The international platform of Ludwig-Maximilians University's Center for Economic Studies and the Ifo Institute

Working Papers

www.cesifo.org/wp

Law Enforcement, Municipal Budgets and Spillover Effects: Evidence from a Quasi-Experiment in Italy

Sergio Galletta

CESIFO WORKING PAPER NO. 5707
CATEGORY 2: PUBLIC CHOICE
JANUARY 2016

ISSN 2364-1428

CESifo
Center for Economic Studies & Ifo Institute

CESifo *Working Paper No. 5707*

Law Enforcement, Municipal Budgets and Spillover Effects: Evidence from a Quasi-Experiment in Italy

Abstract

In this paper, I empirically investigate the presence of spillover effects resulting from the strengthening of law enforcement against corruption and organized crime in local governments. Specifically, I take advantage of an Italian law that gives power to the central government to replace democratically elected municipal officials who are potentially connected with mafia with a commission of non-elected administrators. Fixed effects model estimates that focus on a sample of municipalities from three Italian regions (Campania, Calabria and Sicilia) for the period 1998 to 2013 show that the city council dismissal of a municipality fosters a reduction in public investments in neighboring municipalities. Additional empirical evidence suggests that this result could be explained by the presence of law enforcement spillovers potentially reducing misconducts in neighboring municipalities.

JEL-codes: D730, E620, K420.

Keywords: horizontal interaction, Italy, mafia, corruption.

Sergio Galletta
Institute of Economics (IdEP)
University of Lugano
Switzerland – 6904 Lugano
sergio.galletta@usi.ch

I wish to thank Gianmarco Daniele, Ruben Durante, Mario Jametti, Stephan Litschig, Paolo Pinotti, Hannes Mueller, Albert Solé-Ollé, Raphaël Parchet, Pilar Sorribas-Navarro and Juan Carlos Suarez Serrato for insightful comments. I have also benefited from comments by participants at the Sinergia Workshop (Lugano), CESifo Workshop (Dresden) and SIEP (Ferrara). Financial support from the Swiss National Science Foundation (grants Early Postdoc.Mobility - 15860) is gratefully acknowledged.

1. Introduction

Political corruption negatively affects economic growth and fosters excessive and inefficient public spending (Mauro, 1995, 1998; Del Monte and Papagni, 2001; Arin et al., 2011; Hessami, 2014). In countries where sub-national governments are left with large autonomy, the negative effect is potentially amplified (Brueckner, 2000). This is particularly important with respect to public spending as a decentralized setting could worsen problems of corruption and increase the occasions that favor, for example, bribes or rents (Bardhan and Mookherjee, 2006; Fan et al., 2009). Theoretical arguments and recent empirical evidence suggest that monitoring activities and punishments could be effective in reducing these types of misconducts making possible more efficient public spending (Becker, 1968; Becker and Stigler, 1974; Di Tella and Schargrodsky, 2003; Olken, 2007; Litschig and Zamboni, 2011).

Interestingly, despite these relevant findings on the direct effect of anti-corruption policies, there is very little empirical evidence focusing on their potential spillover effects.[1]

This paper aims to complement the existing research by analyzing the presence of spillover effects that could come from anti-corruption policies. Every time there is an intervention directed at fighting corruption in a specific area or jurisdiction, one could expect its neighbors to be affected as well. For instance, the effective control of illegal activities in the administration of a locality can yield positive spillovers because it works as a credible threat for similar activities in neighboring areas (Sah, 1991; Rincke and Traxler, 2011). Nevertheless, alike to what happens with more common criminal operations, one might also expect that dishonest conducts in public administration will relocate to other jurisdictions (Knight, 2013; Dell, 2015). Moreover, anti-corruption policies that have an important effect on the public budget can favor either positive or negative fiscal spillovers (Besley and Case, 1995; Case et al., 1993). Hence, whether spillover effects exist and whether they increase or decrease the benefits of

[1]For example, Silva (2010) and Carozzi and Muço (2015) account for the potential presence of spillovers by studying the effect of Brazilian random auditing policy on neighbors' outcomes (e.g., electoral results or corruption); Acemoglu et al. (2015) study spillover effects of local state capacity in Colombia; Durante and Gutierrez (2015) investigate how inter-jurisdictional cooperation among Mexican municipalities can prevent crime.

anti-corruption activities is an empirical matter.

Specifically, this paper empirically tests the presence of transitory spillover effects by linking variation in spending on public investment by Italian municipalities with the application of a policy that aims to control political corruption due to mafia infiltration in local administrations.[2] For decades organized crime has taken advantage of local spending by draining public resources.[3] In 1991, after a period of very intense activity by organized crime, the parliament approved a law that gives the power to the Italian central government to dismiss the city council of municipalities where local officials are found to have a potential relationship with the mafia. This law was issued with the clear objective of cracking down on corruption in public administrations due to organized crime. From 1991 until 2013, there have been 243 council dismissals concerning 191 municipalities in total. Not surprisingly, more than 90% of these municipalities belong to the three regions of Italy in which there is a historical presence of mafia-type organized crime (Campania, Calabria and Sicilia). During the dismissal period of usually 18 months, a commission of three technocrats, having equal powers as elected officials, governs the municipality. I provide descriptive results that confirm the anecdotal evidence suggesting that commissioners cut expenditures on public investment as these are likely to be affected by the mafia influence.

The central finding of this study is derived from a fixed effects model that values the effect of city council dismissal in a municipality on the investment spending of its neighboring municipalities. I do so using data from municipalities belonging to the regions of Campania, Calabria and Sicilia considering the period from 1998 to 2013. To reduce concern about potential selection bias, my estimates focus on the sample of treated municipalities (i.e., those municipalities which have at least one neighbor that experienced a city council dismissal in the period of time of the analysis). This allows me to produce causal estimates of the spillover effects by exploiting both the time series and the cross-sectional variation in the sample. Therefore, to give a causal interpretation of the results, I rely on the assumption that the time of a council dismissal

[2]It is worth noting that the results from the Eurobarometer survey (issue 245) show that more than 50% of the persons interviewed believes that most of the corruption is caused by organized crime. Importantly, Italy is the country with the highest percentage of people agreeing on (71%).

[3]Estimates from the Corte dei Conti, the Italian Court of Auditors, suggest that nearly 40% of the cost of large-scale public investments is due to corruption.

in the neighboring area is random conditional on controls. I test the robustness of the identifying assumption by first showing that unobservables need to be relatively large, compared to observables, to invalidate my finding (Altonji et al., 2005; Oster, 2015). Second, I apply a placebo test that suggests the absence of anticipatory effects.

From these first estimates, I suggest that spillovers exist as the compulsory administration of a municipality negatively affects public investments in its neighbors. These results, however, do not yield clear evidence on the mechanism by which these spillovers exist. For instance, this reduction in investment could be due either to a reduction in corruption or waste (i.e., law enforcement spillover), or the consequence of fiscal spillovers (i.e., yardstick competition and benefit spillovers). Hence, I provide further checks, which indicate that a large part of the negative effect on investment can be explained by the presence of law enforcement spillovers. In fact, I find that the municipalities which actually react are those which are more likely to generate illegal activity (i.e., those municipalities where the mafia is active). Further, I specifically rule out the presence of fiscal spillovers due to yardstick competition by showing that electoral incentives do not significantly affect the main result. Finally, I apply a falsification test showing that spillovers are present only if commissioners are assigned because of mafia infiltration and not for other reasons.

Overall, this analysis provides a new empirical evidence that polices put in place to reduce corruption could produce spillover effects. In the case of Italy, compulsory administration seems to cause positive spillovers as there is a decrease in public investment in jurisdictions neighboring the areas that are subject to the intervention. Further evidence suggests that this effect is potentially driven by a reduction in misconducts in the neighboring local administrations. In sum, the results highlight that anti-corruption policies can induce benefits which spread beyond the geographical limits of the intervened jurisdiction.

The remainder of the paper is organized as follows. Section 2 illustrates the institutional framework while Section 3 presents the data used in the empirical estimation. Section 4 lays out first results on the direct effect of compulsory administration on the municipal budget and provides an explanation on the potential mechanisms that produce spillovers. Section 5 describes the empirical strategy. Section 6 shows and discusses the results. Section 7 concludes.

2. Institutional Background

2.1. Municipal level institutions and budget

Italy is structured on three different sub-national tiers of government. There are 20 regions (regioni), 110 provinces (province), and around 8000 municipalities (comuni). The focus of this paper will be on the lowest administrative unit of government. Italian municipalities are administrated by the mayor (sindaco) together with the executive branch (giunta) and the city council (consiglio comunale). The mayor and the city council are elected for a term of 5 years. The former has a limit of two terms and chooses the members of the executive branch. In general, national parties participate in local elections, though in smaller municipalities the presence of independents or local parties is fairly high. National and local parties, commonly, form coalitions and stand for elections with the same mayoral candidate.

Italian municipalities' spending responsibilities are in different areas such as the environment (e.g., water and waste management, pollution monitoring, regulation and preservation of urban green spaces), education (e.g., kindergarten, supplementary services for primary school), transport (e.g., road maintenance, public transport), welfare (e.g., social housing, aids to needy people) and culture (e.g., library, museum). Specifically, considering the aggregated municipal budget for the year 2013, almost 30% of the municipal expenditure is for administrative cost, while policy related to traffic and transport, and to environmental services accounts, respectively, for 20% and 13% of the total expenditure. Moreover, around 70% of the total expenditure was used for current spending while 16% went to investments. The remaining 14% came from either loans repayment or expenditure on behalf of third parties.

These expenditures are largely covered by transfers from other tiers of government or by the municipalities own revenue. The tax instruments at the hands of the municipalities are mainly property tax and a surcharge on the national income tax.[4] In 2013, roughly 40% of the revenue was derived from local taxation, while 15% from transfers and another 15% from non-tax revenues. The remaining 30% came from either sales of public assets, loans or revenue on behalf of third parties .

[4]The property tax was abolished and reintroduced several times during the period of the analysis. In the years in which it was not in place, municipalities usually received transfers from the central government to compensate for the missing revenues.

2.2. The law against mafia infiltration

Italy suffers from the pervasive presence of organized crime. In recent decades, in addition to the problems that organized crime created in the real economy, mafia infiltration in the public administration impacted and inflated public budgets.[5] During the 1980s and early 1990s several laws were passed in order to address the damages that mafia-type organizations were producing in the Italian economy.[6] Among these measures, in 1991 the Italian parliament approved a law (D.L. 31/05/1991, n. 164) that allows the central government, through the Ministry of Interior, to dismiss the city council of municipalities that are found to have potential connections with the mafia. In place of the democratically elected officials, a commission composed of three non-elected members governs the municipalities for an in initial period of usually 18 months, which can be extended to a maximum of 24 months.[7] The clear goal of this law is to break the links between the local public administration and the mafia. Typically, the process starts with a police investigation that identifies the presence of contacts between municipal officials and organized crime. Interestingly, most of the time these investigations begin for reasons which are extraneous to the direct involvement of mafia in the public admnistration.[8] This information is then passed to the representative of the Ministry of Interior at the provincial level, the *prefetto*, which gives the task to a commission to report, within 3 months, on whether the local government is likely to be liable to prosecution. After the final report is drafted, the *prefetto* has 45 days to notify the Ministry of Interior. The latter decides whether there are grounds to dismiss the

[5]Caneppele and Martocchia (2014) describe in detail the different channels that the mafia uses to take advantage of public contracts.

[6]Usually, laws were approved right after very violent attacks against people who were a symbol of the war with the mob. For instance, article 416-bis of the penal code that specifically targets the offence of mafia-type association (associazione mafiosa) was approved in September 1982 as a reaction to the assassination of Gen. Dalla Chiesa, who was at that time the representative of the Ministry of Interior in the province of Palermo.

[7]The law approved in 1991 was largely integrated in 1993 (D.L. 20/12/1993, n. 529) with details on the actual powers of the commission. In 2000 (D.Lgs. 18/08/2000, n. 267) it was merged with existing laws regulating the activities of local jurisdictions (TUEL). Additional changes occurred in 2009 (L. 15/07/2009, n. 94).

[8]Commissione parlamentare d'inchiesta sul fenomeno delle mafie e sulle altre associazioni criminali, anche straniere - 2005.

municipality and in that case the President of the Republic will confirm this decision by issuing a decree. At the end of the period of compulsory administration, new municipal elections are held.

Since the law's approval until the end of 2013, there have been 243 city council dismissals involving 191 municipalities in total.[9] Figure 1 shows the number of dismissed municipalities by year. Of them, 147 experienced compulsory administration once, 36 twice and 8 three times. Further, the city council dismissal has been eventually declared unjustified and hence revoked 19 times. To a certain extent, the fact that almost one-fourth of these municipalities experienced the dismissal more than once suggests that the application of this law does not seem to permanently affect the presence of mafia activity in public administration. Indeed, many critics were expressly against the law because of its very limited long-term effects. For this reason, the paper avoids exploring the long run effects and focuses more on the existence of temporary effects that correspond with the presence of the compulsory administration.

Table 1 provides insights on where these municipalities are located. As expected, almost the totality of these municipalities are in southern regions which, traditionally, have active Mafia-type crime organizations: *Mafia* in Sicilia, *'Ndrangheta* in Calabria, *Camorra* in Campania and *Sacra Corona Unita* in Puglia. Recently, however, Liguria, Lazio, Piemonte and Lombardia have been experiencing a few city council dismissals.

3. Data

I assembled a database that brings together information from a variety of sources for all municipalities belonging to the Italian regions of Campania, Calabria and Sicilia over the period 1998–2013. As shown, compulsory administration for mafia infiltration is more frequent in the south of Italy. Indeed, the regions of Campania, Calabria and Sicilia account for more than 90% of all dismissals in the frame time considered here.[10] This allows me to achieve a certain degree of homogeneity in the sample composition, which helps to reduce bias stemming from using heterogeneous municipalities in terms of unobservables. In addition, for data availability reasons, I have to restrict my data-

[9] The complete list of all municipalities is reported in Table A.1 in Appendix A.

[10] Golden and Picci (2005) suggest that these are also the Italian regions with the highest level of corruption.

set from the year 1998 until 2013 by leaving out the first 7 years from the law's approval. This partial data, however, should not significantly impact my analysis, as I consider a 16-year period in which more than half of the total number of dismissals occurred.

My first source of information is the website of the Minister of Interior, from which I gather municipal spending data.[11] I collect data on *total expenditure*, *current expenditure* and *investment expenditure*.[12]

Second, I have taken information about the political status of each municipality in the sample from the database provided by the Ministry of Interior called "Anagrafe degli Amministratori Locali e Regionali", which contains information on public officials in power in sub-central level jurisdictions. Since I noticed that this database sometimes does not report clearly whether a municipality is under compulsory administration because of mafia infiltration or not, I checked the original decrees of the President of the Republic and complemented the database information accordingly. From here, I construct two variables *compulsory administration* and *council dismissal*. The first one is a dummy variable taking the value of 1 for the three-year period starting from the year in which a municipality experiences a city council dismissal, and 0 otherwise. I do so, since compulsory administration can be of different lengths (i.e., from 12 up to 24 months) but most of the time lasts for at least 18 months, and there is usually a 1-year delay for budget decisions to take place. This is the more conservative way to look at the effect of the compulsory administration as it considers all years in which either the whole or at least part of the budget process has been affected by the commissioners. The second variable, *council dismissal*, is equal to 1 for the year in which the city council has been dismissed (i.e., the first year of compulsory administration), and 0 otherwise.

In order to create the main regressor, I relate the presence of compulsory administration with information on the level of neighborliness among municipalities. Therefore, the variable *neighbors compulsory administration* is equal to 1 when at least one neighboring municipality has the dummy *compulsory administration* equal to 1, and 0 otherwise. Similarly, the variable *neighbors council dismissal* is equal to 1 when at

[11] I am thankful to Luca Repetto for having shared his data on municipal expenditures to allow me to check and complement my database.

[12] In a few cases the website of the Minister of Interior was missing information with respect to municipal budgets. Although this slightly reduces the total number of observations in the sample, it should not affect my analysis as these occurrences are likely to be random.

least one neighboring municipality has the dummy *council dismissal* equal to one, and 0 otherwise. Specifically, the measure of neighborliness is constructed by using data from the "Matrici di contiguità, distanza e pendolarismo" provided by the Italian statistical office. Geographical proximity is probably the most relevant characteristic to take into account. Hence, my definition considers neighbors of a municipality i all those municipalities that share a border with it. This is a standard approach in the research related to spillovers.[13] Indeed, I expect the physical closeness among municipalities to be the right measure to account for the relevant theoretical channels supporting my empirical analysis, which are highlighted in Section 4.2.[14]

Additionally, I create two dummy variables: *other council dismissal* and *other compulsory administration*. Both account for a council dismissal in a municipality for reasons other than mafia infiltration. While the first variable is equal to 1 only in the year in which the dismissal occurred, the second takes value 1 for a two-year period from the beginning of the dismissal. That is because in these cases the commissioner stays in power for 1 year, rather than 18 or 24 months, which means that the period in which his decisions can take effect is shorter than that of compulsory administration for mafia infiltration.[15] These events are ruled by the law D.Lgs. 18/08/2000, n. 267 art. 141. For instance, commissioners are called to govern a city whenever there is a resignation of elected officials, the annual budget is not approved or the mayor dies. Clearly these are more common events compared to compulsory administration for mafia infiltration. Moreover, the variable *commissioner* accounts for whether in a given year a municipality is run by commissioners (i.e., governed by commissioners either because of mafia infiltration or due to other reasons) or by elected officials.

Again from the "Anagrafe degli Amministratori Locali e Regionali", I compute further variables that I use as additional controls. *Local party* takes the value 1 when a municipality is governed by a mayor who has no party affiliation or who belongs to a list with no clear connection to a national party, and 0 otherwise. A second variable, *electoral cycle*, is a measure that weighs the strength of electoral incentives depending

[13] See, for example, Case et al. (1993), Bordignon et al. (2003) and Lyytikäinen (2012).

[14] Summary statistics of each variable are reported in Table 2. Figures B.1, B.2 and B.3 in Appendix B show where the municipalities of interest are located.

[15] Following the strategy mentioned in the previous paragraph, I also compute the variables *neighbors other council dismissal* and *neighbors other compulsory administration*.

on the expected time (in years) from the next election. Thus, as the electoral incentives are stronger when the elections are closer, the variable counts the number of years from the last election.[16]

Further, I collected time-varying control variables from the "Atlante statistico dei comuni" provided by the Italian statistical office. These variables include municipal *population* and *dependency ratio*. I construct the latter using the percentage of the old and young population (*share pop* $>$ *64* and *share pop* $<$ *15*).

Finally, I define the time-invariant variable *mafia*. It identifies those municipalities where the mafia is more likely to be active and hence the probability of having a corrupted municipality is relatively higher. Thus, following Buonanno et al. (2015), the variable *mafia* is a dummy that takes the value 1 for each municipality that experienced at least one real estate or firm seizure related to crimes committed by mafia-type organizations. I use data provided by the ANBSC (Agenzia Nazionale per l'amministrazione e la destinazione dei beni sequestrati e confiscati alla criminalita' organizzata) that accounts for the number of seizures connected to mafia-type organizations starting from the 1980s until the end of 2012.

4. The consequences of a city council dismissal

4.1. The direct effect of compulsory administration

All actions taken by the commissioners aim at eliminating political corruption and ensuring the smooth functioning of the local administration. This is the central aim of the policy. Typically, the commission uses its power to cancel any contract or concession confirmed by previous governors that is clearly illegitimate. Other immediate cuts in the budget are normal as the commissioners need time to gather more information on the general status of the expenditure structure. However, these important reductions in the budget are usually experienced in the first year of compulsory administration while in the remaining periods there is usually an increase in expenditure due to implementation of the new decisions taken by the commission. Interestingly, Acconcia et al. (2014) provided both anecdotal and empirical evidence on the effect compulsory administration

[16]It happens that this variable reports values higher than 4, which is supposed to be the highest possible value because elections are held every 5 years. This is due to the arrivals of commissioners right at the end of the term.

has on public decisions showing that provinces with at least one council dismissal reduce the total amount of investment in infrastructure compared with provinces with no dismissal.

To make sure that compulsory administration has direct impacts on different categories of municipal spending in line with existing research, I report below some useful descriptive evidence. I run two sets of regressions where I link municipal annual budgets and compulsory administrations focusing on the 124 municipalities from my sample that experienced at least one dismissal. The first set investigates what happens to the budget the first year the commission takes office. In the second set, I test how the presence of commissioners affects spending in the following years (three-year period). Table 3 shows the results from the OLS estimates using as a dependent variable, separately, municipal *total expenditure*, *current expenditure* and *expenditure on investment* in per capita term. The results reported in column (1) of Table 3, show that the current expenditure is not affected in the first year of the city council dismissal while investment is more than 45% lower than the average expenditure from the other periods. This strong reduction in investments affects total expenditure, which also experiences a slight decrease. Column (2) highlights that compulsory administration significantly lowered expenditure not just in the very first year but also in the following years. In this case, total and current expenditure are not affected. Instead, spending in investment is reduced, on average, by nearly 15% in each year of the three-year period after the council dismissal.

It is worth noting that these results are not meant to identify the direct effect of corruption on public spending, though the presence of a decrease only on investment, and not in current spending, is in line with previous research showing that corruption can lead to potentially inefficient over-investment in the public sector (Mauro, 1998; Tanzi and Davoodi, 2000). In fact, further reasons could explain this evidence. For instance, compulsory administration might improve the quality of the local officials. Indeed, there is a high probability that municipal officials during the compulsory administration are more competent than those previously in power. The latter relies on the assumption that education level is positively related to competency (Galasso and Nannicini, 2011; Besley et al., 2011). If this is the case, a commission composed of senior officials from the Italian civil services is likely more competent than an average

mayor from a dismissed municipality.[17] Moreover, from a political economy perspective, one can argue that the dismissal of a city council because of mafia infiltration replaces *politicians* with *bureaucrats*. As it is well known in the literature, decisions of politicians with electoral incentives are different from decisions of bureaucrats (Besley and Coate, 2003; Alesina and Tabellini, 2007). For example, the latter are less prone to be influenced by lobbies or enact policy just to please voters.

Summing up, compulsory administration along with a reduction in corruption produces a negative effect on public spending on investment. However, whether the latter is solely a direct consequence of the former is not clear as other possible mechanisms could take place at the same time.

4.2. Compulsory administration and spillovers

This paper evaluates spillover effects by looking at how municipal investment spending is affected by the crackdown on political corruption in a neighboring municipality. Since local spending decisions could be responsive to several of the consequences of the crackdown in the "vicinity", I discuss a number of relevant competing channels.

For instance, Sah (1991) suggests that law enforcement can produce spillovers. He argues that an individual's perceived risk of punishment, which has a direct impact on the probability of engaging in criminal activities, is endogenously determined and it importantly depends on detections in the vicinity.[18] Here, this would mean that the presence of a municipality under compulsory administration might affect existing fraudulent activities in other neighboring jurisdictions as it updates agent's risk perceptions. In a recent study, Rincke and Traxler (2011) provide empirical evidence confirming Sah's (1991) predictions. They show that Austrian households' compliance behavior with respect to TV license fees increases in those communities where some households experience enforcement from the arrival of licensing inspectors. Importantly, they show increasing compliance among both treated and untreated households. Therefore, one

[17] Interestingly, local officials are not only *better* during compulsory administration. Daniele and Geys (2015) study the effect of compulsory administration for mafia infiltration on the level of education of the newly elected representatives after compulsory administration. They find that they are on average more educated compared to those from the dismissed city council.

[18] Sah's (1991) model relaxes the assumption of exogeneity of the risk and perception of detection, which is standard in the literature building on the influential model of crime by Becker (1968).

should expect that the city council dismissal would produce a decrease in the occurrence of corruption activities not just in the municipality affected but also in its neighboring municipalities. In this scenario, the spillover effect should produce a reduction in neighboring municipalities budgets.

Alternatively, as corruption is driven here by the presence of organized crime in the public administration, one might expect a reaction from the criminal organization that aims at compensating for the reduced amount of revenues from public resources coming from the dismissed municipality. For instance, one might expect an increase in the number of other types of illegal activities in the dismissed municipality. However, for the scope of the current study, the most interesting event would be the potential temporary relocation of the mafia interests to other areas.[19] In this scenario, the mafia would have the incentives to meddle with public activities in the neighboring municipalities. Indeed, if this was the mechanism at work, one should expect an increase in spending on investment in these municipalities.

Finally, as one of the clear effects of compulsory administration is a reduction in public investments, fiscal spillover might show up as well. These competing channels focus on the well-established idea in public finance that spending decisions from one government should be affected by decisions taken by its neighbors (Besley and Case, 1995; Case et al., 1993).[20] In particular, yardstick competition models link the quality of a government with the performance of its neighbors (Besley and Case, 1995). Under the assumption that neighboring municipalities have similar shocks, voters can infer the quality of a government by comparing its performance with that of its neighbors. Hence, office-oriented politicians will adjust fiscal decisions accordingly to their neighbors to maximize their probability of reelection or political consensus. In this context, the dismissal of a municipality produces two consequences: first, it reveals the quality of former local officials; second, it improves the quality of the local officials by assigning power to the commission. These information shocks increase the awareness of citizens with respect to the quality of their own politicians who may react by mimicking the behaviors of the commissioners. Therefore, one may expect that public investment will

[19]See, Knight (2013) and Dell (2015) as recent empirical examples that stress how law enforcement affects crime relocation in neighboring jurisdictions.

[20]See also, for example, Baicker (2005), Bordignon et al. (2003) or Solé-Ollé (2006).

decrease not only in municipalities put under compulsory administration but also in neighboring jurisdictions. An alternative explanation is the presence of classical benefit spillovers where public goods or services provided by a jurisdiction increase the utility of citizens from neighboring municipalities because they consume them free of charge (Case et al., 1993).

Overall, city council dismissals should produce enough changes so that in the case spillovers exist they would impact budget decisions in neighboring municipalities. However, both the mechanism through which the externality should occur and whether this is positive (i.e., decrease in neighboring expenditure) or negative (i.e., increase in neighboring expenditure) is not clear.

5. Methodology

5.1. The estimation strategy

Most of the literature on spillover effects has focused on standard spatial econometric models. In principle, these models improve the results from OLS estimates by taking care of the omitted variable bias due to the spatial correlation (Anselin, 1988). However, in a recent contribution, Gibbons and Overman (2012) contend that the identification of these models is correct only if very strong assumptions hold and therefore their results could be misleading.[21] Interestingly, the policy under study can be considered as a source of exogenous variation that is likely to overcome issues rising from spatial dependence in the error terms. Hence, a reduced form approach based on OLS models, which satisfy specific identifying assumptions, should allow estimates with causal interpretation. My strategy is composed of two steps. First, I evaluate whether council dismissal in a municipality affects public spending of neighboring municipalities. While this analysis emphasizes whether spillovers are likely to exist or not,

[21] Typically, these models use an IV strategy where the policy implemented by a jurisdiction (e.g., tax rate or public expenditure) is regressed against a weighted average of those implemented by its neighbors. Eventually, socio-economic characteristics of these neighbors are used to instrument the endogenous variable. These instruments, however, do not seem to satisfy the required exclusion restriction. Indeed, it is likely that either the instruments do directly affect the main dependent variable or there are unobserved characteristics which are correlated with both the instruments and the dependent variable. An alternative methodology is the Maximum Likelihood (ML), which still relies on strong assumptions in terms of both exogeneity and distributional and functional form.

it does not reveal anything about the mechanism through which city council dismissals should affect neighbors' budget. Hence, as a second step, I complement this approach by further checks that aim at understanding which channels are likely to play a role. Formally, in the baseline analysis I estimate the following model:

$$Y_{ipt} = \beta T_{it} + \alpha \mathbf{X}_{it} + \delta_i + \chi_{pt} + \epsilon_{it}, \tag{1}$$

where i denotes a municipality, p the province and t the year. Y_{ipt}, the dependent variable, refers to expenditure in the investment of a municipality i in year t. Instead, T_{it}, depending on the specification, is equal to either *neighbors city council dismissal* or *neighbors compulsory administration*. The first variable takes the value 1 the year in which at least one neighbor experience a council dismissal, while the second is a dummy taking the value of 1 if at least one of the neighbors of the municipality i experiences a city council dismissal in year t or has experienced it in the previous two years (i.e., in t, $t-1$ or $t-2$). $\mathbf{X}_{it}$ are time varying municipal controls, while δ_i and χ_{pt} are municipality and province-year fixed effects, respectively. Finally, ϵ_{it} is the error term.

5.2. Identification issues

As already suggested, under certain conditions, the estimates of the β coefficient from the fixed effects model of equation (1) can mimic a randomized experiment and represent the causal effect of compulsory administration on local public spending of neighboring municipalities.

A first concern is that the municipalities which are neighbors of a municipality put under compulsory administration could be systematically different from the other municipalities in the sample. In this case it would be difficult to make a comparison because the city council dismissal would affect "treated" and "un-treated" municipalities in very different ways. In order to get rid of this potential selection bias, I decide to focus all my regressions only on those municipalities that experienced the treatment at least once (i.e., have at least one neighboring municipality put under compulsory administration in the time period considered). Although this implies a reduction in the number of municipalities considered, it makes it possible to produce causal estimates under weaker identifying assumptions.[22] In fact, given the previous sample restriction

[22]The whole sample would be composed of 1348 municipalities. With the restriction it includes around 400 municipalities with each of the two different measures of neighborliness I use.

the estimates will provide a causal evidence if the timing of city council dismissal among neighboring municipalities is random conditional on the controls. With regard to this, it is worth stressing that for a municipality the occurrence of a city council dismissal has some elements of exogeneity as the decision is taken by the central government. Nevertheless, one may still expect that municipalities that are put under compulsory administration have engaged in behaviors triggering the city council dismissal. Yet, this event is clearly exogenous and potentially unexpected for their neighboring municipalities (i.e., those I am interested in). However, in order to consistently reduce further concerns about potentially omitted variable bias, I control for fixed and time varying municipal characteristics.

The model includes municipality fixed effects to control for distinctive municipal features that are fixed over time. This removes concerns about specific municipal characteristics that could bias the estimates because they are correlated with budget decisions. For instance, they account for the historical presence of organized crime in a given municipality and its effect on public spending. Importantly, the main specification also controls for all time-varying characteristics at the provincial level. The inclusion of the province-year fixed effects is a very strong element in my specification as it controls for attributes varying over time for a rather small geographical area (e.g., GDP shocks or changes in the provincial government). They control for potential variability, both within and between provinces, in the abilities of the *prefetto* in running his office and thus of properly using the policy of interest. Additionally, as I already described in the data section, I include a set of time-varying control variables that might help in increasing the precision of my estimates.

Finally, I follow two different approaches in order to test the identifying assumptions. First, I look at the relative size of the omitted variable bias by examining how the inclusion of additional controls affects the size of the coefficient of interest. On the one hand, the introduction of controls can produce a significant variation in the main coefficient. This implies that the estimated coefficient is likely to be affected by the introduction of even more controls and, hence, the bias coming from omitting controls could confound my estimate. On the other hand, the inclusion of further controls can have a very limited impact on the size of the main coefficient. In this case the stability of the coefficient would favor a causal interpretation of the results. I follow the papers of Altonji et al. (2005) and Oster (2015) to produce a formal test. Therefore,

I quantify how large the effect of unobservables has to be to neutralize the estimated effect under the assumption that the selection on observables is proportional to the selection on unobservables. Second, I give evidence from a placebo test that controls for anticipatory effects by including leads that represent dummies for future compulsory administration in neighboring municipalities. This should emphasize whether municipal spending was somewhat affected by the presence of unlawful conduct in an eventually dissolved neighboring municipality.

5.3. Identifying the channels

While the baseline specification aims at estimating the effect of the council dismissal on neighboring municipalities' spending, it does not deal with the alternative theoretical reasons on why this might occur. In Section 4.2 I suggested a number of explanations on why spillovers should exist. Although it is arguably difficult to empirically distinguish among the different determinants of spillovers, I complement the basic results with additional estimates.

I begin by looking at how the main regressor interacts with variables that proxy either for presence of local officials' electoral incentives or of corrupting behaviors (mafia).

One relevant channel that could explain spillovers from the city council dismissal to the spending decision of neighbors is yardstick competition. As described in Section 3, I constructed the variable electoral cycle to account for the variability of electoral incentives over the years of each term. That should help me to verify whether the effect on expenditure of a city council dismissal in a neighboring municipality increases the closer the year of the next election. Hence, I run the following equation:

$$Y_{ipt} = \beta_1 T_{it} + \beta_2 T_{it} * ElecCycle_{it} + \alpha \mathbf{X}_{it} + \delta_i + \chi_{pt} + \epsilon_{it}, \tag{2}$$

that replicates the main specification of equation (1) but adds the interaction between *electoral cycle* and either *neighbors city council dismissal* or *neighbors compulsory administration*. Therefore, if yardstick competition is the explaining mechanism, I should expect the interaction term to be significantly different from 0 and the sign to be the same as T_{it}, as its effect should be stronger.

Alternatively, I aim at testing whether there is relocation of mafia activity or attenuation of corruption activities in other municipalities. In order to study these alternative

mechanisms I estimate the following model:

$$Y_{it} = \beta_1 T_{it} + \beta_2 T_{it} * Mafia_i + \alpha \mathbf{X}_{it} + \delta_i + \chi_{pt} + \epsilon_{it}, \tag{3}$$

which adds to my main specification a term that interacts either *neighbors city council dismissal* or *neighbors compulsory administration* with the variable *mafia* which defines which of the municipalities are more likely to be mafia-ridden.

Unfortunately, it is a very hard task to measure the variation in mafia activity over time in a given municipality. This is also more challenging in this analysis as I am using municipal observations.[23] Nevertheless, my baseline specification implicitly controls for variation in mafia-activities over time at the provincial level (province-year fixed effects) and accounts for the historical presence of mafia in a specific municipality (municipality fixed effects). Indeed, it is worth mentioning that several studies on the origins of organized crime in the south of Italy have confirmed that the location of mafia activity across different areas today has arisen from the specific conditions of decades or centuries ago (Buonanno et al., 2015). Therefore, if the presence of mafia in a territory is to a certain extent predetermined, I can test the plausibility of this channel by verifying whether the presence of mafia activity in a municipality makes the potential spillover stronger or weaker. The idea is that *ceteris paribus* municipalities that are likely to have a history of mafia in the territory should react differently to the city council dismissal of a neighboring municipality with respect to the other municipalities in which the mafia is less likely to be present. If there is a relocation of fraudulent activities to neighboring municipalities, the sign of the overall effect is supposed to be positive. However, organized crime could move to where it is not already active or increase its strength in municipalities where it is long-standing. Therefore, the interaction term could go in either direction.

The same equation can be used to test the case of law enforcement spillovers, which produce an attenuation of corruption in neighboring municipalities (i.e., the overall ef-

[23] Of the existing research about mafia in Italy, there is no study that accounts for variation over time of mafia activity at the municipal level. Papers that study the municipality level (see, for example, Barone and Narciso (2015)) focus on cross-section analyses. The other papers that account for variation over time of mafia activity were aggregating information at a provincial level (see, for example, Acconcia et al. (2014) or Pinotti (2015)).

fect is negative). In this case the variable *mafia* tells something about the probability of having a corrupted government in a municipality, assuming that mafia-ridden municipalities are more likely to be corrupted. Again, the focus is on the interaction term. Thus, I expect the effect to be stronger in those municipalities with a higher probability of mafia presence in their territory, which means a negative sign for the interaction term.

It is worth mentioning that for both equations (2) and (3) the identifying assumption is the same as that in the baseline analysis. Indeed, the variable *mafia* is fixed and local elections in Italy do not occur for all municipalities in the same year (i.e., they do not have a systematic correlation with the presence of compulsory administration in a neighboring municipality).

To summarize, the overall effect is supposed to be negative if either yardstick competition or law enforcement spillovers are present, while it should be positive if there is a relocation of mafia activities. Under yardstick competition, the interaction term needs to be negative, as I expect stronger incentives the closer are the next elections. Also positive law enforcement spillovers should produce a negative sign in the interaction term, as the municipalities more affected by a reduction in corruption in a neighboring municipality are those more likely to be corrupted. Moreover, if there is a relocation of mafia activity, the sign of the interaction can go either way.

Finally, similar to Acconcia et al. (2014) and Daniele and Geys (2015), I provide additional results from a falsification test in which I focus on the effect generated by city council dismissals that occurred for reasons not related to mafia infiltration in the public administration. The idea is to look at how local spending reacts to the occurrence of such an event in a neighboring municipality and compare it with the effect already estimated in previous sections. To do so, I replicate part of the results using as main regressors either *other compulsory administration* or *neighbors other council dismissal* or *neighbors other compulsory administration* instead of *compulsory administration*, *neighbors council dismissal* and *neighbors compulsory administration*, respectively. If the intervention of commissioners who are in power for reasons other than mafia produces a similar direct effect on investment (i.e., a reduction on expenditure on investment in municipalities that experience the council dismissal), then I can emphasize the presence of fiscal spillovers that are not determined together with a crackdown in corruption. In other words, law enforcement spillovers should not be observed in this

scenario. Therefore, if I find spillovers in both types of compulsory administration it is likely that fiscal spillovers are in place (i.e., either yardstick competition or benefit spillover). Instead, if only compulsory administration for mafia infiltration produces spillovers, these are more likely to be either law enforcement spillover (negative sign) or mafia relocation (positive sign).

6. Results

6.1. Baseline results

Table 4 reports the effect of compulsory administration in a municipality on public investment of neighboring municipalities using the two different regressors I mentioned in the previous section: *neighbors city council dismissal* or *neighbors compulsory administration*. Importantly, as I am considering only the group of "treated" municipalities, this coefficient identifies the *average treatment effect on the treated*. In the first three columns (1 to 3), the focus is on a three-year period from the city council dismissal, while the latter three (4 to 6) account for the very first year of compulsory administration.

In column (1), I include only the main regressor without any additional controls. The coefficient would suggest a reduction of investment of 8% when a neighbor is put under compulsory administration. However, this effect is not significantly different from zero from a statistical point of view.[24] In column (2), I add municipality fixed effects and province-year fixed effects. The estimated effect is now 6% and is significantly different from 0 at the 5% level. Column (3), where further municipal time varying controls are considered, suggests again a reduction in investment of nearly 6% and has the same level of significance as the previous estimate. This evidence confirms that city council dismissals have a significant effect on the budget of those municipalities that are geographically closer if I consider a three-year period.

These results, however, are not confirmed if I look at the effect occurring the first year of the dismissal. In fact, in none of the last three columns (4,5 and 6) is the main regressor significantly different from 0, though the coefficient is consistently negative. The discrepancy between the two effects highlights that neighbors' reactions take place, on average, with a delay with respect to the actual council dismissal.

[24] In all regressions I use standard errors clustered two ways by municipality and by year.

Interestingly, compulsory administration reduces investment in both the municipalities experiencing the dismissal (Table 3) and their neighbors. Hence, this finding is consistent with some of the alternative mechanisms that are described in section 5.3. In fact, the reduction in investment could be due either to local officials who want to maximize their electoral support by mimicking the behavior of the commission or to the attenuation of fraudulent activity or positive benefit spillover.

The presence of spillover effects with regard to the policy under analysis is already an interesting result. Indeed, it adds to the literature more evidence on how policy and decisions from different jurisdictions might be interdependent. Moreover, different from the majority of the existing literature, this result comes from a quasi-experimental framework that in principle produces casual estimates bypassing some of the issues arising from the use of standard spatial econometrics methods.

In the next sections, I test the identifying assumptions (i.e., whether the city council dismissal of a neighboring municipality is random conditional on the controls) and provide additional results to identify the channels more likely to explain the baseline results.

6.2. Checking the identifying assumptions

The first element to emphasize is the relative stability of the coefficients shown over the different specifications in Table 4. If one considers the three-year period of compulsory administration, the effect decreases from 8% of the first specification to 6% when I include all controls, while for its first year it moves from 7.4% to 3.4%. More formally, Table 5 reports the results of a test in the spirit of Altonji et al. (2005) and Oster (2015).[25] The key information is in the last two rows, where the parameter δ and the identifying bounds are displayed. The former tells how large the selection on unobservables has to be such that the results are canceled out while the latter reports the set of values the coefficient can take assuming a $\delta = 1$. Interestingly, the computed δ for the estimates in columns (2) and (3) are much higher than 1, which is the threshold usually considered to define whether the results are robust or not (Oster, 2015). More specifically, δ is 11.20 and 7.88 in column (2) and (3), respectively. Therefore, the effect of unobservables needs to be roughly, at least, 7.5 times stronger than the one from

[25]For further details and a formal derivation of δ and the identification set see Oster (2015). All calculations are made using the PSACALC stata module by Oster (2013).

observables, so that the effect is completely nullified. Also, all the identification sets estimated include only negative values. The results shown in columns (5) and (6) are also robust as the δ are still higher then 1. Overall, these results do not seem to be biased by omitted variables possibly correlated with both the dependent variable and treatment.

As a further test to check the reliability of my analysis, I investigate the presence of anticipatory effects. To do so, I introduce leads of *Neighbors counc. dism.* up to 4 years, to the full controlled regression (i.e., column (6) of Table 4). These results are reported in Table 6. Expenditure on investments in year t is not associated with the city council dismissal in future years. This is true either if one looks at each individual year separately or at the overall effect of the following 4 years. To conclude, both robustness checks seem to confirm the identifying assumptions, thus reinforcing the causal interpretation of the baseline results.

6.3. Testing the mechanisms

Table 7 shows the results from estimates of equations (2) and (3). Both columns (1) and (3) report that the interaction between either *neighbors compulsory administration* or *neighbors council dismissal* and *mafia* is negative and significantly different from 0 at the 1% level. Moreover, the dummy *neighbors compulsory administration* is not significantly different from 0 and it is positive in both specifications. Specifically, expenditure investment decreases by 12% in mafia-ridden municipalities sharing a border with a municipality that experienced compulsory administration. Interestingly, a similar result also appears when I consider the regressor that identifies only the first year of the council dismissal, though in the baseline estimations reported in Table 4 there was no significant effect. In this case the reduction in investment is 11%.[26] These findings favor the hypothesis that law enforcement spillovers could be driving the overall effect emphasized in the baseline analysis.[27] Indeed, the city council dismissal in a neighboring municipality does not affect expenditure on investment in those municipalities in

[26]These come from summing up the two reported coefficients respectively, in column (1) and (4) of Table 7. The p-value of the joint significance of the two coefficients in column (1) is 0.007 and in column (3) is 0.009.

[27]These results also implicitly rule out the presence of benefit spillovers as they are expected to have an homogeneous effect on neighbors.

which the probability of having mafia activity in the territory is low (i.e., *mafia*=0). Instead, the effect is negative and significant in municipalities that are more likely to have the presence of mafia activity starting from the arrival of the commissioners in the neighboring municipalities.

Columns (2) and (4) show the effect of the city council dismissal interacted with the time from the last election, which fills in for the strength of the electoral incentives. The interaction terms of both specifications are not significantly different from 0, hence it rules out the presence of spillover of yardstick competition in this specific framework. Still, the *electoral cycle* variable is always significant and positive, confirming the hypothesis that expenditure increases the closer are elections. The coefficient of *neighbors compulsory administration*, as expected from the main analysis, is significant and also negative when the neighbors are computed in terms of spatial proximity.

Finally, to further investigate the law enforcement channel, Table 8 reports the results from the falsification test. Columns (1) and (2) present the direct effect of experiencing a city council dismissal for reasons other than mafia. This is estimated considering only those municipalities from the whole sample that experience at least one city council dismissal of this kind in the period of the analysis. There is a drop in public investment in both the first year of the dismissal and in the two-year period that follows the council dismissal. This is probably due to the fact that the commissioner is often called to resolve conditions of financial instability, and hence they put forward strong actions to reorganize the municipal budget. I present this descriptive evidence to emphasize that it is comparable to what is reported in Table 3 where the focus was on council dismissal for mafia infiltration. The results shown in columns (2) through (6) of Table 8 are estimated for a restricted sample of neighbors. I include only municipalities that are studied in the main analysis and also experienced at least a city council dismissal in their neighbors for reasons other than mafia. The number of municipalities goes from 406 to 368. These estimates suggest that city council dismissal for reasons other than mafia do not significantly effect spending on investment of neighboring municipalities. Interestingly, the fact that a municipality is identified as mafia-ridden or not does not seem to matter.

7. Conclusion

Anti-corruption policies such as monitoring and auditing of public officials' activities seem to be effective mechanisms for solving corruption and misconduct in lower levels of government. Nevertheless, when illegal activities in the local public administration are regular events, these kinds of policies are more likely to produce indirect consequences to neighbors that may potentially reduce or increase their actual efficiency. In this paper, taking the case of Italy, I provide the first empirical evidence showing the existence of positive spillovers.

Specifically, I explore the effect of an Italian policy that produces an important exogenous break in the governance of those municipalities whose representatives' decisions are affected by organized crime. In fact, once the potential connection with mafia arises, the minister of interior replaces the city council of these municipalities with a commission composed of three bureaucrats who govern for typically three semesters. The presence of the commission significantly reduces municipal spending on investment. Interestingly, my estimates show that the same policy also negatively affects neighboring municipalities' investments. Again, during the first three years after the dismissal of a neighbor, the municipal spending on investment decreases at a yearly average of 6 percent. I check the identifying assumption of my empirical strategy in two ways. First, I show that unobservable factors need to be relatively large to completely neutralize my findings. Second, I provide results that exclude the presence of any anticipatory response to the arrival of the commission.

However, as spending spillovers are possible for several reasons, I test alternative mechanisms. Neither yardstick competition nor the relocation of mafia activities in the neighborhood seem plausible explanations. Instead, the analysis suggests that positive law enforcement spillovers indirectly affecting mismanagement in neighboring municipalities is the potential mechanism at work. In fact, I show that only mafia-ridden municipalities (i.e., those with a higher probability of corruption in public administration) are those affected by the arrival of commissioners in the neighboring municipalities and that compulsory administration for reasons other than mafia do not produce any spillover.

All these findings are coherent with Sah's (1991) model. The presence of commissioners in a municipality affects the perceived probability of punishment of public officials from neighboring municipalities, which are expected to change their behavior

accordingly (i.e., decrease misconducts). However, this mechanism produces consequences which are heterogeneous depending on the propensity for crime of each group of municipalities. Hence, only the municipalities where illegal activity is potentially in place will experience a reduction in expenditure.

In conclusion, anti-corruption policies can create law enforcement spillovers. Still, further investigations are needed to evaluate whether my findings are specific to the compulsory administration policy applied in Italy or can be generalized to anti-corruption policies in place in other countries.

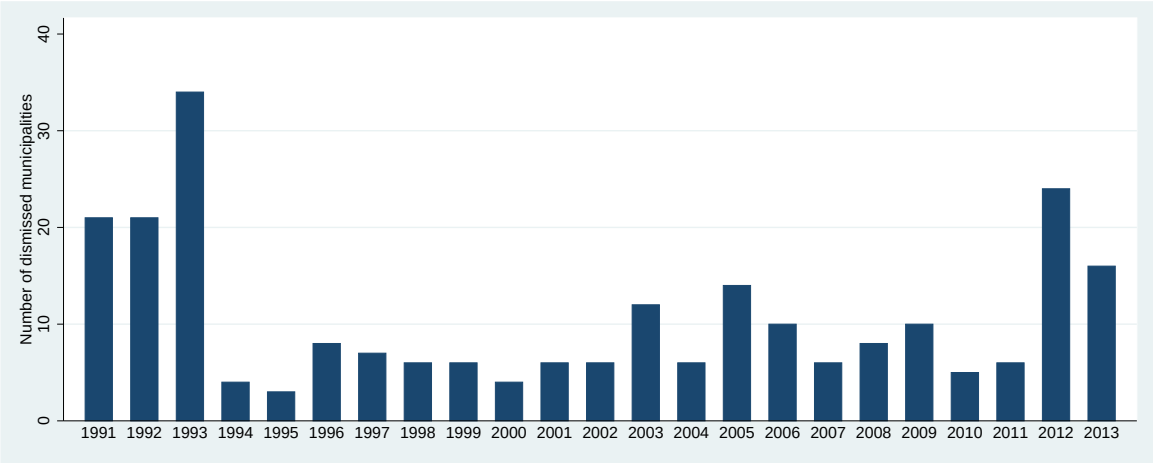

Figure 1: Council dismissals by year.

Table 1: City council dismissals by region and province

Basilicata		*Calabria*		*Campania*		*Lazio*		*Liguria*	
Matera	1	Catanzaro	8	Avellino	4	Roma	1	Imperia	2
		Cosenza	2	Benevento	1				
		Crotone	4	Caserta	33				
		Reggio Calabria	45	Napoli	51				
		Vibo Valentia	14	Salerno	6				

Lombardia		*Piemonte*		*Puglia*		*Sicilia*	
Milano	1	Torino	3	Bari	5	Agrigento	7
				Lecce	2	Caltanissetta	6
						Catania	10
						Messina	3
						Palermo	26
						Ragusa	1
						Siracusa	1
						Trapani	7

Notes: The table displays the number of municipality dismissals for the period 1991-2013 by region and province.

Table 2: Summary statistics

	Bordering municipalities		
Variable	Mean	Std. Dev.	N
Total expenditure p/c	1323.38	977.66	6303
Current expenditure p/c	700.86	297.41	6303
Investment expenditure p/c	388.55	786.71	6303
Council dismissal	0.015	0.121	6303
Compulsory administration	0.038	0.192	6303
Other council dismissal	0.037	0.19	6303
Other compulsory administration	0.07	0.255	6303
Neighbors council dismissal	0.112	0.315	6303
Neighbors compulsory administration	0.266	0.442	6303
Neighbors other council dismissal	0.198	0.399	6303
Neighbors other compulsory administration	0.335	0.472	6303
Electoral cycle	1.866	1.408	6303
Commissioner	0.066	0.249	6303
Mafia	0.572	0.495	6303
Local party	0.378	0.485	6303
Population	16325.86	61661.39	6303
Dependency ratio	0.349	0.036	6303

Table 3: Compulsory administration on local spending

	(1) First year		(2) Three-year period	
Dependent Variable	Coef.	Stand. Error	Coef.	Stand. Error
Total expenditures	-0.071***	0.026	-0.031	0.038
Current expenditures	0.009	0.017	-0.018	0.024
Investment expenditure	-0.466***	0.097	-0.148*	0.084

Notes: The table reports estimates of regressions where the dependent variable is the Log of the reported category of expenditures per capita. These estimates consider annual information for all municipalities from the regions Campania, Calabria and Sicilia, with at least one city council dismissal in the period from 1998-2013. The main regressor in the estimates are: in column (1) a dummy equal to 1 the year a municipality is put under compulsory administration, and 0 otherwise; in column (2) a dummy equal to 1 for the year, and the following two years a municipality experiences a council dismissal, and 0 otherwise. Standard errors in parenthesis. Standard errors clustered two ways by municipality and by year. *p $<$ 0.1, **p $<$ 0.05 and ***p $<$ 0.01.

Table 4: Municipal investment and council dismissals in neighboring municipalities

	Bordering municipalities					
	(1)	(2)	(3)	(4)	(5)	(6)
Neighbors comp. admin.	-0.087	-0.067**	-0.061**			
	(0.057)	(0.033)	(0.031)			
Neighbors counc. dism.				-0.074	-0.040	-0.034
				(0.079)	(0.048)	(0.048)
Municipality FE	No	Yes	Yes	No	Yes	Yes
Province × year fixed effects	No	Yes	Yes	No	Yes	Yes
Municipality control variables	No	No	Yes	No	No	Yes
R^2	0.001	0.382	0.391	0.001	0.382	0.391
N	6303	6303	6303	6303	6303	6303
N mun	404	404	404	404	404	404

Notes: The dependent variable is the Log of *investment expenditure p/c*. *Neighbors compulsory administration* is a dummy taking the value of 1 if at least one of the neighbors of the municipality i experiences a city council dismissal in year t or have experienced it in the previous two years ($t-1$ or $t-2$). *Neighbors council dismissal* is a dummy taking the value of 1 the year in which a neighboring municipality experiences a council dismissal. Municipality control variables are: *local party*, *population dependency ratio*, *electoral cycle* and *commissioner*. Standard errors in parenthesis. Standard errors clustered two ways by municipality and by year. *p $<$ 0.1, **p $<$ 0.05 and ***p $<$ 0.01.

Table 5: Selection on unobservables

	(1) Uncontrolled	(2) Controlled	(3) Controlled	(4) Uncontrolled	(5) Controlled	(6) Controlled
Coefficient	-0.087	-0.067	-0.061	-0.074	-0.040	-0.034
R-squared	0.001	0.382	0.391	0.000	0.382	0.391
δ		11.20	7.88		3.92	2.84
Identified Set		[-0.067,-0.061]	[-0.061,-0.054]		[-0.034,-0.022]	[-0.041,-0.022]

Notes: The dependent variable is *expenditure on investment*. The reported coefficients are those of *Neighbors comp. admin.* in columns (1) to (3) and *Neighbors counc. dism* in columns (3) to (6). Each column replicates the specification used in Table 4. δ is calculated assuming $R_{max} = 1.3$R-squared and $\beta = 0$. The identified set is calculated assuming $R_{max} = 1.3$R-squared and $\delta = 1$.

Table 6: Pre-adoption effects

	(1)	(2)	(3)	(4)	(5)
Bordering municipalities					
F Neighbors counc. dism.	0.006				0.006
	(0.056)				(0.062)
F2 Neighbors counc. dism.		0.018			0.041
		(0.038)			(0.052)
F3 Neighbors counc. dism.			-0.044		-0.033
			(0.037)		(0.048)
F4 Neighbors counc. dism.				0.042	0.046
				(0.047)	(0.053)
Overall effect					*0.060*
Joint significance (p-value)					*0.611*

Notes: The dependent variable is the Log of *investment expenditure p/c*. The regression includes Leads of the variable *Neighbors council dismissal*, which is a dummy taking the value of 1 the year in which at least one neighboring municipality experiences a council dismissal. The estimations include both municipal and province-year fixed effects and the following municipality control variables: *local party*, *population dependency ratio*, *electoral cycle* and *commissioner*. Standard errors in parenthesis. Standard errors clustered two ways by municipality and by year. *p $<$ 0.1, **p $<$ 0.05 and ***p $<$ 0.01.

Table 7: Testing the mechanism

	Bordering municipalities			
	(1)	(2)	(3)	(4)
Neighbors comp. admin.	0.032	-0.111**		
	(0.047)	(0.045)		
Neighbors comp. admin. X Mafia	-0.156***			
	(0.061)			
Neighbors comp. admin. X Electoral cycle		0.026		
		(0.018)		
Neighbors counc. dism.			0.112	-0.057
			(0.073)	(0.068)
Neighbors counc. dism. X Mafia			-0.228***	
			(0.074)	
Neighbors counc. dism. X Electoral cycle				0.012
				(0.025)
Electoral cycle		0.065***		0.071***
		(0.010)		(0.009)
Municipality FE	Yes	Yes	Yes	Yes
Province × year fixed effects	Yes	Yes	Yes	Yes
Municipality control variables	Yes	Yes	Yes	Yes
R^2	0.392	0.392	0.391	0.391
N	6303	6303	6303	6303
N mun	404	404	404	404

Notes: The dependent variable is the Log of *investment expenditure p/c*. *Neighbors compulsory administration* is a dummy taking the value of 1 if at least one of the neighbors of the municipality i experiences a city council dismissal in year t or has experienced it in the previous two years ($t-1$ or $t-2$). *Neighbors council dismissal* is a dummy taking the value of 1 the year in which a neighboring municipality experiences a council dismissal. *Mafia* is a dummy taking the value of 1 for each municipality that experienced at least one real estate or firm seizure related to crimes committed by mafia-type organizations. *Electoral cycle* counts the number of years from the last election. Municipality control variables are: *local party*, *population*, *dependency ratio*, *electoral cycle* and *commissioner*. Standard errors in parenthesis. Standard errors clustered two ways by municipality and by year. *p $<$ 0.1, **p $<$ 0.05 and ***p $<$ 0.01.

Table 8: Falsification test: Municipal investment and council dismissals not for mafia infiltration

	Direct effect		**Spillover effects**			
			Bordering municipalities			
	(1)	(2)	(3)	(4)	(5)	(6)
Other comp. admin	-0.356***					
	(0.056)					
Other counc. dism.		-0.354***				
		(0.070)				
Neighbors other comp. admin.			-0.001	-0.019		
			(0.031)	(0.044)		
Neighbors other comp. admin. X Mafia				0.055		
				(0.061)		
Neighbors other counc. dism.					0.029	0.011
					(0.028)	(0.045)
Neighbors other counc. dism. X Mafia						0.032
						(0.068)
Municipality FE	No	No	Yes	Yes	Yes	Yes
Province × year fixed effects	No	No	Yes	Yes	Yes	Yes
Municipality control variables	No	No	Yes	Yes	Yes	Yes
R^2	0.010	0.006	0.400	0.400	0.400	0.400
N	6854	6854	5741	5741	5741	5741
N mun	439	439	368	368	368	368

Notes: The dependent variable is the Log of *investment expenditure p/c*. *Other compulsory administration* is a dummy taking the value of 1 if a municipality experiences a city council dismissal for reasons other than mafia infiltration in year t or have experienced it in the previous year $t-1$. *Other council dismissal* is a dummy taking the value of 1 the year a municipality is put under compulsory administration for reasons other than mafia. *Neighbors other compulsory administration* is a dummy taking the value of 1 if at least one of the neighbors of the municipality i experiences a city council dismissal for reasons other than mafia in year t or have experienced it in the previous year $t-1$. *Neighbors other council dismissal* is a dummy taking the value of 1 the year in which a neighboring municipality experience a council dismissal for reasons other than mafia. *Mafia* is a dummy taking the value of 1 for each municipality that experienced at least one real estate or firm seizure related to crimes committed by mafia-type organizations. Municipality control variables are: *local party*, *population dependency ratio*, *electoral cycle* and *commissioner*. Standard errors in parenthesis. Standard errors clustered two ways by municipality and by year. *p $<$ 0.1, **p $<$ 0.05 and ***p $<$ 0.01.

A. Appendix

Table A.1: List of municipalities experiencing a city council dismissal (1991-2013)

Acerra	Condofuri	Montecorvino Pugliano	San Luca
Aci Catena	Corigliano Calabro	Nardodipace	San Paolo Belsito
Adrano	Cosoleto	Nettuno	San Procopio
Afragola	Crispano	Nicotera	San Tammaro
Africo	Delianuova	Niscemi	Santa Flavia
Altavilla Milicia	Ercolano	Nocera Inferiore	Santa Maria La Carita'
Amantea	Fabrizia	Nola	Sant'Andrea Apostolo dello Ionio
Ardore	Ficarazzi	Orta di Atella	Sant'Antimo
Arzano	Frattamaggiore	Ottaviano	Sant'Antonio Abate
Augusta	Frignano	Pagani	Sant'Ilario dello Ionio
Bagaladi	Furnari	Pago del Vallo di Lauro	Santo Stefano in Aspromonte
Bagheria	Gallipoli	Pantelleria	Sant'Onofrio
Bardonecchia	Gela	Parghelia	Sarno
Bordighera	Gioia Del Colle	Partanna	Scafati
Borgia	Gioia Tauro	Pignataro Maggiore	Scicli
Boscoreale	Giugliano in Campania	Pimonte	Sedriano
Botricello	Gragnano	Piraino	Seminara
Bova Marina	Grazzanise	Plati'	Siculiana
Briatico	Gricignano di Aversa	Poggiomarino	Siderno
Brusciano	Guardavalle	Polizzi Generosa	Sinopoli
Burgio	Isca sullo Ionio	Pollina	Soriano Calabro
Caccamo	Isola delle Femmine	Pomigliano d'Arco	Stefanaconi
Calanna	Isola di Capo Rizzuto	Pompei	Strongoli
Calatabiano	Lamezia Terme	Portici	Surbo
Caltavuturo	Lascari	Pozzuoli	Taurianova
Camini	Leini	Quarto	Terlizzi
Campobello di Licata	Licata	Quindici	Terme Vigliatore
Campobello di Mazara	Liveri	Racalmuto	Termini Imerese
Canicatti'	Lusciano	Ragalna	Terzigno
Capaci	Marano di Napoli	Recale	Teverola
Careri	Marcedusa	Reggio di Calabria	Torre Annunziata
Carinola	Marcianise	Riesi	Torre del Greco
Casal di Principe	Marina di Gioiosa Jonica	Rivarolo Canavese	Torretta
Casalnuovo di Napoli	Mascali	Rizziconi	Trabia
Casaluce	Mascalucia	Roccaforte del Greco	Trani
Casamarciano	Mazara del Vallo	Roccamena	Tufino
Casandrino	Melito di Napoli	Roghudi	Vallelunga Pratameno
Casapesenna	Melito di Porto Salvo	Rosarno	Ventimiglia
Casignana	Mileto	S. Maria La Fossa	Vicari
Casola di Napoli	Misilmeri	S.Lorenzo Maggiore	Villa di Briano
Casoria	Misterbianco	Salemi	Villa Literno
Castel Volturno	Modugno	Samo	Villabate
Castellammare del Golfo	Molochio	San Calogero	Villaricca
Castello di Cisterna	Monasterace	San Cipriano d'Aversa	Volla
Castrofilippo	Mondragone	San Ferdinando	
Cerda	Mongiana	San Gennaro Vesuviano	
Cesa	Monopoli	San Giovanni La Punta	
Cinisi	Montalbano Jonico	San Giuseppe Vesuviano	
Ciro'	Montebello Jonico	San Gregorio d'Ippona	

Notes: This is a list of all municipalities that experienced at least one city council dismissal starting from the law approval in 1991 until the end of 2013.

B. Appendix

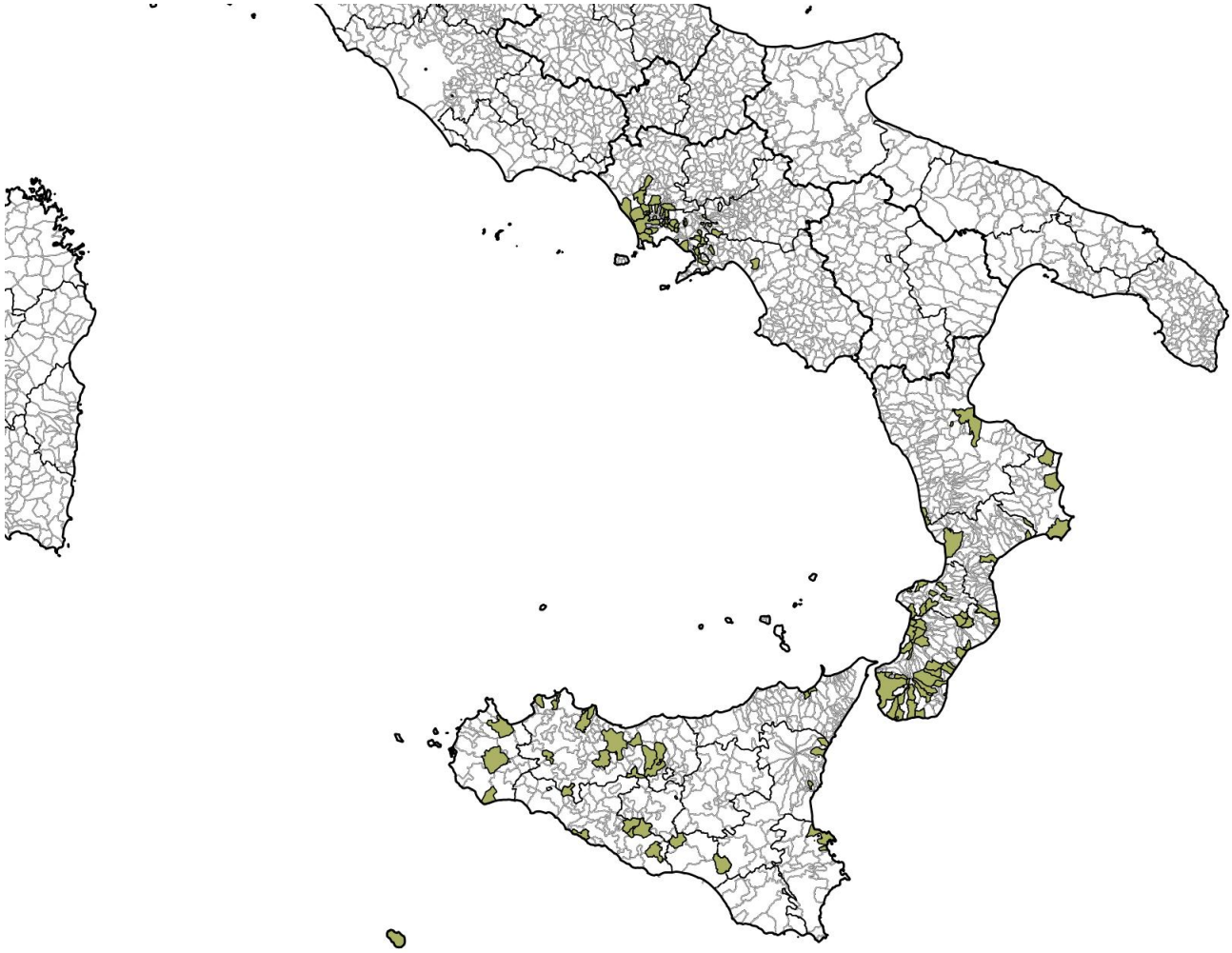

Figure B.1: City council dismissals (Campania, Calabria and Sicilia).

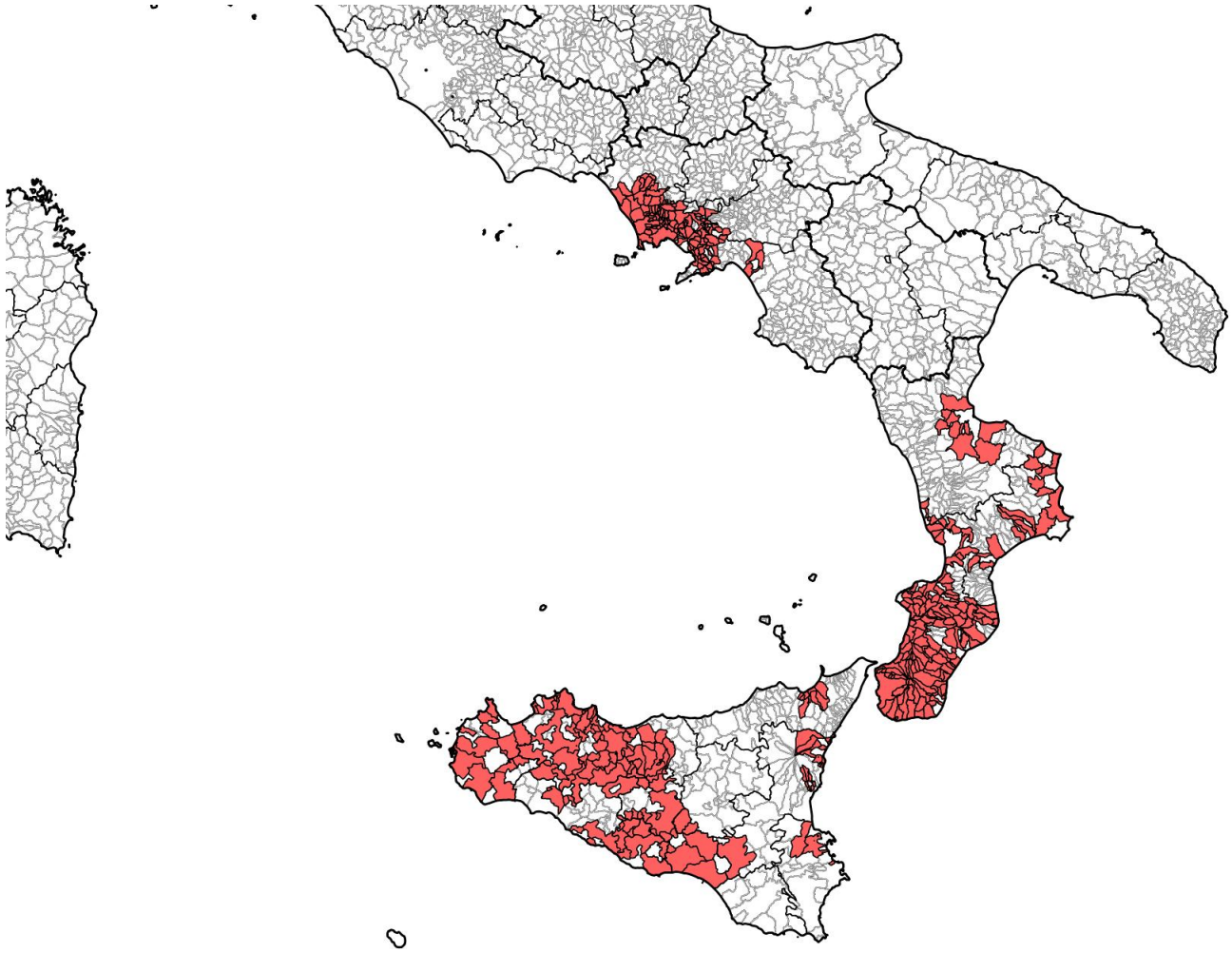

Figure B.2: Neighbors' city council dismissals - Bordering (Campania, Calabria and Sicilia).

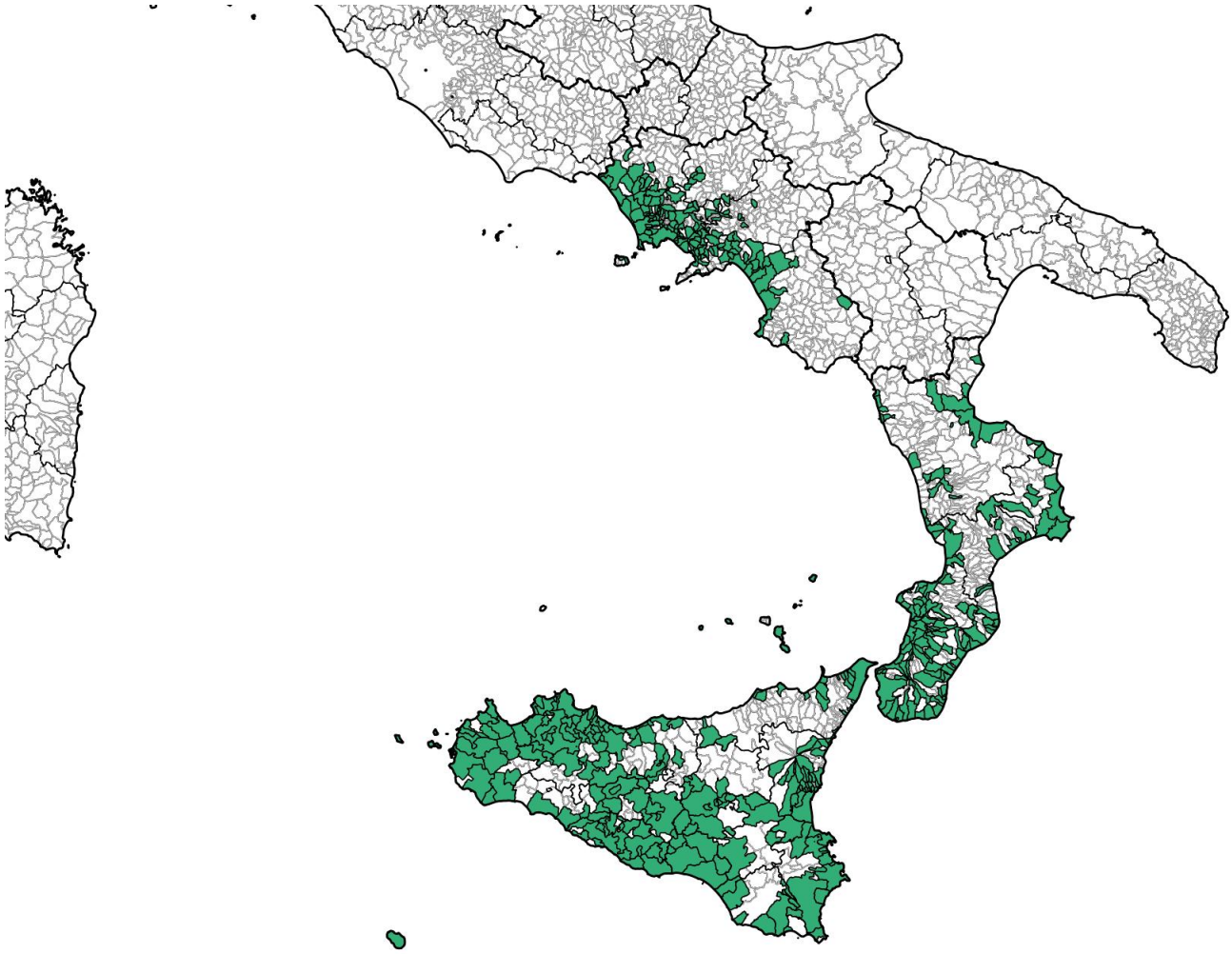

Figure B.3: Mafia-ridden municipalities - At least one seizure (firms or real estate) because of mafia (Campania, Calabria and Sicilia).

Bibliography

Acconcia, A., Corsetti, G., Simonelli, S., 2014. Mafia and public spending: Evidence on the fiscal multiplier from a quasi-experiment. American Economic Review 104 (7), 2185–2209.

Acemoglu, D., Garcia-Jimeno, C., Robinson, J. A., 2015. State capacity and economic development: A network approach. American Economic Review 105 (8), 2364–2409.

Alesina, A., Tabellini, G., 2007. Bureaucrats or Politicians? Part I: A single policy task. American Economic Review 97 (1), 169–179.

Altonji, J. G., Elder, T. E., Taber, C. R., 2005. Selection on observed and unobserved variables: Assessing the effectiveness of catholic schools. Journal of Political Economy 113 (1), 151–184.

Anselin, L., 1988. Spatial Econometrics: Methods and Models. NATO Asi Series. Series E, Applied Sciences. Springer.

Arin, K. P., Chmelarova, V., Feess, E., Wohlschlegel, A., 2011. Why are corrupt countries less successful in consolidating their budgets? Journal of Public Economics 95 (7-8), 521–530.

Baicker, K., 2005. The spillover effects of state spending. Journal of Public Economics 89 (2-3), 529–544.

Bardhan, P., Mookherjee, D., 2006. Decentralization, corruption and government accountability. Edward Elgar Publishing, Inc.

Barone, G., Narciso, G., 2015. Organized crime and business subsidies: Where does the money go? Journal of Urban Economics 86, 98 – 110.

Becker, G. S., 1968. Crime and punishment: An economic approach. Journal of Political Economy 76, 169.

Becker, G. S., Stigler, G. J., 1974. Law enforcement, malfeasance, and compensation of enforcers. The Journal of Legal Studies 3 (1), 1–18.

Besley, T., Case, A., 1995. Incumbent behavior: Vote-seeking, tax-setting, and yardstick competition. American Economic Review 85 (1), 25–45.

Besley, T., Coate, S., 2003. Elected versus appointed regulators: Theory and evidence. Journal of the European Economic Association 1 (5), 1176–1206.

Besley, T., Montalvo, J. G., Reynal-Querol, M., 2011. Do educated leaders matter? Economic Journal 121 (554), F205–.

Bordignon, M., Cerniglia, F., Revelli, F., 2003. In search of yardstick competition: A spatial analysis of Italian municipality property tax setting. Journal of Urban Economics 54 (2), 199–217.

Brueckner, J. K., 2000. Fiscal decentralization in developing countries: The effects of local corruption and tax evasion. Annals of Economics and Finance 1 (1), 1–18.

Buonanno, P., Durante, R., Prarolo, G., Vanin, P., 2015. Poor institutions, rich mines: Resource curse in the origins of the sicilian mafia. The Economic Journal 125 (586), F175–F202.

Caneppele, S., Martocchia, S., 2014. Italian mafias, public procurement and public works in southern italy. In: Caneppele, S., Calderoni, F. (Eds.), Organized Crime, Corruption and Crime Prevention. Springer International Publishing, pp. 293–299.

Carozzi, F., Muço, A., 2015. Learn from thy neighbour: Do voters punish political parties?, mimeo.

Case, A. C., Rosen, H. S., Hines, J. J., 1993. Budget spillovers and fiscal policy interdependence : Evidence from the states. Journal of Public Economics 52 (3), 285–307.

Daniele, G., Geys, B., 2015. Organised crime, institutions and political quality: Empirical evidence from italian municipalities. The Economic Journal 125 (586), F233–F255.

Del Monte, A., Papagni, E., 2001. Public expenditure, corruption, and economic growth: the case of italy. European Journal of Political Economy 17 (1), 1–16.

Dell, M., 2015. Trafficking networks and the Mexican drug war. American Economic Review 105 (6), 1738–79.

Di Tella, R., Schargrodsky, E., 2003. The role of wages and auditing during a crackdown on corruption in the city of buenos aires. Journal of Law and Economics 46 (1), 269–92.

Durante, R., Gutierrez, E., 2015. Fighting crime with a little help from my friends: Political alignment, inter-jurisdictional cooperation and crime in mexico. CEPR (Discussion Paper #10769).

Fan, C. S., Lin, C., Treisman, D., 2009. Political decentralization and corruption: Evidence from around the world. Journal of Public Economics 93 (1-2), 14–34.

Galasso, V., Nannicini, T., 2011. Competing on good politicians. American Political Science Review 105 (01).

Gibbons, S., Overman, H. G., 2012. Mostly pointless spatial econometrics? Journal of Regional Science 52 (2), 172–191.

Golden, M. A., Picci, L., 2005. Proposal for a new measure of corruption, illustrated with italian data. Economics and Politics 17, 37–75.

Hessami, Z., 2014. Political corruption, public procurement, and budget composition: Theory and evidence from oecd countries. European Journal of Political Economy 34 (C), 372–389.

Knight, B., 2013. State gun policy and cross-state externalities: Evidence from crime gun tracing. American Economic Journal: Economic Policy 5 (4), 200–229.

Litschig, S., Zamboni, Y., 2011. Audit risk and rent extraction: Evidence from a randomized evaluation in Brazil. Economics working papers 1270.

Lyytikäinen, T., 2012. Tax competition among local governments: Evidence from a property tax reform in finland. Journal of Public Economics 96 (7-8), 584–595.

Mauro, P., 1995. Corruption and growth. The Quarterly Journal of Economics 110 (3), 681–712.

Mauro, P., 1998. Corruption and the composition of government expenditure. Journal of Public Economics 69 (2), 263–279.

Olken, B. A., 2007. Monitoring corruption: Evidence from a field experiment in indonesia. Journal of Political Economy 115, 200–249.

Oster, E., 2013. Psacalc: Stata module to calculate treatment effects or bounds under proportional selection of observables and unobservables.

Oster, E., 2015. Unobservable selection and coefficient stability: Theory and validation, mimeo.

Pinotti, P., 2015. The economic costs of organised crime: Evidence from Southern Italy. The Economic Journal 125 (586), F203–F232.

Rincke, J., Traxler, C., 2011. Enforcement spillovers. The Review of Economics and Statistics 93 (4), 1224–1234.

Sah, R. K., 1991. Social osmosis and patterns of crime. Journal of Political Economy 99 (6), 1272–95.

Silva, P., 2010. Learning to fear the inspector-general: Measuring spillovers from anti-corrupt policies, mimeo.

Solé-Ollé, A., 2006. Expenditure spillovers and fiscal interactions: Empirical evidence from local governments in spain. Journal of Urban Economics 59 (1), 32–53.

Tanzi, V., Davoodi, H. R., 2000. Corruption, growth, and public finances. IMF Working Papers.