Political Capture and Bureaucratic Behavior.

Evidence from Mafia-Infiltrated Municipalities*

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July 2026

Abstract

Local governments promise democratic responsiveness but are also vulnerable to political capture by illicit actors. While existing research documents the political and economic consequences of capture, less is known about how bureaucrats respond when political leadership is captured — whether they become instruments of corrupt rule or resist it. We examine these competing expectations in the context of Italian municipalities infiltrated by mafia organizations. Leveraging a law that allows the central government to dissolve captured municipal councils, we study how bureaucratic performance responds when political capture is abruptly removed. Using a difference-in-differences design with matched controls based on a machine-learning index of mafia-infiltration risk, we show that dissolutions substantially improve bureaucratic performance. Evidence from administrative data and investigative reports supports the interpretation that the lower performance during mafia rule was driven by bureaucrats resisting political capture. Our findings show that bureaucracies mitigate, rather than amplify, the downstream consequences of political capture.

*Maria Virginia Palmieri, Francesco Salerno, Federica di Chiara and Lorenza Gervasio provided excellent research assistance. We are indebted to Luca Bellodi, Jeremy Bowles, Ernesto Dal Bo, Riccardo di Leo, Gemma Dipoppa, Alessandra Fenizia, Michele Giannola, Vincent Heddesheimer, Alyssa Heinze, Krzysztof Krakowski, Gianmarco León-Ciliotta, Giorgio Malet, Lanny Martin, Sergi Martinez, Francesco Mattioli, Pietro Panizza, Massimo Pulejo, Pablo Querubin, Steve Raphael, Guillermo Toral, Tara Slough, Edoardo Teso, Lorenzo Vicari, Luca Vitale, Eleanor Woodhouse, Chenoa Yorgason, Guo Xu, as well as seminar participants at UC Berkeley, the University College London, the Hong Kong University of Science and Technology, the National University of Singapore, LUISS, the Centre for Studies in Economics and Finance at Naples Federico II, Collegio Carlo Alberto, the Catholic University of the Sacred Heart in Milan, the 2026 Bocconi-Columbia Workshop, the Behavioural Political Economy Workshop at the LSE, the 2026 PoBI workshop, CLEAN at Bocconi University, the Democracy under Pressure workshop at the University of Zurich, and audiences at the European Political Science Association Meeting for excellent comments.

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1 Introduction

Local governments are often seen as engines of democratic responsiveness, bringing political decision-making closer to citizens. At the same time, decentralization can increase the risk of capture: local politicians may be co-opted by special interests whose objectives diverge from those of the broader electorate (Acemoglu and Robinson, 2008; Bardhan, 2002; Fan, Lin and Treisman, 2009; Rodden and Wibbels, 2019). A growing literature in political science and political economy has documented the consequences of capture by corrupt politicians (Brierley, 2020; Ferraz and Finan, 2011; Ferraz, Finan and Moreira, 2012), local elites (Cruz, Labonne and Querubin, 2017; Ferraz, Finan and Martinez-Bravo, 2024; Gulzar, Lal and Pasquale, 2024; Heinze, 2025; Krakowski and Schaub, 2022; Martinez-Bravo, Mukherjee and Stegmann, 2017), organized interests (Anzia, 2022; Golden and Min, 2013; Gulzar, Rueda and Ruiz, 2022; Harding et al., 2024; Trounstine, 2018), and by especially pernicious actors such as criminal organizations and non-state armed groups (Carreri and Dube, 2017; Dipoppa, 2025; Fenizia and Saggio, 2024; Pulejo and Querubín, 2026). Yet a key dimension of capture remains underexplored: how it affects the behavior of the bureaucracy.

Elected officials set policy priorities, while bureaucrats implement them (Aberbach, Putnam and Rockman, 1981; Brierley et al., 2023; Huber and Shipan, 2002; Slough, 2024; Toral, 2024; Wilson, 1989). However, elected officials do not perfectly control bureaucrats' behavior: bureaucrats may comply with, resist, or reshape political directives. When political leadership is captured, does the entire organization become an instrument of corrupt rule, or do bureaucracies act as a buffer that constrains its effects? In other words, do bureaucracies amplify or mitigate the downstream consequences of political capture? Studying this question requires exogenous variation in political capture as well as a measure of bureaucratic behavior that can distinguish between cooperation with and resistance to captured politicians.

This paper addresses these challenges by studying the infiltration of Italian municipal governments by mafia organizations. To get exogenous variation in capture, we exploit an Italian law that authorizes the central government to dissolve municipal councils found

to be under mafia influence.[1] Dissolution entails the removal of all elected officials and their temporary replacement by external commissioners, followed by new elections. This institutional setting allows us to study how bureaucratic behavior changes when political capture is abruptly and forcibly removed from local government. To distinguish between cooperation with and resistance to captured politicians, we need a setting where captured politicians can achieve their objectives only if bureaucrats perform their tasks and sustain high performance. In this type of setting, if bureaucrats cooperate with captured political leaders, bureaucratic performance should remain high under capture, since bureaucrats continue to carry out administrative tasks that facilitate the objectives of captured politicians. By contrast, if bureaucrats resist captured leaders, bureaucratic performance should deteriorate under capture because bureaucrats become unwilling or unmotivated to implement the directives of compromised political principals. These competing dynamics generate opposite predictions once political capture is removed. If bureaucrats had been cooperating with captured politicians, removing those politicians should reduce bureaucratic performance. If instead bureaucrats had been resisting captured politicians, removing political capture should improve bureaucratic performance. The effect of removing captured leaders on bureaucratic performance is therefore informative about whether bureaucrats cooperate with or resist political capture. Our setting satisfies this requirement since the main objectives of mafia-captured governments consist in, as we show in Section 2, favorable treatment of mafia-connected firms and individuals in procurement and other administrative practices where bureaucratic cooperation is necessary.

Empirically, we implement a robust difference-in-differences design with matched controls, where matching is based on a machine-learning index measuring the risk of mafia capture (Campedelli, Daniele and Le Moglie, 2024). The intuition is straightforward: we compare municipalities with similar ex ante exposure to mafia capture, but only a subset of these municipalities experience government dissolution — meaning only some are forcibly relieved from mafia-captured politicians. We show that municipalities whose

[1] Our setting is thus similar to studies that estimate the impact of social media and some of its specific features by studying the removal of social media or the removal of said features (Gauthier et al., 2026; Guess et al., 2023*a*,*b*).

government is dissolved and their matched controls are on similar trends in bureaucratic performance before the government dissolution, and that they are comparable in terms of pre-determined characteristics, including ones not targeted by our matching strategy. This matched difference-in-differences approach has the advantage of not relying on variation in treatment timing. In doing so, it avoids the well-known challenges that arise in staggered-treatment difference-in-differences models when treatment effects are heterogeneous over time (Borusyak, Jaravel and Spiess, 2024; Goodman-Bacon, 2021).[2]

To examine the impact of municipal government dissolutions on bureaucratic performance, we focus on payment delays and processing delays. Measuring bureaucratic performance is inherently difficult because bureaucratic tasks are complex, multidimensional, and carried out by teams (Besley et al., 2022; Holmstrom and Milgrom, 1991; Slough, 2024; Spenkuch, Teso and Xu, 2023; Wilson, 1989). On top of these classic challenges, we must identify a measure of bureaucratic performance that solely depends on bureaucrats' behavior and is not jointly determined by the behavior of elected officials. This requirement of our setting renders unsuitable nearly all indicators of administrative performance used in the literature studying Italian municipal governments.[3] We rely on two measures of bureaucratic performance that satisfy these requirements. We first focus on payment delays because, in the context of Italian local governments, processing payments is an exclusive responsibility of municipal bureaucrats, and delays represent a salient and costly dimension of administrative performance (Gagliarducci and Nannicini, 2013). As an additional measure of performance, we examine delays in the processing of applications received by the municipal technical office (Cerqua and Giannantoni, 2026).[4]

Our findings indicate that dissolutions significantly reduce payment delays, consistent with improved bureaucratic performance once mafia capture is removed. Consistent results are found for processing delays, strengthening our interpretation. Returning to

[2]We also present consistent results using an alternative empirical approach that does not rely on the risk of infiltration index and rather only focuses on municipalities dissolved during the sample period.

[3]Examples are the size of the municipal surplus (Carreri, 2021), cost overruns in procurement (Bellodi, Morelli and Vannoni, 2024), budget congestion measured as the difference between planned and actual budgets (Bellodi and Morelli, 2026), and bunching in procurement values below thresholds for central government oversight or mafia screening (Castellani, Decarolis and Rovigatti, 2025).

[4]Due to data availability however, processing delays are only available for a shorter time window.

the competing theoretical expectations, these results show that bureaucrats are dissociating from captured politicians. When politicians are captured by criminal organizations, bureaucrats are less willing or less motivated to carry out their tasks effectively.

We next test a central implication of the bureaucratic dissociation mechanism. If political capture undermines bureaucratic performance by inducing bureaucrats to dissociate from captured political leaders, the effects of dissolution should be strongest precisely where such dissociation was most pronounced. While bureaucratic dissociation may take many forms, ranging from strategic delay and minimal compliance to more overt acts of opposition, the official investigative reports (*relazioni prefettizie*) underlying each municipal dissolution allow us to observe one particularly visible manifestation: documented bureaucratic resistance to unlawful political directives. These lengthy reports summarize the findings of the investigations leading to municipal dissolution and contain detailed accounts of the interactions between captured politicians and municipal bureaucrats. Using an LLM-assisted annotation procedure, we identify municipalities exhibiting documented bureaucratic resistance and show that the improvement in bureaucratic performance following dissolution is concentrated almost entirely in these municipalities. This heterogeneous effect is precisely what the bureaucratic dissociation mechanism predicts.

In the remainder of the paper, we rule out a range of alternative explanations for these findings. First, we show that the results are difficult to reconcile with accounts in which mafia organizations simply disregard bureaucratic performance or actively prefer payment delays. Second, we demonstrate that documented bureaucratic resistance is unlikely to proxy for higher-quality bureaucracies, more severe forms of mafia infiltration, or more thorough investigations. Finally, we rule out organizational explanations unrelated to bureaucratic dissociation. We find no evidence that dissolutions reduce municipal expenditures or expand the bureaucracy, making it unlikely that the observed improvements arise from mechanical changes in administrative workload. Nor do dissolutions increase bureaucratic turnover relative to ordinary elections, indicating that the gains are unlikely to reflect workforce replacement. We further show that the estimated effects do not re-

flect the election of higher-quality politicians following dissolution. Finally, municipalities that experience placebo dissolutions unrelated to mafia infiltration exhibit no comparable improvement in bureaucratic performance, ruling out the possibility that our findings are driven by the temporary appointment of extraordinary commissioners. Altogether, these findings provide compelling evidence that bureaucratic dissociation is the principal mechanism through which political capture undermines bureaucratic performance.

Our contribution is twofold. Theoretically, we develop a framework in which political capture reshapes politician–bureaucrat principal–agent relations, producing either cooperation or dissociation by civil servants, with sharply different consequences for bureaucratic performance. This perspective shifts attention from corruption as a phenomenon that affects politicians or bureaucrats separately and conceptualizes capture as organizational misalignment, highlighting the importance of studying the interaction between these two actors. Empirically, we leverage quasi-experimental variation to adjudicate between these competing expectations.

Our study speaks to several strands of research at the intersection of the political economy of capture and corruption, crime, and bureaucratic politics. First, it contributes to the growing literature on the political influence of organized crime and mafia in particular. Recent work has documented how mafias shape electoral outcomes, political competition, and governance, often undermining state capacity and the quality of democracy (Acemoglu, De Feo and De Luca, 2020; Alesina, Piccolo and Pinotti, 2019; Campedelli, Daniele and Le Moglie, 2024; Daniele and Dipoppa, 2017; De Feo and De Luca, 2017; Pulejo and Querubín, 2026). At the same time, scholars have examined the effectiveness of the institution we leverage - dissolution of local governments due to mafia infiltration - in removing political capture (Di Cataldo and Mastrorocco, 2022) and its impact on economic growth (Fenizia and Saggio, 2024), mafia presence in neighboring municipalities (Galletta, 2017; Tulli, 2024), government spending (Acconcia, Corsetti and Simonelli, 2014), and political renewal (Daniele and Geys, 2015). Our study also connects to the broader literature on organized crime and criminality in politics, which shows how politicians with criminal ties shape governance, distort resource allocation, and affect policy

outcomes (Blattman et al., 2024; Britto et al., 2024; Carreri and Dube, 2017; Daly, 2022; Pulejo and Querubín, 2026; Prakash, Rockmore and Uppal, 2019). By analyzing how mafia infiltration interacts with the functioning of the state bureaucracy, our work builds on these debates and sheds new light on the role of administrative institutions in contexts of criminal-political entanglement.

Second, our study contributes to an extensive literature documenting the consequences of corruption at the local government level. One strand of literature has looked at political corruption highlighting how it distorts procurement, reduces public accountability, and undermines economic development, and has studied how anti-corruption policies can counteract these negative effects (Amat and Beramendi, 2020; Avis, Ferraz and Finan, 2018; Bobonis et al., 2025; Bourlès et al., 2025; Cingano and Pinotti, 2013; Decarolis et al., 2025; Ferraz and Finan, 2011; Ferraz, Finan and Moreira, 2012; Fisman and Golden, 2017; Mahadevan, 2024; Zamboni and Litschig, 2018). Another strand of literature has focused on corruption within bureaucracies (Brierley, 2020; Decarolis et al., 2023; Fisman and Golden, 2017; Gans-Morse et al., 2018; Harris et al., 2023; Vannutelli, 2022). Our contribution is to bring these perspectives together, showing how political capture shapes bureaucratic behavior by altering politician–bureaucrat interactions, rather than operating solely through politicians or bureaucrats in isolation.

Finally, we contribute to scholarship on bureaucratic politics by studying how bureaucrats respond when political control is not merely partisan or ideological, but criminally captured. Existing work shows how political turnover, patronage, and partisan alignment shape bureaucratic behavior, performance, and turnover (Akhtari, Moreira and Trucco, 2022; Colonnelli, Prem and Teso, 2020; Dahlström and Holmgren, 2019; Heo and Wirsching, 2026; Raffler, 2022; Spenkuch, Teso and Xu, 2023; Story, Lotta and Tavares, 2023; Toral, 2024). More recently, a growing literature has examined the extent to which bureaucrats can constrain unprincipled political leaders by resisting unlawful directives or otherwise shielding public organizations from political interference (Brierley, 2020; Bauer and Becker, 2020; Morelli, Petrukhin and Vannoni, 2026; Moynihan, 2022; Schuster et al., 2022; Silveira et al., 2026). We contribute to this literature and highlight the concept

of bureaucratic dissociation to capture the range of ways in which bureaucrats respond to unprincipled political leadership. Studying the case of criminal political capture, we show that bureaucratic dissociation constitutes a central behavioral response to captured principals.

Taken together, our work integrates insights from research on organized crime, political capture and corruption, as well as bureaucratic politics, to advance a more comprehensive understanding of how illicit actors penetrate and reshape local governments. From a policy perspective, the results highlight a positive channel through which anti-corruption interventions can strengthen the state. Removing captured politicians not only halts rent diversion with positive spillover effects on the local economy (Fenizia and Saggio, 2024), but also revitalizes administrative performance, amplifying the overall gains in local state capacity and service delivery. We show that the improvement in bureaucratic functioning reinforces the broader benefits of anti-capture reforms, revealing that the organizational recovery of the public administration is a key —yet often overlooked— component of state renewal.

2 Institutional Background

In this section we briefly describe the Italian local government institutional framework, how criminal organizations operate in infiltrated municipalities and the council dissolution process.

2.1 Italian local governments

Italy is divided into three sub-national levels of government. From the largest to the smallest administrative unit, there are regions (20), provinces (107, nested within regions), and municipalities ($\approx$ 8,000 and nested within provinces). Municipal governments separate political and bureaucratic authority in order to promote integrity and democratic accountability (Art. 97 of the Italian Constitution). Municipal politicians include the mayor (*sindaco*), the municipal council (*consiglio comunale*), and the executive commit-

tee (*giunta comunale*).[5] The bureaucracy is composed by civil servants (*impiegati* and *funzionari*), hired through standardized public competitions with permanent contracts, and public managers (*dirigenti*), who are politically appointed usually under temporary contracts and headed by an appointed municipal secretary (*segretario comunale*).[6]

2.2 Organized crime infiltration and council dissolutions

Organized crime in Italy and its impact on public institutions has long been studied (Acemoglu, De Feo and De Luca, 2020; De Feo and De Luca, 2017; Gambetta, 1996; Pinotti, 2015). A central aspect of this phenomenon concerns the systematic effort of criminal organizations to influence political processes and public decision-making at multiple levels of government. Influence can be pursued through electoral support, the mobilization of votes, financial contributions, clientelistic exchanges, or, in some cases, intimidation and coercion. By cultivating long-term ties within political networks, criminal organizations aim to secure favorable regulatory environments and access to public resources.

To address these risks, the Italian national government enacted a law (D.L. 31/05/1991, n.164) that allows for the replacement of all elected municipal officials with three centrally appointed commissioners when there is documented evidence of mafia capture.[7] The procedure to trigger this extraordinary measure involves an investigation that lasts a maximum of 6 months during which the national police collects evidence on personal connections between elected officials and organized crime and on actions linking the operations performed by the municipality with organized crime's interests. If concrete, unambiguous and significant evidence is found[8], the Ministry of Interior proposes the

[5]The mayor is directly elected under majoritarian rule for a five-year term. The party or coalition of the elected mayor is secured by law a stable majority of seats in the municipal council, elected concurrently with the mayor. Members of the executive committee are appointed by the mayor.

[6]According to art. 107 TUEL, all administrative acts must be co-signed by bureaucrats.

[7]The commissioners are usually Prefects, retired judges, or other senior civil servants employed by the central administration.

[8]Legal scholars have produced a vast literature on the interpretation of this law, in particular on the precise meaning of "concrete, unambiguous and significant evidence" ("fatti concreti, univoci e rilevanti" in Italian). According to the latest report on commissioned municipalities drafted by Avviso Pubblico (*Il Male in Comune, 2025; Scintille Editore*), "concrete" has been interpreted as "supported by an actual verification of their existance", "unambiguous" has been interpreted as "having clear direction towards the objectives of organized crime", and "significant" has been interpreted as "capable to affect the regular functioning of the public administration".

dissolution of the City Council and the dismissal of the mayor and the executive committee to the President of the Republic, who is legally in charge of the final decision.[9] The three-member commission has full authority over the local administration for a period of 12 months, which can be extended up to 24. The commissioners usually develop a priority action plan to restore institutional integrity and conduct full audits of all municipality operations. Commissioners have the power to replace or confirm spoil system employees (public managers and secretary), while civil servants can be terminated only if they are criminally convicted (TUEL Art. 143, comma 5).

Since its enactment in 1991 there have been almost 400 episodes of dissolution due to mafia infiltration. The majority occurred in Southern Italy, although substantial geographic variation exists within Central and Northern Italy as well. Figure 1 shows the geographical distribution of dissolution episodes in our sample while Appendix Figure A.1 reports the number of dissolved municipalities per year.

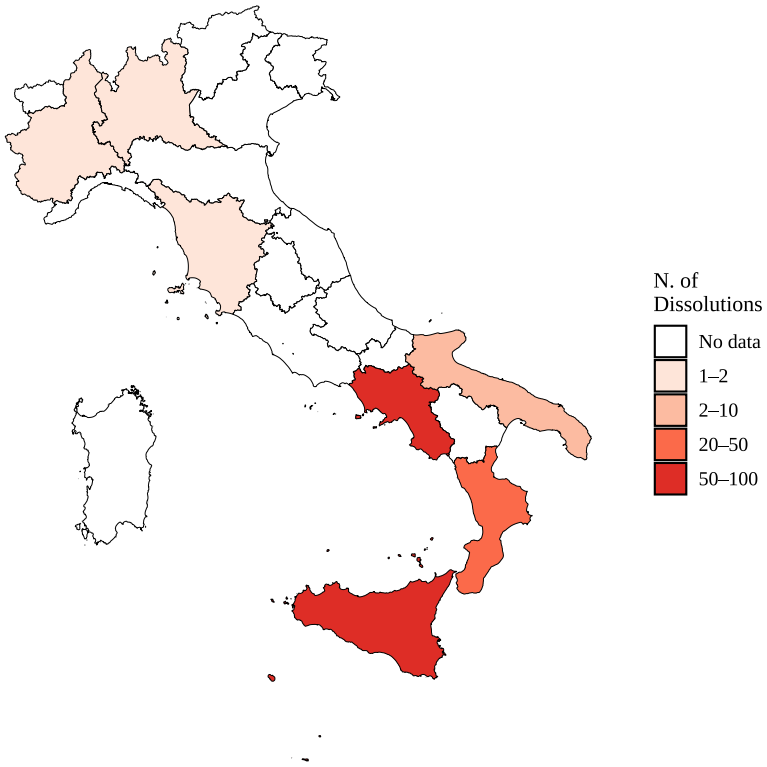
We systematically analyze the investigative reports underlying municipal dissolutions using an LLM-driven annotation process. These documents, which are available for dissolutions from 2010 onward, contain detailed investigation findings that allow us to identify recurring patterns in the activities of captured municipal governments and clarify the objectives of mafia capture.[10] Table 1 shows types and frequency of illicit episodes mentioned in the available reports.

The majority of cases involved irregularities in administrative procedures and public procurement aimed at favoring mafia interests, such as the allocation of public contracts to mafia-connected firms and the manipulation of permits, licenses, and public concessions to benefit organized crime members. Another relevant group consisted in the inefficient management of public resources. This includes, for instance, the assignment of municipal

[9]Dissolved municipalities may appeal the dissolution before a court. If the court finds the evidence of mafia capture insufficient, the dissolution is revoked.

[10]This wealth of textual data has been only minimally leveraged by existing studies of local government dissolution in Italy (Fenizia and Saggio, 2024; Tulli, 2024; Di Cataldo and Mastrorocco, 2022; Galletta, 2017; Daniele and Geys, 2015; Acconcia, Corsetti and Simonelli, 2014). Full investigation reports (*relazioni prefettizie*) are published by Avviso Pubblico and publicly available only from 2010 onwards and for 88% of the dissolutions in our period of interest (until 2020). Additional information is provided in Appendix Section C.1.

Figure 1: Geographical distribution of dissolutions



NOTES: Number of city council dissolutions by region occurred between 2002 and 2020.

assets to organized crime members at a favorable rate.[11]

Importantly, elected officials retain discretionary authority over all of these activities, i.e. they involve policy decisions that are initiated and approved by elected officials, making the capture of politicians a necessary condition for organized crime to pursue its objectives within municipal government. Although bureaucrats may also be captured, this motivates our focus on political capture: capturing bureaucrats alone is unlikely to produce significant changes in municipal activities without the involvement and support of political principals.

[11] A list of 10 randomly extracted examples is available in Appendix Table C.15, and a more detailed description of each category is available in Appendix Table C.16.

Table 1: Consequences of mafia capture on local government activities

Type of episode	**Share of total (%)**
Irregularities in administrative procedures	45.1
Irregularities in public procurement and contracts	40.6
Inefficiencies and waste of public resources	14.3

NOTES: A Large Language Model provided by Mistral AI was used to analyze all the official investigation reports available from 2010 to 2020 (n=132). Reports were processed to extract activities taking place in captured municipalities, which were then classified into three categories. Share of total refers to how many episodes out of total episodes belong to that category. See Appendix C for methodological details and additional results.

3 Theoretical Expectations

To theorize whether bureaucrats cooperate with or dissociate from captured political leaders, we begin by clarifying how politicians and bureaucrats interact under conditions of political capture. We build on the political economy of bureaucracy, extending its insights to settings in which political principals pursue unlawful objectives. We then derive implications for our empirical setting, namely for how the removal of captured political leaders affects bureaucratic performance in contexts where captured politicians depend on bureaucratic cooperation to pursue their objectives.

Classic accounts of bureaucracy portray its members as impartial implementers of the political will (Wilson, 1989). A large body of subsequent research, however, emphasizes that bureaucrats' behavior is influenced by their own preferences, professional norms, and career incentives (Miller and Whitford, 2016; Moe, 2012). As a result, politician–bureaucrat relations are characterized by information asymmetries and goal conflict, commonly conceptualized as a principal–agent problem (Brierley et al., 2023; Miller, 2005; Raffler, 2022; Waterman and Meier, 1998). Political principals therefore cannot perfectly control policy implementation, even under ordinary conditions (Aghion and Tirole, 1997; Alonso and Matouschek, 2008; Dessein, 2002; Gailmard and Patty, 2007; Huber and Shipan, 2002).

We argue that these tensions are particularly relevant when principals are captured. In such settings, politicians may demand bureaucrats to carry out unlawful actions or normatively objectionable actions that conflict with bureaucrats' professional standards

and ethical commitments (Hollibaugh Jr, Miles and Newswander, 2020). In our empirical context, captured politicians may seek to advance organized-crime interests at the expense of the public good. Under these conditions, bureaucrats face a choice between resisting demands by captured politicians or accommodating them.

Assuming bureaucrats do not exit the organization, existing theory points to two broad modes of interaction between captured principals and their agents: dissociation and cooperation. When bureaucrats *dissociate* from captured political leadership, misalignment may manifest through a range of behaviors. These include active responses such as voicing and resistance (Schuster et al., 2022; Hollibaugh Jr, Miles and Newswander, 2020; O'Leary, 2019; Wirsching, 2026), as well as more indirect forms of opposition, including strategic shirking, delay, or sabotage (Brehm and Gates, 1999). Dissociation may also take passive forms, such as defensive silence or minimal compliance, that nonetheless impede organizational effectiveness and constrain captured politicians in achieving their objectives (Silveira et al., 2026; Story, Lotta and Tavares, 2023). The motivations underlying such dissociation are likely to be heterogeneous. Bureaucrats may object to unlawful directives on professional or normative grounds, or they may equally seek to avoid the legal and personal consequences of participating in criminal activities.

Alternatively, bureaucrats may *cooperate* with captured principals. Cooperation can arise through explicit collusion and rent-sharing (Sanchez De La Sierra et al., 2024; Wade, 1982), but it need not imply voluntary criminal participation. Agents may comply due to aligned material incentives (Brierley, 2020), organizational inertia, or fear of retaliation (Story, Lotta and Tavares, 2023). In these cases, bureaucratic effort and coordination will be sustained and even intensified—under captured leadership, albeit in ways that serve illicit rather than public objectives.

These contrasting modes of interaction generate competing predictions about how bureaucratic performance responds when captured principals are removed. Prior empirical work shows that political misalignment between principals and agents depresses performance in public organizations (Spenkuch, Teso and Xu, 2023; Toral, 2024). Yet we know far less about how these dynamics operate when principals' objectives are unlawful

and tied to organized-crime interests. This gap matters for the study of anti-corruption policy: interventions that remove captured leaders may either strengthen state capacity by freeing bureaucrats to perform effectively, or instead disrupt organizational equilibria that had sustained output under conditions of capture. Ultimately, how can we expect bureaucratic performance to be impacted when captured principals are removed from office?

If bureaucrats were predominantly dissociating from captured politicians, the removal of captured principals should lead to improvements in performance. Persistent misalignment undermines morale and induces behaviors—such as shirking, delay, or resistance—that slow administrative processes (Heo and Wirsching, 2026). Eliminating captured political oversight can therefore restore professional motivation and allow bureaucrats to perform their tasks more effectively. These gains should be most pronounced where interference was most intense and conflict most acute, such as municipalities exhibiting documented cases of bureaucratic resistance. This logic underpins our test in the mechanism Section 7.1.

By contrast, if bureaucrats were predominantly cooperating with captured principals, removal may reduce bureaucratic performance, at least in the short run. Under cooperation, captured leaders may provide informal incentives or coordination that sustain bureaucratic effort (Sanchez De La Sierra et al., 2024). Dissolution disrupts these arrangements, potentially weakening incentives, increasing uncertainty, and eroding informal hierarchies that structured day-to-day operations. Moreover, the sudden removal of the captured politician the bureaucrat was cooperating with may induce risk aversion, defensive behavior, or disengagement among cooperating agents, leading to slower decision-making and reduced output. In this scenario, performance declines reflect organizational disruption rather than normative realignment.

We acknowledge that bureaucrats' response might not be uniform across the organization. Indeed, individuals may respond to capture in different ways, with some cooperating and others distancing themselves from captured leaders. Our analysis is at the municipality-level and therefore focuses on identifying the dominant response within the

local government organization.

4 Data

We assemble a panel of Italian municipalities for the years 2001-2022. The list of municipalities dissolved during this period is drawn from Avviso Pubblico, a network of local and regional governments committed to promoting legality, transparency, and the prevention of organized crime infiltration in public administration.

We employ two measures of bureaucratic performance as our outcomes. The first measure is the delay in the payment flow of current spending, which we calculate according to the following formula:

$$\text{Payment delay}_{i,t} = (1 - \frac{\text{Current Spending Payments}_{i,t}}{\text{Current Spending Duties}_{i,t}}).$$

This measure represents the share of the current spending that municipality i has committed to spend in year t according to its budget which has not been paid out to service providers, contractors, and employees during the same year (Gagliarducci and Nannicini, 2013).[12] Intuitively, the measure stems from the comparison of the accrual version of the municipal budget with its cash flow version. The data source are municipality's balance sheets, that we collected from the Ministry of Interior (until 2015) and the Ministry for Economics and Finance (since 2016).[13] A value of the ratio approaching 0 implies that the municipality is able to deliver payment for all its obligations in due time while higher values indicate that the municipality is not paying its bills in due time.[14] Payment delays

[12]The Italian Ministry of Internal Affairs relies upon this measure of bureaucratic performance to evaluate the payment efficiency of municipalities.

[13]One may worry that the discrepancy between current spending payments and current spending duties as reported in the balance sheets may be an imprecise proxy for the payment delay. Exact data on invoice payment delay are published by the Ministry of Economics and Finance starting from 2019. In Appendix Figure A.3 we document that for the years available, our key dependent variable shows a striking correlation with two measures of invoice payment delay: namely the delay days of payment relative to invoice maturity (panel a) and the share of invoices expired in year t that are not paid during the same year (panel b).

[14]It is important to remark that late payments do not depend on financing or liquidity constraints because every spending duty must be financed, i.e. have an identified source of funds, in order to finalize a balanced budget. In turn, high values of our measure do not indicate that a municipal government cannot afford to deliver goods and services to its citizens; rather, high values would suggest that the municipal government does not process the paperwork and payment in due time despite having the necessary resources.

represent an ideal measure of bureaucratic performance for our study in light of several reasons.

First, unlike most indicators of governance quality used in the literature, payment delays are not jointly determined by bureaucrats and politicians and rather capture bureaucratic input exclusively. This is due to the fact that under the legal framework for Italian local governments paying invoices in due time is solely a responsibility of bureaucrats, while most actions require coordination between elected politicians and civil servants. Moreover, the payment process involves several steps and multiple offices, making it dependent not only on individual performance, but also organization-wide coordination.[15]

Second, payment delays are a persistent challenge across all layers of Italian public administration, making it a salient indicator in the context of municipal governments. In 2018, according to the Ministry of Economy, unpaid commercial invoices amounted to roughly €20 billion (about 1% of GDP), and in 2023 payments worth €37 billion were performed after their due date, with local governments accounting for nearly €10 billion of these delays. Moreover, payment delays are substantively important. Late payments directly affect the local economy since many companies rely heavily on government clients; when administrations delay payments, firms experience liquidity shortages that constrain investment and employment (see, e.g., Checherita-Westphal, Klemm and Viefers 2016). Indeed, in Appendix Figure A.4 we show that across the Italian territory, our measure of payment delays correlates with measures of local economic activity such as banking deposits and local employment.[16]

Our second indicator of bureaucratic performance measures the efficiency in processing applications received by municipalities' technical offices (Cerqua and Giannantoni, 2026).

[15]The payment process in Italian public administrations follows the procedures set by the Public Contracts Code (Legislative Decree 50/2016 and 163/2006 for most of our period of interest, currently DL 36/2023), which we briefly summarize here. Once a supplier delivers goods or services, or completes the contracted works, an electronic invoice is issued. The responsible office receives and records the invoice, confirming its accuracy. Then the accounting office performs administrative verifications, ensuring that the expenditure has been previously committed, that it complies with budgetary and fiscal rules, and that the supplier meets contribution requirements. Following these checks, a liquidation order is issued, signed by the responsible officer. The treasury office finally issues a payment mandate through the municipal treasurer bank, which then executes the actual payment by crediting the supplier's account.

[16]Since 2023, the central government is attempting to reduce the share of delayed invoices through monetary incentives for top bureaucrats. The performance-based component of top bureaucrats' salary is cut if the share of delayed invoices surpasses a fixed percentage of the total value of invoices.

These offices, staffed by civil servants, primarily oversee land use, i.e. all activities related to the physical development, maintenance, and regulation of municipal territory and infrastructure.[17] Any kind of significant private construction activity in the municipality territory needs to be approved by the technical office. In particular, we compute a measure of processing delays using this formula:

$$\text{Processing delay}_{i,t} = \left(\frac{\text{Applications Received - Applications Processed}_{i,t}}{\text{Applications Received}_{i,t}}\right).$$

This measure can be reconstructed only for the period 1998-2006, due to reporting changes in municipal balance sheets provided by the Ministry of Interior.

To investigate turnover in the bureaucracy, we draw from administrative data provided by the Italian Ministry of Finance, through *Conto Annuale dei Dipendenti*. We focus on the universe of workers employed by municipalities and registered under the national contract for regions and local authorities (named "RALN"). We distinguish between "staff" (civil servants hired via competitive examination) and "managers" (political-appointee positions) and compute turnover utilizing a formula adapted from Bellodi, Morelli and Vannoni (2024), who calculate turnover intensity as the sum of exits and hirings divided by the total workforce.[18] The same data source allows us to measure aggregate bureaucrats characteristics (bureaucrats' average age, educational attainment, gender, and seniority) at the municipality-year level for managers and staff separately.

We collect data on a large set of municipal-level characteristics from the Ministry of Interior, the Ministry of Economy, and ISTAT. Descriptive statistics for all key variables are presented in Appendix Table A.1.

Finally, we rely on text-based evidence from the official investigation reports (*Relazioni Prefettizie*) published by Avviso Pubblico for the period 2010-2020.[19] These documents, drafted by the investigative commissions, provide detailed narratives of the

[17]Other responsibilities of technical offices include: coordinating public works and urban planning; managing investment funds allocated by higher levels of government; issuing zoning compliance certificates; developing projects for new public infrastructure; and overseeing tender procedures, including the awarding of contracts to external firms for the execution of public works.

[18]Details on this variable are available in the Appendix, Section B.

[19]We also collect from Avviso Pubblico data on attacks against municipal governments (Daniele, Dipoppa and Pulejo, 2026; Pulejo and Querubín, 2026) which we use to corroborate our measure of mafia infiltration and to rule out alternative accounts.

irregularities uncovered within municipal administrations. We use this material to provide further descriptive statistics and test our proposed interpretation of how politician-bureaucrat dissociation affects performance. Importantly for our purposes, *Relazioni Prefettizie* allow us to identify whether members of the administrative apparatus performed actions of resistance against illicit behavior conducted by the mayor or other local political members. Appendix C details the LLM-driven procedure for the text annotation tasks and provides additional statistics obtained from the reports.

4.1 Risk of infiltration index

Our matching strategy described in Section 5 below relies on the risk of infiltration index developed by Campedelli, Daniele and Le Moglie (2024). The index is a novel, time-varying measure of the likelihood that a local government is captured by organized crime. The index is constructed through a supervised machine-learning model (XGBoost) trained on the full universe of Italian municipalities over the period 2000–2020. The model predicts whether a city council was officially dissolved for mafia infiltration in a given year, drawing on more than 200 predictors describing political and fiscal characteristics of each municipality.[20] These include electoral competitiveness, incumbency, and ideological composition of local coalitions, together with detailed patterns of municipal spending. The model uses synthetic oversampling (ADASYN) to generate balanced training data to address the fact that fewer than 1 percent of municipal-year observations experience a council dissolution.

The resulting score, bounded between 0 and 1, captures the predicted probability that a municipality is infiltrated in a given year. The model correctly identifies 97.4 percent and 95.9 percent of captured municipalities that will be eventually dissolved during the following year or within the next two years, respectively. When restricting attention to the top 5 percent of municipalities ranked each year by the predicted risk, the model

[20] As discussed in Section 2, some dissolutions were later revoked by administrative courts because the evidence was deemed insufficient to justify the dissolution decision. For the construction of the index, however, these municipalities are classified as not dissolved. More details in Campedelli, Daniele and Le Moglie (2024).

captures roughly 89 percent of all subsequent dissolutions with a precision of 15 percent, i.e. one correctly classified infiltration for every five *false positives*. As Campedelli, Daniele and Le Moglie (2024) emphasize, *false positives* in this setting are not necessarily prediction errors but can be thought of as local governments that are captured by the criminal organization, although the infiltration remains undetected due to limited investigative capacity and discretion of anti-mafia investigations. In fact, Campedelli, Daniele and Le Moglie (2024) show that these *false positives* resemble *true positives* much more than *true negatives* in terms of several markers of mafia capture – such as mafia attacks, mafia-related homicides, and irregularities in public procurement. These capacity constraints have also motivated the collaboration between Italian law enforcement and Campedelli, Daniele and Le Moglie (2024) to develop a predictive index that helps prioritize investigative efforts.

5 Empirical Strategy

To identify the effect of the removal of captured politicians on bureaucratic performance we utilize a matched difference-in-differences design. Our approach is similar to Fenizia and Saggio (2024), who used a matched difference-in-differences to estimate the effect of city council dissolutions on local economic activity. Differently from Fenizia and Saggio (2024), who perform a propensity score matching based on local economic characteristics measured at baseline, we utilize Campedelli, Daniele and Le Moglie (2024)'s index of mafia-infiltration risk for our matching strategy.

We do so by implementing a matching algorithm that selects, for each dissolved municipality, a single control from the pool of municipalities that are never dissolved. The chosen control is the unit exhibiting the closest value of the infiltration risk index in the year preceding dissolution, subject to a series of constraints.[21] These constraints require that control municipalities are observed in the same calendar year, in the same year of

[21]This approach is the reason why our main sample covers dissolutions occurred in the period 2002–2020 as the index is only available since 2001. In column (3) of Table 2, we show robustness to constructing our matched sample based on calculating the average infiltration index over the entire pre-dissolution term.

the electoral cycle, and belong to a different region with respect to their matched treated municipality.[22] As a result of our matching approach, dissolved municipalities and their matched control municipalities display very comparable levels for the risk of infiltration index: in the year prior to dissolution, the average difference in the index between each treated municipality and its matched control is as low as 0.02 (statistically indistinguishable from zero) on a range from 0 to 1. Indeed, as shown in Figure A.2, both dissolved municipalities and matched control municipalities are located in the upper tail of the distribution of the infiltration risk index across the universe of Italian municipalities. Control municipalities represent "shadow-infiltrate" local governments, where political capture is similar to treated municipalities but was not uncovered by the authorities.

Investigative reports produced by the Italian police indicate that inquiries into municipal governments are often triggered by information uncovered in unrelated investigations into local mafia clans—for instance, through court-authorized wiretaps revealing the involvement of elected officials. Such discoveries prompt targeted investigations into the municipal administration, which may culminate in council dissolution. Because law enforcement resources are limited and cannot be deployed uniformly across approximately 8,000 municipalities, the detection of political capture is necessarily selective.

Our matching algorithm produces two comparable groups of treated and control municipalities as shown in Appendix Tables A.2 and A.3 across several characteristics of the municipalities, including politicians' observable traits, bureaucrats' observable traits, and reported criminal attacks against the municipal administration.[23] Importantly, the two groups of municipalities show no differences in characteristics, such as those of bureaucrats, that are not used for estimating the risk of infiltration index. While different treated municipalities are dissolved, hence treated, at different points in time, our one-

[22]We require control municipalities to be located in a different region with respect to the treated municipality in the same matched pair in order to avoid spillover effects of council dissolutions on neighboring control municipalities, which would invalidate the Stable Unit Treatment Value (SUTVA) identifying assumption behind our difference-in-differences design. We relax this assumption in column (2) of Table 2. We require control municipalities to be on the same electoral calendar as their matched treated municipality to make sure that our results are not driven by political budget cycles.

[23]Despite the fact that these two tables show two comparable groups, in Appendix Table A.6 we show that our results are robust to controlling for covariates that are unbalanced between treated and control municipalities.

to-one matching strategy allows us not to gain causal traction from variation in treatment timing, and therefore allows us to avoid common pitfalls in staggered difference-in-differences designs highlighted by the recent econometric literature (Borusyak, Jaravel and Spiess, 2024; Chiu et al., 2023; de Chaisemartin and D'Haultfœuille, 2020; Goodman-Bacon, 2021; Liu, Wang and Xu, 2024; Callaway and Sant'Anna, 2021). We estimate the following equation:

$$Y_{ipt} = \alpha_i + \beta_{pt} + \gamma Dissolved_{it} + \varepsilon_{ipt}, \tag{1}$$

where Y_{ipt} denotes an outcome of interest measuring bureaucratic performance in municipality i belonging to the matched pair p (one dissolved or treated municipality and one control municipality) in year t. The indicator $Dissolved_{it}$ takes value one for all dissolved municipalities (treated municipalities) from the year of dissolution onward and zero otherwise. We include municipality fixed effects, α_i, and year-matched pair fixed effects, β_{pt}. Standard errors are clustered at the municipality level.[24] We restrict attention to the 177 dissolution events that occur between 2002 and 2020 in order to align with the availability of the risk of infiltration index whilst ensuring that we observe each municipality at least one year before and after the dissolution. For municipalities that are dissolved multiple times, we retain only the first dissolution.

Our estimates are identified under the assumption that the outcomes in treated and control municipalities would have evolved in a parallel fashion in the absence of the dissolution. Although inherently untestable, we can provide evidence in favor of the plausibility of this assumption by estimating the event-study specification below, which flexibly tracks changes in the outcome relative to the year before the government dissolution. If the event-study coefficients γ_t estimated in the pre-treatment period are close to zero, this suggests that the identification assumption is plausible in this context, as well as the absence of anticipatory effects.

[24]Following De Chaisemartin and Ramirez-Cuellar (2024), we show robustness to clustering standard errors at the matched pair level in Appendix Table A.7.

$$Y_{ipt} = \alpha_i + \beta_{pt} + \sum_{k=-7, k\neq -1}^{+7} \gamma_k \mathbf{1}(TimeToDissolution_{it} = k) + \varepsilon_{ipt}, \quad (2)$$

As discussed in Section 6, this placebo test shows no evidence of differential pre-trends between treated and control units, lending credibility to the design.[25]

In Table 2 and Figure 2, we also document that our conclusions remain unaltered when adopting an alternative empirical strategy that does not rely on the risk of infiltration index and rather only focuses on dissolved municipalities. We restrict the sample to municipalities that are dissolved at least once during our time window of observation and estimate a difference-in-differences model that exploits the variation induced by the fact that municipalities are dissolved at different points in time. We follow the stacked-by-event design approach proposed in Cengiz et al. (2019) where we construct and stack a series of event-specific datasets, each featuring municipalities that experience a dissolution in the same year (*treated* municipalities) and compare them to municipalities whose council is dissolved in subsequent years (*not-yet treated* municipalities).[26]

6 Results

6.1 Effects on Bureaucratic Performance

Table 2 presents our main difference-in-differences estimates of the impact of government dissolutions for mafia infiltration on bureaucratic performance, measured through the

[25] We focus on a time window [-7;+7] to ensure that the post-treatment indicators cover a full post-dissolution term. Notice that commissioning periods may last – if they are granted a special extension – until $k + 2$, which implies that the subsequent term may last until year $k + 7$.

[26] When comparing treated municipalities with not-yet treated municipalities, we re-arrange equation 1 and 2 to fit the stacked data structure by saturating the municipality and year fixed effects with indicators for the specific stacked dataset, i.e. by replacing municipality fixed effects with municipality-event cohort fixed effects, and replacing year-matched pair fixed effects with year-event cohort fixed effects. As discussed in the next section, we follow the state-of-the-art approach recommended by the recent econometric literature to avoid the pitfalls described above and utilize a variety of estimators (de Chaisemartin and D'Haultfœuille, 2020; Borusyak, Jaravel and Spiess, 2024; Callaway and Sant'Anna, 2021; Sun and Abraham, 2021; Cengiz et al., 2019). Results included in Table 2 and Figure 2 are based on the estimator proposed by Cengiz et al. (2019) while we replicate our estimates using other estimators in Figure A.6 in Appendix Section A, where we show that our results are also robust to alternative estimators proposed by Callaway and Sant'Anna (2021), de Chaisemartin and D'Haultfœuille (2020), Borusyak, Jaravel and Spiess (2024), and Sun and Abraham (2021).

average delay in the payment flow of current spending. Our baseline specification, in column (1), shows a significant and quantitatively meaningful effect. Municipalities whose council is dissolved experience a reduction in the share of delayed payments equal to 2 percentage points. This effect is substantive, as it corresponds to 6 percent of the average share of delayed payments among matched control municipalities at baseline. To quantify the estimated effect more precisely in terms of days of delay, it is helpful to refer to the correlation between our dependent variable and the average number of delay days in invoice payments, shown in Figure A.3 and described earlier. Our estimates imply that delays are reduced by approximately two days per invoice, on average. Moreover, the average values of the numerator and of the denominator of our main dependent variable, reported in Appendix Table A.1, allows quantifying the economic relevance of our estimated effect. At baseline, payments delayed to the following year amount to about 800K euros per control municipality per year. Council dissolutions due to mafia infiltrations reduce this quantity by 31K euros each year for each treated municipality.

This improvement in the municipality's payment performance is robust to a series of robustness tests. Since municipalities with a higher risk index are concentrated in Southern regions and our main specification requires that each treated municipality be matched with a control from a different region, this restriction may result in a pool of control municipalities that are geographically different from the treated. To address this concern, we relax the regional constraint. Column (3) of Table 2 reports estimates from an alternative specification in which matched controls are instead drawn from a different province relative to the treated municipality.[27] In column (2) of Table 2, we select matched control municipalities based on the average value of the risk of infiltration index calculated during the entire pre-dissolution period.[28] Finally, in column (4) we restrict our sample only to municipalities that experience a dissolution during our sample period and estimate a staggered difference-in-differences model using the stacked-by-event design proposed by Cengiz et al. (2019). Our estimate of the impact of council dissolutions

[27]Our sample includes a total of 354 municipalities, 28 provinces, and 11 regions.

[28]We define as pre-dissolution period the 7 years before the dissolution event; this might include up to two different terms, since the event might occur at different moments of the electoral cycle.

Table 2: Council Dissolutions and Payment Delays

	(1) Delay	(2) Delay	(3) Delay	(4) Delay
Dissolved	-0.020**	-0.026***	-0.021***	-0.025**
	(0.008)	(0.009)	(0.008)	(0.010)
Observations	4,382	4,422	4,388	21,703
R-squared	0.806	0.797	0.807	0.711
Municipalities	354	354	354	177
Specification	Baseline	Avg. Risk	Province	Not Yet
Mun. FE	✓	✓	✓	–
Year × Matched Pair FE	✓	✓	✓	–
Year × Event cohort FE	–	–	–	✓
Mun. × Event cohort FE	–	–	–	✓
Mean delay	.292	.29	.286	.313
% Mean delay	-6	-8	-7	-7

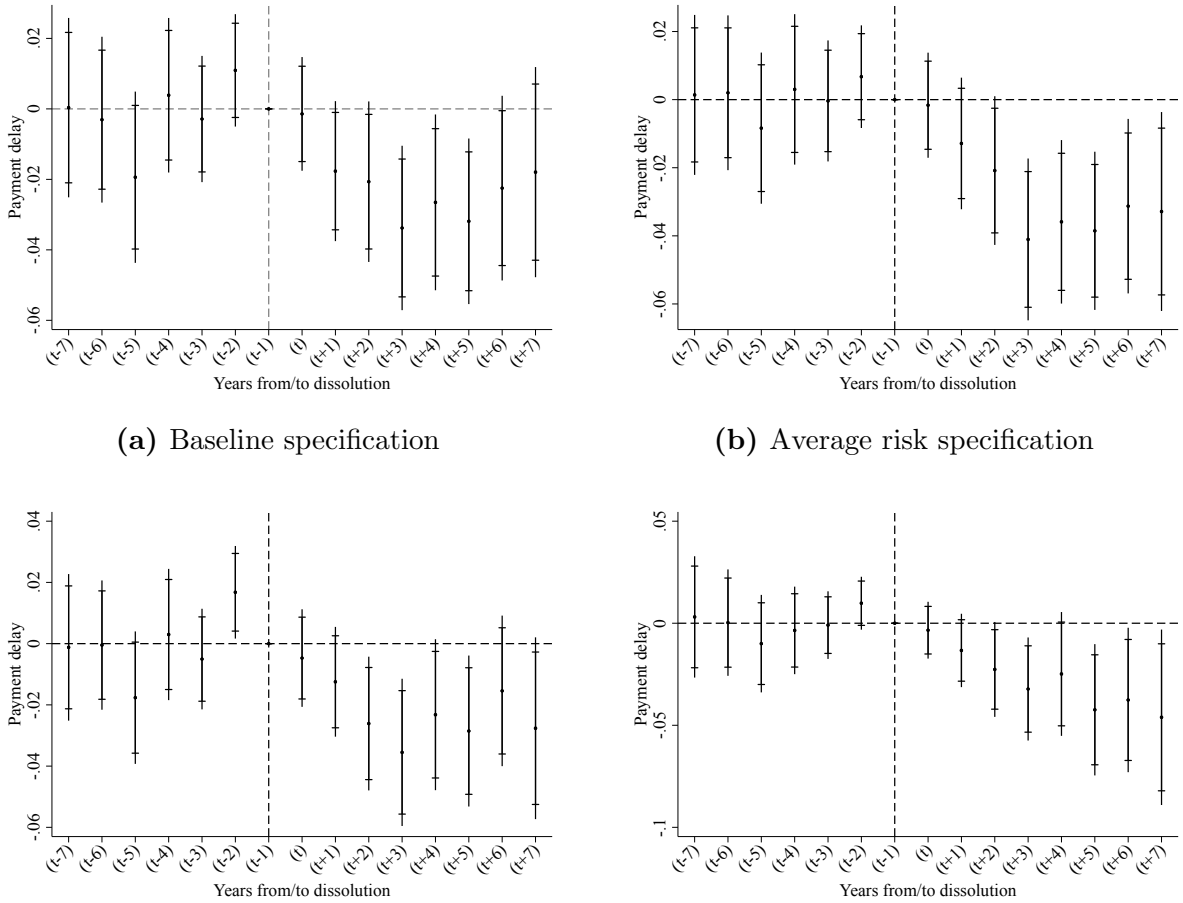
NOTES: The table reports the effect of municipal council dissolutions on bureaucratic performance. The dependent variable is the delay of current payments. *Mean delay*, reported at the bottom of the table, shows the average value of the dependent variable for control municipalities in the pre-treatment period. *% Mean Delay* shows the magnitude of the effect as a percentage of the average value of the dependent variable described above. Column (1) is based on the specification in Equation 1. In column (2), we construct the matched sample using the average value of the risk of infiltration index across all years (until the year prior to dissolution) of the dissolution's term. In column (3), we search, for each treated municipality, a matched control in all municipalities excluding those that belong to the same province as the dissolved one. In column (4), we restrict the sample to municipalities that experience at least one dissolution episode before 2020 and construct a series of event-specific datasets, each featuring municipalities that experience a dissolution in the same year (*treated* municipalities) and compare them to municipalities whose council is dissolved in subsequent years (*not-yet treated* municipalities). Standard errors clustered at municipality level are shown in parentheses. * significant at 10% , ** significant at 5%, *** significant at 1%.

is robust across specifications and remains remarkably stable, showing a 6 to 8 percent reduction of payment delays.

Figure 2 shows event-study coefficients for the dynamic difference-in-differences specification shown in Equation 2. Estimates indicate parallel pre-trends and a sharp, persistent decline in payment delays beginning in the year following dissolution. Figure 2 also documents that the performance improvement is distributed across the first two years post dissolution, when the local government is under the appointed commission described in Section 2.2, and the subsequent years, in which a newly elected local government is in office.

Removing captured officials leads to faster disbursement of municipal expenditures,

Figure 2: Council Dissolutions and Payment Delays – Dynamic Specification



(a) Baseline specification

(b) Average risk specification

(c) Excluding same-province controls

(d) Not-yet-treated specification

NOTES: The figure plots the dynamic effects of municipal council dissolutions on bureaucratic performance. The dependent variable is the delay of current payments. Panel (a) is based on the specification in Equation 2. In Panel (b), we construct the matched sample using the average value of the risk of infiltration index across all years (until the year prior to dissolution) of the dissolution's term. In Panel (c), we search for each treated municipality a matched control in all municipalities with the exclusion of those that belong to the same province as the dissolved one. In Panel (d), we restrict the sample to municipalities that experience at least one dissolution episode before 2020 and construct a series of event-specific datasets, each featuring municipalities that experience a dissolution in the same year (*treated* municipalities) and compare them to municipalities whose council is dissolved in subsequent years (*not-yet treated* municipalities). Following Cengiz et al. (2019), we stack each of these event-specific datasets and estimate an equation that modifies equation 1 to fit the stacked data structure: we saturate the municipality and year fixed effects with indicators for the specific stacked dataset (Mun. $\times$ Event cohort FE and Year $\times$ Event cohort FE). Standard errors are clustered at the municipality level. Vertical spikes represent 90% and 95% confidence intervals, respectively. Year t corresponds to the year of dissolution; pre- and post-treatment years are labeled accordingly relative to the timing of the event. Years t and *t+1* represent the commissioning period. Year *t+2* is usually the year in which new municipal elections are held.

an essential dimension of administrative efficiency in a context such as Italian local governments where delayed payments are among the most visible pitfalls.

Next, we examine results for our alternative measure of bureaucratic performance:

processing delays. Table 3 provides evidence of a statistically significant and meaningful reduction in the delays of the technical office: after dissolution, the number of applications not processed decreases by more than 13%. Although this alternative measure is available for a more limited sample due to data constraints, these results provide reassurance that our main findings for payment delays reflect broader improvements in bureaucratic performance.

Table 3: Council Dissolutions and Processing Delays

	(1) Delay
Dissolved	-0.135** (0.068)
Observations	292
R-squared	0.768
Municipalities	80
Specification	Baseline
Mun. FE	✓
Year × Matched Pair FE	✓
Mean App. not processed	.137
% Mean App. not processed	-98

NOTES: The table reports the effect of municipal council dissolutions on bureaucratic performance. The dependent variable is the delay of applications processing in the municipality technical office, available only for the dissolutions happening in the period 2002-2006 (n=41, 23% of our full sample). *App. not processed*, reported at the bottom of the table, shows the average value of the dependent variable for control municipalities in the pre-treatment period. *% App. not processed* shows the magnitude of the effect as a percentage of the average value of the dependent variable described above. Column (1) is based on the specification in Equation 1. The event study version of this table is available in Appendix A.5. Standard errors clustered at municipality level are shown in parentheses. * significant at 10% , ** significant at 5%, *** significant at 1%.

Our findings reveal that when political leadership is captured by criminal organizations, bureaucrats appear less effective in carrying out their administrative responsibilities. This evidence is consistent with the theoretical mechanism of *bureaucratic dissociation* discussed in Section 3 and with recent work showing that misalignment between political and bureaucratic preferences weakens organizational performance in public institutions (Spenkuch, Teso and Xu, 2023; Wirsching, 2026) and that bureaucrats can act as a buffer against unprincipled principals (Brierley, 2020; Bauer and Becker, 2020; Morelli, Petrukhin and Vannoni, 2026; Moynihan, 2022; Schuster et al., 2022; Silveira

et al., 2026). By contrast, we find no indication that on average bureaucrats collude with infiltrated governments. While the average treatment effect is consistent with bureaucratic dissociation, however, it does not by itself identify the underlying mechanism. We therefore turn to evidence that directly tests this interpretation and distinguishes it from competing explanations.

7 Mechanism and Alternative Accounts

Our main estimates show that bureaucratic performance improves after captured political leaders are removed. We interpret this finding as evidence that bureaucrats dissociate from captured politicians: under political capture, bureaucrats become less willing or less motivated to carry out their administrative responsibilities, and performance recovers once captured principals are removed. In this section, we first provide direct evidence supporting this mechanism and then consider alternative explanations for our findings.

7.1 Evidence for Bureaucratic Dissociation

A central implication of our framework is that the effects of dissolutions should be strongest where misalignment between bureaucrats and captured politicians was most pronounced. To test this prediction, we leverage the official investigative reports (*Relazioni Prefettizie*) produced by the national police that investigate municipalities before recommending dissolution. These reports reconstruct the functioning of municipal governments under mafia capture, drawing on documentary evidence, administrative records, and witness testimony. In doing so, they frequently describe concrete interactions between elected officials and bureaucrats, including episodes in which bureaucrats resisted unlawful political directives.

Table C.17 reports a set of illustrative examples drawn from these reports. The examples highlight the diverse ways in which bureaucratic resistance manifests in practice. Investigators document cases in which municipal secretaries challenged council resolutions designed to legalize unauthorized construction, technical-office officials refused to

issue unlawful building permits despite political retaliation, and municipal employees blocked inflated payments to politically connected contractors. Such episodes provide unusually direct evidence of bureaucratic resistance that is otherwise difficult to observe systematically in administrative data.

To measure these episodes consistently across municipalities, we employ an LLM-assisted annotation procedure using on an off-the-shelf large language model developed by Mistral AI (*Mistral Large 3*).[29] The procedure identifies municipalities in which investigators explicitly documented bureaucratic resistance—that is, observable actions through which bureaucrats opposed, delayed, or refused unlawful directives issued by captured political leaders. We interpret these documented episodes as a conservative proxy for bureaucratic dissociation. Dissociation may also manifest through less visible behaviors such as reduced effort, strategic shirking, or disengagement, but these forms are inherently difficult to observe. By contrast, overt acts of resistance are more likely to be mentioned in the investigative reports and therefore provide a measurable indication of our proposed mechanism. A total of 34 percent of dissolved municipalities are classified as having acts of bureaucratic resistance under this approach. A detailed description of the annotation procedure, together with model selection rationale as well as robustness to alternative LLM annotation methods is provided in Appendix C.

Table 4 examines whether the improvements in bureaucratic performance documented in Section 6 are concentrated in municipalities with bureaucratic resistance. Because investigative reports are only available for dissolutions occurring between 2010 and 2020, column (1) first replicates our baseline estimate within this restricted sample, showing that the improvement in bureaucratic performance remains comparable to our main results. Column (2) then interacts the dissolution indicator with the presence of documented bureaucratic resistance.

The results strongly support our proposed mechanism. Nearly all of the improvement in bureaucratic performance following dissolution is concentrated among municipalities where investigators documented episodes of bureaucratic resistance. Munici-

[29]Each of the reports contains more than 9,000 words on average; see Table C.10.

Table 4: Council Dissolutions, Bureaucratic Resistance, and Payment Delays

	(1) Delay	(2) Delay
Dissolved	-0.033***	-0.014
	(0.011)	(0.012)
Dissolved × Resistance		-0.057**
		(0.025)
Observations	2,460	2,460
R-squared	0.799	0.803
Municipalities	200	200
Specification	Baseline	Baseline
Mun. FE	✓	✓
Year × Matched Pair FE	✓	✓
Marginal effect for Resistance Mun.	–	-0.071***
Mean delay	.307	.306
% Mean delay	-10%	–
% Mean delay - No Res.	–	-5%
% Mean delay - Res.	–	-23%

NOTES: The table reports the heterogeneous effect of municipal council dissolutions on bureaucratic performance, depending on whether there was at least one episode of a bureaucrat explicitly opposing unlawful actions committed by the mayor or other members of the political bodies. The dependent variable is the delay of current payments. Since investigation reports are only available for dissolutions occurred over the period 2010-2020, in column (1) we replicate the results based on the specification in Equation 1 within this subsample. In column (2), we augment the specification in equation 1 with the interaction between the $Dissolved_{i,t}$ indicator and an indicator that takes the value 1 if the investigation reports at least one episode of resistance, as identified by Mistral Large LLM. Standard errors clustered at municipality level are shown in parentheses. * significant at 10% , ** significant at 5%, *** significant at 1%. Appendix Figure A.7 shows event-study estimates for our baseline results results reported column (1).

palities without resistance exhibit no statistically meaningful performance improvement post dissolution, whereas municipalities with resistance experience performance improvements that are more than twice as large as the average treatment effect. This pattern is precisely what we would expect under the theoretical mechanism of bureaucratic dissociation: where bureaucrats were dissociating from captured political leaders, removing those leaders restores alignment between political principals and bureaucratic agents, allowing bureaucratic performance to recover.[30]

[30]We show that these results are robust to alternative LLM choices for data annotation in Figure C.8.

7.2 Ruling Out Alternative Accounts

The heterogeneous effects documented in Table 4 not only support the bureaucratic dissociation mechanism but also allow us to distinguish our interpretation from several alternative explanations for the estimated effects. We first consider explanations based on the objectives of captured politicians and then address concerns regarding the interpretation of the heterogeneous effects.

A first possibility rests on the idea that mafia organizations simply do not value bureaucratic effectiveness. Under this interpretation, bureaucrats perform poorly while politicians are captured because administrative performance is not a priority for the mafia, and bureaucratic efficiency simply reverts to normal once captured politicians are removed. A related possibility is that captured politicians actively prefer slower payments —for example, because delaying payments can benefit politically connected firms by hurting competitors or be instrumental to punish non-aligned companies. Both explanations predict improvements following dissolution without requiring bureaucratic dissociation.

However, neither of these accounts can be easily reconciled with our evidence. Table 4 shows that improvements in bureaucratic performance following dissolution are concentrated entirely in municipalities where investigators documented bureaucratic resistance. If poor performance merely reflected the mafia's indifference toward administrative effectiveness—or an active preference for payment delays—there is no reason why the effects of dissolution should depend on whether bureaucrats openly resisted captured politicians. In fact, these alternative explanations predict the opposite pattern. In municipalities where bureaucrats cooperated with captured political leaders, administrative performance would deteriorate during capture and improve once captured politicians were removed. By contrast, where bureaucrats resisted pressures to deviate from their official duties, administrative performance should remain comparatively high during the capture period, implying little improvement—or even a deterioration—following dissolution. This prediction stands in sharp contrast to the heterogeneous effects documented in Table 4. Moreover, the second explanation is further undermined by our alternative measure of

bureaucratic performance reported in Table 3. Dissolutions also reduce delays in processing applications submitted to the municipal technical office, an outcome that captures administrative efficiency, but does not measure payment delays. The consistency of the results across these two distinct outcomes suggests that dissolutions improve bureaucratic performance broadly rather than simply accelerating payments.

A second set of concerns is that documented bureaucratic resistance may proxy for characteristics of municipalities other than bureaucratic dissociation. If municipalities exhibiting documented resistance differ systematically from other dissolved municipalities, the heterogeneous effects in Table 4 could reflect these underlying differences rather than the behavioral mechanism we propose. We consider three such possibilities.

A first possibility is that documented bureaucratic resistance proxies for higher-quality bureaucracies rather than bureaucratic dissociation. More competent individuals may both be more likely to resist unlawful political directives and perform better once political capture is removed, independently of the mechanism we propose. Appendix Table A.4 provides little support for this interpretation. Municipalities with and without documented bureaucratic resistance are balanced with respect to all available characteristics of municipal bureaucrats, including their average educational attainment, age, and years of experience in the bureaucracy, suggesting that the heterogeneous effects documented in Table 4 do not simply reflect differences in bureaucratic quality.

A second possibility is that municipalities exhibiting documented bureaucratic resistance experienced more severe forms of mafia infiltration. If bureaucratic resistance is more likely where political capture is particularly intense, the heterogeneous effects documented in Table A.4 may simply reflect differences in treatment intensity—that is, differences in the severity of mafia capture—rather than differences in bureaucratic behavior. Under this interpretation, more deeply captured municipalities would experience larger improvements in bureaucratic performance following dissolution because mafia control had been more disruptive to administrative activity for reasons that are orthogonal to bureaucratic dissociation. This explanation, however, also rests on the premise that more severe mafia capture further depresses bureaucratic performance even in absence

of bureaucratic resistance. Such a premise is difficult to reconcile with the evidence presented in Table 1, which shows that the principal objectives of captured governments - such as manipulating procurement and exploiting public resource - require bureaucrats to perform administrative tasks rather than cease performing them. We nevertheless examine this possibility directly. Appendix Table A.5 shows that municipalities with and without documented bureaucratic resistance are balanced in the mafia infiltration index used throughout our empirical strategy, indicating comparable ex ante risks of political capture. They are likewise balanced with respect to the number of attacks against the municipal government recorded prior to dissolution. Taken together, these balance tests suggest that documented bureaucratic resistance is unlikely to be proxying for more severe forms of mafia infiltration.

A third possibility is that documented bureaucratic resistance proxies for the thoroughness of the investigation underlying the municipal dissolution rather than for bureaucratic dissociation. More thorough investigations are likely to uncover a greater number of episodes of bureaucratic resistance simply because investigators collect more evidence. At the same time, a more intensive investigation may itself heighten bureaucrats' perceptions of legal scrutiny, inducing them to improve their performance following dissolution regardless of whether they had previously dissociated from captured political leaders. Under this interpretation, the heterogeneous effects documented in Table A.5 would reflect differences in investigative intensity rather than differences in bureaucratic behavior. We find little support for this explanation. As shown in Table A.5, municipalities with and without documented bureaucratic resistance exhibit comparable investigation report lengths, measured by the number of words. This balance suggests that the heterogeneous effects are unlikely to be driven by differences in the thoroughness of the underlying investigations.

A final set of alternative explanations attributes the observed improvements in bureaucratic performance not to changes in the behavior of incumbent bureaucrats but rather to organizational changes induced by the dissolution itself. For example, administrative efficiency may improve because municipalities process fewer expenditures, because staffing

levels increase and bureaucrats face lower workloads, because incumbent bureaucrats are replaced following dissolution, because the centrally appointed commissioners govern municipalities more effectively than elected politicians, or because politicians elected after dissolution are positively selected. Although these explanations are not naturally consistent with the heterogeneous effects documented in Table 4, we examine each of them directly.

We begin by considering whether the estimated effects reflect bureaucratic renewal rather than changes in the behavior of incumbent bureaucrats. If dissolutions systematically replace career civil servants, improvements in bureaucratic performance could simply reflect workforce replacement rather than behavioral changes among incumbent bureaucrats. Prior work shows that turnover associated with elections can improve public service delivery (Bazzi et al., 2025), underscoring the importance of assessing this alternative mechanism in our setting. This concern is already mitigated by the institutional setting. As discussed in Section 2, municipal dissolutions do not alter the employment protections enjoyed by Italian civil servants, who cannot be dismissed simply because a municipality is dissolved. We nevertheless examine this possibility directly. Our treatment is a compound intervention: it combines the removal of mafia capture, the temporary replacement of elected officials with appointed commissioners, and subsequent municipal elections. While the first two components are specific to municipalities subject to dissolution, elections are a regular feature of local governance in Italy.[31] In order to rule out the alternative mechanism of bureaucratic turnover, we must test whether elections following dissolutions induce greater turnover than ordinary elections.

We implement this test in Table 5 using the full sample of Italian municipalities. Specifically, we compare the effect of municipal elections on bureaucratic turnover with the effect of elections that occur immediately after council dissolutions. We estimate a two-way fixed effects model that allows the impact of elections to differ depending on whether they follow a dissolution.[32]

[31]Municipalities follow staggered electoral calendars, with elections held every five years.

[32]Specifically, we estimate $Y_{it} = \alpha_i + \beta_t + \gamma Election_{it} + \delta(Election_{it} \times Dissolved_{it}) + \varepsilon_{it}$, where Y_{it} represents bureaucratic turnover in municipality i in year t. $Election_{it}$ is an indicator equal to one in election years, and $Dissolved_{it}$ indicates elections following a council dissolution. We consider a five-year

Table 5: Council Dissolutions and Bureaucratic Turnover

	(1) Turnover Staff	(2) Turnover Managers
Election	0.001	0.170***
	(0.002)	(0.008)
Election × Dissolved	0.016	0.032
	(0.013)	(0.086)
Observations	133,431	64,915
R-squared	0.120	0.148
Mun. FE	✓	✓
Year FE	✓	✓
Mean dep. var.	.144	.311

NOTES: The table shows the results obtained estimating a twoway fixed effect model of the form $Y_{it} = \alpha_i + \beta_t + \gamma Election_{it} + \delta(Election_{it} \times Dissolved_{it}) + \varepsilon_{it}$, where Y_{it} represents the amount of bureaucratic turnover, defined as in Section 4, in municipality i in year t, and $Election_{it}$ is an indicator taking value one when municipality i holds municipal elections in year t, and $Dissolved_{it}$ is an indicator taking value one when the election of municipality i in year t follows a council dissolution. For every municipality, we consider 5 years, i.e. a 2-years window around each election year. Standard errors clustered at municipality level are shown in parentheses. * significant at 10% , ** significant at 5%, *** significant at 1%.

We examine turnover separately for managers and rank-and-file staff. Managers are politically appointed and therefore more likely to be replaced following elections, whereas staff are career civil servants with tenure protections. Consistent with prior literature (Akhtari, Moreira and Trucco, 2022; Bazzi et al., 2025; Bellodi, Morelli and Vannoni, 2024; Toral, 2024), we find that elections increase bureaucratic turnover, and consistent with the Italian setting, it is concentrated among managerial positions only. Crucially however, elections following dissolutions do not lead to additional turnover relative to ordinary elections. In Appendix Table A.8, we further examine whether elections following dissolutions affect the characteristics of managers, who are the most likely to be replaced. We find no evidence that managers appointed after dissolutions are more educated, as measured by secondary school or university attainment.

Altogether these findings indicate that the improvements in bureaucratic performance are unlikely to be driven by changes in the composition of the bureaucracy. Instead, they are more consistent with incumbent bureaucrats changing their behavior once captured

window centered around each election.

political leaders are removed.

Another concern is that the observed improvements reflect the superior competence of the commissioners appointed to administer dissolved municipalities rather than the removal of captured political leaders. As discussed in Section 2.2, these commissioners typically serve one- to two-year terms and are drawn from the ranks of senior civil servants, most often retired judges. If commissioners are positively selected relative to the average elected politician in control municipalities (as is likely the case), their higher administrative competence or professional integrity could conceivably drive the observed efficiency gains. A more capable principal – irrespective of the preceding government's behavior –might elicit greater effort from bureaucrats, either through enhanced oversight or because civil servants derive greater satisfaction from working under a fellow career official rather than a partisan superior. Furthermore, appointed commissioners are not motivated or constrained by re-election incentives, which may also affect their performance. This explanation also sits uneasily with the heterogeneous effects documented in Table 4. If commissioner quality were the principal driver of the results, improvements should be observed across dissolved municipalities regardless of whether bureaucrats had previously resisted captured politicians. Moreover, as shown in Figure 2, performance improvements are not concentrated during the commissioners' tenure (years *t+1* and *t+2*); instead, the largest improvements occur following new elections in year *t+3*, once regular political administrations are reinstated. This temporal pattern indicates that the efficiency gains we observe cannot plausibly be attributed to the commissioners themselves. We nevertheless evaluate this possibility directly by examining placebo dissolutions unrelated to mafia infiltration. Table 6 compares our baseline estimates in column (1) to placebo dissolution episodes, i.e. instances of administrative dissolution and commissioning that were unrelated to mafia infiltration. Column (2) looks at municipalities placed under extraordinary commissioners following dissolutions that were subsequently overturned by the courts. These exhibit no comparable improvement in bureaucratic performance. Column (3) of Table 6 examines 536 council dissolutions triggered by mayoral resignation rather than infiltration. Such resignations typically occur when a mayor loses

Table 6: Placebo: Commissioning Episodes without Mafia Infiltration

	(1) Delay	(2) Delay	(3) Delay
Dissolved	-0.020**	0.015	0.003
	(0.008)	(0.012)	(0.004)
Observations	4,382	1,398	13,240
R-squared	0.806	0.809	0.779
Municipalities	354	108	1012
Specification	Baseline	Revoked	Comm.
Mun. FE	✓	✓	✓
Year × Matched Pair FE	✓	✓	✓
Mean delay	.292	.259	.24
% Mean delay	-6	5	1

NOTES: Column (1) reports baseline estimates (as in column (1) of Table 2). In column (2), we replace the $Dissolved_{i,t}$ indicator with an indicator equal to 1 if the municipal council was dissolved due to mafia infiltration but the dissolution was later revoked because no evidence of mafia infiltration was actually detected. In column (3), we replace the $Dissolved_{i,t}$ indicator with an indicator equal to 1 if the municipal council was dissolved and a commissioner was installed due to other reasons such as the resignation of the mayor or of the majority of the municipality's council. To produce the results in column (2) and column (3), we construct a new sample of matched pairs of municipalities that receive each of the *placebo* treatment and their best control, following the same approach described in Section 5. We can observe cases of revoked dissolutions only during the period 2010-2020. Standard errors clustered at municipality level are shown in parentheses. * significant at 10% , ** significant at 5%, *** significant at 1%.

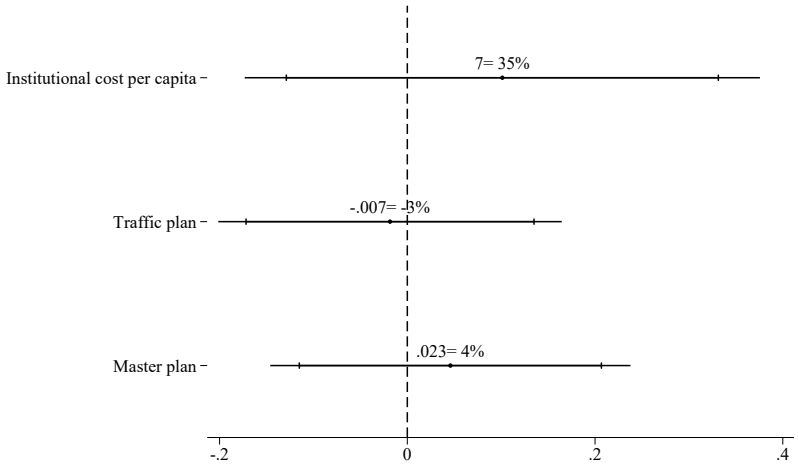
the support of the council majority, rendering governance untenable, or when the mayor gets appointed to another office. Consistent with the previous findings, these estimates also show no improvement in bureaucratic outcomes. Since municipalities examined in column (2) and (3) experienced commissioner rule without genuine political capture, the absence of any performance gains indicates that commissioner quality alone cannot account for our findings.

A related concern is that the observed improvements are driven by the higher quality of the politicians elected following dissolution rather than by changes in bureaucratic behavior. This concern is consistent with a broader literature showing that institutional features shape the quality and characteristics of individuals willing to seek public office (Eggers et al., 2025; Gagliarducci and Nannicini, 2013; Gulzar, 2021). Dissolutions may alter the local political environment, discouraging candidates connected to criminal organizations from running for office or attracting candidates with greater competence or

integrity. If so, bureaucratic performance could improve because bureaucrats respond to higher-quality political principals rather than because they cease dissociating from captured politicians. Daniele and Geys (2015) shows that council dissolutions due to mafia infiltration lead to a modest increase in the quality of local politicians, measured through educational attainment. Although the detected effect is small, and despite growing evidence that education is a poor proxy for competence among executive politicians (Carnes and Lupu, 2016; Dal Bó et al., 2017), one possible concern is that an improvement in politicians' quality could account for our results. This explanation is difficult to reconcile with the dynamic evidence in Figure 2, showing that performance gains are not concentrated only in post-election years. The improvements in bureaucratic performance begin during the period in which municipalities are governed by extraordinary commissioners, before new elections are held. Nevertheless, to address this concern directly, we examine three indicators of political efficacy. We analyze the impact of dissolutions on per capita spending for the municipal administration, as well as whether two key executive tasks for municipal governments - the master plan and the traffic plan - are completed on time. As shown in Figure 3, council dissolutions have no discernible effect on any of these measures of political efficacy, alleviating concerns that our findings are driven by improvements in the quality of elected officials.

We finally consider whether the estimated effects reflect purely mechanical changes in municipal administration following dissolution rather than genuine improvements in bureaucratic performance. One possibility is that dissolutions reduce overall fiscal activity. Municipalities might process fewer expenditures, mechanically shortening the queue of pending payments and giving the appearance of faster administrative performance even if bureaucrats' behavior remains unchanged. This explanation is difficult to reconcile with our results in Table 3, which show that dissolutions also improve the processing of applications submitted to the municipal technical office—an outcome that captures bureaucratic efficiency as well as the number of requests submitted by residents, but is unrelated to the processing of municipal payments. A second possibility is that dissolutions increase the size of the municipal bureaucracy. If additional personnel are hired, bureaucrats would

Figure 3: Council Dissolutions and Political Efficacy



NOTES: The figure shows the effect of dissolutions on three measures of political efficacy. Each coefficient reports the result of a separate regression in which the dependent variable is specified on the horizontal axis. *Institutional cost* refers to all costs related to the functioning of political bodies of the municipalities, per capita in Euros. *Traffic plan* and *Master plan* are indicators that take value 1 if the municipality has adopted the plans required by law. All dependent variables are expressed in standard deviation units. Estimated coefficients and confidence intervals are based on the specification in Equation 1. Standard errors are clustered at the municipality level. Horizontal spikes represent 90% and 95% confidence intervals, respectively.

face lower workloads, allowing payments to be processed more quickly without any change in effort or motivation. We examine both possibilities directly in Table 7. Column (1) shows that dissolutions do not produce any statistically significant change in per capita municipal expenditures, providing further evidence against the hypothesis that lower fiscal activity mechanically reduces payment delays. Columns (2) and (3) similarly show no evidence that dissolutions increase the size of the municipal bureaucracy, neither among rank-and-file staff nor among managers. These findings indicate that the improvements in bureaucratic performance cannot be explained mechanically by changes in the volume of administrative activity or the staffing levels of municipal bureaucracies.

Taken together, the evidence presented in this section substantially strengthens our interpretation of the main results. The heterogeneous effects documented in Table 4 are concentrated precisely where our proposed mechanism predicts, i.e. municipalities in which investigators documented bureaucratic resistance, and cannot be readily explained by alternative accounts based on the objectives of captured politicians, differences in bureaucratic quality, differences in the severity of mafia capture, organizational changes fol-

Table 7: Council Dissolutions, Municipal Spending, and Bureaucracy Size

	(1) Current Expenditures per capita	(2) Employees per 1,000 inh. Staff	(3) Employees per 1,000 inh. Managers
Dissolved	-2.453	0.241	0.007
	(20.325)	(0.170)	(0.022)
Observations	4,378	4,646	4,646
R-squared	0.760	0.903	0.693
Municipalities	350	354	354
Mun. FE	✓	✓	✓
Year × Matched Pair FE	✓	✓	✓
Mean dep. var.	696	5.943	.153
% Mean dep. var.	0	4	5

NOTES: The table presents the results obtained from three tests performed with the aim of assessing potential mechanical explanations for the main effect on spending delays. All columns are based on the specification in Equation 1. In column (1), the dependent variable is the level of per capita municipal expenditures (in Euros). In column (2), the dependent variable is the number of staff employed by the municipality per 1000 inhabitants. In column (3), the dependent variable is the number of managers employed by the municipality per 1000 inhabitants. Standard errors clustered at municipality level are shown in parentheses. * significant at 10% , ** significant at 5%, *** significant at 1%.

lowing dissolution, or the higher quality of extraordinary commissioners or newly elected politicians. Instead, the evidence consistently points to bureaucratic dissociation as the central mechanism through which political capture undermines bureaucratic performance.

8 Conclusion

This paper examines how bureaucracies respond when political leadership is captured: whether they become instruments of corrupt rule or act as a buffer that constrains its effects. Studying Italian municipalities infiltrated by mafia organizations, we show that bureaucracies, on average, do not accommodate captured politicians. Instead, bureaucratic performance improves when captured political leadership is removed, and evidence from investigative reports indicates that these gains are driven by municipalities in which bureaucrats resisted unlawful political directives.

These findings highlight the role of bureaucrats in shaping how political capture trans-

lates into policy outcomes. Rather than passively implementing the directives of captured principals, bureaucrats may limit the reach of illicit influence by withholding effort or refusing to cooperate. In this sense, bureaucracies constrain the full administrative reach of political capture, even as dissociation depresses performance while capture persists.

Although we provide evidence for a bureaucratic dissociation mechanism, we cannot fully distinguish among the specific behavioral channels through which dissociation affects performance. Documented episodes of explicit resistance are only one observable manifestation of a broader set of behaviors. Future research should examine both the organizational conditions under which bureaucrats dissociate from captured political leaders and the individual motivations underlying such behavior. Bureaucrats may object to unlawful directives on professional or normative grounds, but they may equally seek to avoid the legal and personal consequences of participating in criminal activities. Distinguishing among these motivations, as well as separating dissent-driven dissociation from broader changes in bureaucratic morale, would deepen our understanding of bureaucratic responses to political capture. Evidence from in-depth interviews with municipal bureaucrats represents a particularly promising avenue for advancing this agenda.

Our findings should be interpreted in light of the institutional features of Italian local governments. Municipal bureaucrats operate within a framework of civil-service protections and formal procedures that limit the ability of elected officials to replace them or bypass them entirely. These protections make bureaucratic dissociation possible: civil servants can distance themselves from captured political authority while remaining inside the organization. Our argument should therefore be most applicable to settings in which captured politicians depend on a legally protected bureaucracy to implement policy. Where politicians can freely appoint or dismiss bureaucrats, capture may operate differently.

From a policy perspective, our results have implications for the effectiveness of anti-corruption and anti-capture interventions. Recent research emphasizes that improving the functioning of public institutions can generate benefits that extend beyond reducing corruption itself by strengthening state capacity and government performance (Amat and

Beramendi, 2020). Our findings point to an additional mechanism through which such interventions may operate. By removing compromised political principals, anti-capture policies can restore alignment between political authority and bureaucratic agents, enabling more effective administrative performance.

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Appendix

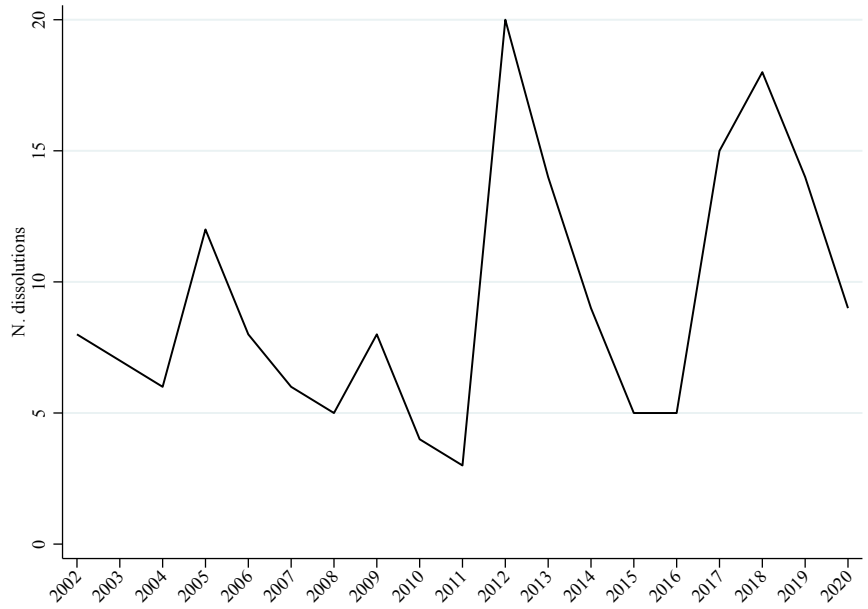
A Additional Figures and Tables

Table A.1: Descriptive Statistics

	Mean	Std. Dev.	Min.	Max.	N
Main outcomes					
Payment delay	0.300	0.110	0.000	0.842	4382
Dissolved	0.500	0.500	0.000	1.000	4382
Resistance	0.341	0.474	0.000	1.000	1230
Processing delay	-0.020	3.473	-79.000	1.000	530
Municipality characteristics					
University rate	13.000	7.104	0.000	46.100	4252
University rate executives	45.009	27.829	0.000	100.000	4282
University rate councilors	39.395	18.598	0.000	100.000	4282
Age councilors	43.319	3.786	30.000	59.636	4282
Occupation rate	32.980	5.701	16.800	60.700	4252
Current expenditures per capita	733.504	336.071	59.755	11799.725	4366
Political efficacy					
Institutional cost per capita	20.583	67.045	0.000	2637.618	3106
Master plan	0.530	0.499	0.000	1.000	3141
Traffic plan	0.195	0.396	0.000	1.000	3143
Bureaucracy size and characteristics					
Employees (per 1,000 inh.) - Staff	5.762	2.729	0.000	26.352	4366
Employees (per 1,000 inh.) - Managers	0.140	0.233	0.000	8.453	4366
Turnover - Staff	0.141	0.203	0.000	5.000	4368
Turnover - Managers	0.573	1.132	0.000	9.000	3397
Age - Staff	53.297	3.648	21.250	64.000	4364
Age - Managers	51.314	7.689	19.000	68.000	3391

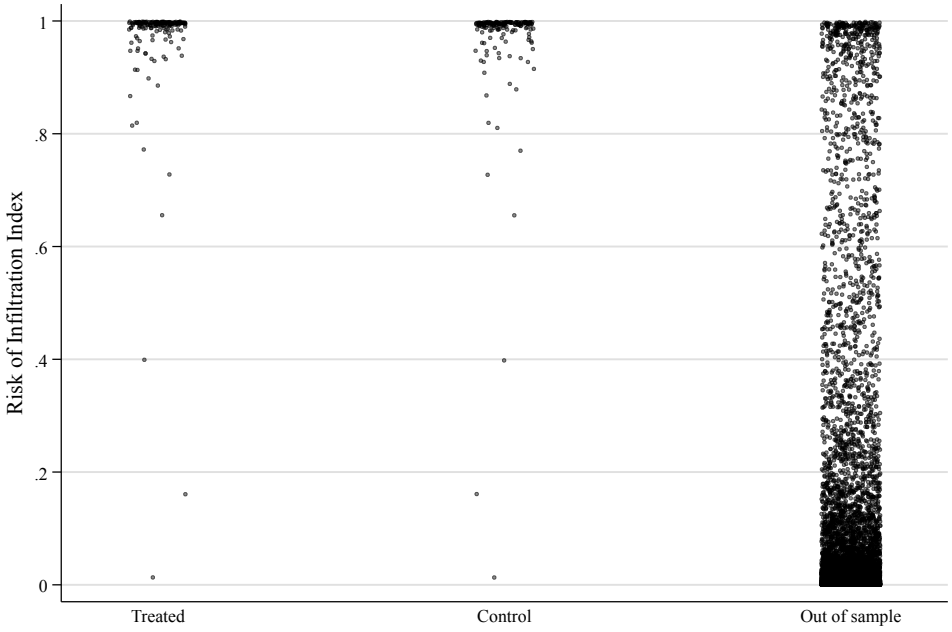
NOTES: The table shows the main summary statistics of all variables included in our analysis. The sample is restricted to treated municipalities and their matched control, observed within a window starting seven years prior to the dissolution occurred in treated municipalities and ending seven years after the dissolution. Municipalities dissolved more than once are kept in the sample only around the first dissolution episode. Note that the variable *Resistance* is defined for the sample of dissolved municipalities only.

Figure A.1: Time distribution of dissolutions



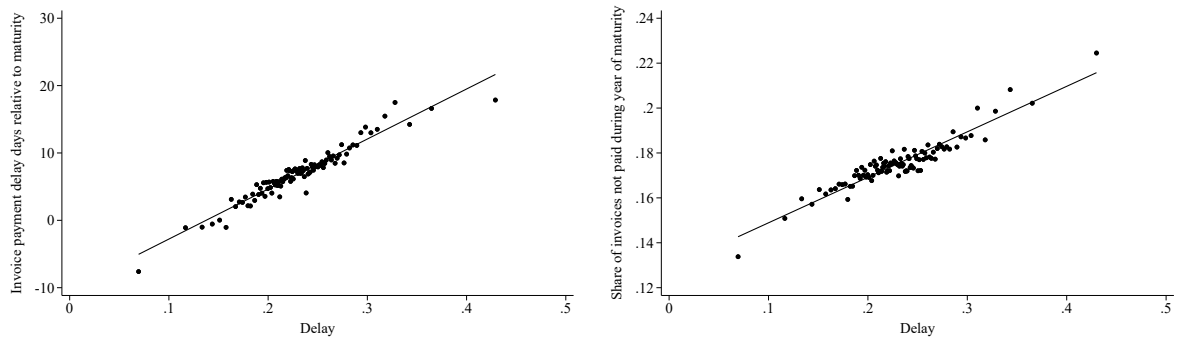
NOTES: Number of city council dissolutions per year occurred between 2002 and 2020.

Figure A.2: Distribution of the risk of infiltration index



NOTES: The figure shows the distribution of the risk of infiltration index for municipalities whose local councils are dissolved because of mafia infiltration (Treated), their matched control municipalities (Control), and all remaining Italian municipalities that are not included in our estimation sample (Out of sample). For both treated municipalities and their matched controls, the risk of infiltration index is measured in the year preceding the dissolution of the treated municipality. For municipalities outside the estimation sample, the index is measured in 2011, the year preceding the modal year of municipal dissolution in the treated sample (2012).

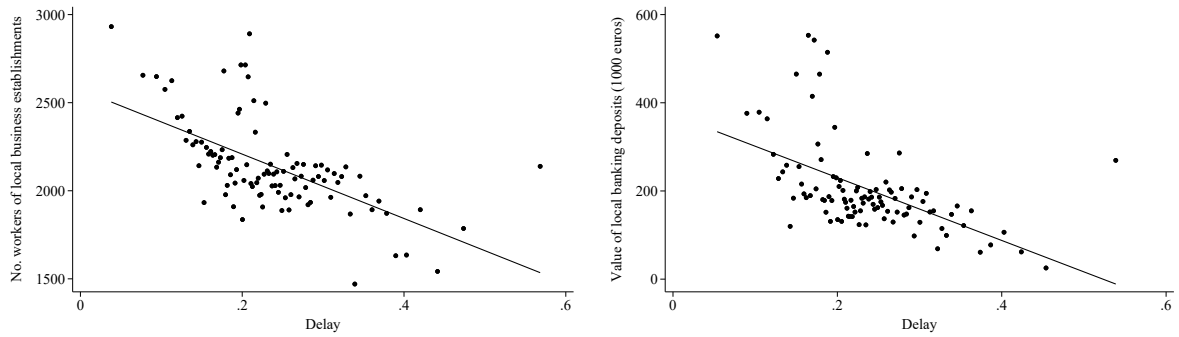
Figure A.3: Correlation between payment delay (budget data) and invoice payment delay



(a) Payment delay days **(b)** Invoices not paid during year of maturity

NOTES: Data on invoice payments are available for the period 2019-2023. The unit of observation is a municipality-year. Each marker reports the average value of the dependent variable within bins equal to one percentage of the distribution of the Payment Delay$_{i,t}$ variable. Estimates and sample averages are adjusted for municipality FE and year FE. $N = 39,034$.

Figure A.4: Correlation between payment delay and local economic activity



(a) Workers of local business establishments **(b)** Value of banking deposits

NOTES: Data on business establishments are available for the period 2012-2022 ($N = 85,821$) from the Italian Ministry of Economy (MEF, Ragioneria dello Stato). Data on banking deposits are available for the period 2007-2023 and restrict the sample to municipalities in which at least one bank branch is active ($N = 87,908$), also from MEF. The unit of observation is a municipality-year. Each marker reports the average value of the dependent variable within bins equal to one percentage of the distribution of the Payment Delay$_{i,t}$ variable. Estimates and sample averages are adjusted for the municipality's population and for province FE and year FE.

Table A.2: Balancing of pre-treatment government characteristics between treated municipalities and matched control municipalities

	(1) Avg. T	(2) Avg. C	(3) Coefficient	(4) SD
Panel A: Mayor				
Avg. age	49.467	49.714	-0.247	0.896
Female (%)	0.018	0.033	-0.015	0.013
University (%)	0.652	0.665	-0.013	0.043
Incumbent	0.331	0.326	0.004	0.035
Any previous public office (%)	2.439	2.538	-0.100	0.106
Term limited	0.321	0.322	-0.001	0.035
Panel B: Executive				
Avg. age	43.979	44.698	-0.719	0.456
Female (%)	0.155	0.156	-0.001	0.012
University (%)	0.396	0.455	-0.059**	0.027
Any previous public office (%)	1.748	1.741	0.007	0.056
Panel C: Council				
Avg. age	42.821	43.433	-0.612*	0.322
Female (%)	0.125	0.120	0.005	0.007
University (%)	0.348	0.393	-0.045***	0.016
Any previous public office (%)	1.755	1.785	-0.030	0.036
Panel D: Bureaucracy				
N. staff	88.747	152.648	-63.901	61.235
Turnover staff	7.851	15.321	-7.470	7.528
Female staff (%)	0.308	0.311	-0.002	0.014
Female managers (%)	0.433	0.409	0.040	0.046
Avg. age staff	52.047	52.093	-0.046	0.252
Avg. seniority staff	21.733	21.618	0.115	0.378
High school education staff (%)	0.857	0.843	0.014	0.008
University education staff (%)	0.143	0.157	-0.013	0.008
N. managers	1.678	2.663	-0.985	0.995
Turnover managers	0.749	1.055	-0.306	0.295
Avg. age managers	50.691	49.948	0.884	0.758
Avg. seniority managers	17.196	17.596	-0.597	1.409
High school education managers (%)	0.018	0.010	0.008	0.007
University education managers (%)	0.982	0.987	-0.005	0.007
Panel E: Election				
N. candidates	2.452	2.386	0.073	0.131
Incumbent runs	0.554	0.530	0.024	0.038
Candidates with University (%)	0.978	1.007	-0.045	0.057
Turnout (%)	0.718	0.725	-0.007	0.012
Due councilors	17.948	17.972	-0.024	0.682
Assigned councilors	5.401	5.580	-0.179	0.196

NOTES: The table shows the differences in a number of characteristics of elections and of local administrators between dissolved municipalities and their matched controls, measured prior to the dissolution occurred in treated municipalities. Standard errors clustered at the municipality level are shown in column 4. * significant at 10% , ** significant at 5%, *** significant at 1%.

Table A.3: Balancing of pre-treatment municipal characteristics between treated municipalities and matched control municipalities

	(1) Avg. T	(2) Avg. C	(3) Coefficient	(4) SD
Surface (Km2)	51.021	55.276	-4.839	8.253
Population (1,000s)	15.574	20.413	-4.838	6.023
Demographic density	927.374	881.185	84.433	190.997
Household size	2.914	2.872	0.042	0.031
Elderly share	7.090	7.012	0.078	0.316
Sex ratio	96.032	95.433	0.619	0.389
Labor Force Partecipation	30.682	31.492	-0.848	0.629
Employment rate	31.454	32.747	-1.340**	0.579
Migration rate	1.047	1.047	-0.010	0.102
University rate	9.180	10.970	-1.790***	0.451
Poor families	2.208	2.107	0.102	0.118
N. taxpayer (1,000s)	8.851	12.827	-3.979	4.890
Current expenditures (1,000s)	10.585	17.249	-6.665	7.502
Capital expenditures (1,000s)	3.120	5.032	-1.912	2.358
Revenues (1,000s)	19.073	31.962	-12.889	13.660
Deficit (1,000s)	-5.368	-9.681	4.312	3.859
Deficit index	0.275	0.267	0.008	0.021
IRPEF (million of euros)	125.321	214.431	-88.095	95.361
Mafia Infiltration Risk	0.901	0.879	0.021	0.014
N. attacks to municipal government	0.274	0.164	0.111	0.073
Prob. attack to municipal government	0.460	0.354	0.106	0.066

NOTES: The table shows the differences in a number of census characteristics between dissolved municipalities and their matched controls, together with the mafia-infiltration index value and the probability of attacks carried out by mafia members, measured prior to the dissolution occurred in treated municipalities. Standard errors clustered at the municipality level are shown in column 4. * significant at 10% , ** significant at 5%, *** significant at 1%.

Table A.4: Balancing of pre-treatment government characteristics by resistance status

	(1) Avg. Res.	(2) Avg. No Res.	(3) Coefficient	(4) SD
Panel A: Mayor				
Avg. age	49.690	50.864	-1.174	1.868
Female (%)	0.049	0.022	0.027	0.029
University (%)	0.698	0.689	0.009	0.079
Incumbent	0.269	0.323	-0.054	0.064
Any previous public office (%)	2.694	2.660	0.034	0.206
Term limited	0.261	0.303	-0.042	0.062
Panel B: Executive				
Avg. age	43.708	44.554	-0.846	0.908
Female (%)	0.214	0.196	0.018	0.026
University (%)	0.468	0.408	0.060	0.044
Any previous public office (%)	1.816	1.827	-0.011	0.112
Panel C: Council				
Avg. age	43.234	43.192	0.042	0.727
Female (%)	0.167	0.152	0.016	0.021
University (%)	0.387	0.375	0.012	0.029
Any previous public office (%)	1.888	1.811	0.078	0.071
Panel D: Bureaucracy				
N. staff	75.122	81.492	-6.369	22.156
Turnover staff	7.624	7.613	0.012	2.115
Female staff (%)	0.332	0.335	-0.003	0.024
Female managers (%)	0.536	0.374	0.162*	0.083
Avg. age staff	53.528	53.399	0.129	0.590
Avg. seniority staff	22.597	22.695	-0.099	0.823
High school education staff (%)	0.838	0.856	-0.018	0.014
University education staff (%)	0.162	0.146	0.016	0.014
N. managers	1.302	1.614	-0.312	0.447
Turnover managers	0.816	0.672	0.144	0.160
Avg. age managers	50.947	52.564	-1.617	1.469
Avg. seniority managers	14.733	16.182	-1.449	2.489
High school education managers (%)	0.032	0.010	0.023	0.025
University education managers (%)	0.967	0.990	-0.023	0.025
Panel E: Election				
N. candidates	3.282	3.026	0.255	0.342
Incumbent runs	0.518	0.521	-0.003	0.072
Candidates with University (%)	0.776	0.713	0.063	0.094
Turnout (%)	0.700	0.697	0.003	0.022
Due councilors	17.963	17.386	0.578	1.187
Assigned councilors	5.412	5.091	0.321	0.369

NOTES: The table shows the differences in a number of characteristics of elections and of local administrators between municipalities with and without documented acts of bureaucratic resistance, as described in section 7.1, measured prior to the dissolution occurred in treated municipalities. Standard errors clustered at the municipality level are shown in column 4. * significant at 10% , ** significant at 5%, *** significant at 1%. Standard errors clustered at the municipality level are shown in column 4. * significant at 10% , ** significant at 5%, *** significant at 1%.

Table A.5: Balancing of pre-treatment municipal characteristics by resistance status

	(1) Avg. Res.	(2) Avg. No Res.	(3) Coefficient	(4) SD
Surface (Km2)	46.344	65.298	-18.955	14.394
Population (1,000s)	14.899	16.091	-1.193	4.016
Demographic density	1073.006	437.196	635.810	390.132
Household size	2.914	2.882	0.033	0.062
Elderly rate	6.786	7.474	-0.688	0.559
Sex ratio	95.506	95.673	-0.167	0.678
Labor Force Partecipation	31.040	31.594	-0.554	1.256
Employment rate	32.416	32.976	-0.561	1.324
Migration rate	1.343	1.400	-0.057	0.262
University rate	9.109	9.400	-0.291	0.693
Poor families	2.066	2.285	-0.219	0.209
N. taxpayer (1,000s)	8.386	10.143	-1.758	2.429
Current expenditures (1,000s)	10.508	11.610	-1.103	3.116
Capital expenditures (1,000s)	2.309	3.307	-0.998	0.965
Revenues (1,000s)	19.744	22.527	-2.783	6.513
Deficit (1,000s)	-6.927	-7.610	0.683	2.673
Deficit index	0.225	0.302	-0.077**	0.032
IRPEF (million of euros)	119.986	141.879	-21.893	39.863
Mafia Infiltration Risk	0.899	0.889	0.010	0.036
Lenght commissioners' report (words)'	1.3e+04	8678.677	4458.895	2820.680
N. attacks to municipal government	0.194	0.341	-0.147	0.109
Prob. attack to municipal government	0.486	0.468	0.018	0.107

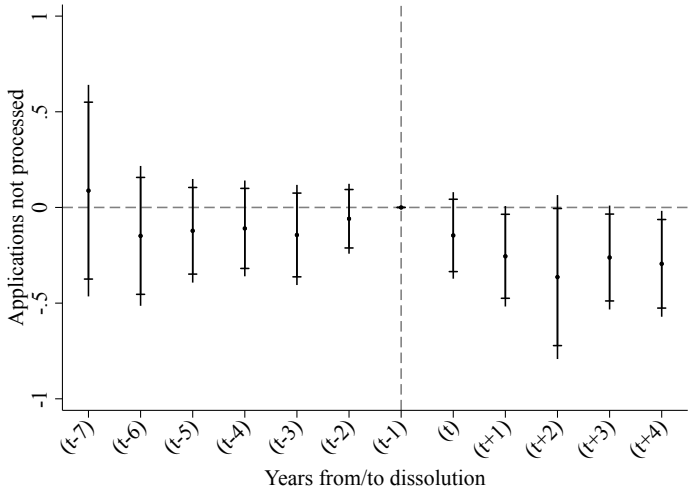
NOTES: The table shows the differences in a number of census characteristics between dissolved municipalities and their matched controls, together with the mafia-infiltration index value and the probability of attacks carried out by mafia members, measured prior to the dissolution occurred in treated municipalities. It also includes the difference in the length of the investigation report. Standard errors clustered at the municipality level are shown in column 4. * significant at 10% , ** significant at 5%, *** significant at 1%.

Table A.6: Robustness to unbalanced pre-dissolution characteristics

	(1) Delay	(2) Delay	(3) Delay	(4) Delay	(5) Delay	(6) Delay
Dissolved	-0.021**	-0.019**	-0.019**	-0.018**	-0.017**	-0.018**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)
Dissolved × Univ. executive	-0.024					-0.034*
	(0.016)					(0.018)
Dissolved × Age council		0.001				0.001
		(0.001)				(0.001)
Dissolved × Univ. council			0.009			0.029
			(0.025)			(0.027)
Dissolved × Occupation rate				-0.000		-0.000
				(0.001)		(0.001)
Dissolved × Univ. rate					0.000	0.001
					(0.001)	(0.001)
Observations	4,282	4,282	4,282	4,222	4,222	4,222
R-squared	0.812	0.812	0.812	0.814	0.814	0.815
Municipalities	354	354	354	354	354	354
Mun. FE	✓	✓	✓	✓	✓	✓
Year × Matched Pair FE	✓	✓	✓	✓	✓	✓
Mean delay	.292	.292	.292	.292	.292	.292
% Mean delay	-7	-6	-6	-6	-5	-6

NOTES: The table assesses the robustness of our main estimates to the observation that treated municipalities and matched control municipalities display statistically significant differences in a limited number of pre-dissolution characteristics. The dependent variable is the delay of current payments. In each column, we augment the specification in Equation 1 with the interaction between the characteristic specified in the table footer and year dummies. In column (6), we add to the specification in Equation 1 all the interactions simultaneously. Standard errors clustered at municipality level are shown in parentheses. * significant at 10% , ** significant at 5%, *** significant at 1%.

Figure A.5: Council Dissolutions and Processing Delays - Dynamic Specification



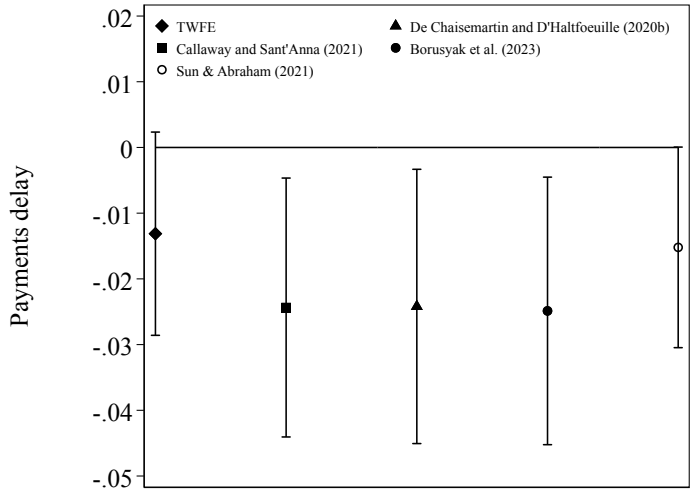
NOTES: The figure plots the dynamic effects of municipal council dissolutions on bureaucratic performance. The dependent variable is the delay of applications processing of the technical office. The results are based on the specification in Equation 2. Standard errors are clustered at the municipality level. Vertical spikes represent 90% and 95% confidence intervals, respectively. Year t corresponds to the year of dissolution; pre- and post-treatment years are labeled accordingly relative to the timing of the event. Years t and *t+1* represent the commissioning period. Year *t+2* is usually the year in which new municipal elections are held.

Table A.7: Robustness to clustering at the matched-pair level

	(1) Delay	(2) Delay	(3) Delay
Dissolved	-0.020**	-0.026***	-0.021***
	(0.008)	(0.009)	(0.008)
Observations	4,382	4,422	4,388
R-squared	0.806	0.797	0.807
Municipalities	354	354	354
Specification	Baseline	Avg. Risk	Province
Mun. FE	✓	✓	✓
Year × Matched Pair FE	✓	✓	✓
Mean Delay	.292	.29	.286
% Mean Delay	-6	-8	-7

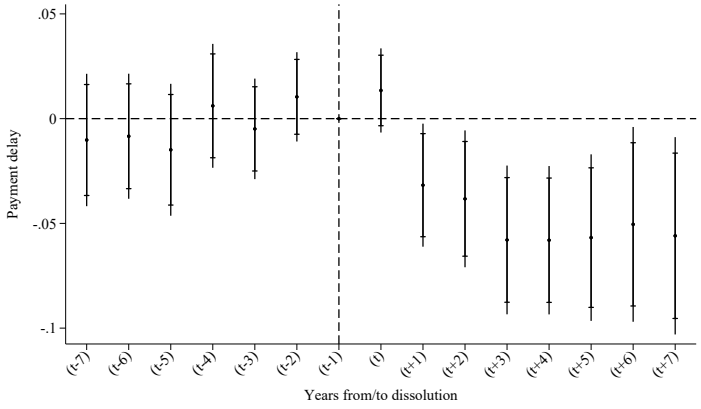
NOTES: The table reproduces results shown in Table 2 with standard errors clustered at matched-pair level. * significant at 10% , ** significant at 5%, *** significant at 1%.

Figure A.6: Alternative Estimators (early treated vs. not-yet treated specification)



NOTES: The figure plots the coefficients and confidence intervals obtained estimating difference-in-differences model that compare early dissolved municipalities with municipalities that will be eventually dissolved in the future. The sample is restricted to municipalities that experience at least one dissolution episode. The dependent variable is the delay of current payments. Compared to equation 1, we include year fixed effect instead of year-matched pair fixed effect. The diamond marker reports the coefficient obtained performing a twoway fixed effect regression; the square marker reports the coefficient obtained using the estimator proposed by Callaway and Sant'Anna (2021); the triangle marker reports the coefficient obtained using the estimator proposed by de Chaisemartin and D'Haultfœuille (2020); the black circle marker reports the coefficient obtained using the estimator proposed by Borusyak, Jaravel and Spiess (2024); the white circle marker reports the coefficient obtained using the estimator proposed by Sun and Abraham (2021). Standard errors are clustered at the municipality level. Vertical spikes represent 95% confidence intervals.

Figure A.7: Payment delay, dynamic specification – Sample of available investigation reports, after 2010



NOTES: The figure replicates the results obtained in panel (a) of Figure 2 for the subsample of dissolutions for which investigation reports are available (and their matched controls). The figure plots the dynamic effects of municipal council dissolutions on bureaucratic performance. The dependent variable is the delay of current payments. The results are based on the specification in Equation 2. Standard errors are clustered at the municipality level. Vertical spikes represent 90% and 95% confidence intervals, respectively. Year t corresponds to the year of dissolution; pre- and post-treatment years are labeled accordingly relative to the timing of the event. Years t and $t+1$ represent the commissioning period. Year $t+2$ is usually the year in which new municipal elections are held.

Table A.8: Council Dissolutions and Bureaucratic Characteristics, Managers only

	(1) Age	(2) High School	(3) University
Election	0.355***	0.006***	0.001**
	(0.049)	(0.001)	(0.000)
Election X Dissolved	-0.068	0.001	0.004
	(0.777)	(0.013)	(0.005)
Observations	133,561	133,578	133,578
R-squared	0.584	0.612	0.614
Mun. FE	✓	✓	✓
Year FE	✓	✓	✓
Mean dep. var.	36	.639	.111

NOTES: The table shows the results obtained estimating a twoway fixed effect model of the form $Y_{it} = \alpha_i + \beta_t + \gamma Election_{it} + \delta(Electionit \times Dissolved_{it}) + \varepsilon_{it}$, where Y_{it} represents average characteristics for all managers in the bureaucracy in municipality i in year t, and $Election_{it}$ is an indicator taking value one when municipality i holds municipal elections in year t, and $Dissolved_{it}$ is an indicator taking value one when the election of municipality i in year t follows a council dissolution. For every municipality, we consider 5 years, i.e. a 2-years window around each election year. High school measures the share of managers that hold a high-school diploma. University measures the share of employees that hold a university diploma. Standard errors clustered at municipality level are shown in parentheses. * significant at 10% , ** significant at 5%, *** significant at 1%.

B Data and variables construction

B.1 Personnel data

All administrative datasets for personnel employed in Italian municipalities are available at https://contoannuale.rgs.mef.gov.it/. We examine all employees employed under RALN contracts, that encompass all workers in Italian local entities, excluding 3 autonomous regions (Trentino Alto Adige, Friuli Venezia Giulia, Valle d'Aosta).

Employees are categorized by "categoria" and "qualifica" (most granular). We use the "categoria" to qualify staff and managers. We consider as staff categories CA, CB, CC, CD, while managers are categories DF, DG, DI and FP. Complete details on which workers these categories represent are available in Table B.9. We utilize total employees headcount, number of hirings ("assunti") and separations ("cessati") for measuring employees' turnover according to this formula (Bellodi, Morelli and Vannoni, 2024):

$$Turnover_{it} = \frac{N.\,Separations_{it} + N.\,Hirings_{it}}{N.\,TotalWorkers_{it}}$$

Table B.9: Categories Description from *Conto Annuale*

Type	Code	Official Title	Definition	Examples
Staff (Civil servant)	CA	Operatori	Workers performing operational and technical maintenance tasks	*Technical maintenance operator, surveillance operator*
Staff (Civil servant)	CB	Operatori Esperti	Workers performing basic administrative and advanced operational tasks	*Administrative collaborator, maintenance supervisor*
Staff (Civil servant)	CC	Istruttori	Workers specialized in administrative processes	*Accountant, surveyor, IT staff*
Manager (Appointee)	CD	Funzionari	Professionally-oriented and experienced workers	*Administrative supervisor, accounting manager, architect, engineer, communication specialist*
Manager (Appointee)	DF	Dirigenti (t.d.)	Managerial roles tasked with complex and temporary duties	*Senior urban planning manager, Deputy head of procurement*
Manager (Appointee)	DG	Direttori Generali	City manager; role that can be established only for cities with more than 15,000 inhabitants	–
Manager (Appointee)	DI	Dirigenti	Executives tasked with managing specific vertical functions	*Head of finance and accounting, head of human resources*
Manager (Appointee)	FP	Segretario Comunale	Municipal secretary, required by law and nominated by the mayor	–

NOTES: We report here all categories included in our analysis. We exclude the following categories: RP (remaining personnel), PC (contractors), SP (specialist appointments), which compose a small minority of personnel in Italian municipalities. The DF category (Dirigenti t.d.) stands for short-time managers.

C LLM Coding Protocol and Steps

We utilized Large Language Models to systematically examine and annotate all the official investigation reports ("relazioni prefettizie" in Italian) available online for our period of interest. In this section we explain in detail how the analysis was completed.

C.1 Data processing

As explained also in the main body of the paper, the investigation reports contain a detailed analysis of the irregularities found in the municipality's activities, including links between administrators and members of organized crime, as well as the reasons that made it necessary to dissolve the council. Drafted by the investigating commission, the reports are intended to provide the Minister of the Interior with all the elements needed to assess whether the commissioning conditions exist.

We downloaded all the investigation reports published for our period of interest. Since no reports were published by Avviso Pubblico for the dissolutions before 2010[33], we restricted our sample for the text analysis to the events between 2010 and 2020, downloading a total of 132 reports. 18 cases of dissolution were missing, since only the Presidential decree without the attached investigation is publicly available. This might be due to the secrecy of the investigation findings. Therefore we manage to recover qualitative evidence on the dissolutions for 88% of the events happening between 2010 and 2020. We manage to recover the reports for all the events part of our sample from 2010 to 2020 (n = 100, excluding double dissolutions). We used Google Vision API to extract the text page by page, because the majority of the documents are not machine-readable. We did not perform any pre-processing steps on the files analyzed by the LLM, other than removing extra blank spaces. At the end of the process some documents were manually inspected to verify eventual issues with the transcription.

The average length of the reports varies significantly. Over time they tend to become

[33]Avviso Pubblico publishes all the official documentation concerning dissolutions from 1995 to 2025. However, events happening before 2010 have only the official decree signed by the President of the Republic and the attached ministerial decree, which contain only basic information about the investigation findings. We decided to focus exclusively on the investigation reports, as they contain all the details about the capture episodes.

Table C.10: Average Words per Report by Year

Year	Number of Reports	Average Words per Report
2010	4	2481
2011	4	3101
2012	17	4926
2013	14	5006
2014	8	7415
2015	5	7764
2016	8	13208
2017	20	7903
2018	22	7728
2019	19	16070
2020	11	18393
Total	**132**	**9210**

more detailed, including in-depth descriptions of the capture episodes. The average words per file goes up from only 2 thousands in 2010 to more than 18 thousands in 2020.

C.2 Tasks description

Off-the-shelf LLMs are considered appropriate to complete text annotation tasks associated with economics (Ash and Hansen, 2023; Ludwig, Mullainathan and Rambachan, 2026) and political science research (Benoit et al., 2025; Le Mens and Gallego, 2025; Lee et al., 2024), and were even found to outperform human research assistants in several labeling tests (Gilardi, Alizadeh and Kubli, 2023). We utilized LLMs to perform two separate tasks:

1. Episodes extraction, classification and labeling: The LLM first identified all concrete episodes describing how mafia influence affected the administration and management of the municipality in each report text. The extraction focused on the consequences of infiltration for local government activities, highlighting unlawful activities, and excluding the actions through which mafia acquired power (e.g.: vote buying). The extracted episodes were stored in a dataset with a short 300 characters description and subsequently labeled using a predefined classification comprising the following categories:[34] *Distorsioni*

[34]Separating extraction from labeling helps reduce unsupported claims (Fang, Li and Lu, 2025).

negli appalti e nei contratti pubblici (*Irregularities in public procurement and contracts*); *Indebolimento delle procedure e dell'imparzialità amministrativa* (*Irregularities in administrative procedures*); *Inefficienze e dispersione di risorse pubbliche* (*Inefficiencies and waste of public resources*). The classification was derived by the researchers by aggregating a more detailed LLM-generated taxonomy from a random sample of 100 episodes. Episodes directly concerning the award, execution, extension, or continuation of a public contract were assigned to the first category, even when they also involved failures of oversight or economic losses. Episodes primarily concerning administrative decisions, appointments, authorizations, concessions, controls, or interference with municipal offices were assigned to the second category. Episodes whose principal consequence was uncollected revenue, improper payments, higher costs, debt, unused public assets, or another economic loss were assigned to the third category. A more thorough description of each category is available in section C.6.

2. Identification of cases of bureaucratic resistance: The LLM analyzed the text from the reports to identify any instance of bureaucrats actively opposing corrupt decisions by captured politicians. The model was asked to examine only text windows that included the stem of relevant keywords, following an approach similar to Lupo et al. (2023).[35] For example, paragraphs containing words related to "opposition" or "refusal" were analyzed one by one by the LLM to identify possible cases of resistance. Each candidate window received a binary classification (yes/no). A report was classified as containing resistance if at least one candidate window was classified as "yes". Reports with no keyword windows are assigned "no". As a final check, the municipalities with at least one confirmed episode were manually checked to verify that the episodes reported mentioned

[35]The list of keywords was defined ex ante by creating a word frequency table of the text of all reports, and manually inspecting it to find words relevant for our task. We then confirmed the list during the manual benchmarking exercise. We identify candidate windows using a keyword filter and extract a fixed text section of 1,200 characters before and after each hit, which corresponds to roughly one–two paragraphs and provides enough context for the LLM to interpret the episode without introducing unnecessary text. Hits occurring within 350 characters are merged to avoid treating several closely spaced mentions of the same event as separate episodes. Full list of keywords in Italian: "disapprovare", "opporsi", "manifestare", "bloccare", "rifiutare", "contestare", "denunciare", "pressioni", "minacce", "ostacolare", "contrastare", "segnalare", "intimidazioni", "ritorsione".

real instances of bureaucratic resistance. Whenever a non-relevant episode was identified, it was flagged and removed.[36] Beyond its substantive role in our analysis, this procedure illustrates how LLM-extracted qualitative information from administrative records can be systematically incorporated into quantitative research designs, complementing conventional approaches to text coding (Benoit et al., 2025; Le Mens and Gallego, 2025; Lee et al., 2024).

C.3 LLM model selection and set-up

Following best practices for the use of LLMs in data annotation (Baumann et al., 2025), we report here the model selection rationale and precise set-up. As our main choice we utilized *mistral-large* (latest version is 25.12 accessed in March 2026), connecting it via API. The model choice was determined by a performance benchmarking of 4 different models. We randomly extracted a validation sample of 15 reports (11% of our sample), which were annotated by a human coder for the resistance identification task. According to the results, displayed in Table C.11 and C.12, Mistral Large was the best performing model in terms of F1, together with Claude Sonnet. Given comparable performance, we ultimately decided to utilize Mistral Large due to its more convenient pricing scheme. Robustness tests using different models are reported in section C.5.

The maximum number of tokens was set at 131,072, so that the context window was very large, but longer documents were split into different chunks for processing, and the temperature was set constant at 0.[37] Other sampling parameters (e.g., top-p, frequency penalty) were left at default values. All the analysis was completed using zero-shot or few-shot prompting, without model fine-tuning. This method was considered appropriate for the nature of our task, given the high costs associated with fine-tuning and the limited benefits that were found for tasks of a similar nature (Alizadeh et al., 2025; Muhammad and Rospocher, 2025). Compared to a machine learning classifier with embeddings (such as BERT models), this solution represents a more efficient method that

[36]For example, the LLM was wrongly identifying episodes in which some minority political exponents or other third parties, and not bureaucrats, were resisting illegal acts. We ended up removing three cases from the final dataset: Campobello 2012, Bova Marina 2017 and Crispano 2017.

[37]Except for GPT 5.4, for which the temperature parameter can't be modified.

Table C.11: Benchmarking of LLMs labeling on validation sample

Municipality-year	Human annotator	Mistral Medium	Mistral Large	OpenAI Gpt5.4	Claude Sonnet 4.5
Ardore 2013	-	-	-	-	-
Arzano 2015	-	-	-	-	-
Battipaglia 2014	YES	YES	YES	YES	YES
Briatico 2018	-	-	-	-	-
Campobello 2012	-	-	YES	-	-
Casabona 2018	-	-	-	-	-
Cutro 2020	YES	YES	YES	YES	YES
Limbadi 2018	YES	YES	YES	-	YES
Maniace 2020	YES	YES	YES	YES	YES
Mattinata 2018	-	-	-	-	-
Saint Pierre 2020	YES	YES	YES	YES	YES
San Cataldo 2019	-	YES	-	-	YES
San Gregorio d Ippona 2018	-	-	-	-	-
San Luca 2013	-	YES	-	-	-
Taurianova 2013	YES	YES	YES	YES	YES

NOTES: The validation sample is composed by a random subset of 15 reports selected from the whole sample of 132. The first column contains the results of the manual annotation performed by a research assistant. Each subsequent column shows the results of the annotation performed by different LLMs.

Table C.12: Models' performance against human annotator

Model	Precision	Recall	F1
Mistral Medium	0.75	1	0.86
Mistral Large	0.86	1	0.92
Gpt5.4	1	0.83	0.91
Claude Sonnet 4.5	0.86	1	0.92

NOTES: Precision, recall, and F1-score are computed by treating the human annotation as ground truth and coding every YES as a positive outcome. Metrics are calculated at the municipality–year level on a validation sample of 15 random reports.

requires no training data, which would be problematic given our small sample.

C.4 Prompting

To reduce the risk of hallucinations and imprecise outputs, we provided clear instructions and templates of the expected result, and used very clear formatting. Here are the prompts that were used for the two tasks, both in Italian (original language) and English[38].

Prompt for episodes extraction (ITA): *Riceverai un segmento di una relazione prefettizia relativa allo scioglimento di un comune per infiltrazione o condizionamento mafioso. Individua gli episodi concreti che descrivono come il condizionamento, le interferenze politiche, i conflitti di interesse o gli interessi privati si siano tradotti nel funzionamento e nella gestione del comune durante il mandato dell'amministrazione oggetto dello scioglimento. L'obiettivo non è ricostruire come la criminalità organizzata abbia acquisito influenza politica, ma identificare che cosa è concretamente accaduto nell'attività amministrativa una volta che l'amministrazione era in carica. Estrai un episodio soltanto quando sono soddisfatte tutte le seguenti condizioni. È descritta un'azione, omissione, decisione, pressione o interferenza concreta. La condotta riguarda l'attività del comune, una procedura comunale, un ufficio, un servizio, un bene, una risorsa o una decisione pubblica. La condotta è avvenuta durante il mandato dell'amministrazione oggetto dello scioglimento. Il segmento presenta la condotta come irregolare, anomala, impropria, inefficiente, condizionata o comunque rilevante ai fini dello scioglimento. Se manca anche una sola di queste condizioni, non estrarre l'episodio. Non estrarre episodi relativi a elezioni, rapporti di parentela e frequentazioni, descrizione delle organizzazioni criminali operanti sul territorio e delle loro gerarchie. La descrizione deve descrivere un solo episodio concreto e restare autonoma e comprensibile senza leggere il segmento. Deve indicare il soggetto pubblico principale, usando il ruolo istituzionale, distinguendo, quando possibile, chi decide, chi esegue e chi esercita pressioni. Deve precisare l'azione, omissione, decisione, pressione o interferenza e il suo oggetto amministrativo concreto. Deve specificare il settore fattuale interessato, per esempio appalti, personale, urbanistica, rifiuti, tributi, servizi sociali o patrimonio, senza assegnare etichette di classificazione non presenti nel testo. Deve indicare il beneficiario o interesse favorito, la regola o il controllo aggirato e la principale conseguenza amministrativa, finanziaria o sul servizio, soltanto quando emergono dal segmento. Deve collegare nella stessa descrizione la condotta e la sua conseguenza diretta, ma separare azioni o decisioni autonome che potrebbero essere classificate indipendentemente. Deve omettere le informazioni assenti invece di sostituirle con formule vaghe o inferenze. Non deve attribuire intenzioni, ruoli, beneficiari, effetti o nessi causali non esplicitati. Non deve citare testualmente il documento né aggiungere valutazioni generiche. Deve usare lo spazio disponibile per i dettagli utili, senza ripetizioni, e non superare (max number) caratteri, spazi inclusi. Se lo spazio non basta, dare priorità a condotta, oggetto amministrativo, attori e conseguenza principale.*

Prompt for episodes extraction (ENG): *You will receive a segment of a prefectural report concerning the dissolution of a municipality due to mafia infiltration. Identify the concrete episodes describing how political interference, conflicts of interest, private interests, or external influence affected the functioning and administration of the municipality during the term of the administration that was dissolved. The objective is not to reconstruct how organized crime acquired political influence, but rather to identify what concretely happened in the municipality's administrative activity once the administration was in office. Extract an episode only if all of the following conditions are satisfied. A concrete action, omission,*

[38]The prompts are not represented in the original formatting

decision, pressure, or interference is described. The conduct concerns the municipality's activities, an administrative procedure, a municipal office, a public service, a public asset, a public resource, or a public decision. The conduct occurred during the term of the administration that was dissolved. The segment presents the conduct as irregular, anomalous, improper, inefficient, influenced, or otherwise relevant to the dissolution. If even one of these conditions is not met, do not extract the episode. Do not extract episodes concerning elections, family relationships or personal associations, or descriptions of criminal organizations operating in the area and their internal hierarchies. The description must describe only one concrete episode and remain self-contained and understandable without reading the original segment. It must identify the main public actor, using the person's institutional role, distinguishing, whenever possible, who makes the decision, who implements it, and who exerts pressure. It must specify the action, omission, decision, pressure, or interference and its concrete administrative object. It must specify the substantive policy area involved, for example public procurement, personnel, urban planning, waste management, taxation, social services, or public assets, without assigning classification labels that are not present in the text. It must identify the beneficiary or interest favored, the rule or control that was circumvented, and the main administrative, financial, or service-related consequence, but only when these emerge from the segment. It must connect the conduct with its direct consequence within the same description, while separating independent actions or decisions that could be classified separately. It must omit information that is not present rather than replacing it with vague formulations or inferences. It must not attribute intentions, roles, beneficiaries, effects, or causal relationships that are not explicitly stated. It must not quote the document verbatim or add generic evaluative statements. It must use the available space for informative details without repetition and must not exceed (max number) characters, including spaces. If space is insufficient, give priority to the conduct, the administrative object, the actors involved, and the main consequence.

Prompt for episodes classification (ITA): *Riceverai un campione casuale di descrizioni di azioni illecite o irregolari estratte da relazioni prefettizie italiane. Compito: genera una tassonomia granulare dei tipi di azione, in italiano. La tassonomia deve essere mutuamente esclusiva e collettivamente esaustiva. I nomi delle categorie devono essere in italiano. Evita termini vaghi e crea categorie sufficientemente precise. La tassonomia deve includere una categoria residuale chiamata esattamente "Altro". Usa al massimo 20 categorie oltre ad "Altro". La descrizione di ciascuna categoria deve avere al massimo 120 caratteri e non deve contenere a capo.*

Prompt for episodes classification (ENG): *You will receive a random sample of descriptions of illicit or irregular actions extracted from Italian prefectural reports. Task: generate a granular taxonomy of action types, in Italian. The taxonomy must be mutually exclusive and collectively exhaustive. Category names must be in Italian. Avoid vague terms and create sufficiently precise categories. The taxonomy must include a residual category named exactly "Other". Use no more than 20 categories in addition to "Other". The description of each category must not exceed 120 characters and must not contain line breaks.*

Prompt for episodes labeling (ITA): *Classifica un singolo episodio di azione illecita o irregolare. Descrizione dell'episodio: ... Tassonomia ampia legacy: ... Tassonomia granulare: ... Scegli esattamente una categoria ampia legacy e una categoria granulare. Per la categoria granulare, usa il nome italiano esatto presente nella tassonomia granulare; usa "Altro" se l'episodio non rientra chiaramente in nessuna categoria. Restituisci esclusivamente nomi di categorie già presenti nelle rispettive liste, in italiano. Per la categoria ampia, applica le seguenti regole. Se l'episodio riguarda direttamente l'affidamento, l'esecuzione o la prosecuzione di un contratto pubblico, assegna "Distorsioni negli appalti e nei contratti pubblici", anche quando sono presenti omissioni di controllo o conseguenze economiche. Se riguarda decisioni, nomine amministrative, autorizzazioni, concessioni, contributi, controlli o interferenze sugli uffici, assegna "Indebolimento delle procedure e dell'imparzialità amministrativa". Se riguarda principalmente entrate non riscosse, pagamenti, costi, debiti, patrimonio inutilizzato o altre perdite economiche, assegna "Inefficienze e dispersione di risorse pubbliche". Assegna "Al-*

tro" solo a episodi sostantivamente diversi dalle prime tre categorie; non usarlo soltanto perché l'episodio è ambiguo o presenta elementi appartenenti a più categorie. Nei casi incerti, identifica la conseguenza prevalente e applica le regole precedenti.

Prompt for episodes labeling (ENG): *Classify a single episode of illicit or irregular conduct. Episode description: ... Legacy broad taxonomy:... Granular taxonomy: ... Select exactly one legacy broad category and one granular category. For the granular category, use the exact Italian category name from the granular taxonomy; use "Other" if the episode does not clearly fit any category. Return only category names that already exist in the corresponding lists, in Italian. For the broad category, apply the following rules. If the episode directly concerns the award, execution, or continuation of a public contract, assign "Distorsioni negli appalti e nei contratti pubblici", even if it also involves failures of oversight or economic consequences. If it concerns administrative decisions, appointments, authorizations, permits, grants, oversight activities, or interference with municipal offices, assign "Indebolimento delle procedure e dell'imparzialità amministrativa". If it primarily concerns uncollected revenues, payments, costs, debts, underutilized public assets, or other economic losses, assign "Inefficienze e dispersione di risorse pubbliche". Assign "Other" only to episodes that are substantively different from the first three categories; do not use it merely because the episode is ambiguous or contains elements belonging to multiple categories. In uncertain cases, identify the predominant consequence and apply the preceding rules.*

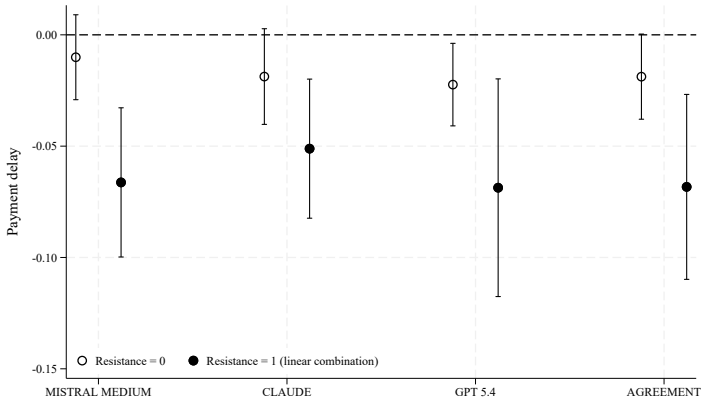
Prompt for resistance (ITA): *Esamina l'estratto seguente preso da una relazione per infiltrazione mafiosa di un comune italiano. Stabilisci se descrive un episodio di resistenza da parte di funzionari pubblici onesti: funzionari/dirigenti pubblici che si oppongono a decisioni/azioni corrotte dei politici (es.: rifiuto di firmare atti illeciti, blocco di atti irregolari, opposizione esplicita). Regole: La resistenza deve essere chiara ed esplicita. Non fornire citazioni né testo extra; restituisci SOLO lo JSON richiesto, senza Markdown o simboli.*

Prompt for resistance (ENG): *Examine the following excerpt taken from a report on mafia infiltration in an Italian municipality. Determine whether it describes an episode of resistance by honest public officials: public officials/executives opposing corrupt decisions/actions of politicians (e.g., refusal to sign unlawful acts, blocking irregular acts, explicit opposition). Rules: The resistance must be clear and explicit. Do not provide quotations or extra text; return ONLY the requested JSON, without Markdown or symbols.*

C.5 Robustness checks

We report here the results for the heterogeneity analysis of Table 4 using alternative models. Figure C.8 shows graphically the results of the same specification utilizing different LLMs, confirming our findings that the positive performance effect after dissolution is concentrated among municipalities displaying episodes of bureaucratic resistance.

Figure C.8: Alternative LLMs for Heterogeneity Analysis



NOTES: The figure plots the coefficients and confidence intervals obtained from the heterogeneous difference-in-differences specification estimated using the alternative resistance-classification models. The dependent variable is the delay of current payments. For each model, the left marker reports the coefficient on the post-dissolution indicator for municipalities with resistance equal to zero, while the right marker reports the corresponding post-dissolution effect for municipalities with resistance equal to one, computed as the linear combination of the coefficient on the post-dissolution indicator and the coefficient on its interaction with resistance. *Agreement* refers to a more conservative indicator that classifies a fragment as positive only when it is coded consistently by both top-performing LLMs (see C.12). This approach reduces classification error at the cost of excluding borderline cases. Standard errors are clustered at the municipality level. Vertical spikes represent 90% confidence intervals.

C.6 Additional Results

We report here some additional findings that supplement the ones already included in the main text. For clarity, the final outputs of the text analysis are two datasets: the first contains one row for each identified capture episode, with municipality, year and category. From this we generated Table C.13 that describes the total number of illicit episodes found in each year, and Table C.14 that shows the yearly distribution of episode types. A set of random examples is presented in Table C.15. In addition, Table C.16 provides a more detailed description of the three categories.

The second dataset contains a list of all the candidate text windows for resistance identification, with the assigned labels, municipality and year. A set of resistance episodes was extracted and is presented in Table C.17.

Table C.13: Number of episodes extracted by the LLM in each year

Year	Total episodes	Municipalities commissioned	Average episodes by municipality
2010	35	4	9
2011	27	4	7
2012	106	17	6
2013	98	14	7
2014	100	8	13
2015	52	5	10
2016	114	8	14
2017	192	20	10
2018	243	22	11
2019	288	19	15
2020	170	11	15
Total	**1425**	**132**	**11**

NOTES: The increasing number of episodes per year reflects the tendency of judiciary reports to be more detailed in the description of the corruption events that led to the dissolution. The extreme values reported for the year 2019 are driven by the length of the reports for two municipalities (San Cipirello and Mezzojuso) that are over 250 pages long.

Table C.14: Distribution of episodes by type over the years (in %)

Year	Irregularities in administrative procedures	Irregularities in public procurement and contracts	Inefficiencies and waste of public resources
2010	28.6	62.9	8.6
2011	37.0	40.7	22.2
2012	53.8	26.4	19.8
2013	39.8	43.9	16.3
2014	47.0	40.0	13.0
2015	38.5	42.3	19.2
2016	44.7	39.5	15.8
2017	43.2	38.5	18.2
2018	46.5	41.6	11.9
2019	50.7	38.9	10.4
2020	39.4	47.1	13.5
Total	**45.1%**	**40.6%**	**14.3%**

NOTES: Classification categories created by the authors

Table C.15: Examples of Capture Episodes, with Classification

Municipality	Year	Episode	Category
Battipaglia	2014	The municipal councillor responsible for housing policy repeatedly intervened to protect the unlawful occupants of municipal housing, contributing to the continuation of the irregular occupations.	Irregularities in administrative procedures
Bova Marina	2017	The municipal administration repeatedly awarded public works contracts through direct awards and the splitting of expenditure, without competitive tendering or planning. It spent approximately 450,000 euros on water and sewer repairs over 30 months, almost all of which was awarded directly.	Irregularities in public procurement and contracts
Calvizzano	2018	For approximately 15 years, the municipality entrusted the transport service for minors and adults with disabilities to the same company owned by a mafia-tied family.	Irregularities in public procurement and contracts
Mazzarra Sant Andrea	2015	For years, the municipal administrations remained substantially inactive in recovering claims worth millions of euros owed to the municipality by a company, despite the municipality's known financial dependence on this source of revenue and the risk of financial collapse.	Inefficiencies and waste of public resources
Mezzojuso	2019	The executive board approved the municipality's membership to an association linked to a councilor with mafia ties.	Irregularities in administrative procedures
Racalmuto	2012	The executive board failed to initiate disciplinary proceedings against members of the municipality in close contact with mafia exponents.	Irregularities in administrative procedures
San Gennaro Vesuviano	2018	The municipal offices kept records in a disorderly manner, with decisions often inadequately reasoned and assessments conducted superficially.	Irregularities in administrative procedures
Sant Antimo	2020	The head of the cemetery service extended the votive-lighting service contract with the same company without holding a tender.	Irregularities in public procurement and contracts
Taurianova	2013	Assignments for urgent works were awarded altering the internal allocation of responsibilities.	Irregularities in administrative procedures
Tropea	2016	The municipality submitted the documents for the new wastewater plant tender to the central procurement authority three weeks late, allowing the incumbent company to continue operating for almost a year without a contract.	Irregularities in public procurement and contracts

NOTES: 10 episodes randomly extracted from the full sample of investigation reports.

Table C.16: Detailed Description of Capture Episodes Categories

Category name	Category description
Irregularities in administrative procedures [45%]	Across these episodes, the most recurrent pattern is the weakening of ordinary administrative safeguards through both unlawful intervention and omission. Political officeholders frequently intrude into management functions reserved to officials, influencing commissions, permits, concessions, appointments, subsidies, and the allocation of municipal assets or services. Equally common are deficient or bypassed procedures: absence of public calls or comparative selection, use of irregular commissions, missing preliminary inquiries, incomplete files, failure to apply regulatory criteria, and disregard of conflict-of-interest or competence rules. A large cluster concerns urban planning and building control, where municipalities often failed to inspect, sanction, demolish, or complete follow-up steps after detecting abuses. Another recurring theme is the inadequate use of antimafia checks and other eligibility verifications in licenses, concessions, contracts, social benefits, and service provision.
Irregularities in public procurement and contracts [40%]	Across these episodes, the most recurrent pattern is the systematic displacement of open, competitive procurement by direct awards, negotiated procedures, repeated extensions, and emergency ordinances used beyond clearly documented urgent circumstances. Contracts are often fragmented into sub-threshold amounts, split into short periods or separate lots, or renewed in sequence so as to avoid public tenders, rotation, MEPA use, and stricter legal controls. A second recurring feature is weak or omitted oversight: missing market inquiries, incomplete files, absent contracts, ex post regularization of services already started, irregular variants, deficient execution controls, and payments despite non-compliance. Political officeholders, mayors, councillors, technical offices, RUPs, and commissions repeatedly appear as actors who interfere with contractor selection or fail to supervise it. Many episodes also mention omitted or delayed antimafia, DURC, and qualification checks, alongside concentration of contracts on the same firms or related operators.
Inefficiencies and waste of public resources [14%]	Episodes in this category recurrently concern weak financial administration and poor stewardship of municipal assets. The most common pattern is the ineffective assessment and collection of local fees, rents, water charges, and concession payments, often accompanied by delayed notices, failure to start coercive recovery, prescription of credits, and tolerance of arrears even by officeholders, employees, concessionaires, or occupants of municipal property. A second cluster involves negligent management of public assets: municipal buildings, land, garages, markets, sports facilities, and confiscated properties are frequently left without formal contracts, monitoring, maintenance, repossession, or socially intended use, while users continue to occupy them without paying. Other recurring episodes involve inaccurate or misleading accounting, use of earmarked funds for current expenditure, off-balance liabilities and fragmented or unsupported spending decisions.

Table C.17: Examples of Resistance Episodes

Municipality	Year	Resistance episode
Lavagna	2017	Municipal officials continued carrying out inspections of the beachside commercial activities despite strong political pressures, reporting written irregularities to the office director, and seeking the required sanctions and immediate removal of the illegally occupied public land.
Orta	2019	The technical area manager and the SUAP officer resisted demands to grant an unlawful building permit by suspending the procedure for further checks and then rejecting the application because the property was in total breach of the planning rules. The report also notes that these negative opinions were later met with disciplinary suspensions by the city council.
Palazzo Adriano	2016	The municipal technical office rejected requests to bend procedures in several matters. A responsible official refused to approve an unlawful arrangement for assigning executive design work, insisting on the legal rules and preparing invitations and contract terms for selected professionals; the secretary also challenged a council decision that would have reduced the cemetery protection zone to regularize illegal buildings, asking for the decision to be suspended for further review.
Ricadi	2014	Municipal staff resisted the municipal executive's improper interference in contract management. When the council tried to direct a negotiated procedure for sewage plant maintenance, the commission president pointed out that the tender had to be handled by the provincial procurement body because of the amount involved, and the act was corrected.
Taurianova	2013	The municipal technical official refused to keep moving forward with two applications for greenhouse construction in agricultural land with photovoltaic panels, maintaining from the outset that the projects were not permissible under the applicable rules. He also opposed continuing the dog-custody service with a company hit by an antimafia notice, instead warning that the resolution should be revoked and the service reassigned to another firm pending a new tender.
Trecastagni	2018	The municipal secretary-general repeatedly urged the administration to rotate bureaucratic staff as an anti-corruption measure, but the mayor did not act on those warnings and failed to supervise the officials involved. This inaction left the municipal technicians free to carry out unlawful conduct in managing waste services and dealings with a company under anti-mafia interdiction.

NOTES: These episodes were extracted from the full list of municipalities with evidence of resistance.