is the ratio between "*riscossioni conto competenza*" and "*accertamenti.*" Particularly for waste taxes, it is not uncommon that the actual collected revenues, "*riscossioni conto competenza,*" is listed as zero directly in the Financial Certificates. We rely on the official data of the Ministry of Interior and, in these cases, the amount of yearly municipal collected revenues reported to the Ministry is zero and our dependent variable reflects that.

20. We collect information on *residui passivi*, which are defined as the total municipal debt toward third parties. Here a report (in Italian) published by the Ministry of Interior: dait.interno.gov.it/documenti/2017_analisi_residui_passivi_2011_2015.pdf

21. More precisely, deficit is equal to 1 if the difference between revenues and expenditure plus the differences between credits and debt of the municipality (toward third parties) is negative (openbdap.mef.gov.it/it/Home/AvanziSpendibiliEntiTerritoriali)

22. We use the date of the decrees of application of Law 164/1991 from the Presidency of the Republic.

23. We use election dates from the website *dait.interno.gov.it/elezioni/anagrafe-amministratori.*

4.1.3 Local Government Dissolutions Due to Other (Non-Mafia Related) Reasons

We identify all local governments that have been dissolved for non-mafia-related reasons using the Census of Local Italian Administrators, which is a rich dataset including characteristics of local administrations and administrators.[24]

4.1.4 Control Variables

A number of municipal levels time-varying characteristics were obtained from the Italian Statistical Agency (ISTAT) Censuses including unemployment rate, employment share in manufacturing, employment share in agriculture, employment share in services, share of high school, and high school/tertiary degree holders. The data are drawn from the ISTAT Censuses and interpolated and extrapolated over time. Data on yearly municipal population come from the *Certificati Consuntivi*. Our control variables are reported (at baseline) in Table A2.

4.1.5 Criminal Violence

Data of attacks on local Italian politicians have been extracted from the Italian Non governmental organisation *Avviso Pubblico*. On a daily basis, volunteers from *AvvisoPubblico* consult and register news of attacks on Italian politicians and public officers at all levels of government. The information they collect comes either from national/local newspapers or from first-hand sources. Our dataset covers Calabria, Campania, and Sicily for the Years 2010–17.

4.1.6 Electoral Results

We have collected data on municipal election results from 1998 to 2015. The data source for all regions but Sicily is the *Archivio Storico delle Elezioni* of the Ministry of Interior, reporting candidates, parties, and outcomes of local elections of Italy. For Sicily, not included in the dataset, we have used information on local elections reported in the official website of the region. We then used the website of Italian administrators to validate and complement our data.[25] Whenever possible, "civic lists" have been manually coded into either center-left, center, or center-right.

4.1.7 Infiltrated Firms

The Organized Crime Investigation Group of the Italian Financial Police (*Guardia di Finanza*) collects data on firms that are either under investigation or seized because colluded with organized crime groups. These data are confidential and we have been granted access to the list of municipalities where a firm with proven connections with criminal groups was operating, and which business sector it belongs to. Our dataset has cross-sectional municipal variation and we have constructed an indicator equal

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24. Source listed in footnote 23
25. Source listed in footnote 23

to 1 if in a given municipality, there has been a firm seized because of criminal infiltration. We do not have firm-level data.

4.1.8 Waste services and public procurement

We have collected data on the number of households served by waste collection and the amount of total waste collected and processed by each municipality in each year from the Financial Statement Certificates, for the period 1998–2015. We also have partial access to public procurement data for a subset of information and only for the period 2000–12. The main data source is Telemat S.p.a, a leading information provider in the Italian market for reselling information on public contracts. With that, we have constructed a municipal-level yearly dataset on whether tenders have been auctioned and the overall amount of resources auctioned, disaggregated by business sector. These are proprietary data.

4.2 Estimating Equation

The identification strategy is based on a staggered DiD design. We study whether criminal infiltrations have an impact on municipal public finances by comparing municipal governments with and without infiltration, before and after such infiltration begins, by estimating various versions of the following baseline model:

$$Y_{m,t} = \alpha + \beta \text{ Infiltration}_{m,t} + \delta X_{m,1998} * \tau_t + \varphi_m + \tau_t + \epsilon_{m,t} \qquad (1)$$

where $Y_{m,t}$ refers to public finance outcomes in municipality m in year t. More precisely, $Y_{m,t}$ can be total aggregate spending, capital, or current expenditures (disaggregated by components), revenues collection, and debt or deficit.

The key variable in the model is Infiltration$_{m,t}$, a dummy taking value one if the local government is infiltrated by the criminal organization and zero otherwise.[26] The coefficient of interest is β, capturing the impact of the infiltration in year t in municipality m on the local public finances of municipality m at time t.

Vector $X_{m,t}$ denotes a set of control variables. To avoid any post-treatment bias, we take controls at baseline (1998) and interact them with year dummies. Controls include: log population, unemployment share, employment share in manufacturing, employment share in agriculture, employment share in services, share of high school/tertiary degree holders.

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

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26. As explained in Section 3, this indicator takes value one from the last municipal election to the dissolution of the local government.

The main sample is composed of 1350 municipalities of Calabria, Campania, and Sicily over the period 1998–2016. Among the robustness analyses, we adopt a restricted (matched) sample composed of 232 municipalities, or an extended sample including municipalities of two additional regions, Apulia and Basilicata (1738 municipalities in total).

5. Estimation Results

In this section, we present the estimation results. All tables are reported using the same format. Column (1) presents our baseline specification, conditional on municipalities dummies, year dummies, and controls at baseline interacted with year fixed effects. In Column (2), we replicate the analysis adopting a matched sample of 232 municipalities, obtained with the methodology described in Section 3. In Column (3), we exclude the Year 2012, characterized by an abnormally high number of municipal dissolutions.[27] To account for heterogeneous trends within provinces, in Column (4) we include province-year fixed effects. Finally, in Column (5), we expand our dataset by including municipalities from two more regions, Apulia and Basilicata.

5.1 Total Municipal Expenditures

We begin by presenting the estimates of the effect of mafia infiltration on total municipal expenditure. More precisely, the outcome variables, expressed in logarithm, are respectively, total expenditures, capital expenditures, and current expenditures per inhabitant ($\log(S_{m,t}/\text{pop}_{m,t})$, where $S_{m,t}$ is the total/capital/current expenditures of municipality m at time t, and $\text{pop}_{m,t}$ is population). We compare municipal governments with and without infiltration, before and after such infiltration begins. As explained above, the control group is composed of municipalities that have never been dissolved and by dissolved municipalities before the infiltration begins. The years after the dissolution are excluded.

The results are presented in Table 1, with each outcome in a dedicated panel: total expenditure per capita in Panel A, total capital expenditure per capita in Panel B, and total current expenditure per capita in Panel C. Throughout all the different specifications, the coefficients of the infiltration dummy are quite small in magnitude and not statistically significant. Hence, captured local governments do not seem to exhibit higher total expenditures, neither for public investments (capital expenditures) nor for services and maintenance spending (current expenditures). This result is interested per se and it might suggest that, unlike generic rent-seeking pressure groups (Tanzi and Davoodi 1997), when organized crime groups manage to interfere with local government choices they are not interested

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27. This allows us to control for any specific characteristics of the Year 2012, when a technocratic government was in power in Italy. Moreover in Appendix B, Table B3 excludes all the treated municipalities whose dismissal has been implemented in 2012 and replicate the analysis for our main results.

Table 1. Infiltration and Total Per Capita Spending

	(1)	(2)	(3)	(4)	(5)
Panel A—Dep var: total spending pc					
Infiltration	0.00241	0.00175	−0.00775	−0.00451	−0.00246
	(0.0222)	(0.0229)	(0.0223)	(0.0223)	(0.0202)
Observations	22,822	3685	21,648	21,648	29,972
R^2	0.527	0.554	0.531	0.562	0.571
Mean Y	7.006	6.85	7.006	7.006	6.97
Panel B—Dep var: total capital expenditures pc					
Infiltration	0.0255	−0.0131	−0.00281	−0.0247	−0.0270
	(0.0745)	(0.0798)	(0.0730)	(0.0743)	(0.0683)
Observations	22,763	3681	21,593	21,593	29,933
R^2	0.354	0.330	0.363	0.406	0.366
Mean Y	5.48	5.12	5.48	5.48	5.5
Panel C—Dep var: total current expenditures pc					
Infiltration	−0.00505	0.00392	−0.00797	−0.00919	−0.00177
	(0.0147)	(0.0153)	(0.0149)	(0.0141)	(0.0136)
Observations	22,819	3682	21,645	21,645	29,966
R^2	0.813	0.712	0.808	0.817	0.833
Mean Y	6.55	6.53	6.55	6.55	6.52
Municipality dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes
Matched sample	—	Yes	—	—	—
Exclusion Y2012	—	—	Yes	Yes	—
Province*year FEs	—	—	—	Yes	—
Apulia and Basilicata	—	—	—	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. The analysis compares the total spending of noninfiltrated governments with infiltrated governments, before and during the infiltration. Commissioning period and post-commissioning years excluded. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. Outcome variables: Log total per capita spending (Panel A); log total per capita capital expenditures (Panel B); log total per capita current expenditures (Panel C). Controls at baseline (1998) and interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in agriculture, employment share in services, share of high school/tertiary degree holders. Main sample: 1350 municipalities of Campania, Calabria, and Sicily. Column (1) is our baseline specification. Column (2) performs the analysis on a matched sample of 232 municipalities. Column (3) drops the year 2012. Column (4) includes province*year FEs. Column (5) expands the data to Apulia and Basilicata.

in affecting the overall level of total spending.[28] Rather, they may be interested in affecting the allocation of resources—the *composition* of municipal spending—toward sectors of strategic interest for them. Taking advantage of the disaggregation of the data on public expenditures, this is what we investigate next.

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28. Our findings differ from those of Olivieri and Sberna (2014), reporting 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 organized crime, but on criminal infiltration within politics.

Table 2. Infiltration and Capital Spending Categories

	(1)	(2)	(3)	(4)	(5)
	Panel A—Dep. var.: Administration				
Infiltration	−0.00863	0.000464	−0.00528	0.00310	−0.00280
	(0.0160)	(0.0175)	(0.0166)	(0.0164)	(0.0150)
Observations	22,595	3651	21,425	21,425	29,442
R^2	0.248	0.250	0.252	0.271	0.251
Mean Y	0.15	0.15	0.15	0.15	0.15
	Panel B—Dep. var.: Social sector				
Infiltration	−0.00274	−0.00217	−0.00391	−0.00197	−0.00534
	(0.00872)	(0.00994)	(0.00833)	(0.00874)	(0.0081)
Observations	22,473	3624	21,303	21,303	29,290
R^2	0.134	0.155	0.136	0.152	0.132
Mean Y	0.062	0.061	0.062	0.062	0.06
	Panel C—Dep. var.: Construction and waste management				
Infiltration	0.0489**	0.0438*	0.0572**	0.0517**	0.0429**
	(0.0225)	(0.0231)	(0.0229)	(0.0220)	(0.0208)
Observations	22,704	3669	21,534	21,534	29,561
R^2	0.196	0.246	0.201	0.225	0.201
Mean Y	0.34	0.34	0.34	0.34	0.34
	Panel D—Dep. var.: Public transport and lighting				
Infiltration	−0.0224	−0.0345**	−0.0255	−0.0311**	−0.0281*
	(0.0153)	(0.0160)	(0.0155)	(0.0152)	(0.0144)
Observations	22,649	3657	21,479	21,479	29,492
R^2	0.177	0.224	0.180	0.201	0.174
Mean Y	0.22	0.21	0.22	0.22	0.21
	Panel E—Dep. var.: Education				
Infiltration	0.00394	0.0104	0.000358	7.41e-06	0.00414
	(0.0130)	(0.0136)	(0.0130)	(0.0124)	(0.0124)
Observations	22,408	3624	21,238	21,238	29,190
R^2	0.122	0.153	0.125	0.154	0.123
Mean Y	0.09	0.09	0.09	0.09	0.09
	Panel F—Dep. var.: Police				
Infiltration	−0.000802	−0.00099	−0.000866	−0.00089	0.00265
	(0.00114)	(0.00139)	(0.00123)	(0.00128)	(0.00266)
Observations	22,063	3561	20,893	20,893	28,775
R^2	0.130	0.218	0.129	0.149	0.130
Mean Y	0.003	0.0056	0.003	0.003	0.003
Municipality dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes

Continued

Table 2. Continued

	(1)	(2)	(3)	(4)	(5)
Matched sample	—	Yes	—	—	—
Exclusion Y2012	—	—	Yes	Yes	—
Province*Year FEs	—	—	—	Yes	—
Apulia and Basilicata	—	—	—	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. **p < 0.05, *p < 0.1. The analysis compares the capital spending components of noninfiltrated governments with infiltrated governments, before and during the infiltration. Commissioning period and post-commissioning years are excluded. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. Outcomes: yearly capital expenditure spending for Administration (Panel A); social sector (Panel B); construction and waste management (Panel C); public transport and lighting (Panel D); education (Panel E); and police (Panel F). Controls at baseline (1998) and interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in agriculture, employment share in services, share of high school/tertiary degree holders. Main sample: 1350 municipalities of Campania, Calabria, and Sicily. Column (1) is our baseline specification. Column (2) performs the analysis on a matched sample of 232 municipalities. Column (3) drops the year 2012. Column (4) includes province*year FEs. Column (5) expands the data to Apulia and Basilicata.

5.2 Capital and Current Expenditures

Table 2 reports estimates for capital expenditures components, while Table 3 focuses on current expenditures. Each table has six panels representing the main budget items of Italian municipalities. In Table 2, each spending item is measured as a share of total annual capital expenditures, while in Table 3, each component is normalized by total annual current expenditures.

We begin by focusing on capital expenditures as outcome variables in Table 2. A key result emerging from this analysis concerns municipal expenditure allocated for "construction and waste management" during infiltration periods. Table 2, Panel C shows that infiltrated local governments significantly increase spending in this sector. With an estimated coefficient of 0.0489 (Column (1), Panel C), the effect is economically significant as this implies that infiltrated administrations increase the resources dedicated for construction and waste management by 14%. The result remains stable when exploiting our matched sample, when dropping the Year 2012, with the inclusion of province-year fixed effects, and when expanding the dataset to Apulia and Basilicata. We discuss the magnitude and the interpretation of this finding in the subsection 5.5.

When looking at the results for the other sectors, we also observe a reduction in the amount of resources dedicated to "transports and public lighting" (Panel D). The coefficient is always negative, but insignificant in the baseline model and when excluding 2012. No other significant variation of capital expenditures is observed in other sectors: administration, social sector, education, and police.

When we turn our attention to current expenditures (Table 3), most of the spending items display insignificant coefficients with the exception of spending in administration (Panel A). In that case, we observe a negative coefficient across specifications, albeit small in magnitude. These results

Table 3. Infiltration and Current Spending Categories

	(1)	(2)	(3)	(4)	(5)
	Panel A—Dep. var.: Administration				
Infiltration	−0.0106[*]	−0.0130[**]	−0.0116[**]	−0.0134[**]	−0.00888[*]
	(0.00547)	(0.00611)	(0.00565)	(0.00579)	(0.00504)
Observations	22,812	3681	21,638	21,638	29,958
R^2	0.709	0.685	0.705	0.730	0.714
Mean Y	0.42	0.39	0.42	0.42	0.41
	Panel B—Dep. var.: Social sector				
Infiltration	0.000967	0.00347	0.00161	−0.000691	−0.000203
	(0.00558)	(0.00555)	(0.00589)	(0.00573)	(0.00510)
Observations	22,811	3681	21,637	21,637	29,958
R^2	0.606	0.599	0.600	0.616	0.603
Mean Y	0.07	0.085	0.07	0.07	0.07
	Panel C—Dep. var.: Construction and waste management				
Infiltration	0.00764	0.00738	0.00756	0.00546	0.00696
	(0.00520)	(0.00583)	(0.00530)	(0.00502)	−0.00478
Observations	22,810	3681	21,636	21,636	29,956
R^2	0.724	0.706	0.722	0.760	0.718
Mean Y	0.23	0.26	0.23	0.23	0.23
	Panel D—Dep. var.: Public transport and lighting				
Infiltration	−0.00324	−0.0042[*]	−0.0036	−0.000728	−0.00306
	(0.00247)	(0.00242)	(0.00253)	(0.00249)	(0.00230)
Observations	22,809	3681	21,635	21,635	29,956
R^2	0.692	0.714	0.689	0.705	0.677
Mean Y	0.08	0.073	0.08	0.08	0.08
	Panel E—Dep. var.: Education				
Infiltration	0.000635	0.00149	0.000478	0.00205	0.000272
	(0.00196)	(0.00203)	(0.00206)	(0.00202)	(0.00181)
Observations	22,810	3681	21,636	21,636	29,956
R^2	0.807	0.820	0.807	0.817	0.803
Mean Y	0.078	0.074	0.078	0.078	0.080
	Panel F—Dep. var.: Police				
Infiltration	0.000573	0.00181	0.000801	0.0011	0.000691
	(0.00163)	(0.00176)	(0.00167)	(0.00172)	(0.00151)
Observations	22,807	3681	21,633	21,633	29,952
R^2	0.630	0.688	0.627	0.637	0.629
Mean Y	0.056	0.056	0.056	0.056	0.058
Municipality dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes

Table 3.   Continued

	(1)	(2)	(3)	(4)	(5)
Matched Sample	—	Yes	—	—	—
Exclusion Y2012	—	—	Yes	Yes	—
Province*Year FEs	—	—	—	Yes	—
Apulia and Basilicata	—	—	—	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. **p < 0.05, *p < 0.1. The analysis compares the current spending components of nonfiltrated governments with infiltrated governments, before and during the infiltration. Commissioning period and post-commissioning years are excluded. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. The dependent variables are yearly current expenditure spending for Administration (Panel A); social sector (Panel B); construction and waste management (Panel C); public transport and lighting (Panel D); education (Panel E); and police (Panel F). Controls at baseline (1998) interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in agriculture, employment share in services, share of high school/tertiary degree holders. Main sample: 1350 municipalities of Campania, Calabria, and Sicily. Column (1) is our baseline specification. Column (2) performs the analysis on a matched sample of 232 municipalities. Column (3) drops the year 2012. Column (4) includes province*year FEs. Column (5) expands the data to Apulia and Basilicata.

are not extremely robust, as the coefficient loses significance when we expand the dataset to Apulia and Basilicata.[29]

Taken together, the results emerging from the estimates illustrated in Tables 1–3 seem to indicate that organized crime groups capture local governments to bias the allocation of public resources toward sectors that are of strategic interest for them. We provide a more comprehensive interpretation of these results in the next subsection.

5.3 Local Revenues Collection

We now turn to whether the capturing of local government has an impact on the ability of the local governments to collect *revenues*. Given the high degree of devolution of powers to sub-national authorities of the Italian State, municipalities are expected to maintain a certain level of independence and autonomy in collecting their own financial resources. As discussed in Appendix C, local taxes represent an important source of income for municipalities (IFEL 2014).

Our dependent variables are measures of efficacy in revenues collection calculated as the ratio between actually collected revenues and forecasted revenues a municipality expects to collect. We focus on the two main local taxes, property tax and waste tax, and on total taxes and total collected revenues. Property tax and waste tax represent the main source of income in the municipal budget. Total taxes represent the total fiscal inflows of a

29. Given that we are performing multiple hypothesis tests for several outcomes, one may worry that the obtained results are "false-positive." In Table A3 we decrease the number of tests by aggregating together capital and current expenditures for each spending component and expressing them as share of total spending. Across all specifications, the results for construction and waste management and public transport and lighting are confirmed. This is not the case for expenditures in administration, which is not surprising given the size of its coefficients in Table 3.

Table 4. Infiltration and Local Revenues Collection

	(1)	(2)	(3)	(4)	(5)
	Panel A—Dep. var.: Property tax				
Infiltration	−0.0141	−0.0192	−0.0140	−0.00473	−0.0133
	(0.0172)	(0.0181)	(0.0177)	(0.0179)	(0.0162)
Observations	22,082	3583	21,002	21,002	29,075
R^2	0.343	0.405	0.323	0.349	0.359
Mean Y	0.66	0.64	0.66	0.66	0.67
	Panel B—Dep. var.: Waste tax				
Infiltration	−0.0357**	−0.0363**	−0.0405***	−0.0199	−0.0342**
	(0.0143)	(0.0161)	(0.0148)	(0.0144)	(0.0140)
Observations	20,203	3254	19,094	19,094	26,964
R^2	0.540	0.546	0.545	0.571	0.578
Mean Y	0.18	0.136	0.18	0.18	0.22
	Panel C—Dep. var.: Total taxes				
Infiltration	−0.0183	−0.0269**	−0.0206*	−0.0308***	−0.0173
	(0.0124)	(0.0129)	(0.0123)	(0.0114)	(0.0113)
Observations	23,010	3712	21,816	21,816	30,184
R^2	0.581	0.551	0.576	0.624	0.603
Mean Y	0.53	0.50	0.53	0.53	0.58
	Panel D—Dep. var.: Total revenues				
Infiltration	0.00244	0.00497	0.00309	3.12e-05	0.0020
	(0.00928)	(0.0102)	(0.00967)	(0.00941)	(0.00856)
Observations	23,003	3709	21,809	21,809	30,177
R^2	0.403	0.472	0.411	0.455	0.402
Mean Y	0.58	0.59	0.58	0.58	0.58
Municipality dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes
Matched Sample	—	Yes	—	—	—
Exclusion Y2012	—	—	Yes	Yes	—
Province*Year FEs	—	—	—	Yes	—
Apulia and Basilicata	—	—	—	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. The analysis compares the revenue collection of noninfiltrated governments with infiltrated governments, before and during the infiltration. Commissioning period and post-commissioning years are excluded. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. Outcomes: "Property tax" (Panel A), "Waste tax" (Panel B), "Total taxes" (Panel C), and "Total revenues" (Panel D). Outcomes are calculated as the ratio between the actual collected amount of resources (*riscossioni*) and the forecasted amount (*accertamenti*). Controls at baseline (1998) and interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in agriculture, employment share in services, share of high school/tertiary degree holders. Main sample: 1350 municipalities of Campania, Calabria, and Sicily. Column (1) is our baseline specification. Column (2) performs the analysis on a matched sample of 232 municipalities. Column (3) drops the year 2012. Column (4) includes province*year FEs. Column (5) expands the data to Apulia and Basilicata.

municipality. Total revenues represent the overall amount of revenues a municipality receives, including all transfers from a multiplicity of sources such as the region, the National Government, or the European Union.

We present our findings for each dependent variable in a dedicated panel of Table 4. To begin with, it can be noted that the coefficient of infiltration on property tax is always insignificant, while on waste tax it is negative and statistically significant across specifications. The estimated effect is economically sizeable. In the baseline model, infiltrated municipalities exhibit a reduction of approximately 20% in our outcome variable, which is defined as the amount of collected revenues divided by the forecasted revenues on a yearly basis. The coefficient remains negative but loses significance in Column (4) when we include province-year fixed effects. When we turn our attention to total taxes (Panel C), we observe negative coefficients across specifications, which is significant in our matched sample and when including province-year fixed effects, but only barely when excluding 2012. When looking at the combination of results for property tax (Panel A), waste tax (Panel B), and total taxes (Panel C), it appears that municipalities infiltrated by criminal organizations are characterized by a lower efficacy in collecting fiscal revenues, a result that seems to be driven by a reduction in the ability in collecting waste taxes.

The same evidence is not present in Panel D, when we look at total revenues. This may be due to the fact that part of the total annual revenues of Italian municipalities is composed of regional and national transfers, which would partially offset the loss induced by the decrease in fiscal revenues if, as claimed by Barone and Narciso (2015), municipalities with a strong presence of criminal organizations manage to attract more funds from the central government.

5.4 Municipal Debt and Deficit

To conclude, we turn our attention to municipal debt and deficit. As data on total municipal public debt at the yearly level are not available, to proxy for it we adopt debt toward third parties, one of the most important components of total municipal debt reflecting all the outstanding money municipalities is to disburse to their creditors. Debt is measured in two ways. First, by using the total level of yearly debt toward third parties listed in the municipal budget ("total debt"). Second, following Coviello et al. (2021), as share of the total revenues of a municipality ("total debt/total revenues"). To measure municipal deficit, we create an indicator equal to 1 if the difference between total revenues and total expenses is negative.

Table 5 reports the results, described in dedicated panels for each of the three dependent variables. An interesting finding emerging from this analysis is that infiltrated local governments exhibit a higher value of total debt toward third parties, as compared to non-infiltrated local governments. The coefficient of total debt is relatively stable across specifications (Panel A), though it loses significance when using our matched sample. However, when we express this as share of total revenues (Panel B), the coefficient is not significant. Finally, the analysis in Panel C reveals that infiltrated administrations are not more likely than control municipalities to run yearly budget deficits. This may represent a deliberate strategy to avoid attracting external attention.

Table 5. Infiltration and Municipal Debt

	(1)	(2)	(3)	(4)	(5)
	Panel A—Dep. var.: Total debt (log)				
Infiltration	0.105**	0.0729	0.0924**	0.0966**	0.0982**
	(0.0426)	(0.0450)	(0.0437)	(0.0447)	(0.0401)
Observations	23,028	3715	21,834	21,834	30,196
R^2	0.706	0.864	0.704	0.721	0.708
Mean Y	14.43	14.9	14.43	14.43	14.4
	Panel B—Dep. var.: Total debt/total revenues				
Infiltration	−0.00651	−0.0111	−0.00675	0.0179	−0.0107
	(0.0396)	(0.0411)	(0.0411)	(0.0416)	(0.517)
Observations	22,957	3714	21,765	21,765	30,120
R^2	0.282	0.331	0.288	0.323	0.279
Mean Y	0.89	0.75	0.89	0.89	0.87
	Panel C—Dep. var.: Deficit				
Infiltration	0.0311	0.0481	0.0342	0.0343	0.0136
	(0.0313)	(0.0340)	(0.0327)	(0.0321)	(0.0295)
Observations	23,254	3770	22,057	22,057	30,488
R^2	0.223	0.286	0.221	0.238	0.213
Mean Y	0.41	0.38	0.41	0.41	0.42
Municipality dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes
Matched Sample	—	Yes	—	—	—
Exclusion Y2012	—	—	Yes	Yes	—
Province*Year FEs	—	—	—	Yes	—
Apulia and Basilicata	—	—	—	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. **$p < 0.05$, *$p < 0.1$. The analysis compares the municipal debt toward third parties and the municipal deficit of noninfiltrated governments with infiltrated governments, before and during the infiltration. Commissioning period and post-commissioning years are excluded. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. We measure debt with the total municipal debt toward third parties. Outcomes: "Total debt (log)" (Panel A), "Total revenues/total debt" (Panel B), and "Deficit" (Panel C). We exclude from the analysis instances with abnormal values of "Total revenues/total debt" (>10). Controls at baseline (1998) and interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in agriculture, employment share in services, share of high school/tertiary degree holders. Main sample: 1350 municipalities of Campania, Calabria, and Sicily. Column (1) is our baseline specification. Column (2) performs the analysis on a matched sample of 232 municipalities. Column (3) drops Year 2012. Column (4) includes province*year FEs. Column (5) expands the data to Apulia and Basilicata.

5.5 Interpretation of the Results

The evidence reported in the previous section suggests that captured local governments do not increase aggregate public spending, but rather they affect the composition of the spending budget by redirecting resources toward sectors of strategic interest for them. In particular, two main findings emerge as strong and robust across all our specifications. First, captured local governments allocate more resources on construction and waste management and, second, they exhibit a reduction in how effective they are in collecting waste tax.

5.5.1 Construction and waste management

According to the estimates in Table 2, infiltrated governments increase capital expenditure on construction and waste management. An estimated coefficient of 0.0489 (Column (1), Panel C) implies that infiltrated local governments increase the allocation of resources dedicated to construction and waste management by approximately 14%, compared to the average spending for the same item in nontreated municipalities (equal to 0.34). This is a relatively large figure if we consider that functions related to construction and waste management already account for the largest part of the capital account budget (Table A2).

This particular spending item (called "Territorio e Ambiente" in the "Certificati Consuntivi") includes all expenses allocated to waste collection and the construction of buildings, urban planning as well as the management and the maintenance of the local territory. Investing in this sector represents a strategic decision for criminal organizations for many reasons. First, criminal groups need to find an outlet for profits obtained from illegal activities and the construction sector represents an easy and highly profitable option for money laundering. This is not only just because of the financial returns that this sector might generate, but also because the technological and financial barriers to entry are relatively low, making this an ideal area for long-term investment (Dipoppa 2021).

Second, the area of construction and waste management is associated with a set of activities that are deeply embedded within the local territory (De Feo and De Luca 2017). 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 involves many agents: political leaders in charge of awarding public work tenders, contractor enterprises responsible for delivering the project, and a labor pool to carry out the work. Members of organized crime groups may be involved at all levels of this chain, and very similar to the most traditional 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 favor.

Mafias invest in local firms and, in order to generate profits, they need investment opportunities and public funding. To provide empirical evidence of this we have gained partial access to proprietary public procurement data at the municipal level from 2000 to 2012. More precisely, we know the total amount of money tendered out in a municipality in a given year, and its disaggregation by sector.[30] We have focused on the following sectors: roads, building, waste, services, arts, and culture, and a residual sector which includes a set of minor procurement contracts. Procurement on construction and waste management has been grouped together, as the sum of the starting

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30. Unfortunately, we only have a very partial access to the TELEMAT dataset. We do not have all the information available such as the typology of the selection procedure, the winning rebate, and the number of the bidding firms.

values of the tenders for buildings and waste management. Then, a set of outcome variables has been created representing the money tendered out via public procurement by different business sectors as a share of the total. We then investigate whether, conditional on having a public tender, infiltrated local governments exhibit different patterns than noninfiltrated local government, before and after the infiltration begins. The analysis exploits all municipalities with at least an auction of Calabria, Campania, and Sicily from 2000 to 2012 and it is presented in Table A4. The estimates reveal that, conditional on having a tender, infiltrated local government allocates more resources to tenders in the sector of construction and waste management.

This may be an indication of a precise *modus operandi* adopted by criminal organizations and colluded local administrators. The capturing of local governments facilitates the re-allocation of resources toward sectors of strategic interest for criminal groups, such as construction and waste management, and the implementation of public procurement tenders making these resources available to private enterprises. This in turn might enable criminal organizations to provide business opportunities to their controlled firms as well as re-invest the liquidity generated from illicit activities and, more broadly, strengthen their control over the local territory by offering employment opportunities to citizens. Unfortunately, we do not have access to panel data on infiltrated firms to empirically test for this. However, to provide an initial descriptive evidence of such mechanism by exploiting cross-sectional information on cities with registered mafia-controlled firms that have been seized by the Italian Financial Guards. Table A5 shows a positive correlation between local governments that have been dissolved because of criminal infiltration and the presence of seized firms in the same municipalities. A report by Transcrime (2017) on organised crime's investment in the legal economy shows that approximately 29% of the firms seized because of connections with criminal organisations were operating in the construction sector.

5.5.2 Waste Tax

Table 4, Panel B shows a statistically significant reduction in the efficacy of waste tax collection of infiltrated municipalities. This result, alongside that of a significant increase in spending for waste management discussed above, seems to confirm the well-documented presence of criminal organizations in the waste collection sector.[31]

The observed link between waste tax collection and mafia infiltrations can have at least two (nonmutually exclusive) explanations. On the one

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31. The connection between the waste hauling industry and organized crime dates back decades. In the United States, *Cosa Nostra* has been part of New York's commercial sanitation system since at least the 1950s (personal trash is hauled by the city 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 2 weeks because the Mafia had closed the dumps.

hand, it may point to a lower administrative and revenue-collection capacity of local governments during infiltration periods. On the other hand, this evidence may indicate a lower willingness to pay waste taxes by citizens, when infiltrations are in place.[32]

The former interpretation would essentially relate the observed dynamic to generalized inefficiencies of the local public administration during corruption or collusion periods, in line with what was suggested by Daniele and Dipoppa (2017). While this is indeed a possibility, such interpretation is at odds with the fact that we do not observe a significant reduction in the collection's ability of property taxes by infiltrated municipalities. We do find some evidence of a general decrease in fiscal revenues during infiltrations, but these seem to be mostly driven by waste taxes. Furthermore, the result of the placebo test reported in Section 7 shows that municipalities characterized by nonmafia-related administrative inefficiencies (such as failure to approve the budget, political instability, and absenteeism) do not display any significant link with waste tax collection capacity. In light of this, it seems more likely that the lower efficacy in waste tax collection is specific to infiltrated local governments, and directly related to the dynamics induced by the capturing of politicians from criminal organizations.

This links with the latter interpretation, pointing to the fact that citizens may be less willing to pay waste taxes if waste is managed by local administrations directly connected with criminal groups. As suggested by the evidence on public procurement discussed above, infiltrations may increase the probability that waste management is contracted to mafia-controlled companies, exploiting the infiltration precisely to make profit out of it. However, the increase in spending for waste management by these local governments may not necessarily translate into a higher quality of the waste collection service, quite the opposite. Mafia-contracted waste management firms may entail a higher number of environmental crimes, which are indeed a common problem of Campania, Calabria, and Sicily.[33] Therefore, citizens may feel entitled to avoid paying it if waste collection is managed by organized crime and the quality of the waste processing service is low.[34]

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32. While more convoluted, a third explanation looks at the increase in resources allocated to construction and waste management and a decrease in the efficacy in collecting waste taxes as a criminal strategy. When taxes are lower the costs of producing waste are lower. This might lead to an increase of the production of waste which might be in line with the incentives of criminal organizations, since it would require more investments in waste collection and processing.

33. A recent report published by *Legambiente* and the Italian anti-mafia directorate show that our three regions of interest, Campania, Sicily, and Calabria, are respectively ranked first, second, and third in terms of environmental crimes in Italy, with 44.4% of the total crimes detected. The Italian anti-mafia unit has measured the criminal business gravitating around waste management at 19.9 billion only in 2019. The report can be found at legambiente.it/comunicati-stampa/i-dati-del-rapporto-ecomafia-2020-nel-2019-in-aumento-i-reati-contro-lambiente/

34. This is particularly likely in these three regions where tax evasion of the waste tax is more of a problem than in the rest of Italy.

In order to provide some initial descriptive evidence on this, we have collected data from the Financial Certificates on the number of households served by municipal waste collection and the yearly amount (tons) of waste collected and processed by the municipal governments Daniele and Giommoni (2020). The data, available from 1998 to 2015, were extracted for municipalities of Campania, Calabria, and Sicily. We have normalized these indicators by the number of inhabitants and used them as dependent variables (expressed in logarithm) in our model, testing for a link with infiltration. While these variables have a large number of nonrecorded observations which we coded as missing, they can be used to provide some preliminary and very descriptive evidence on the characteristics of waste collection services during infiltrations.

Table A6 shows the results of this exercise. It is interesting to note that in spite of the fact that infiltrated local governments are characterized by higher spending for waste management, they do not seem to exhibit better waste collection capacity than control municipalities. The coefficients are negative, potentially in line with the idea of a worse service during infiltration. The coefficients are, however, not statistically significant and therefore this analysis is suggestive in its nature and should be therefore taken with a grain of salt. Additional evidence on the waste collection capacity of mafia-rigged municipalities is provided by D'Amato et al. (2015), estimating that Italian provinces characterized by the presence of infiltrated municipalities display lower waste collection capacity, and concluding that organized crime within local municipalities represents a strong obstacle to achieving better waste management performance.

The dataset on local waste services also provides descriptive information on the waste collection provider (consortium, private firm, municipality-controlled firm, public entities, PPP , and unknown) used by a given municipality in given years. Exploiting this descriptive information, it is possible to see that, in infiltrated local governments, in 24% of the cases the providers are listed as unknown, a statistically higher number than in noninfiltrated local governments. In such a context, both a lack of institutional trust and low quality of the service might reduce the incentives to pay the municipal waste tax.

5.5.3 Other Results

When looking at the effect of criminal capturing on capital expenditure in Table 2, we also find some evidence of a decrease in the amount of investments allocated for transport and public lighting. Investments in this chapter of the balance sheet include expenditures for local public transportation (e.g., school buses), public lighting, as well as any improvements in the management of road traffic. Reducing the amount of resources devoted to this expenditure may be instrumental to increase resources toward sectors of more strategic importance, such as construction and waste management, without causing an increase in the overall amount of public

expenditure. Investments in transports and public lighting has little (if any) connections with the main activities of criminal organizations. Moreover, a reduction in capital investment in public transport and lighting may not be perceived by the municipal residents in the short term. Hence, this might avoid the risk of electoral backlashes.

Table 3 reveals that captured municipalities are associated with a lower amount of current expenditures for the administration budget item. Under this heading, Italian municipalities record all current expenditures for municipal personnel and for the *ufficio tecnico*, that is, the office responsible for overseeing all municipal expenditures and public procurement. This result should be taken with caution, as the coefficient is only weakly significant and quite small in magnitude across specifications. Moreover, the negative effect seems to be mostly driven by the presence of an upper trend in the legislature before the infiltration (Figure A1, Panel (d)). Finally, the coefficients in Panel A of Table 5 seem to suggest that infiltrated municipalities exhibit a higher level of total debt. This finding should also be taken with a grain of salt, given that debt is imperfectly measured. Furthermore, while we see a statistically significant increase in the total level of debt in Panel A, the result loses significance when we normalize debt by total revenues in Panel B.

6. Exogeneity Checks

In this section, we present a set of tests of the robustness of our design and our estimates. We mainly focus on our two main results, that is, an increase of capital expenditure allocated for construction and waste management and a decrease in the efficacy of waste tax collection during infiltration periods. However, all the exogeneity and robustness checks are also performed for all other outcomes for which we have found some statistically significant evidence in any of our specifications.

6.1 Infiltration Period Starts with the Elections

As discussed in Section 3, the starting assumption of our identification strategy is that the period of infiltration begins at the moment of the election of later-dissolved governments and ends with the dissolution. We test the validity of this assumption in Table 6, where we perform a number of placebo experiments exploiting data on the length and characteristics of municipal legislatures. In Columns (1) and (4), we report the baseline estimates for our two main dependent variables, capital spending for construction, and waste management and waste tax, as also expressed in Tables 2 and 4. We then perform two placebo exercises.

In the first one, we identify all municipalities whose treatment period coincides with the second consecutive term of the mayor. In other words, the same mayor administering the infiltrated (and dissolved) government was in charge during the previous term. One concern could be that the infiltration, and the distortion of public finances, started

Table 6. Timing of the Infiltration

	Construction and waste management			Waste tax		
	(1)	(2)	(3)	(4)	(5)	(6)
Infiltration	0.049[**]	0.049[**]	—	−0.036[**]	−0.044[***]	—
	(0.022)	(0.024)	—	(0.014)	(0.016)	—
Prior legislature	—	—	0.036	—	—	−0.023
	—	—	(0.024)	—	—	(0.021)
Observations	22,704	22,561	22,110	20,203	20,081	19,694
R^2	0.196	0.197	0.199	0.540	0.539	0.539
Mean Y	0.34	0.34	0.34	0.18	0.18	0.18
Municipality dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes	Yes
Excl. same mayor	—	Yes	Yes	—	Yes	Yes

Note: Clustered standard errors at municipality level in parenthesis. ***p < 0.01, **p < 0.05, *p < 0.1. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. Dependent variables are capital expenditure for construction and waste management (Columns (1)–(3)) and waste tax (Columns (3)–(6)). We estimate the analysis on our main sample of all municipalities of Calabria, Campania, and Sicily. All estimations are conditional on municipal fixed effects, year fixed effects, and controls at baseline interacted with year dummies. Controls: population (log), unemployment share, employment share in manufacturing, employment share in services, employment share in agriculture, share of high school degree holders. In Columns (2), (3), (5), and (6) we exclude from the sample all municipality years in which municipalities are ruled by the same mayors in their first term that will be infiltrated and dissolved during their second term. In Columns (3) and (6) we regress *Prior legislature*, a dummy variable taking value of 1 for the entire legislature before the election of a later-dissolved government, on our main outcomes. When doing this, we exclude from the sample infiltrated years. In all estimations, commissioning period and post-commissioning years are excluded.

before the beginning of the legislature, during the first mayoral term. To check if this is the case, when the infiltration period coincides with the second term of the mayor, we drop from the sample years which correspond to the first mayoral term. We report the estimates of this exercise in Columns (2) and (5) of Table 6. The results are reassuring in which both the estimate for construction and waste management and waste tax remain stable and unaffected by the exclusion of all the years of the first mayoral term.

If significant variations in local public finances were taking place in the period preceding infiltrations, the decision to infiltrate a government might be taken as a result of these variations. This would occur if the criminal organizations 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 organized crime. If this was the case, public finance decisions would be the cause, not the consequence, of infiltrations. To take this into account, our second placebo verifies the local finances of the governments immediately preceding those dissolved for mafia infiltration. In Columns (3) and (6) of Table 6, we drop the *infiltration* dummy and introduce a variable capturing to the municipal legislature immediately preceding the infiltration period. "Prior legislature" is a dummy variable equal to 1 for each year of the legislature

before the infiltration.[35] We then run our analysis with this as main explanatory variable and, in order to avoid contamination in the control group, dropping from the sample the treatment years. We expect to find no significant correlation between pre-infiltration governments and any form of public spending or revenue collection distortion. Reassuringly, for both our outcomes, the coefficients of "prior legislature" do not exhibit any statistical significance.

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 Bó et al. (2006), according to which elections constitute a "recruitment process" whereby a new bargaining table between crime and politics is established. This might particularly be true in Southern Italy where the political turnover is very high: 71% of local administrators leave local politics within 5 years and 93% within 10 years (Daniele and Geys 2015). In this context, elections are crucial because they can constitute a turning point whereby the "criminal interest groups" select the political counter-parties that best suit their interests (Wolton 2016). Hence, the difference in all the coefficients from Columns (1) and (4) to Columns (3) and (6) in Table 6 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.

6.2 Parallel Trend—Full Dynamic Specification

Our staggered DiD lend itself to a test of causality in the spirit of Granger (Angrist and Pischke 2008), which allows us to verify the parallel trend assumption and to analyze the year-by-year evolution of our main results. We perform event studies to check whether there is any statistically significant difference between infiltrated and noninfiltrated municipalities before the infiltration takes place. In order to do this, a set of dummy variables is created for each and every year of the treatment period, that is, the period from the governments' election to their dissolution. Similar dummy variables are also constructed for pretreatment years.

Formally, we estimate the following equation:

$$Y_{m,t} = \alpha_m + \theta_{p,t} + \sum_{\lambda=1}^{p} \beta_{-\lambda} \text{Infiltration}_{m,t-\lambda} + \sum_{\lambda=0}^{q} \beta_{+\lambda} \text{Infiltration}_{m,t+\lambda}$$
$$+ \epsilon_{m,t} \tag{2}$$

where Infiltration$_m$ is an indicator equal to one if municipality m is

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35. The number of years observed in the data for the previous legislature depends on the year in which the previous legislation begins. If, for instance, the election of the infiltrated government was in 2000, we will forcibly have information on the previous legislature for two years only (1998–99), due to the start of our dataset in 1998. This is, however, relatively uncommon as the average length of observed prior legislatures is 4.3 years.

infiltrated, q represents the post-infiltration effect, and ρ represents the anticipatory effect. We estimate this dynamic model including this set of leads and lags and controlling for municipal fixed effect, year fixed effects, and province-year fixed effects $\theta_{p,t}$. The omitted category is the year before the election of a later-dissolved government (*1* y prior). We perform this test on both our main sample of municipalities of Campania, Calabria, and Sicily and on a larger sample including municipalities of Apulia and Basilicata. As in our main model, post-dissolution years (including the commissioning period) are excluded and all municipalities dissolved before 1998 are dropped from the sample. In addition, we also exclude local governments infiltrated in 1998, for which we would not have any pretreatment period, and municipalities having experienced two or more dissolutions during our sample period.[36]

Figure 4 displays the result of the analysis for our two main outcomes, capital spending for construction and waste management, and waste tax. We assess the evolution of municipal spending up to 5 years *before* the election of an infiltrated government and 2 years *after* the election. Each point in the figure refers to the estimated coefficient for a given year. We limited the post-period at 2 years after the elections because the average infiltration period is 2.7 years and we want to keep a balanced window.

Importantly, both for expenditures in construction and waste management and for waste tax, the estimates reveal no statistical difference between control and treatment group in the preinfiltration period. The five pretreatment years show that, before the infiltrated governments, there is limited and not significant variation for both outcomes, relative to control municipalities. The same pattern is detectable when looking at the expanded sample, including Apulia and Basilicata. This is providing reassuring evidence on the parallel trend assumption.[37]

Panels (A) and (C) of Figure 4 show an increase in resources for construction and waste management in the first and second year after municipal elections (i.e., second and third year of legislature). Panels (B) and (D), focusing on waste taxes as dependent variable, also display a variation in infiltrated vis-á-vis noninfiltrated municipalities in the first and second year after the election of the infiltrated government.

In Figure A1, we replicate the analysis for all other outcome variables displaying statistically significant links with infiltration in any of the specifications in Tables 2–5: current spending for administration, capital spending for transport and lighting, total revenues, and municipal debt. Current expenditure for administration is the only expenditure item that

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36. We drop municipalities with two or more occurrences of infiltration because in these instances the pretrends for the second dissolution would suffer from post (first) treatment bias making the event study less rigorous and reliable.

37. The magnitude of the coefficients in the post treatment period is different than those of the DiD main estimates because, as described above, we are exploiting a different sample, i.e. municipalities dissolved only once.

Campania, Calabria, Sicily

Campania, Calabria, Sicily, Apulia, Basilicata
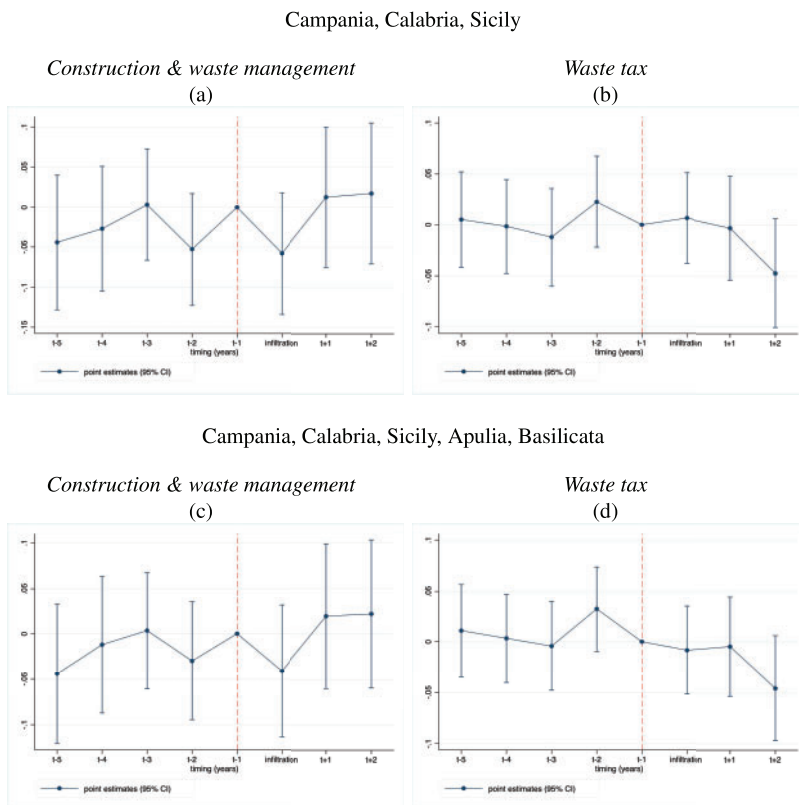
Figure 4. Dynamic Panel Estimation (event study). Campania, Calabria, and Sicily *Construction and waste management*. (A) *Waste tax*. (B) Campania, Calabria, Sicily, Apulia, and Basilicata *Construction and waste management*. (C) *Waste tax*. (D) Dots refer to point estimates, spikes to 95% confidence intervals. We include dummy variables relative to 5 years prior to and 2 years after the election of the infiltrated government. The omitted category is the first year before the elections of the infiltrated government. We keep a balanced window across periods. The outcome variables are capital spending for construction and waste management (Panels (A) and (C)) and waste tax collection efficacy (Panels (B) and (D)). Sample: municipalities of Calabria, Campania, and Sicily (Panels (A) and (B)), municipalities of Calabria, Campania, Sicily, Apulia, and Basilicata (Panels (C) and (D)). Years *after* the dissolution of the infiltrated governments are excluded. Moreover, municipalities with two or more dissolutions are excluded, i.e. the sample is composed by municipalities dissolved only once. Estimates are conditional on municipality fixed effects, year fixed effects and province*year fixed effects. Standard errors clustered at the municipal level.

seems to reveal some statistical difference between treatment and control group before the beginning of the infiltration. This might suggest that the coefficients in Table 3 are driven by an upper trend in the pre-period rather than being a consequence of the criminal infiltration and, for this reason, we do not consider it as a robust result.

For all other results, Figure A1 does not seem to reveal any statistically significant difference between control and treatment group. However, the size of the coefficients of the five pre-periods is more volatile and unstable. This makes these results less strong than those presented in Figure 4 and for this reason we are more cautious in interpreting them. Figure A1 also reports event studies for all the other expenditure items of the municipal budget, even if for them no significant link with infiltration was found. We do not observe any presence of statistical difference between treatment and control municipalities before the beginning of the infiltration.[38]

6.2.1 Bacon Decomposition

When there is variation in the timing of the treatment, and the effects are dynamic, the estimated coefficient represents a weighted average of these dynamic effects and some of the weights can be negative (Chaisemartin and D'Haultfoeuille 2020; Goodman-Bacon 2021). This is because the "control group" in some of the two-by-two comparisons may be treated in both periods. To explore whether this issue is at play, we compute the number of negative weights in our setting and the type of comparisons they refer to. More precisely, purely as a diagnostic test, we implement a Bacon decomposition Goodman-Bacon (2021) for each of our main results. In Figure A2, we report the results and show that the negative weights problem should be limited in our empirical setting since the comparison receiving the highest weight is between treated units versus never treated units.[39]

6.3 Test for Selection into Treatment Correlated with Outcome Variable

Our results indicate that infiltrated local governments spend on average more on construction and waste management and are less effective in collecting waste taxes. 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, the selection into treatment would be correlated with the dependent variable, inducing bias in our estimates.

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 explicitly reported to be associated with anomalies in the

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38. The unique exception is a marginally significant coefficient for total expenditure in social services Panel i), but only in period $t-1$.

39. We also computed the diagnostic of (Chaisemartin and D'Haultfoeuille 2020), *twowayfeweights*. Under the common trend assumption, the beta estimates for construction and waste management is a weighted sum of 345ATTs, with 335ATTs receiving a positive weight and 10 a negative weight. For waste tax, out of a weighted sum of 292ATTs, 281 receive positive weights and 10 negative weights.

balance sheets.[40] Table A7 reports the results, shown for all our key outcomes.

Columns (1)–(3) focus on capital expenditures in construction and waste management, Columns (3)–(6) provide points estimate for waste tax and total taxes, respectively. Even when dropping from sample municipalities characterized by this type of mafia dissolutions, the coefficients of the treatment dummy are very similar in magnitude with respect to our main analysis reported in Section 5. While we cannot rule out the possibility that some investigations started because of anomalies in the balance sheets, this exercise is reassuring, in that it suggests that excluding those municipalities whose dissolution was explicitly motivated by oddities in the expenditure levels does not affect our results in any significant way. In Table A15, we perform the same exercise for our additional results.

7. Robustness Checks

In the previous section, we provided some fundamental tests for our identification strategy. In this section, we perform a number of additional robustness tests might affect the empirical results. In doing so, we focus and comment mostly on our two main results, increase in capital expenditure allocation for construction and waste management and a reduction in the ability to collect waste taxes.[41]

7.1 Placebo Test: Mafia-Unrelated Dissolutions

A concern related to the changes in the public finances of infiltrated governments is that, rather than being caused by the mafia, they are driven by some inherent characteristics of local governments such as inefficiencies of the public administration, mismanagement, or low quality of the local administrators. In order to test for this, we exploit the fact that in Italy local legislatures can be interrupted for reasons entirely 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. This type of events is indubitably a bad outcome for a newly elected local government because if a government is dissolved the elected politicians cannot run again in the following election. Thus, politicians have every incentive to avoid this scenario. Yet, these dissolutions are relatively common in our sample and time-span—in the period from

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40. To perform this test, we exploit official statements on the dissolutions. These documents contain descriptions not only of the final reason for the dissolution, but also some information on why the investigation started in the very first place. We exclude from our sample all the municipalities for which (a) the investigation started and/or (b) the reason for the dissolution was explicitly reported to be associated with spending related distortions. To the extent that the reasons behind the beginning of an investigation are not always evident and clearly distinguishable, the analysis is subject to measurement error.

41. Table A15 replicates these tests for all other public finance items related with infiltration: current spending for administration, capital spending for transport and lighting, total revenues, municipal debt.

1998 to 2016, there were 439 cases of nonmafia-related early terminations of municipal legislatures within the three regions of analysis. We use these instances as proxies for unstable governments and for low quality of elected politicians. As a robustness, we then test whether our main results were driven by these characteristics of inefficient local governments, rather than by criminal infiltrations. We replicate the estimates of model (1) using "Mafia-unrelated dissolution" as the main explanatory variable, a dummy taking value 1 for all the years from the election of the local government to its early termination for nonmafia-related reasons.

The results of this placebo test for our main outcome variables are presented in Table A8. We compare local government dismissals for nonmafia-related reasons with nondissolved governments, before and after the dismissal takes place, using the sample of municipalities of Calabra, Campania, and Sicily and excluding from sample all local governments dissolved for criminal infiltration. Columns (1) and (3) replicate our baseline specification. In Columns (2) and (4), we include province-year fixed effects. There are no statistically significant coefficients, suggesting that our main results do not seem to be driven by other nonmafia-related factors such as inefficiencies in the public administration. Table A9 reports the results of this exercise for all other outcomes.

7.2 Political Business Cycle

A legitimate concern is that our findings might be confounded by political business cycles. We tackle this issue nonparametrically by creating an election-year variable which represents the count for each year of each legislature. We then replicate our main analysis including a set of dummy variables that take value 1 for each election-year. Table A10 report estimates of our baseline model including election year dummies (Columns (1) and (4)), we then drop from sample the Year 2012 (Columns (2) and (5)) and add province-year fixed effects (Columns (3) and (6)). Our main findings remain stable across specifications with the only exception of waste, when including province-year FEs.

7.3 Test for Spillover Effects

Previous research has demonstrated that municipalities neighboring those dissolved for mafia infiltration tend to respond to their neighbors' dissolution by reducing the overall level of public investment (Galletta 2017; Tulli 2019). If some municipalities artificially lower their spending as a response to the dissolution of a neighboring municipality, our control group may be biased and so would be our results. In order to discard the possibility that the findings are driven by such spillover mechanism, we replicate our estimates by excluding from sample all municipalities located in the vicinity of those dissolved for mafia infiltration at any moment during the 1998–2016 period. Geographical proximity is defined in three different ways. The first

definition considers as neighbors of dissolved municipalities all those municipalities sharing a border with them during the sample period. In such a way, 244 municipalities of Campania, Calabria, and Sicily are dropped. The two other definitions of proximity are based on distance. Neighboring municipalities are considered as those within 1 or 5 km from dissolved ones. This entails dropping 266 municipalities from our sample of three regions in the former case, and 413 in the latter case.

The results are displayed in Table A11. The coefficient of total capital expenditures is slightly larger than that of Table 1. This might suggest that , on average, municipalities which are neighbors of dissolved local governments tend to exhibit a decrease in public spending. Yet, as in Table 1, the coefficient of the treatment dummy is not statistically different from zero, indicating that total capital expenditures during infiltrations are not significantly different from noninfiltrated periods. Our key results remain unaffected by the exclusion of neighboring municipalities.

7.4 Attacks to Politicians

Next, we test for the relationship between mafia violence and criminal infiltration. To do so, we adopt municipal-level data on violent attacks against local politicians and administrators perpetrated by organized crime groups.[42] We merge this information with our data and obtain a sample composed of the municipalities of Calabria, Campania, and Sicily over the period 2010–16. We then create a dummy variable, "Attacks to politicians" which takes value 1 if there has been violence against local administrators in a given municipality.[43]

We then regress this measure on our standard infiltration variable. The results, reported in Table A12, indicate that there is no statistical correlation between the capturing of local politicians and mafias' attacks against them. In Column (2), we also test whether there is any violence against politicians in the year before the infiltration to the municipal council, finding no evidence of it. While one may expect that criminal infiltrations give rise to an increase in violent activities—as criminal groups may impose their will on administrators through violent means—engaging in violent behavior when infiltrated may be counterproductive for mafia organizations, because it may undermine their potential to bias the allocation of public resources. In Table A13, we run our main specification (Equation 1), but measuring organized crime presence using incidents of attacks to politicians and excluding municipalities dissolved for criminal infiltration. Results show that these

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42. The dataset is constructed using information collected by Avviso Pubblico, an Italian NGO that systematically record news of attacks to local Italian politicians. The data covers the Years 2010–17. As studied by Daniele and Dipoppa (2017) the violence targeted at politicians is not sporadic. From 2010 to 2017 there were, on average, 301 attacks against Italian politicians.

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

episodes of violence against local administrators seem to be uncorrelated with the spending components that, on the opposite, are affected by the criminal infiltration in local councils.

7.5 Organized Crime and Politics

A legitimate question is whether our results are truly driven by criminal infiltration or, simply by some unobserved political characteristics. To address this issue, we augment our dataset with information on local election results and local political characteristics of all municipalities of Calabria, Campania, and Sicily from 1998 to 2016.[44] Our primary data sources for political variables are the Historical Archive of Local Elections of the Italian Ministry of Interior and the database on local administrators, also available from the Ministry of Interior.

To test for the possibility that our main results are biased by some omitted political variables correlated both with infiltrations and with local public finances, we replicate our main model controlling for key political elements potentially linked with infiltrations, by estimating:

$$
\begin{aligned}
Y_{m,t} = \alpha &+ \beta \text{Infiltration}_{m,t} + \gamma P_{m,t} + \xi G_{r,t} + \psi G_{p,t} + \vartheta X_{m,1998} * \tau_t + \varphi_m \\
&+ \tau_t + \epsilon_{m,t}
\end{aligned}
\tag{3}
$$

$P_{m,t}$ is sub-divided into a set of variables referring to key political features of the local government. First, we focus on (lack of) electoral competition (Schleiter and Voznaya 2014), and in particular on the cases where there is only one candidate potentially eligible for mayor because no other electoral lists were presented (variable "single candidate").[45] Second, to minimize the risk that our results are driven by binding term limits affecting the behavior of politicians (Besley and Case 2003; List and Sturm 2006; Alt et al. 2011; Ferraz and Finan 2011), we exploit the fact that up until 2014 all mayors had a term limit of two mandates, and control for the variable "last mandate."[46] Third, infiltrations may be systematically correlated with the political color of the local, provincial, or regional government.[47]

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44. It is relatively common that local municipal elections in Italy are won by civic lists. In order to not lose these instances, we have manually coded them into the three party categories - centre right, centre left, centre party - by exploiting information on the political party affiliation of the civic list mayoral candidates. Local elections results and manual coding of the civic list has been completed only until 2015.

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

46. While mayors can run for a third term after a term break, third-term candidacies are rare. We drop these instances from the sample.

47. Recent evidence has shown that the mafia sells votes to the party that has more core supporters and it is therefore expected to win (De Feo and De Luca 2017). In Sicily, the strongest political relationships developed by the mafia have been with the Christian Democrats (*Democrazia Cristiana*, DC) and then after the DC's demise in 1994, with the party Forza Italia (Buonanno et al. 2016).

We include in the model dummy variables referring to whether the municipal government is ruled by center-left or center-right parties. Finally, $G_{r,t}$ and $G_{p,t}$ are dummy variables taking value one if the regional or provincial governments, respectively, are ruled by left-wing parties. These two controls can be included only if the model is estimated without province-year fixed effects.

The results, displayed in Table A14, show that the coefficients for our two main results remain remarkably similar and significant even when controlling for key political factors. This analysis provides reassuring evidence that the documented variations in capital expenditures for construction and waste management and waste tax in captured local governments were not confounded by omitted political characteristics potentially correlated with the infiltration.

8. Conclusion

Collusion and corruption distort the correct functioning of democratic systems. 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. In this article, we have focused on the cases of collusion between organized crime and local politicians in Southern Italy, analyzing the way in which these may distort local government decisions on matters of public finance.

The findings indicate that collusions between organized crime and politicians affect the allocation of public resources and the ability of local governments to collect fiscal revenues. Our analysis suggests that while the overall allocation of financial resources of local governments remains unaltered, the resources dedicated for specific components of public finance vary significantly as a result of infiltrations. In particular, DiD estimates reveal that infiltrated municipalities commit to invest higher shares of resources in construction and waste management, and are less effective in collecting waste taxes. These results are robust to changes in specifications and to a series of robustness checks.

These findings shed some light on the strategy of organized crime when it endeavors to take control of local politics and consequences for local state capacity. Interestingly, influences on political choices perpetrated by organized crime seem to impact on public finances in a different way as compared to generic forms of political interference as identified in the literature. While previous empirical studies on the capturing of political decision-making have found that the undue influence of powerful interest groups on politics (e.g., through corruption) determines a general inflation of public capital expenditures (Tanzi and Davoodi 1997), our analysis reveals that mafia infiltrations do not necessarily entail higher public spending overall, which may increase the probability of mafia's political trustees to be noticed and possibly removed from power for financial

instability reasons. Rather, local finances are modified only in the key sectors where the mafia has interests to protect. In particular, the largest influence on the municipal financial budget seems to involve a substantial diversion of investment funds toward the construction and waste management sector, which is considered crucial for mafia groups in order to reinforce their presence locally, protect their traffics, and further increase business profits (Gambetta 1993). Despite more and better evidence is needed, this seems to occur through disproportionate amounts of money tendered out in this sector during infiltrations, which do not translate into better public services for citizens.

The fact that infiltrated governments do not appear to be more likely to incur in financial mismanagement issues makes it more complicated to detect and remove them. As a consequence, in local territories where the presence of the mafia is more pervasive, efforts to "clean up" legal institutions from politicians linked to criminal organizations must be considerable. The 164/1991 law has allowed to discover and put an end to hundreds of collusion cases, but the relative frequency of repeated dissolutions in the same municipality (sometimes after just a few years) demonstrates that more powerful legislative tools are needed to completely eradicate the phenomenon of political infiltrations. A strengthening of the law allowing mafia-related government dissolutions, under discussion in these years (Cantone and Di Feo 2014), may prove helpful. However, this reform could be insufficient if not coupled with measures preventing any potential distortions to democratic competition at local elections. Equally important to limit the local power of mafia clans would be to guarantee public services and employment opportunities in the small towns and urban neighborhoods where organized crime currently has the upper hand.

How harmful is a protracted mafia-capturing of political systems for the socio-economic development of local communities? This will depend on how detrimental for the economy is the distortions in public finances and political competition identified by our study. While we have briefly discussed the negative implications of such interference, our estimates do not calculate their precise welfare impact. We leave the task of quantifying the socio-economic effects of infiltrations to future research.

To conclude, our analysis has unveiled the impact mafia infiltrations may have on policy choices. Our study contributes to a deeper understanding of such phenomenon and, possibly, aid in its prevention.

Conflict of Interest Statement

None declared.

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Appendix
Appendix A
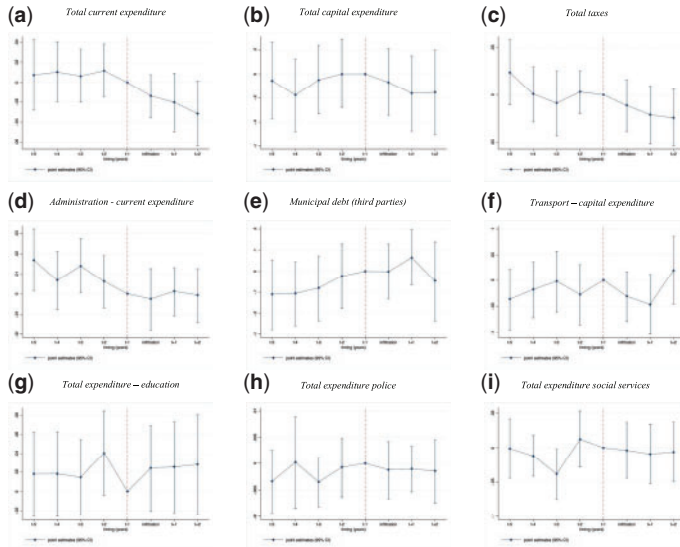
Figure A1. Event Study—All Outcomes. *Note:* Event study. Dots refer to point estimates, spikes to 95% confidence intervals. We include dummy variables relative to 5 years prior to and 2 years after the election of the infiltrated government. The omitted category is the first year before the infiltration. The outcome variables are: total current expenditure (a), total capital expenditure (b), total taxes (c), current expenditure for administration (d), municipal debt (e), capital spending for transport (f), total expenditure for education (g), total expenditure for municipal police (h) and total expenditure for social services (i). Sample of municipalities of Campania, Calabria, and Sicily. All years *after* the dissolution of the infiltrated governments are excluded. Municipalities with two or more dissolutions are excluded. Estimates are conditional on municipality fixed effects, year fixed effects and province*year fixed effects. Standard errors clustered at the municipal level.
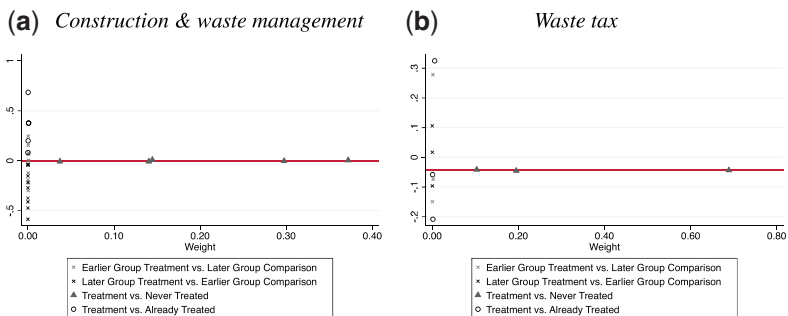
Figure A2. Bacon Decomposition. *Note:* Bacon decomposition for our main results: *construction and waste management (a) and waste tax (b)*. In the figure, the two panels report visually the distribution of the weight in the 2×2 difference in differences with staggered timing. The weights are reported in the table.

Bacon decomposition

	Construction waste management—weight (1)	Waste tax—weight (2)
Earlier T versus later C	0.006	0.004
Later T versus earlier C	0.001	0.000
T versus never treated	0.991	0.987
T versus already treated	0.002	0.008

Note: The table shows the relative weights of the 2×2 difference in differences regressions. Goodman–Bacon break downs the average DD estimates in four comparisons. Treated units versus never treated unit exhibit the highest weight for both outcome variables.

Table A1. Matching—Balancing Test

Municipal characteristics	Mean treated	Mean control	*t*-test	*p*-value
Population (log)	8.87	8.93	−0.36	0.719
Employment share	0.226	0.232	−1.22	0.223
Unemployment share	0.1	0.099	0.53	0.597
Share employment industry	0.181	0.18	−0.02	0.986
Share employment in services	0.53	0.528	0.09	0.932
Share employment in agriculture	0.141	0.146	−0.37	0.713
Share with high school degree	0.203	0.204	−0.12	0.901
Share of illiterates	0.0443	0.044	−0.09	0.93
Total municipal spending per capita (log)	6.64	6.67	−0.6	0.547
Total municipal area (km^2)	47.088	58.69	−1.46	0.146
Municipal altitude (log)	4.86	4.82	0.18	0.854
Total number of houses (log)	8.23	8.32	-0.57	0.568
Distance from the coast	10078	8980.4	1.04	0.297
Landlocked municipality	0.603	0.54	0.93	0.355
Distance from the region capital	22.742	23.057	−0.18	0.86

Note: The table performs a nearest neighbor propensity score matching and pairs treated municipalities with the most similar control municipalities across a set of pre-specified characteristics. We match with common support and without replacement. The table reports the variables used to perform our matching algorithm. The table reports a set of covariates related to: socio-demographic characteristics, local public expenditure, and geographical features. These are taken at baseline (i.e., 1998). The matched sample is made of 232 municipalities, half of which experienced infiltrations and dissolutions.

Table A2. Descriptive Statistics

	Campania, Calabria, and Sicily			Campania, Calabria, Sicily, Apulia, and Basilicata		
	Obs	Mean	Std dev	Obs	Mean	Std dev
Total expenditures per capita						
Total	25,189	1320.1	1169.8	32,478	1299.1	1208.6
Capital expenditures	25,192	566.36	1067.73	32,507	567.71	1087.33
Current expenditures	25,191	753.66	338.18	32,480	731.32	335.66
Capital expenditure (share of total)						
Administration	24,923	0.151	0.218	31,898	0.15	0.21
Social sector	24,787	0.062	0.135	31,732	0.062	0.133
Construction and waste management	25,032	0.345	0.295	32,017	0.334	0.298
Public transport and lighting	24,976	0.222	0.242	31,947	0.215	0.237
Education	24,730	0.091	0.163	31,639	0.090	0.161
Municipal police	24,362	0.003	0.02	31,201	0.0036	0.020
Current expenditure (share of total)						
Administration	25,153	0.425	0.097	32,436	0.41	0.0957
Social sector	25,152	0.073	0.061	32,436	0.078	0.061
Construction and waste management	25,151	0.237	0.089	32,434	0.233	0.086
Public transport and lighting	25,149	0.082	0.042	32,433	0.083	0.041
Education	25,151	0.078	0.039	32,434	0.0801	0.039
Municipal police	25,148	0.057	0.027	32,430	0.058	0.026
Municipal revenues (efficacy measure)						
Property tax	24,316	0.665	0.22	31,444	0.67	0.22
Waste tax	22,264	0.179	0.296	29,147	0.223	0.314
Total taxes	25,388	0.53	0.18	32,699	0.55	0.18
Total revenues	25,381	0.583	0.176	32,692	0.588	0.17
Debt and deficit						
Debt as share of revenues	25,334	0.896	0.96	32,634	0.868	0.93
Total debt (log)	25,407	14.44	1.22	32,712	14.48	1.212
Deficit	25,650	0.417	0.493	33,022	0.426	0.495
Municipal characteristics (at baseline 1998)						
Population (log)	25,650	8.253	1.137	33,022	8.338	1.155
Share employed	25,650	0.254	0.044	33,003	0.259	0.043
Share unemployed	25,631	0.083	0.035	32,984	0.081	0.033
Share employed in industry	25,631	0.206	0.068	33,003	0.217	0.071
Share employed in services	25,574	0.547	0.137	32,946	0.542	0.129
Share highly educated	25,650	0.215	0.058	33,003	0.214	0.056

Continued

Table A2.   Continued

	Campania, Calabria, and Sicily			Campania, Calabria, Sicily, Apulia, and Basilicata		
	Obs	Mean	Std dev	Obs	Mean	Std dev
Share illiterate	25,631	0.046	0.027	32,984	0.045	0.026
Share employed in agriculture	25,650	0.14	0.101	33,003	0.153	0.099
Political variables						
Prior legislature	25,650	0.017	0.130	33,022	0.013	0.114
Last mandate	25,521	0.317	0.465	25,521	0.317	0.465
Right party	25,611	0.207	0.405	25,646	0.207	0.405
Left party	25,611	0.359	0.480	25,646	0.359	0.479
Center party	25,611	0.425	0.494	25,646	0.424	0.494
Civic list	25,611	0.045	0.207	25,646	0.046	0.210
Single candidate	25,650	0.008	0.090	33,022	0.007	0.084
Treatment variable and placebo treatment						
No. of infiltrated municipalities (1998–2016)	—	—	157	—	—	168
Infiltrated 1998–2016, excluding municipalities dissolved before 1998	—	—	124	—	—	135
No. of mafia-unrelated dissolutions (1998–2016)	—	—	439	—	—	595

Notes: The sum of the means of all capital account or current account spending components does not sum up to 1 due to the fact that there are some other minor spending items (Appendix C). The number of infiltrated municipalities in Calabria, Campania, and Sicily is 157. This includes some municipalities which have already been dissolved before 1998 (this includes also municipalities dissolved before 1998 and [also] after, that is, during our sample period). As explained in Section 3, we drop these from the sample to avoid contamination in the control group. The final sample is composed of 124 treated municipalities in Calabria, Campania, and Sicily.

Table A3. Infiltration and Aggregate (Capital and Current) Spending Components

	Administration		Social sector		Construction and waste management		Public transport and lighting		Education		Police	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Infiltration	−0.019	−0.010	−0.003	−0.003	0.056**	0.056**	−0.025	−0.031**	0.005	0.002	−0.000	0.000
	(0.017)	(0.017)	(0.011)	(0.010)	(0.024)	(0.023)	(0.016)	(0.016)	(0.013)	(0.013)	(0.002)	(0.002)
Observations	22,586	21,416	22,463	21,293	22,690	21,520	22,638	21,468	22,399	21,229	22,057	20,887
R^2	0.327	0.353	0.221	0.241	0.252	0.284	0.211	0.233	0.166	0.195	0.490	0.504
Mean Y	0.57	0.57	0.135	0.135	0.580	0.580	0.305	0.305	0.168	0.168	0.606	0.606
Municipality dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exclusion Y2012		Yes		Yes		Yes		Yes		Yes		Yes
Province year dummies	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. $^{**}p < 0.05$, $^*p < 0.1$. The analysis compares aggregate spending categories (sum of current and capital expenditures) of non-infiltrated governments with infiltrated governments, before and during the infiltration. Commissioning period and post-commissioning years excluded. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. The dependent variables are calculated as the sum of the yearly capital expenditure (as share of the total) and yearly current expenditure (as share of the total) for each spending item. Administration (Columns (1) and (2)); social sector (Columns (3) and (4)); construction and waste management (Columns (5) and (6)); public transport and lighting (Columns (7) and (8)); education (Columns (9) and (10)), and police (Columns (11) and (12)). Controls at baseline (1998) and interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in services, employment share in agriculture, share of high school degree holders. Main sample: municipalities of Campania, Calabria, and Sicily.

Table A4. Municipal Procurement

	Share construction and waste		Share roads and transport		Share services		Share art and culture		Share other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Infiltration	0.0589*	0.0622**	−0.0243	−0.0100	−0.0190	−0.0199	−0.0124*	−0.00723	−0.0136	−0.0211
	(0.0311)	(0.0313)	(0.0365)	(0.0359)	(0.0148)	(0.0151)	(0.00750)	(0.00743)	(0.0315)	(0.0314)
Observations	12,374	12,374	12,374	12,374	12,374	12,374	12,374	12,374	12,374	12,374
R^2	0.203	0.226	0.187	0.224	0.132	0.153	0.168	0.198	0.176	0.209
Mean Y	0.21	0.21	0.195	0.195	0.024	0.024	0.027	0.027	0.23	0.23
Municipality dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province*Year FEs	—	Yes	—	Yes	—	Yes	—	Yes	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. $**p < 0.05$, $*p < 0.1$. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. The commissioning period and the years after that are always excluded. The outcome variables represent the starting value for different municipal tenders. Precisely, in Columns (1) and (2) construction and waste (sum of tenders for buildings and waste), in Columns (3) and (4) roads and transport, in Columns (5) and (6) services, in Columns (7) and (8) art and culture, and in Column (9) and in Column (10) all other residual categories. Outcomes are expressed as share of the total amount of money tendered out by the municipality, conditional on the municipality having had an auction. The sample is all municipalities with at least an auction of Campania, Calabria, and Sicily from 2000 to 2012. Controls at baseline and interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in agriculture, employment share in services, share of high school/tertiary degree holders. Column (1) is our baseline specification conditional on municipalities fixed effects, year fixed effects, and controls at baseline interacted with time dummies. Column (2) introduces province*year fixed effects.

Table A5. Mafia-infiltrated firms and dissolved municipalities.

	Mafia firms	
	(1)	(2)
Municipal dissolution	0.400***	0.196***
	(0.0300)	(0.0324)
Controls	No	Yes
Observations	1350	1346
R^2	0.081	0.304

Note: Clustered standard errors at municipality level in parenthesis. ***$p < 0.01$. The table shows simple correlation between municipalities with cases of firm(s) either seized or under investigation for mafia infiltration and the dissolved municipalities. It employs a cross sectional dataset where mafia firm is a dummy variable equal to 1 if in a given municipality there is a firm linked to criminal organizations according to the Italian Financial Guards. Dissolution is a dummy variable taking value 1 if the municipality has been dissolved. In Column (2), we include socio-demographic controls at municipal level. The cross sectional dataset on municipalities where infiltrated firms are located has been obtained from the Italian Financial Guards.

Table A6. Waste Collection Services

	Number of households served per capita (log)			Tons of processed waste per capita (log)		
	(1)	(2)	(3)	(4)	(5)	(6)
Infiltration	−0.0228	−0.0379	−0.00516	−0.00413	−0.0743	−0.141
	(0.0899)	(0.0923)	(0.0944)	(0.227)	(0.219)	(0.223)
Observations	15,898	14,679	14,677	14,870	13,788	13,774
R^2	0.316	0.316	0.356	0.302	0.332	0.334
Municipal dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes	Yes
Management type dummy	—	Yes	Yes	—	Yes	Yes
Exclusion 2012	—	—	Yes	—	—	Yes
Province*year FEs	—	—	Yes	—	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. The commissioning period and the years after that are always excluded. The outcome variables are (a) the number of households normalized by population and (b) the log of tons of processed waste per inhabitant. Management type dummy: set of dummies for waste management type (e.g., consortium, private firm, municipality-controlled firm, public entitites, Public private partnership (PPP). The sample is composed of municipalities in Calabria, Campania, and Sicily from 1998 to 2015. Controls at baseline (1998) and interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in agriculture, employment share in services, share of high school/tertiary degree holder. These correlations are conditional on municipalities fixed effects, year fixed effects, and controls at baseline interacted with time dummies Columns 2 and 5 include a dummy for the management type. Columns 3 and 6 exclude year 2012 and control for province*years fixed effects.

Table A7. Selection into Treatment

	Construction and waste management			Waste tax		
	(1)	(2)	(3)	(4)	(5)	(6)
Infiltration	0.055**	0.063***	0.057**	−0.040***	−0.046***	−0.025*
	(0.024)	(0.024)	(0.023)	(0.015)	(0.015)	(0.015)
Observations	22,680	21,511	21,511	20,179	19,071	19,071
R^2	0.196	0.201	0.225	0.540	0.546	0.571
Mean Y	0.34	0.34	0.34	0.18	0.18	0.18
Municipality dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes	Yes
Exclusion Y2012	—	Yes	Yes	—	Yes	Yes
Province*Year FEs	—	—	Yes	—	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. The analysis compares capital expenditures in construction and waste management and waste tax of noninfiltrated government with infiltrated governments, before and during the infiltration. For treated municipalities, the commissioning period and all years after that are excluded. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. Municipalities for which the main reason for (a) dissolution or (b) the police investigation in the first place was explicitly reported to be related to distortions in the balance sheets (anomalies in spending patterns) are excluded from sample. These municipalities are San Gennaro Vesuviano, Guardavalle, Terme Vigliatore, Plati', San Gregorio d'Ippona, Montelepre, Casoria, Corigliano Calabro, and Badolato. Hence, the analysis is based on all municipalities for which the investigation for dissolution started for reasons unrelated to public spending. Dependent variables are capital expenditure for construction and waste management (Columns (1)–(3)) and waste tax (Columns (3)–(6)). We estimate the analysis on our main sample of all municipalities of Calabria, Campania, and Sicily. All estimations are conditional on municipal fixed effects, year fixed effects, and controls at baseline interacted with year dummies. Controls at baseline (1998) interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in services, employment share in agriculture, share of high school degree holders. In Columns (2) and (5) we exclude 2012 from the sample. In Columns (3) and (6), we include province-year fixed effects.

Table A8. Mafia-Unrelated Dissolutions—Main Results

	Construction and waste management		Waste tax	
	(1)	(2)	(3)	(4)
Mafia-unrelated dissolution	−0.017	−0.014	−0.007	−0.010
	(0.010)	(0.011)	(0.009)	(0.009)
Observations	22,062	22,062	19,618	19,618
R^2	0.199	0.222	0.535	0.560
Mean Y	0.34	0.34	0.18	0.18
Municipality dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes
Province*Year FEs	—	Yes	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. Mafia-unrelated dissolution is an indicator equal to 1 and it refers to local government whose regular legislature has been interrupted for nonmafia-related reasons. Dependent variables are construction and waste management (Columns (1)–(2)) and waste tax (Columns (3) and (4)). We estimate the analysis on our main sample of all municipalities of Calabria, Campania, and Sicily. Municipalities dissolved for mafia infiltration are dropped from the sample. All estimations are conditional on municipal fixed effects, year fixed effects, and controls at baseline interacted with year dummies. Controls at baseline (1998) interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in services, employment share in agriculture, and share of high school degree holders. In Columns (2) and (4) we include province-year fixed effects.

Table A9. Mafia-unrelated Dissolutions—Other Outcome Variables

	(1) Total capital exp.	(2) Total current exp.	(3) Total expenditures	(4) Administration capital exp.	(5) Social capital exp.	(6) Transport capital exp.	(7) Education capital exp.	(8) Police capital exp.	(9) Administration current exp.	(10) Social current exp.
Mafia-unrelated dissolution	−0.104***	0.001	−0.019	0.013	0.002	0.003	0.001	−0.000	0.001	−0.004**
	(0.039)	(0.005)	(0.013)	(0.008)	(0.005)	(0.008)	(0.007)	(0.001)	(0.002)	(0.002)
Observations	22,119	22,175	22,176	21,966	21,846	22,013	21,792	21,466	22,168	22,167
R^2	0.358	0.837	0.532	0.247	0.133	0.175	0.123	0.139	0.711	0.608

	(1) Construction current exp.	(2) Transport current exp.	(3) Education capital exp.	(4) Police capital exp.	(5) Property tax	(6) Total taxes	(7) Total revenues	(8) Total debt/tot. revenues	(9) Total debt	(10) Deficit
Mafia-unrelated dissolution	0.003	−0.001	0.000	0.000	−0.004	−0.006	0.006	−0.022	−0.021	−0.006
	(0.002)	(0.001)	(0.001)	(0.001)	(0.007)	(0.005)	(0.006)	(0.028)	(0.022)	(0.017)
Observations	22,166	22,165	22,166	22,163	21,430	22,360	22,353	22,309	22,379	22,591
R^2	0.721	0.691	0.806	0.623	0.342	0.580	0.399	0.280	0.707	0.223
Municipality dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Clustered standard errors at municipality level in parenthesis. *** $p < 0.01$, ** $p < 0.05$. Non mafia related dissolutions (NMD) is an indicator equal to one and it refers to local government whose regular legislature has been interrupted for nonmafia-related reasons. The table is divided into two panels and it reports all municipal spending items, revenues, and public finance indicators which are NOT included in Table A8. We estimate the analysis on our main sample of all municipalities of Calabria, Campania, and Sicily. Municipalities dissolved for mafia infiltration are dropped from the sample. The estimation is conditional on municipal fixed effects, year fixed effects, and controls at baseline interacted with year dummies. Controls at baseline (1998) interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in services, employment share in agriculture, and share of high school degree holders.

Table A10. Political Business Cycle

	Construction and waste management			Waste tax		
	(1)	(2)	(3)	(4)	(5)	(6)
Infiltration	0.047**	0.055**	0.048**	−0.034**	−0.039***	−0.018
	(0.023)	(0.023)	(0.022)	(0.014)	(0.015)	(0.014)
Observations	22,704	21,534	21,534	20,203	19,094	19,094
R^2	0.197	0.201	0.225	0.540	0.546	0.571
Mean Y	0.34	0.34	0.34	0.18	0.18	0.18
Municipality dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes	Yes
Election Years	Yes	Yes	Yes	Yes	Yes	Yes
Exclusion Y2012	—	Yes	Yes	—	Yes	Yes
Province*Year FEs	—	—	Yes	—	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. ***$p < 0.01$, **$p < 0.05$. The analysis replicates our main results controlling nonparametrically for election-year fixed effects. For treatment municipalities, commissioning period and years of the commissioning period are always excluded. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. Dependent variables are construction and waste management (Columns (1)–(3)) and waste tax (Columns (3)–(6)). Sample of municipalities of Calabria, Campania, and Sicily. All estimations are conditional on municipal fixed effects, year fixed effects, election-years fixed effects, and controls at baseline interacted with year dummies. Controls at baseline (1998) interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in services, employment share in agriculture, share of high school degree holders. In Columns (2) and (5), we exclude the year 2012 from the sample. In Columns (3) and (6), we include province-year fixed effects.

Table A11. Test for Spillover Effect

	Total spending (1)	Capital spending (2)	Construction and waste management (3)	Waste tax (4)
Panel A: neighbors sharing border				
Infiltration	0.000	0.030	0.069***	−0.037**
	(0.023)	(0.078)	(0.023)	(0.016)
Observations	17,404	17,363	17,315	15,283
R^2	0.527	0.372	0.197	0.552
Panel B: neighbors within 1 km				
Infiltration	−0.002	0.022	0.070***	−0.038**
	(0.023)	(0.078)	(0.023)	(0.016)
Observations	17,016	16,975	16,927	14,930
R^2	0.522	0.371	0.197	0.551
Panel C: neighbors within 5 km				
Infiltration	−0.003	0.017	0.071***	−0.039**
	(0.024)	(0.080)	(0.024)	(0.017)
Observations	14,457	14,420	14,379	12,624
R^2	0.515	0.372	0.198	0.546
Municipality dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes
Exclusion Y2012	Yes	Yes	Yes	Yes

Note: Clustered standard errors at municipality level in parenthesis. ***$p < 0.01$, **$p < 0.05$. Dependent variables are total spending and total capital spending (Columns (1) and (2)), construction and waste management (Column (3)) and waste tax (Column (4)). Panel A: all municipalities sharing a border with those dissolved between 1998 and 2016 are excluded from the sample; Panel B: all municipalities within 1 km from dissolved ones are excluded from the sample; Panel C: all municipalities within 5 km from dissolved ones are excluded from the sample. Sample of municipalities of Calabria, Campania, and Sicily. All estimations are conditional on municipal fixed effects, year fixed effects, and controls at baseline interacted with year dummies. Controls at baseline (1998) interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in services, employment share in agriculture, and share of high school degree holders. In all estimations, we exclude the year 2012 from the sample.

Table A12. Violent Attacks to Politicians and Infiltration

	Infiltration (1)	1 year before infiltration (2)
Attacks to politicians	0.00931	−0.00769
	(0.0126)	(0.00977)
Observations	9232	7901
R^2	0.612	0.194
Municipality dummies	Yes	Yes
Year dummies	Yes	Yes
Controls at baseline	Yes	Yes

Note: Clustered standard errors at municipality level in parenthesis. Test for correlation between violent attacks toward politicians and infiltrations. "Attacks to politicians" is equal to 1 if there has been violence against local administrators in a given municipality. "Infiltration" is the infiltration dummy. Estimation conditional on municipal fixed effects, year fixed effects, and controls at baseline interacted with year dummies. Period: 2010–16.

Table A13. Violent Attacks to Politicians and Public Finances

	Construction and waste management		Waste tax	
	(1)	(2)	(3)	(4)
Attacks to politicians	0.015	0.008	−0.017	−0.016
	(0.022)	(0.023)	(0.018)	(0.018)
Observations	7,680	7,680	6,204	6,204
R^2	0.326	0.344	0.616	0.635
Municipality dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes
Province*Year FEs	—	Yes	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. "Attacks to politicians" is an indicator equal to 1 if there has been violence and/or intimidation against local administrators in a given municipality. Dependent variables are construction and waste management (Columns (1)(2)) and waste tax (Columns (3)(4)). Period: 2010–16. Sample is composed of municipalities of Calabria, Campania, and Sicily. We exclude dissolved municipalities. Estimations are conditional on municipal fixed effects, year fixed effects, and controls at baseline interacted with year dummies. Controls: population (log), unemployment share, employment share in manufacturing, employment share in services, employment share in agriculture, and share of high school degree holders. Columns (2) and (4) include province-year fixed effects.

Table A14. Infiltration and Public Finances, Controlling for Political Factors

	Construction and waste management			Waste tax		
	(1)	(2)	(3)	(4)	(5)	(6)
Infiltration	0.048**	0.048**	0.056**	−0.035**	−0.034**	−0.040***
	(0.023)	(0.022)	(0.023)	(0.014)	(0.014)	(0.015)
Single candidate	−0.006	−0.004	−0.007	0.005	0.008	0.002
	(0.018)	(0.018)	(0.018)	(0.018)	(0.019)	(0.019)
Last mandate	0.001	0.001	0.001	0.004	0.004	0.004
	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)
Center right	−0.010	−0.010	−0.007	0.018**	0.018**	0.019**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Center left	−0.007	−0.007	−0.007	0.023**	0.023**	0.023**
	(0.009)	(0.009)	(0.009)	(0.0093)	(0.0093)	(0.0094)
Observations	22,636	22,520	21,468	20,139	20,023	19,032
R^2	0.197	0.199	0.201	0.541	0.540	0.546
Mean Y	0.34	0.34	0.34	0.18	0.18	0.18
Municipality dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes	Yes
Controls for regional/provincial govt	—	Yes	Yes	—	Yes	Yes
Exclusion Y2012	—	—	Yes	—	—	Yes

Note: Clustered standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$. Infiltration is an indicator equal to 1 capturing the period of criminal infiltration within the local governments. Dependent variables: capital spending for construction and waste management (Columns (1)–(3)), waste tax (Columns (4)–(6)). Single candidate takes value 1 if only one candidate is running for elections; Last mandate takes value 1 if the incumbent is running for the second and last mayoral mandate; Center right/center left/center party take value 1 for the political color of the winning party. When controls for regional/provincial govt are included, the estimates also include dummy variables taking value 1 if the regional or provincial government is ruled by a left-wing party. Sample: municipalities of Calabria, Campania, and Sicily, over the period 1998–2015. All estimates are conditional on municipal fixed effects, year fixed effects, and controls at baseline interacted with year dummies. Controls at baseline (1998) interacted with year dummies: population (log), unemployment share, employment share in manufacturing, employment share in services, employment share in agriculture, and share of high school degree holders. In Columns (2) and (5), we control for the color of the provincial and regional government. In Columns (3) and (6), Year 2012 is excluded.

Table A15. Robustness Checks—Secondary Results

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A—Dep. var.: Public transport and lighting						
Infiltration	−0.034**	−0.026	−0.035**	−0.029*	−0.042***	−0.024
	(0.016)	(0.017)	(0.016)	(0.015)	(0.016)	(0.015)
Observations	3657	21,344	21,455	21,479	17,279	22,582
R^2	0.224	0.201	0.201	0.201	0.204	0.178
Panel B—Dep. var.: Administration						
Infiltration	−0.013**	−0.013**	−0.012*	−0.013**	−0.014**	−0.011*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)
Observations	3681	21,502	21,614	21,638	17,397	22,744
R^2	0.685	0.730	0.730	0.730	0.726	0.709
Panel C—Dep. var.: Total taxes						
Infiltration	−0.027**	−0.035***	−0.033***	−0.030***	−0.028**	−0.018
	(0.013)	(0.013)	(0.012)	(0.011)	(0.012)	(0.012)
Observations	3712	21,680	21,792	21,816	17,546	22,941
R^2	0.551	0.623	0.624	0.624	0.629	0.581
Panel D—Dep. var.: Debt						
Infiltration	0.073	0.131**	0.088*	0.124***	0.106**	0.109**
	(0.045)	(0.051)	(0.046)	(0.045)	(0.045)	(0.042)
Observations	3715	21,698	21,810	21,834	17,555	22,960
R^2	0.864	0.721	0.721	0.722	0.683	0.706
Municipality dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes	Yes
Exclusion Y2012	—	Yes	Yes	Yes	Yes	Yes
Province*Year FEs	—	Yes	Yes	Yes	Yes	Yes
Matching	Yes	—	—	—	—	—
Excl.same mayor pre-diss	—	Yes	—	—	—	—
Selection correction	—	—	Yes	—	—	—
Election years FEs	—	—	—	Yes	—	—
Spillover	—	—	—	—	Yes	—
Local politics	—	—	—	—	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. The analysis compares the current spending components of noninfiltrated governments with infiltrated governments, before and during the infiltration. Commissioning period and post-commissioning years excluded. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. The dependent variables are yearly capital expenditure spending for Transport and public lighting (Panel A); current expenditure for administration (Panel B); total taxes (Panel C); debt toward third parties (Panel D). All estimations are conditional on municipal fixed effects, years fixed effects, and controls at baseline interacted with time dummies. Controls: population (log), unemployment share, employment share in manufacturing, employment share in agriculture, employment share in services, and share of high school/tertiary degree holders. Column (1) performs the analysis on the matched sample of 232 municipalities. From Column (2) onwards we exclude Year 2012 and we include province*year fixed effects. When the infiltration period coincides with the second term of the mayor, we drop from the sample years which correspond to the first mayoral term,Column (2). Column (3) drops municipalities whose dissolution was explicitly related to anomalies in the balance sheets. Column (4) controls for election year fixed effects. Column (5) controls for spillovers. Column (6) includes local electoral characteristics as control. Expect Column (1), matched sample, all other analyses exploit our main sample of 1350 municipalities of Campania, Calabria, and Sicily.

Appendix B: Law 164/1991—Additional Evidence

B.1 Main Reasons Behind Dissolutions

In Table B1, we classify the most common reasons behind the dissolutions of local governments because of criminal capturing. We do this on the basis of the dissolution reports publicly available from the *Gazzetta Ufficiale dello Stato*. The exercise is suggestive in its nature as it is subject to measurement error . It is not straightforward to identify one main typology of infiltration as, in many cases, they are not mutually exclusive.

Direct infiltrations denote instances of mafia affiliates being personally part of a local government. *Indirect infiltrations* are cases where the criminal organizations do not directly place one of their members within the local government, but they manage to exert a significant influence on its composition and policy decisions. This form of capturing is very heterogeneous and it can take a variety of forms. Here we provide a non-exhaustive list of some of the most common typologies.

- *Unexpected public appearances.* These include all instances where there have been unexpected public appearances of criminal mobsters with local administrators (mayor participating in the wedding of a local *mafioso*, dinner between administrators and local mobsters, public parties with the presence of criminal affiliates, etc.). One example is the city of Crispano (Campania), where *"a symptomatic event* [of the infiltration] *was the delivery* [during] *the celebrations* [. . .] *in the presence of the mayor, of a letter with which a well-known exponent of a prominent organized crime group, through the public*
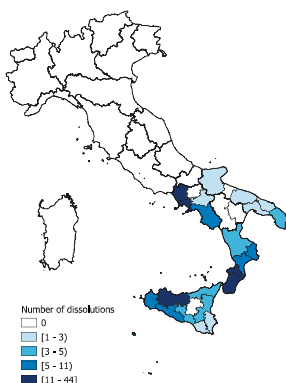

Figure B1. Number of Dissolutions by Province.
Source: Italian Ministry of Interior, authors' own elaboration. The figure reports the number of dissolutions over the period 1998–2018. Sicily: Agrigento (8), Caltanisetta (3), Catania (4), Messina (3), Palermo (21), Ragusa (2), Siracusa (1), Trapani (5). Campania: Avellino (2), Caserta (16), Napoli (29), Salerno (5). Calabria: Catanzaro (9), Crotone (7), Cosenza (3), Reggio Calabria (44), Vibo Valentia (20). Apulia: Bari (1), Brindisi(1), Foggia (4), Lecce (3), and Taranto (1).

expression of good wishes for the event, reiterated his hegemonic role."[48]

- *Mayor-mafia direct involvement.* The mayor can be directly involved in the cases of collusion. In Gricignano di Aversa (Campania), *"the mayor has concluded a pre-election agreement in which he promised future financial benefits to the local camorra clan in exchange for electoral support."*[49]

- *Vote-buying events.* Infiltrations can occur through bribes in exchange for electoral favors. This is the case of Seminara (Calabria), where *"the mafia clan's commitment continued throughout the election campaign through a vote-buying action capable of influencing and controlling the will of the voters."*

Less common (or more likely simply less reported) are all the instances of threats toward the mayor and or the local administrators. These intimidations are more rarely associated with direct infiltration and more commonly correlated with more indirect forms of capturing such as in the case of the city of Niscemi, within the province of Caltanissetta, where the report states that *"the municipality was affected by further criminal episodes, such as damage to the service car of the mayor and the burning of the private car of one of the councillors, as well as acts of intimidation against a municipal employee."*[50]

B.1.1 Mayors' Characteristics.   In Table B2, we descriptively explore the characteristics of the mayors of dissolved local governments. It is interesting to see that the overwhelming of them are men and they are *local*, in that they are either born in the same city or in the same province/region. The average age is 50-year old and the most common professional background is highly specialized (mostly doctors or notary) or coming from the tertiary sector and mostly services.

Table B1. Typologies of Infiltration—Dissolution Reports

	Mean	Std. dev.
Direct infiltration	0.27	0.49
Indirect infiltration	0.73	0.49
Direct infiltration with detected intimidation	0.06	0.24
Indirect infiltration with detected intimidation	0.14	0.35

Note: The table classifies the most common typologies of infiltrations. Information comes from gazzettaufficiale.it

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48. gazzettaufficiale.it/eli/id/2005/11/11/05A10535/sg
49. Full report available at: gazzettaufficiale.it/eli/id/2010/08/21/10A10389/sg
50. gazzettaufficiale.it/eli/id/2004/05/17/04A05056/sg

Table B2. Characteristics of Colluded Mayors

	Mean	SD	p10	p50	p90
Age, gender, and place of birth					
Age	50.36	9.76	38.00	50.00	64.00
Female	0.03	0.17	0.00	0.00	0.00
Born in city	0.66	0.47	0.00	1.00	1.00
Born in province	0.79	0.40	0.00	1.00	1.00
Born in region	0.95	0.21	1.00	1.00	1.00
Born abroad	0.02	0.15	0.00	0.00	0.00
Education					
Primary	0.00	0.07	0.00	0.00	0.00
Lower Secondary	0.02	0.14	0.00	0.00	0.00
Upper Secondary	0.34	0.47	0.00	0.00	1.00
University	0.60	0.49	0.00	1.00	1.00
Years of Education	15.50	3.84	13.00	18.00	18.00
Previous occupation					
Managerial	0.11	0.31	0.00	0.00	1.00
Highly specialized	0.29	0.46	0.00	0.00	1.00
Technical	0.18	0.39	0.00	0.00	1.00
Tertiary	0.23	0.42	0.00	0.00	1.00
Commerce and services	0.02	0.15	0.00	0.00	0.00
Craftsmanship	0.01	0.10	0.00	0.00	0.00
Conductors	0.01	0.11	0.00	0.00	0.00
Other	0.08	0.26	0.00	0.00	0.00
Tenure					
Number of terms	1.43	0.61	1.00	1.00	2.00
Term limit	0.34	0.48	0.00	0.00	1.00

Note: The table provides descriptive statistics of the mayors of dissolved municipalities.
Source: Census of Local Administrators amministratori.interno.gov.it/amministratori/index.html.

Table B3. Excluding Treated Municipalities Dissolved in 2012

	Construction and waste management			Waste tax		
	(1)	(2)	(3)	(4)	(5)	(6)
Infiltration	0.0580**	0.0543**	0.0504**	−0.0302*	−0.0288*	−0.0282*
	(0.0229)	(0.0233)	(0.0210)	(0.0156)	(0.0173)	(0.0151)
Observations	22,653	3618	29,510	20,163	3214	26,924
R^2	0.197	0.251	0.201	0.539	0.546	0.578
Mean Y	0.34	0.34	0.34	0.18	0.18	0.18
Municipality dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls at baseline	Yes	Yes	Yes	Yes	Yes	Yes
Matched Sample	—	Yes	—	—	Yes	—
Apulia and Basilicata	—	—	Yes	—	—	Yes

Note: Clustered standard errors at municipality level in parenthesis. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. The analysis replicates our main results excluding all treated municipalities whose dissolution has been implemented in 2012. For treatment municipalities, commissioning period and years the commissioning period are always excluded. Infiltration is a dummy equal to 1 if the government is infiltrated by organized crime. Dependent variables are construction and waste management (Columns (1)–(3)) and waste tax (Columns (3)–(6)). Sample of municipalities of Calabria, Campania, and Sicily. All estimations are conditional on municipal fixed effects, year fixed effects, election years fixed effects, and controls at baseline interacted with year dummies. Controls at baseline (1998) interacted with year dummies.

B.1.2 Technocratic National Government. As shown in Figure 2, during the technocratic national government in 2012, a significant number of municipalities have been dissolved. In addition to excluding the Year 2012 in all our tables, we report here an additional test where we exclude from the sample all those treated municipalities whose dismissal has been implemented during the technocratic government which ended with the general elections in February 2013. We focus on our two main results and, in Table B3, we show that the estimates are robust to the exclusion of these municipalities in our baseline model, when exploiting the matched sample and when expanding the dataset to Apulia and Basilicata.

Appendix C: Italian Municipalities: Institutional Details and Public Finances
C.1 Italian municipalities.

As of 2016, the year when our time span ends, there were 8010 municipalities in Italy, 1350 of which are found in the three regions of Campania, Calabria, and Sicily, while 388 are in Apulia and Basilicata. The institutional setting of the municipalities is centered 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.

C.2 Public spending components.

In the Financial Statements of the Italian Ministry of Interior, municipal expenditures (current and capital) are sub-divided into several different chapters of spending. The main ones are: (a) general functions of administration, including all expenses related to the management of offices coordinating the internal activities of the municipality; (b) social sectors, including all expenses for the provision of social services and the creation of infrastructure to that aim (kindergartens, retirement homes, and rehab centers); (c) construction and waste management (called "Territorio e ambiente" in the Certificati Consuntivi), referring 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), construction of housing, maintenance and management of the local territory, waste collection, and disposal; (d) public transport and lighting, including expenses to guarantee local public transportation, public lighting, and management of road traffic; (e) public education, including all expenses for all education infrastructure, school maintenance, and school transportation; (f) functions of local police, including the acquisition and maintenance of goods and equipment, cars and office structures.[51]

The average per capita spending in the municipalities of Calabria, Campania, and Sicily over the 1998–2016 period corresponds to €566 euros per inhabitant for the capital account and €753 for the current account. Summing up these two figures, we obtain the average total spending per municipality, 1320 euros per inhabitant. As shown in Table A2, the spending function to which the most annual resources are allocated is construction and waste management, which makes up 34% of the annual capital expenditure budget. As for the current account, spending is highest for administration, followed by construction and waste management. The municipalities are also responsible for tendering and awarding public procurement contracts to the contractor company in charge of carrying out the work.

C.2.1 Data Collection

The data collection has been completed in two phases. First, for the municipalities of Calabria, Campania, and Sicily for Years 1998–2013, we have received data directly from the Ministry of Interior (division of Local Finance) in late 2015. Two spending items, current expenditure in education and public transport, did not have data fully reported for,

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51. The additional chapters of spending are (a) culture, (b) justice, (c) services, and (d) sport.

respectively, Years 2002–10 and Year 2012. We have collected this information directly from the website of the Ministry of Interior.

Second, we have complemented this dataset with information (a) for the municipalities of Calabria, Campania, and Sicily for the Years 2014, 2015, and 2016 and (b) for the municipalities of Apulia and Basilicata for the Years 1998–2016. We have collected this data directly from the website of the Ministry of the Interior with an extraction dated December 2020. [52]

C.3 Municipal revenues.

Revenues of municipalities are composed of two broad categories: (a) fiscal revenues from taxes (*entrate tributarie*) and (b) transfers + nonfiscal revenues. The former category is subdivided into several different subcategories, of which by far the most important are: the property tax (formerly called ICI, now IMU), that is, a tax paid by any household for real estate ownership, and the waste tax (*tassa per lo smaltimento dei rifiuti solidi urbani*), a tax paid by citizens for the service of waste collection provided by the municipality. Property taxes are collected in the following way. From 1998 to 2007, we collect the variable *ICI*. From 2008 to 2011, the accounting of the italian municipalities changes, and reports "*ICI abitazione principale*" and "*ICI su fattispece diversa abitazione principale.*" For these years, we use the sum of these two items. In 2012, the balance sheet reports "*IMU abitazione principale*" and "*IMU su fattispece diversa abitazione principale.*" For this year, we take the sum of these two items. From 2013 to 2016 we take the total, "*Imu—imposta municipale propria.*"

As far as the waste tax is concerned, from 1993 until 2012, it was called TARSU, then TARES, now from 2014 TARI. Its rate depends exclusively on the size of a house and the number of components of each household, not on the amount of waste produced. In this sense, its amount does not depend on the quality of service provided (but the citizens' willingness to pay it might). The amount of money a municipality collects from the waste tax cannot be higher than what it spends on waste management services. Municipalities have some room for modifying the tax. The base waste tax rate is one per thousand, and from 2014 its maximum has been set to three per thousand. Other minor taxes municipalities can independently collect are taxes on advertisement on public soil, and taxes on temporary usage of public spaces.

It is not uncommon that the actual collected revenues, "riscossioni conto competenza," is listed as zero directly in the Financial Certificates. In these cases, the amount of municipal collected revenues reported by the Ministry of Interior is zero and our dependent variable, which is the ratio between collected revenues and the total amount of forecasted revenues the municipality expects to collect within the budget year, is equal to zero.

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52. finanzalocale.interno.gov.it/apps/floc.php/in/cod/4.

The category of transfers + nonfiscal revenues includes, among others, any transfer from provinces, regions, the national government, or any other public institutions for the services provided by municipalities (law enforcement, schooling, sport, and touristic events, elections, etc.).

C.3.1 Data Collection

The data collection has been completed in two phases. First, for the municipalities of Calabria, Campania, and Sicily for Years 1998–2013, we have received data directly from the Ministry of Interior (division of Local Finance) in late 2015.

Second, we have complemented this dataset with information (a) for the municipalities of Calabria, Campania, and Sicily for the Years 2014, 2015, and 2016 and (b) for the municipalities of Apulia and Basilicata for the Years 1998–2016. We have collected data directly from the website of the Ministry of the Interior with an extraction dated December 2020.[53] Data on debt toward other parties and deficit have been collected for all our regions and all years directly from the website of the Ministry of Interior in January 2021.

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53. finanzalocale.interno.gov.it/apps/floc.php/in/cod/4.