
Essays in Political Economics

A thesis presented for the degree of
Doctor of Philosophy by

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Declaration

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Federico Fabio Frattini

Summary

This dissertation consists of three essays on political economics. First, it studies how changes in the electoral design affect politicians and voters alike. Second, it studies the impact of criminal organisations on both the legal economy and the development of society.

The first essay (Chapter 2) investigates the impact that the simultaneity of national and local elections has on the local electoral stage, in terms of civic and political participation, political competition and electoral results. Methodologically, it employs a difference-in-differences design that exploits the staggered nature of the local elections in Italy, where some municipalities experience the simultaneity, while the rest do not. Voters' participation is positively impacted, with homogeneous effects along the gender dimension. Political participation mildly increases, while its competition is affected in a dual and opposite way. Mayors winning in this simultaneous setting are more likely to have previous office experience, while no pattern emerges in terms of educational attainment and out-of-office job characteristics. Estimates survive a series of robustness checks, including a propensity score matching estimating-sample procedure to account for possible bias in the simultaneity occurrence, a full-dynamic specification employed to assess the parallel trend assumption, and a change in clustering unit. Lastly, using the simultaneity as a sample restriction, it documents the existence of a split-ticket voting behaviour. It is worth mentioning that the simultaneity is crucial to investigate such behaviour. Namely, naively comparing the election results of a local election and a national one with a time difference may just express a change in policy preferences or a change in ideology. However, the simultaneous elections setting nullifies these concerns. In this regard, this essay finds support for the divided government hypothesis as a mechanism.

The second essay (Chapter 3) investigates the impact of criminal organisations on the legal economy, by studying the effect of the collusion between organised crime and local politicians in the South of Italy on outcomes related to public procurement. To identify the presence of organised crime, this essay takes advantage of the staggered application of a national law that enables the dissolution of a local government when evidence of complicity between local officials and the criminal organisation. It then measures and quantifies the consequences of this collusion by using unique data on public procurement and firms. Results from difference-in-differences estimates show that infiltrated governments present lower average rebates and are more likely to have non-public negotiations. Results are heterogeneous across procurement macro-categories and political party colours. The essay employs a series of robustness tests that mainly include the estimation of a full dynamic specification to test the parallel trend assumption, a range of novel tests related to the staggered difference-in-differences design, and

checks related to the nature of the municipal government dissolution and to the local political stage. Further, employing an intention-to-treat type of setup, it finds that firms winning a procurement contract in an infiltrated municipality exhibit an increase in the cumulative probability of victory in a public procurement contract. These firms show an increase in balance sheet values related to profits and labour, and a reduction in capital, leaving unaffected total factor productivity. Again, a full dynamic specification is estimated to assess the validity of parallel trends.

The third essay (Chapter 4) studies the long-term effect of organised crime presence on social capital. This study combines multiple historical data sources, especially novel ones related to social capital and organised crime, to study this relationship. Focusing on the expansion of the criminal organisations in the Centre-North of Italy, it provides two alternative empirical identification strategies, based on an instrumental variable approach. First, it exploits a law ("*soggiorno obbligato*") that forced organised crime members living in the South of Italy to re-settle in the Centre-North area. Second, it exploits the combination of migratory movements from the South to the Centre-North of the country and the allocation of Marshall plan funds. Crucially, both instrumental variable strategies show strength and relevance in their first-stage. Primarily employing a measure of tax compliance, which proxies for civic awareness, instrumental variables estimates show that long-term exposure to mafia presence depresses social capital accumulation. Part of this result is found in other measures of social capital. The essay contains a series of robustness checks, including a propensity score matching estimating-sample procedure for the forced resettlement law, an alternative set of instruments instead of the combination of migration and public funds allocation, and formal tests for pre-trends for both.

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The PhD, this journey, has been one of the most challenging, intense and life-changing experiences of my life. Thinking of who I was before it, both as a researcher and as a person, it seems to look at a different Federico. This is because the PhD makes you evaluate, doubt, question and challenge yourself. But, despite this intro-verse dimension, it is greatly influenced by the people taking part in it. I thank most of them here, but I'd also like to express my gratitude to anyone who took part, even marginally, in this journey of mine.

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Dedication

*To my wife,
lover,
and best friend
Agnese*

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Chapter 1

General introduction

This dissertation consists of three essays on political economics. The common theme that binds them together within this thesis is their focus on institutions. In fact, it is known in the economic literature that formal and informal institutions play a central role in the development of societies (La Porta et al., 1999; Acemoglu, Johnson, et al., 2005). This thesis studies the role that changes and distortions of institutions have on society, distinguishing between formal and informal institutions. In particular, it focuses on the following three core and broad research questions. *Do changes to the institutional design impact citizens in the clothes of voters and politicians? How does a distorted use of institutions impact the legal economy? Does long-term exposure to organised crime activities affect the social fabric of society?*

The most fundamental message that a reader should take from reading this thesis is that changes and distortions to institutions, formal and informal ones, deeply affect societies. The second Chapter of this thesis documents that changes to the design of institutions, «*the rules of the game*» in the words of Douglass North (North, 1990), impact voters' turnout, electoral results, and political competition and participation. These are all key elements of any democratic country. Then, the thesis moves away from the simple concept of change, to the one of distortion. Institutional distortions can take many forms. Democratic parties can be controlled by a small group of leaders (Michels, 1915). Small, well-organized interest groups often have an advantage in the political process over larger, diffuse groups (Olson, 1965). Public officials and civil servants can engage in corrupt practices, eroding trust in government and diminishing economic development (Klitgaard, 1988). The ultimate distortion, which somewhat embodies all of the just mentioned examples, is the one of organised crime, given its aim to operate as a «*state within a state*» (Repetto, 2005). The third Chapter of this thesis documents that politicians, once elected, may indeed collude with criminal organisations, and hence take advantage of and negatively impact the legal economy, formally distorting its functioning and damaging the structure of formal society from an economical standpoint. Lastly, this thesis expands on the distortion that is organised crime, and investigates its relationship with informal institutions, defined as the unwritten rules, norms, and customs that shape social behavior and govern interactions between individuals and groups within a society (North, 1990). Informal institutions are just as important, and to an extent more important, as formal institution for the development of a society, given their flexibility, their low implementation costs and their

endurance to changes. However, such endurance may be an issue for the advancement of a society. In fact, if a norm, a behaviour is harmful to this progress, it may slow it down and it can be hard to change it. About this, the fourth Chapter of this thesis shows that long-term exposure to organised crime erodes social capital accumulation, both in terms of civic awareness, civic engagement and of political participation. These are crucial informal institutions to the development of any society.

From a more practical standpoint, all chapters employ a micro-econometric approach and focus on a quite small unit in administrative terms, that of municipalities. The granular geographical focus, along with the employment of rigorous causal estimation frameworks, allows this thesis to both advance the academic knowledge on the studied topics and to be policy relevant. All the chapters use Italy as a case study. This is because Italy offers a great background for the themes tackled in this thesis. First, Italy offers a quite diverse political setting, as well as a staggered series of national and local elections to be exploited for identification. Second, it has a long-lasting tradition of organised crime presence, as well as important variations in social capital levels. Hence, the choice of Italy as the only country to focus the analysis of this thesis on should not diminish its value, as it can be looked at as a representative example for other developed democracies. The rest of the thesis is divided as follows.

The first essay (Chapter 2) investigates the impact that the simultaneity of national and local elections has on the local electoral stage, in terms of civic and political participation, political competition and electoral results.

Indeed, It is known that a lower voter participation rate is a problem for a well-functioning democracy. If participation is unequal along important economic dimensions, like income, a consistent portion of voters may not be represented (Larcinese, 2007). The same is argued for political participation. Indeed, even assuming acceptable levels of voter participation, unequal political participation may still lead to poor representation (Stratmann, 2005). Lastly, low levels of political competition may result in elected officials holding power for long periods, increasing the chances for corruption and decreasing the ones for economic growth (Bueno de Mesquita et al., 2001). A growing literature in political economics has focused on simultaneous elections to touch on mainly voters' turnout, while political participation and competition remain fairly unexplored. Methodologically, it employs a difference-in-differences design that exploits the staggered nature of local elections in Italy, where some municipalities experience the simultaneity, while the rest do not. Voters' participation is positively impacted. This result is in line with the related literature, and it is interpreted through the lens of a reduction in participation costs of the voters and an increase in the salience of traditionally "second-order" elections. Importantly, this study finds homogeneous effects on voters' turnout along the gender dimension. Given the existence of a documented gender gap in voters' participation, this result is novel. Political participation mildly increases, while its competition is affected

dually and oppositely. Specifically, it is shown a reduction in the distance between the first and last candidates, and an increase in the probability of victory of an incumbent. Political participation along the origin and the gender of candidates is not affected. Further, mayors winning in this simultaneous setting are more likely to have previous office experience, while no pattern emerges in terms of educational attainment and out-of-office job characteristics. Lastly, difference-in-differences estimates show that right-leaning local parties are negatively affected in terms of electoral results. This study employs a series of robustness checks, including a propensity score matching estimating-sample procedure to account for possible bias in the simultaneity occurrence, a full-dynamic specification employed to assess the parallel trend assumption and a change in the clustering unit. Building on the result related to electoral outcomes, using the simultaneity as a sample restriction, this study documents the existence of split-ticket voting behaviour. It is worth mentioning that the simultaneity is crucial to investigate such behaviour. Namely, naively comparing the election results of a local election and a national one with a time difference may just express a change in policy preferences or a change in ideology. However, the simultaneous elections setting nullifies these concerns. In this regard, this essay finds support for the divided government hypothesis as a mechanism for such behaviour.

The second essay (Chapter 3) investigates the impact of criminal organisations on the legal economy, by studying the effect of the collusion between organised crime and local politicians in the South of Italy on outcomes related to public procurement.

As a matter of fact, organised crime presence is detrimental to the development of any economic environment (Pinotti, 2015). In particular, in developed countries, these groups operate with relatively low violent methods, as this allows them to remain undetected and then infiltrate the legal economy, often via the channel of politics. On this, a growing number of studies investigate the consequences of their presence in the legal economy (Le Moglie and Sorrenti, 2020; Mirenda et al., 2022; Di Cataldo and Mastroiocco, 2021). At the same time, the public procurement environment represents roughly 13% of OECD countries' GDP (OECD, 2016) and it is prone to corruption (Conley and Decarolis, 2016). Nonetheless, for this area of the literature, connections between organised crime and public procurement remain fairly unexplored. To identify the presence of organised crime, this essay takes advantage of the staggered application of a national law that enables the dissolution of a local government when evidence of complicity between local officials and the criminal organisation. It then measures and quantifies the consequences of this collusion by using highly detailed and confidential data on public procurement and firms. Results from difference-in-differences estimates show that infiltrated governments present lower average rebates and are more likely to have non-public negotiations. These findings are interpreted as a direct extraction behaviour of public resources executed by criminal organisations, and as a means that they use to award more

auctions to firms of their own, respectively. These results are heterogeneous across procurement macro-categories. This means that organised crime may exploit heterogeneously the public procurement machinery, this being a relevant discovery for deterrence and monitoring. Further, this essay explores potential heterogeneities related to the political economics sphere. First, it shows that the driver of the above-mentioned results comes from local governments elected for the first time, rather than from ones in which the mayor is subject to a term limit. This finding is interpreted as suggestive of the preference of criminal organisations for directly electing governments and inducing them to act to their own benefit, rather than infiltrating ones already in power. Second, when differentiating local governments by centre-right and centre-left, this essay shows that, despite exhibiting both degrees of corruption, the ones with estimates more in line with the baseline specification are the ones for centre-right affiliated local governments. This essay employs a series of state-of-the-art robustness tests. These mainly include the estimation of a full dynamic specification to test the parallel trend assumption, a range of novel tests related to the staggered difference-in-differences design, and checks related to the nature of the municipal government dissolution and to the local political stage. In its last part, this essay further expands its reach and analyses the firms involved in the public procurement process. Specifically, it employs an intention-to-treat type of set-up, where it employs a difference-in-differences design, in which we compare Winning-procurement-contract (WPC) firms in municipalities never infiltrated, to WPC firms in municipalities infiltrated, before and after the exposure to infiltration. This essay finds that treated firms exhibit an increase in the cumulative probability of victory in a public procurement contract. Moreover, these firms show an increase in balance sheet values related to profits and labour, and a reduction in capital, leaving unaffected total factor productivity. These results are interpreted as a confirmation that exposed to infiltration WPC firms win more procurement contracts, and as suggestive evidence of money-laundering behaviour. Again, a full dynamic specification is estimated to assess the validity of parallel trends.

The third essay (Chapter 4) studies the long-term effect of organised crime presence on social capital.

Even if the economics literature that focuses on organised crime has grown at an impressive rate, contributions that relate to these two spheres are mostly absent. Social capital is known to be a crucial element in the functioning of institutions, promoting civic engagement and economic growth. Qualitatively and anecdotally, it is also known to be affected by the presence of organised crime. On this, the following words said by the former prosecutor Paolo Borsellino, murdered by organised crime, are clear. *«The fight against the mafia [...] was not to be just a detached work of repression, but a cultural and moral movement that involved everyone and especially the younger generations, the most suitable to immediately feel the beauty of the fresh scent of freedom that makes people reject the stench of moral compromise, indifference, contiguity and therefore complicity.»*.

In a nutshell, this essay aims at answering the following question. *Does the presence of organised crime have a long-term effect on social capital?* To investigate this research question, this essay identifies the Centre-North of Italy as the ideal case study, given its presence and variation in both organised crime and social capital. Further, it combines multiple historical data sources. Specifically, this essay shows two novel measures of both the historical presence of organised crime and social capital. First, it employs a historical measure of organised crime based on the web-scraping of organised crime-related news from the Italian newspaper "*La Stampa*" for the period 1950-2006. Second, it uses as a long-term measure of social capital the TV tax compliance rate from 1955 to 2015, which proxies for its dimension related to civic awareness. Both measures are novel and will be possibly let available to the research community for those interested in these topics. To account for endogeneity in organised crime presence, and hence to avoid having biased estimates, this essay exploits two alternative empirical identification strategies, both based on an instrumental variable approach. First, it exploits a forced resettlement law, "*soggiorno obbligato*", a heritage of a similar law produced during the Fascist period, that aimed at disrupting the local connections of the members of criminal groups, removing them from their locality of operation and displacing them elsewhere distant, mostly in the Centre-North regions. Second, this essay exploits the combination of migratory movements from the South to the Centre-North and a positive shock to public funds allocation, proxied by the allocation of the Marshall plan funds, as a possible expansion cause of organised crime to the Centre-North part of Italy. Estimates resulting from both identification strategies show that the long-term presence of organised crime decreases the TV tax compliance rate. This finding is interpreted in light of ideas related to the increase in opportunistic behaviour due to adverse events and to the fact that exposure to corruption increases the probability of dishonest behaviour. This essay conducts a series of robustness tests related to each identification strategy, such as checking for the presence of pre-trends, the restriction of the estimation to a sample resulting in a Propensity Score Matching (PSM) algorithm and the use of a more robust version of the instrument related to the combination of migration and public funds. Lastly, this essay extends the previously discussed analysis to other three social capital variables, capturing different dimensions of it, namely the number of civic associations and the turnout to European elections and referendums, in a cross-section set-up. The results from this exercise are mostly in line with the analysis of TV tax compliance.

Chapter 5 briefly summarises the results of the thesis, further expands on the implications of the results, the methodology and the data employed and provides an outline of possible future venues of research.

Table 1.0.1: Summary of the research studies

	Simultaneous elections and electoral outcomes: evidence from Italy	Organised crime, public procurement and firms	The social power of the Mafia
Research questions	<i>What is the effect of simultaneous elections on the local political stage?</i>	<i>What is the effect of organised crime infiltration in local institutions on the public procurement process?</i>	<i>What is the long-term effect of organised crime on social capital?</i>
Methodology	Econometric analysis: fixed effects regressions with a difference-in-differences approach	Econometric analysis: fixed effects regressions with a difference-in-differences approach	Econometric analysis: fixed effects regressions with an instrumental variable approach
Authors	Federico Fabio Frattini	Federico Fabio Frattini, Decio Coviello, Nicola Mastrorocco	Federico Fabio Frattini, Francesca Calamunci
Own-contribution	I collected and assembled the necessary data, run the analysis and drafted the manuscript.	I assembled the two main sources of data (organised crime presence and public procurement). On organised crime infiltration, I helped in defining the treatment variable and the design of the robustness checks. I conducted the data analysis and drafted the manuscript. I received valuable contributions and feedback from his co-authors throughout.	I jointly took care of the data collection. Particularly regarding the collection and creation of the measures of organised crime presence and social capital (TV tax compliance), I took care of the data collection and management. I led the data analysis and jointly drafted the manuscript. I received valuable contributions and feedback from his co-author throughout.

Chapter 2

Simultaneous elections and electoral outcomes: evidence from Italy

«Political-economy models begin with the assertion that economic policy choices are not made by social planners, who live only in academic papers.»

(Alberto Alesina)

2.1 Introduction

It is known that a low voter participation rate is a problem for a well-functioning democracy. If participation is unequal along important economic dimensions, like income, a consistent portion of voters may not be represented (Larcinese, 2007). The same is argued for political participation. Indeed, even assuming acceptable levels of voter participation, unequal political participation may still lead to poor representation (Stratmann, 2005). Lastly, low levels of political competition may result in elected officials holding power for long periods, increasing the chances for corruption and decreasing the ones for economic growth (Bueno de Mesquita et al., 2001). This varies to a degree when comparing "first-order", national elections, and "second-order" elections, local ones, but remains true in principle. Especially given the increasing relevance that cities have in modern society and the economy (Glaeser et al., 1992), local elections are more salient and important by the day.

A growing literature in political economics has focused on simultaneous elections to investigate a series of outcomes that are relevant from an electoral, political and economic standpoint. Probably the most investigated outcome is turnout, where the most recent empirical literature has provided evidence in line with the idea that simultaneous elections have a positive effect on it (Fauvelle-Aymar and François, 2015; Garmann, 2016; Revelli, 2017; Bracco and Revelli, 2018; Lo Prete and Revelli, 2021; Cantoni et al., 2021).

In this paper, I aim at providing a broader and more detailed overview of how simultaneous elections affect voters, politicians and electoral outcomes. To do so, I exploit the quasi-random variation in the occurrence of simultaneous local and national elections in Italy to investigate the possible changes that this brings to the local civic and political setting. Even though

national and local elections are held every five years, their occurrence changes over time due to seemingly unrelated events ¹ that allow for space and time variation in the occurrence of these elections. Hence, I exploit a difference-in-differences (DiD) design that compares municipalities that experience the simultaneity, with municipalities that do not, before and at it.

In line with the most recent empirical literature, DiD estimates show that turnout at the local level increases by 19.37%. This result is driven by the fact that simultaneous elections do, on the one hand, reduce the participation costs of the voters (Fauvelle-Aymar and François, 2015), and on the other hand, increase the salience of a traditionally "second-order" election, such as the local one (Reif and Schmitt, 1980; Andersen et al., 2014). Moreover, given the evidence of a gender gap in voters' participation both in developing countries (Isaksson et al., 2014; Prillaman, 2017; Cheema et al., 2021) and in developed ones (Kostelka et al., 2019), I investigate potentially heterogeneous effects along the gender dimension. DiD estimates show no sign of heterogeneity, with estimates slightly higher for men. Hence, the homogeneity of the result is novel.

Further, Stratmann (2005) argues that unequal political participation may lead to unequal representation and subsequent unbalanced policies. Hence, I investigate whether simultaneous local and national elections help to increase political participation at the local level. DiD estimates imply a 6.16% higher political participation, measured by the number of local candidates, with no heterogeneous effects on the participation of female candidates and of candidates born in the municipality where local elections are held. These are important heterogeneities to unveil, given the existence of a gender gap in political participation (Hessami and Fonseca, 2020), and the differences in policies stemming from having a citizen-mayor (Osborne and Slivinski, 1996). I take one step further and investigate the effect of simultaneous elections in terms of political competition, where the simultaneity brings a dual and opposite effect. On the one hand, the Herfindahl-Hirschman political competition index² increases by about 24.13%, and, on the other hand, the probability of victory of an incumbent mayor is positively affected by about 108.3%. These results are novel and can be interpreted in the light that the simultaneity of national and local elections augments the media visibility of the local political stage, which on the one hand attracts more candidate and subject them to high scrutiny (Besley, 2005), and on the other provides a setting that incumbents can exploit more successfully (Halberstam and Montagnes, 2015). In an attempt to further validate this last interpretation, I investigate the characteristics of winning mayors. DiD estimates show that mayors with previous experience in office benefit from having an election held in this setting,

¹Such as the loss of majority for the party in power at the national level, causing the early termination of the national legislature, or the resignation of the local mayor, that triggers the early termination of the local government. Sections 2.2 and 2.3 expand on this topic.

²A standard measure in political science, an increase of which signals an increase in political competition

while no effect is found along their out-of-office job type and years of schooling. This is in line with the key role that previous office experience play in the simultaneous setting.

Lastly, to contribute to the vast literature that investigates electoral outcomes (Folke and Snyder, 2012; Erikson et al., 2015; Schönhage and Geys, 2021), this study investigates how the simultaneity affects the local electoral outcomes. DiD estimates reveal that local parties that have a right political leaning are negatively affected by the simultaneity, where the related votes share experience a decrease of about 76%. These results are not reconciled with the hypothesis of coat-tail effects (Campbell and Sumners, 1990; Rudolph and Leininger, 2019), but can be under the lens of the divided government and its political balancing hypothesis (Alesina and Rosenthal, 1996; Folke and Snyder, 2012). Building on this last result, I exploit the simultaneity as a sample restriction and investigate the relationship between national and local votes share for a given party, particularly focusing on a left and right dimension.

I document the existence of split-ticket voting behaviour along the national and local dimensions. Defining split-ticket voting as the act of a voter voting for candidates from different political parties when multiple offices are being assigned, I find that 21.3% out of 1676 municipalities engage in such a behaviour³. The simultaneity is crucial to unravel and investigate such a pattern. Namely, naively comparing the election results of a local election and a national one with a time difference may just express a change in policy preferences or a change in ideology. However, the simultaneous elections setting nullifies these concerns. I move forward by investigating the possible determinants of this behaviour. I find support for the divided government hypothesis by Alesina and Rosenthal (1996), whereby an ideologically unbiased portion of the voters would engage in split-ticket voting to aim at balancing the government policies by balancing its composition, exploiting an empirical model provided by Ade and Freier (2013). Specifically, conditioning on the result of the first-local round, the national votes share at the municipal level of a right party negatively correlates with the second-local round of a right mayoral candidate. Despite the absence of statistical significance, the opposite is true for left parties.

This study, with its ample analysis of the role of simultaneous elections on the local political stage, contributes mainly to two literature strands. First, it contributes to the growing literature that exploits the quasi-random variation in the occurrence of simultaneous multi-government layers elections to investigate several electoral outcomes (Fauvelle-Aymar and François, 2015; Garmann, 2016; Revelli, 2017; Bracco and Revelli, 2018; Rudolph and Leininger, 2019; Lo Prete and Revelli, 2021; Cantoni et al., 2021; Schönhage and Geys, 2021; Armillei and Cavallotti, 2021). First, this study expands the turnout results along the gender dimension, within high-tier and low-tier elections. Second, it investigates other, less explored but equally important outcomes related to political participation and competition areas. Moreover, specifically to

³I do not have individual voting outcomes, but I consider the aggregate votes share at the municipal level.

the electoral results dimension, this study contributes to the existing literature by moving the analysis to a vertical dimension of the layers of the government. Second, it contributes to the literature on split-ticket voting and its determinants (Fiorina, 1992; Alesina and Rosenthal, 1996; Chari et al., 1997; Folke and Snyder, 2012; Ade and Freier, 2013; Erikson et al., 2015). First, this study documents such behaviour on a national-local dimension. Then, by providing support for the divided government mechanism (Alesina and Rosenthal, 1996), it expands its application to a vertical dimension.

The structure of the elaborate is as follows. Section 2.2 provides a brief background on the Italian electoral and political setting. Section 2.3 explains the identification strategy in detail, discusses the data being employed in the elaborate and presents the estimating equation. Section 2.4 shows the DiD results. Section 2.5 focuses on the split-voting behaviour and its determinants. Section 2.6 concludes.

2.2 Institutional Background

Italy is a parliamentary republic with four levels of government: nation, regions (*regioni*), provinces (*province*) and municipalities (*comuni*). As mentioned before, the first and the last levels are the focus of this paper.

National elections are held every five years with the election day being the same in all the municipalities. Since Italy has a bicameral legislature, voters vote to elect the members of two institutions: the Upper Chamber, the "*Senato*", and the Lower Chamber, the "*Camera*". In practical terms, the powers of these institutions are essentially the same, resulting in Italy having a perfect bicameral legislative structure. At the end of the electoral turnout, where, in simplified terms, voters vote for their preferred party, with variations depending on the specific electoral rule in place ⁴, either the party or the coalition that receives the majority of the votes is tasked with choosing the Prime Minister, and then the rest of the Ministers for each area of the government. Then, the President of the Republic, who is elected by the parliament and not by the population directly, on a previous date, grants the official and formal approval to rule, and the either party or coalition is tasked to do so for the next five years. It is not uncommon that elected governments need to change their composition due to a variety of political scenarios. Also, if the elected government is not able to guarantee the majority of both the Upper and the Lower chambers ⁵, the President of the Republic can call a sudden election, that implies an early termination of the legislature and hence of the elected government. In the period considered in this paper, the national political scene saw two major coalitions alternating power. Specifically, the centre-left coalition ruled from 1996

⁴Chiaromonte (2015) provides a detailed overview of the national electoral laws of the period under consideration.

⁵In practical terms this translates into a vote of no confidence expressed by the members of one of the Chambers.

to 2001, from 2006 to 2008, and from 2013 to 2018, whereas the centre-right coalition ruled from 1994 to 1995, from 2001 to 2006 and then from 2008 to 2011. Both simultaneous election years exploited in this analysis, 2001 and 2008, happened at the end of a nationally centre-left oriented government and then a resulting centre-right one.

On the other hand, municipalities are led by a directly elected mayor, who is tasked with the appointment of an executive committee, which altogether rules the municipality with a city council. Moreover, municipal elections are held every five years, with the election day differing for clusters of municipalities. Since 1993, municipalities with population above 15'000 people, if there is no candidate with more than the 50% of the votes in the first round, have the possibility of a run-off. The differential in election day at the local level is also because there exist several reasons for which a local government can experience an early termination. Examples of instances that can anticipate the local elections are violations of laws from the governing mayor and/or council, either the resignation or the death of the mayor, and the resignation of more than half of the members of the city council.

The changes to the calendar of both national and primarily local elections allow a quasi-random variation in the timing, the number and the identity of municipalities that may or may not experience simultaneous local and national elections. This source of variation is what I primarily exploit in this paper.

2.3 Research Design

To study the impact that the simultaneity of national and local elections has on the local one, I exploit the quasi-random occurrence of this simultaneity. Hence, the identification strategy is based on a difference-in-differences design. Specifically, I compare the political and electoral outcomes of municipalities with and without the simultaneity, before and at this simultaneity. Note that the treatment coincides with the elections and it does not stay active after it, preventing having post-treatment periods⁶. The election years in which in some municipalities local and national elections were held simultaneously identify the treatment units and the period. The control group is composed of the election years for those municipalities that never experienced the simultaneous elections and by-election years before the simultaneity for those municipalities which experienced the simultaneity. Hence, the temporal difference is given by the comparison of simultaneous and not simultaneous elections for the treatment group, while the cross-sectional difference is given by the comparison of the simultaneous election for the treatment group with the non simultaneous elections for the control group.

For example, let's look at the following three cases. In the first case, a municipality like Colico

⁶This characteristic make the estimating design a peculiar difference-in-differences, which more closely resembles an event study design, that I estimate and explain in a later section.

in Lombardy, which experienced the simultaneous elections in 2001, has as a treated period the election year 2001 and as a control period all the local election years previous to 2001, namely 1997. In the second case, a municipality like Polia in Calabria, which experienced the simultaneous elections in 2008, has as a treated period the election year 2008 and as a control period all the local election years previous to 2008, namely 2004, 1999 and 1995. Note that for both a case like Colico and Polia, the post-treatment election may function as placebos, given that I do not expect the treatment to still have an impact in the next election. In the third and last case, a municipality like Montiano in Emilia-Romagna, which never experienced simultaneous local and national elections, has as a control group all its local elections years, namely 1995, 1999, 2004, 2009, 2014 and 2019.

As explained in Section 2.2, there is no systematic rule with which a municipality experience simultaneous local and national elections. However, it may be that treatment assignment is not completely random. This would imply that treatment and control groups may be statistically different along some observable and unobservable characteristics, hence biasing the treatment effect. I tackle this problem in two ways.

First, I re-construct the control group following a matching strategy. Specifically, I employ a nearest neighbour propensity score matching and match treatment-assigned municipalities with the most similar control municipality along a set of observable characteristics. I perform this matching exercise with common support and without replacement, restricting the choice of the paired control municipality to the same region as its treated one, to mitigate potentially unobserved characteristics. All the characteristics employed in the matching procedure are taken before any simultaneity takes, that is in 1991, to avoid any post-treatment bias. Table 2.1 reports the list of variables used and reports the post-matching balance test between treated and control municipalities. It is possible to note that there is no statistical difference between treated and control municipalities in any of the variables employed in the matching exercise.

Second, I estimate a full-dynamic specification to inspect the parallel trend assumption. Namely, I inspect whether treatment and control units exhibit a parallel trend for the outcome investigated in the election years before the simultaneous local and national elections. Essentially, had treatment not taken place, treated and control municipalities should not exhibit any statistical difference concerning the outcome inspected. Figures 2.7.3, 2.7.4, 2.7.5, 2.7.6 and 2.7.7 discussed in Sub-Section 2.4 show that this is the case in most of the outcomes inspected.

2.3.1 Data

The data source for the electoral and political data are the archive on elections and the archive on mayors' characteristics of the Italian Ministry of the Interior ⁷.

Specifically to local elections, I have collected all local elections data that took place from 1994 to 2019 ⁸, for 17 out of 20 of the Italian regions ⁹. I have information on the date of the election, the local turnout by gender, the number of candidates by gender and origin, the number of votes they received, their party affiliation, whether a second round took place, if there is an incumbent candidate and the name of the winning one.

I proceed to compute the share of votes for a candidate as $Votes\ Share_{i,t} = \frac{Votes_{i,t}}{Affluent\ Voters_{i,t}}$. Namely, for each candidate i at the election t I take the ratio of the votes they received over the number of voters who attended the election. I perform this for both the first and the second rounds. I then assign the vote share to a party belonging to the right or the left depending on the candidate's affiliation. I then compute the Herfindahl-Hirschman political competition index as $HHI_{i,t} = 1 - \sum_j Votes\ Share_{j,i,t}^2$. Namely, the sum of squares of the vote shares of each candidate j running for election in the municipality i at time t . It is an index that varies between 0 and 1, with 0 being no competition and 1 equal maximum competition. This is a standard measure of competition used in political economics and political science (Afzal, 2014). I also compute the distance in votes share from the first and last candidate as $Max\ distance_{f,l} = Votes\ Share_{f,t} - Votes\ Share_{l,t}$, namely, the simple difference of votes share between the first f candidate at election t and the last l candidate at the election. Lastly, I repeat this exercise with the first and second candidates, i.e. the plurality share, finding similar results. Regarding the party affiliation of local candidates, it can be that it corresponds to national parties, as they compete in local elections. It is also worth mentioning the high prevalence of independent parties¹⁰ in local elections, where a classification in a right-left political spectrum is not always possible. However, the cases where there is no possibility of classification are limited to municipalities with small population (Bracco, Lockwood, et al., 2015).

Specifically to national elections, I have collected the ones starting from 1994 up to 2018 namely 7 national elections, for 17 out 20 of the Italian regions again. I have information about the date of the election, the national turnout and the number of votes for each of the parties present

⁷ Archivio Storico delle Elezioni: elezionistorico.interno.gov.it and Anagrafe degli amministratori locali e regionali dait.interno.gov.it/elezioni/anagrafe-amministratori respectively

⁸ The 1994 election sets the beginning of what is called "The Second Republic", following the scandal called "Clean Hands" that disrupted completely the Italian political scenario, both at the local and the national level. It is common in the literature to start the data collection from this date onwards.

⁹ I have collected data for all the 15 regions under a normal status, plus Sicily and Sardinia as special status ones. Local electoral data for Aosta Valley, Trentino-South Tyrol and Friuli-Venezia Giulia is incomplete, hence not included in the analysis.

¹⁰ Also known as "Liste Civiche".

at the election. As mentioned in Section 2.2, the Upper and Lower Chamber, for which voters vote separately at a national election, have essentially the same legislative powers. Hence, to compute the national overall variables, I compute the simple average of both votes share and attendance for the two institutions. Combining the information regarding the date of the election for both the local and the national ones, I can compute the treatment variable of interest, that captures when the two were held on the same day. As previously mentioned, this occurrence took place on the 13th of May 2001 and on the 13th of April 2008. Hence, the treatment corresponds to a dummy variable equal to one if an election for specific municipalities took place on either of the two dates.

Relatively to mayor characteristics, I have retrieved information on their age, gender, education and job outside of the public role (if present). Importantly for the analysis, given that the dataset on mayors is not limited to this figure alone, but extends to other roles within the local government, I can observe if an elected mayor had any experience in any local office prior to the election¹¹.

Lastly, the data source for the socio-demographic data is the Italian Institute of Statistics ¹². Specifically, I have collected data at the municipal level from the censuses of 1991, 2001 and 2011 on an extensive set of variables.

Table 2.7.1 displays the summary statistics of the main variables at my disposal. It is possible to note that the mean national turnout is higher than the local one and that the votes share of both left and right are somewhat comparable at the local and national levels. Table 2.7.2 shows the count of the treated municipalities, plus a few variables that characterize them in terms of geographic location and population size. Specifically, treated municipalities are 1674, with 39% of them located in the North, 13% in the Centre and 48% in the South and in the main Islands of Italy ¹³, and 37% of them have a population of over 5'000 citizens. Figure 2.7.1 shows the geographical distribution of the municipalities that experience simultaneous local and national elections. They are divided into panels (a) and (b), depending on their location. It is worth noticing their homogeneous distribution throughout the Italian territory. Figure 2.7.2 shows the occurrence of national and local elections over time. Specifically, the blue line identifies the local elections, while the dark red dots identify the national ones. Relatively to the simultaneous elections, the two vertical red dashed lines identify the election years in which the simultaneity took place, and the green dots show the number of municipalities that had them.

¹¹This is possible because the dataset on mayors it is not limited to this figure alone, but it is extended to other roles within the local government as well.

¹²ISTAT: www.istat.it/

¹³According to the classification of ISTAT, I classify in the North those municipalities that are in Emilia-Romagna, Liguria, Lombardy, Piedmont and Veneto, while in the Centre those that are in Lazio, Marche, Tuscany and Umbria, and lastly in the South/Islands those that are in Abruzzo, Basilicata, Calabria, Campania, Molise, Apulia, Sicily and Sardinia.

2.3.2 Estimating equation

To estimate the impact of simultaneous local and national elections on local political and electoral outcomes, I estimate the following model.

$$Y_{i,t} = \alpha_i + \beta_1 Sim Ele_{i,t} + \beta_2 X_{i,t} + \tau_t + \epsilon_{i,t} \quad (2.1)$$

Where $Y_{i,t}$ is the dependent variable of interest in municipality i at year t . I will inspect the following outcomes. The local turnout, to measure citizens' engagement in the local election. The richness of the data allows me to investigate possible heterogeneous effects on turnout based on gender. The number of mayoral candidates, to measure the level of political participation in the local election, where I can still investigate the gender dimension, as well as distinguish candidates by whether they were born in the municipality that is holding the elections or not. The probability of having a mayoral incumbent win and the distance in votes share between the first and the last candidate to assess the level of political competition in the local election. To measure the impact on the local election results, I will inspect the local votes share of right and left parties respectively.

$Sim Ele_{i,t}$ is the main treatment variable, which is a dummy that takes values equal to 1 if the local election in municipality i in year t corresponds to the simultaneous local elections one, hence either to the 13th of May 2001 or to the 13th of April 2008.

$X_{i,t}$ is a vector of control variables containing socio-demographic characteristics in municipality i at year t , and α_i and τ_t are a set of municipality and election-year fixed effects respectively. To take into account the fact that municipalities may have been on different trajectories, in some specifications I also include municipalities' linear trends to control for any potential differential temporal developments independent of the treatment. The idiosyncratic error term $\epsilon_{i,t}$ concludes the specification.

2.4 Results

In this section, I give a detailed overview of the results of the main analysis and the robustness checks associated with it.

2.4.1 Local turnout

This sub-section shows the results related to the relationship between simultaneous elections and civic engagement, measured as the turnout to the local election.

Table 2.7.3 shows the results of estimating Equation 2.1 on the local turnout, overall and by gender of the population. Specifically, the table is divided into three panels, depending on the

dependent variable inspected. Namely, *Panel A* focuses on the local turnout at the 1st round, *Panel B* focuses on the local turnout at the 1st round for the female population, while *Panel C* on the male population. Columns vary depending on the level of controls and fixed effects included. Specifically, Column (1) simply regresses the treatment variable on the outcome, Column (2) adds city and year fixed effects, Column (3) further adds socio-demographic controls, and lastly, Column (4) includes city linear trends. In all the columns standard errors are clustered at the city level.

Focusing on *Panel A* and taking as a reference Column (3), the coefficient of the national-local simultaneous elections is positive and statistically significant with a value of 0.147. This, if compared to a mean outcome of 0.759, implies an increase in local turnout of 19.37%. Overall, the coefficients of the treatment variable exhibit a statistical significance and positive pattern that is stable across all the specifications.

This result is in line with the simultaneous elections literature. Other papers that exploit this context (Fauvelle-Aymar and François, 2015; Bracco and Revelli, 2018; Lo Prete and Revelli, 2021; Cantoni et al., 2021; Armillei and Cavallotti, 2021), show that simultaneity between multiple elections increases voters' turnout and hence citizens' engagement. This is especially true when the simultaneity takes place with a higher tier election (national) and a lower tier one (local) (Reif and Schmitt, 1980), since the former brings, in the days that precede the election, media coverage of a different (higher) magnitude. Moreover, a higher turnout is commonly accepted as a positive occurrence, implying fairer participation and quicker action by the government to support the voters' needs (Larcinese, 2007; Avery, 2015).

Moving to *Panel B* and *C*, they show that this positive and statistically significant effect is homogeneous along the gender dimension, with it being slightly higher for males. Despite not having found heterogeneous effects across the gender dimension, this result maintains its relevance. The related literature provides evidence that a gender gap in political participation exists overall in developing countries (Prillaman, 2017; Isaksson et al., 2014; Cheema et al., 2021), and in second-order elections in developed countries (Kostelka et al., 2019). Given the socio-economic context of Italy, the results relative to *Panel B* and *C* relate to this last strand of results, suggesting that holding first- and second-order simultaneously may reduce the gender gap in turnout to elections.

2.4.2 Political participation and competition

This sub-section shows the results relative to the connections between simultaneous elections and political participation and competition. These connections are mostly unexplored in political economics and political science empirical literature.

Table 2.7.4 shows the results of Equation 2.1 on political participation, measured by the num-

ber of candidates that compete for the local election, differentiated by gender and origin of the candidates. Focusing on *Panel A*, the coefficients of the treatment variable exhibit a statistical significance and positive pattern that is stable across all the specifications but the one in Column (4). Taking as a reference Column (3), the coefficient of the simultaneity of national-local elections is 0.17, which implies an increase in the number of local candidates of 6.16%. Moving to *Panel B* and *C*, none of the coefficients of the national-local simultaneity exhibits a pattern of statistical significance worth inspecting, implying no heterogeneous effects along the gender and the origin dimensions of the candidates participating at the local election. Given the existing gender gap in political participation (Hessami and Fonseca, 2020), and the differences in policies stemming from having a citizen-mayor (Osborne and Slivinski, 1996), these are important heterogeneities to investigate. Hence, there is mild evidence at best that simultaneous elections increase political participation.

Table 2.7.5 shows the results of Equation 2.2 on political competition, measured with the distance in votes share between first and last (second) candidates and the probability of victory of an incumbent mayor. Starting from *Panel A*, it can be seen that the simultaneity of national and local elections positively affects the Herfindahl-Hirschman political competition index. In fact, focusing on Column (3), the coefficient is 0.133 which, if compared with a mean outcome of 0.551, implies an increase in the index of 24.13%. Looking at *Panel B* and *C*, it is possible to see that the national-local simultaneity is associated with a reduction in the distance in votes share between the winner and its competitors. Specifically, the coefficients of the treatment variable exhibit a negative and statistically significant pattern in all the specifications but the one of Column (4) of *Panel B*. Taking as a reference Column (3), the coefficients of the simultaneity are respectively -0.047 and -0.032, implying a reduction in the votes share distance of 17.34% and 17.39%. Moving to *Panel C*, the simultaneity greatly benefits the incumbent candidates. Across the columns, the coefficients of the treatment variable are stably positive and statistically significant. Taking as reference Column (3) the associated coefficient is 0.339 which, if related to a mean outcome of 0.313, implies an increase in the probability of victory of an incumbent candidate by 108.30%. The coefficient is even higher if I control for municipality linear trends.

Overall, inspecting political participation and competition I find the following. First, I find that simultaneous elections positively affect political participation, with a mild increase in the number of candidates competing in the local elections. Then, I find a set of competing results. On the one hand, an increase in political competition, with an increase in the Herfindahl-Hirschman political competition index and a reduction in the distance in votes share between the first and last (second) candidates. On the other hand, a reduction in political competition, with an increase in the probability of victory in the local election for an incumbent candidate.

From a political economics literature standpoint, it is unclear whether having a higher number of candidates is beneficial to the electorate. On the one hand, more political participation is associated with higher incentives by incumbents and other candidates to represent the preferences of the voters, given the higher number of candidates to compete with and hence the associated lower probability of victory (Stratmann, 2005). On the other hand, the increased visibility that the national election casts on the local one may attract low-skilled candidates that do not necessarily increase the benefits of the voters in terms of competition. The increase in the Herfindahl-Hirschman political competition index may be just the result of the increased information costs that voters face at the election (Martinelli, 2006). Unfortunately, the data on the local elections candidates does not contain information on either their current job or their level of education, from which research could derive a measure of the quality of the additional participants, and hence have a sense of the overall effect at play.

From a practical standpoint, looking directly at the estimates, the coefficient relative to the increase in the number of candidates is rather small in magnitude compared to the one related to the reduction in the distance between the first and the last candidate. Hence, the simultaneity must affect directly the level of political competition, and not only provide noise. For example, the likely increased visibility on the local political stage that is due to the simultaneity can increase the scrutiny of the local citizens on the mayoral candidates (Besley, 2005; Ferraz and Finan, 2008). However, the result of the reduction in the distance in votes share is balanced by the dramatic increase in the probability of winning by an incumbent candidate. In fact, incumbent candidates, in their unique position as existing mayors, can exploit the greater media coverage to their advantage and hence gain an advantage over their competitors. Related to this, Halberstam and Montagnes (2015) describe the role that informed voters have on the outcome of an elections. In this context, it may be that the relevance of the simultaneous elections increases turnout, but of people not necessarily well-informed about the local elections, who then cast the votes for the incumbent candidate.

2.4.3 Elected mayors

So far, the results have shown that having simultaneous national-local elections impacts the local political stage, along both the level of civic engagement and the levels of political participation and competition. Considering the mixed evidence of the previous paragraph, it is worth investigating the characteristics of the winning mayors when simultaneously elections are held. The aim is to give a more accurate statement regarding the outcome of the choice stemmed from the simultaneous national and local elections. Do these elected mayors have higher education? Do they have peculiar out-of-office job characteristics? Do they have past office experience?

Tables 2.7.6 and 2.7.7 show the results of estimating Equation 2.1 on different mayors' charac-

teristics. Namely, I compare mayors that won in a non-simultaneous framework, with mayors that did, before and while they did. I investigate the following three outcomes. First in Table 2.7.6, exploiting the richness of the data on members of local governments, in *Panel A* I create a dummy variable equal to one if a winning mayor has had any experience in a previous office. Then, in *Panel B* I investigate the years of education of winning mayors, measured as the minimum number of years necessary to obtain a degree (Baltrunaite et al., 2014). Lastly in Table 2.7.7, in the four panels I investigate four different dummy variables that differ based on the type of the job out of the office of the mayor, classified according to the ISTAT's CPI classification.

Looking at *Panel A* of 2.7.6, it is possible to note that winning mayors in national-local simultaneous elections have a higher probability of having experience in a previous local government. Taking as a reference Column (3), the coefficient of the treatment variable is 0.09 which, related to a mean outcome of 0.638, implies an increase in this probability of 14.10%. It is worth mentioning that the dependent variable, in the way that it is constructed, does not simply captures possible incumbent mayors, but also a winning mayor who had a role in a previous administration, i.e. council member. Moving to *Panel B*, there is no clear pattern emerging, suggesting that the mayors who have won under a simultaneous national-local election are not statistically different from those who won in a local alone context, both in terms of job type and of educational levels.

Moving to 2.7.7, again there is no pattern emerging in either of the dependent variables inspected. Namely, there are no mayors' out-of-office job types, aggregated at the abstract, technical, services and manual types, that benefit from a national-local simultaneous election.

Connecting with the previous sub-section, the quality of either holding the office or having worked in it before is the most beneficial in a simultaneous elections framework. This is in line with the idea that these mayors exploited better than losing candidates the higher exposure due to the simultaneous setting, given their past experience. A further step would be to evaluate their performance, but this is left to future research on the topic.

2.4.4 Local share of votes

This sub-section shows the results relative to the local electoral stage. The literature that studies electoral outcomes of multiple elections is large (Ferejohn and Calvert, 1984; Campbell and Sumners, 1990; Folke and Snyder, 2012; Erikson et al., 2015; Rudolph and Leininger, 2019) but, at least empirically, simultaneous elections and the vertical dimension of multiple governments institutions is often ignored (Rudolph and Leininger, 2019).

Table 2.7.8 shows the results of estimating Equation 2.1 on two outcomes of interest. Namely,

the votes share of local respectively right, *Panel A*, and left, *Panel B*, parties at the first round of the election. If the simultaneous national-local elections do not impact the votes share of local left parties, the same cannot be claimed for right parties. The coefficient of the treatment variable displayed in *Panel A* shows a negative and statistically significant pattern. Taking as a reference Column (3), the associated coefficient is -0.304 which, relative to a mean outcome of 0.400, implies a reduction in local right parties of 76%. It can be noted the drop in the number of observations. This is due to the at time unclear local political scenario in Italy. Specifically, at the local level, it is not guaranteed the presence of clearly identifies right and left parties. Hence, the cases in which either is not identified are left missing.

These results go against two popular theories in political science and political economics. First, they cannot be reconciled by the hypothesis of coat-tail effects (Campbell and Sumners, 1990; Rudolph and Leininger, 2019; Schönhage and Geys, 2021), whereby the national success of a party spills over at the local level. This cannot be the case because both in 2001 and 2008, the two years in Italy where there have been national-local simultaneous elections, the right coalition won at the national level. Secondly and conversely, an exiting party usually is damaged in terms of vote share at the end of their mandate. One hypothesis that can reconcile these results and that has been investigated in political science and political economics is the one of divided government and its political balancing hypothesis (Alesina and Rosenthal, 1996; Folke and Snyder, 2012). This hypothesis is the core of Section 2.5 and it is discussed in great detail there.

2.4.5 Robustness checks

Propensity score matching sample. To partially address the potential endogeneity of the previous estimations, I replicate the analysis of Tables 2.7.3, 2.7.4, 2.7.5, 2.7.6, 2.7.7 and 2.7.8 restricting the estimating sample to the one resulting from the propensity score matching. Tables 2.2, 2.3, 2.4, 2.5, 2.6 and 2.7 show the results of this exercise. Reassuringly, all the estimated coefficients are in line with the ones of the main analysis.

Full dynamic specification. As previously mentioned in Section 2.3, the identifying assumption of a difference-in-differences estimation is that of parallel trends. That is, absent the treatment, treated and control municipalities would have behaved similarly. I formally test this assumption by estimating the following full-dynamic specification.

$$Y_{i,t} = \alpha_i + \sum_{p=-4}^{+2} \beta_p Sim Ele_{i,p} + \tau_t + \epsilon_{i,t} \quad (2.2)$$

Where $Y_{i,t}$ is one of the outcomes of interest previously discussed in a municipality i at time t .

$SimEle_{i,p}$ are the relative time to treatment dummy variables, which take value equal to 1 for treatment municipalities if time t is p election-year away from the treatment. Note that $p = 0$ corresponds to the simultaneous elections year. I inspect up to $p = -4$ election years before the simultaneity and up to $p = +2$ election years after it. This is a peculiar setting in this regard because treatment does not stay on after $p = 0$. Hence, one can interpret election years after the simultaneity as a sort of placebos. The omitted period is $p = -1$.

Municipality and year fixed effects, α_i and τ_t , as well as an idiosyncratic error term, $\epsilon_{i,t}$ conclude the specification.

Figure 2.7.3 shows the results of Equation 2.2 for the first set of outcomes related to local turnout. Reassuringly, none of the sub-graphs exhibit signs of statistically significant and consistent pre-trends. Moreover, the whole effect can be observed at 0, i.e. at the simultaneity. This suggests, as expected that the effect at hand does not survive following non-simultaneous elections.

Figure 2.7.4 shows the results of Equation 2.2 for the first set of outcomes related to political participation. Again, none of the sub-graphs exhibit signs of statistically significant and consistent pre-trends.

Figure 2.7.5 shows the results of Equation 2.2 for the first set of outcomes related to political competition. Still, none of the sub-graphs exhibit signs of statistically significant and consistent pre-trends. Moreover, the whole effect can be observed at 0, i.e. at the simultaneity, excluding the probability of victory for a local incumbent, where some negative coefficients can be seen in election years following 0.

Figure 2.7.6 shows the results of Equation 2.2 for the set of outcomes related to elected mayors' characteristics. Again, none of the sub-graphs exhibit signs of statistically significant and consistent pre-trends.

Figure 2.7.6 shows the results of Equation 2.2 for the first set of outcomes related to the local share of votes. None of the sub-graphs exhibit signs of statistically significant and consistent pre-trends. The whole effect can be observed at 0, i.e. at the simultaneity.

All the previously describe graphs are replicated restricting the estimating sample to the one resulting from the PSM exercise. Figure 2.1 in the Appendix shows the results, with the graphs being virtually the same as the non-matched ones.

Different clustering levels. All the results discussed so far reported standard errors clustered at the municipal level. However, I re-estimate the equivalent of Column (3) of Tables 2.7.3, 2.7.4, 2.7.5 and 2.7.8, changing the clustering level. Specifically, Table 2.7.9 shows this exercise, where in *Panel A* the clustering level is at the province level, and in *Panel B* it is at the region level. Despite a few changes, the majority of the estimates remain unchanged both in terms of

precision and statistical significance.

2.4.6 Regional-local simultaneity

Before concluding Section 2.4, I replicate the analysis shown so far but change one of the two simultaneous elections. Specifically, I investigate the role of simultaneous regional and local elections in the local political sphere. I focus on regional elections because they are somewhat comparable to national elections, both in terms of media coverage and legislative powers being assigned. In fact, Italy, while maintaining a governing central state, progressively delegated some legislative power in a few areas to the regions of the country¹⁴.

Tables 2.8, 2.9 and 2.10 show the results of simultaneous regional and local elections on local turnout, by gender, on political participation, by gender and origin of the candidates, and on political competition. The simultaneity still positively impacts the electorate turnout, with homogeneous results along gender. It affects negatively the number of local candidates, with however heterogeneous effects in terms of gender and birthplace of local candidates, which are affected negatively and positively respectively by the simultaneity. Lastly, the regional-local simultaneous elections similarly impact political competition as the national-local one, even if the positive effect on the probability of victory for an incumbent mayor is not statistically significant. Potential differences for the national-local simultaneity are left to be inspected.

2.5 Spit-voting and divided government

2.5.1 Divided government hypothesis

So far, I have exploited the local and national elections simultaneity to assess the impact that this has on the local political stage. However, this setting allows me to investigate the relationship between local and national electoral outcomes for a given party. That is, inspecting whether, in a given municipality, the share of votes for a party with a specific political leaning follows the same pattern in local and national elections or not. Given also the peculiar result related to local electoral outcomes, this exercise is of the most importance.

It is worth mentioning that the simultaneity is crucial to investigate such a relationship. Namely, naively comparing the election results of a local election and a national one with a time difference may just express a change in policy preferences or a change in ideology. However, the simultaneous elections setting nullifies these concerns.

¹⁴Hospitalization for example.

2.5.2 Sample definition and split-voting

I start this exercise by restricting the sample to those municipalities that experience the simultaneous local and national elections, that is 1676 municipalities. Then, I classify each of these units into two different categories depending on the votes share at the local and national elections for both left and right parties.

Specifically, the two categories are the following. First, a municipality is assigned to the first category if the following is true.

- The highest votes share at the local election is associated with a left (right) party, while the opposite is true for the votes share at the national election, that is the highest votes share at this election is associated with a right (left) party.

Second, a municipality is assigned to the second category if the following is true.

- The highest votes share at the local election is associated with a left (right) party, and the same is true for the votes share at the national election, that is the highest votes share at this election is associated with a left (right) party.

Namely, the first category signals an aligned local-national voting behaviour, also defined in the literature as a split-ticket voting behaviour, that is the conscious act of a voter to vote for candidates from different political parties when multiple offices are being assigned. The second signal is a misaligned one, or defined as not split-ticket behaviour.

Before moving further, it is worth stressing a couple of points. First, It is true the political scenario both at the national and local level in Italy is often quite variable, with parties that go from the very far right to the very far left, with a consistent centre as well and even some transversal parties. However, both in 2001 and 2008 the national and local political scenarios were very much polarised in a left-right dimension (D’Alimonte, 2005; Chiaramonte, 2015).

Second, I classify a municipality in a specific category if it exhibits a clear left and right competition both at the local and the national level. However, as previously mentioned, at the local election level the political leaning of a party is not always immediately identifiable, due to the presence of independent parties. I alleviate this problem by classifying in either a left or right category the independent party winner whenever possible. This is possible by exploiting the part of the Ministry of the Interior’s website that contains the Registry of Local Administrators¹⁵. Thanks to this repository, I can classify the independent party depending on the past political affiliations of its mayoral candidate ¹⁶.

¹⁵*Anagrafe degli Amministratori Locali e Regionali*: amministratori.interno.gov.it/amministratori.

¹⁶Unfortunately, such an extensive and detailed repository does not exist for the candidates that did not manage to win the local election. Hence a condition for this classification exercise is that there has to exist an identifiable

After this introduction, I move to describe and characterise the sample at hand, particularly focusing on split-ticket voting behaviour.

[Table 2.7.10 about here]

Table 2.7.10 breaks down the numbers of the just-described categorization. Out of 1676 municipalities, 358 engage in split-ticket voting behaviour, standing for 21.30% of the total. On the other hand, 787 do not engage in such behaviour, standing for 47.00% of the total. Lastly, for 531 municipalities that account for 31.70% of the total it was not possible to derive a clear left and right competition at the local level.

Figure 2.7.8 shows the geographical distribution of the 1676 municipalities along the Italian territory, showing the distribution of the before-mentioned categories as well. It is possible to note that there is no sign of concentration of any of the categories in a particular area.

Figure 2.7.9 shows the correlates of political and socio-demographic characteristics with the probability of a municipality engaging in split-ticket voting. Specifically, they are the coefficients of uni-variate linear probability model regressions of each explanatory outcome. Nothing of particular interest can be drawn from these correlations, given that none of the coefficients is statistically significant.

2.5.3 Divided government hypothesis

Now that I have documented the existence of this split-ticket voting behaviour, I aim at providing a mechanism for it.

The split-ticket voting behaviour has been documented already in the literature (Fiorina, 1992; Alesina and Rosenthal, 1996; Chari et al., 1997). In particular, Alesina and Rosenthal (1996) propose a model in which voters, in a simultaneous elections setting, vote for both the executive and the legislative institutions. Then, ideologically unbiased voters strategically aim at balancing the electoral outcomes. This behaviour results in: a portion of voters engaging in split-ticket voting behaviour; a resulting divided government; the following mid-term election is used further as a tool for balancing policies¹⁷. In the final remarks of their paper, Alesina and Rosenthal (1996) hint that their model can be applied in a more vertical dimension, such as a local-national one.

In what follows, I aim at providing support for the divided government hypothesis as a mechanism for the documented split-voting behaviour. Empirically, I draw the estimating equation from Ade and Freier (2013)¹⁸, that is I estimate the following equation.

either left or right competitor.

¹⁷Alesina and Rosenthal (1996) construct the model having the US political setting in mind, specifically referring to the presidential and congressional elections.

¹⁸Ade and Freier (2013) to assess whether voters reward or punish a mayor that performed well in the council

$$Y_{i,t,run-off}^p = \alpha + \beta_1 NVS_{i,t}^p + \beta_2 Y_{i,t,1^{st} round}^p + \beta_3 X'_{i,t} + \epsilon_{i,t} \quad (2.3)$$

Where $Y_{i,t,run-off}^p$ is the local votes share for party p , in municipality i at time t , at the second round of the local election ¹⁹. The variable of interest is $NVS_{i,t}^p$, which is the national votes share for party p that took place roughly two weeks before the second round. If split-ticket voting is connected with voters aiming at balancing policies via balancing local and national government, I expect the coefficient of this variable to be negatively correlated with the dependent variable for the party that triumphed in the national election. $Y_{i,t,1^{st} round}^p$ is the local votes share for party p , in municipality i at time t , at the first round of the local election. This is a crucial control to include, given that it is likely to capture most of the unobserved determinants that lead to voting for a specific candidate. I assume that, partialling-out the influence of the local votes share for party p in the first round, $NVS_{i,t}^p$ captures the causal effect of interest, that is the electoral outcome of the national election on the second round of the local one. The specification is concluded with the inclusion of $X'_{i,t}$, which contains political and socio-demographic controls, and an idiosyncratic error term $\epsilon_{i,t}$.

Table 2.7.11 shows the results of Equation 2.3. There are two panels. Panel A shows the analysis relative to parties of the right, while Panel B does so relative to parties of the left.

Keeping in mind that both in the 2001 and 2008 elections the right coalition triumphed nationally, the economic significance of the coefficients for both right and left parties moves as expected.

Specifically in Panel A, the coefficient estimates of the national votes share for a right party are negatively correlated with the outcome of interest. The estimates remain statistically significant across the various columns. Focusing on Column (5), its coefficient implies that for an additional 10% votes share at the national election for a right party, voters cast 1.5% fewer votes for a local candidate at the local one. Hence voters votes against the local right candidate after having observed the success of the right party at the national level, in order to balance the final outcome of policies on a national-local dimension.

On the other hand in Panel B, the coefficient estimates of the national votes share for a left party are positively correlated with the outcome of interest across all the columns. Unfortunately, none of the estimates is statistically significant. Nonetheless, I deem it important that the signs of the coefficient are in line with the expectations.

Figures 2.7.10 and 2.7.11 show the coefficients of the variable of interest, respectively for right and left parties. It is possible to note the negative trend for those related to right parties, while

election estimate a conceptually identical model to the one I describe in this section.

¹⁹According to the Italian local electoral system, the second-round is allowed only in municipalities with a population equal or higher than 15'000.

the positive trend for those related to left parties.

Overall, I find support for the divided government mechanism as in Alesina and Rosenthal (1996) for the split-ticket voting behaviour. It is worth mentioning that estimates should be taken carefully, given the low number of observations.

2.6 Conclusion

In this paper, I study the effect that the simultaneity of local and national elections has on the local political stage.

From an identification standpoint, I exploit the quasi-random variation in the occurrence of simultaneous local and national elections. This translates into estimating a difference-in-differences, where I compare Italian municipalities that experience the simultaneity, with municipalities that do not, before and at the simultaneity.

Difference-in-differences estimates reveal that the simultaneity increases the voters' participation, via local turnout, homogeneously along gender. Estimates further show that simultaneous elections mildly increase local political participation, via the number of mayoral candidates that run for office. Further, they provide a dual and opposite effect to the local political competition. On the one hand, the Herfindal-Hirschman political competition index increases and the distance in votes share between the first and the last candidate reduces, both signalling an increase in political competition. On the other hand, simultaneous elections offer a clear advantage to a local incumbent. Moreover, difference-in-differences estimates affect positively the probability of having a mayor with previous experience in office, with no effect on her out-of-office job type and years of schooling. Lastly, they show that locally right-leaning parties are negatively affected by the simultaneity.

Connecting with this last result, I document the existence of a split-ticket voting behaviour on a local-national elections dimension. This behaviour is not associated with any particular geographic and socio-demographic characteristics of the municipalities. I find support for the divided government hypothesis as in Alesina and Rosenthal (1996), contributing to it by showing its validity on a vertical government dimension.

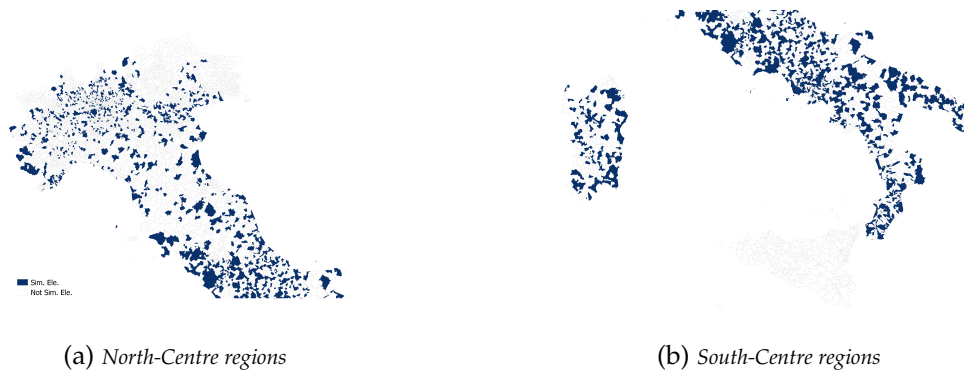
Overall, these results are in part in line with recent papers on a similar topic (Besley, 2005; Stratmann, 2005; Bracco and Revelli, 2018; Lo Prete and Revelli, 2021; Cantoni et al., 2021) and in part novel. They are important since first, an electoral system that contemplates the use of simultaneous elections can be easily implemented at low costs, and second, it shows how simultaneous elections provide more equal participation from citizens, both as voters and politicians, in the electoral process. However, they do not fully explain what is the dynamic at play in local political competition. Moreover, they further show that the implementation

of simultaneous local and national elections may result in strategic behaviour in the electorate.

2.7 Figures and Tables

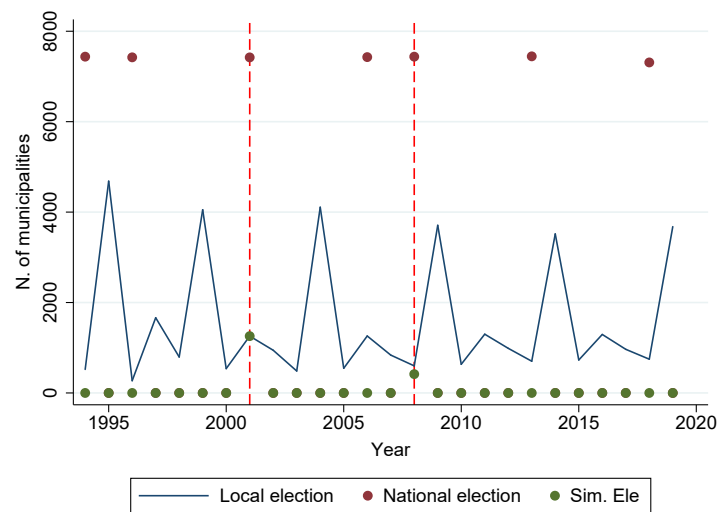
Figures

Figure 2.7.1: Simultaneous elections, geographical distribution.



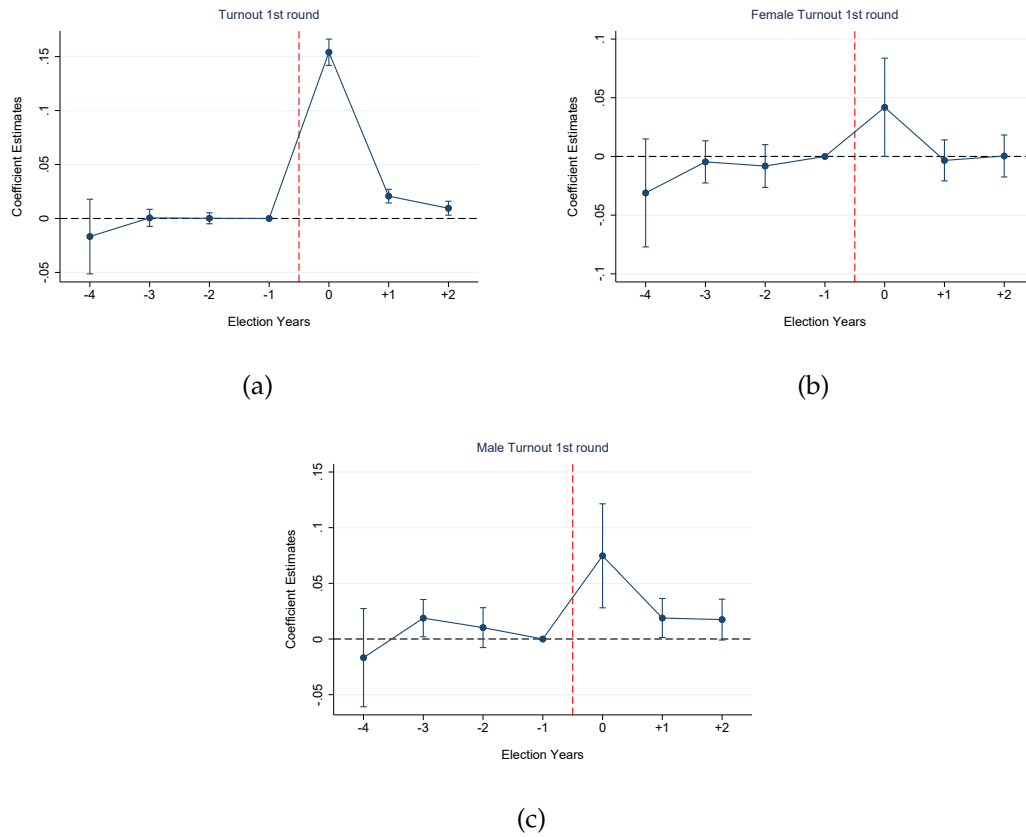
The figure shows the geographical distribution of the municipalities which experienced simultaneous local and national elections (blue).

Figure 2.7.2: Local and national elections over time.



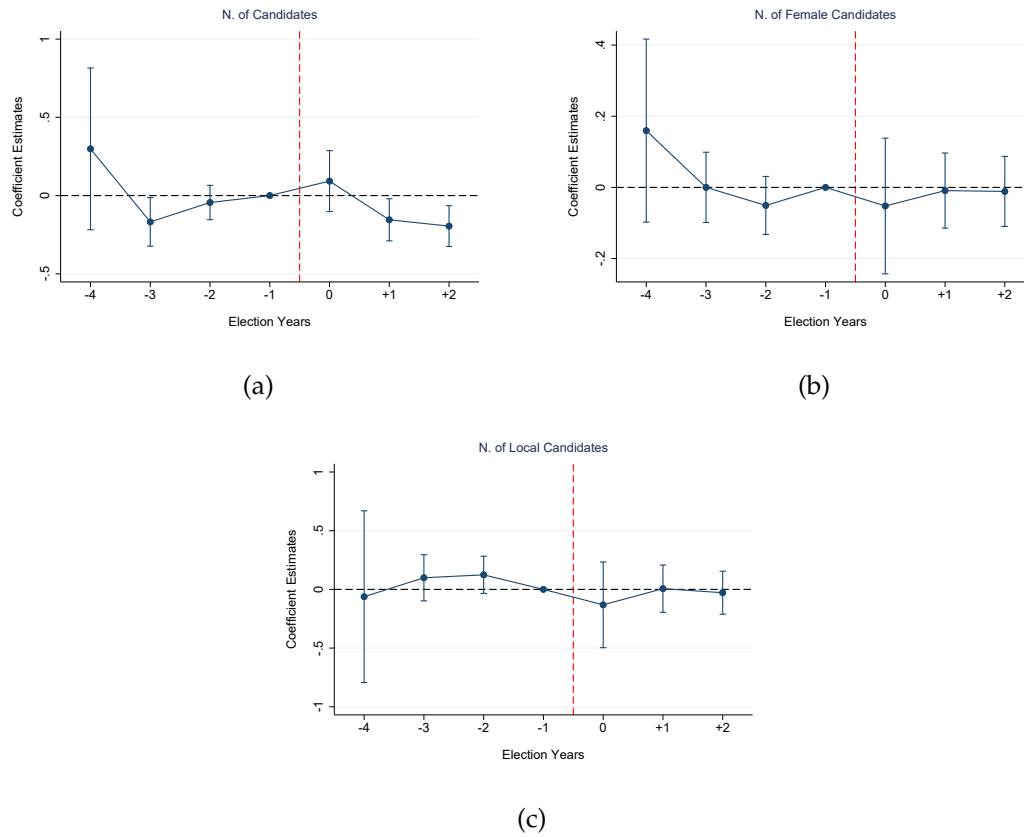
The figure shows the distribution over time of the local (blue line) and national (dark red dots), highlighting the year when the two were simultaneous (red dashed lines) and the amount of municipalities which had them (green dots).

Figure 2.7.3: Local turnout, by gender. Full dynamic specification



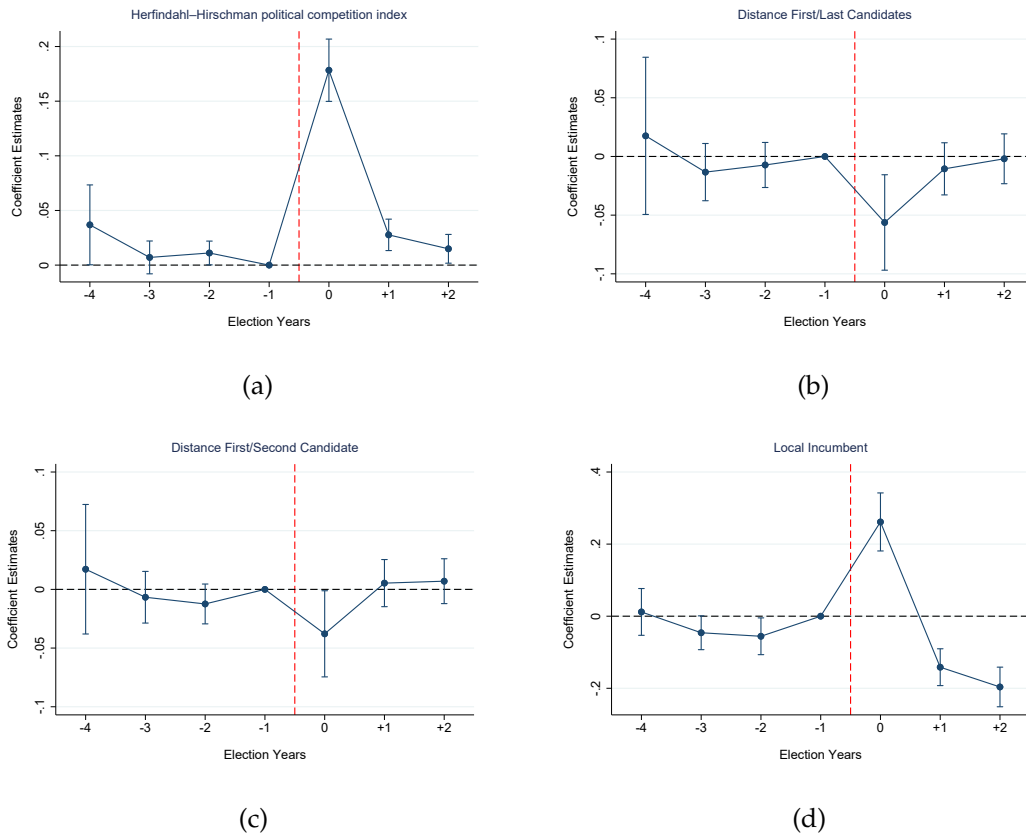
Note: Event study. Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to -4 election years prior and to $+2$ election years after the simultaneous local and national election. The omitted category is the first election year before the simultaneity. The estimation includes time and municipality dummies. Standard errors clustered at the municipal level.

Figure 2.7.4: Political participation, by gender and origin. Full dynamic specification



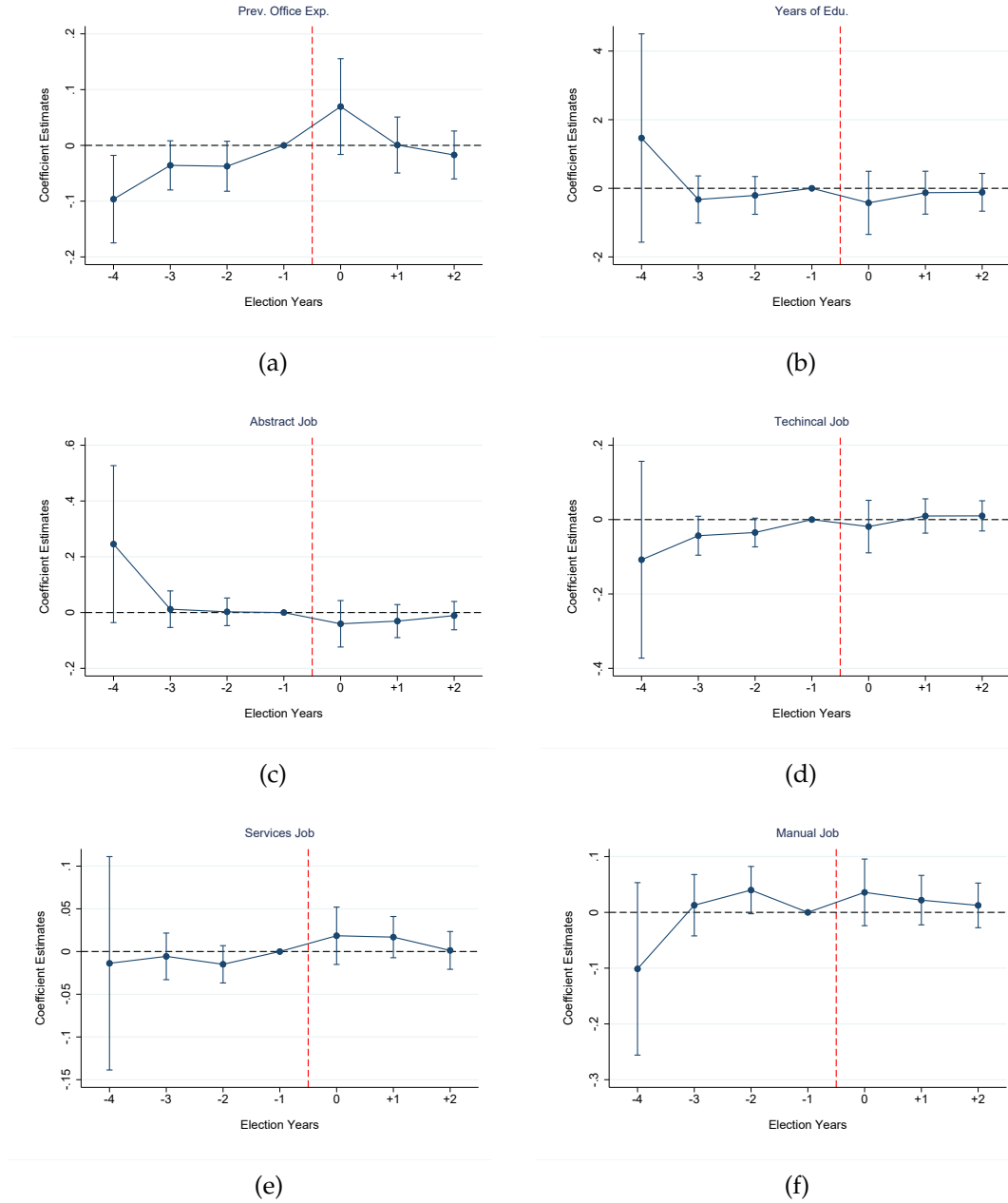
Note: Event study. Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to -4 election years prior and to $+2$ election years after the simultaneous local and national election. The omitted category is the first election year before the simultaneity. The estimation includes time and municipality dummies. Standard errors clustered at the municipal level.

Figure 2.7.5: Political competition. Full dynamic specification



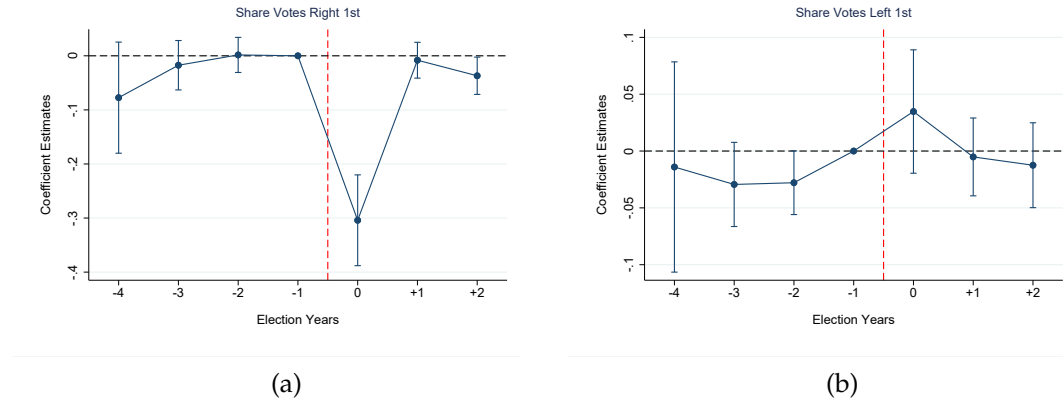
Note: Event study. Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to -4 election years prior and to $+2$ election years after the simultaneous local and national election. The omitted category is the first election year before the simultaneity. The estimation includes time and municipality dummies. Standard errors clustered at the municipal level.

Figure 2.7.6: Elected mayors characteristics. Full dynamic specification



Note: Event study. Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to -4 election years prior and to $+2$ election years after the simultaneous local and national election. The omitted category is the first election year before the simultaneity. The estimation includes time and municipality dummies. Standard errors clustered at the municipal level.

Figure 2.7.7: Local share of votes, by party. Full dynamic specification



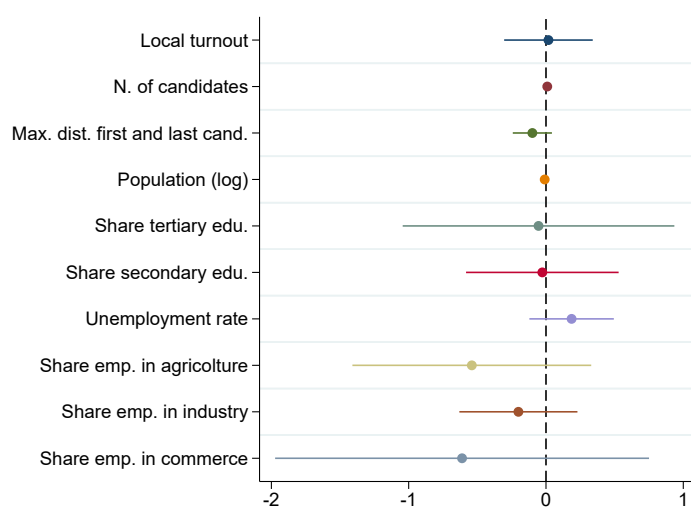
Note: Event study. Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to -4 election years prior and to $+2$ election years after the simultaneous local and national election. The omitted category is the first election year before the simultaneity. The estimation includes time and municipality dummies. Standard errors clustered at the municipal level.

Figure 2.7.8: Split-Ticket voting, geographical distribution.



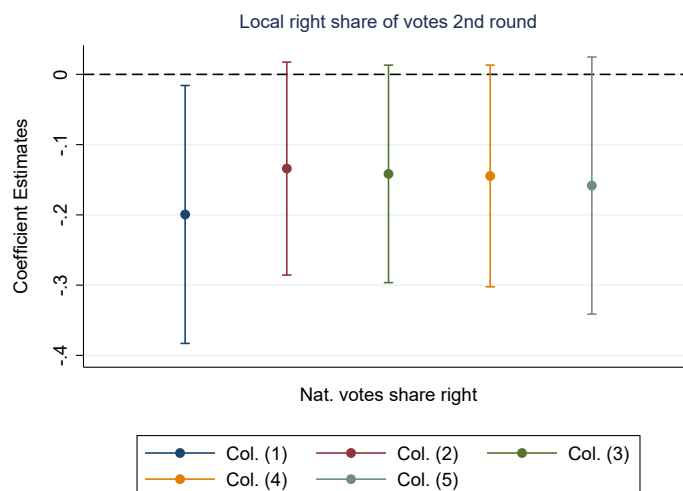
The figure shows the geographical distribution of the municipalities which experienced simultaneous local and national elections, which of those engaged in split-ticket voting (dark-blue) and which did not (light-blue).

Figure 2.7.9: Correlates and probability of split-ticket voting.



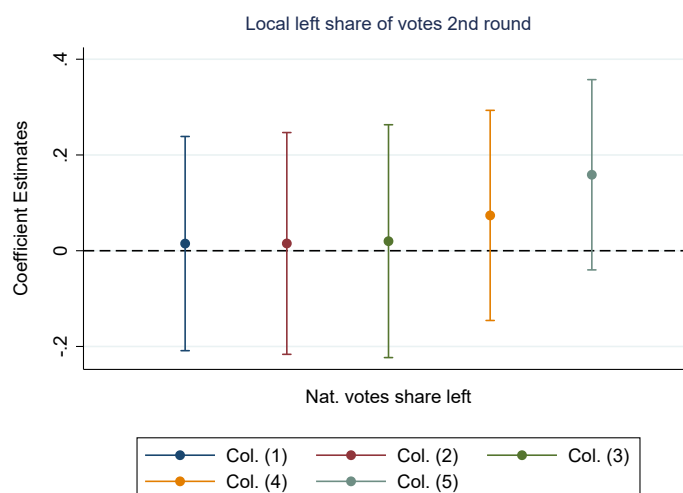
Note: the figure shows uni-variate correlations between electoral and socio-demographic variables and the probability of a municipality engaging in split-ticket voting.

Figure 2.7.10: National votes share on local second round, right.



Note: the figure shows the coefficients of the variable *Nat. votes share right* among the 5 columns of Table 2.7.11.

Figure 2.7.11: National votes share on local second round, left.



Note: the figure shows the coefficients of the variable *Nat. votes share left* among the 5 columns of Table 2.7.11.

Tables

Table 2.7.1: Summary statistics

	n	mean	sd	p10	p50	p90
<i>Electoral variables:</i>						
<i>Local turnout 1st round</i>	38390.00	0.76	0.11	0.61	0.78	0.88
<i>Females local turnout 1st round</i>	30400.00	0.75	0.11	0.61	0.77	0.87
<i>Local turnout 2nd round</i>	2165.00	0.61	0.11	0.46	0.61	0.74
<i>Females local turnout 2nd round</i>	1658.00	0.61	0.13	0.46	0.61	0.75
<i>Local n. of candidates</i>	38390.00	2.76	1.34	2.00	2.00	4.00
<i>Local n. of female candidates</i>	31173.00	0.36	0.60	0.00	0.00	1.00
<i>Local n. of candidates from mun.</i>	30738.00	0.94	1.14	0.00	1.00	2.00
<i>Local second round</i>	38390.00	0.08	0.27	0.00	0.00	0.00
<i>Local right share of votes</i>	14502.00	0.41	0.22	0.12	0.40	0.71
<i>Local left share of votes</i>	12300.00	0.47	0.20	0.17	0.47	0.71
<i>Local max. distance first and last cand.</i>	38390.00	0.27	0.19	0.02	0.26	0.53
<i>Local max. distance first and second cand.</i>	38390.00	0.18	0.17	0.01	0.14	0.43
<i>HH political competition index</i>	38390.00	0.55	0.13	0.40	0.54	0.70
<i>Local incumbent</i>	38390.00	0.31	0.46	0.00	0.00	1.00
<i>National right share of votes</i>	51903.00	0.44	0.14	0.26	0.44	0.62
<i>National left share of votes</i>	51903.00	0.35	0.13	0.19	0.34	0.52
<i>Socio-geo-demographic variables:</i>						
<i>North</i>	38390.00	0.52	0.50	0.00	1.00	1.00
<i>Centre</i>	38390.00	0.13	0.34	0.00	0.00	1.00
<i>South and islands</i>	38390.00	0.34	0.47	0.00	0.00	1.00
<i>Population (log)</i>	38390.00	7.86	1.33	6.21	7.82	9.55
<i>Unemployment rate</i>	38390.00	0.10	0.07	0.04	0.07	0.21
<i>Share tertiary educ.</i>	38390.00	0.05	0.03	0.02	0.05	0.09
<i>Share secondary educ.</i>	38390.00	0.23	0.06	0.15	0.23	0.31
<i>Share employed in agriculture</i>	38390.00	0.04	0.03	0.01	0.03	0.08
<i>Share employed in industry</i>	38390.00	0.14	0.06	0.06	0.13	0.22
<i>Share employed in commerce</i>	38390.00	0.06	0.02	0.03	0.06	0.09
<i>Share employed in transports</i>	38390.00	0.02	0.01	0.01	0.02	0.03

Notes: this tables reports summary statistics for the main variables employed in the paper, dividing them by categories. The *Electoral variables* are respectively: the local turnout at 1st and 2nd round; the female local turnout at 1st and 2nd round; the local total number of candidates; the local total number of female candidates; the local total number of local candidates; a dummy equal to 1 if locally a second round took place; the local share of votes for a right-oriented party; the local share of votes for a left-oriented party; the local maximum distance between the first and the last candidate; the local maximum distance between the first and the second candidate; the Herfindahl-Hirschman political competition index; a dummy equal to 1 if locally there is an incumbent candidate; the national right and left share of votes. The *Socio-geo-demographic variables* area respectively: a dummy equal 1 if a municipality is located in the northern area of Italy; a dummy equal to 1 if a municipality is located in the central area of Italy; a dummy equal to 1 if a municipality is located in the southern/main islands area of Italy; the log of population; the local unemployment rate; the share of citizens who completed a tertiary degree; the share of citizens who completed a secondary degree; the share of citizens employed in agriculture; the share of citizens employed in industry; the share of citizens employed in commerce; the share of citizens employed in transports. All of the variables reported are at the municipality level.

Table 2.7.2: Count of treated municipalities and distribution.

	n	mean	sd	p10	p50	p90
<i>NL sim. ele.</i>	1676.00	1.00	0.00	1.00	1.00	1.00
<i>North</i>	1676.00	0.39	0.49	0.00	0.00	1.00
<i>Centre</i>	1676.00	0.13	0.34	0.00	0.00	1.00
<i>South and islands</i>	1676.00	0.48	0.50	0.00	0.00	1.00
<i>Pop. over 5k</i>	1676.00	0.37	0.48	0.00	0.00	1.00

Notes: this table reports the number of treated municipalities, that is those that experienced simultaneous local and national elections, with few variables characterizing them. Specifically, *National-Local sim. ele.* is the treatment variable. *North* is a dummy equal to 1 if a municipality is located in the northern area of Italy. *Centre* is a dummy equal to 1 if a municipality is located in the central area of Italy. *South* is a dummy equal to 1 if a municipality is located in the southern/main islands area of Italy. *Pop. over 5k* is a dummy equal to 1 if a municipality has more than 5000 citizens. All of the variables reported are at the municipality level.

Table 2.7.3: Local turnout, by gender.

	(1)	(2)	(3)	(4)
<i>Panel A - Local turnout 1^{round}</i>				
<i>NL sim. ele.</i>	0.051*** (0.002)	0.146*** (0.006)	0.147*** (0.006)	0.131*** (0.005)
Observations	38390	38385	38385	38385
R ²	0.009	0.860	0.863	0.933
Mean outcome	0.759	0.759	0.759	0.759
<i>Panel B - Female local turnout 1^{round}</i>				
<i>NL sim. ele.</i>	0.059*** (0.003)	0.041** (0.020)	0.042** (0.020)	0.052** (0.024)
Observations	30400	30077	30077	30077
R ²	0.015	0.833	0.835	0.914
Mean outcome	0.749	0.749	0.749	0.749
<i>Panel C - Male local turnout 1^{round}</i>				
<i>NL sim. ele.</i>	0.047*** (0.003)	0.063*** (0.023)	0.064*** (0.022)	0.077*** (0.024)
Observations	30400	30077	30077	30077
R ²	0.009	0.846	0.851	0.925
Mean outcome	0.765	0.765	0.765	0.765
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the local turnout; the female local turnout; the male local turnout. *NL sim. Ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019.

Table 2.7.4: Political participation, by gender and origin.

	(1)	(2)	(3)	(4)
<i>Panel A - N. of candidates</i>				
<i>NL sim. ele.</i>	0.093*** (0.035)	0.177* (0.093)	0.170* (0.094)	0.163 (0.114)
Observations	38390	38385	38385	38385
R ²	0.000	0.656	0.657	0.751
Mean outcome	2.759	2.759	2.759	2.759
<i>Panel B - N. of female candidates</i>				
<i>NL sim. ele.</i>	0.019 (0.030)	-0.043 (0.096)	-0.047 (0.096)	0.006 (0.138)
Observations	31173	30862	30862	30862
R ²	0.000	0.377	0.379	0.598
Mean outcome	0.357	0.357	0.357	0.357
<i>Panel C - N. of local candidates</i>				
<i>NL sim. ele.</i>	0.039 (0.064)	-0.180 (0.177)	-0.184 (0.177)	-0.095 (0.217)
Observations	30738	30558	30558	30558
R ²	0.000	0.588	0.589	0.745
Mean outcome	0.940	0.940	0.940	0.940
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the number of local candidates; the number of female candidates; the number of local candidates. *NL sim. Ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019.

Table 2.7.5: Political competition.

	(1)	(2)	(3)	(4)
<i>Panel A - HH political competition index</i>				
<i>NL sim. ele.</i>	0.016*** (0.003)	0.162*** (0.014)	0.161*** (0.014)	0.133*** (0.016)
Observations	38390	38385	38385	38385
R ²	0.001	0.505	0.507	0.653
Mean outcome	0.551	0.551	0.551	0.551
<i>Panel B - Distance between first and last candidates</i>				
<i>NL sim. ele.</i>	-0.001 (0.005)	-0.048** (0.020)	-0.047** (0.020)	-0.042* (0.022)
Observations	38390	38385	38385	38385
R ²	0.000	0.372	0.373	0.551
Mean outcome	0.271	0.271	0.271	0.271
<i>Panel C - Distance between first and second candidates</i>				
<i>NL sim. ele.</i>	-0.018*** (0.004)	-0.033* (0.018)	-0.032* (0.018)	-0.032 (0.020)
Observations	38390	38385	38385	38385
R ²	0.000	0.318	0.319	0.516
Mean outcome	0.184	0.184	0.184	0.184
<i>Panel D - Local incumbent</i>				
<i>NL sim. ele.</i>	-0.042*** (0.011)	0.333*** (0.035)	0.339*** (0.035)	0.508*** (0.045)
Observations	38390	38385	38385	38385
R ²	0.000	0.218	0.220	0.342
Mean outcome	0.313	0.313	0.313	0.313
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the Herfindahl–Hirschman political competition index; the distance between the first and last candidates; the distance between the first and second candidates; the probability of victory of a local incumbent. *NL sim. ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019.

Table 2.7.6: Elected mayors characteristics.

	(1)	(2)	(3)	(4)
<i>Panel A - Previous office experience</i>				
<i>NL sim. ele.</i>	0.043*** (0.012)	0.090** (0.041)	0.090** (0.041)	0.100** (0.045)
Observations	42675	42674	42674	42674
R ²	0.000	0.492	0.492	0.569
Mean outcome	0.638	0.638	0.638	0.638
<i>Panel B - Years of education</i>				
<i>NL sim. ele.</i>	0.436*** (0.133)	-0.110 (0.435)	-0.110 (0.435)	-0.186 (0.468)
Observations	42675	42674	42674	42674
R ²	0.000	0.350	0.350	0.564
Mean outcome	12.905	12.905	12.905	12.905
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: a dummy equal to 1 if a mayor has had any role in a previous administration; years of education. *NL sim. ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019.

Table 2.7.7: Elected mayors job types.

	(1)	(2)	(3)	(4)
<i>Panel A - Abstract jobs</i>				
<i>NL sim. ele.</i>	0.041*** (0.012)	-0.026 (0.040)	-0.026 (0.040)	-0.015 (0.043)
Observations	42675	42674	42674	42674
R ²	0.000	0.375	0.375	0.586
Mean outcome	0.444	0.444	0.444	0.444
<i>Panel B - Technical jobs</i>				
<i>NL sim. ele.</i>	-0.005 (0.010)	-0.007 (0.034)	-0.007 (0.034)	-0.017 (0.038)
Observations	42675	42674	42674	42674
R ²	0.000	0.346	0.346	0.569
Mean outcome	0.198	0.198	0.198	0.198
<i>Panel B - Services jobs</i>				
<i>NL sim. ele.</i>	0.006 (0.006)	0.012 (0.016)	0.012 (0.016)	0.014 (0.018)
Observations	42675	42674	42674	42674
R ²	0.000	0.356	0.356	0.580
Mean outcome	0.055	0.055	0.055	0.055
<i>Panel C - Manual jobs</i>				
<i>NL sim. ele.</i>	-0.011 (0.010)	0.024 (0.027)	0.024 (0.027)	0.017 (0.031)
Observations	42675	42674	42674	42674
R ²	0.000	0.378	0.378	0.585
Mean outcome	0.235	0.235	0.235	0.235
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: a dummy equal to 1 if a mayor has an abstract job (i.e. entrepreneur, architects, bankers); a dummy equal to 1 if a mayor has a technical job (i.e. administratives, accountants); a dummy equal to 1 if a mayor has a service job (i.e. chefs, tour guides); a dummy equal to 1 if a mayor has a manual job (i.e. artisan, conductor of vehicles). The job type of the mayor is classified according to the CPI ISTAT classification. *NL sim. ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019.

Table 2.7.8: Local share of votes, by party.

	(1)	(2)	(3)	(4)
<i>Panel A - Right share of votes 1st round</i>				
<i>NL sim. ele.</i>	0.039*** (0.007)	-0.298*** (0.042)	-0.304*** (0.041)	-0.293*** (0.049)
Observations	14914	12733	12733	12733
R ²	0.002	0.563	0.567	0.817
Mean outcome	0.400	0.400	0.400	0.400
<i>Panel B - Left share of votes 1st round</i>				
<i>NL sim. ele.</i>	-0.034*** (0.007)	0.036 (0.026)	0.028 (0.026)	0.032 (0.033)
Observations	12762	10714	10714	10714
R ²	0.001	0.609	0.614	0.835
Mean outcome	0.451	0.451	0.451	0.451
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the local share of votes for a right party at the first round; the local share of votes for a left party at the first round. *NL sim. ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019.

Table 2.7.9: Civic, political participation, competition and votes share. Change in clustering.

	<i>Turnout 1st round</i>	<i>Fem. Turnout 1st round</i>	<i>M. Turnout 1st round</i>	<i>N. Cand.</i>	<i>N. Fem. Cand.</i>	<i>N. Local Cand.</i>	<i>HH PC index.</i>	<i>Dist. F/L Cand.</i>	<i>Dist. F/S Cand.</i>	<i>Local Incumbent</i>	<i>Local sh. v. Right</i>	<i>Local sh. v. Left</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Panel A - Cluster: Province</i>												
<i>NL sim. ele.</i>	0.147*** (0.015)	0.042* (0.021)	0.064*** (0.024)	0.170 (0.133)	-0.047 (0.073)	-0.184 (0.152)	0.161*** (0.028)	-0.047** (0.018)	-0.032** (0.016)	0.339*** (0.041)	0.-304*** (0.030)	0.028 (0.023)
Observations	38385	30077	30077	38385	30862	30558	38385	38385	38385	38385	12733	10714
R ²	0.863	0.835	0.851	0.657	0.379	0.589	0.507	0.373	0.319	0.220	0.400	0.451
Mean outcome	0.759	0.749	0.765	2.759	0.357	0.940	0.551	0.271	0.184	0.313	0.400	0.451
Cl. Province	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>Panel B - Cluster: Region</i>												
<i>NL sim. ele.</i>	0.147*** (0.031)	0.042 (0.024)	0.064* (0.035)	0.170** (0.074)	-0.047 (0.031)	-0.184** (0.077)	0.161*** (0.052)	-0.047*** (0.010)	-0.032*** (0.006)	0.339*** (0.083)	0.-304*** (0.013)	0.028** (0.012)
Observations	38384	30077	30077	38384	30862	30558	38384	38384	38384	38384	12733	10714
R ²	0.863	0.835	0.851	0.657	0.379	0.589	0.507	0.373	0.319	0.220	0.400	0.451
Mean outcome	0.759	0.749	0.765	2.759	0.357	0.940	0.551	0.271	0.184	0.313	0.400	0.451
Cl. Region	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
City-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: Dependent variables: the local turnout; the female local turnout; the male local turnout; the number of local candidates; the number of female candidates; the number of local candidates; the Herfindahl–Hirschman political competition index; the distance between the first and last candidates; the distance between the first and second candidates; the probability of victory of a local incumbent; the local votes share for a right (left) party. Panel A shows coefficient estimates with standard errors clustered at the province level, while Panel B shows those clustered at the region level. *NL sim. ele.* refers to the simultaneous local and national elections dummy. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, and socio-demographic characteristics. Sample years: 1994/2019.

Table 2.7.10: Categorization of local-national, left-right voting.

<i>Voting Alignment</i>	<i>Freq.</i>	<i>Percent</i>	<i>Cumulative</i>
<i>Split-ticket voting (Cat. 1)</i>	358.00	21.30	21.30
<i>Not Split-voting (Cat. 2)</i>	787.00	47.00	68.30
<i>Uncategorised</i>	531.00	31.70	100.00
<i>Total</i>	1676.00	100.00	

Notes: this table reports the categorization of municipalities that experienced the simultaneity of local and national elections, according on the relationship between the votes share for both left and right party, both at the local and the national elections. *Split-ticket voting (Cat. 1)* implies that the highest votes share at the local level is of a right (left) party, while the one at the national level is of left (right) party. *Not Split-voting (Cat. 2)* implies that the highest votes share at the local level is of a right (left) party, while the one at the national level is of right (left) party. *Uncategorised* implies that at the local level it was not possible to identify a clear left vs. right competition.

Table 2.7.11: The national election results on second round of local elections.

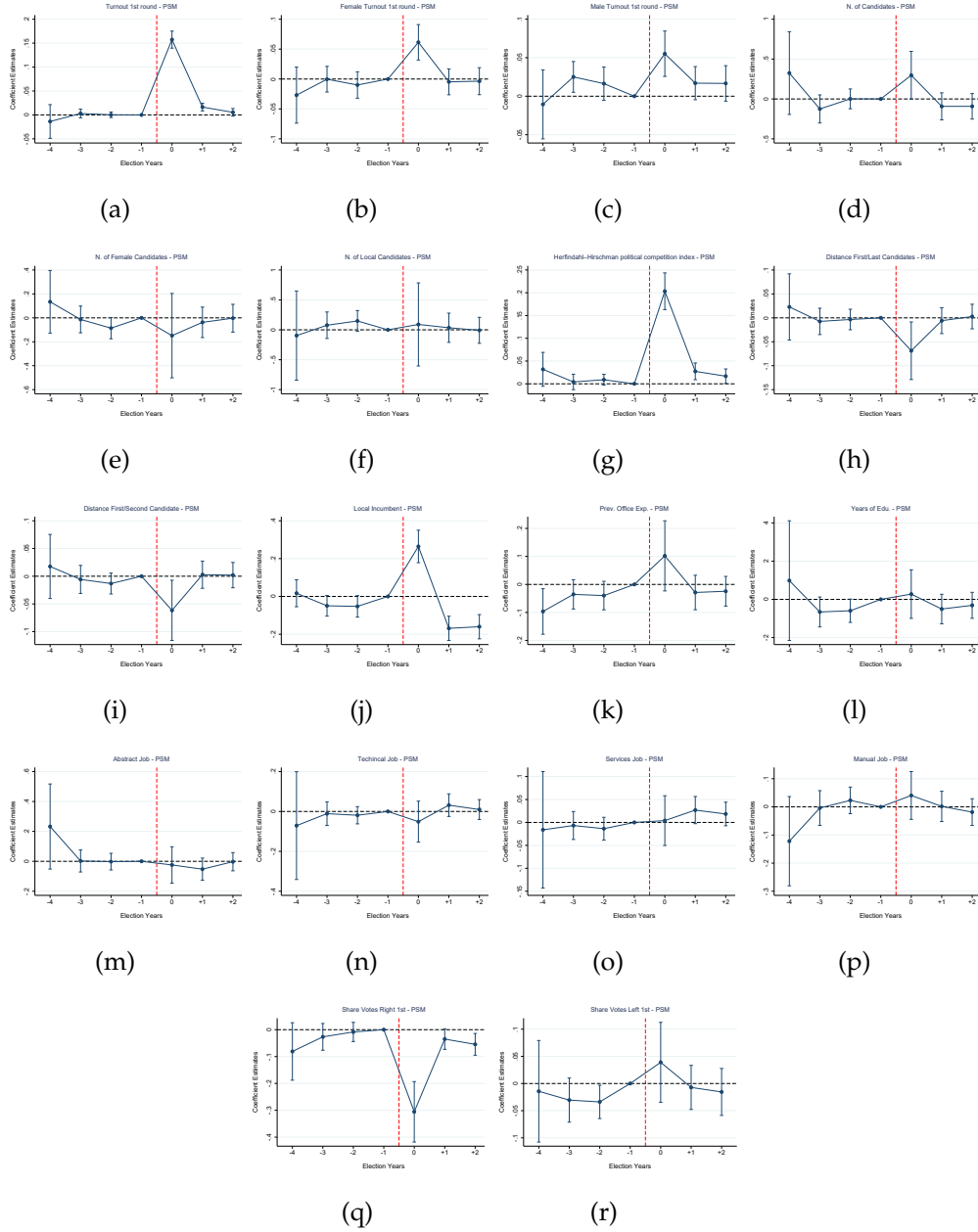
	(1)	(2)	(3)	(4)	(5)
<i>Panel A: Local right share of votes 2nd round</i>					
<i>Nat. votes share right</i>	-0.199** (0.092)	-0.134* (0.076)	-0.142* (0.078)	-0.145* (0.079)	-0.158* (0.092)
<i>Loc. votes share 1st round right</i>	0.800*** (0.110)	-1.150*** (0.267)	-1.109*** (0.265)	-1.146*** (0.283)	-1.071*** (0.296)
<i>Loc. votes share 1st round right sq.</i>		2.092*** (0.275)	2.058*** (0.271)	2.091*** (0.286)	2.000*** (0.291)
<i>N. of candidates</i>			0.002 (0.003)	0.003 (0.003)	0.000 (0.004)
<i>Distance from second best candidate</i>				-0.097 (0.117)	-0.071 (0.123)
Observations	94	94	94	93	93
R ²	0.588	0.709	0.710	0.711	0.738
Mean outcome	.437	.437	.437	.437	.437
<i>Panel B: Local left share of votes 2nd round</i>					
<i>Nat. votes share left</i>	0.015 (0.113)	0.015 (0.117)	0.020 (0.122)	0.074 (0.110)	0.159 (0.100)
<i>Loc. votes share 1st round left</i>	0.400*** (0.147)	-0.485 (0.854)	-0.497 (0.867)	-0.598 (0.773)	-0.472 (0.723)
<i>Loc. votes share 1st round left sq.</i>		1.007 (1.022)	1.016 (1.031)	1.150 (0.929)	1.000 (0.869)
<i>N. of candidates</i>			-0.001 (0.003)	0.000 (0.003)	0.001 (0.006)
<i>Distance from second best candidate</i>				-0.363** (0.168)	-0.374* (0.196)
Observations	99	99	99	98	98
R ²	0.195	0.218	0.218	0.273	0.356
Mean outcome	.411	.411	.411	.411	.411
Controls	✓				

Notes: Dependent variables: the local votes share at the second round for right and left parties. *Nat. Votes share right* is the main variable of interest and refers to the national votes share of right and left respectively. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include the local votes share of the first round, the local votes share of the first round squared, the number of candidates at the local election, the distance from the second best candidate, as well as socio-demographic characteristics.

Appendices

2.A Figures

Figure 2.1: Full dynamic specifications, PSM estimates.



Note: Event study. Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to -4 election years prior and to $+2$ election years after the simultaneous local and national election. The omitted category is the first election year before the simultaneity. The estimation includes time and municipality dummies. Standard errors clustered at the municipal level.

2.B Tables

Table 2.1: Matching balancing test.

Variables	Mean		t-test	
	Treated	Control	t	p-value
<i>Population (log)</i>	8.023	8.009	0.30	0.767
<i>Share tertiary edu.</i>	0.019	0.019	-0.56	0.578
<i>Share secondary edu.</i>	0.133	0.133	0.34	0.733
<i>Share emp. in agriculture</i>	0.051	0.051	-0.20	0.839
<i>Share emp. in industry</i>	0.14	0.14	0.42	0.672
<i>Share emp. in commerce</i>	0.045	0.045	0.61	0.543
<i>Share emp. in transports</i>	0.017	0.017	0.08	0.935
<i>Unemployment rate</i>	0.078	0.078	-0.51	0.607
<i>Area (km²)</i>	39.28	39.862	-0.30	0.768
<i>Min. altitude (m)</i>	193.49	194.01	-0.07	0.943
<i>Max. altitude (m)</i>	812.26	812.56	-0.01	0.990
<i>Dist. from sea (km)</i>	53.386	53.864	-0.25	0.801

Notes: this tables shows the variables that were used in the matching algorithm. The time invariant variables are taken in 1991 exploiting ISTAT census.

Table 2.2: Local turnout, by gender. PSM estimates.

	(1)	(2)	(3)	(4)
<i>Panel A - Local turnout 1^{round}</i>				
<i>NL sim. ele.</i>	0.064*** (0.002)	0.150*** (0.009)	0.151*** (0.009)	0.135*** (0.007)
Observations	16279	16279	16279	16279
R ²	0.029	0.859	0.863	0.930
Mean outcome	0.746	0.746	0.746	0.746
<i>Panel B - Female local turnout 1^{round}</i>				
<i>NL sim. ele.</i>	0.072*** (0.002)	0.060*** (0.012)	0.061*** (0.012)	0.070*** (0.012)
Observations	12919	12787	12787	12787
R ²	0.045	0.819	0.823	0.897
Mean outcome	0.737	0.737	0.737	0.737
<i>Panel C - Male local turnout 1^{round}</i>				
<i>NL sim. ele.</i>	0.063*** (0.003)	0.042*** (0.013)	0.044*** (0.012)	0.053*** (0.011)
Observations	12919	12787	12787	12787
R ²	0.032	0.833	0.839	0.911
Mean outcome	0.749	0.749	0.749	0.749
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the local turnout; the female local turnout; the male local turnout. *NL sim. Ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019. All estimates are restricted to the sample resulting from the PSM algorithm.

Table 2.3: Political participation, by gender and origin. PSM estimates.

	(1)	(2)	(3)	(4)
<i>Panel A - N. of candidates</i>				
<i>NL sim. ele.</i>	-0.036 (0.033)	0.342** (0.148)	0.338** (0.148)	0.370** (0.185)
Observations	16279	16279	16279	16279
R ²	0.000	0.660	0.661	0.754
Mean outcome	2.897	2.897	2.897	2.897
<i>Panel B - N. of female candidates</i>				
<i>NL sim. ele.</i>	0.017 (0.030)	-0.126 (0.181)	-0.133 (0.182)	0.010 (0.312)
Observations	11525	11392	11392	11392
R ²	0.000	0.405	0.406	0.650
Mean outcome	0.361	0.361	0.361	0.361
<i>Panel C - N. of local candidates</i>				
<i>NL sim. ele.</i>	-0.056 (0.063)	0.061 (0.346)	0.039 (0.346)	0.366 (0.480)
Observations	11338	11262	11262	11262
R ²	0.000	0.604	0.605	0.775
Mean outcome	1.036	1.036	1.036	1.036
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the number of local candidates; the number of female candidates; the number of local candidates. *NL sim. Ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019. All estimates are restricted to the sample resulting from the PSM algorithm.

Table 2.4: Political competition. PSM estimates.

	(1)	(2)	(3)	(4)
<i>Panel A - HH political competition index</i>				
<i>NL sim. ele.</i>	0.010*** (0.003)	0.188*** (0.020)	0.187*** (0.021)	0.157*** (0.024)
Observations	16279	16279	16279	16279
R ²	0.001	0.494	0.496	0.642
Mean outcome	0.557	0.557	0.557	0.557
<i>Panel B - Distance between first and last candidates</i>				
<i>NL sim. ele.</i>	-0.008 (0.005)	-0.064** (0.030)	-0.063** (0.030)	-0.057* (0.034)
Observations	16279	16279	16279	16279
R ²	0.000	0.351	0.353	0.535
Mean outcome	0.280	0.280	0.280	0.280
<i>Panel C - Distance between first and second candidates</i>				
<i>NL sim. ele.</i>	-0.015*** (0.004)	-0.057** (0.027)	-0.056** (0.027)	-0.055* (0.032)
Observations	16279	16279	16279	16279
R ²	0.001	0.305	0.306	0.506
Mean outcome	0.183	0.183	0.183	0.183
<i>Panel D - Local incumbent</i>				
<i>NL sim. ele.</i>	-0.039*** (0.012)	0.344*** (0.038)	0.347*** (0.038)	0.535*** (0.049)
Observations	16279	16279	16279	16279
R ²	0.001	0.193	0.195	0.325
Mean outcome	0.314	0.314	0.314	0.314
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the Herfindahl–Hirschman political competition index; the distance between the first and last candidates; the distance between the first and second candidates; the probability of victory of a local incumbent. *NL sim. ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019. All estimates are restricted to the sample resulting from the PSM algorithm.

Table 2.5: Elected mayors characteristics. PSM estimates.

	(1)	(2)	(3)	(4)
<i>Panel A - Previous office experience</i>				
<i>NL sim. ele.</i>	0.068*** (0.012)	0.130** (0.061)	0.130** (0.061)	0.137** (0.068)
Observations	17684	17684	17684	17684
R^2	0.002	0.479	0.479	0.563
Mean outcome	0.619	0.619	0.619	0.619
<i>Panel B - Years of education</i>				
<i>NL sim. ele.</i>	0.224* (0.136)	0.825 (0.621)	0.825 (0.621)	0.887 (0.652)
Observations	17684	17684	17684	17684
R^2	0.000	0.346	0.346	0.557
Mean outcome	13.128	13.128	13.128	13.128
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: a dummy equal to 1 if a mayor has had any role in a previous administration; years of education. *NL sim. ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019. All estimates are restricted to the sample resulting from the PSM algorithm.

Table 2.6: Elected mayors job types. PSM estimates.

	(1)	(2)	(3)	(4)
<i>Panel A - Abstract jobs</i>				
<i>NL sim. ele.</i>	0.009 (0.012)	-0.006 (0.058)	-0.006 (0.058)	0.009 (0.062)
Observations	17684	17684	17684	17684
R^2	0.000	0.372	0.372	0.578
Mean outcome	0.444	0.444	0.444	0.444
<i>Panel B - Technical jobs</i>				
<i>NL sim. ele.</i>	-0.001 (0.010)	-0.050 (0.050)	-0.050 (0.050)	-0.069 (0.055)
Observations	17684	17684	17684	17684
R^2	0.000	0.344	0.344	0.562
Mean outcome	0.198	0.198	0.198	0.198
<i>Panel B - Services jobs</i>				
<i>NL sim. ele.</i>	0.006 (0.006)	-0.009 (0.027)	-0.009 (0.027)	-0.009 (0.030)
Observations	17684	17684	17684	17684
R^2	0.000	0.356	0.356	0.570
Mean outcome	0.055	0.055	0.055	0.055
<i>Panel C - Manual jobs</i>				
<i>NL sim. ele.</i>	0.017* (0.010)	0.045 (0.040)	0.045 (0.040)	0.050 (0.048)
Observations	17684	17684	17684	17684
R^2	0.000	0.368	0.368	0.576
Mean outcome	0.235	0.235	0.235	0.235
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: a dummy equal to 1 if a mayor has an abstract job (i.e. entrepreneur, architects, bankers); a dummy equal to 1 if a mayor has a technical job (i.e. administratives, accountants); a dummy equal to 1 if a mayor has a service job (i.e. chefs, tour guides); a dummy equal to 1 if a mayor has a manual job (i.e. artisan, conductor of vehicles). The job type of the mayor is classified according to the CPI ISTAT classification. *NL sim. ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019.

Table 2.7: Local share of votes, by party. PSM estimates.

	(1)	(2)	(3)	(4)
<i>Panel A - Right share of votes 1st round</i>				
<i>NL sim. ele.</i>	0.036*** (0.007)	-0.290*** (0.056)	-0.296*** (0.055)	-0.261*** (0.064)
Observations	6779	5962	5962	5962
R ²	0.003	0.553	0.558	0.800
Mean outcome	0.400	0.400	0.400	0.400
<i>Panel B - Left share of votes 1st round</i>				
<i>NL sim. ele.</i>	-0.027*** (0.007)	0.041 (0.036)	0.036 (0.036)	0.043 (0.043)
Observations	5986	5183	5183	5183
R ²	0.002	0.575	0.581	0.811
Mean outcome	0.442	0.442	0.442	0.442
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the local share of votes for a right party at the first round; the local share of votes for a left party at the first round. *NL sim. ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019. All estimates are restricted to the sample resulting from the PSM algorithm.

Table 2.8: Local turnout, by gender. Regional and local elections simultaneity.

	(1)	(2)	(3)	(4)
<i>Panel A - Local turnout 1^{round}</i>				
<i>RL sim. ele.</i>	0.057*** (0.001)	0.011*** (0.002)	0.010*** (0.002)	0.009*** (0.002)
Observations	38390	38385	38385	38385
R ²	0.040	0.856	0.859	0.930
Mean outcome	0.751	0.751	0.751	0.751
<i>Panel B - Female local turnout 1^{round}</i>				
<i>RL sim. ele.</i>	0.059*** (0.001)	0.016*** (0.002)	0.015*** (0.002)	0.010*** (0.002)
Observations	30400	30077	30077	30077
R ²	0.053	0.833	0.836	0.914
Mean outcome	0.739	0.739	0.739	0.739
<i>Panel C - Male local turnout 1^{round}</i>				
<i>RL sim. ele.</i>	0.065*** (0.001)	0.011*** (0.002)	0.010*** (0.002)	0.011*** (0.002)
Observations	30400	30077	30077	30077
R ²	0.058	0.846	0.851	0.925
Mean outcome	0.753	0.753	0.753	0.753
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the local turnout; the female local turnout; the male local turnout. *RL sim. Ele.* refers to the simultaneous local and national elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019.

Table 2.9: Political participation, by gender and origin. Regional and local elections simultaneity.

	(1)	(2)	(3)	(4)
<i>Panel A - N. of candidates</i>				
<i>RL sim. ele.</i>	-0.172*** (0.018)	-0.105*** (0.030)	-0.098*** (0.030)	-0.145*** (0.048)
Observations	38390	38385	38385	38385
R^2	0.002	0.656	0.657	0.752
Mean outcome	2.795	2.795	2.795	2.795
<i>Panel B - N. of female candidates</i>				
<i>RL sim. ele.</i>	-0.108*** (0.007)	-0.047** (0.019)	-0.041** (0.019)	-0.036 (0.030)
Observations	31173	30862	30862	30862
R^2	0.005	0.377	0.379	0.598
Mean outcome	0.379	0.379	0.379	0.379
<i>Panel C - N. of local candidates</i>				
<i>RL sim. ele.</i>	0.091*** (0.015)	0.114*** (0.027)	0.109*** (0.027)	-0.012 (0.042)
Observations	30738	30558	30558	30558
R^2	0.001	0.588	0.589	0.745
Mean outcome	0.921	0.921	0.921	0.921
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the number of local candidates; the number of female candidates; the number of local candidates. *RL sim. Ele.* refers to the simultaneous local and regional elections dummy. Municipality clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019.

Table 2.10: Political competition. Regional and local elections simultaneity.

	(1)	(2)	(3)	(4)
<i>Panel A - HH political competition index</i>				
<i>RL sim. ele.</i>	0.011*** (0.002)	-0.004 (0.004)	-0.003 (0.004)	-0.008 (0.006)
Observations	38390	38385	38385	38385
R ²	0.001	0.501	0.503	0.651
Mean outcome	0.550	0.550	0.550	0.550
<i>Panel B - Distance between first and last candidates</i>				
<i>RL sim. ele.</i>	-0.027*** (0.003)	-0.015** (0.006)	-0.018*** (0.006)	-0.011 (0.009)
Observations	38390	38385	38385	38385
R ²	0.003	0.372	0.373	0.551
Mean outcome	0.275	0.275	0.275	0.275
<i>Panel C - Distance between first and second candidates</i>				
<i>RL sim. ele.</i>	-0.008*** (0.002)	-0.010* (0.006)	-0.013** (0.006)	-0.016* (0.009)
Observations	38390	38385	38385	38385
R ²	0.000	0.318	0.319	0.516
Mean outcome	0.185	0.185	0.185	0.185
<i>Panel D - Local incumbent</i>				
<i>RL sim. ele.</i>	-0.237*** (0.004)	0.011 (0.015)	0.006 (0.015)	0.020 (0.023)
Observations	38390	38385	38385	38385
R ²	0.039	0.217	0.218	0.339
Mean outcome	0.354	0.354	0.354	0.354
City-Year FE		✓	✓	✓
Controls			✓	✓
City linear trends				✓

Notes: Dependent variables: the Herfindahl–Hirschman political competition index; the distance between the first and last candidates; the distance between the first and second candidates; the probability of victory of a local incumbent. *RL sim. ele.* refers to the simultaneous local and regional elections dummy. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, socio-demographic characteristics and municipality linear trends. Sample years: 1994/2019.

Chapter 3

Organised crime, public procurement and firms

3.1 Introduction

Organised crime presence is detrimental to the development of any economic environment (Pinotti, 2015). While in developing countries criminal organisations act often with means of violence and are almost exclusively focused on the illegal side of their activities (Acemoglu, Robinson, et al., 2013; Melnikov et al., 2020), in developed countries these groups operate with less violent methods, as this allows them to remain undetected and then to infiltrate the legal economy, often via the channel of politics (De Feo and De Luca, 2017). On this, a growing number of studies investigate the consequences of their presence in the legal economy (Le Moglie and Sorrenti, 2020; Mirenda et al., 2022; Di Cataldo and Mastrorocco, 2021).

With this research project, we aim at unveiling more of these consequences. Specifically, we study the effect of collusion between local elected officials and organised crime, and we estimate its impact on the local public procurement sphere, mapping these effects from the allocation and selection of the winner of the procurement contract to the evaluation of the winning firms' performances. The public procurement environment represents roughly 13% of OECD countries' GDP (OECD, 2016) and it is prone to corruption (Conley and Decarolis, 2016; Coviello and Gagliarducci, 2017). Nonetheless, for this area of the literature, it remains fairly unexplored. We focus on Italy, a country with a well-known history of organised crime, in the three regions where it is more rooted, namely Calabria, Campania and Sicily, over the period that goes from 2000 to 2012.

To detect the collusion between local politicians and members of criminal organisations, we exploit law 164/1991 of the Italian legal framework. Such a law allows the central government to dissolve a local government upon clear and compelling evidence of its collusion with organised crime. The application of this law allows us to pin down a clear moment in time when the infiltration of organised crime in a local government comes to an end, that is the dissolution date. We exploit this fact, by considering it as infiltrated the last legislature prior to the infiltration, namely from the moment that is elected to the one it is dissolved. Methodologically,

we employ a difference-in-differences estimation design as in Di Cataldo and Mastroiocco (2021), where we compare municipalities with and without infiltration, before and during the infiltration.

Exploiting highly detailed and confidential data on public procurement, we start our analysis by investigating the two following outcomes. First, we focus on the probability that an auction is organised with private negotiations, a measure of discretionary selection of the winning firm. Estimates reveal that, while a municipality experiences the infiltration of organised crime, the probability of having auctions negotiated privately increases between 56% and 82% depending on the specification. We interpret this finding as a mean that organised crime uses to award more auctions to firms of its own. This effect is driven by auctions related to the supply of goods and the allocation of services for the municipality. Second, we shift our attention to the winning discount over the starting value of the auction. Estimates show that, when infiltration is ongoing, the winning discount of an auction decreases between -7.72% and -11.81% , with the effect entirely coming from the construction sector. We interpret this finding as a direct extraction behaviour of public resources executed by criminal organisations.

Regarding these outcomes, we then explore potential heterogeneities related to the political economics sphere. First, we focus on infiltrated municipal governments that, respectively were elected for the first time, and that were subject to a term limit. Surprisingly, the estimates from the former group are in line, and at times stronger, with the ones of the main estimation, while the ones from the latter are weaker. Contrary to the classic political accountability hypothesis (Besley and Case, 2003), we interpret this finding as suggestive of the fact that criminal organisations would rather directly elect governments and induce them to act to their own benefit, rather than infiltrate already existing ones. Second, we focus on infiltrated municipal governments that, respectively were affiliated with a centre-right party, and on those that were affiliated with a centre-left party. Estimates show a stronger pattern for the former category, especially concerning the winning discount variable and the construction sector. The link between centre-right parties and organised crime is not new in the literature (Buonanno, Prarolo, et al., 2016; De Feo and De Luca, 2017).

We also investigate a separate set of public procurement outcomes, finding the following results. Organised crime infiltration does not affect either the overall volume of procurement¹ or the concentration of procurement contracts won², or the local origin of the winner³. We find a negative association with the number of firms participating in the procurement process. However, due to the low quality of the data regarding this outcome, this evidence is at best

¹We measure it in two distinct ways: with the number of auctions and with the average value of the reserve price of the contracts.

²We measure it as the maximum number of victories from the same firm.

³That is if the winning firm is registered in the municipality.

suggestive.

Studies that deal with organised crime have to deal with a relative amount of imperfection in terms of measurement and exogeneity. Even if this is a fundamental problem, we perform a series of robustness checks, placebo and falsification exercises that confirm the validity of our difference-in-differences estimates and which confirm the goodness of the treatment definition. This series of checks are discussed in detail in a dedicated section.

Lastly, we move our attention to the firms that win a procurement contract in an infiltrated municipality. We are not able to measure infiltration at the firm level, as it would be ideal. However, we classify as treated the firms that win a procurement contract in an infiltrated municipality, when they do so. Namely, we document what changes to these firms that are exposed to municipal infiltration, in an Intention-To-Threat (ITT) type of analysis. Then, we employ a flexible difference-in-differences design, in which we compare Winning-procurement-contract (WPC) firms in municipalities never infiltrated, to WPC firms in municipalities infiltrated, before and after the exposure to infiltration. Exploiting a separate set of detailed and confidential data, estimates reveal that, after the exposure, the probability of winning a procurement contract increases by 95.9%, and profits increase by about 15.21% for treated firms. Moreover, we observe a weak increase in labour, and a somewhat weak reduction in capital, while Total Factor Productivity (TFP) remains unaffected.

Overall, our analysis indicates that organised crime, when colluding with local elected officials, acts to distort the public good and redirects resources to its own benefit. Our paper tries to map this course in detail, starting from the public good allocation, via public procurement, to the receiving user, the firms.

This paper particularly relates to the following strands of the literature. First, it adds to the growing number of studies that measure the consequences of criminal organisations in the legal economy (Barone and Narciso, 2015; Pinotti, 2015; Le Moglie and Sorrenti, 2020; Calamunci and Drago, 2020; Tulli, 2021; Mirenda et al., 2022). A notable mention goes to Di Cataldo and Mastrorocco (2021), from which we borrow the main identification strategy. Our paper builds upon theirs, and, given our focus on public procurement and firms' outcomes, it helps to complete the inspection of the consequences of the capturing of local administrators on the allocation of public resources. Second, with the inspections of differential effects depending on the term characteristics and the party affiliation of the elected government, it contributes to the literature that links organised crime to politics (Daniele and Geys, 2015b; Buonanno, Prarolo, et al., 2016; De Feo and De Luca, 2017; Daniele and Dipoppa, 2017; Alesina, Piccolo, et al., 2019; Dipoppa, 2021; Baraldi et al., 2021). Our paper further extends the consequences that this connection implies for the public. Moreover, if on the one hand, the finding that our results are more pronounced when we look at colluded centre-right governments is not novel, on the other hand, the result on the term's length is so. Lastly, this paper contributes to the

series of studies that focus on the effect of government policies aimed at preventing overall criminal activities (Findley et al., 2015; Daniele and Geys, 2015b; Daniele and Dipoppa, 2022; Calamunci and Drago, 2020). More than evaluating the effect of a policy per se, our paper, by showing the consequences of the aforementioned collusive behaviour, can help policymakers in implementing effective laws at limiting its consequences.

The rest of the paper is organised as follows. Section 3.2 describes the application of law 164/1991 in the fight against organised crime and gives a brief overview of the legislation regarding the procurement process in Italy. Section 3.3 describes the research design, explains the identification strategy, presenting the data and the main estimating equation. Section 3.4 presents the results related to public procurement and briefly discusses them. Section 3.5 shows a series of robustness checks aimed at validating the analysis performed so far. Section 3.6 builds on the previous sections and presents the framework of the analysis related to firms, discussing the identification strategy, the data and the results. Section 3.7 concludes.

3.2 Institutional Background

Organised crime is known to have a somewhat solid presence throughout the Italian territory. According to the estimates reported in (Transcrime, 2013), the total annual earnings of organised crime account for roughly 1.7% of Italian GDP.

Moreover, its way of operating has evolved. From organisations that primarily employ violence and killings, to ones that would rather behave as an interest group, and hence aim at shaping and influencing the public policy to their advantage, and at infiltrating institutional entities to distort its allocation of resources (Le Moglie and Sorrenti, 2020; Di Cataldo and Mastrorocco, 2021). To tackle the rise of these more sophisticated methods, the institutions had to adapt their legal framework (Daniele and Dipoppa, 2022; Calamunci and Drago, 2020).

3.2.1 Law 164/1991

In response to a wave of violence and the ever-increasing infiltration into local governments, Italian legislators introduced *Law 164/1991*. It states that the national government can dissolve a municipal government "*when evidence is found regarding either direct or indirect connections between local administrators and the criminal organisation, or on ways that influence the electoral bodies [...] such that they expose to precariousness the correct functioning of the local services and the state of the public security.*"⁴.

The application of this law takes place via the following steps. First, either the police, be it local or state associated, or the magistrate conducts an independent investigation regarding

⁴www.gazzettaufficiale.it

the activities of the criminal organisation, taking note of the possible infiltration of it into a local government.

Then, the provincial prefect is notified, and a commission is established to assess the validity and the extent of such infiltration. This commission is composed of the vice-prefect and members of the Italian Anti-mafia Directorate (*DIA*). If the investigation confirms the evidence of infiltration by organised crime in the local entity, the commission and the provincial prefect draft a report that proposes its dissolution. Both the Ministry of the Interior, the Council of Ministers and the President of the Republic need to ratify this proposal to let the dissolution process begin. For an in-depth overview of the reasons behind a dissolution, we refer to Di Cataldo and Mastrorocco (2021).

Then, the ruling local government is removed from office, and its colluded members, along with the members of the criminal organisations, are arrested. Then, the national government appoints a team of external commissioners that rule the municipality for a period that goes from 12 to 36 months. Once this transition period terminates, regular elections are held. What is key to our analysis, is that the dissolution of a local government due to organised crime infiltration identifies a period in which the local administration and the criminals have colluded.

In the Appendix, we provide two figures closely following Di Cataldo and Mastrorocco (2021). Figure 3.1 shows the geographical distribution of these dissolutions from 1991 to 2019 at the provincial level. It is possible to note that the vast majority of them took place in the three regions that we focus on, namely Calabria, Campania and Sicily. Moreover, Figure 3.2 shows the distribution of these dissolutions over time. The dots represent the total number of dissolved municipalities in a year, while the lines identify those carried out in either Calabria or Campania or Sicily. The chart spans from 1991 to 2018, and the black lines and dots identify the sample of our analysis, namely from 2000 to 2012. Again, most of the dissolutions took place in the three regions under consideration.

3.2.2 Related literature that exploits Law 164/1991

Previous research has used law 164/1991 in studying organised crime.

Acconcia et al. (2014) exploits the dissolutions as a period of unanticipated contraction in local spending, causing the GDP at the province level to decrease.

Daniele and Geys (2015b) and Daniele and Geys (2015a) exploit the dissolution of local governments to assess their impact on the local political scenario, finding that it both decreases local turnout and the performance of incumbents and increases the educational achievement of newly elected politicians.

Galletta (2017) uses the dissolution to investigate possible spillover effects in neighbouring municipalities, finding a reduction in public investments. Still focusing on spillover effects, Tulli (2021) looks at the public procurement sector, showing that neighbouring municipalities select contracts with lower legal requirements and renegotiate fewer contracts.

Di Cataldo and Mastrorocco (2021) identifies the period of infiltration in the local government of a municipality, and it investigates the municipal local finance during such a period, providing evidence of the distortion of public machinery in favour of the criminal organisations, specifically in terms of a reduction in the collected revenues and of an increase in the spending for the construction and the dissolution to identify the end of the organised crime infiltration waste sectors.

Fenizia and Saggio (2020) exploits the dissolution of a local government to investigate the degree to which the commissioners can remove the previously detected organised crime infiltration. They find that the dissolution, and the subsequent ruling of the commissioners, causes the municipality to exhibit an increase in formal employment, industrial and real estate prices, local tax compliance and local infrastructure investment.

Lastly, Baraldi et al. (2021) uses it to identify the period of infiltration in the local government of a municipality, and it investigates whether the presence of the mafia increases the probability of observing a low-qualified politician run for the mayor position. They find that infiltration does not prevent high-qualified individuals to cast themselves as possible candidates for elections, but it biases citizens to vote for the low-qualified ones.

3.2.3 Public Procurement

In the sample period, that is from 2000 to 2012, the laws governing public procurement in Italy can be divided into two periods.

Before 2006, the main law applicable to public procurement is *Law 109/94*⁵. It mandates that local entities must outsource local works and select possible contractors via public tenders. The mayor of the municipality where the auction is being held appoints a manager within the local administration, with the task of preparing an official draft of the auctioned project, taking care of the advertisement, managing the auction itself, and paying the winning contractor as well as monitoring the state of the works in the future. Given the way we measure locally organised crime infiltration, that is via political capture, it is key that is the mayor, after the approval of the local council, that nominates the manager that administers the auction. Participation in the auctions can be mainly of two types: open auctions and private negotiations⁶. Open auctions are more ordinary and participation is granted to any firm satisfying a

⁵"*Legge Merloni*": *Legge 109/94*, with amendments ranging till 2002

⁶*Pubblico incanto* and *Trattativa privata* respectively.

set of minimum requirements. Private negotiations are by contrast more uncommon, and the contracting authority invites directly a restricted number of firms, with greater discretionary powers. The choice of one or the other participation mechanisms depends on the reserve price or the starting value of the auction, that is the maximum price at which the contracting authority is willing to pay for the auctioned works. The reserve price is set by the municipality, via the employment of a technical expert on the matter. The participating bidders offer a percentage reduction, a discount, on the reserve price⁷. Hence, an higher winning discount represents a lower cost for the municipality. An algorithm⁸ that aims at trimming abnormally high and low bids determines the winning bid. We can define this winning criterion as the "lowest price". Part of the terms of the procurement contract may be renegotiated in particular circumstances⁹, and such renegotiations are granted by the auction manager after the approval of the mayor.

After 2006, in response to EU law, the main law applicable to public procurement is *Law 106/2006*. Concerning participation in the auctions, the main distinction between open auctions and private negotiations remained substantially unchanged¹⁰. Concerning the criterion that determines the winner, aside from the "lowest price" criterion, a greater emphasis and accessibility has been given to the "economically most advantageous offer", where not only price (discount), but a spectrum of other characteristics are taken into consideration to award the contract¹¹. Specifically, this form of award criterion can be seen as a possible discretionary tool (Decarolis, Fisman, et al., 2020). However, later on in the analysis, we do not focus on this award criterion specifically as a discretionary tool.

For an extensive review of the specifics of the laws governing public procurement, we refer to (Decarolis and Giorgiantonio, 2015; Coviello and Gagliarducci, 2017).

3.3 Research Design

3.3.1 Identification strategy

In this section, we aim at explaining in great detail the identification strategy for the analysis related to public procurement outcomes.

The identification strategy is closely related to the one in Di Cataldo and Mastrorocco (2021).

⁷Technically called "rebate".

⁸It starts by trimming the top and bottom 10% of the bids. Then, excludes bids that exceed the average by more than the average deviation. The remaining highest bid determines the winning firm.

⁹Natural events such as floods, earthquakes, landslides etc.

¹⁰The main change relates to the threshold that enables a municipality to use a privately negotiated auction. Before 2006, this threshold corresponded to 750,000€. It has been then increased to first 1 million €, and then to 1.5 million€.

¹¹Before 2006, such a criterion was present, but exploitable under specific circumstances.

That is, it relies on a difference-in-differences design that exploits the time and geographical variation of the application of law 164/1991 over time. We rely on the dissolution of local governments and on the local elections to identify our treatment period, which is when a municipal government is experiencing organised crime infiltration. We provide in Figure 3.3 in the Appendix a timeline that aims at clarifying the identification strategy. Further, similarly to Di Cataldo and Mastrorocco (2021), this identifying setting is subject to various concerns.

First, it may be that the enforcement of law 164/1991 is imperfect, leading to erroneous dissolutions or undetected infiltration, introducing attenuation bias in the estimates. In terms of interpretation of the results, undetected infiltration might imply that we are measuring the effect of "low-skilled" criminal organisations. We cannot discard this possibility, and hence the estimated coefficients from our analysis should represent a lower bound of the true effect.

Second, there may be a correlation between our measure of infiltration and public procurement outcome variables, raising the issue of simultaneous causality¹². To face this concern, we demonstrate in Section 3.5, with different methodologies that factor in the problematics relative to a staggered DiD, that infiltrated and non-infiltrated governments followed similar trends with respect to the outcome variables inspected.

Third, we define infiltration as a binary event during local elections, but it may be a continuous process that started before elections, potentially contaminating our control group. We deal with this potential threat in Section 3.5, by both estimating a full dynamic specification and by excluding consecutive term mayors, namely mayors that were already in office before the election that starts infiltration¹³.

Lastly, it may be that the dissolution of municipal governments has been manipulated politically. This is unlikely since the dissolution process is started by the Italian Anti-Mafia Investigation Directorate (*DIA*), one of the most efficient investigative bodies of the Italian State, and the multiplicity of actors involved in the dissolution process as described in Section 3.2. However, to tackle this eventuality, we run the analysis excluding the year 2012 since, as it can be seen in Figure 3.2, there exists a spike in the number of dissolutions in that year, and we exploit unrelated to mafia dissolutions to see if the patterns unravelled emerge there as well.

3.3.2 Data

Public procurement. The main data source is *Telemat S.p.a*, a leading information provider in the Italian market for reselling information on public contracts. This confidential data set

¹²Criminal organisations decide to infiltrate municipalities because of particular procurement contracts and the peculiarities of these contracts.

¹³According to our definition.

runs from the year 2000 to 2012, allowing us to have access to 163'969 auctions, held in 1'350 municipalities, in the three regions of interest, namely Sicily, Campania and Calabria. The data contains information on, among others, where the auction has been held, the object of the auction, the number of firms that participate in the auction, the type of negotiation conducted, the reserve price, the winning discount and the name of the winning firm. Crucially for the firms' analysis, it contains also the names of the winners of the procurement process. Moreover, data can be categorised into three macro-categories. Namely, auctions related to works for construction, the supply of goods, and the allocation of services. Construction works refer to either the construction of new infrastructures or to the restoration of old ones. Supply of goods refer to the provision of a particular good i.e. paper. The allocation of services refer to the management of particular public services within the municipalities, i.e. the school bus. This is important because it allows us to estimate the effect of interest for these sub-categories, unveiling interesting heterogeneities.

Mafia Dissolved municipalities. The dates of the dissolution of the local governments are collected from the website of the Italian Ministry of the Interior. Specifically, it is collected from the decrees of application of Law 164/1991.

Electoral results. Data on electoral results were collected from the *Archivio Storico delle Elezioni* for the period that goes from 2000 to 2012. Moreover, we collected data on mayors' characteristics from the website of the Ministry of the Interior. These include age; sex; education; previous occupation; whether they have previous experience in office; party affiliation. The independent parties (*Liste Civiche*) deserve a particular mention. Especially in the later part of our sample, their diffusion increased substantially, especially in smaller municipalities. We manually code each of them into the political spectrum, whenever possible. This has been performed by first looking into the previous political affiliation of the main candidate of the party, and then by a manual search for each of these candidates in the news, to gather information on their political agenda.

Municipality characteristics We obtained several municipal-level time-varying characteristics from *ISTAT*, including municipal population, unemployment rate, percentage of industry employment and percentage of tertiary education degree holders. The data are drawn from the 1991, 2001 and 2011 *ISTAT* Censuses and interpolated over time.

Table 3.8.1 shows the summary statistics of the data at our disposal.

3.3.3 Estimating equation

The identification strategy is based on a difference-in-differences design. The effect of organised crime infiltration in the municipal government on public procurement outcomes is estimated by comparing municipal governments with and without infiltration, before and after

the infiltration begins. Namely, we will rely on the following estimating equation.

$$Y_{i,m,t} = \alpha_m + \beta Inf_{m,t} + \gamma X'_{m,2000} \cdot \tau_t + \tau_t + \epsilon_{i,m,t} \quad (3.1)$$

Where $Y_{i,m,t}$ denotes the outcome of interest in an auction i , in the municipality m and at time t . $Inf_{m,t}$ is the treatment variable, a dummy taking value one if a municipality is experiencing organised crime infiltration in the municipal government. Hence, β is the main coefficient of interest, which captures what is the effect of organised crime infiltration on public procurement outcomes in municipality m at time t . $X'_{m,2000}$ denotes a set of control variables taken at baseline (2000), which include a set of municipality characteristics. In turn, these are interacted with year-fixed effects. α_m and τ_t are municipality and year-fixed effects that conclude the specification. $\epsilon_{i,m,t}$ is an idiosyncratic error term. Standard errors are clustered at the municipal level.

Additionally, similarly to Di Cataldo and Mastrorocco (2021), we perform a matching exercise to try to minimise observed differences between treated and control groups. Specifically, we employ nearest neighbour propensity score matching identifying a unique control municipality for each treated one, across a set of characteristics taken at baseline (2000) to avoid post-treatment bias. This results in 180 distinct municipalities. Table 3.1 shows the post-matching differences between treated and control municipalities along the characteristics employed, highlighting the fact that none exhibits statistical significance.

Lastly, considering the clusters of dissolutions as shown in Figure 3.1, we include provinces times year fixed effects.

3.4 Results

In this section, we present the estimation results of the analysis that focuses on procurement outcomes. As stated previously, we investigate mainly two outcomes. First, the probability of observing an auction for which negotiations were private. Second, the winning discount of the auction.

The format of the table is as follows. Columns 1 to 4 focus on private negotiation, while 5 to 8 on the winning discount. Columns 1 to 4, and 5 to 8 respectively, differ in terms of baseline regression, focus on the matched sample, exclusion of the year 2012, and the inclusion of interacted province and year fixed effects. Each table is composed of four panels, that change depending on the macro-category we decide to restrict our analysis on. Namely, *Panel A* reports overall estimates, *Panel B* focuses on auctions related to constructions, *Panel C* centres on auctions related to the supply of goods, and *Panel D* highlights auctions related to the allocation of services.

3.4.1 Baseline results

Table 3.8.2 reports the results of Equation 3.1 on the main procurement outcomes of interest.

Focusing on the probability of having a privately negotiated auction, in *Panel A* it is possible to see that the coefficient of interest is consistently positive and statistically significant, with values that range from 0.028 to 0.041 depending on the specification. Concerning a mean outcome of 0.05, this corresponds to a sizeable increase that ranges from 56% to 82%. Moving to the other panels, it is possible to note that this effect is stronger in an auction whose focus relies on the provision of goods and the allocation of services. Specifically, for the provision of goods, the coefficient ranges from 0.06 to 0.099, with an implied increase that ranges from 66.67% to 110%, while for the allocation of services, the coefficients range from 0.028 to 0.041, with an implied increase that ranges from 35% to 51.25%.

Moving to the winning discount of the auction, in *Panel A* it can be noted that, even if there is no statistical significance, the pattern is consistently negative. Among the other panels, *Panel B* is of particular interest. Specifically, for auctions related to constructions, the coefficient of interest is negative and statistically significant, with values that range from -0.17 to -0.26 depending on the specification. Regarding the mean outcome, this implies a sizeable reduction that ranges from -7.72% to -11.81% . It is worth mentioning that a lower winning discount means a lower discount applied to the local government of a municipality, and hence a higher cost and monetary loss for it.

All in all, these pieces of evidence point in the direction that, while infiltrated, municipalities increase the number of private negotiations by quite the amount, and at the same time, induce the reduction of the winning discount of the auction, hence corrupting the level of local competition. In the last sub-section of this section, we dig deeper into what can be the consequences of these results.

3.4.2 New local governments and term limit

In this sub-section, we start exploring possible heterogeneous effects at place in the sphere of political economics. Specifically, we restrict the analysis to local colluded local governments that: got formed and elected for the first time in office; are subject to a term limit.

Table 3.8.3 shows the results of Equation 3.1 on the main procurement outcomes of interest, focusing on local governments that are created and elected for the very first time.

From a political economics perspective, one could expect that newly elected governments should be less corruptible, given that they will have to face the electorate evaluation at the end of the mandate, which will determine the likelihood of a second term (Besley and Case, 2003;

Ferraz and Finan, 2011). Alternatively, one could hence expect that the newly formed government, which is infiltrated, is not accountable to the electorate, but to the criminal organisation that "elected" it instead. Hence in such a case, one should see a similar pattern with respect to the main analysis.

Focusing on the probability of having a privately negotiated auction, the pattern in Table 3.8.3 is very similar to the one in Table 3.8.2. Considering *Panel A*, the coefficient of interest is still positive and statistically significant across all the specifications, with coefficients that vary from 0.032 to 0.047. Concerning the mean outcome, this implies an increase that ranges from 64% to 94%. Inspecting the other panels, all of the coefficients in them are positive, but only in *Panel D* these are consistently statistically significant, with values that range from 0.037 to 0.052 depending on the specification. Regarding the mean outcome, the coefficients translate into an increase in the outcome of interest that ranges from 46.25% to 65%.

Shifting to the winning discount of the auction, the pattern seen in Table 3.8.2 is reinforced in Table 3.8.3. *Panel A* shows coefficients of the main variable of interest that are consistently negative, with weak signs of statistical significance. On the other hand, *Panel B*, which focuses on constructions-related auctions, exhibit still coefficients with a negative pattern, but that are accompanied by a stable statistical significance. Specifically, the values of the coefficients range from -0.017 to -0.042 and, with respect to the mean outcome, they imply a decrease in the winning discount that vary from -7.72% to -19.09% .

To investigate another interesting dimension related to the political economics environment, we restrict the analysis to elected governments that are subject to the term limit and observe how they behave while being in collusion with criminal organisations. We perform this exercise in Table 3.8.4. For both the outcomes of interest, excluding *Panel C* for the privately negotiated auction one, there is no clear pattern emerging.

Overall, it seems that the classic political accountability hypothesis concerning just-elected politicians does not hold in this context. Moreover, the fact that the estimates of Table 3.8.3 are similar and if anything stronger than in Table 3.8.2, signals that this is the main source of statistical power of our result along this dimension. This is further reinforced by the weak evidence shown in Table 3.8.4. In the last subsection of this section, we engage in a discussion aimed at explaining these differences.

3.4.3 Party heterogeneous effects

We proceed into the inspection of heterogeneous effects in the sphere of political economics by investigating the party affiliation of an elected, colluded, local government. Specifically, we restrict the infiltration treatment to when it happens with local governments affiliated with parties of the right, and when it does so with local governments affiliated with parties of the

left respectively.

Table 3.8.5 shows the results of the analysis on the main procurement outcomes of interest, focusing on local government, colluded, that are affiliated with a right party.

Focusing on the privately negotiated auctions, *Panel A* still shows a stable pattern of positive coefficients, however without a corresponding stable one of statistical significance. Inspecting the specific macro-categories of the content of the auctions, *Panel D* stands out. When focusing on auctions related to the allocation of services, the coefficients are still positive and also consistently statistically significant, with values that range from 0.038 to 0.042. Relating them to the mean outcome, they imply an increase that ranges between 47.5% and 58.75%, consistent with previous tables.

Looking at the winning discount, *Panel B* stands out, where the coefficients are stably negative and statistically significant, with values that vary between -0.019 and -0.042 . Comparing them to the respective mean outcome, they imply a decrease that ranges between -8.63% and -19.09% .

Table 3.8.6 shows the results of the analysis on the main procurement outcomes of interest, focusing on local government, colluded, that are affiliated with a left party.

Inspecting the privately negotiated auctions outcome, *Panel C* sticks out, with a series of coefficient of interest values that are both positive and stably statistically significant. The values range from 0.11 to 0.161 and they imply a sizeable increase that varies between 115% and 178% depending on the specification considered. *Panel D* follows a quite similar pattern, but with a weaker outline of statistical significance.

Inquiring about the winning discount of the auctions, there is no particular pattern that emerges from any of the panels and specifications displayed.

Overall, when local governments collude with criminal organizations, both centre-right and centre-left affiliated governments act to favour their partners in crime, distorting and manipulating the local competition. Effects for centre-right affiliated governments are more pronounced, especially considering the sector of construction, for which the results are absent when considering centre-left affiliated governments. Again, we postpone the interpretation of these differences to a dedicated sub-section.

3.4.4 Other outcomes

Aside from the probability of having a privately negotiated auction and its winning discount, we investigate also other outcomes related to public procurement. Specifically, we also consider the volume of procurement in a given municipality and year, the number of bidders that participate in the auction, the maximum number of victories of the same firm in a given mu-

nicipality and year, and the probability of observing a winning firm that is locally registered in the municipality.

Volume of procurement. Once a criminal organization and a local government collude, it is interesting to investigate whether the volume of procurement for that municipality in that year changes. It may be that criminal organisations are interested in increasing it, having more auctions to participate in, and possibly winning. On the other hand, it may well be that the overall number of auctions remains unaffected or even decreases, and what changes is the value of the contract, possibly made higher so that more resources can be extracted by the criminal organisation from the public.

According to this, we measure the volume of procurement in a given municipality and year in two ways. First, we count the absolute number of auctions that have been held in a municipality in a year. Second, we take the average of the value of the contracts, that is the starting values of the auctions, in a municipality in a given year. Table 3.2 shows the results of this exercise. It can be seen that there is no particular pattern emerging for either of the outcome variables considered. If anything, the coefficients for the number of auctions in *Panel D* exhibit a negative and somewhat statistically significant pattern. However, this design is not corroborated when looking at the average value of the starting value of the auctions.

Overall, we conclude that organised crime, when infiltrating local governments, does not affect the volume of the procurement of the municipality.

Number of bidders. Another outcome worth inspecting is the number of bidders participating in the auction when the municipality is infiltrated. On the one hand, one can expect that firms, that would usually participate, observing the rigged, corrupted and potentially dangerous environment in which they would have to enter, decide not to do so, and hence do not participate. On the other hand, one can imagine that firms affiliated with organised crime collude, and flood the auction to curb the competition of honest firms.

Table 3.3 shows the results of our baseline estimation on the outcome of interest being the number of bidders participating at an auction, in a municipality, in a year. The coefficients of interest are negative and with a pattern of statistical significance somewhat, in line with the first hypothesis outlined previously. The values range from -14.92 to -21.749 and, with respect to their mean outcome, this implies a reduction in firms participating in an auction that ranges from 33.23% and 48.44 %. Having said that, it is notable the loss in observations and hence in data quality. Hence, we cannot say that these results are conclusive but rather just suggestive instead.

Max. number of victories and local winner. Lastly, the other two outcomes that we are the following. First, we focus on the maximum number of victories achieved by the same firm in a given municipality and year. In a corrupted and distorted environment that the infiltration

of organised crime creates, one can imagine that this measure, aimed at capturing a level of competition, should increase, as firms that are affiliated with the criminal organisation are favoured. Second, we focus on the probability of observing a winning firm that is registered in the municipality where the auction has been organised and held. On the one hand, one can expect that this measure is positively affected by the infiltration of organised crime, as its members favour and/or create "*ex novo*" firms in the infiltrated municipality. On the other hand, one can think that this measure is negatively affected by the infiltration, as organised crime members bring firms from outside the infiltrated municipality.

Table 3.4 shows the coefficients of our baseline estimation for the two outcomes of interest. For either variable of interest, no pattern emerges. On the one hand, the coefficients associated with the maximum number of victories achieved by the same firm are consistently positive across the panels, with however weak statistical significance attached to them. On the other hand, the coefficients related to the probability of having a local winner are consistently negative across the panels, with as well weak statistical power with them. Hence, even if potentially interesting, we cannot conclude much from these results.

3.4.5 Discussion

In this sub-section, we wish to briefly summarise our findings so far, and aim at providing an interpretation for them.

In our baseline analysis, we find that infiltration of organised crime in the local government of a municipality is associated with greater use of discretionary awarding procedures, in the form of a privately negotiated auction, and with a lower winning discount. We unpack these results across procurement macro-categories, finding that auctions related to the provision of goods and the allocation of services are driving the results associated with the private negotiation, while auctions related to public constructions drive the ones associated with winning discount.

Specifically to the probability of having a privately negotiated auction, during the infiltration in the local government of a municipality, this measure of discretionary selection criteria exhibits an increase that ranges from 56% to 82% depending on the specification considered. Related literature on discretion corruption (Coviello, Guglielmo, et al., 2018; Decarolis, Fisman, et al., 2020) has highlighted the fact that discretion by itself does not necessarily imply corruption. In fact, in normal settings, it can facilitate the selection of the most suited bidder for the municipality to assign the contract related to the auction. In our setting, however, where there is clear evidence of collusion between local politicians and members of a criminal organisation, the increase in the exploitation of this discretionary tool is reasonable, and it is aimed at facilitating the victory of firms associated with organised crime. Hence, we connote

this increase in a negative sense, as it damages the level of competition in the local public procurement market.

Regarding the winning discount of an auction, the infiltration of organised crime in the local government of a municipality reduces it, implying a direct monetary loss for the municipality. Recalling the coefficients related to this effect range between -7.72% and -11.81% depending on the specification, taking the average value of a procurement contract in a municipality in a year, that is of 298'034.7€, we can conclude that on average the cost for the municipality varies between 23'008.28€ and 35'197.9€, that in per capita terms translates into a range of 2.18€ and 3.33€, and in per auction terms it translates into a range of 2'138.32€ and 3'271.18€. These estimated costs give a sense of how much resources organised crime extracts from the local municipality.

We then explore heterogeneities related to the political economics environment, finding the following. Investigating separately infiltrated both newly formed and elected governments and governments subject to a term limit, we find that in the former sample, the estimates are similar and or stronger than in the baseline, while in the latter sample, the estimates are partially in line with the baseline and weaker in terms of statistical power.

Related to this, we find evidence that is not in line with the classic political accountability hypothesis (Besley and Case, 2003). It seems that an alternative more plausible explanation is the one where once a newly formed government is elected, which is infiltrated, is not accountable to the electorate, but to the criminal organisation that "elected" it instead. Hence, the local government starts from the very first legislature to corrupt the level of local competition, damaging the public good. Moreover, we find weak at best evidence of any effect when restricting the analysis of colluded governments that are subject to a term limit. We conjecture that this may be because, since colluded governments tend to operate right after their election, increasing their probability of being detected, they, in turn, decrease the one of making it to their last term in office.

We further look for heterogeneities related to the political economics sphere, looking at the party affiliations of the colluded governments. We find similar estimates both for centre-right affiliated governments and centre-left affiliated ones. However, centre-right ones have estimates that are more similar to the baseline ones, especially in terms of auctions related to public constructions.

The fact that the results are more pronounced for local governments affiliated with the centre-right does not come as a surprise. Related literature has highlighted the relationship between organised crime and the centre-right, mainly in terms of voting outcomes (Buonanno, Prarolo, et al., 2016; De Feo and De Luca, 2017; Dipoppa, 2021).

Lastly, we investigate other outcomes of interest finding that: criminal organisations do not

seem to affect the overall volume of procurement when infiltrating a municipality; they do affect the number of firms participating in the auction, even though estimates are suggestive at best; there is no clear statistical pattern emerging from estimate related to the investigation of the maximum number of victories from the same firm, and of the probability of having a local winner.

3.5 Robustness checks

In this section, we present a series of tests aimed at assessing the robustness of our estimates.

3.5.1 Parallel trend - full dynamic specification

The main identifying assumption in a difference-in-differences model is that of parallel trends. Namely, absent the treatment, treatment and control groups would have been on a parallel trend. Hence, we estimate the following event-study specification to formally test whether infiltrated and non-infiltrated municipalities exhibit any statistically significant difference before infiltration.

$$Y_{m,t} = \alpha_m + \sum_{p=-5}^3 \beta_p Inf_{m,p} + X'_{m,t} + \tau_t + \epsilon_{m,t} \quad (3.2)$$

Where $Y_{m,t}$ represents the procurement outcome of interest averaged at the municipality m and year t level. $Inf_{m,p}$ are the relative time to treatment dummy variables, which take value equal to 1 for treatment municipalities if time t is p years away from treatment. Note that, to adapt our treatment to an event-study design, $p = 0$ corresponds to the first year of infiltration. We inspect up to $p = 5$ years before infiltration and up to $p = 3$ years after the beginning of it and the omitted period is $p = -1$. α_m and τ_t are municipality and year-fixed effects that conclude the specification. $\epsilon_{m,t}$ is an idiosyncratic error term.

Figure 3.8.1 show the coefficients estimate from Equation 3.2 for respectively the main procurement outcomes of interest, that is the probability of observing a private negotiation and the winning discount of the auction. Each point in these figures refers to the estimated coefficient for that year. Reassuringly, in all the figures there is no evidence of a statistically significant difference between the treatment and control group in the pre-treatment period. Moreover, sub-Figures (a) and (b) of Figure 3.8.1, namely the ones related to the winning discount, exhibit a consistent negative trend in the years after the beginning of the infiltration, in line with our main estimates. Similarly, sub-Figures (c) and (d), that is the ones related to the probability of having a privately negotiated auction, show a weak positive trend in the post-treatment

period, in line with our main estimates somewhat.

3.5.2 Difference-in-differences with staggered timing

We then move to the extensive literature that has recently risen in reviewing the difference-in-differences estimation design, concerning the case when there exists variation in the timing of the treatment. Specifically, we perform the following diagnostics.

We perform the Bacon decomposition (Goodman-Bacon, 2021) for the results related to our main outcomes of interest. Figure 3.4 reports the results of this test and shows that most of the weights come from the comparison between treated units versus never treated ones.

We implement the estimation method developed in Chaisemartin and D'Haultfoeuille (2020), hence showcasing an alternative estimation for the event-study specification. Figure 3.5 shows the results of this procedure. Estimates are similar to the ones of Figure 3.8.1, and, importantly, there is no sign of statistically significant pre-trends.

Lastly, we also develop the estimation developed in Borusyak et al. (2021), further trying an alternative estimation of our event-study specification. Figure 3.6 shows the results of this procedure. Again, estimates are similar to the ones of the two previous figures, and there is still no sign of a statistically significant pre-trend.

3.5.3 Consecutive terms mayors

A potential concern in the treatment definition is represented by mayors who remain appointed for two consecutive terms in a local legislature. If the second term corresponds to the one where infiltration is detected, which then results in the dissolution of the local government, how we define the infiltration periods would assign the first term to the control group. Even if we do not rule out possible imperfections in treatment assignments, as discussed in Section 3.3, such an occurrence would be a likely cause of contamination of the control group. Hence, we identify all consecutive-term mayors and we re-run the analysis by excluding from the sample the first term if the second term then results in the dissolution of the local government for organised crime infiltration.

Table 3.8.7 in Columns (2) and (5) reports the results of the analysis, showing that the treatment variable has very similar coefficients to the ones depicted in Table 3.8.2. Moreover, we investigate the legislature before the one infiltrated, to rule out further possible sources of endogeneity. Reassuringly, none of the coefficients related to the legislature before the infiltrated one exhibit values similar to the ones of our main estimates. If anything, the only pattern that emerges is a positive and statistically significant set of coefficients related to the winning discount of the auction.

3.5.4 Political Business Cycle

A possible concern is that our findings could be confounded by political business cycles. We tackle this issue non-parametrically by creating an election-year variable that represents the count for each year of each legislature. We then replicate our main analysis including a set of dummy variables that take value 1 for each value of the election year. Table 3.8.8 shows the coefficients resulting from this estimation. Our main findings remain stable across specifications.

3.5.5 Organised crime - unrelated dissolutions

One final concern related to the changes in procurement outcomes of infiltrated municipalities is that they may not be caused by the infiltration, but they might be driven by some innate characteristics of dissolved local governments instead. So far, in our analysis, we have shown that the results are robust to the inclusion of municipalities' characteristics and fixed effects. However, if there were to be unobservable characteristics of dissolved local governments that correlate with changes in the public procurement outcomes inspected so far, then this can be an issue for our analysis.

To test this, we exploit the dissolutions of local governments for reasons unrelated to organised crime infiltration to perform a placebo exercise. These reasons include the failure to approve the financial budget, the resignation of the mayor, the resignation of more than 50% of the council member, and the vote of no confidence in the mayor's leadership.

We use these dissolutions as proxies for unobservable characteristics of dissolved government, and we re-estimate Equation 3.1 using *MUD*, that is mafia unrelated dissolutions, as the main variable of interest, a dummy variable that takes value equal to 1 for the years of a local legislature later dissolved for mafia-unrelated reasons. If our main results shown so far were driven by characteristics common to dissolved local governments, we would expect to observe similar effects in the framework just described.

Table 3.8.9 shows the results of this placebo test for the main procurement outcomes inspected. Reassuringly, the patterns that emerge from it are not related to the ones that we find in our main analysis. Focusing on the probability of having a privately negotiated auction, *Panel C* showcases a couple of negative and statistically significant coefficients. However, our main estimates in this environment are positive. Concerning the winning discount of an auction, the coefficient in *Panel D*, Column (4) is negative and statistically significant. However, our main estimates related to the winning discount do not pertain to the allocation of services.

3.6 Winning Firms

So far we have provided evidence of how organised crime affects the public procurement process once it manages to successfully infiltrate the local government of a municipality. In this section, we expand on the previous ones and we aim to characterise the firms that win public procurement contracts.

3.6.1 Identification strategy and data

To identify the firms that are exposed to organised crime's infiltration we proceed in the following way.

First, from the data that we have on procurement, we know the names of the firms that win a particular auction in a given municipality, in a given year. We also know whether that municipality in a given year is experiencing organised crime infiltration. Then, we code as exposed to infiltration the set of firms that win a procurement contract in an infiltrated municipality, when they do so. Namely, we do not observe the beginning of infiltration at the firm level, but we document what changes to those firms that are exposed to the municipal one, in an Intention-To-Threat (ITT) type of analysis. It is worth mentioning that, given that we do not observe infiltration at the firm level, this methodology does not allow us to provide clear interpretations for potential results, as they are, despite insightful, suggestive.

We employ a flexible difference-in-differences design in which we compare WPC firms in municipalities never infiltrated, to WPC firms in municipalities that infiltrated, before and after the exposure to infiltration.

Namely, we will rely on the following estimating equation.

$$Y_{j,t} = \alpha_j + \sum_{p=-5}^3 \beta_p Inf_{m,p} + \tau_t + \epsilon_{j,t} \quad (3.3)$$

Where $Y_{j,t}$ is the outcome of interest for a firm j in year t . Inf_p are the relative time to treatment dummy variables, which take value equal to 1 for treatment municipalities if time t is p years away from treatment. Note that $p = 0$ corresponds to the year in which a firm j wins a procurement contract in a municipality that is experiencing organised crime infiltration. We inspect up to $p = 5$ years prior to the victory and up to $p = 3$ years after it. α_j and τ_t are firm and year fixed effects, and $\epsilon_{j,t}$ is an idiosyncratic error term that completes the specification.

To limit observed differences between treated and control groups, we perform a matching exercise similar to the one in the public procurement analysis. Specifically, we employ nearest neighbour propensity score matching identifying a unique control firm for each treated one, matching on the total of assets held and on total revenues. This results in 368 distinct

firms.

For what concerns the outcomes, we combine our data on procurement outcomes with data provided by *Cerved*¹⁴. After a matching exercise that exploits the firms' names, we have access to a highly detailed balance sheets information set for about 4'282 winning procurement firms from 2000 to 2012, in the three regions of interest. We start by investigating the cumulative number of procurement contracts won in a year by a firm, as well as their cumulative average values. Then, in line with the most recent literature on organised crime and firms' performance, we focus on their profits, here measured by the Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA), labour, capital¹⁵ and Total Factor Productivity (TFP). Importantly, due to data availability, we focus on WPC firms that operate in the construction sector. Hence, the estimates shown from now on relate to only this macro-procurement category. Table 3.8.10 shows the descriptive statistics of these firms.

3.6.2 Results

Figures 3.8.2 and 3.8.3 show the results of Equation 3.3 on the firms' level outcomes inspected. Specifically, Figure 3.8.2's sub-Figures (a) and (b) focus on the cumulative number of procurement contracts won by a firm in a year, while (c) and (d) focus on the cumulative average value of those won procurement contracts. Similarly, Figure 3.8.3's sub-Figures (a) and (b) focus on the EBITDA as an outcome of interest, with (a) showing the analysis on the whole sample while (b) on the matched one. Similarly, sub-Figures (c) and (d) focus on labour, (e) and (d) on capital, and (g) and (h) on TFP.

First, following the victory of a procurement contract in an infiltrated municipality, treated firms observe an increase in procurement contracts won of around 1 more than control firms. This effect peaks at year 0 when they actually win the contract and mildly increases in the years after that. Specifically, the average value of the coefficients between 0 and +3 is 1.596, which, with respect to a mean outcome of 1.663, implies an increase of roughly 95.9%. Importantly, for both sub-Figure (a) and (b), the parallel trend assumption is valid, as the years before the exposure to infiltration do not show any statistically significant coefficients. This result is somewhat confirmed if looking at the cumulative average value of procurement won. Similarly to the previous outcome, at year 0, the exposure one, treated firms exhibit a positive peak in this outcome. Specifically, the average value of the coefficients between 0 and +3 is 2.887¹⁶, which implies an increase in the outcome of about 40.9%, given a mean outcome of 7.066. However, inspecting the coefficients prior to the exposure, and hence assessing the parallel trend assumption, we find that for sub-Figure (c) their trend looks less than ideal.

¹⁴www.cerved.com

¹⁵Note that these outcomes are deflated using KLEMS (2012) deflators and divided by 1'000€

¹⁶100'000€.

Leading coefficients exhibit a negative and at times statistically significant trend, which could be interpreted as treated firms being less efficient at winning higher-valued procurement contracts. Sub-Figure (d) is more reassuring in this regard, as well as sub-Figures (c) and (d) of Figure 3.7, where we replicate this exercise using the (Chaisemartin and D'Haultfoeuille, 2020) estimation techniques.

Second, following the victory of a procurement contract in an infiltrated municipality, treated firms exhibit a higher amount of profits than the control counterpart. Specifically, focusing on sub-Figures (a) and (b), the post-treatment coefficients exhibit a clear positive trend. The average value of coefficients between 0 and +3 is 32.634, which, with respect to a mean outcome of 214.625€ (1'000 €), implies an increase of 15.21%. This is a substantial increase, given that: we exploit the within-firm variation in the treatment exposure; the rest of the control group is composed of winning-procurement-contracts firms, as opposed to participants as well. This result is in line with money-laundering behaviour, performed via the over-reporting of profits in the balance sheets. In fact, related empirical literature shows that firms, when infiltrated by criminal organisations, typically shows abnormal profits (Daniele and Dipoppa, 2022; Mirenda et al., 2022). Alternatively, higher profits in treated firms can be explained by the fact that they won procurement contracts with an on average lower discount, which in turn allows them to have extra returns. However, given our ITT identification setting, there is no concluding evidence of such an interpretation, as they remains suggestive at best. Importantly, before the exposure to the infiltration of a local government, treatment and control groups do not show any sign of statistical difference between one and the other.

Moving to the factors of production, sub-Figures (c) and (d) focus on labour as the inspected outcome. The victory of a procurement contract in an infiltrated municipality is associated with a weakly positive trend in the employment level. Specifically, taking the average values of the post-treatment coefficients, that is 29.89, and relating it to a mean outcome of 382.98€ (1'000€), this implies an increase of about 7.8%. However, the coefficients are mostly non-statistically significant. On the other hand, sub-Figures (e) and (f) focus on capital as the inspected outcome. Treatment exposure is associated with a negative trend in the volume of capital. This is particularly notable in sub-Figure (f), where, taking the average values of the post-treatment coefficients as 59.74, and relating it to a mean outcome of 839.51€ (1'000€), this implies a decrease of about 7.1%.

These results are reconciled with the literature that views an increase in formal employment in organised crime-associated firms as a tool to gather social consensus in the local territory (Sergi and Lavorgna, 2016). Moreover, the decrease in the capital stock for such firms can be interpreted as a sign of short-term interest of criminals in these firms (Mirenda et al., 2022), and by the fact that capital stock is of no use for money laundering activities. Again, there is no evidence of a statistically significant coefficient in the pre-treatment period.

Having observed these changes in labour and capital, it is worth investigating the following question. Do treated firms become more productive? sub-Figures (g) and (h) focus on TFP as an inspected outcome. After the victory of the procurement contract in the infiltrated municipality, there is no evidence of a particular pattern and/or of statistically relevant significance. This result is in line with the previous findings. Namely, it provides further suggestive evidence that there were no clear management/business decisions behind the changes

Table 3.5 shows the previously plotted coefficients for each of the inspected outcomes. Moreover, Figures 3.7 and 3.8 apply the (Chaisemartin and D'Haultfœuille, 2020) machinery in replicating our results. The pattern is shown in the standard TWFE model held in this setting as well.

3.7 Conclusion

In this research project, we study what are the consequences of collusion between elected local officials and members of organised crime in the public procurement sphere. We measure this collusion thanks to the application of law 164/1991, which dissolves the local government of a municipality upon evidence of this collusion. In practice, we employ a difference-in-differences estimation strategy, that is based on the comparison of public procurement outcomes between municipalities never colluded and municipalities infiltrated, before and during the infiltration period.

We find that the infiltration distorts the mechanisms of the local procurement process, in terms of a warped use of discretionary selection procedures and the price charged to the local administration. These results are heterogeneous across macro procurement categories.

Moreover, we explore heterogeneities related to the political economics sphere. Specifically to this, we find that first-ever elected officials, rather than ones subject to a term limit, are the main drivers of our findings. This suggests that criminal organisations would rather directly elect governments and induce them to act to their benefit, rather than infiltrate already existing ones. Further, we investigate heterogeneous effects based on the party affiliation of the colluded local government. The estimates more in line with the main specification are ones of local government affiliated with a centre-right party.

Lastly, we investigate other outcomes related to public procurement, finding that the overall volume of procurement is unaffected by the infiltration, there is no effect either on the concentration of procurement contracts won or on the local origin of the winner, and there exists a suggestive negative association with the number of firms participating at the procurement process.

We perform a series of robustness checks and changes in the specification that involve the va-

lidity of the difference-in-differences estimation strategy when implemented with a staggered timing, and a set of placebo and falsification exercises based on the context in which the infiltration of organised crime in local governments take place. All in all, these robustness tests validate our analysis.

After the investigation of the public procurement sphere, we extend the reach of our analysis, by looking at the set of firms involved in it. Specifically, we inspect the performances of firms that are exposed to the infiltration that we measure. In practice, we estimate a flexible difference-in-differences, where we compare WPC¹⁷ firms in a non-infiltrated municipality, to WPC firms in infiltrated municipalities, before and after this victory.

We document an increase in the cumulative number of procurement contracts won in a year by exposed firms, accompanied by an increase in exposed firms' profits, that goes in parallel with a weak increase in labour and a decrease in capital.

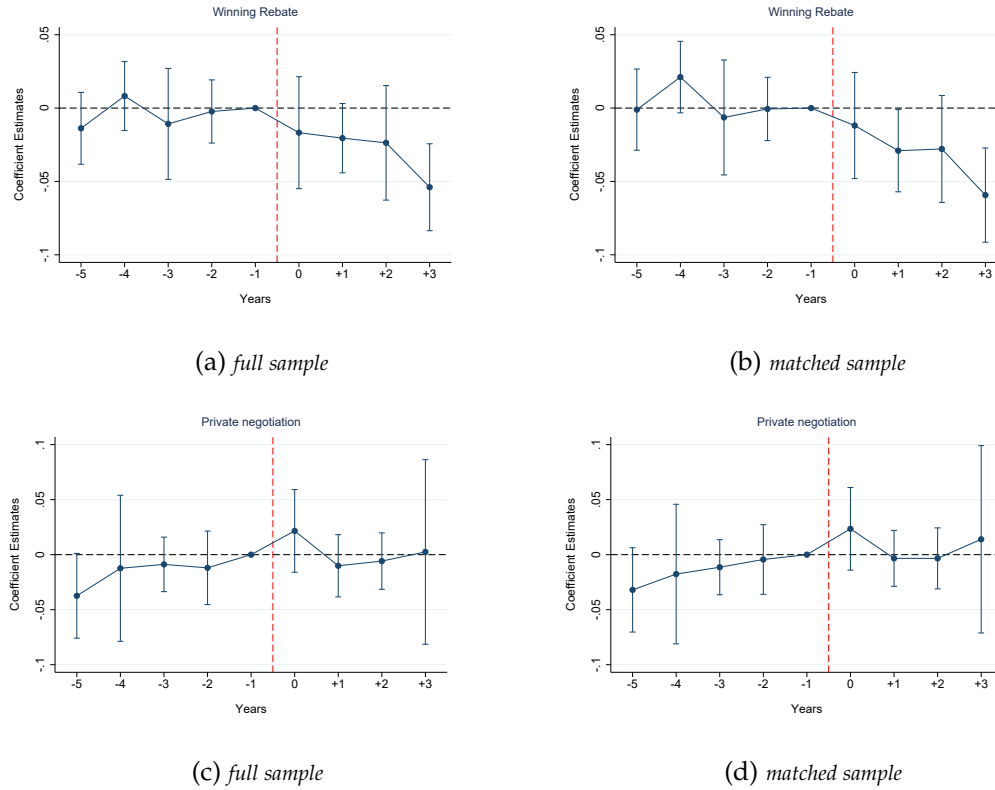
Overall, in our research project, we describe the consequences of the collusion of local elected politicians and members of organised crime, on the public procurement process, which starts from the allocation of the public contract and ends with the firm's performance evaluation. Our analysis, by shedding light on this course of events, aims at helping policymakers in implementing the most appropriate tools to guarantee the security of the public good.

¹⁷Winning-procurement-contracts.

3.8 Figures and Tables

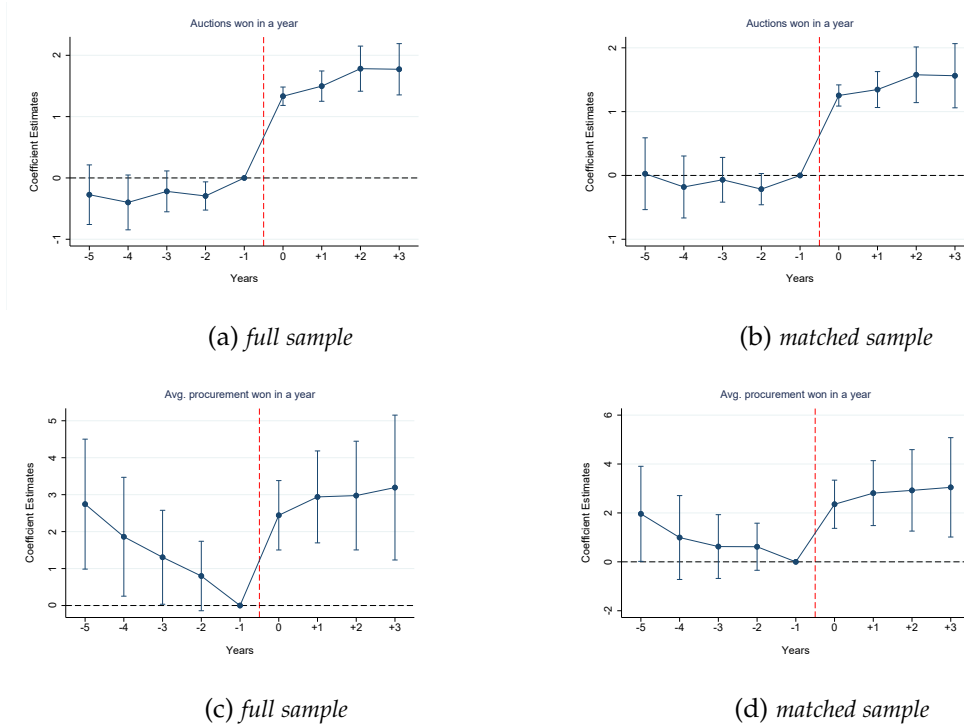
3.8.1 Figures

Figure 3.8.1: Full dynamic specification - all types of contracts



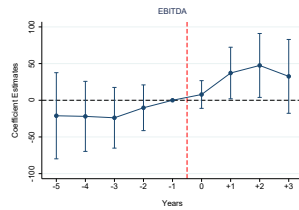
Note: Event study. Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to 5 years prior to and 3 years after the election of the infiltrated government. All years after the dissolution of the infiltrated governments are excluded. The omitted category is the first year before the infiltration. The estimation includes time and municipality dummies. Standard errors clustered at the municipal level. Note that rebate = discount.

Figure 3.8.2: Full dynamic specification - firms outcomes (1)

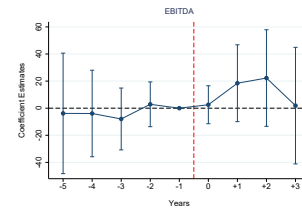


Note: Event study. Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to 5 years prior to and 3 years after the victory of a procurement contract in an infiltrated municipality. All years after the dissolution of the infiltrated governments are excluded. The omitted category is the first year before the exposure. The estimation includes time and firms dummies. Standard errors clustered at the firm level.

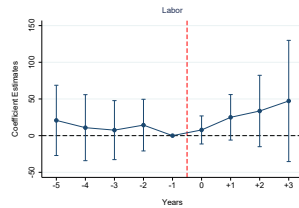
Figure 3.8.3: Full dynamic specification - firms outcomes (2)



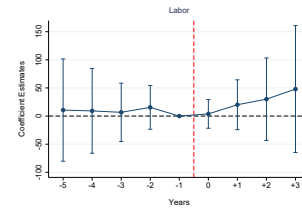
(a) *full sample*



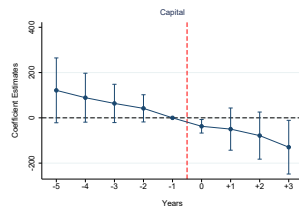
(b) *matched sample*



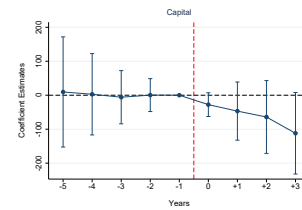
(c) *full sample*



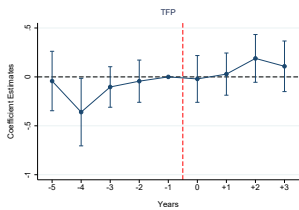
(d) *matched sample*



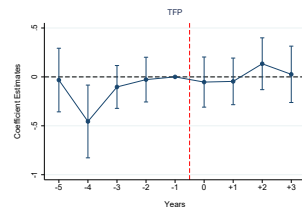
(e) *full sample*



(f) *full sample*



(g) *matched sample*



(h) *matched sample*

Note: Event study. Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to 5 years prior to and 3 years after the victory of a procurement contract in an infiltrated municipality. All years after the dissolution of the infiltrated governments are excluded. The omitted category is the first year before the exposure. The estimation includes time and firms dummies. Standard errors clustered at the firm level.

3.8.2 Tables

Table 3.8.1: Descriptive statistics

	N	Mean	SD	p10	p50	p90
<i>Auctions characteristics</i>						
N of auctions	15228.00	10.77	45.05	1.00	4.00	16.00
Avg. taring value	15228.00	2.98	25.30	0.23	1.26	5.93
Constructions auctions	163969.00	0.60	0.49	0.00	1.00	1.00
Goods auctions	163969.00	0.12	0.32	0.00	0.00	1.00
Services auctions	163969.00	0.29	0.45	0.00	0.00	1.00
Private negotiations	147201.00	0.05	0.22	0.00	0.00	0.00
Winning discount	65294.00	0.21	0.15	0.02	0.22	0.36
Max wins same firm	9669.00	0.29	0.27	0.06	0.20	0.50
Local winner	8003.00	0.09	0.22	0.00	0.00	0.33
<i>Treatment characteristics</i>						
N. of infiltrated cities	116	—	—	—	—	—
<i>Cities Characteristics (in 2000)</i>						
Sicily	15228.00	0.28	0.45	0.00	0.00	1.00
Calabria	15228.00	0.29	0.46	0.00	0.00	1.00
Campania	15228.00	0.43	0.49	0.00	0.00	1.00
Population (log)	15228.00	8.35	1.16	6.96	8.20	9.94
Share unemployed	15228.00	0.24	0.08	0.14	0.23	0.35
Share emp. industry	15228.00	0.26	0.08	0.17	0.26	0.36
Share emp. commerce	15228.00	0.07	0.06	0.02	0.05	0.12
Share emp. tertiary	15228.00	0.01	0.01	0.00	0.01	0.02
Share emp. agriculture	15228.00	0.15	0.11	0.04	0.13	0.30
Share highly educated	15228.00	0.26	0.07	0.18	0.25	0.35
<i>Political characteristics</i>						
Term limit	15228.00	0.34	0.47	0.00	0.00	1.00
First term	15228.00	0.61	0.49	0.00	1.00	1.00
Centre-right	15228.00	0.21	0.41	0.00	0.00	1.00
Centre-left	15228.00	0.37	0.48	0.00	0.00	1.00

Notes: this tables shows descriptive statistics of the main variables at our disposal.

Table 3.8.2: Auction outcome variables and mafia infiltration effects.

	Private negotiation		Private negotiation		Winning discount		Winning discount	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A - All types of work</i>								
<i>Infiltration</i>	0.035** (0.016)	0.028** (0.012)	0.039** (0.015)	0.041** (0.019)	-0.011 (0.012)	-0.005 (0.009)	-0.013 (0.013)	-0.004 (0.008)
<i>N</i>	131500	22396	124491	131500	58161	10458	55525	58161
<i>adj. R²</i>	0.056	0.089	0.057	0.062	0.230	0.245	0.238	0.264
<i>Mean outcome</i>	0.05	0.05	0.05	0.05	0.21	0.21	0.21	0.21
<i>Panel B - Constructions</i>								
<i>Infiltration</i>	0.026 (0.020)	0.017 (0.013)	0.030* (0.018)	0.034 (0.027)	-0.022* (0.012)	-0.017* (0.009)	-0.026** (0.013)	-0.015** (0.008)
<i>N</i>	84689	14146	81372	84689	48372	8512	46307	48372
<i>adj. R²</i>	0.059	0.097	0.058	0.068	0.391	0.427	0.400	0.439
<i>Mean outcome</i>	0.03	0.03	0.03	0.03	0.22	0.22	0.22	0.22
<i>Panel C - Goods</i>								
<i>Infiltration</i>	0.087** (0.034)	0.060* (0.032)	0.099** (0.040)	0.063** (0.027)	-0.053 (0.038)	0.025 (0.037)	-0.031 (0.033)	-0.027 (0.041)
<i>N</i>	15454	2788	14625	15454	3834	751	3622	3811
<i>adj. R²</i>	0.116	0.300	0.116	0.136	0.067	0.150	0.066	0.073
<i>Mean outcome</i>	0.09	0.09	0.09	0.09	0.19	0.19	0.19	0.19
<i>Panel D - Services</i>								
<i>Infiltration</i>	0.033** (0.014)	0.037*** (0.014)	0.041*** (0.015)	0.028*** (0.011)	0.007 (0.023)	0.020 (0.022)	-0.012 (0.027)	0.001 (0.027)
<i>N</i>	31062	5434	28167	31062	5502	1151	5156	5492
<i>adj. R²</i>	0.067	0.073	0.067	0.080	0.088	0.108	0.092	0.103
<i>Mean outcome</i>	0.08	0.08	0.08	0.08	0.19	0.19	0.19	0.19
<i>Controls</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>Year FE</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>City FE</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>Matched Sample</i>		✓				✓		
<i>No Y2012</i>			✓				✓	
<i>Prov · Y FE</i>				✓				✓

Notes: Dependent variables: the probability of observing a privately negotiated auction (1-4); the auction winning discount (5-8). *Infiltration* refers to the mafia infiltration dummy. Columns 1 and 5 run the estimating equation on the full sample, columns 2 and 6 do so only on the matched sample, columns 3 and 7 exclude the year 2012, and columns 4 and 8 do so on the full sample including province fixed effects interacted with year dummies. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012. In all estimations the commissioning period and the post-commissioning years are excluded.

Table 3.8.3: Auction outcome variables and mafia infiltration effects, new local government.

	Private negotiation		Private negotiation		Winning discount		Winning discount	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A - All types of work</i>								
<i>1st Term · Infiltration</i>	0.040*	0.032*	0.043**	0.047*	-0.018	-0.012	-0.025*	-0.001
	(0.021)	(0.017)	(0.020)	(0.025)	(0.013)	(0.011)	(0.014)	(0.010)
<i>N</i>	130400	21626	123448	130400	57641	10057	55034	57641
<i>adj. R²</i>	0.054	0.074	0.055	0.060	0.231	0.250	0.238	0.264
<i>Mean outcome</i>	0.05	0.05	0.05	0.05	0.21	0.21	0.21	0.21
<i>Panel B - Constructions</i>								
<i>1st Term · Infiltration</i>	0.037	0.027	0.041	0.045	-0.033***	-0.031***	-0.042***	-0.017*
	(0.028)	(0.021)	(0.026)	(0.038)	(0.012)	(0.011)	(0.013)	(0.009)
<i>N</i>	84056	13717	80761	84056	47982	8224	45929	47982
<i>adj. R²</i>	0.060	0.096	0.060	0.069	0.391	0.432	0.400	0.438
<i>Mean outcome</i>	0.03	0.03	0.03	0.03	0.22	0.22	0.22	0.22
<i>Panel C - Goods</i>								
<i>1st Term · Infiltration</i>	0.056*	0.044	0.054	0.055*	-0.068	0.099	-0.052	-0.025
	(0.032)	(0.037)	(0.035)	(0.032)	(0.062)	(0.082)	(0.047)	(0.065)
<i>N</i>	15287	2648	14483	15287	3761	682	3563	3741
<i>adj. R²</i>	0.104	0.254	0.105	0.125	0.066	0.145	0.065	0.070
<i>Mean outcome</i>	0.09	0.09	0.09	0.09	0.19	0.19	0.19	0.19
<i>Panel D - Services</i>								
<i>1st Term · Infiltration</i>	0.039**	0.042**	0.052***	0.037***	0.026	0.051*	0.000	0.032
	(0.019)	(0.017)	(0.019)	(0.013)	(0.027)	(0.028)	(0.037)	(0.036)
<i>N</i>	30763	5232	27878	30763	5441	1102	5098	5432
<i>adj. R²</i>	0.067	0.074	0.067	0.080	0.087	0.095	0.091	0.101
<i>Mean outcome</i>	0.08	0.08	0.08	0.08	0.19	0.19	0.19	0.19
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
City FE	✓	✓	✓	✓	✓	✓	✓	✓
Matched Sample		✓				✓		
No Y2012			✓				✓	
Prov · Y FE				✓				✓

Notes: Dependent variables: the probability of observing a privately negotiated auction (1-4); the auction winning discount (5-8). *Infiltration* refers to the mafia infiltration dummy only when the infiltration takes place in a newly formed local government. Columns 1 and 5 run the estimating equation on the full sample, columns 2 and 6 do so only on the matched sample, columns 3 and 7 exclude the year 2012, and columns 4 and 8 do so on the full sample including province fixed effects interacted with year dummies. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012. In all estimations the commissioning period and the post-commissioning years are excluded.

Table 3.8.4: Auction outcome variables and mafia infiltration effects, term-limit mayors.

	Private negotiation		Private negotiation		Winning discount		Winning discount	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A - All types of work</i>								
<i>Term Limit · Infiltration</i>	0.028 (0.028)	0.032 (0.022)	0.029 (0.028)	0.032 (0.028)	0.000 (0.015)	0.004 (0.017)	0.005 (0.016)	-0.011 (0.010)
<i>N</i>	129227	20436	122620	129227	57237	9673	54742	57237
<i>adj. R²</i>	0.054	0.083	0.056	0.061	0.231	0.251	0.239	0.265
<i>Mean outcome</i>	0.05	0.05	0.05	0.05	0.21	0.21	0.21	0.21
<i>Panel B - Constructions</i>								
<i>Term Limit · Infiltration</i>	0.003 (0.019)	0.003 (0.020)	0.008 (0.022)	0.015 (0.023)	0.001 (0.014)	-0.002 (0.015)	-0.000 (0.014)	-0.014 (0.014)
<i>N</i>	83452	13051	80363	83452	47676	7914	45722	47676
<i>adj. R²</i>	0.055	0.075	0.056	0.064	0.393	0.443	0.402	0.441
<i>Mean outcome</i>	0.03	0.03	0.03	0.03	0.22	0.22	0.22	0.22
<i>Panel C - Goods</i>								
<i>Term Limit · Infiltration</i>	0.131*** (0.043)	0.087* (0.047)	0.146*** (0.049)	0.087* (0.050)	-0.045 (0.041)	0.019 (0.047)	-0.009 (0.048)	-0.038 (0.053)
<i>N</i>	15149	2546	14369	15149	3757	688	3556	3734
<i>adj. R²</i>	0.116	0.326	0.116	0.136	0.068	0.152	0.065	0.073
<i>Mean outcome</i>	0.09	0.09	0.09	0.09	0.19	0.19	0.19	0.19
<i>Panel D - Services</i>								
<i>Term Limit · Infiltration</i>	0.015 (0.019)	0.035* (0.018)	0.016 (0.022)	0.006 (0.021)	-0.061 (0.043)	-0.064 (0.045)	-0.048 (0.047)	-0.079** (0.035)
<i>N</i>	30326	4806	27557	30326	5357	1031	5029	5347
<i>adj. R²</i>	0.065	0.058	0.066	0.079	0.087	0.101	0.091	0.102
<i>Mean outcome</i>	0.08	0.08	0.08	0.08	0.19	0.19	0.19	0.19
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
City FE	✓	✓	✓	✓	✓	✓	✓	✓
Matched Sample		✓				✓		
No Y2012			✓				✓	
Prov · Y FE				✓				✓

Notes: Dependent variables: the probability of observing a privately negotiated auction (1-4); the auction winning discount (5-8). *Infiltration* refers to the mafia infiltration dummy only when the infiltration takes place when the mayor of a local government is subject to a term limit. Columns 1 and 5 run the estimating equation on the full sample, columns 2 and 6 do so only on the matched sample, columns 3 and 7 exclude the year 2012, and columns 4 and 8 do so on the full sample including province fixed effects interacted with year dummies. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012. In all estimations the commissioning period and the post-commissioning years are excluded.

Table 3.8.5: Auction outcome variables and interaction of mafia infiltration and centre-right party effects.

	Private negotiation		Private negotiation		Winning discount		Winning discount	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A - All types of work</i>								
<i>Centre Right · Infiltration</i>	0.042 (0.027)	0.046 (0.028)	0.044* (0.025)	0.053 (0.034)	-0.018 (0.016)	-0.014 (0.014)	-0.022 (0.018)	0.004 (0.011)
<i>N</i>	129386	20898	122524	129386	57292	9835	54724	57292
<i>adj. R²</i>	0.053	0.073	0.054	0.060	0.230	0.250	0.238	0.264
<i>Mean outcome</i>	0.05	0.05	0.05	0.05	0.21	0.21	0.21	0.21
<i>Panel B - Constructions</i>								
<i>Centre Right · Infiltration</i>	0.043 (0.037)	0.053 (0.039)	0.049 (0.034)	0.054 (0.050)	-0.036*** (0.013)	-0.035*** (0.013)	-0.042*** (0.016)	-0.019* (0.010)
<i>N</i>	83599	13389	80347	83599	47770	8099	45747	47770
<i>adj. R²</i>	0.059	0.101	0.058	0.068	0.391	0.436	0.400	0.439
<i>Mean outcome</i>	0.03	0.03	0.03	0.03	0.22	0.22	0.22	0.22
<i>Panel C - Goods</i>								
<i>Centre Right · Infiltration</i>	0.029 (0.033)	0.014 (0.036)	0.013 (0.031)	0.030 (0.035)	-0.068 (0.064)	0.040 (0.076)	-0.053 (0.044)	-0.007 (0.078)
<i>N</i>	15113	2532	14321	15113	3714	649	3517	3691
<i>adj. R²</i>	0.103	0.266	0.104	0.124	0.065	0.148	0.063	0.068
<i>Mean outcome</i>	0.09	0.09	0.09	0.09	0.19	0.19	0.19	0.19
<i>Panel D - Services</i>								
<i>Centre Right · Infiltration</i>	0.038* (0.020)	0.047** (0.022)	0.046** (0.021)	0.042*** (0.015)	0.081*** (0.020)	0.033 (0.033)	0.054 (0.034)	0.085** (0.035)
<i>N</i>	30377	4945	27528	30377	5360	1046	5024	5351
<i>adj. R²</i>	0.065	0.056	0.065	0.079	0.084	0.086	0.088	0.099
<i>Mean outcome</i>	0.08	0.08	0.08	0.08	0.19	0.19	0.19	0.19
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
City FE	✓	✓	✓	✓	✓	✓	✓	✓
Matched Sample		✓				✓		
No Y2012			✓				✓	
Prov · Y FE				✓				✓

Notes: Dependent variables: the probability of observing a privately negotiated auction (1-4); the auction winning discount (5-8). *Infiltration* refers to the mafia infiltration dummy. *Centre Right* refers to the party affiliation of the mayor. Columns 1 and 5 run the estimating equation on the full sample, columns 2 and 6 do so only on the matched sample, columns 3 and 7 exclude the year 2012, and columns 4 and 8 do so on the full sample including province fixed effects interacted with year dummies. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012. In all estimations the commissioning period and the post-commissioning years are excluded.

Table 3.8.6: Auction outcome variables and interaction of mafia infiltration and centre-left party effects.

	Private negotiation		Private negotiation		Winning discount		Winning discount	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A - All types of work</i>								
<i>Centre Left · Infiltration</i>	0.043 (0.031)	0.023 (0.029)	0.049 (0.031)	0.033 (0.031)	-0.008 (0.016)	0.004 (0.017)	-0.007 (0.016)	0.006 (0.014)
<i>N</i>	129589	20691	122998	129589	57333	9687	54859	57333
<i>adj. R²</i>	0.053	0.074	0.055	0.060	0.232	0.256	0.239	0.265
<i>Mean outcome</i>	0.05	0.05	0.05	0.05	0.21	0.21	0.21	0.21
<i>Panel B - Constructions</i>								
<i>Centre Left · Infiltration</i>	0.021 (0.024)	-0.007 (0.031)	0.026 (0.024)	0.018 (0.027)	-0.015 (0.017)	-0.009 (0.017)	-0.013 (0.018)	0.001 (0.013)
<i>N</i>	83610	13174	80526	83610	47734	7917	45787	47734
<i>adj. R²</i>	0.055	0.075	0.056	0.064	0.393	0.442	0.402	0.441
<i>Mean outcome</i>	0.03	0.03	0.03	0.03	0.22	0.22	0.22	0.22
<i>Panel C - Goods</i>								
<i>Centre Left · Infiltration</i>	0.157*** (0.058)	0.104* (0.059)	0.161*** (0.058)	0.110** (0.048)	-0.007 (0.057)	0.037 (0.068)	-0.009 (0.057)	-0.029 (0.064)
<i>N</i>	15181	2548	14423	15181	3751	675	3564	3731
<i>adj. R²</i>	0.108	0.286	0.109	0.129	0.069	0.160	0.066	0.072
<i>Mean outcome</i>	0.09	0.09	0.09	0.09	0.19	0.19	0.19	0.19
<i>Panel D - Services</i>								
<i>Centre Left · Infiltration</i>	0.049* (0.028)	0.051* (0.029)	0.052* (0.031)	0.027 (0.027)	-0.071 (0.048)	-0.004 (0.042)	-0.074 (0.051)	-0.083** (0.037)
<i>N</i>	30497	4936	27717	30497	5387	1047	5059	5377
<i>adj. R²</i>	0.067	0.078	0.067	0.080	0.086	0.093	0.090	0.101
<i>Mean outcome</i>	0.08	0.08	0.08	0.08	0.19	0.19	0.19	0.19
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
City FE	✓	✓	✓	✓	✓	✓	✓	✓
Matched Sample		✓				✓		
No Y2012			✓				✓	
Prov · Y FE				✓				✓

Notes: Dependent variables: the probability of observing a privately negotiated auction (1-4); the auction winning discount (5-8). *Infiltration* refers to the mafia infiltration dummy. *Centre Left* refers to the party affiliation of the mayor. Columns 1 and 5 run the estimating equation on the full sample, columns 2 and 6 do so only on the matched sample, columns 3 and 7 exclude the year 2012, and columns 4 and 8 do so on the full sample including province fixed effects interacted with year dummies. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012. In all estimations the commissioning period and the post-commissioning years are excluded.

Table 3.8.7: Infiltration timing.

	Private negotiation		Winning discount			
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A - All types of work</i>						
<i>Infiltration</i>	0.035**	0.041**		-0.011	-0.017	
	(0.016)	(0.021)		(0.012)	(0.012)	
<i>PriorL</i>			0.013			0.025**
			(0.012)			(0.012)
<i>N</i>	131500	130534	130512	58161	57752	57743
<i>adj. R²</i>	0.056	0.054	0.053	0.230	0.229	0.229
<i>Mean outcome</i>	0.05	0.05	0.05	0.21	0.21	0.21
<i>Panel B - Constructions</i>						
<i>Infiltration</i>	0.026	0.032		-0.022*	-0.029**	
	(0.020)	(0.024)		(0.012)	(0.012)	
<i>PriorL</i>			0.020			0.027***
			(0.017)			(0.010)
<i>N</i>	84689	84100	84090	48372	48038	48031
<i>adj. R²</i>	0.059	0.058	0.058	0.391	0.390	0.390
<i>Mean outcome</i>	0.03	0.03	0.03	0.22	0.22	0.22
<i>Panel C - Goods</i>						
<i>Infiltration</i>	0.087**	0.092*		-0.053	-0.048	
	(0.034)	(0.052)		(0.038)	(0.048)	
<i>PriorL</i>			-0.009			0.084*
			(0.026)			(0.043)
<i>N</i>	15454	15303	15302	3834	3804	3804
<i>adj. R²</i>	0.116	0.106	0.105	0.067	0.069	0.070
<i>Mean outcome</i>	0.09	0.09	0.09	0.19	0.19	0.19
<i>Panel D - Services</i>						
<i>Infiltration</i>	0.033**	0.038**		0.007	0.016	
	(0.014)	(0.015)		(0.023)	(0.027)	
<i>PriorL</i>			-0.003			0.011
			(0.015)			(0.021)
<i>N</i>	31062	30836	30825	5502	5453	5450
<i>adj. R²</i>	0.067	0.067	0.066	0.088	0.088	0.088
<i>Mean outcome</i>	0.08	0.08	0.08	0.19	0.19	0.19
Controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
City FE	✓	✓	✓	✓	✓	✓
Excl. same mayor		✓	✓		✓	✓

Notes: Dependent variables: the probability of observing a privately negotiated auction (1-3); the auction winning discount (4-6). *Infiltration* refers to the mafia infiltration dummy. *PriorL* refers to the legislature prior to the one infiltrated. Columns 1 and 4 report the main results, columns 2 and 5 do so excluding the first term of a local legislature infiltrated at the second term with the same mayor, and columns 3 and 6 inspect the legislature prior to the one infiltrated. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012. In all estimations the commissioning period and the post-commissioning years are excluded.

Table 3.8.8: Political business cycle.

	Private negotiation		Private negotiation		Winning discount		Winning discount	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A - All types of work</i>								
<i>Infiltration</i>	0.033** (0.016)	0.027** (0.012)	0.037** (0.016)	0.040** (0.019)	-0.011 (0.012)	-0.007 (0.010)	-0.013 (0.013)	-0.003 (0.008)
<i>N</i>	131500	22396	124491	131500	58161	10458	55525	58161
<i>adj. R²</i>	0.056	0.089	0.057	0.063	0.230	0.245	0.238	0.264
<i>Mean outcome</i>	0.05	0.05	0.05	0.05	0.21	0.21	0.21	0.21
<i>Panel B - Constructions</i>								
<i>Infiltration</i>	0.024 (0.021)	0.014 (0.013)	0.028 (0.018)	0.033 (0.027)	-0.021* (0.012)	-0.018* (0.010)	-0.026* (0.013)	-0.015** (0.008)
<i>N</i>	84689	14146	81372	84689	48372	8512	46307	48372
<i>adj. R²</i>	0.059	0.097	0.059	0.068	0.391	0.427	0.400	0.439
<i>Mean outcome</i>	0.03	0.03	0.03	0.03	0.22	0.22	0.22	0.22
<i>Panel C - Goods</i>								
<i>Infiltration</i>	0.088** (0.034)	0.059* (0.032)	0.100** (0.042)	0.065** (0.028)	-0.053 (0.038)	0.023 (0.040)	-0.034 (0.033)	-0.024 (0.041)
<i>N</i>	15454	2788	14625	15454	3834	751	3622	3811
<i>adj. R²</i>	0.116	0.300	0.116	0.136	0.066	0.145	0.066	0.073
<i>Mean outcome</i>	0.09	0.09	0.09	0.09	0.19	0.19	0.19	0.19
<i>Panel D - Services</i>								
<i>Infiltration</i>	0.034*** (0.013)	0.042*** (0.015)	0.042*** (0.014)	0.029*** (0.011)	0.006 (0.023)	0.004 (0.024)	-0.011 (0.027)	0.002 (0.027)
<i>N</i>	31062	5434	28167	31062	5502	1151	5156	5492
<i>adj. R²</i>	0.067	0.073	0.068	0.080	0.088	0.110	0.093	0.103
<i>Mean outcome</i>	0.08	0.08	0.08	0.08	0.19	0.19	0.19	0.19
<i>Controls</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>Year FE</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>City FE</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>Matched Sample</i>		✓				✓		
<i>No Y2012</i>			✓				✓	
<i>Prov · Y FE</i>				✓				✓

Notes: Dependent variables: the probability of observing a privately negotiated auction (1-4); the auction winning discount (5-8). *Infiltration* refers to the mafia infiltration dummy. Columns 1 and 5 run the estimating equation on the full sample, columns 2 and 6 do so only on the matched sample, columns 3 and 7 exclude the year 2012, and columns 4 and 8 do so on the full sample including province fixed effects interacted with year dummies. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012. In all estimations the commissioning period and the post-commissioning years are excluded. The analysis replicates our main results controlling non parametrically for election-year fixed effects.

Table 3.8.9: Mafia-unrelated dissolutions (MUD).

	Private negotiation		Winning discount	
	(1)	(2)	(3)	(4)
<i>Panel A - All types of work</i>				
<i>MUD</i>	-0.011	-0.011*	-0.000	-0.003
	(0.007)	(0.007)	(0.005)	(0.003)
<i>N</i>	147187	147187	65257	65257
adj. <i>R</i> ²	0.056	0.062	0.220	0.253
<i>Panel B - Constructions</i>				
<i>MUD</i>	-0.004	-0.007	0.002	-0.002
	(0.008)	(0.008)	(0.004)	(0.003)
<i>N</i>	93233	93233	53539	53539
adj. <i>R</i> ²	0.057	0.066	0.393	0.440
<i>Panel C - Goods</i>				
<i>MUD</i>	-0.055***	-0.041**	-0.002	0.010
	(0.015)	(0.016)	(0.014)	(0.016)
<i>N</i>	17476	17476	4474	4451
adj. <i>R</i> ²	0.126	0.144	0.070	0.079
<i>Panel D - Services</i>				
<i>MUD</i>	-0.014	-0.010	-0.012	-0.021*
	(0.011)	(0.008)	(0.012)	(0.011)
<i>N</i>	36179	36179	6757	6750
adj. <i>R</i> ²	0.074	0.087	0.081	0.096
Controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
City FE	✓	✓	✓	✓
Prov · Y FE		✓		✓

Notes: Dependent variables: the probability of observing a privately negotiated auction (1-2); the auction winning discount (3-4); the maximum number of contracts won by the same firm in a municipality in a year (5-6); the probability of having a local winner (7-8). *MUD* is a dummy that refers to legislature for which a mafia-unrelated dissolution took place. Columns 1, 3, 5 and 7 run the estimating equation on the full sample, while columns 2, 4, 6 and 8 do so on the full sample including province fixed effects interacted with year dummies. Municipality clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012.

Table 3.8.10: Descriptive statistics of firms data

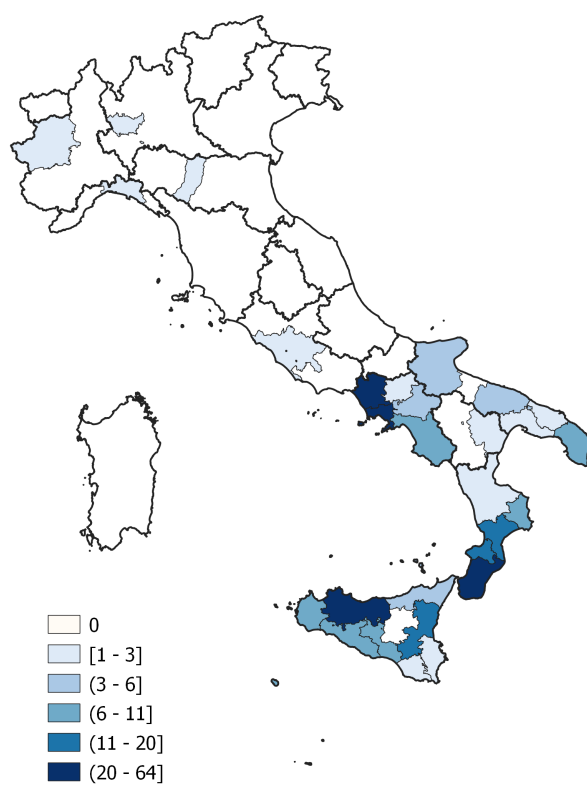
	N	Mean	SD	p10	p50	p90
<i>Firms characteristics</i>						
EBITDA	30649.00	214.62	9877.02	-4.90	32.30	227.93
Labor	30375.00	383.00	10690.69	0.00	74.19	461.48
Capital	30649.00	839.52	72459.64	1.35	57.47	747.69
TFP	24104.00	0.96	1.11	-0.27	0.97	2.20
<i>Treatment characteristics</i>						
N. of firms treated	190	—	—	—	—	—

Notes: this tables shows descriptive statistics of the main variables on the analysis on firms.

Appendices

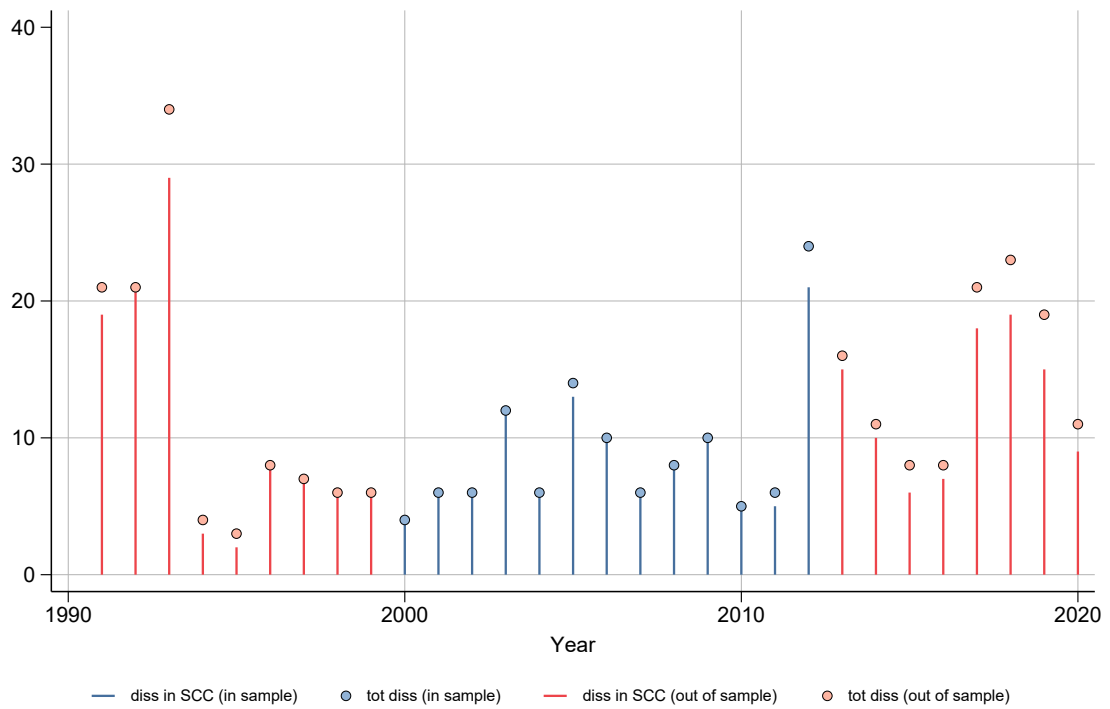
3.A Figures

Figure 3.1: Geographical distribution of dissolutions.



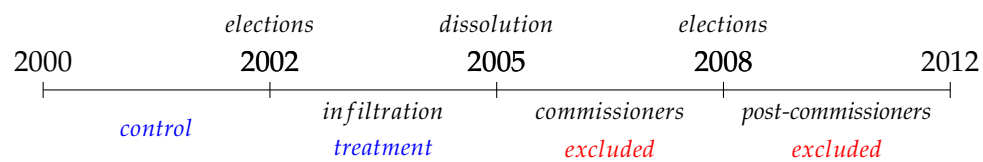
Source: Official Gazette (*Gazzetta Ufficiale*) The figure shows the geographical location of the dissolved municipalities from 1991 to 2019.

Figure 3.2: Number of dissolved municipalities for organised crime infiltration



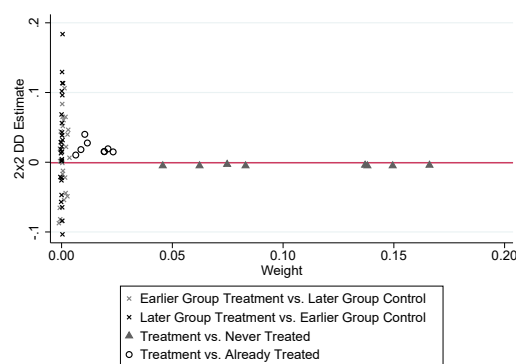
Source: Official Gazette (*Gazzetta Ufficiale*). The graph shows the number of dissolved municipalities over time. Data in blue stands for the sample period considered in our analysis, 2000/2012, while data in red identifies the rest of the years. It further distinguishes between the total number of dissolutions in Italy as a whole and the ones that took place in either Calabria, or Campania or Sicily.

Figure 3.3: Identification of the treatment period (Casoria)

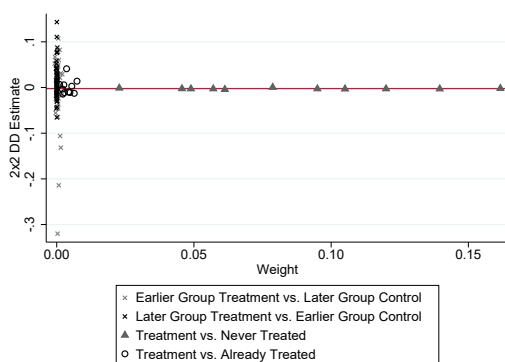


Note: In this example (Casoria), the treatment period begins with the election of Casoria's local government in 2002 to its dissolution in 2005. During this period, organised crime was colluding with members of the local government. From 2005 to 2008 commissioners rule of Casoria's local government.

Figure 3.4: Goodman Bacon decomposition - all types of contracts



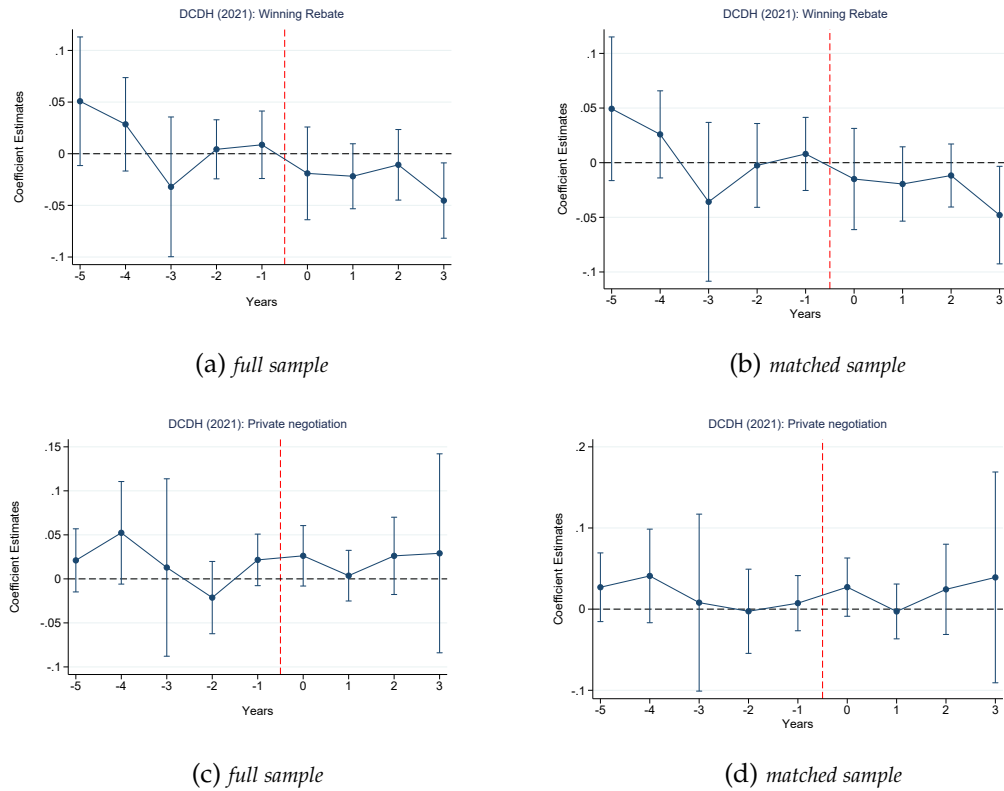
(a) *Winning rebate*



(b) *Private negotiation*

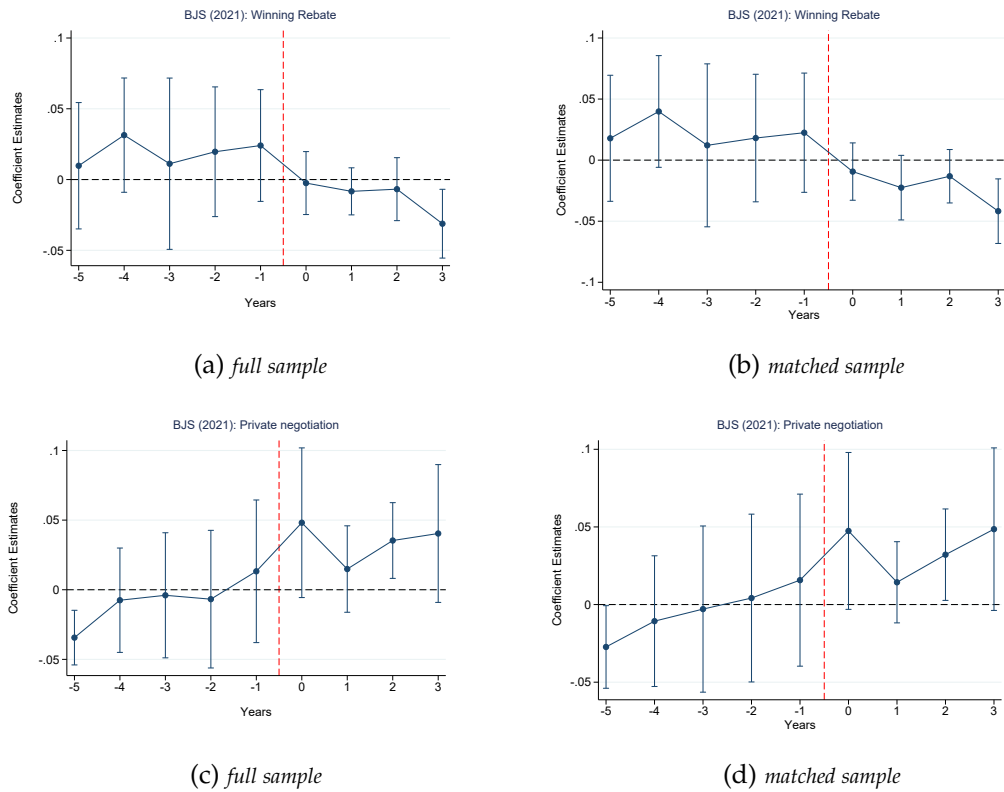
Note: Goodman Bacon decomposition of the main results. The graphs report the distribution of the weights in the 2x2 difference in differences with staggered timing.

Figure 3.5: Full dynamic specification - all types of contracts - de Chaisemartin and D'Haultfoeuille (2020)



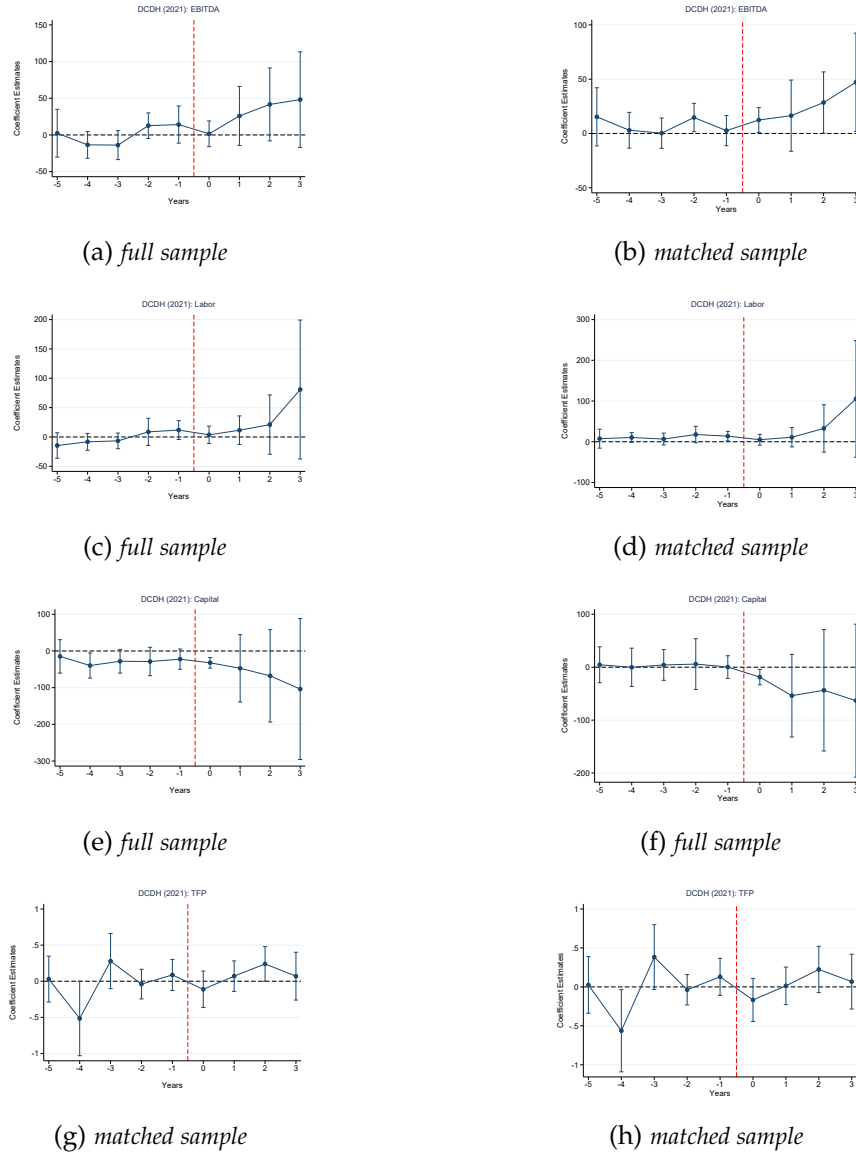
Note: Event study with estimation according to de Chaisemartin and D'Haultfoeuille (2020). Dots refer to point estimates, bars to 95% confidence intervals. We include estimates relative to 5 years prior to and 3 years after the election of the infiltrated government. All years after the dissolution of the infiltrated governments are excluded. Standard errors clustered at the municipal level. Note that rebate = discount.

Figure 3.6: Full dynamic specification - all types of contracts - Borusyak et al. (2021)



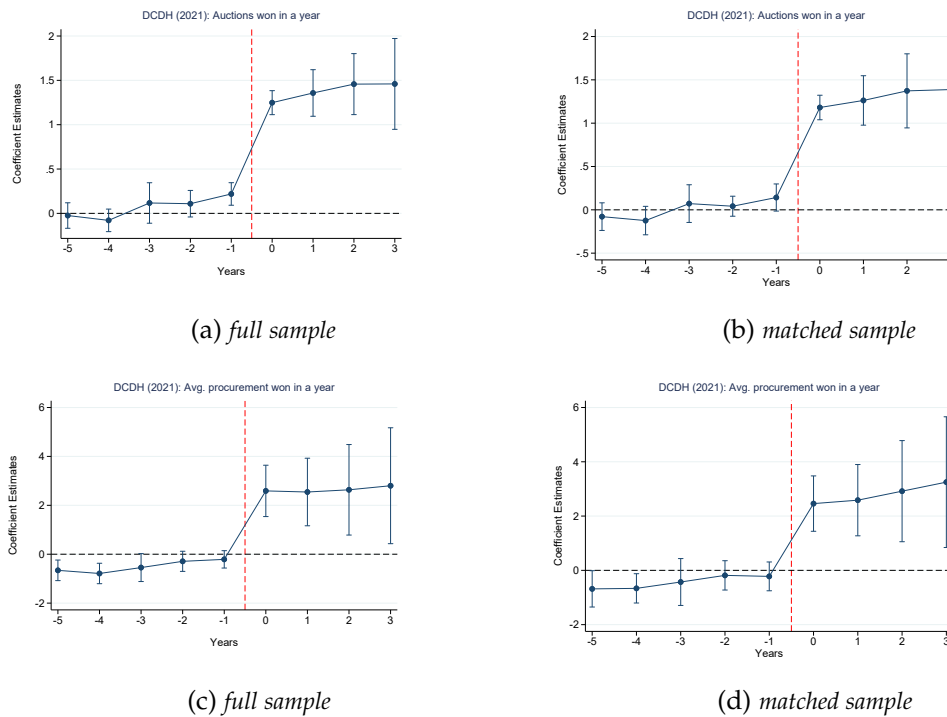
Note: Event study with estimation according to Borusyak et al. (2021). Dots refer to point estimates, bars to 95% confidence intervals. We include estimates relative to 5 years prior to and 3 years after the election of the infiltrated government. All years after the dissolution of the infiltrated governments are excluded. Standard errors clustered at the municipal level. Note that rebate = discount.

Figure 3.7: Full dynamic specification - firms analysis - de Chaisemartin and D'Haultfoeuille (2020)



Note: Event study with estimation according to de Chaisemartin and D'Haultfoeuille (2020). Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to 5 years prior to and 3 years after the victory of a procurement contract in an infiltrated municipality. All years after the dissolution of the infiltrated governments are excluded. The estimation includes time and firms dummies. Standard errors clustered at the firm level.

Figure 3.8: Full dynamic specification - firms analysis - de Chaisemartin and D'Haultfoeuille (2020)



Note: Event study with estimation according to de Chaisemartin and D'Haultfoeuille (2020). Dots refer to point estimates, bars to 95% confidence intervals. We include dummy variables relative to 5 years prior to and 3 years after the victory of a procurement contract in an infiltrated municipality. All years after the dissolution of the infiltrated governments are excluded. The estimation includes time and firms dummies. Standard errors clustered at the firm level.

3.B Tables

Table 3.1: Matching balancing test.

Variables	Mean		t-test	
	Treated	Control	t	p-value
Share unemployed	0.291	0.289	0.22	0.827
Share emp. industry	0.247	0.244	0.25	0.801
Share emp. commerce	0.072	0.069	0.32	0.752
Share emp. tertiary	0.008	0.007	0.33	0.740
Share emp. agriculture	0.152	0.161	-0.49	0.628
Share highly educated	0.246	0.247	-0.09	0.928
Population (log)	8.967	8.929	0.22	0.826
Starting value	1.843	1.702	0.44	0.658
N. of auctions	14.233	9.3	0.96	0.337
Sea distance (km)	5.524	5.653	-0.12	0.901
Area (km ²)	46.004	41.606	0.59	0.553
Min. altitude (m)	61.333	63.978	-0.16	0.875
Max. altitude (m)	633.220	585.460	0.73	0.469
Tot. capital spending	3.5e+06	2.5e+06	1.30	0.195
Tot. current spending	8.6e+06	6.7e+06	1.09	0.275
Tot. revenues	1.4e+07	1.1e+07	1.08	0.279

Notes: this tables shows the variables that were used in the matching algorithm.

Table 3.2: Volume of procurement and mafia infiltration effects.

	N. of auctions		N. of auctions		Starting value (avg.)		Starting value (avg.)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A - All types of work</i>								
<i>Infiltration</i>	-1.124 (1.201)	-2.082** (0.953)	-1.529 (0.982)	-0.112 (1.165)	1.029 (0.776)	0.119 (0.451)	1.087 (0.808)	0.387 (0.487)
<i>N</i>	13654	1945	12614	13654	13654	1945	12614	13654
<i>adj. R²</i>	0.955	0.925	0.960	0.956	-0.006	0.128	-0.008	-0.001
<i>Mean outcome</i>	10.76	10.76	10.76	10.76	2.99	2.99	2.99	2.99
<i>Panel B - Constructions</i>								
<i>Infiltration</i>	0.542 (1.563)	-1.758* (0.960)	0.255 (1.188)	1.614 (1.631)	1.825 (1.339)	0.467 (0.658)	1.606 (1.306)	0.976 (0.836)
<i>N</i>	12330	1774	11568	12330	12287	1773	11525	12287
<i>adj. R²</i>	0.892	0.896	0.910	0.894	-0.014	0.104	-0.013	-0.007
<i>Mean outcome</i>	7.15	7.15	7.15	7.15	3.84	3.84	3.84	3.84
<i>Panel C - Goods</i>								
<i>Infiltration</i>	0.604 (1.015)	-0.436 (0.788)	0.372 (0.921)	1.005 (1.035)	-0.066 (0.468)	-0.211 (0.340)	-0.290 (0.543)	-0.126 (0.513)
<i>N</i>	3676	773	3419	3675	3676	773	3419	3675
<i>adj. R²</i>	0.844	0.493	0.852	0.849	0.137	0.249	0.135	0.114
<i>Mean outcome</i>	4.19	4.19	4.19	4.19	0.93	0.93	0.93	0.93
<i>Panel D - Services</i>								
<i>Infiltration</i>	-2.292** (1.109)	-0.632 (0.721)	-2.471** (1.116)	-2.938** (1.222)	-0.502 (1.130)	-0.721 (1.112)	-0.680 (1.263)	-0.994 (1.160)
<i>N</i>	7711	1389	6838	7711	7710	1389	6837	7710
<i>adj. R²</i>	0.889	0.789	0.886	0.890	-0.037	0.107	-0.038	-0.036
<i>Mean outcome</i>	5.19	5.19	5.19	5.19	2.08	2.08	2.08	2.08
<i>Controls</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>Year FE</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>City FE</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>Matched Sample</i>		✓				✓		
<i>No Y2012</i>			✓				✓	
<i>Prov · Y FE</i>				✓				✓

Notes: Dependent variables: the number of auctions in a municipality, in a year (1-4); the average starting value of an auction in a municipality, in a year. (5-8). *Infiltration* refers to the mafia infiltration dummy. Columns 1 and 5 run the estimating equation on the full sample, columns 2 and 6 do so only on the matched sample, columns 3 and 7 exclude the year 2012, and columns 4 and 8 do so on the full sample including province fixed effects interacted with year dummies. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012. In all estimations the commissioning period and the post-commissioning years are excluded.

Table 3.3: Auction outcome variables and mafia infiltration effects, number of bidders.

	N. of bidders		N. of bidders	
	(1)	(2)	(3)	(4)
<i>Infiltration</i>	-18.094*** (6.135)	-4.117 (10.183)	-21.749*** (8.167)	-14.920** (7.442)
<i>N</i>	5267	941	3855	5261
<i>adj. R²</i>	0.246	0.446	0.301	0.249
<i>Mean outcome</i>	44.9	44.9	44.9	44.9
<i>Controls</i>	✓	✓	✓	✓
<i>Year FE</i>	✓	✓	✓	✓
<i>City FE</i>	✓	✓	✓	✓
<i>Matched Sample</i>		✓		
<i>No Y2012</i>			✓	
<i>Prov · Y FE</i>				✓

Notes: Dependent variables: the number of bidding firms in an auction. *Infiltration* refers to the mafia infiltration dummy. Column 1 runs the estimating equation on the full sample, column 2 does so only on the matched sample, column 3 excludes the year 2012, and columns 4 does so on the full sample including province fixed effects interacted with year dummies. Municipality clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012. In all estimations the commissioning period and the post-commissioning years are excluded.

Table 3.4: Other auction outcome variables and mafia infiltration effects (2).

	Max wins same firm		Max wins same firm		Local winner		Local winner	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A - All types of work</i>								
<i>Infiltration</i>	0.009 (0.006)	0.013* (0.007)	0.008 (0.006)	0.004 (0.008)	-0.023 (0.035)	-0.028 (0.031)	-0.020 (0.035)	-0.004 (0.032)
<i>N</i>	8452	1394	7806	8451	35630	6354	34487	35630
<i>adj. R²</i>	0.582	0.522	0.583	0.581	0.091	0.136	0.090	0.096
<i>Mean outcome</i>	0.29	0.29	0.29	0.29	0.15	0.15	0.15	0.15
<i>Panel B - Constructions</i>								
<i>Infiltration</i>	0.011 (0.011)	0.022 (0.014)	0.013 (0.012)	0.002 (0.013)	0.005 (0.029)	-0.010 (0.030)	-0.003 (0.031)	0.025 (0.026)
<i>N</i>	7755	1267	7210	7754	28318	4829	27505	28318
<i>adj. R²</i>	0.570	0.513	0.571	0.566	0.103	0.157	0.100	0.108
<i>Mean outcome</i>	0.40	0.40	0.40	0.40	0.13	0.13	0.13	0.13
<i>Panel C - Goods</i>								
<i>Infiltration</i>	0.015 (0.031)	-0.053 (0.071)	0.013 (0.039)	0.071 (0.053)	-0.096 (0.060)	-0.086 (0.095)	-0.032 (0.053)	-0.020 (0.098)
<i>N</i>	1211	314	1095	1171	2915	633	2792	2889
<i>adj. R²</i>	0.642	0.461	0.639	0.602	0.143	0.153	0.146	0.135
<i>Mean outcome</i>	0.51	0.51	0.51	0.51	0.16	0.16	0.16	0.16
<i>Panel D - Services</i>								
<i>Infiltration</i>	0.032* (0.017)	0.027 (0.025)	0.025 (0.020)	0.044* (0.027)	-0.076 (0.053)	-0.097 (0.071)	-0.102 (0.064)	-0.040 (0.062)
<i>N</i>	2428	611	2166	2413	3963	841	3763	3945
<i>adj. R²</i>	0.675	0.529	0.675	0.650	0.123	0.182	0.123	0.120
<i>Mean outcome</i>	0.38	0.38	0.38	0.38	0.22	0.22	0.22	0.22
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
City FE	✓	✓	✓	✓	✓	✓	✓	✓
Matched Sample		✓				✓		
No Y2012			✓				✓	
Prov · Y FE				✓				✓

Notes: Dependent variables: the maximum number of contracts won by the same firm in a municipality in a year (1-4); the probability of having a local winner (5-8). *Infiltration* refers to the mafia infiltration dummy. Columns 1 and 5 run the estimating equation on the full sample, columns 2 and 6 do so only on the matched sample, columns 3 and 7 exclude the year 2012, and columns 4 and 8 do so on the full sample including province fixed effects interacted with year dummies. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include municipality and year fixed effects, and socio-demographic characteristics at baseline interacted with year dummies. Sample years: 2000/2012. In all estimations the commissioning period and the post-commissioning years are excluded.

Table 3.5: Infiltration exposure and firms' outcomes.

	Cum. n. of auctions won		Cum. starting value (avg.)		EBITDA		Labor		Capital		TFP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
-5	-0.273 (0.248)	0.027 (0.286)	2.744*** (0.897)	1.963** (0.988)	-20.614 (29.897)	-8.609 (22.703)	21.623 (24.342)	6.876 (46.595)	121.822* (72.907)	1.688 (83.072)	-0.033 (0.155)	-0.086 (0.165)
-4	-0.399* (0.228)	-0.181 (0.247)	1.861** (0.820)	0.994 (0.872)	-20.964 (24.360)	-7.290 (16.287)	11.811 (22.742)	6.907 (38.417)	90.915* (54.895)	-3.337 (61.318)	-0.350** (0.177)	-0.485** (0.190)
-3	-0.219 (0.170)	-0.068 (0.178)	1.306** (0.648)	0.625 (0.663)	-23.616 (21.084)	-8.787 (11.640)	6.412 (20.354)	3.622 (26.314)	61.827 (43.215)	-10.870 (40.406)	-0.108 (0.107)	-0.144 (0.112)
-2	-0.294** (0.117)	-0.215* (0.124)	0.799* (0.479)	0.618 (0.490)	-10.411 (15.779)	3.191 (8.396)	14.855 (17.732)	15.642 (19.559)	41.522 (30.693)	-2.273 (24.751)	-0.086 (0.118)	-0.054 (0.116)
0	1.333*** (0.076)	1.253*** (0.084)	2.442*** (0.479)	2.355*** (0.501)	8.938 (10.067)	4.388 (7.670)	10.859 (9.889)	6.529 (12.946)	-40.375*** (14.971)	-28.342 (17.708)	0.004 (0.125)	-0.011 (0.133)
+1	1.497*** (0.126)	1.346*** (0.143)	2.939*** (0.635)	2.810*** (0.675)	37.706** (17.971)	22.201 (14.597)	26.583* (15.831)	23.376 (22.537)	-46.142 (47.665)	-39.594 (43.879)	0.026 (0.110)	-0.012 (0.121)
+2	1.782*** (0.188)	1.577*** (0.222)	2.975*** (0.750)	2.923*** (0.847)	48.151** (22.122)	27.836 (18.279)	29.943 (24.545)	28.489 (37.271)	-79.022 (53.422)	-59.978 (55.274)	0.195 (0.126)	0.194 (0.136)
+3	1.772*** (0.213)	1.563*** (0.256)	3.192*** (1.000)	3.046*** (1.033)	32.572 (25.757)	9.287 (22.326)	48.087 (42.286)	53.062 (57.747)	-129.276** (60.848)	-105.472* (61.889)	0.115 (0.131)	0.113 (0.146)
Observations	34442	3243	34442	3243	29468	2811	29204	2784	29468	2811	22978	2308
Adjusted R ²	0.740	0.779	0.507	0.807	0.351	0.604	0.952	0.539	0.760	0.669	0.355	0.303
Mean outcome	1.663	1.663	7.066	7.066	222.54	222.54	394.22	394.22	879.749	879.74	0.95	0.95
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: Dependent variables: cumulative number of auctions won in a year by a firm; cumulative average starting value of a won auction; Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA); labor; capital; Total Factor Productivity (TFP). Note that EBITDA, labor and capital are deflated using KLEMS (2012) deflators and divided by 1'000€. Firms clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Controls include firm and year fixed effects. Sample years: 2000/2012.

Chapter 4

Social capital and the power of the Mafia

«The fight against the mafia, the first problem to be solved in our beautiful and unfortunate land, was not to be just a detached work of repression, but a cultural and moral movement that involved everyone and especially the younger generations, the most suitable to immediately feel the beauty of the fresh scent of freedom that makes people reject the stench of moral compromise, indifference, contiguity and therefore complicity.»
(Paolo Borsellino)

4.1 Introduction

Organised crime is a pervasive and relevant phenomenon affecting both developed and developing countries¹. Over time it has increasingly penetrated economic, political, societal, and legal spheres with relevant harmful effects on local communities.

More broadly, the economic literature identifies three paths that ensure the acquisition and maintenance of mafia territorial dominance. First, organised crime impacts the local society with a protection-extortion behaviour (Gambetta, 1993; Balletta and Lavezzi, 2019; Brown et al., 2021). Second, organised crime develops a dense network of relationships in various institutional settings, that allows it to control the local political powers (Daniele and Geys, 2015b; Buonanno, Prarolo, et al., 2016; Daniele and Dipoppa, 2017; Alesina, Piccolo, et al., 2019; Baraldi et al., 2021; De Feo and De Luca, 2017; Vargas et al., 2022). Lastly, organised crime expands by infiltrating legal economic activity (Pinotti, 2015; Barone and Narciso, 2015; Calamunci and Drago, 2020; Le Moglie and Sorrenti, 2020; Di Cataldo and Mastroiocco, 2021; Melnikov et al., 2020). However, the economic literature has not focused so much on the impact that organised crime implies on other relevant spheres, such as the ones of social capital, human capital, health and welfare.

With this study, we aim to contribute to filling this gap and try to shed some light on how the pervasive infiltration of criminal organisations affects the accumulation of one of the most fundamental factors of economic development, which is social capital (Guiso et al., 2004; Sabatini, 2008).

¹Organised crime and mafia are used interchangeably from now on.

Indeed, social capital is a crucial element in the functioning of institutions, promoting civic engagement and economic growth. Research has explored various factors that contribute to its formation, suggesting that cultural and normative norms are passed down through generations, leading to persistence over time (Putnam et al., 1992). However, social capital can also change in response to external factors such as natural disasters (Buonanno, Plevani, et al., 2021; Bai and Li, 2021) or corruption (Banerjee, 2016). Both individual characteristics and societal culture play a role in building it up within a community. Thereafter, even the presence of organised crime and its impact on society may shape social capital accumulation.

From an intuitive standpoint, on the one hand, we expect that the presence of organised crime reduces the accumulation of social capital. Criminal organisations would contribute to creating a corrupted and extortion environment which, in turn, would not be favourable to the development of social capital. On the other hand, we may expect organised crime presence to generate somewhat of an opposite reaction in the local population, making it more aware and prone to social engagement. For example, civil society has reacted in some areas by creating anti-mafia movements (among others Addiopizzo, Libera, etc).

Overall, from a theoretical perspective, this relationship is ambiguous and worth investigation². We specifically ask: *Does the presence of organised crime have a long-term effect on social capital? If any, does the long-term effect of organised crime increase or decrease social capital?*

To investigate this research question, we identify Italy as the ideal case study. It has a long-lasting tradition of organised crime activities, at the beginning mostly focused in its Southern part, but which then expanded to the rest of the country. Furthermore, it is also relevant for the study of social capital since the seminal work of Putnam et al. (1992), which popularized the notion of social capital with it. However, studying and identifying the effect of organised crime on social outcomes is particularly ambitious since it lays down a series of fundamental empirical challenges, summarized in the following three main points.

First, it is difficult to quantify organised crime and find measures able to capture it from a long-run perspective. Official indicators are available only starting from the 1980s and some of them offer only an aggregate view. To overcome this limit, following Dipoppa (2021), we create a time-varying measure of mafia presence by web-scraping organised crime-related news from the Italian newspaper "*La Stampa*" for the period 1950-2006.

Second, it is challenging to find adequate measures of social capital, since its multidimensional nature (Durante, Mastrorocco, et al., 2021), and more so again from a long-term perspective. In

²In this regard, the words of Sergio Mattarella, the President of Italy, on the XXII Day of Remembrance and Anti-Mafia Commitment celebrate in Locri in 2017 are meaningful: "[*The Mafia*] is the denial of rights. It oppresses, spreads fear, undermines family and social ties, and exalts abuse and privilege [...]. Its criminal actions will have harmful effects for generations." [...] "Where before there was silence, now there are symbols and flags of associations committed against the Mafia. [...] Where there was indifference or resignation, now legality is taught."

this regard, we collect several social capital proxies, capturing different dimensions of it. Our main proxy of interest comes in a panel data dimension, and it is the TV tax compliance rate from 1955 to 2015, gathered with the collaboration with "RAI". It is a novel and unique measure for its period and its granularity, and it should proxy for the dimension of social capital related to rules compliance (Bracco, De Paola, et al., 2015). In a cross-sectional form, we collect data on turnout to referendums and European elections and on the number of voluntary associations to proxy for the political participation and the civic engagement dimensions, respectively.

Lastly, it is difficult to have a reliable identification strategy. Organised crime presence is not random, but rather it infiltrates where it deems to be best for its interests. For example, we can conjecture that it may be easier for it to infiltrate, and then control, areas with lower social capital values. In such a case, naively estimating an OLS specification relating organised crime presence to proxies for social capital is likely to produce biased estimates. To this end, the early expansion of organised crime from the South to the Centre-North of Italy between the 1950s and the 1960s allows us to both pin down a clear period where criminal organisations arrived in the area and also to address both the endogeneity in its presence and the possible reverse causality at play with social capital. We specifically exploit the two following causes of the expansion of organised crime from the South to the Centre-North identified by Camera and Senato (1994), employing an instrumental variable (IV) approach.

First, we exploit a forced resettlement law, "*soggiorno obbligato*", a heritage of a similar law produced during the Fascist period, that aimed at disrupting the local connections of the members of criminal groups, removing them from their locality of operation and displacing them elsewhere distant, mostly in the Centre-North regions. We gathered novel data at the municipality level on displaced criminals from the Italian Parliamentary Antimafia Commission (IPAC), which we use to instrument our measure of organised crime presence. 2SLS estimates reveal that long-term exposure to organised crime reduces the compliance rate of the TV tax by 4.56%, given a 10% increase in our main explanatory variable. Importantly, the instrument shows both relevance and strong predictive power. Specifically, the first stage exhibits high F-statistics and positively predicts the endogenous variable, supporting the idea that the forced resettlement law facilitated the importation of organised crime in the Centre-North. Then, exploiting the richness of our data on forced resettlement, we run a heterogeneous analysis distinguishing the type of criminal organisation a forced resettler belonged to, finding homogeneous effects.

To allow for possible imperfections in the application of this law, and for possible endogeneity left over, we perform the following exercises. First, we conduct a balancing test on a set of covariates at baseline to investigate possible differences in treated (receiving) and control (not receiving) municipalities. We find statistically significant differences in a subset of these covariates, which we include in the estimations interacted with year dummies. Second, we re-

estimate the analysis restricting the sample to one generated from a Propensity Score Matching (PSM) strategy proposed by Rosenbaum and Rubin (1985). Then, we estimate a reduced form in a full-dynamic fashion to formally test for the presence of pre-trends. Our estimates survive this series of tests.

Second, we exploit the combination of migratory movements from the South to the Centre-North and a positive shock to public funds allocation, proxied by the allocation of Marshall plan funds, as a possible expansion cause of organised crime to the Centre-North part of Italy. In fact, Dipoppa (2021) shows that the combination of migration and of a positive shock in the construction sector, which implies an increase in labour demand, positively predicts mafia presence during the period that goes from 1960 to 1990. Similarly to the construction shock, the economic opportunity represented by the allocation of Marshall plans implied an increase in agricultural production, an increase in the entry of firms in the industrial sector (Giorcelli and Bianchi, 2023). The 2SLS estimates deriving from this identification confirm the previously described negative patterns. Long-term exposure to mafia reduces TV tax compliance rate between 3.72% and 0.83%, given a 10% increase in our measure of organised crime. Importantly, the first stage still predicts a positive mafia presence, with strong statistical power.

To address potential endogeneity in both migration and the Marshall funds allocation, we re-estimate the previous analysis employing as an alternative set of instruments the combination of a shift-share instrument for migration and the number of days with bombs a city experienced during II World War. This exercise does not affect the direction and the magnitude of the estimates on TV tax compliance. Moreover, to test for the presence of pre-trends, we correlate the beginning of the period values of the TV tax compliance rate with our instruments, finding reassuring results.

Lastly, we extend the previously discussed analysis to the other three social capital dimensions, namely the number of civic associations and the turnout to European elections and referendums, in a cross-section set-up. Concerning the IV related to forced resettlement, we find negative and statistically significant results across all three measures. When looking instead at the combination of migratory movements and Marshall funds allocation, we find negative and statistically significant estimates only for the turnout to European elections, while non-statistically significant coefficients for the other two variables.

Overall, the results reveal that organised crime has a negative effect on social capital, measured by different dimensions. This corroborates the idea that organised crime generates a lack of rule compliance, an increase in an individualistic spirit, and a loss of trust in institutions as identified by the TV tax compliance, the number of voluntary associations and the turnout respectively.

We believe that this elaboration contributes to several strands of literature. First, we connect with the somewhat limited strand of economics literature studying the impact of organised crime on social aspects. A few notable exceptions are Coniglio et al. (2010), Caglayan et al. (2021) and Rolla and Justino (2022). The closest related to our work is Rolla and Justino (2022). The authors analyse extensively and in detail the relationship between organised crime and social capital, both in contemporaneous terms and from a long-term perspective, on the latter exploiting a synthetic control approach in the Italian region of Apulia. Our paper differs from theirs mainly in the geographical area we focus on, the level of the analysis, the measure of organised crime and social capital that we adopt, and the identification strategies we employ. Their overall results are in line with the ones of this elaborate.

Second, we also connect with the general literature on social capital (Putnam et al., 1992; Putnam, 2000; Guiso et al., 2008; Guiso et al., 2011; Nannicini et al., 2013; Bracco, De Paola, et al., 2015; Buonanno, Plevani, et al., 2021). Lastly, we relate with the emerging literature exploring the causes behind the organised crime expansion (Dipoppa, 2021; Varese, 2011; Massari, 1998) and studying organised crime from a historical perspective (Bandiera, 2003; Acemoglu, De Feo, et al., 2020; Dimico et al., 2017; Buonanno, Durante, et al., 2015).

The rest of the paper is organised as follows. Section 4.2 gives a brief overview of the concept of social capital. Section 4.3 describes the historical background of organised crime and explains in detail the rationale behind both the expansion channels being exploited. Section 4.4 describes the multiple data sources that we have gathered for the development of this paper. Sections 4.5 and 4.6 present the empirical strategy and the results associated, respectively. Section 4.7 describes the series of robustness checks that we performed. Section 4.8 discusses the mechanisms at play and Section 4.9 concludes.

4.2 Social capital framing

Framing the concept of social capital and discussing its measurement requires particular effort, mainly due to two types of problems³. First, it is not uniquely defined as its definition is challenging. Second, there is no measurement method commonly accepted and there are difficulties in finding adequate data.

Although the idea of social capital has a long conceptual history in the social sciences, there is no universally unambiguously accepted definition. In the early 1990s, the concept of social capital became a prominent theme in the social sciences discussions and those years it has been defined in different ways⁴. One important example comes from Putnam et al. (1992), which

³«The empirical social capital literature seems to be particularly plagued by vague definition of concepts, poorly measured data, absence of appropriate exchangeability conditions, and lack of information necessary to make identification claims plausible» (Durlauf, 2002)

⁴One of the first attempts was provided in 1980 by Bourdieu (1980). Bourdieu and Wacquant (1992) defined

refers to social capital as *«features of social life-networks, norms, and trust, that enable participants to act together more effectively to pursue shared objectives»*.

The challenge of not having a unique definition derives primarily from the multidimensionality of social capital, with each dimension having its own identity, but without fully encapsulating the idea in its totality (Hean et al., 2003). Indeed, social capital may be classified into several dimensions, types and levels.

Specialized literature has tried to decompose its various dimensions by identifying at least five (trust, rules and norms governing social action, types of social interaction; network resources, other network characteristics), although other authors have extended/restricted this conceptualization (Coleman, 1988; Putnam et al., 1992; Claridge, 2004)

The classification types are several as well (Sabatini, 2005). A typical distinction in social capital studies is between structural and cognitive components (Putnam et al., 1992). The structural dimension covers externally evident features of social structure and is distinguished by behavioural expressions of network linkages or civic involvement. The cognitive dimension conveys subjective views such as trust in others and reciprocity standards. An additional distinction falls between bonding and bridging social capital (Putnam et al., 1992). Bonding social capital refers to trustworthy and cooperative relationships within homogeneous groupings, i.e., strong linkages between network members who share socio-demographic or social features (e.g., age, ethnicity, social class). Bridging social capital refers to relationships between people with different social identities and authority (i.e., men and women).

Lastly, related research generally agrees that social capital may be identified from the individual to the national level. Nevertheless, social capital can be identified at any level where there is identification and belonging (Claridge, 2004). Hence, the general classification is micro (individual), meso (group) and macro (societal) levels.

Consequently, the second issue, related to measurement, derives from the definition of social capital. Quantifying social capital is more complex than measuring other types of capital, such as financial or human capital, given the difficulty in finding a unique proxy able to capture all of its dimensions. It is common in the specialized literature to use several proxies, with each one capturing one dimension of it. In addition, the specific measures used by research vary depending on the discipline and the level of examination (Guiso et al., 2011).

To summarise the problem of the measurement method, as argued by Fukuyama (2001): *“one of the greatest weaknesses of the social capital concept is the absence of consensus on how to measure it”*.

social capital as *«the sum of the resources, actual or virtual, that accrue to an individual or group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition»*. Following this definition, Coleman (1988) provided a new framework to define social capital. According to Coleman *«social capital is defined by its function. It is not a single entity, but a variety of different entities, with two elements in common: they all consist in some aspect of social structures, and they facilitate certain actions of actors within the structure»*.

With this premise in mind, at least three major methods have predominated the literature. The first involves using survey data with questions on capturing its various dimensions (Durante, Mastrorocco, et al., 2021). The second involves conducting a census of groups and group memberships in a given culture. The third exploits measures based on observable behaviours that are expressions of these networks and norms, for example, rates of organs donation, turnout in referendums, membership of voluntary organizations, newspaper readership (Nannicini et al., 2013; Cartocci, 2007; Guiso et al., 2008). In this elaborate, we employ this latter category, measuring three social capital dimensions: civic awareness, civic engagement and political participation. Given the data available, we will focus primarily on civic awareness.

4.3 Historical Background: Organized Crime expansion in the North of Italy

The presence of criminal organisations in Italy stands out for its historical longevity and territorial roots, especially in the Southern region of the country. Nowadays, evidence shows how the economic and territorial relevance of criminal organisations is significant and growing even in the Centre-North (Transcrime, 2013; Mirenda et al., 2022).

The existence of mafias in the Centre-North of Italy has long been denied or ignored by public authorities. While numerous parliamentary committees have investigated the phenomenon (Camera and Senato, 1972; Camera and Senato, 1976) in the four historic settlement regions (Sicily, Calabria, Campania and Apulia)⁵, none concentrated on the non-traditional ones. However, since the early 1970s, the press periodically highlighted major incidents of intimidation in some Northern cities⁶ (Massari, 1998) and some police operations revealed evidence of mafia infiltration in Centre-North of Italy (Camera and Senato, 1976)⁷.

Concerns about the mafia spreading outside of its usual territory began to rise only in the 1990s (Ciconte, 1998; Sciarrone, 1998; Ciconte, 2010; Varese, 2011), reaching also the parliamentary debate, which started dwelling on the so-called "territorial ramifications of the mafia". Between 1992 and 1994, a special parliamentary committee started to explore the causes behind

⁵The origins of Italian criminal organisations have been extensively researched. Especially for the Sicilian mafia, many pieces of evidence have been proposed in the broad array of different explanations of how, when, and where mafia originated, beginning with key reports by Franchetti and Sonnino (1877), Alongi (1887) and Villari (1978) and Cutrera (1900).

⁶For example, the press reported many cases of intimidation against southern immigrant workers in Piedmont, particularly in the Turin and Bardonecchia area. These cases were characterized by the phenomenon of violent demands of exploitative labour brokers who controlled the market in many fields of expertise to work in the industrial and construction sectors. These intermediaries earned profits by saving considerable amounts of money by avoiding social security and accident prevention taxes, but also withholding large portions of the wages of newly hired workers. During the two years 1969-1970, the problem affected 70-80% of all construction workers (Camera and Senato, 1976).

⁷Police operations originated from a probe set in Southern Italy, and the parliamentary commission was almost entirely focused on the South, in particular the island of Sicily.

this spread outside the original stronghold territory⁸, subsequently argued by Varese (2011), identifying two types of causes: internal to criminal dynamics and external to criminal decisions.

In the first category, the special committee recognized three main possible causes. The first cause relates to the need for the escape of individuals belonging to local “families” from the areas of origin, due to feuds or vendettas. The second one concerns the possibility of higher ease of camouflage and the lack of proven social defensive tools (Camera and Senato, 1976), resulting in the avoidance of stringent regulations that were frequent in the original territory. The third one refers to the increasing engagement in the drug market, as well as the concurrent rise of illegal trafficking and criminal business.

In the second category, the special committee has identified two major likely explanations as exogenous shocks outside the criminal network. First, the committee listed the use of “*soggiorno obbligato*” and second, they included the change in the demographic fabric of some areas of Center-North, induced by the migratory boom of the 1950s and the increased labour demand⁹.

In this study, we focus on this second category and, in the following subsections, we provide additional details on the two causes to support our empirical set-up.

4.3.1 Institutional details of the program: Forced resettlement

Following the legacy of a Fascist regulation to isolate political opponents of the state, in 1956 the Italian legislation introduced Law 1423/1956 regulating the “*soggiorno obbligato*”, forced resettlement. It was later perfected with Law 575/1965.

The objective of this provision was to separate the offender from his bonded criminals and transfer him to other regions, inflicting significant damage to the mafia’s status (Ciconte, 2010). The favoured destination locations were those of Central and Northern Italy.

The law stated that, in presence of public threat or risk correlated to an individual, «*the Questore (Police Commissioner, i.e. the head of police in a certain city), or the National Antimafia Prosecutor, or the state prosecutor can ask the court to order forced relocation to a town, then decided by the President of the Court, that has appropriate territorial and safety characteristics...*». In other words, the Court issued the relocation order on the proposal of the Commissioner, and appeals were heard by the Prefect. The mandate to live in the destination municipality might last one to five years .

⁸Camera and Senato (1994), pages 19-22 of the report.

⁹The committee points out that: “*This type of immigration is not in itself a criminal phenomenon nor a phenomenon to be regarded with suspicion. Otherwise, a real injustice would be committed to the many workers who moved to the Centre-North with their families and lived honestly*”. However, since the migratory movement was consistent, together with honest immigrant workers, individuals more inclined to engage in criminal activities have infiltrated the area, serving as a source of support for criminal groups in need of safe bases or references.

Additionally, when the residence obligation is prescribed in a specific municipality, it could be prescribed to 1) not going far from the chosen home without notice to the judicial authority, and 2) report to the public security authority proposed for surveillance.

The forced resettlement law did not indicate that at the end of the procedure, the confined person must return to his municipality. If they were successful in establishing themselves in the new town, they could decide to stay.

Similarly, it did not provide any specific parameters for the choice of location. Only in 1982, the forced resettlement law was revised to include some characteristics of the destination town. Specifically, *«the compulsory stay must be arranged in a municipality with a population of no less than 5 thousand inhabitants far from large metropolitan areas, such as to ensure effective control of people subjected to the preventive measure and which is the seat of a police office.»*. Further modifications were provided in 1988 and 1993. In 1995 the forced resettlement law was abrogated.

4.3.2 Economic boom, labour demand and migratory movement

After the end of II World War, the Centre-North of Italy experienced an economic boom due to its industrial development, especially in areas where more Marshall Plan aids (known as the *European Recovery Program (ERP)*) were granted (Giorcelli and Bianchi, 2023).

The Marshall Plan, which the United States backed to boost Europe's postwar recovery between 1948 and 1952, was the world's largest economic and financial aid initiative of the time (Zamagni, 1997). Italy received three kinds of assistance: financial grants, in-kind subsidies, and loans. In particular, financial grants accounted for 74% of total help and were utilized to fund 14,912 projects¹⁰. The ERP investments were directed to agriculture, industrial equipment, public works, construction in transportation (especially railways) and buildings increase (as social housing) and business loans to firms as that of the "Industrial Triangle".

The ERP aid had an impact on the post-war economic growth of Italian regions, with differential effects. The development in agricultural output, the amount invested in labour-saving equipment, the number of businesses joining the industrial sector, and the expansion of industrial and service personnel were all more pronounced in the provinces with the improved infrastructure (Giorcelli and Bianchi, 2023). From a geographical standpoint, in some areas of the Centre-North the industrial sector expanded, and the economy as a whole developed

¹⁰The entire fundraising process was being monitored by American authorities. First, the US government utilized the *"Italy Country Study"*, to gather extensive data on the Italian economy and to identify the primary economic and geographical regions that required assistance. Second, using this initial evaluation, the US Economic Cooperation Administration (ECA) and the Italian government developed yearly plans, each divided into four quarters, for the course of the five years (1948-1952) that the Marshall Plan actively disbursed funds (Fauri, 2006). Given this framework, it seems unlikely that local lobbying and corruption had any impact on the distribution of funds, given that the US authorities recognized each project on its own merits and rigorously monitored its distribution. See Giorcelli and Bianchi (2023) for the details on the characteristics of funded projects.

the fastest. The South did not experience industrial progress, or rather, it occurred considerably more slowly and differently, failing to succeed in the areas that, had they been in the Centre-North, would have given rise to thriving industrialisation.

It is worth mentioning that there exists literature describing the role that the Sicilian mafia had in helping the US military landing in Sicily, by utilizing their contacts in the region to gather intelligence, provide information on local conditions, and aid in undermining the Fascist regime (Gambetta, 1993; Costanzo, 2007; Newark, 2012). It may have been the case then that some allocation of the ERP funds is endogenous to mafia presence. However, this should not be too concerning for us for the following reasons. First, we focus on the Centre-North and at the time none of the major mafia organizations expanded to the region of the country. Second, we empirically tackle the possibility of endogeneity of ERP funds allocation in a dedicated sub-section later on.

The poor economic conditions in the South prompted internal emigration to the Centre-North regions. The demand for a workforce, although one that was not always qualified, was great, and this provided an opportunity for many southern labourers. As a result, Southern labourers relocated to Centre-North cities in search of jobs and, maybe, luck (Panichella, 2012). In the years 1958-1963, more than one million three hundred thousand people moved from the Southern regions. From the 69,000 new registrations in 1958 in the municipalities of the industrial triangle, in 1963 the number almost tripled (183,000), already exceeding the previous year to reach 200,000 units (Ascoli, 1979). This "cheap" labour arrived on the trains¹¹ above all from Apulia and Sicily, but the other Southern regions also participated conspicuously (Calabria, Sardinia and Campania) (Fofi, 1964).

Emigrants arriving from the South were mainly employed either in the numerous factories that were born in large numbers in those years or the construction sector, both sectors that required a substantial number of workers. For example, in 1962 in Genoa, 70% of the construction workforce came from the South, in Turin in 1960-61 about 80% of the construction workers were registered with "*Cassa Edile*", and in Milan, the non-residents started building up and in 1962 were almost 85% of the total, with the groups of Calabrians, Apulians and Sicilians surpassing the Venetians and even the Lombards (Paci, 1973). A particular phenomenon concerned Lazio, which was interested in migratory movements mainly due to the administrative and tertiary nature of Rome. In general, women were employed in home jobs, in the field of knitwear, yarn and tailoring, or even in factories.

As highlighted by Camera and Senato (1994), the expansion of the mafia to the Centre-North could have been possibly driven also by the flow of immigrants from the South and the in-

¹¹The flow of people became so impressive that the State, given the huge and urgent needs, established the creation of a special railway line, called the "*Treno del Sole*" (Train of the Sun), which crossed Italy from North to South, to favour and allow the unfolding of these displacements in the best possible way.

creasing need of labour demand in the Centre-North. This theory was strongly validated empirically by the study of Dipoppa (2021) in which she shows that the increase in demand for unskilled labour, and in criminals' capacity to fill it by exploiting migrants, allowed Southern Italian mafias to expand to the Centre-North, and that mafia expansion gave a persistent electoral advantage to certain political parties that were collaborating with them.

4.4 Data

In the following section, we carefully describe the data employed in this paper. To unravel the relationship between organised crime and social capital, we combine data from multiple sources, often from a historical perspective.

4.4.1 Organised crime presence

Measuring the presence of organised crime from a historical perspective is not an easy task. Most of the indicators that are commonly used in the literature start at the earliest in the 1980s and some of them are at the provincial levels (Calderoni, 2011; Dugato et al., 2020) rather than municipal, which is the unit our analysis focuses on.

To solve this problem, following Dipoppa (2021), we web-scraped news containing the words "mafia", "camorra" and "'ndrangheta" from the "La Stampa" newspaper online archive¹². We performed this task for the period that goes from 1950 to 2006¹³. In each article, we can collect the date, the page number within the newspaper, location tags and the body. Then, exploiting both the location tags and the body, we can classify whether a municipality is related to a mafia news article on a given date. Specifically, if an article that have we extracted contains the name of one or more municipalities, we classify that mafia-related news to be related to that set of municipalities. Lastly, for each municipality and decade, we count the number of news concerning organised crime, formally our indicator.

Despite acknowledging that this measure is not perfect, we believe that it provides a good proxy for organised crime presence for a relatively long time horizon, for a period in which official indicators are absent. To describe its content in a more detailed way, we show what follows.

Figure 4.10.1 shows the log+1 of the number of news over the Centre-North part of the Italian territory, averaged over the 1950-2006 period, i.e. before the consistent presence of official

¹²*La Stampa* is a nationally available newspaper outlet founded in 1867 in Turin. Its online public archive covers the period that goes from 1867 to 2006. To our knowledge, it is the only online public archive that allows covering such a long period. Examples of the extracted news are reported in the appendix 4.B

¹³The upper limit of the archive.

indicators. It is possible to note that the largest cities in the Centre-North have the highest values.

To describe the content of the news article that we have extracted, we run a Latent Dirichlet Allocation (LDA) model. Before that, we perform routine exercises of data cleaning, such as removing stop-words, punctuation, symbols etc. This results in the creation of tokens that we employ to populate a Document-Feature Matrix (DFM). From it, we further sub-select tokens that have a minimum frequency of 100 and that appear at least in 10 documents (Gentzkow et al., 2019). Lastly, we formally estimate the LDA model with 20 topics, the results of which can be seen in Figure 4.10.2. Mostly all of them are related to organised crime direct or indirect activities, like drug trafficking, arrests, money laundering, homicides, police forces etc.

To assess the validity of our indicator, in Table 4.10.1 we regress its log average value from 1950 to 1990, namely before official indicators were produced, on various dummies referring to the confiscations of goods and firms associated with organised crime, i.e. official indicators of organised crime presence¹⁴. Our based mafia-news indicator is consistently positively correlated with the various dummies, with constant levels of statistical significance.

4.4.2 Forced resettlement

We gather municipal-level data on members of organised crime forcibly resettled from a couple of sources. First, from the documents composing the Italian Parliamentary Antimafia Commission (IPAC)¹⁵. Specifically, we gather the name of the criminal, his/her origin, and his/her destination for the period that goes from 1962 to 1972. Second, we extend the data on forcibly resettled organised crime members that belong specifically to the *'Ndrangheta*, with the data coming from various sources and relating to the period that goes from 1972 to 1995¹⁶.

To our knowledge, this is the most comprehensive data on forcibly resettled members of organised crime at the municipal level. Figure 4.10.3 shows in panel (a) the distribution of municipalities receiving forcibly resettled members of organised crime and in panel (b) the share of forcibly resettled members of organised crime's surnames on nowadays population¹⁷. It is possible to note that in panel (a) the distribution of receiving resettlers is quite homogeneous across the Centre-North of Italy and that in panel (b) there exists a notable cluster in the area surrounding Milan, where multiple units of the *'Ndrangheta* are present nowadays.

¹⁴The data on confiscations comes from "ANBSC", i.e. the national agency for the management of goods confiscated to organised crime

¹⁵"*Documentazione Allegata alla Relazione Conclusiva della Commissione Parlamentare d'Inchiesta sul fenomeno della Mafia in Sicilia, Doc. XXIII, n.1, Volume primo*" and "*Volume quarto, tomo ventiduesimo*".

¹⁶We are thankful to Lucia Rizzica and Sandro Mocetti for sharing these key data.

¹⁷To compute this share, we exploit the data on Italian taxpayers of 2008. The dataset was published online in 2008 by the Italian Ministry of Finance in the form of a full set of individual tax declarations. It was subsequently removed following the intervention of the Italian Privacy Authority, which deemed that the online publication of individual earnings did not conform to the law. We employ this data source merely in aggregates in this paper.

4.4.3 Migratory movement and Marshall funds

Internal migration. We collected data on internal migration from the "IRPSS"¹⁸. Specifically, we gathered an arrivals-departure matrix at the province-year level for the whole of Italy, from 1955 to 2014, whose basis is census data from *ISTAT*. Then, for the analysis, we focused our attention on the internal migration from the South to the Centre-North of Italy.

Marshall funds. To capture the economic boom that took place in Italy in the 1950s, we gathered data on the Marshall Aid funds from the "*Mutual Security Agency*" bulletins for the period 1948- 1950¹⁹. Specifically, for the 1948-1950 period, we have at the municipality level the number of funds allocated to public procurement, construction and loans to firms.

Days with bombs. To later address the possible endogeneity in the allocation of Marshall Funds, we have collected data on the number of bombing days a municipality in Italy experienced during the II World War from Gagliarducci et al. (2020).

Figure 4.10.4 shows the three data just described. Specifically, panel (a) shows the share of migrants from the South of Italy to each province of the Centre-North, by province, averaged over the 1950-1990 period, and panel (b) shows the log of the Marshall funds a municipality received between 1948 and 1950, and panel (c) shows the maximum of bombing days a municipality experienced during the II World War.

4.4.4 Social Capital

As we highlighted in Section 4.2, studying social capital, given its multidimensionality, is not an easy task. This is further complicated when one aims at unravelling a long-term relationship in a small-scale context, such as that of municipalities. In this paper, we gather various data that proxy for social capital, with different time lengths, giving priority to the ones available at the municipality level. This data allows us to measure social capital based on observable behaviours such as civic awareness, civic engagement and political participation. However, only for civic awareness, we can exploit the time dimension of the data.

Time-varying, TV tax compliance. To capture the dimension of social capital that can be classified in civic awareness, we collected data on TV tax compliance. from "RAI"²⁰. The economics literature agrees with using this data to build a reliable proxy for individuals' propensity to free-ride for two main reasons (Bracco, De Paola, et al., 2015; Buonanno, Plevani, et al., 2021; Bracco, Liberini, et al., 2021). To begin with, this tax is relatively not expensive and easy to evade. In Italy, anyone owning a TV is required to pay a not relevant fee, 104€ p/year in 2007 and 113.50€ p/year in 2014, and administrative sanction is very weakly enforced and

¹⁸"Institute of Researches on Population and Social Policies"

¹⁹We are thankful to Michela Giorcelli for sharing these key data.

²⁰We are thankful to Gabriella Menguini and Francesca Arduino for sharing these key data.

typical fines for a household are low relative to cost (up to 516 Euros plus a mandatory 5-year license purchase). Secondly, like in many other European nations throughout the research period, public broadcasting programs were available regardless of whether TV owners paid the fee, thereby making its payment a pure public benefit contribution with practically little incentive to comply. Due to this, the ability to pay it depends on one's willingness to contribute to the greater public benefit or on a sense of civic responsibility²¹.

We have information on the compliance rate of families within a municipality in paying the TV tax. This measure is constructed by taking the ratio of the number of TV licenses for private issues in a municipality and the number of households in that municipality. After receiving yearly data in PDF format from "RAI", we designed a script that was able to convert them at intervals of five years in structured data using the Python package `layoutparser` (Shen et al., 2021). Then, we computed decade averages at the municipal level to have a panel from the 1950s to the 2010s.

Figure 4.10.5 shows the geographical distribution of the average TV tax compliance rate from the 2000s to the 2010s. Moreover, Figure 4.10.6 shows the evolution over time of the rate, by region.

Cross-section, Voluntary associations. We gather data on the number of voluntary associations per 100 inhabitants in a municipality measured in 2001 from the National Institute of Statistics, *ISTAT*, censuses. This measure is a standard in the literature (Durante, Pinotti, et al., 2019) and should capture the level of civic engagement.

Cross-section, Referendums turnout. We gathered data on the turnout for all ever-held referendums, i.e. from 1946 to 2020, for which we have data at the municipality level, from the "Eligendo" portal, in the Italian Ministry of the Interior website²². Among all elections, a referendum should capture the level of civic duty present in a municipality since they are the ones less prone to influences and manipulations, being less affected by economic incentives (Bracco, De Paola, et al., 2015; Cartocci, 2007; Barone and Mocetti, 2016). For that, it is the one to more likely capture political participation. We focus on the ones held from the 2000s forward.

Cross-section, European elections turnout. Similarly to the turnout to referendums, we have collected data on the turnout to European elections from the "Eligendo" portal, in the Italian Ministry of the Interior website, as they should capture political participation as well (Amodio et al., 2012). Specifically, we collect data on those elections that took place from the 2000s onward.

²¹As a result of the inconsistent compliance, starting in 2016, the Italian government passed new legislation, and home energy providers are now required to include the TV tax in their bills.

²²However, in the historical archive of elections, data are not available at the municipal level from 1985 to 2006 and this gap makes less reliable the time-varying measure. For this reason, we use this measure in a cross-sectional way.

Figure 4.10.7 shows the geographical distribution of the three variables related to the social capital just described.

4.4.5 Other data

Municipalities characteristics. We collected data on municipality characteristics from "ISTAT" censuses from 1951 to 2011. We have information such as population, employment by macro-sectors and education levels. Table 4.10.2 shows the descriptive statistics of the variables just discussed.

4.5 Identification strategy

In this section, we explain the identification strategy that we employ to investigate the relationship between organised crime and social capital. If we were to estimate the following OLS regression,

$$SC_{i,t} = \alpha + \delta M_{i,t} + \gamma_i + \tau_t + \epsilon_{i,t} \quad (4.1)$$

where $SC_{i,t}$ is a measure of social capital in city i at decade t and $M_{i,t}$ is the $\log + 1$ of the number of news in city i at decade t related to the mafia, this is likely to produce bias estimates, mainly due to the selection of organised crime in certain areas of the Centre-North. OLS estimates may be biased for at least four main reasons. First, there may be reverse causation, where, with OLS, we cannot rule out whether low levels of social capital imply mafia presence or the opposite. Second, even assuming that the direction is mafia affecting social capital, it is known from the literature that the presence of organised crime is endogenous. We can hypothesize that organised crime may settle in municipalities with lower levels of social capital. Third, there could be some omitted variables that affect both social capital and mafia presence. Lastly, there can be measurement error in our measure of mafia, introducing attenuation bias in the estimates.

To deal with OLS issues and address potential endogeneity in our estimates, we exploit the two external causes behind the expansion of organised crime to the Centre-North of Italy as plausible exogenous shocks²³. Specifically, in the following section, we highlight the details of the identification strategies related to the forced resettlement law and the combination of migratory movement to an economic boom in the Centre-North of Italy²⁴.

²³See Section 4.3.

²⁴We also perform a correlation exercise using historical data for the Sicilian context (see Tables 4.1 and 4.2 in the Appendix). This analysis is limited since the problem of reverse causality may be at play (Boeri and Vicqu ry, 2019) even in IV context (Mellon, 2021) and it is difficult to pin down the exact moment of "birth" of the mafia.

4.5.1 Main empirical specification: forced resettlement

We start by testing the consequences of criminal organisations on social capital using the forced resettlement law as an external cause linked to the expansion of organised crime to the Center-North as the first identification strategy. We address the selection bias previously discussed, estimating the following 2SLS system of equations:

$$M_{i,t} = \alpha + \beta C_{i,t} + \psi \mathbf{X}'_{i,1950} * \tau_t + \gamma_i + \tau_t + \epsilon_{i,t} \quad (4.2)$$

$$SC_{i,t} = \alpha + \delta \widehat{M}_{i,t} + \psi \mathbf{X}'_{i,1950} * \tau_t + \gamma_i + \tau_t + \epsilon_{i,t} \quad (4.3)$$

where $SC_{i,t}$ is a measure of social capital in city i at decade t . $M_{i,t}$ is the $\log + 1$ of the number of news in city i at decade t related to the mafia. To ease the interpretation, we take the log of $SC_{i,t}$ as well. $C_{i,t}$ is the instrumental variable, which is a dummy equal to 1 if a city i received a forced resettler. It is equal to 0 in the pre-1970 period, and equal to 1 from 1970 onward. $\mathbf{X}'_{i,1950} * \tau_t$ is a vector of controls in city i in 1950, i.e. baseline, multiplied by decade fixed effects. γ_i , τ_t are city and decade fixed effects. We additionally include either region times decade fixed effects or region linear trends, depending on the specification.

Conceptually and practically, we are not the first to use the forced resettlement law in the economics of crime literature. Buonanno and Pazzona (2014) use the regional number of criminals to which the forced resettlement law is enforced, interacted with a variable measuring migration to study the effect that this interaction has on crime activity. Importantly, they argue in favour of its exogeneity. Scognamiglio (2018) implements a difference-in-differences design to estimate at the provincial level the effect of the just-mentioned law on criminal activity and employment in the construction sector. Caglayan et al. (2021) exploit the forced resettlement law as an instrument at the provincial level to investigate the relationship between organised crime and human capital. Lastly, Pinotti and Stanig (2016) exploit the same source that we do, to investigate the relationship between organised crime presence and again crime activity at the municipality level, arguing in favour of the exogeneity of the forced resettlement law.

As it is custom in instrumental variable strategies, we provide evidence for the relevance of the instrument in the next sections, that is $\beta \neq 0$, while as far as the exclusion restriction is concerned, that is $Cov(M_{i,t}, \epsilon_{i,t}) = 0$, following the previous qualitative and quantitative literature, we can argue in its favour. As mentioned in Section 4.3, the underlying idea behind the forced resettlement law was to break the ties of the criminal with the organisation of origin. However, there are instances in which, for some important figures of the criminal world, there is evidence of influence in the destination choice (Dipoppa, 2021). Nonetheless, it is unlikely that the majority of the convicted criminals, or the criminal organisation as a whole, could influence the decision of the judge systematically. Additionally, as it is depicted in Figure 4.10.3, the distribution of the *confinati* in our dataset is fairly homogeneous. Unfortunately,

given the absence of guidelines in the judge's decision, and the fact that social capital does correlate with many aspects of our society, we cannot claim that the forced resettlement law is as good as a randomised experiment.

We formally investigate possible differences between treated (receiving) and control (not receiving) municipalities by performing a t-test on municipalities' characteristics in 1950 divided by these two categories. Table 4.10.3 shows the results of this exercise, where it is possible to note that a few variables exhibit statistically significant differences. They are population, in 1936 and 1950, population density in 1950, owned house index in 1950, latitude and altitude. To attenuate possible bias introduced by these variables, we include them in the previously mentioned vector of controls interacted with decade dummies. Further, in Section 4.7 we re-estimate the system of equations 4.2 and 4.3 without controls but with a sub-sample resulting from a Propensity Score Matching (PSM), constructed using the previously mentioned variables. Lastly, we estimate the reduced-form decomposing effects by decades to assess the validity of the pre-trends.

4.5.2 Alternative empirical specification: migratory movement and Marshall funds

Following Dipoppa (2021), we also test the implications of organised crime on social capital using a second identification in which we combine the public funds' allocation of the Marshall plan and migratory movements to the Centre-North as a possible organised crime expansion theory²⁵. To again address the selection bias concerning organised crime presence and activity we estimate the following 2SLS system of equations:

$$M_{i,t} = \alpha + \delta_1 Mig_{p,t-1} + \delta_2 Mig_{p,t-1} * Marsh_{i,1950} + \psi \mathbf{X}'_{i,1950} * \tau_t + \gamma_i + \tau_t + \epsilon_{i,t} \quad (4.4)$$

$$SC_{i,t} = \alpha + \beta \widehat{M}_{i,t} + \psi \mathbf{X}'_{i,1950} * \tau_t + \gamma_i + \tau_t + \epsilon_{i,t} \quad (4.5)$$

where $SC_{i,t}$ is a measure of social capital in city i at decade t . $M_{i,t}$ is the $\log + 1$ of the number of news in city i at decade t related to the mafia. $Mig_{p,t-1}$ is the share of migrants from the south to province p at decade $t-1$. $Marsh_{i,1950}$ is the number of funds that a city i received from the Marshall Aid plan in 1950, which should proxy for a positive shock to public funds allocation. $\mathbf{X}'_{i,1950} * \tau_t$ is a vector of controls in city i in 1950 multiplied by decade fixed effects²⁶. γ_i , τ_t are city and decade fixed effects. We additionally include either region*decade fixed effects or region linear trends, depending on the specification.

Given the aforementioned qualitative and quantitative literature in section 4.3, we may argue in favour of the exclusion restriction. Indeed, it states that, after controlling for trends, the instrument affects the outcome only through changes in mafia activity. Since the two variables

²⁵See Section 4.3.2.

²⁶We keep using the ones derived from the forced resettlement law for comparison.

composing the instrument, that are the Marshall funds and Southern migration to the Centre-North, are controlled for, the interaction of the two terms allows us to test the second cause behind mafia transplantation. However, pitfalls could disable the instrument. We discuss them and propose more robustness in section 4.7. Indeed, although exclusion restriction cannot be tested directly, in this spirit we will perform a series of tests using a slightly different specification with alternative instruments. Further, as conventional in the IV study, we provide evidence for the relevance of the first stages.

4.6 Main Results

4.6.1 Results: forced resettlement

We first start presenting the results of the mechanism of expansion of organised crime to the Centre-North related to the forced resettlement law. Table 4.10.4 shows the first set of results. Specifically, columns (1) to (4) show the OLS estimate referring to Equation 4.1, while columns (5) to (8) show the 2SLS second stage estimates related to Equation 4.3. Columns (1) to (4) and (5) to (8) vary depending on the set of fixed effects and controls included in the estimating equations. Specifically, columns (1) and (5) include just year and city fixed effects, columns (2) and (6) add the vector of not balanced controls in 1950 interacted with year dummies, columns (3) and (7) add region times year fixed effect to account for region-specific shocks, while columns (4) and (8) substitute the previous interaction with region linear trends to control for different region-specific trends over time.

Overall, both OLS and 2SLS estimates depict a negative and statistically significant pattern relating to the TV tax compliance rate and the presence of the mafia. Focusing on 2SLS estimates, their values range between -1.284 and -0.405. Taking as a reference the coefficient in column (2), a 10% increase in the number of news related to organise crime implies a 4.56% decrease in the TV tax compliance rate. Columns from (5) to (8) report both the Kleibergen-Paap (KP) and the Cragg-Donald (CD) F statistic for weak identifications of the first stage, with values that range from 58.664 to 27.004 and from 150.320 to 63.517 respectively, indicating a strong and relevant first stage relationship. The fact 2SLS estimates are more negative than the OLS ones implies an upward bias in the OLS. This may be because the variable we employ to measure organised crime presence, that is the number of news related to it, is quite noisy and suffers, to some degree, from measurement error. Then, when it is instrumented with the forced resettlement variable, which is likely to capture a clear importation in the receiving municipality of a member of organised crime, estimates suffer less from attenuation bias, identifying a clearer relationship.

Tables 4.10.5 and 4.10.6 show the first stage and the reduced form of the 2SLS estimation relative to the forced resettlement law. Focusing on Columns (1) to (4) for both tables, it is

possible to note that in Table 4.10.5 the coefficients of the instrument are always positive, the sign one would expect, and statistically significant, while the coefficients turn negative and statistically significant in Table 4.10.6, again supporting the 2SLS strategy at hand.

4.6.2 Alternative specification: migratory movements and Marshall funds

As an alternative and parallel channel, we instrument our measure of organised crime exploiting a second cause of its expansion to the Centre-North, namely the one related to the combination of Southern migratory movement and the allocation of public funds, proxied by the Marshall funds allocation, as explained in Section 4.2. We argue that finding similar results as the ones previously described would reinforce our findings.

Table 4.10.7 shows the results of this test. Specifically, columns (1) to (4) show the OLS estimate referring to Equation 4.1, while columns (5) to (8) show the 2SLS second stage estimates related to Equation 4.5. Similarly to Tables 4.10.4, Columns (1) and (5) include just year and city fixed effects, columns (2) and (6) add the vector of covariates at baseline interacted with year dummies, columns (3) and (7) add region times year fixed effect to account for region-specific shocks, while columns (4) and (8) substitute the previous interaction with region linear trends to control for different region-specific trends over time.

Indeed 2SLS estimates still show negative and statistically significant coefficients describing the effect of the presence of the mafia on the TV tax compliance rate. Compared to the forced resettlement channel, 2SLS estimates are somewhat smaller in terms of magnitude, with values that range between -0.335 and -0.054. Taking as reference the coefficient of column (2), a 10% increase in the number of news related to organise crime is associated with a 0.82% decrease in the TV tax compliance rate. The reason for their lower magnitude with respect to the one resulting from the forced resettlement specifications may be due to their more indirect nature. The interaction between migratory movements and the allocation of public funds is not a clear-cut allocation of members of organised crime as the forced resettlement law can be. Columns (5) to (8) still report the KP and CD F statistics of the first stage, with values that range from 27.068 to 10.031 and from 110.521 to 39.883 respectively, indicating a relatively strong and relevant first-stage relationship.

Table 4.10.8 shows both the first stage and the reduced form estimates relative to the specification under discussion. First, in columns (1) to (4) the interaction of the share of migrants from the South to the Centre-North provinces and the log. of the amount of Marshall funds allocated to a municipality predicts positively and with statistical significance the presence of the mafia. Moreover, as previously described, both the KP and CD F statistics provide evidence of a strong first stage. Second, in columns (5) to (8), the aforementioned interaction exhibits a consistent pattern of negative coefficients, statistically significant in columns (5) and (8).

Overall, even when instrumenting organised crime presence with the combination of migrants from the South and Marshall funds, 2SLS estimates show a negative effect of the mafia on the proxy of social capital. The fact that two alternative IV strategies point to similar conclusions is reassuring concerning the validity of our estimates²⁷.

4.6.3 Cross-section outcomes

To fully exploit the social capital proxies at our disposal, we test both channels of expansion in a cross-section fashion. This allows us to test the effect of organised crime presence on the number of voluntary associations, a variable that proxies for the dimension of social capital related to civic engagement, and on the turnout to European elections and referendums, that proxy for political participation.

Table 4.10.9 shows the results of this activity. First, OLS estimate yields meaningful and statistically significant estimates only when looking at the turnout of the European elections.

Second, we focus on the forced resettlement law as an instrument. Across all the dependent variables being inspected, the coefficients relative to the presence of organised crime are negative and statistically significant. Taking column (4) as a reference, concerning the number of voluntary association, a 10% increase in the presence of organised crime implies a negative change of 0.0209 units, which correspond to a reduction of 3.55%. Regarding the turnout of the European elections, a 10% increase in the presence of organised crime decreases it by 0.0087 units, which is a 1.19% decrease. Lastly, regarding the turnout to referendums, a 10% increase in the presence of organised crime implies a decrease in it of 0.0025, which is a reduction of 0.54%.

Then, focusing on the migratory movement and Marshall plan funds combination, the only coefficients which are statistically significant are the ones relative to the European turnout. They are reassuringly negative and, taking as reference the one of column (6), a 10% increase in the presence of organised crime implies a decrease in the European turnout of 0.0041, which corresponds to a 0.56% decrease.

Overall, 2SLS estimates identify a negative relationship between the presence of organised crime and the cross-sectional outcomes related to social capital investigated here. It is worth mentioning that, given the cross-sectional set-up, these estimates should be taken with care.

²⁷ Alternatively of the use of the logarithm in the mafia variable, we use the inverse hyperbolic sine transformation for both identifications. Tables 4.1, 4.2 and 4.3 show that the results are robust.

4.7 Additional Results and Robustness

4.7.1 Heterogeneity analysis: mafia type

Exploiting the detailed information in the data at our disposal related to the forced resettlement law, we can identify which type of criminal organisation has been exported to which city. We find the heterogeneity exercise interesting because, despite being all under the umbrella of criminal organisations, Italian mafias operate with some differences. For example, *Camorra* and *Cosa Nostra* have a reputation for being particularly violent, while *'Ndrangheta* is secretive and tight-knit.

Specifically, we possess the information related to the origin of each forced resettler, being it either his place of birth or the province in which he was prosecuted. We then assume that the region in which the forced resettler was either born or prosecuted identifies the criminal organisation to which he belonged. In practice, a forced resettler born in Naples is coded as a member of the *Camorra*, the mafia from Campania, while one prosecuted in Palermo is coded as a member of the *Cosa Nostra*, the mafia from Sicily, and lastly, one born in Reggio Calabria is coded as member of the *'Ndrangheta*, the mafia from Calabria. We exclude a few cases in which the forced resettler is neither born nor prosecuted in either of the aforementioned regions²⁸. We focus on those forced resettlers from one organisation that are either exclusively or in a majority imported in a given city²⁹. Lastly, we create a set of dummies that identifies the criminal organisation to which one or more forced resettlers, imported in a given city, belong.

Table 4.10.10 reports the coefficients of a reduced form estimation, that describes the effect of $Confino_{i,t}$ interacted with both $CosaNostra_i$ and $'Ndrangheta_i$, on TV tax compliance. The omitted criminal organisation is $Camorra_i$, reflected by the non-interacted $Confino_{i,t}$ coefficients. It is possible to see that across all the criminal organisations the coefficients are negative, with the ones being more statistically significant being the ones related to the *Camorra* and the *'Ndrangheta*. Specifically, being a municipality with a forced resettler from *Camorra* lowers the TV tax compliance rate by 31.7%, while with a forced resettler from *Cosa Nostra* and *'Ndrangheta* reduces the TV tax compliance rate by 7.1% and 6.6% respectively. It is worth mentioning that, out of 472 remaining cities that received a forced resettler, 249 received it from *Cosa Nostra*, 215 from *'Ndrangheta* and just 8 from *Camorra*. Hence, we have a sample that is not balanced along this dimension, implying that, if the results for *Cosa Nostra* and *'Ndrangheta* are somewhat reliable, the one on *Camorra* can be at best an upper bound estimate. Overall, we do not find evidence of heterogeneous effects across different criminal organisations.

²⁸These are 4 cases, where the forced resettlers were from Genova, Roma, Nuoro and Matera, respectively.

²⁹In other words, we exclude from the estimating sample those cases in which there are multiple forced resettlers in a given city, but from different organisations. The vast majority of the cases do not belong to this category.

4.7.2 Propensity score matching

Given the imperfections in the design, and hence possibly in its application, of the forced resettlement law described in Sections 4.2 and 4.5, we replicate the analysis with a sub-sample resulting from a PSM exercise³⁰. Specifically, we employed a logit estimation, with common support and no replacement. Table 4.10.11 shows the results of this activity, while Table 4.10.12 shows the variables being used in the propensity score algorithm. In Table 4.10.11 it is possible to note that in both panels the patterns described in Table 4.10.4 survive, with 2SLS estimates showing a similar magnitude.

Tables 4.10.5 and 4.10.6, in columns (5) to (8) show the first stage estimates and the reduced form ones with the sub-sample resulting from the PSM exercise. In Table 4.10.5, in all columns, the instrumental variable is still positively and statistically significantly predicting the presence of organised crime. Moreover, as previously mentioned, the instrument results are strong. Then, in Table 4.10.6, from columns (5) to (8) emerges a pattern of negative and statistically significant coefficients, in line with both the matched-second stage and the unmatched-reduced form.

4.7.3 Migration shift-share and bombing days

Despite the discussion provided in subsection 4.5.2, another potential concern is that, even if it was as good as random, the interaction between Marshall and Southern migration may hide a potential bias that could invalidate our estimates.

Firstly, as discussed in Dipoppa (2021), bias could affect the migratory movement since the flows of immigrants tend to be geographically clustered and successive waves are likely to settle where original settlers established their residence generating a source of endogeneity. Therefore, we follow the most recent literature on shift-share instruments related to migration (Card, 2001; Tabellini, 2020), and construct the following Bartik instrument:

$$MSS_{p,t} = \frac{1}{Pop_{p,t}} * \sum_{o=1}^O \sigma_{o,p,1955} * \Delta Mig_{o,t}^{-Mig_{o,p,t}} \quad (4.6)$$

where $\sigma_{o,p,1955}$ is the share of initial settlers in 1955 of origin o , to province p , out of all the migrants from the South to province p . $\Delta Mig_{o,t}^{-Mig_{o,p,t}}$ is the national change in migrants from province o between t and $t-1$, minus the contribution of province p . $Pop_{p,t}$ is the population of province p at decade t . We allow for the contemporaneous population as a scaling factor, but we later show that our results are robust if we use it at baseline (1950).

Secondly, although it seems unlikely that local lobbying and corruption had any impact on the

³⁰We used *psmatch2* command in Stata proposed by Leuven and Sianesi (2003)

distribution of Marshall funds, as we argued in Section 4.3, we follow Giorcelli and Bianchi (2023) framework and we instrument the allocation of Marshall funds with the total bombing days a municipality was exposed to between 1943 and 1945³¹. Hence, we estimate the following 2SLS system of equations in the following reduced form fashion.³²

$$M_{i,t} = \alpha + \delta_1 MSS_{p,t-1} + \delta_2 MSS_{p,t-1} * B_{i,1943-45} + \psi \mathbf{X}'_{i,1950} * \tau_t + \gamma_i + \tau_t + \epsilon_{i,t} \quad (4.10)$$

$$SC_{i,t} = \alpha + \beta \widehat{M}_{i,t} + \psi \mathbf{X}'_{i,1950} * \tau_t + \gamma_i + \tau_t + \epsilon_{i,t} \quad (4.11)$$

$SC_{i,t}$ is a measure of social capital in city i at time t . $M_{i,t}$ is the $\log + 1$ of the number of news in city i at decade $t-1$ related to the mafia. $MSS_{p,t-1}$ is the migration shift-share instrument relative to province p at decade $t-1$. $B_{i,1943-45}$ is the total bombing days that city i suffered between 1943 and 1945. $\mathbf{X}'_{i,1950} * \tau_t$ is a vector of controls in city i in 1950 multiplied by decade fixed effects. γ_i , τ_t are city and decade fixed effects. We additionally include either region*decade fixed effects or region linear trends.

Table 4.10.13 shows the results produced with the system of equations 4.10 and 4.11. Again, the idea is to corroborate our findings with a different instrument. Consistently with the previous specification, 2SLS estimates show a consistently negative and statistically significant pattern relating to mafia presence and the TV tax compliance rate. The coefficients range between -1.025 and -0.348. Taking as a reference the coefficient in column (2), a 10% increase in the number of news related to organised crime implies a 3.48% decrease in the TV tax compliance rate, a magnitude very close to the forced resettlement specification. The KP and CD F statistic of the first stage of columns (5) to (8) report values that range from 20.057 to 12.693 and from 62.924 to 33.988 respectively, indicating a strong first-stage relationship. Our estimates survive this robustness check, which is reassuring.

Table 4.10.14 shows the first stages between the share of migrants and its interaction with the log amount of Marshall funds with both the migration shift-share instrument and interacted with the total days with bombs (Equations 4.7 and 4.8). It is worth mentioning that the KP and CD F statistics report values that range from 57.871 to 20.441 and from 52.177 to 6.845 respectively when looking at the share of migrants alone, and from 25.868 to 3.698 and from 54.746 to 5.584 respectively when looking at its interactions with the Marshall funds variable. Overall, the relevance is stable, while the instrument's strength is somewhat inconsistent.

³¹Bombing activities during the Italian Campaign are most likely exogenous, resulting from clashes between the German and Allied soldiers on Italian land (Gagliarducci et al., 2020)

³²The classic 2SLS system of equations is made of two first-stages and one second-stage, namely:

$$Mig_{p,t-1} = \alpha + \delta_1 MSS_{p,t-1} + \delta_2 MSS_{p,t-1} * B_{i,1943-45} + \psi \mathbf{X}'_{i,1950} * \tau_t + \gamma_i + \tau_t + \epsilon_{i,t} \quad (4.7)$$

$$Mig_{p,t-1} * Marsh_{i,1950} = \alpha + \delta_1 MSS_{p,t-1} + \delta_2 MSS_{p,t-1} * B_{i,1943-45} + \psi \mathbf{X}'_{i,1950} * \tau_t + \gamma_i + \tau_t + \epsilon_{i,t} \quad (4.8)$$

$$M_{i,t} = \alpha + \beta_1 \widehat{Mig}_{p,t-1} + \beta_2 \widehat{Mig}_{p,t-1} * \widehat{Marsh}_{i,1950} + \psi \mathbf{X}'_{i,1950} * \tau_t + \gamma_i + \tau_t + \epsilon_{i,t} \quad (4.9)$$

Table 4.10.15 shows the second stage estimates of the instrumented share of migrants from the South and its interaction with the Marshall funds variable, on the presence of organised crime (Equation 4.9). Similarly, conceptually to Table 4.10.8 columns (1) to (4), the interaction of instrumented share of migrants from the South and its interaction with the Marshall funds predicts positively and with statistical significance the presence of the mafia, providing support to our estimation strategy.

Alternative construction of the Shift-Share. To further provide robustness, we construct the shift-share instrument slightly differently, that is without allowing scaling for the contemporaneous provincial population, but using its baseline instead that is 1950 population as the scaling factor in the shift-share. Therefore, we alternatively consider the shift-share as:

$$MSS_{p,t} = \frac{1}{Pop_{p,1950}} * \sum_{o=1}^O \sigma_{o,p,1955} * \Delta Mig_{o,t}^{-Mig_{o,p,t}} \quad (4.12)$$

In Table 4.10.16 it is possible to note that the estimates, despite losing some statistical significance, do not change substantially.

4.7.4 Correlation between instruments and pre-instruments social capital

To further assess the validity of our estimates, and to make sure that the results that we are showing are in fact due to the long-term exposure to mafia activity, we perform the following exercises. Indeed, the IV estimates could still be invalid if there is a persistence of municipality-specific trends in social capital attitudes in the pre-period.

First, we regress both instrumental variables related to the migratory movements and the allocation of public funds with baseline measures of social capital, that is the average TV tax compliance rate in the 1950 decade. This exercise can be thought of as a placebo, or as a test on the presence of pre-trends. That is, assessing the effect of both instruments before they took place, in cities that are then going to be treated. Table 4.10.17 reports the results of this empirical exercise.

Focusing on columns (1) and (2), we first notice that migration does not exhibit any statistically significant coefficient. When moving to the ones related to the Marshall plan funds, we find a positive and statistically significant correlation with the log of the TV tax compliance rate in the 1950 decade. This is not ideal, but it is worth noting the following points. First, this positive and significant correlation survives both the local labour markets' fixed effects. However, in the main specifications, we always employ a set of fixed effects that is way more granular and complex than this. Second, it is worth remembering that we are mainly interested in the role of the interaction of migratory movements and the allocation of Marshall funds. This interaction, even if it exhibits weak signs of statistical significance in column (1), vanishes in column (2).

Focusing then on columns (3) and (4), we find a somewhat similar pattern. However, when looking at the interaction of the migration shift-share and the total of bombing days in the II World War, none of the coefficients is statistically significant. Overall, Table 4.10.17 provides suggestive evidence of the absence of pre-trends between the instruments employed and the dependent variable at baseline.

Second, we estimate the reduced-form of the forced resettlement in a full dynamic specification, namely

$$SC_{i,t} = \alpha + \sum_{p=-2}^{+4} \beta_p C_{i,p-1} + \tau_t + \gamma_i + \delta_r * \tau_t + \epsilon_{i,t} \quad (4.13)$$

where $SC_{i,t}$ is a measure of social capital in city i at decade t . $C_{i,p}$ is the instrumental variable related to forced resettlement, restructured to be a series of dummy variables, with $p = 0$ in 1970. We inspect up to $p = -2$ decades prior and up to $p = +4$ decades after and the omitted period is $p = -1$. We include decade and municipality fixed effects, τ_t and γ_i respectively, and $\delta_r * \tau_t$ that are region times year fixed effects to account for region-specific shocks. Note that the estimating sample is restricted to the one resulting from the PSM strategy and that Equation 4.13 is weighted by population in 1950.

Figure 4.10.8 shows the results of this exercise. From it, it is possible to note that for $p = -2$ there is no sign of statistically significant differences between receiving and not receiving municipalities, reassuring us of possible pre-instrument differences concerning the outcome variable inspected.

4.8 Discussion: Potential mechanisms

The findings from the two identification strategies indicate that long exposure to organised crime has a substantial and detrimental impact on social capital. This section discusses the factor through which the effect of criminal organisations on social capital unfolds. We identify and explore the key mechanisms at play presumably connected with each proxy of social capital employed in the research, drawing on the general literature on both organized crime and corruption, as well as the wider body of work on the determinants of social capital.

We start by focusing on our main results, which are those related to TV tax compliance, which captures the civic awareness of the local population. The fact that long-term exposure to organised crime activities negatively affects the TV tax compliance rate can be reconciled with the idea that this exposure positively affects the propensity to engage in individualistic and dishonest behaviour, hence reducing their pro-social behaviour. In fact, according to Winkler (2021), an adverse event has the potential to trigger self-serving behaviour by individuals. Moreover, the recent work from Gulino and Masera (2023), which looks at the effect of a local corruption scandal on the propensity of stealing by supermarket customers, shows that

corruption and dishonest behaviour are indeed contagious. We conjecture a somewhat similar mechanism in our setting, whereby exposure to corruption positively influences the likelihood of dishonest behaviour, measured by the evasion of the TV tax.

Secondly, we observe a negative result associated with the number of voluntary associations, which should proxy for civic engagement. The mafia proposes a socio-cultural and economic model based on the extremes of values such as selfishness, oppression, cunning, arrogant competition, violence, and power to impose one's dominion over others and the environment. Indeed, territorial control requires that residents know the mafia's authority in their town or neighbourhood and its vast capacity for personal, social, and economic collapse. This aspect makes people either tolerate the group's existence or remain neutral, choosing not to express strong sentiments in any circumstances. Only in a few cases, do people become extra-civic to indicate their opposition to the criminal organisations and refusal to accept any compromise with them. Additionally, mafia presence can cause community disruption as the illegal activities of the mafia often breed distrust and suspicion among community members. Therefore, their presence can induce a sense of selfishness in the local community, making people less prone to invest in social capital and leading to a decline in collective initiatives for the common good. In other words, the presence of organised crime generates an environment with reduced collaboration as a result of dread and resignation.

Lastly, we consider the possible mechanisms behind the negative effects related to the turnout of the referendum and the European elections as proxies for political participation. The arrival of criminal organisations and their engagement in criminal activities often clashes with the state's presence. In the case of mafias migrating towards the Centre-North of Italy, local political and administrative institutions were often oriented towards both denying the mafia's presence and avoiding problems increasingly raised by representatives of the investigative and judicial authorities on the matter (Massari, 1998).³³ The lack of perceived support from the state may lead to lower institutional trust and lower political participation among the population. Yet, previous studies have demonstrated that exposure to corruption may lower institutional trust over the short term. In the context of corruption, Daniele, Aassve, et al. (2023) shows how corruption scandals negatively impact institutional trust in the long term affecting individuals' beliefs. Similarly, organised crime may erode local communities' social fabric by crowding out state institutions' effectiveness and the rule of law (Alesina, Piccolo, et al., 2019). This mechanism is plausible, also given the empirical evidence from other contexts. For example, (Buonanno, Plevani, et al., 2021) shows how a natural event such as an earthquake affects social capital as a result of the state's inability to supply public goods.

³³In this instance, the words of some mayors and administrators of large northern cities appear significant, who, on the occasion of public demonstrations or interviews with the press, have come to despise anyone who tries to raise the question of mafia infiltration in contexts under examination.

4.9 Conclusion

Organised crime is a pervasive phenomenon that has been and is being studied with increasing interest in the economics literature. However, to the best of our knowledge, this literature has not provided extensive evidence on the relationship between organised crime and social capital. In this paper, we combine multiple historical data sources and employ novel ones to study the consequences of long-term exposure to organised crime activities on social capital related outcomes.

We focus on Italy as a case study and investigate this relationship in the context of the organized crime presence in the Centre-North, exploiting two external causes of expansion as plausible exogenous shocks as instruments. The results of both identification strategies, estimated through an IV approach, reveal that long-term exposure to mafia presence depresses proxies of social capital, represented by the compliance rate of the TV tax.

Then, in a cross-section fashion, we investigate as proxies for social capital the number of voluntary associations, the turnout of the European elections, and the turnout at referendums. In such a methodological setting, we find differences between the two IV approaches. Namely, the identification based on the forced resettlement law yields negative and statistically significant results across all the previously mentioned proxies. However, if we focus on the combination of migratory movements and public funds allocation as instrumental variables, we find a meaningful and negative effect only for the turnout of the European elections.

Hence, overall we document the existence of a meaningful relationship between long-term exposure to organised crime activities and social capital. Given these findings, this study is significant due to the socio-economic effects of perceiving the risk posed by criminal organisations.

Our work represents an advance toward a deeper understanding of the impact of organized crime on social outcomes. It represents one of the first attempts of the economic literature to move in this direction, and as such, it may benefit from additional research. This is an important connection to unveil since criminal organizations deeply affect the social fabric of the territory in which they operate. The implications of a damaged local social capital can have an impact on various aspects related to the development of a well-operating society.

The findings of our study have straightforward and meaningful policy implications both for policymakers and academics alike. Firstly, they may explain the dynamics of organized crime presence in the territory. Scholars have highlighted how criminal organizations directly affect local communities, though social control and the accumulation of social capital are key components for their development. Secondly, as pointed out by judge Borsellino, the fight against the mafia was not supposed to be only a detached war of repression but a cultural and

moral movement. Our findings may help design effective counter-organized crime measures since social capital is an essential component for their success. Lastly, since other countries could be experiencing a similar phenomenon of active criminal organizations in the territory or mafia transplantation, it would be interesting to investigate this issue as a prevention mechanism.

4.10 Figures and Tables

4.10.1 Figures

Figure 4.10.1: Log. of news related to mafia, avg. over 1950 to 2006.

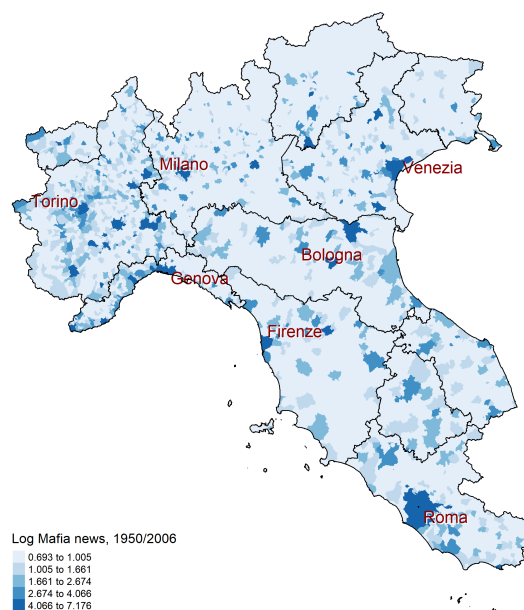
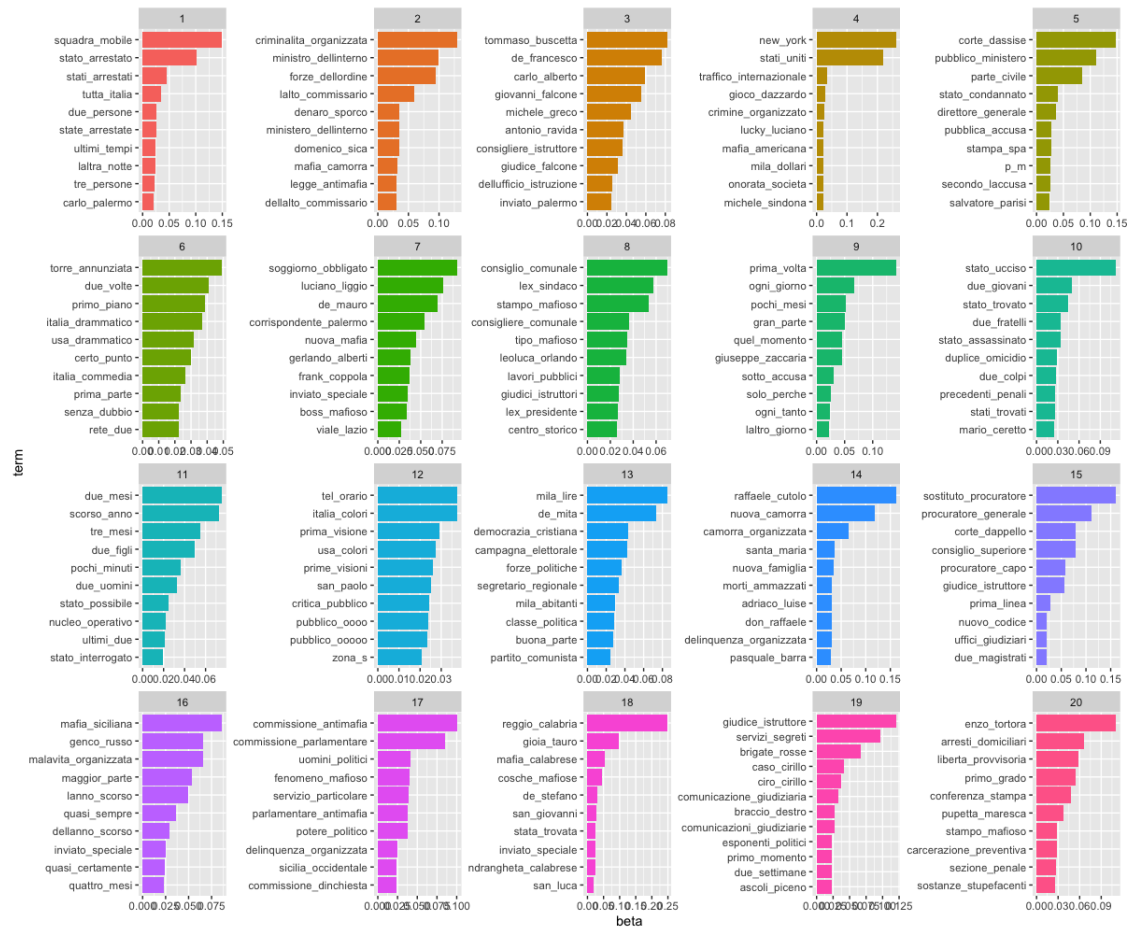


Figure 4.10.2: Topics of organised crime related news extracted via a LDA model.



Note: translation of the top 3 bigrams of the 20 topics follows. (1) investigation_squad; status_arrested; status_arrested. (2) organised_crime; interior_ministry; police_force. (3) tommaso_buscetta; de_francesco; carlo_alberto. (4) new_york; united_states; international_trafficking. (5) assizes_court; public_minister; civil_party. (6) torre_annunziata; two_times; fore_ground. (7) forced_resettlement; luciano_liggio; de_mauro. (8) town_council; former_mayor; mafia_like. (9) first_time; every_day; few_months. (10) status_killed; two_youngsters; status_found. (11) two_months; last_year; three_months. (12) phone_timeline; italy_colors; premiere. (13) thousands_liras; de_mita; christian_democracy. (14) raffaele_cutolo; new_camorra; organised_camorra. (15) deputy_prosecutor; general_attorney; appellate_court. (16) sicilian_mafia; genco_russo; organisedz_crime. (17) antimafia_commission; parliamentary_commission; politics_men. (18) reggio_calabria; gioia_taurino; calabria_mafia; (19) investigating_judge; secret_services; red_brigades. (20) enzo_tortora; house_arrests; bail.

Figure 4.10.3: Maps relative to forced resettlers distribution and persistence.

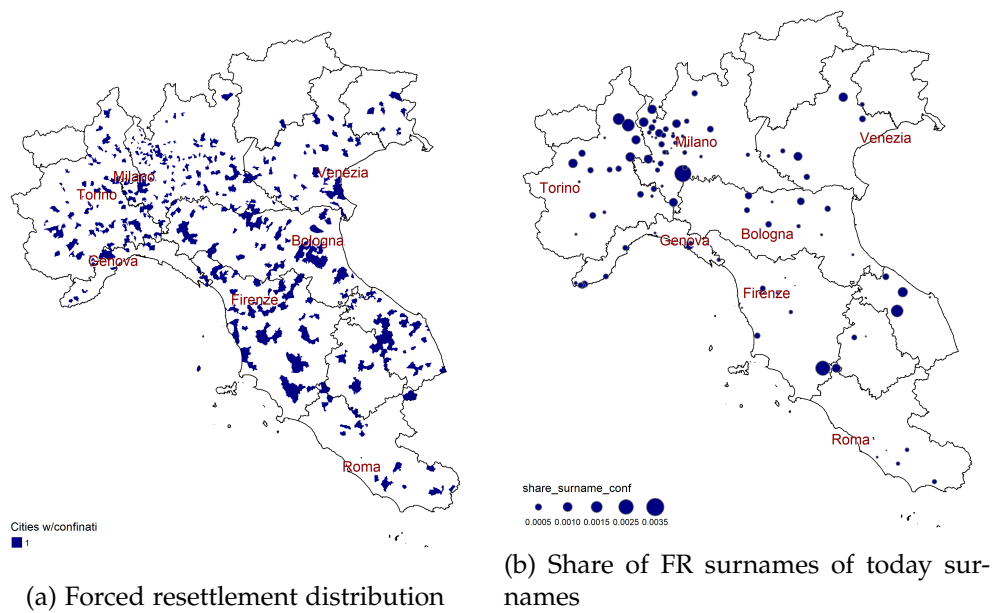


Figure 4.10.4: Maps relative to South to Centre-North migration, Marshall funds and bombing days distribution.

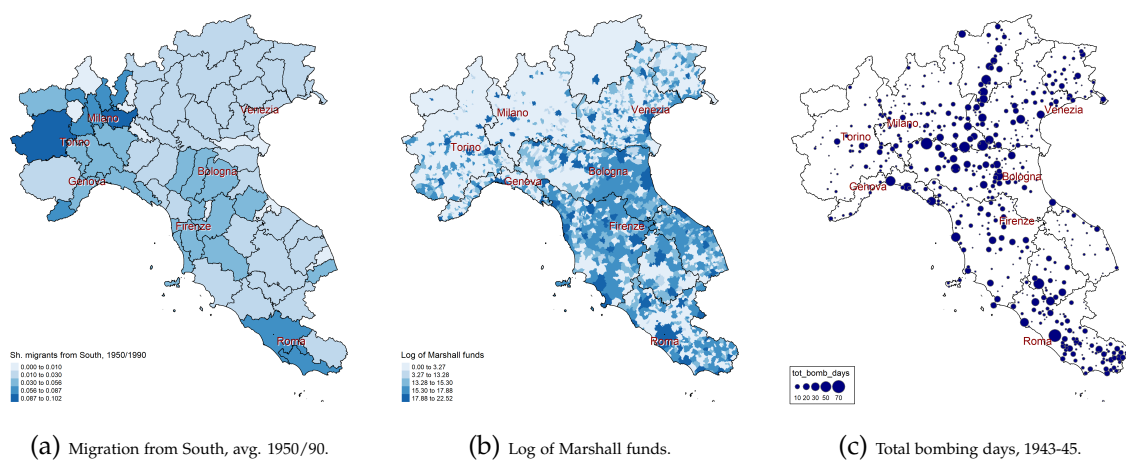


Figure 4.10.5: Avg. TV tax compliance rate 2000/10s

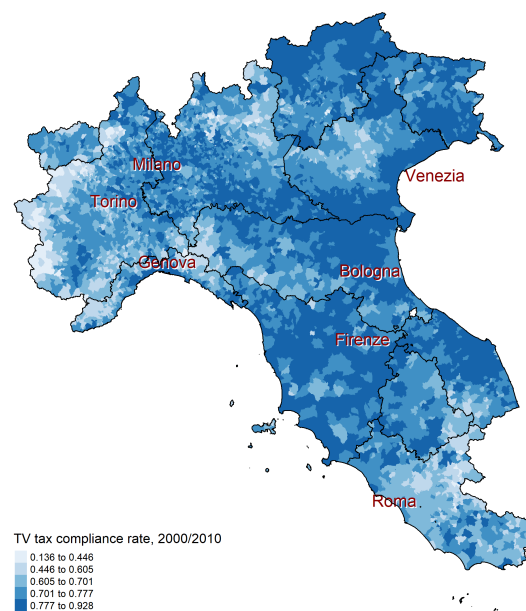
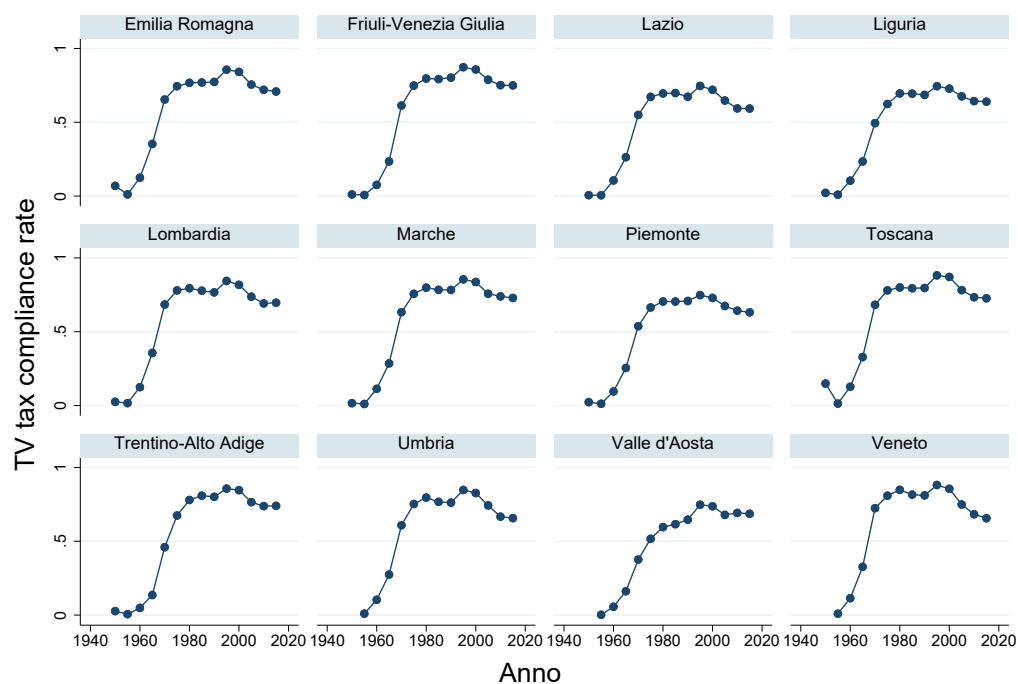


Figure 4.10.6: Evolution of TV tax compliance rate over time, by region.



Graphs by region

Figure 4.10.7: Maps relative to the number of voluntary associations per capita, the turnout to European election and referendum.

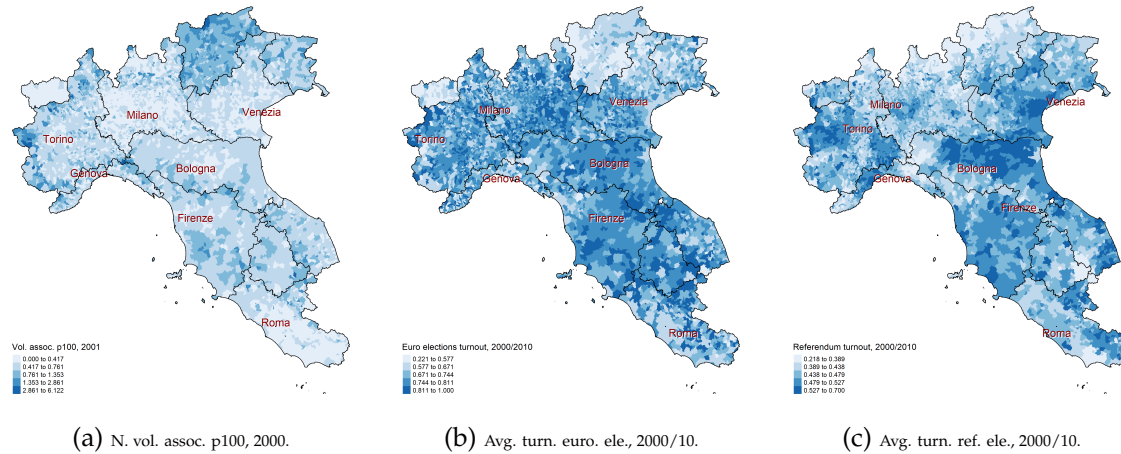
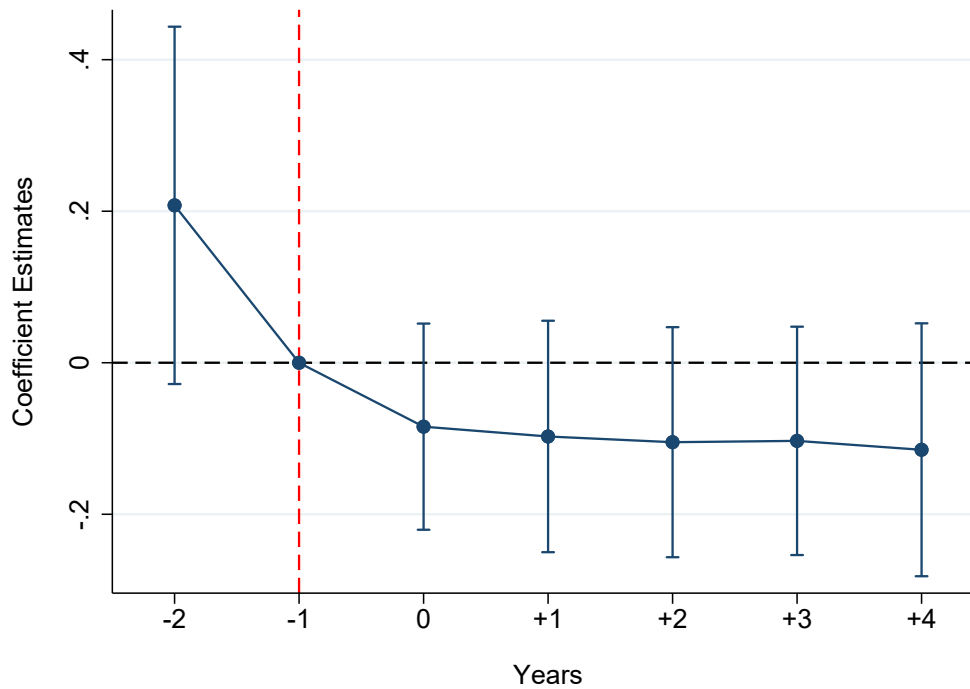


Figure 4.10.8: Full dynamic specification of forced resettlement law instrument.



4.10.2 Tables

Table 4.10.1: Correlation between mafia news indicator and confiscations dummies.

	<i>Confisc.</i> <i>Overall_{i,1980-2020}</i>		<i>Confisc.</i> <i>Firms_{i,1980-2020}</i>		<i>Confisc.</i> <i>Real Estate_{i,1980-2020}</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Mafia_{i,1950-1990}</i>	0.124*** (0.012)	0.102*** (0.014)	0.088*** (0.011)	0.063*** (0.011)	0.119*** (0.012)	0.097*** (0.013)
<i>N</i>	5405	5405	5405	5405	5405	5405
adj. <i>R</i> ²	0.215	0.227	0.119	0.138	0.201	0.213
Mean outcome	0.171	0.171	0.050	0.050	0.158	0.158
SLL FE	✓	✓	✓	✓	✓	✓
Controls		✓		✓		✓

Notes: Dependent variables: a dummy equal to one if a municipality ever experienced a confiscation; a dummy equal to one if a firm registered in a municipality has ever been confiscated; a dummy equal to one if a real estate in a municipality has ever been confiscated. The endogenous variable, *Mafia_{i,1950-1990}*, refers to the log of the number of news related to the mafia in city *i*, averaged from the 1950s to the 1990s. Controls include city population in 1950, longitude, latitude and area. All columns include local labor markets areas fixed effects. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.10.2: Descriptive statistics of main variables.

	N	mean	sd	p10	p50	p90
<i>Organised crime presence</i>						
Log. of Mafia news	38381.00	0.20	0.68	0.00	0.00	0.69
<i>Forced resettlement</i>						
Confino	38381.00	0.09	0.29	0.00	0.00	0.00
N. cities w/Confino	499.00	-	-	-	-	-
<i>Migration, Marshall, bombs</i>						
Share of migrants from South	38381.00	0.03	0.03	0.01	0.02	0.06
Log. of Marshall funds	38381.00	3.72	6.61	0.00	0.00	15.56
Bombing days	38381.00	0.73	3.48	0.00	0.00	1.00
<i>Social capital</i>						
TV tax compliance	38381.00	0.55	0.31	0.01	0.69	0.85
Referendum turnout (avg. 2000-2010)	5483.00	0.46	0.05	0.40	0.46	0.53
N. vol. ass. p100 inhab. (2001)	5483.00	0.59	0.43	0.24	0.49	1.04
Euro. elections turnout (avg. 2000-2010)	5483.00	0.73	0.09	0.61	0.75	0.83
<i>Municipalities characteristics</i>						
Population (1936)	5483.00	5105.83	26935.18	888.00	2353.00	7990.00
Population	38381.00	6355.96	44952.12	476.00	2165.00	10260.00
Pop. density	38381.00	239.33	442.94	26.00	114.31	542.34
Elderly index	38381.00	1.23	1.21	0.35	0.95	2.32
Avg. household size	38381.00	3.03	0.76	2.23	2.86	4.07
Educ. gender gap	38381.00	1.33	0.66	0.90	1.16	1.92
Illiteracy index	38381.00	0.02	0.04	0.00	0.01	0.06
Owned houses index	38381.00	69.02	16.73	43.55	73.53	86.10
Workforce participation rate	38381.00	55.76	7.41	47.49	55.76	66.07

Notes: this tables shows the descriptive statistics of the variables that at our disposal in the time varying analysis.

Table 4.10.3: Balance table by forced resettlement law.

	Not-Confino	Confino	Diff. (NC - C)	SE	N
Population (1936)	4794.762	8724.612	-3929.849***	(1346.535)	5483
Population (1950)	5141.040	9453.308	-4312.267**	(1677.049)	5483
Pop. density (1950)	179.866	298.230	-118.364***	(13.019)	5483
Elderly index (1950)	0.486	0.471	0.015	(0.013)	5483
Avg. household size (1950)	4.055	4.088	-0.033	(0.039)	5483
Owned houses index (1950)	54.390	40.331	14.059***	(1.077)	5483
Educ. gender gap (1950)	1.691	1.614	0.077	(0.049)	5483
Illiterate index (1950)	0.059	0.075	-0.016***	(0.003)	5483
Workforce participation rate (1950)	56.352	55.991	0.360	(0.371)	5483
Log. mafia news (avg. 50/00)	0.918	1.083	-0.165***	(0.031)	5483

Notes: * p<0.10, ** p<0.05, *** p<0.01.

Table 4.10.4: Mafia presence and TV tax compliance rate, forced resettlement.

	OLS				2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>TV tax compliance rate</i>								
<i>Mafia_{i,t}</i>	-0.039*** (0.004)	-0.020*** (0.003)	-0.015*** (0.003)	-0.020*** (0.003)	-1.284*** (0.180)	-0.457*** (0.140)	-0.405*** (0.157)	-0.420*** (0.140)
<i>N</i>	37465	37465	37465	37465	37465	37465	37465	37465
KP F-Stat					58.664	32.342	26.972	30.486
CD F-Stat					150.320	84.232	63.512	77.192
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓		✓	✓	✓
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: Dependent variables: the log of the ratio of the number of TVs over the number of households. The endogenous variable, *Mafia_{i,t}*, refers to the log + 1 of the number of news related to the mafia in city *i* at *t*. The instrumental variable, *Confino_{i,t}*, is a dummy equal to 1 if a city *i* received a confinato. It is equal to 0 pre-1970 and equal to 1 from 1970 onward. Columns (1), (2), (3) and (4) show the OLS estimates. Columns (5), (6), (7) and (8) show the 2SLS estimates. Columns (5), (6), (7) and (8) report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4.10.5: First stage of forced resettlement.

	<i>Mafia_{i,t}</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>Whole sample</i>				<i>Matched sample</i>			
<i>Confino_{i,t}</i>	0.208*** (0.027)	0.154*** (0.027)	0.130*** (0.025)	0.148*** (0.027)	0.157*** (0.034)	0.157*** (0.034)	0.132*** (0.032)	0.150*** (0.034)
<i>N</i>	37465	37465	37465	37465	6738	6738	6738	6738
KP F-Stat	58.664	32.342	26.972	30.486	21.718	22.441	17.848	20.234
CD F-Stat	150.320	84.232	63.512	77.192	30.723	32.405	23.250	27.999
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓				
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: The endogenous variable, *Mafia_{i,t}*, refers to the log + 1 of the number of news related to the mafia in city *i* at *t*. The instrumental variable, *Confino_{i,t}*, is a dummy equal to 1 if a city *i* received a confinato. It is equal to 0 pre-1970 and equal to 1 from 1970 onward. Columns (1), (2), (3) and (4) show first stage estimates over the whole sample, while columns (5), (6), (7) and (8) show first stage estimates over the matched one. All columns report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4.10.6: Reduced form of forced resettlement.

	<i>TV tax compliance rate</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>Whole sample</i>				<i>Matched sample</i>			
<i>Confino_{i,t}</i>	-0.267*** (0.024)	-0.070*** (0.019)	-0.053*** (0.018)	-0.062*** (0.018)	-0.055* (0.032)	-0.055* (0.032)	-0.069** (0.030)	-0.070** (0.029)
<i>N</i>	37465	37465	37465	37465	6738	6738	6738	6738
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓				
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: Dependent variable: the log of the ratio of the number of TVs over the number of households. The instrumental variable, *Confino_{i,t}*, is a dummy equal to 1 if a city *i* received a confinato. It is equal to 0 pre-1970 and equal to 1 from 1970 onward. Columns (1), (2), (3) and (4) show reduced form estimates over the whole sample, while columns (5), (6), (7) and (8) show reduced form estimates over the matched one. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4.10.7: Mafia presence and TV tax compliance rate, migratory movements and Marshall funds.

	OLS				2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>TV tax compliance rate</i>								
<i>Mafia_{i,t}</i>	-0.039*** (0.004)	-0.020*** (0.003)	-0.015*** (0.003)	-0.020*** (0.003)	-0.335*** (0.064)	-0.083** (0.036)	-0.055 (0.042)	-0.372*** (0.076)
<i>N</i>	37465	37465	37465	37465	32898	32898	32898	32898
KP F-Stat					27.068	21.480	9.994	19.124
CD F-Stat					110.521	70.909	39.719	65.064
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓		✓	✓	✓
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: Dependent variable: the log ratio of the number of TVs over the number of households. The endogenous variable, *Mafia_{i,t}*, refers to the log + 1 of the number of news related to the mafia at *t*. The instrumental variables, *Mig_{p,t-1}* and *Mig_{p,t-1}*Marsh_{i,1950}*, are the share of migrants from the south to province *p* at time *t-1* and its interaction with the log amount of funds that city *i* received from the Marshall Aid plan in 1950, respectively. Columns (1), (2), (3) and (4) show the OLS estimates. Columns (5), (6), (7) and (8) show the 2SLS estimates. Columns (5), (6), (7) and (8) report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4.10.8: First stage and reduced form of migratory movements and Marshall funds.

	<i>Mafia_{i,t}</i>				<i>TV tax compliance rate</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>First stage</i>				<i>Reduced form</i>			
<i>Mig_{p,t-1}</i>	0.471*** (0.139)	0.523*** (0.143)	0.248 (0.159)	0.538*** (0.149)	-0.356*** (0.047)	-0.130*** (0.045)	-0.060 (0.051)	-0.621*** (0.059)
<i>Mig_{p,t-1}*Marsh_{i,1950}</i>	0.232*** (0.039)	0.169*** (0.037)	0.153*** (0.038)	0.174*** (0.038)	-0.059*** (0.010)	-0.004 (0.007)	-0.005 (0.007)	-0.020*** (0.007)
<i>N</i>	32898	32898	32898	32898	32898	32898	32898	32898
KP F-Stat	27.068	21.480	9.994	19.124				
CD F-Stat	110.521	70.909	39.719	65.064				
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓		✓	✓	✓
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: Dependent variables: the log + 1 of the number of news related to the mafia; the log ratio of the number of TVs over the number of households. The instrumental variables, *Mig_{p,t-1}* and *Mig_{p,t-1}*Marsh_{i,1950}*, are the share of migrants from the south to province *p* at time *t-1* and its interaction with the log amount of funds that city *i* received from the Marshall Aid plan in 1950, respectively. Columns (1), (2), (3) and (4) show the first stage estimates. Columns (5), (6), (7) and (8) show the reduced form estimates. Columns (5), (6), (7) and (8) report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4.10.9: Mafia presence and social capital outcomes, cross-section.

	OLS		2SLS-FS		2SLS-MM	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A - N. of voluntary associations</i>						
<i>Mafia_{i,1950-2000}</i>	0.002 (0.007)	-0.000 (0.007)	-0.153** (0.074)	-0.209** (0.100)	0.027 (0.032)	0.041 (0.050)
<i>N</i>	5405	5405	5407	5407	5407	5407
KP F-Stat			20.732	14.259	38.562	21.392
CD F-Stat			28.138	20.108	130.153	60.804
Mean outcome	0.589	0.589	0.589	0.589	0.589	0.589
<i>Panel B - European elections turnout</i>						
<i>Mafia_{i,1950-2000}</i>	-0.011*** (0.002)	-0.007*** (0.002)	-0.087*** (0.024)	-0.087*** (0.031)	-0.040*** (0.007)	-0.041*** (0.011)
<i>N</i>	5405	5405	5407	5407	5407	5407
KP F-Stat			20.732	14.259	38.562	21.392
CD F-Stat			28.138	20.108	130.153	60.804
Mean outcome	0.734	0.734	0.734	0.734	0.734	0.734
<i>Panel C - Referendums turnout</i>						
<i>Mafia_{i,1950-2000}</i>	0.001 (0.001)	0.001 (0.001)	-0.022* (0.012)	-0.025* (0.015)	0.002 (0.003)	0.005 (0.005)
<i>N</i>	5405	5405	5407	5407	5407	5407
KP F-Stat			20.732	14.259	38.562	21.392
CD F-Stat			28.138	20.108	130.153	60.804
Mean outcome	0.459	0.459	0.459	0.459	0.459	0.459
SLL FE	✓	✓	✓	✓	✓	✓
Controls		✓		✓		✓

Notes: Dependent variables: the number of voluntary associations per 100 inhabitants in 2001; the avg. turnout to european elections between 2000 and 2010; the avg. turnout to referendums between 2000 and 2010. The endogenous variable, *Mafia_{i,1950-2000}*, refers to the log + 1 of the number of news related to the mafia in city *i*, averaged over 1950 and 2000. The first instrumental variable, *Confino_i*, is a dummy equal to 1 if a city *i* received a confinato. The second instrumental variables are *Mig_{p,1950-90}* and *Mig_{p,1950-90}*Marsh_{i,1950}*, that are the share of migrants from the south to province *p*, averaged from the 1950s to the 1990s, and its interaction with the log amount of funds that a city *i* received from the Marshall Aid plan in 1950, respectively. Columns (1) and (2) show the OLS estimates. Columns (3) and (4) show the 2SLS estimates of the forced resettlement law. Columns (5) and (6) show the 2SLS estimates of migration and Marshall plan funds. Columns from (3) to (6) report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population in 1950, longitude, latitude and area. All columns include local labor markets areas fixed effects. Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4.10.10: Mafia-type heterogeneity in forced resettlement and TV tax compliance rate.

	TV tax compliance rate	
	(1)	(2)
$Confino_{i,t}$	-0.568*** (0.149)	-0.316*** (0.061)
$Confino_{i,t} * Cosa Nostra_i$	0.295* (0.152)	0.246*** (0.066)
$Confino_{i,t} * 'Ndrangheta_i$	0.316** (0.153)	0.250*** (0.067)
$C_{i,t} + C_{i,t} * CN_i$	-0.273*** (0.033)	-0.071*** (0.026)
$C_{i,t} + C_{i,t} * 'N_i$	-0.252*** (0.034)	-0.067** (0.027)
N	37276	37276
Year and City FE	✓	✓
Controls		✓

Notes: Dependent variable: the log of the ratio of the number of TVs over the number of households. The instrumental variable, $Confino_{i,t}$ or $(C_{i,t})$, is a dummy equal to 1 if a city i received a confinato. It is equal to 0 pre-1970 and equal to 1 in 1970 and onward. The instrument is interacted with two dummies, namely *Cosa Nostra* _{i} or (CN_i) and *'Ndrangheta* _{i} or (N_i) , the omitted dummy being *Camorra* _{i} . Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects and year fixed effects. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4.10.11: Mafia presence and TV tax compliance rate, forced resettlement, PSM estimates.

	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel C - TV tax compliance rate</i>						
$Mafia_{i,t}$	-0.039*** (0.007)	-0.047*** (0.007)	-0.040*** (0.007)	-0.353* (0.198)	-0.518** (0.221)	-0.463** (0.194)
<i>N</i>	6738	6738	6738	6738	6738	6738
KP F-Stat				21.718	17.477	20.002
CD F-Stat				30.723	23.550	27.696
Year and City FE	✓	✓	✓	✓	✓	✓
Region * Year FE		✓			✓	
Region linear trends			✓			✓

Notes: Dependent variable: the log of the ratio of the number of TVs over the number of families. The endogenous variable, $Mafia_{i,t}$, refers to the log + 1 of the number of news related to the mafia in city i at t . The instrumental variable, $Confino_{i,t}$, is a dummy equal to 1 if a city i received a confinato. It is equal to 0 pre-1970 and equal to 1 in 1970 and onward. In all columns the estimating sample is restricted to the matched one. Columns (1), (2) and (3) show the OLS estimates. Columns (4), (5), (6), (7) and (8) show the 2SLS estimates. Columns (4), (5) and (6) report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.10.12: Matching balancing test.

Variables	Mean		t-test	
	Treated	Control	t	p-value
Population (1936)	9278.3	7921	1.09	0.278
Population (1950)	10346	8843.6	1.01	0.311
Pop. density (1950)	300.52	266.17	1.61	0.109
Owned houses index (1950)	40.143	39.062	0.98	0.328
Illiteracy index (1950)	0.074	0.079	-1.19	0.235

Notes: this tables shows the variables that were used in the matching algorithm.

Table 4.10.13: Mafia presence and TV tax compliance rate, migration shift-share and bombing days.

	OLS				2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>TV tax compliance rate</i>								
<i>Mafia_{i,t}</i>	-0.039*** (0.004)	-0.020*** (0.003)	-0.015*** (0.003)	-0.020*** (0.003)	-1.025*** (0.131)	-0.348*** (0.100)	-0.525*** (0.124)	-0.407*** (0.100)
<i>N</i>	37465	37465	37465	37465	32898	32898	32898	32898
KP F-Stat					20.057	13.800	12.693	13.651
CD F-Stat					62.924	39.008	33.988	40.129
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓		✓	✓	✓
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: Dependent variable: the log of the ratio of the number of TVs over the number of families. The endogenous variable, *Mafia_{i,t}*, refers to the log + 1 of the number of news related to the mafia at *t*. The instrumental variables, *MSS_{p,t-1}* and *MSS_{p,t-1} * B_{i,1943-45}*, are the shift-share migration instruments values of province *p* at time *t-1* and its interaction with the total number of days with a bombing that city *i* suffered during WWII, respectively. Columns (1), (2), (3) and (4) show the OLS estimates. Columns (5), (6), (7) and (8) show the 2SLS estimates. Columns (5), (6), (7) and (8) report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4.10.14: First stage of migration shift-share and bombing days on migration and its interaction with Marshall funds,.

	<i>Mig_{p,t-1}</i>				<i>Mig_{p,t-1}*Marsh_{i,1950}</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>MSS_{p,t-1}</i>	0.302*** (0.045)	0.198*** (0.045)	0.024 (0.048)	0.247*** (0.054)	0.938*** (0.265)	0.420 (0.271)	0.757** (0.366)	0.377 (0.296)
<i>MSS_{p,t-1}*B_{i,1943-45}</i>	0.039*** (0.005)	0.032*** (0.005)	0.021*** (0.003)	0.033*** (0.006)	-0.421*** (0.066)	-0.143*** (0.050)	-0.074* (0.044)	-0.155*** (0.052)
<i>N</i>	32898	32898	32898	32898	32898	32898	32898	32898
KP F-Stat	57.871	37.258	20.441	31.421	25.868	5.409	3.698	5.271
CD F-Stat	52.177	27.409	6.845	41.072	54.746	6.932	5.584	8.208
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓		✓	✓	✓
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: The endogenous variables, $Mig_{p,t-1}$ and $Mig_{p,t-1} * Marsh_{i,1950}$, refer to the share of migrants from the south to province p at time $t-1$ and its interaction with the amount of funds that city i received from the Marshall Aid plan in 1950, respectively. The instrumental variables, $MSS_{p,t-1}$ and $MSS_{p,t-1} * B_{i,1943-45}$, are the shift-share migration instruments values of province p at time $t-1$ and its interaction with the total number of days with a bombing that city i suffered during WWII, respectively. Columns (1), (2), (3) and (4) show first stage estimates on $Mig_{p,t-1}$ alone, while columns (5), (6), (7) and (8) show first stage estimates on $Mig_{p,t-1} * Marsh_{i,1950}$. All columns report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.10.15: Second stage of instrumented migration and Marshall funds on mafia presence.

	<i>Mafia_{i,t}</i>			
	(1)	(2)	(3)	(4)
<i>Mig_{p,t-1}</i>	-4.559 (3.033)	-15.356*** (5.596)	-45.542*** (13.012)	-12.269** (5.310)
<i>Mig_{p,t-1}*Marsh_{i,1950}</i>	3.209*** (0.479)	4.600*** (1.703)	1.711 (2.923)	4.913*** (1.725)
<i>N</i>	32898	32898	32898	32898
KP F-Stat	26.999	4.987	2.082	4.684
CD F-Stat	31.725	5.783	3.646	7.048
Year and City FE	✓	✓	✓	✓
Controls		✓	✓	✓
Region * Year FE			✓	
Region linear trends				✓

Notes: The dependent variable, $M_{i,t}$ refers to the log of the number of news related to the mafia at t . The endogenous variables, $Mig_{p,t-1}$ and $Mig_{p,t-1} * Marsh_{i,1950}$, refer to the share of migrants from the south to province p at time $t-1$ and its interaction with the amount of funds that city i received from the Marshall Aid plan in 1950, respectively. All columns report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.10.16: Mafia presence and social capital outcomes, migration shift-share and bombing days. 1950 population as scaling factor in the shift-share.

	OLS				2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel C - TV tax compliance rate</i>								
$Mafia_{i,t}$	-0.039*** (0.004)	-0.020*** (0.003)	-0.015*** (0.003)	-0.020*** (0.003)	-0.924*** (0.116)	-0.287*** (0.097)	-0.511*** (0.123)	-0.363*** (0.095)
N	37465	37465	37465	37465	32898	32898	32898	32898
KP F-Stat					22.012	16.065	14.117	15.860
CD F-Stat					65.590	41.602	34.883	42.932
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓		✓	✓	✓
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: Dependent variable: the log of the ratio of the number of TVs over the number of families. The endogenous variable, $Mafia_{i,t}$, refers to the log + 1 of the number of news related to the mafia at t . The instrumental variables, $MSS_{p,t-1}$ and $MSS_{p,t-1} * B_{i,1943-45}$, are the shift-share migration instruments values of province p at time $t-1$ and its interaction with the total number of days with a bombing that city i suffered during WWII, respectively. The migration shift-share is scaled by 1950 population of province p , rather than by contemporaneous population. Columns (1), (2), (3) and (4) show the OLS estimates. Columns (5), (6), (7) and (8) show the 2SLS estimates. Columns (5), (6), (7) and (8) report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.10.17: Correlation between instruments and pre-instrument social capital measures.

	(1)	(2)	(3)	(4)
<i>TV tax compliance rate</i> ₁₉₅₀				
<i>Mig</i> _{p,1950-90}	0.635 (0.716)	0.773 (0.714)		
<i>Marsh</i> _{p,1950}	0.011*** (0.003)	0.012*** (0.003)		
<i>Mig</i> _{p,1950-90} * <i>Marsh</i> _{p,1950}	0.165* (0.086)	0.056 (0.085)		
<i>MSS</i> _{p,1950-1990}			36.303 (22.959)	37.156 (22.971)
<i>B</i> _{i,1943-45}			0.020*** (0.004)	0.012** (0.005)
<i>MSS</i> _{p,1950-1990} * <i>B</i> _{i,1943-45}			3.461 (3.513)	1.289 (3.683)
<i>N</i>	4530	4530	4530	4530
SLL FE	✓	✓	✓	✓
Controls		✓		✓

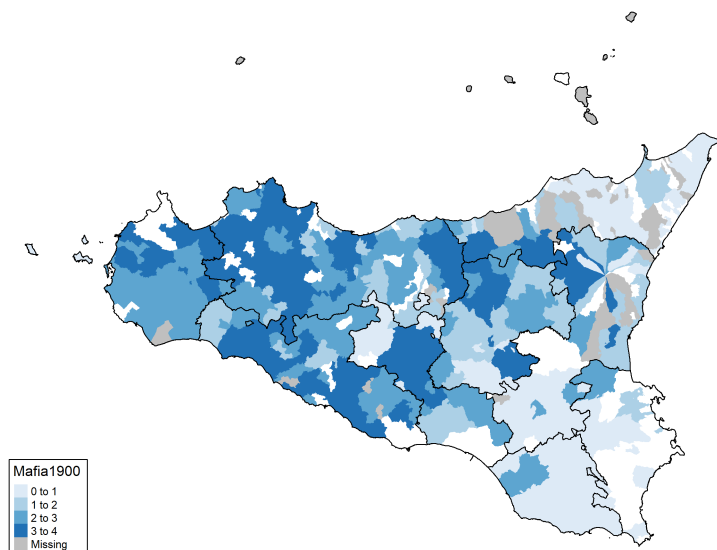
Notes: Dependent variables: the log of the average ratio of the number of TVs over the number of families in the 1950 decade. The first set of instrumental variables, *Mig*_{p,1950-90}, *Marsh*_{p,1950} and *Mig*_{p,1950-90}**Marsh*_{p,1950}, are the average share of migrants from the South to city *i* between the 1950 and 1990, the log amount of the Marshall funds allocated to city *i*, and their interaction. The second set of instrumental variables, *MSS*_{p,1950-90}, *B*_{p,1943-45} and *MSS*_{p,1950-90}**B*_{p,1943-45}, are the shift share instrument for migration, the number of bombing days in city *i* between 1943 and 1945 and their interaction. Controls include city population in 1950, longitude, latitude and area. Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Appendices

4.A Sicilian Historical Mafia Presence

The measure of mafia presence for Sicily, at the municipality level, at the beginning of the XX century, comes from Cutrera (1900). Cutrera was a policeman based in the island that assembled this intelligence based on his own experience. This measure is a standard in the literature that studied the presence of organised crime in Sicily over the period (Buonanno, Durante, et al., 2015; De Feo and De Luca, 2017; Acemoglu, De Feo, et al., 2020). Specifically to Acemoglu, De Feo, et al. (2020), we draw on their adaptation of the measure of Cutrera (1900), that is a variable that ranges from 0 (no mafia presence), to 3 (great mafia presence).

Figure 4.1: Mafia presence in 1900



This map shows the distribution of mafia presence based on the variable created by Acemoglu, De Feo, et al. (2020), based on Cutrera (1900).

Figure 4.1 shows the distribution of mafia based on the variable created by Acemoglu, De Feo, et al. (2020), based on Cutrera (1900). It is possible to note how the highest concentration can be found in the North-West area of the region, where there is the city of Palermo.

4.A.1 Correlation Exercise: Results

To estimate the impact of the long-lasting presence of organised crime on current measures of social capital we estimate the following OLS regression:

$$Social\ Capital_i = \alpha + \beta Mafia1900_i + \gamma X_i^{hist} + \theta_p + \epsilon_i, \quad (14)$$

where *Social Capital*_{*i*} is the main outcome of interest, representing the nowadays specific social capital variable of focus in municipality *i*. *Mafia1900*_{*i*} is the main variable of interest, that is a discrete measure of mafia presence over the Sicilian territory, for municipality *i*. X_i^{hist} is a vector of historical control variables in municipality *i*. Provincial fixed effects θ_p and an idiosyncratic error ϵ_i conclude the specification.

In an attempt to move toward causality, we apply the framework implemented in Acemoglu, De Feo, et al. (2020) when inspecting medium-term and long-term outcomes. That is, we apply an instrumental variable strategy by instrumenting the measure of mafia activity with the relative rainfall in the spring of 1893. Namely, this amount of relative rainfall in the spring of 1893 resulted in a drought, that impacted crop production and has been shown to be correlated with the rise of the peasant fasci³⁴. Specifically, we estimate the following two-stage least squares (2SLS):

$$Mafia_i = \alpha + \beta_1 relative\ rainfall_i^{1893} + \gamma X_i^{hist} + \theta_p + \epsilon_i, \quad (15)$$

$$Social\ Capital_i = \alpha + \beta \widehat{Mafia1900}_i + \gamma X_i^{hist} + \theta_p + \epsilon_i, \quad (16)$$

where in Equation 15, the first-stage, we instrument the main variable of interest, *Mafia*_{*i*}, with the instrumental variable $relative\ rainfall_i^{1893}$, that is the amount of relative rain in the spring of 1893. We then use the cleansed by the instrument regressor of interest, and use it to estimate the second stage. As in Acemoglu, De Feo, et al. (2020), both in the first and second stages, we extend the vector of controls X_i^{hist} to include further geographic variables and to include determinants of the presence of the mafia in 1900 and of the peasants fasci.

Tables 4.1 and 4.2 show the results. For each couple of outcomes inspected, Panel A shows the coefficients related to the OLS regression, while Panel B shows the coefficients of the 2SLS estimation. When we look at the proxies for civic engagement and rule compliance (number of voluntary associations and tv tax compliance, respectively) in Table 4.1, both OLS and 2SLS estimates reveal coefficients with a pattern that are persistently negative and statistically significant. Continuing, Table 4.2 shows the results on the average turnout at European elections and at referendums, respectively. It still shows a persistent negative effects, despite it is less

³⁴For further details, we refer to (Acemoglu, De Feo, et al., 2020).

Chapter 4: Social capital and the power of the Mafia

Table 4.1: Mafia activity, number of voluntary associations and female workforce participation rate.

	N. of voluntary assoc.			TV tax compliance rate		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A - OLS</i>						
<i>Mafia1900</i>	-0.013** (0.006)	-0.021*** (0.008)	-0.017** (0.008)	-0.003 (0.006)	-0.014** (0.007)	-0.016** (0.006)
<i>N</i>	266	266	266	266	266	266
<i>Panel B - 2SLS</i>						
<i>Mafia1900</i>	-0.020 (0.019)	-0.107* (0.055)	-0.105** (0.050)	0.005 (0.032)	-0.215*** (0.058)	-0.177** (0.069)
<i>N</i>	238	238	238	238	238	238
FS F-statistic	24.844	8.082	24.117	24.844	8.082	24.117
Mean outcome	0.229	0.229	0.229	0.577	0.577	0.577
Province FE		✓			✓	✓
Controls			✓			✓

Notes: Dependent variables: the number of voluntary associations p 100 inhabitants (1-3); the TV tax compliance measure. *Mafia1900* refers to the mafia presence and activity in 1900. Robust standard errors in parentheses for *Panel A*. District and weather station clustered standard errors for *Panel B*. * p<0.10, ** p<0.05, *** p<0.01. Controls include geographic characteristics for *Panel A*. Controls include further geographic characteristics and determinants of the presence of both fasci and mafia for *Panel B*

Table 4.2: Mafia activity and the turnout to referendums and European elections.

	Euro. elections turnout			Referendums turnout		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A - OLS</i>						
<i>Mafia1900</i>	-0.003 (0.004)	0.002 (0.005)	0.000 (0.005)	-0.019** (0.007)	-0.014* (0.008)	-0.022** (0.010)
<i>N</i>	266	266	266	266	266	266
<i>Panel B - 2SLS</i>						
<i>Mafia1900</i>	-0.011 (0.015)	0.012 (0.053)	0.007 (0.029)	-0.042 (0.031)	-0.144 (0.107)	-0.107* (0.056)
<i>N</i>	238	238	238	238	238	238
FS F-statistic	24.844	8.082	24.117	24.844	8.082	24.117
Mean outcome	0.637	0.637	0.637	0.679	0.679	0.679
Province FE		✓	✓		✓	✓
Controls			✓			✓

Notes: Dependent variables: the average turnout to European elections from 1974 to 2014 (1-3); the average turnout to referendums. *Mafia1900* refers to the mafia presence and activity in 1900. Robust standard errors in parentheses for *Panel A*. District and weather station clustered standard errors for *Panel B*. * p<0.10, ** p<0.05, *** p<0.01. Controls include geographic characteristics for *Panel A*. Controls include further geographic characteristics and determinants of the presence of both fasci and mafia for *Panel B*

significant compared with the previous proxies. Overall, the results indicate a negative correlation between the presence and intensity of the Mafia in 1900. Moreover, some of these correlations are still valid when estimated via an instrumental variable strategy. These pieces of evidence are in line with the hypothesis that organised crime, via its activities that cause the creation of a distorting and corrupted environment, depresses social capital.

4.B News related to organised crime

We report some examples of an articles related to organised crime present in our extracted sample. 1) The article talks about a hotel set on fire in the city of Santa Maria Maggiore, in the province of Verbania, Piedmont.

"Is it the mafia? [...] The investigations into the appalling fire at the Excelsior, which claimed fifteen lives, seem to hit a dead end. There is still no plausible and official explanation of the origins of the accident. [...] According to rumors circulating in the country, the mafia would have extended its tentacles to the main tourist resorts and the burning of the Excelsior would be nothing more than a moment of the war that has been unleashed between rival gangs."



2) The article reports a new bloody episode in the province of Milan regarding a shoot from the car and kill of a bartender as evidence of 'ndragheta: *«A man was killed last night in a bar run by his wife by 2 revolvers that exploded from the edge of a BMW which immediately vanished.*

According to the carabinieri, the crime has no political motive even if the victim held the position of vice president of the combatants and veterans section of Lainate, a small town about twenty kilometers from Milan: it is in all probability a matter of revenge, although perhaps the the killers simply wanted to limit themselves to a warning and only by sheer fatality did the bullets hit the man. The victim is Salvatore Primerano, 52 years old, originally from Catanzaro, a worker in a factory in the area. [...] Salvatore Primerano was in fact known by everyone as a good person, dedicated only to work and family: he never got involved in politics even though he had been appointed vice president of the Fighters and Veterans section of Lainate. This task and the fact that his wife was the owner of the Crai had created jealousy in the environment as more and more customers flocked to the place deserting the other bars in the area. Just to win new sympathies Salvatore Primerano had decided to make substantial improvements to the Crai and had spent a lot on the modernization works. This had even more impacted the competition and it seems that in recent days the worker had received covert threats. [...]»



(3) The article discusses Turin's new face at fiery midnight where there are episodes of clan vendettas, female and male prostitution, drugs selling. *The man was taken out of the operating room. Before the bullet was extracted from his skull (two others had passed through his abdomen) the electroencephalogram was flat. "Speak out. Tell us who did it. You have nothing to lose," the inspector murmured to him.[...] The man was taken out of the operating room. Before the bullet was extracted from his skull (two others had passed through his abdomen) the electroencephalogram was flat. "Speak out. Tell us who did it. You have nothing to lose," the inspector murmured to him. The man raised two fingers, tracing a vague sign of the cross in the void. "Speak out. Maybe you can get away with it," the inspector tried again. The man repeated that gesture. Meaning: I die. But also: I won't say anything.*

Collected in via Santa Giulia on the night of Friday 21 May, together with a friend who was already a corpse with two now useless pistols in his hand, he would have written only his name: Giovanni Pistrorio. Twenty-seven years old. He died the next day, without regaining consciousness. And he had died, a few hours before him, in a bar on via Principe Tommaso, crashed by three bullets Aissa Bouherraoa, thirty-five years old, Algerian. He wanted to become a boss, they find him dead with not even three thousand lire in his pocket, a single change of linen in his miserable little room. A few hours later, a killer massacres the young Franco Imperio with six shots from a 7.65 automatic in a restaurant in Borgo San Paolo: three bullets smash his face, three enter his body. Clean Sweep Is the feud over? No one can tell. Some, with inevitable cynicism, comment: as long as they kill each other, all is well. Others predict a new chain of vendettas. The opinion of those who are forced to "work" on this material is: we are dealing with "work conflicts". Indeed, every outbreak of violence between rival clans cannot be judged differently. [...]

"Black Turin" regained nine-column headlines in the news pages, then the paragraphs diminished, the news became thin and cold, everyday life resumed with its sad undertows. I have to condense in this article an overly nourished series of information on Turin which has "become different". It is explained to me: there is the prostitution racket, the drug racket, the third of the fruit and vegetable markets, mediated by Neapolitan experiences; here we are at the fourth, of extortion; here we are at the fifth, of the kidnappings; here we are at the sixth, of the building industry, where labour, concrete and piles of illicit money guarantee. They are forms of the mafia, of the Camorra, which followed the great immigrations of the 1950s and within a generation managed to proliferate and take root in favorable terrain. Not to mention the spontaneous people who invent this or that robbery. To forget the very young, more or less occasional muggers. In order not to put into statistics the various types of fraud, theft, cheating, or the "chains" of receiving stolen goods. I am told: twenty-five thousand prostitutes are "beating" in the area of the so-called "great Turin". The turnover, according to some, seems to be slightly lower than Fiat's turnover, even if these are hypothetical figures, of an insane liquidity that does not know budgets or taxation.

• **AOSTA** — Tra le 24 e le 0,30 di stanotte ha preso l'arvio al casinò di St-Vincent una grossa operazione di polizia, condotta a termine dalla Guardia di Finanza, che ha bloccato gli ingressi della casa da gioco, controllato tutte le strade che portano al nuovo edificio dove si pratica il gioco d'azzardo.

AOSTA — Tre le 24 e le 2,30 di stonotte ha preso l'arrivo al casinò di St-Vincent una grossa operazione di polizia, condotta a termine dalla Guardia di Finanza, che ha bloccato gli ingressi della casa da gioco, controllato tutte le strade che portano al casale ed effettuato due blitz di controllo. Tutti i clienti ignari, si sono visti bloccare dai militari, i quali hanno effettuato un diligente controllo dei documenti. A quanti transitavano a quell'ora lungo le strade della cittadina valdostana è sembrato di essere in un paese in pieno stato d'assedio, o in un paese in pieno stato epidemia, o in un paese e proprio stato d'assedio, giacché i militari prestavano servizio con giubbottino antiproiettile ed armi appesi: nessuno ha potuto avvicinarsi

Sull'operazione di polizia si sa poco, perché ad intervenire sono stati uomini renuti da fuori valle, invitati a compiere l'operazione da magistrati della procura della Repubblica di Torino.

Si è parlato di arresti o per lo meno di fermi, ma si tratta di voci, di notizie difficilmente controllabili, perché sull'operazione è mantenuto il più stretto riserbo.

Non si esclude neppure sia stato sequestrato denaro «sporco», proveniente cioè da riscatti o da altre illecite

Si tratterebbe comunque, forse, di poche banconote riciclate. Il commissario regionale, geometra Eraldo Mangano, che cura gli interessi dell'amministrazione della Valle, che ha affidato la gestione dei giochi alla società Silav, non sembra saper molto. Lo abbiamo raggiunto al telefono e si è limitato a dire di aver ricevuto nel suo ufficio i responsabili dell'interazione di polizia a

Solo allora i clienti sono potuti rientrare nei rispettivi alberghi o luoghi di residenza. Il comandante del gruppo della



Saint Vincent, il casinò dove nella notte è scattato il blitz

Guardia di Finanza di Aosta della Valle

non ha saputo dire molto, e ha affermato che sono intervenuti circa trecento uomini e che il «bill» ha interessato tutte le case da gioco italiane, e cioè Sanremo, Campione e Venezia. Si voleva insomma sapere qualcosa di più sul problema del riciclaggio del denaro «sporco» derivato dai sequestri ai tavoli da gioco, anche in seguito delle dichiarazioni

Con la massima discrezione a vigilanza i finanziere sono intervenuti contemporaneamente nelle quattro case di gioco. Stamane gli ufficiali della Guardia di Finanza che hanno dato l'avvio ai controlli al casinò di St-Vincent riferiranno alla magistratura, forse che, per altro, nessuno ha mai trattato.

Della casa da gioco di St-Vincent si era interessato agli inizi della settimana il Consiglio regionale dove si sono discusse alcune interrogazioni, morioni ed interpellanze presentate da alcuni gruppi politici presenti al Consiglio

SANREMO — La città sembra cinta d'assedio. Posti di blocco all'autostrada, alla stazione ferroviaria, alla periferia. L'offensiva del ministro dell'Interno Scalfaro contro la mafia ed il riciclaggio del denaro «sperco» all'interno del casinò sta scioccando la riviera. Alle 10.30 di stamane la Guardia di finanza, mitra spianati, stava bloccando ancora numerosi centri vitali della città dei fiori.

Mentire gli investigatori impedivano l'accesso e l'uscita dai due porti, il Porto vecchio e Portosole, due elicotteri delle fiamme gialle continuavano a sorvolare a bassa quota le case e il golfo. «Stanno cercando tre uomini — si ricordavano le voci — che arretrarono trovato nascondiglio su una darga o che, nella notte avrebbero fatto in tempo ad evitare l'uccacciamento e a fuggire da Sanremo a bordo di una yacht».

Di chi si tratta: mafiosi, prestasoldi, elementi ex legati alla «n'dragheta» che avrebbero riciclato denaro proveniente da sequestri ai tavoli

Di ufficiale, per ora, non si sa nulla. Le ipotesi si accavallano. Il secondo blitz della storia del casinò di Sanremo, apre inquietanti interrogativi. A palazzo Bellevue e nelle sedi dei partiti, c'è grande tensione. Nella notte, mentre decine e decine di agenti di Ps, Guardia di Finanza passavano al setaccio tutti i clienti del casinò si parlava di mandati di cattura generali del

Verso le nove di stamane, proprio sul porto, nella fascia del bar sempre affollati di turisti, veniva data per certa la notizia di sei arresti: tutti personaggi molto influenti.

«E' ancora presto — ha risposto il dirigente, il vicesegretario Gennaro Simeoni — stiamo ancora operando. Appena possibile sarete informati di tutto».



Sanremo. I geo della finanza bloccano l'ingresso del Casinò

L'ora X è scattata a mezzanotte e 29 minuti dal Caspio al Sanremo. Oltre 150 fra i dirigenti della Guardia di Finanza e i carabinieri sono stati tutti i comandi del Nord Italia ed anche da Firenze, Roma e Napoli hanno fatto irruzioni in massa. I carabinieri hanno tutti i clienti ed il personale e fermando le roulettes. Tutto è finito in un attimo. I tavoli e nelle casse delle roulette sono stati sequestrati da gioco è stato sequestrato. La Guardia di Finanza e centinaia di milioni.

Le caspi casse. L'operazione combinata con tutti gli altri casci italiani è stata decisa in tutta segretezza nei giorni scorsi a Milano. I dirigenti della Guardia di Finanza avevano partecipato il ministro dell'Interno, Oscar Scalfaro, il ministro della Giustizia, i prefetti del triangolo industriale Milano-Genova-Torino. Il triangolo sul quale, secondo i dirigenti, si è svolta l'operazione è dragnetica e camorra hanno puntato le loro alleanze. E'

La Guardia di Finanza ha sequestrato i sigilli ed in giornata ha sequestrato le banconote, una per una. Una radiografia che ha permesso di individuare gli investigatori di accettare le offerte e di sporcere. Denaro dei riscatti.

Nel cuore della notte è stato arrestato il latitante più ricercato, ma è stato buttato giù dal letto il segretario generale del Casaleggio, dottor Vittorio Berta. Fu arrestato il latitante più ricercato, ma è stato buttato giù dal letto il segretario generale del Casaleggio, dottor Vittorio Berta. Fu arrestato il latitante più ricercato, ma è stato buttato giù dal letto il segretario generale del Casaleggio, dottor Vittorio Berta.

nelle sale da gioco, al ristorante, nel bar bloccando tutte le uscite. Non si poteva varcare i cancelli. Fuori, in città, numerosi posti di blocco hanno creato una cintura invalicabile. Al largo, in mare, una motovedetta della Finanza ha battuto la costa per bloccare natanti sospetti.

Si è parlato di arresti. Personaggi al di sopra di ogni sospetto. Il colonnello comandante del nucleo di Genova della Guardia di Finanza, Michele Catella, ha parlato brevemente con i cronisti annunciando che i magistrati di Milano e Torino avevano emesso numerosi mandati di cattura e che sarebbero stati eseguiti nel corso delle 24 ore.

Il Casinò è chiuso. Come minimo le roulette non gireranno sino a quando la Guardia di Finanza non avrà controllato tutti i numeri di serie delle banconote sequestrate. Le sale da gioco intanto per la seconda volta hanno conosciuto l'onta dei sicilli.

Il blitz di stanotte ha coinvolto personaggi noti e meno noti. Clienti di rango, torinesi, alessandrini, di Cuneo, Milano, e di quasi tutto il Nord Italia sono stati tratti in arresto anche per più di tre ore nelle sale da

gioco, mentre Finanza e polizia provvedevano alla loro identificazione. Tutti i nomi, circa 400, sono stati trasmessi alla procura per i termini della sentenza. Il risultato della sequestura di Roma è stato che, tra le carte eventualmente precedenti a pendenze giudiziarie. Gli ultimi hanno lasciato la casa da gioco intorno alle 4,30. Abbeggiano che il più importante finanziere c'era l'ex presidente del Casinò, Antonio Smeri, l'uomo del bilite del 1981 e fino ad un mese fa custode segreto del Casinò di Venezia. Il gioco, il ruolo del personale. Claudio Pisani, il responsabile dell'economato. Ferrari, il trasfere di Gregorio. Il trattamento non è stato diverso. I giocatori sono stati identificati. Hanno potuto lasciare la casa da gioco solo dopo essere stati identificati.

Roberto
e Giampaolo Moretti

4.C Alternative log transformation in mafia presence: inverse hyperbolic sine transformation

Table 4.1: Mafia presence and TV tax compliance rate, forced resettlement.

	OLS				2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>TV tax compliance rate</i>								
<i>Mafia_{i,t}</i>	-0.032*** (0.003)	-0.017*** (0.003)	-0.012*** (0.003)	-0.017*** (0.003)	-1.079*** (0.152)	-0.371*** (0.112)	-0.329*** (0.126)	-0.341*** (0.112)
<i>N</i>	37465	37465	37465	37465	37465	37465	37465	37465
KP F-Stat					58.989	34.447	28.601	32.485
CD F-Stat					145.738	86.757	65.407	79.671
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓		✓	✓	✓
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: Dependent variables: the log of the ratio of the number of TVs over the number of households. The endogenous variable, *Mafia_{i,t}*, refers to the $\log(x + \sqrt{x^2 + 1})$ of the number of news related to the mafia in city *i* at *t*. The instrumental variable, *Confino_{i,t}*, is a dummy equal to 1 if a city *i* received a confinato. It is equal to 0 pre-1970 and equal to 1 from 1970 onward. Columns (1), (2), (3) and (4) show the OLS estimates. Columns (5), (6), (7) and (8) show the 2SLS estimates. Columns (5), (6), (7) and (8) report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4.2: Mafia presence and TV tax compliance rate, migratory movements and Marshall funds.

	OLS				2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>TV tax compliance rate</i>								
<i>Mafia_{i,t}</i>	-0.032*** (0.003)	-0.017*** (0.003)	-0.012*** (0.003)	-0.017*** (0.003)	-0.284*** (0.053)	-0.070** (0.030)	-0.047 (0.036)	-0.316*** (0.063)
<i>N</i>	37465	37465	37465	37465	32898	32898	32898	32898
KP F-Stat					29.078	22.800	10.236	20.214
CD F-Stat					107.688	70.923	38.001	64.595
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓		✓	✓	✓
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: Dependent variable: the log ratio of the number of TVs over the number of households. The endogenous variable, *Mafia_{i,t}*, refers to the $\log(x + \sqrt{x^2 + 1})$ of the number of news related to the mafia at *t*. The instrumental variables, *Mig_{p,t-1}* and *Mig_{p,t-1}*Marsh_{i,1950}*, are the share of migrants from the south to province *p* at time *t-1* and its interaction with the log amount of funds that city *i* received from the Marshall Aid plan in 1950, respectively. Columns (1), (2), (3) and (4) show the OLS estimates. Columns (5), (6), (7) and (8) show the 2SLS estimates. Columns (5), (6), (7) and (8) report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4.3: Mafia presence and TV tax compliance rate, migration shift-share and bombing days.

	OLS				2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>TV tax compliance rate</i>								
<i>Mafia_{i,t}</i>	-0.032*** (0.003)	-0.017*** (0.003)	-0.012*** (0.003)	-0.017*** (0.003)	-0.931*** (0.122)	-0.314*** (0.088)	-0.456*** (0.109)	-0.358*** (0.087)
N	37465	37465	37465	37465	32898	32898	32898	32898
KP F-Stat					20.276	13.483	12.752	13.413
CD F-Stat					55.667	34.999	30.692	36.114
Year and City FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓		✓	✓	✓
Region * Year FE			✓				✓	
Region linear trends				✓				✓

Notes: Dependent variable: the log of the ratio of the number of TVs over the number of families. The endogenous variable, *Mafia_{i,t}*, refers to the $\log(x + \sqrt{x^2 + 1})$ of the number of news related to the mafia at *t*. The instrumental variables, *MSS_{p,t-1}* and *MSS_{p,t-1}*B_{i,1943-45}*, are the shift-share migration instruments values of province *p* at time *t-1* and its interaction with the total number of days with a bombing that city *i* suffered during WWII, respectively. Columns (1), (2), (3) and (4) show the OLS estimates. Columns (5), (6), (7) and (8) show the 2SLS estimates. Columns (5), (6), (7) and (8) report the Kleibergen-Paap and Cragg-Donald F statistic for weak identification. Controls include city population (1936, 1950), population density (1950), elderly index (1950), owned house index (1950), all interacted with year dummies. Depending on the specification, we include city fixed effects, year fixed effects, region*year fixed effects, and region linear trends. Municipality clustered standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Chapter 5

General conclusion

This thesis focuses on the role that changes and distortions to institutions have on society. Specifically, Chapter 2 investigates the impacts of changes to the electoral design on the local electoral stage. Chapter 3 studies the impact on the legal economy, focusing on the public procurement process, of the infiltration of organised crime in local governments. Lastly, Chapter 4 studies the long-term effect of exposure to organised crime activities on measures of social capital.

In the following paragraphs, I summarise and comment on the main findings of each of the three chapters, on the way they advance the related literature, and on their limitations and possible avenues for research. Lastly, I reconcile all the findings in a common framework and give a brief overview of the future areas of research I would like to focus my attention on.

Chapter 2 finds that simultaneous local and national elections do impact the local electoral stage. Specifically, the simultaneity increases the voters' participation, via local turnout, homogeneously along gender. It mildly increases local political participation, measured by the number of mayoral candidates that run for office. These are two important results. First, an electoral system employing multi-layered simultaneous elections can be relatively easily implemented cheaply. Second, they show how simultaneous elections provide higher equal participation from citizens, both as voters and politicians, in the electoral process, both of them being key components for the development of a well-functioning democracy (Stratmann, 2005; Larcinese, 2007). Further, the analysis provides a dual and opposite effect to the local political competition, by, on the one hand, reducing the distance in votes share between the first and the last candidate and, on the other hand, by offering a clear advantage to a local incumbent, increasing her winning probability. A limitation of this study is not computing the net effect of these dual forces. Somewhat connecting to this result, the elected mayors have a higher probability of having previous office experience, while they do not differ from ones elected in a non-simultaneous setting in terms of educational attainment and out-of-office job characteristics. This is suggestive evidence that winners have more experience, hence are better suited for the job, than mayors elected in a non-simultaneous framework. A possible expansion of this argument lies in studying the performances of these mayors in the aftermath of their victory. Lastly, the simultaneity negatively affects the probability of victory of right-leaning

local parties. Connecting with this last result, Chapter 2 documents the existence of split-ticket voting behaviour on a local-national elections dimension. While this conduct is not associated with any particular geographic and socio-demographic characteristics of the municipalities, it is associated with the divided government hypothesis as in Alesina and Rosenthal (1996). This study is the first that shows support for this hypothesis on a vertical government dimension. Unfortunately, the sample is limited in size, and hence these conclusions have to be interpreted with care. Overall, Chapter 2 shows that simultaneous national and local elections affect voters' and politicians' behaviour, mostly in a positive way. Further, Chapter 2 suggests that the systematic implementation of simultaneous multiple government-layers election should provide overall benefits along the dimensions previously discussed.

Chapter 3 finds that the infiltration of organised crime in elected local governments distorts the mechanisms of the local procurement process, in terms of a warped use of discretionary selection procedures and the price charged to the local administration. These results are heterogeneous across macro procurement categories, where the finding related to the distorted use of discretionary procedures is driven by procurement contracts about the provision of goods and services, while the result on the lower discount for the local administration is due to procurement contracts related to construction works. The unravelling of these heterogeneities is novel in the related literature, and it is key for policymakers and deterring actors to monitor the health of the public procurement machinery. However, a current limitation is not to expand on the reason why this differential effect is at play. Moreover, Chapter 3 explores heterogeneities related to the political economics sphere. It finds that first-ever elected officials, rather than ones subject to a term limit, are the main drivers of the findings. This suggests that criminal organisations would directly elect governments and induce them to act to their benefit, rather than infiltrating already existing ones. This finding differs from the classic interpretations of term limits in political economy (Besley and Case, 2003; Ferraz and Finan, 2011). Further, we investigate heterogeneous effects based on the party affiliation of the colluded local government. The results more in line with the main specification are the ones concerning local right-leaning governments. This is in line with previous qualitative evidence and scientific research specific to the Italian political context (Buonanno, Prarolo, et al., 2016; De Feo and De Luca, 2017). Further, Chapter 3 investigates other outcomes related to public procurement, finding that the overall volume of procurement is unaffected by the infiltration, that there is no effect either on the concentration of procurement contracts won or on the local origin of the winner, and that exists a suggestive negative association with the number of firms participating at the procurement process. Lastly, Chapter 3 extends the reach of the public procurement analysis, by looking at the set of firms involved in it. Specifically, it looks at the performances of firms that were exposed to the infiltration measured at the municipality level. This approach is entirely novel in the economics literature that focuses on crime. First, it documents an increase in the cumulative number of procurement contracts won in a year by

exposed firms, consistent with the idea that firms exposed to the infiltration win more procurement contracts once exposed to it. Then, it shows that treated firms exhibited higher profits, a weak increase in labour, a decrease in capital and a no-effect in total factor productivity. Chapter 3 reconciles these findings with suggestive evidence of money laundering and control of the territory's behaviour (Mirenda et al., 2022). Overall, by shedding light and giving great details on this chain of events relating to organised crime and public procurement, Chapter 3 could help policymakers and deterring actors in implementing the most appropriate tools to guarantee the security of the public good. Further, it serves as another layer and example within the economics literature that focuses on the study of organised crime.

Chapter 4 finds that long-term exposure to organised crime presence depresses proxies of social capital, mainly represented by the compliance rate of the TV tax. This is evidence of a reduction in civic awareness, a key component in the development of a strong society. This result is robust to the employment of two different instrumental variable strategies. The first exploits the forced resettlement law as an exogenous introduction of organised crime presence in a Centre-North of Italy municipality. The second combines the positive shock in public funds allocation generated by the Marshall funds allocation and the migratory movements from the South to the Centre-North of Italy. Particularly referring to the instrumental variable strategy associated with forced resettlement, Chapter 4 shows homogeneous effects depending on the criminal organisation of origin of the forced resettlement. Then, in a cross-section fashion, it investigates a different set of proxies for social capital, such as the number of voluntary associations, the turnout of the European elections, and the turnout at the referendum. The identification based on the forced resettlement law yields negative and statistically significant results across all these proxies, while the identification based on the combination of migratory movements and public funds allocation, shows a meaningful and negative effect only for the turnout of the European elections. This study reconciles these results under the lens of various interpretations. First, the negative effect on TV tax compliance can be due to an increase in individualistic and dishonest behaviour (Winkler, 2021; Gulino and Masera, 2023). Second, the negative effect on the number of voluntary associations may be due to the promotion of organised crime in a socio-cultural and economic model based on selfishness, competition and violence. Lastly, the negative effect on the turnout of the referendum and European elections can be linked to a fall in institutional trust (Massari, 1998; Buonanno, Plevani, et al., 2021; Daniele, Aassve, et al., 2023). Despite these interpretations, the main limitation of this study remains the lack of empirical investigation of these chapters. Overall, Chapter 4 documents the existence of a meaningful relationship between long-term exposure to organised crime activities and social capital. Chapter 4 in particular stands somewhat out from the others, as it represents one of the first attempts within the economic literature to unravel and investigate this relationship. As argued, this is a crucial connection to unveil, since criminal organizations deeply affect the social fabric of the territory in which they operate. In turn, the implications

of a damaged local social capital can have an impact on various aspects related to the development of a well-operating society. Lastly, It is important to stress the great effort in data collection, combination and creation. On this last point, the two main variables of interest, the historical presence of organised crime and the TV tax compliance rate, are novel. The final dataset could be shared with researchers interested in these topics to advance the state of research.

Altogether, these studies show that changes and distortions to formal and informal institutions have a profound impact on society, affecting the behaviour of its members, potentially for several generations. Changes to the institutional design impact voters' participation, politicians' participation and competition, and electoral outcomes. If this results in an actual change in the politicians elected, that as hypothesized underwent higher scrutiny and exposure, it may decrease their likelihood of becoming corrupt and of collusion with organised crime members. Then, unveiling how organised crime impacts the public procurement process, thanks to the collusion with corrupted members of formal institutions, can give insights into which rules and laws to introduce to diminish and attenuate this detrimental economic effect. Lastly, organised crime can affect the accumulation of the informal institution that is social capital, one of the very drivers of, among others, voters' and politicians' participation in the development of a society. Hence, this thesis draws a circular trail that relates actors and institutions within a democratic state. Moreover, given the central role of institutions in the development of societies (North, 1990; La Porta et al., 1999; Acemoglu, Johnson, et al., 2005) and the rigorous econometric techniques employed, the chapters of this thesis are relevant from both research and policy perspectives.

I hope that the analysis, methodology, data, and insights of this thesis can be of use to the related literature, and of inspiration to possible young scholars interested in the topics studied. As far as future avenues of research are concerned, I plan to take the following directions. First, I intend to expand the literature that links organised crime and human capital with my own contribution. I have compiled unique data on the presence of organised crime within cities, and I am working to link it with data related to human capital. Similarly to social capital, human capital is a key driver of growth and the development of societies and understanding the relationship with organised crime is of fundamental importance (Sviatschi, 2022). Second, I intend to step into the literature on the political economy of climate change and the green transition. Particularly, I am interested in the following topics. First, in the labour market effects of the green transition, which may have heterogeneous effects across occupations and locations. Second, in the political acceptability of green policies. Lastly, in the somewhat lack of overall support for green parties on the ballot, despite the current climate crisis.

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