Alma Mater Studiorum – Università di Bologna

DOTTORATO DI RICERCA IN

Economia

Ciclo XXVIII

Settore Concorsuale di afferenza: 13/A1

Settore Scientifico disciplinare: SECS-P01

Essays in Political Economics and Voting Behavior

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Esame finale anno 2016

Contents

Introduction

This dissertation consists of two papers. The first paper "Do Electoral Systems Affect the Incumbent Probability of Re-election? Evidence from Italian Municipalities" empirically investigates how electoral systems affect the incumbent likelihood of re-election in Italian municipalities. It also sheds light on the mechanism through which the electoral system affects the re-election probability. The overarching goal of the paper is to connect different aspects of the issue. I provide new insight into how different electoral systems affect accountability, politician selection and then economic policies. Results show that the probability of re-election is significantly higher in majoritarian systems for mayors but not for assessors and councillors. The majoritarian system defines a clear majority within the city council and its leader, which increases accountability toward the mayors. Indeed, in the majoritarian systems, the effort of mayors, measured as the probability of having a social welfare investment, is higher. Finally, We show that the observed evidence is not driven by political selection. The second paper "Separated Under the Same Roof: Fiscal Inefficiency of Parties' Fragmentation and Mayor's Political Power" investigates the effect of political fragmentation of local government on fiscal policies. It shows that the effect of fragmentation on fiscal policies depends mainly on two factors: the presence of a binding budget constraint and the political power of the executive leader. Results show that, in the presence of a binding budget constraint, a more fragmented majority performs less public spending and collects less revenue. Moreover, we show that the negative effect of political fragmentation disappears while the political power of the mayor increases.

Chapter 1

Do Electoral Systems Affect the Incumbent Probability of Re-election? Evidence from Italian Municipalities

1.1 Introduction

Elections nowadays are the most commonly used institution for selecting the political class, as stressed by Besley (2005). The main aims of electoral rules are to select the best among the candidates with regard to many possible dimensions, such as ability, competence and representativeness and to create precise incentive schemes to ensure that politicians, once elected, operate in the public interest. Scholars have investigated both the impact of electoral systems on policy outcome and the relationship between a particular incentive mechanism and the incumbent's political activity.

This paper studies the causal effect of different electoral systems on the incumbent likelihood of re-election. It also sheds light on the mechanism trough which the electoral system affects the incumbent probability of re-election. Is a higher probability of re-election a consequence of a greater effectiveness of the electoral system in selecting the best candidate? Or is the creation of better incentive schemes to ensure that the politicians act in the interests of the community? In other words, this paper tries to connect different aspects of the issue. The effects of different electoral systems on selection and incentive of politicians, and so on economic policies, and than the effect of politicians' activity on future rewards obtained by the incumbents.

In order to identify the causal effect of the electoral system, this paper exploits a particular feature of the local Italian electoral systems that were in place before the introduction of a new regime set in 1993 by the Italian government. Before 1993, cities with less than

5,000 inhabitants were ruled by a plurality system[1], instead, cities with more than 5,000 inhabitants were characterized by a party-list proportional system[2]. After 1993, in cities with less than 15,000 inhabitants, a plurality system with single ballot and the direct election of the mayor has been introduced[3]. Exploiting the policy change at 5,000 inhabitants before 1993, the paper identifies the causal effect of the electoral systems on the incumbent probability of being re-elected. However, at the threshold of 5,000 inhabitants there is another policy variation, the wage of the mayor[4]. For this reason, a standard Regression Discontinuity Design (RDD) cannot identify the causal effect of the electoral systems. Then, a Difference-in-Discontinuities Design (Diff-in-Disc), introduced by Grembi, Nannicini, and Troiano (2012), which combines a Difference-in-Differences strategy and a Regression Discontinuities Design, is exploited. Applying a RDD, and then comparing municipalities above and below the 5,000 inhabitants threshold, the estimated difference would capture the combined effect of a change in the mayor's wage and a change in electoral system. Since the confounding factor, the wage of the mayors, remains constant before and after the reform, while the difference in electoral system disappear after the reform, the Diff-in-Disc strategy allows to net out the effect of mayor's wages from the total effect and identify the "true" effect of the electoral systems. Specifically, this strategy allows to identify the causal effect of the plurality system, as opposed to the party-list proportional system, on the incumbent probability of being re-elected. This work also implements a pre/post strategy to provide evidence on the effect of the introduction of the new regime on municipalities that before the reform were ruled by two different electoral systems. In other words, this strategy captures, separately, the difference between a party-list proportional system and the new plurality system, and between the old and new plurality system.

Data come from a large database that contains the mayoral terms elected from 1985 to 2000 for all 8,092 Italian municipalities. It includes information about the elected mayor, the members of the executive committee (assessors) and the members of the city council (councillors). Thanks to the characteristics of the database, the work studies not only the effects of different electoral systems on the incumbent likelihood of re-election, but also examines whether the effect is heterogeneous among different heading organs of the local

[1]In particular a plurality system with *panachage*, that means the possibility to vote for candidates who do not belong to the same party. For further details see Section 3 and Table A.2 and A.3.

[2]It is important to underline that in both cities the same parliamentary form of government was in force.

[3]Furthermore, a neo-parliamentary form of government is introduced in place of a parliamentary form of government.

[4]Mayors of municipalities below 5,000 inhabitants earn about 600 euro less than mayors of cities above 5,000.

government.

Results show that mayors probability of re-election is about 25 percentage point higher in majoritarian systems than in proportional system. Instead, there is no evidence that assessors and councillors have different probability of being re-elected in the two different electoral systems. Surprisingly, the Difference-in-Discontinuities strategy point out that the characteristics of the politicians elected under different electoral systems do not show significant differences, both in terms of age, sex, previous job of the elected and level of education, that in the literature it is generally used as a measure of the quality of politicians. Moreover, results show that majoritarian systems are less subject to reshuffles of the majority in which the roles of the politicians within the city council change, including the mayors. Finally, in majoritarian systems the likelihood of having a social welfare investment is higher, about 20 percentage point, as compared to a proportional systems. Data on public libraries as a proxy of social welfare investment are used. Building a public library represents a good approximation of the type of public spending that mayors of small cities undertake to advertise their conduct. These small municipalities generally do not have sufficient funds to build or activate a library by themselves, hence the implementation is the result of a long bargaining process between the municipality and the higher levels of administration, such as the provinces and the regions[5]. During the bargaining process the effort of the mayor is decisive for the success of the project.

The main result of the pre/post analysis shows that the effect of the introduction of the new regime does not immediately lead the system to a new steady state but it needs time for the system to reach a new equilibrium point[6]. In fact, the effect of the introduction of the new regime is different between the first election and the second election after 1993. In small cities, where a plurality system was already in force, the effect of the first election after the reform on the incumbent probability of being re-elected is about 3 percentage point negative. While at the second election the probability of being re-elected turn to be positive, about 11 point higher than the first election. Instead, in cities where a proportional system was in force, surprisingly, the effect of the first election after the reform on the probability of re-election for mayors is already higher, about 6 percentage point; at the second election the effect is even higher, about 19 point. This finding points out that during the transition from a proportional system to a plurality system there is not a selection effect on incumbent

[5] Also Hessami (2014) in her paper shows that directed elected mayors of German municipalities attract more investments grants from the state tier during the year of the elections.

[6] Also Bordignon and Monticini (2012) show how the introduction of a new electoral system for electing the Italian Parliament does not produce immediately an effect on the party system.

mayors. Instead, a slight decrease in the probability of re-election is obseved in those cities where the mayors had already a high probability of being re-elected. The selection effect of the introduction of the new regime is active only on mayors who were already accountable for their actions.

This paper relates to several strands of literature. First, scholars have extensively studied the effect of the electoral system on policy outcome, both theoretically and empirically. It is well established that the electoral system has a strong impact on both the type and the size of public spending. In particular, it has been shown that majoritarian systems promote more targeted public spending and lower levels of corruption (e.g. Lizzeri and Persico (2001), Persson and Tabellini (2002), Milesi-Ferretti, Perotti, and Rostagno (2002), Persson, Tabellini, and Trebbi (2003), Persson and Tabellini (2005) and Funk and Gathmann (2013)). A relevant contribution to this strand of literature is the paper by Gagliarducci, Nannicini, and Naticchioni (2011) which performs a micro test on the behavior of elected officials, using a database on Italian House of Representatives. They show that politicians elected under the majority rule propose targeted programs and have lower absenteeism rates than politicians elected under the proportional rule. The second strand of the literature studies the effects of electoral accountability on the policy choices of elected officials. Besley and Case (1995) argue that politicians planning to run again for office are complied to act in the interest of voters to deserve re-election and show that the possibility of being re-elected affects their choices of economic policy. Furthermore, it has been shown that higher level of accountability increase responsiveness (e.g Besley and Burgess (2002), Hogan (2008) and, Ferraz and Finan (2011)), and that this affects the probability of re-election (e.g. Litschig and Morrison (2010), Casaburi and Troiano (2013) and Bracco, Porcelli, and Redoano (2013)). Finally, other scholars study the effect of electoral system on political selection (e.g. Myerson (1999), Litschig and Morrison (2010)) and Besley (2005)). The political representation of certain groups of the population is definitely a function of the electoral system (e.g. Norris (2004)). Also the quality of elected politicians depends on the interplay between the personal decision to run for an office and the selection process made by parties, and both depend on the electoral system (e.g. Caselli and Morelli (2004), Galasso and Nannicini (2011) and Galasso and Nannicini (2014)).

From a theoretical point of view, it is unclear which is the effect of the electoral system on the incumbent probability of re-election. On the one hand, a higher level of accountability is observed in majoritarian systems, which results in a higher level of responsiveness and then in a higher probability of re-election (e.g. Persson and Tabellini (1999)). On the other hand, as suggested by Myerson (1993), proportional system lowers barriers to entry and selects better politicians. Since they are better, they are also more likely to be re-elected.

The contribution of the paper is threefold. First, it shows that in majoritarian systems future electoral rewards are concentrated on the figure of the leader of the executive, which has a substantially higher chance of being re-elected than in proportional systems. Second, the work provides evidence showing that the higher probability of re-election is not the result of the selection of a better qualified political class, but the effect is primarily due to accountability and allocation of responsibilities. Finally, it shows that the introduction of an important reform of the institutional system does not translate into an immediate optimal response of agents, but it needs at least two rounds of elections to reach its new equilibrium point.

The paper is organized as follows. Section 2 presents the three different local electoral systems of Italian municipalities in detail. Sections 3 and 4 set up the empirical strategies, respectively the Difference-in-Discontinuites design and the pre/post strategy. Section 5 describes the data. Section 6 presents the results. Section 7 discusses the empirical results. Finally, section 8 concludes.

1.2 Institutional Background

Italian municipalities (*Comuni*) are the third-level administrative divisions of the state. Each municipality provides many of the basic civil functions: registry of births and deaths, registry of deeds, contracting for local roads and public works, etc. Furthermore, it is in charge for the supply of a wide range of services, such as waste management, municipal police, infrastructures, welfare, housing and water supply.

The Italian municipalities are ruled by a city council (*Consiglio Comunale*) and an executive committee (*Giunta*), headed by a mayor (*Sindaco*). The electoral systems adopted to select the municipal government have varied both over time and among municipalities, depending on the population size of the city. In Table A.1 are reported all the electoral systems of Italian municipalities relying on the population size and the sample period.

Table A.2 shows the specific characteristics of the four different electoral systems, described in detail in the next section. Furthermore, Table A.3 shows the consequences of voting for the formation of the municipal government in each system. In fact, an electoral system is not only a method for converting votes into seats but it also modifies the relationship between the various heading organs of local government.

1.2.1 Electoral Systems

Before the electoral law of 1993, municipalities above 5,000 inhabitants had a party-list proportional system. According to this system, each voter has to choose a party (or civic list), and can also indicate preferences for the councillors candidate, expressing up to a maximum of 4 or 5 preferences[7]. The seats in the city council are proportionally allocated. Then, once the member of the city council have been elected, they choose the mayor and the member of the executive committee. The adoption of this system favors a high degree of fragmentation of the city council, in which even a small party can influence crucial decisions, as in the case of mayor's appointment and selection of the members of the executive committee. Assessors need to be members of the city council.

As pointed out in several works (Baldini and Legnante (2000), Vandelli (1997)), within this system, the political parties are not mere intermediaries between voters and executive bodies. Indeed, on the one hand, they are key players in the process of consensus building, and on the other, once the representatives in the city council were elected, they negotiate among them the appointment of the executive committee and the mayor. The parties are the central institution of the government of municipalities. The government activity is strongly influenced, and in some cases literally paralyzed, by the confusion in the allocation of responsibilities between various organs, and by the limited decision-making capacity of the mayors, bounded by the vetoes of the parties[8].

In municipalities with a population below 5,000 inhabitants, until 1993, a plurality system with limited vote and the possibility to *panachage* has been in force. Although the mechanism of voting might seem complicated, its purpose is to maximize the voters opportunity of selecting the candidates. As well summarized by De Mucci (1990), nominations must be grouped into lists, distinguished by a mark, including a number of candidates not exceeding 2/3 of the total number of seats in the city council. Each voter disposes a pack of votes equal to 4/5 of the seats available in the city council[9]. Within this limit the voter can: (1) choose to give their votes to any candidate, regardless of the list to which they belong (possibility to *panachage*). (2) assign all preferences at her disposal to a single list, tracing

[7] According to the population size of the city. Return to Table A.2 for details.

[8] With respect to this framework, the law no. 142 of 1990 was a first attempt to correct this situation of permanent paralysis. However, the corrective actions have not worked effectively. As it has been argued by Baldini and Legnante (2000) and Vandelli (1997) these changes do not alter the mechanism of municipal representation. It is not affected the role of parties as mediators of consensus and the primary source of selection, recruitment and legitimacy of the political personnel.

[9] For example; if the number of councillors in the city council is 15, then every lists could contain a maximum of 10 candidates and each voter dispose of 12 preferences.

a sign on the symbol of the list (*Voto in testa*). In other words, the voter can build her own customized list or she can choose to allocate their preferences to a single list. Then, all the candidates who obtained the highest number of preferences (including those obtained through the *voto in testa*) are declared elected[10]. In contrast to the proportional system, with this specific type of plurality system, the "freedom" of the voter is higher, since she can express her approval for a large number of candidates. I would make even more clear that this belong fully to the category of plurality systems. In fact, given the possibles combinations of votes, the features and size of this municipalities, this plurality system ensured almost always a stable majority in the city council. Moreover, the candidate who collect the highest number of votes is usually elected mayor, but it is not a rule which binding parties to respect the outcome of the polls[11]. It is important to emphasize that, within this system, the decisiveness of electoral competition is always mediated by the parties. In fact, the electoral system deals only with electing councillors, then the members of the city council and so parties have to negotiate to form a majority and to elect the mayor[12].

On march 25, 1993, after only eight months of legislative procedure, the law no. 81 on the direct election of the mayor has been approved. As highlighted in other works (Barbera and Barrera (1993), Agosta (1999)), the law no. 81 is something more than an electoral reform. It is not a simple review of procedures for converting votes into seats, but it is a radical change of the outline of representation and municipal government. Indeed, not only the electoral system changes, but also the parliamentary form of government is replaced by a neo-parliamentary form of government. Another major change is the population threshold for the application of the electoral law, which has been brought from 5,000 to 15,000. After 1993, in municipalities under 15,000 inhabitants a single-round plurality system has been introduced. The electors vote jointly for a list and for the mayor connected to the list, they can also express a single preference for a councillors candidate. Each mayor may be connected to a single list. The party and the mayor obtaining the relative majority of votes, get 2/3 of the seats in the municipal council. The remaining seats are proportionally distributed to losing parties.

The new law introduces several novelties. It attaches to the mayor the highest degree

[10]For further information De Mucci (1990) and Riccamboni (1992) undertake a detailed analysis of this electoral system.

[11]In his analysis, De Mucci (1990) shows the data related to the frequency with which the candidate with the most votes were actually elected mayors. In 1985: 79.3% in the North-West, 54.1% in the North-East, 77.7% in the North-Central, 75% in the South-Central, 54% in the South.

[12]It is important to highlights that the parliamentary form of government of these two groups of cities is equal. In fact, this feature will allows us to isolate perfectly the causal effect of the electoral system.

of popular legitimation[13]. Thus, the mayors emerged as political actors with unexpected visibility, popularity and influence (Pasotti (2007)). The Reform radically changed the system of selecting councillors, it ensure a solid majority to the political forces that support the mayor. It simplifies the political scenario, going in the direction of a bipolar system, providing stability to the local government.

1.3 Difference-in-Discontinuities Design

This estimation framework identify the causal effect of the plurality system with *panachage*, as opposed to the party-list proportional system, the two systems that were in force before the reform, on the incumbent probability of being re-elected. As already mentioned, the electoral system that is in force in a municipality depend on its population size. Before 1993 cities with less than 5,000 inhabitant had a plurality system with *panachage*, cities with more than 5,000 had a party-list proportional system.

In order to implement this analysis, the sample is restricted to cities between 3,000 and 7,000. This range is chosen for two main reasons: to stay close enough to the threshold of 5,000 and because, as can be seen from Table A.1, at the threshold of 3,000 inhabitants other policies change.

It could appear sufficient, exploiting the discontinuity at 5,000 inhabitant before 1993, implement a cross-sectional Regression Discontinuity design to identify the causal effect of the majoritarian system. Unfortunately, at 5,000 inhabitants there is another discontinuity, local politicians above this threshold earn higher wages[14]. Thus, the standard assumption of continuity of potential outcome of the RD design is violated and a cross-sectional RD estimator gives biased estimates of the causal effect. However, exploiting the information on the period after the reform where both cities have the same plurality system, a Difference-in-Discontinuities design, introduced by Grembi, Nannicini, and Troiano (2012), is implemented.

The Difference-in-Discontinuities design (Diff-in-Disc) combines a Difference-in-Differences strategy and an RD design. The Diff-in-Disc estimator takes the difference between the cross-sectional discontinuity at the threshold P_s (5,000) before T_0 (1993), when both the

[13]It is important to stress that given the high concentration of power in the hands of the mayors, the lawmakers enacted a two-term limit for mayors. After the introduction of the reform, any mayor can be in office only for two consecutive terms. For this reason, only the first two terms after the introduction of the new reform have been kept in the sample.

[14]In 2000 a Mayor of a city between 5,000 and 7,000 inhabitants earns 2 €,789 gross, one of a city between 3,000 and 5,000 inhabitants earns 2 €,169 gross.

electoral system and the politicians' wage show a jump, and the cross sectional discontinuity at P_s after T_0, when only the politicians' wage show a jump.[15].

As in Grembi, Nannicini, and Troiano (2012), in order to be able to estimate the causal effect of the majority system is necessary to derive two precise assumptions, that are in line with the assumptions needed to implement an RD design and a DIDs strategy.

The effect of the confounding discontinuity on the potential outcome in the case of no treatment is constant over time.

This assumption is equivalent to the continuity of potential outcome assumption of the RD design. Furthermore, it has to hold both before and after T_0. In other words, this assumption states that the ratio between the politicians' wages under 5,000 inhabitants and the politicians' wages over 5,000 must be constant throughout all the period of analysis. Regarding the wage of the politicians it is satisfied since the ratio between the two wages is constant along all the nineties. For all the others potential outcome, that are observable, this assumption can be tested.

A second assumption is require to ensure that Difference-in-Discontinuities design estimates the causal effect of the majoritarian system.

The effect of the confounding policy discontinuity is the same in the case of treatment and no treatment.

This assumption states that a politician, who earns less, and a politician, who earns more, must react in the same way to the same electoral system. In other words, there must be no interaction between the treatment and the confounding discontinuity. Assumption 2 in this scenario seems plausible and it can be presented strong supporting evidence exploiting other wage thresholds. As can be seen from Table A.1, at the thresholds of 3,000 and 10,000 inhabitants, the wage of the mayor changes but not the electoral system[16]. Exploiting this feature, the same Diff-in-Disc model that is carried out at the threshold of 5,000 is performed of 3,000 and 10,000 inhabitants. These estimates identify the interaction between the income of the mayor and the introduction of the new electoral law on the probability of being re-elected[17].

[15] see Grembi, Nannicini, and Troiano (2012)

[16] This "test" is even more useful considering that around the threshold of 3,000 inhabitants the change of wages is comparable to that existing at the threshold of 5,000. The difference in wage is 723 euro at the threshold of 3,000 inhabitants, 620 euro at 5,000 and 310 at 10,000 inhabitants.

[17] Differently from the setting of the paper by Grembi, Nannicini, and Troiano (2012), in this framework assumption 2 is *conditio sine qua non* to be able to identify the causal effect of the electoral systems. Because the introduction of the new electoral system takes place simultaneously for both groups of cities.

Let Y_c be a dummy variable that take value 1 if the politician is re-elected 0 otherwise[18], P_c^* is the normalized population size $P_c^* = P_c - P_s$. Then, S_c is a dummy for city below 5,000 and T_t takes value 1 in the years *before* the reform, until 1992, 0 otherwise.

Thus, the sample is restricted to the interval $P_c \in [P_s - h, P_s + h]$ and a local linear probability model of this form is estimated:

$$Y_{ct} = \delta_0 + \delta_1 P_c^* + S_c(\gamma_0 + \gamma_1 P_c^*) + T_t[\alpha_0 + \alpha_1 P_c^* + S_c(\beta_0 + \beta_1 P_c^*)] + \epsilon_{ct} \tag{1.1}$$

Standard error are clustered at the city level. The coefficient of interest is β_0 and it identifies the causal effect of the majoritarian system, as the treatment is $S_c \times T_t$. In word, being a town with less than 5,000 inhabitants before 1993 (excluded).

In addition, as it is discussed later in the paper, since the database contains two electoral terms after the reform, it can be controlled for heterogeneous effect of the introduction of the new regime. Thus the following model is estimated:

$$\begin{gathered} Y_{ct} = \delta_0 + \delta_1 P_c^* + S_c(\gamma_0 + \gamma_1 P_c^*) + \\ T_t[\alpha_0 + \alpha_1 P_c^* + S_c(\beta_0 + \beta_1 P_c^*)] + F_t[\pi_0 + \pi_1 P_c^* + S_c(\lambda_0 + \lambda_1 P_c^*)] + \epsilon_{ct} \end{gathered} \tag{1.2}$$

where F_t is a dummy variable that take values 1 for all the first election after the reform and 0 otherwise. Also here, the coefficient of interest is β_0, which now, identifies the causal effect of the majoritarian system, controlling for the the long-term effects of the reform.

Finally, as it is suggested by literature, a spline polynomial approximation, allowing for a flexible functional form in the relationship between Y_{ct} and P_c, is performed:

$$Y_{ct} = \sum_{k=0}^{p}(\delta_k P_c^{*k}) + S_c \sum_{k=0}^{p}(\gamma_k P_c^{*k}) + T_t[\sum_{k=0}^{p}(\alpha_k P_c^{*k}) + S_c \sum_{k=0}^{p}(\beta_k S_c^{*k})] + \xi_{ct} \tag{1.3}$$

Then, also in the case, controlling for a possible heterogeneous effect of the reform, the

[18] Before the introduction of the new form of government in 1993, municipalities were ruled by a parliamentary form of government; therefore, more than one mayor could be in office during the same legislature term. For the purposes of the analysis, and for all the paper, it is used only the last mayor before the end of the term.

following model is estimated:

$$
\begin{aligned}
Y_{ct} = \sum_{k=0}^{p}(\delta_k P_c^{*k}) + S_c \sum_{k=0}^{p}(\gamma_k P_c^{*k}) + \\
T_t[\sum_{k=0}^{p}(\alpha_k P_c^{*k}) + S_c \sum_{k=0}^{p}(\beta_k S_c^{*k})] + F_t[\sum_{k=0}^{p}(\pi_k P_c^{*k}) + S_c \sum_{k=0}^{p}(\lambda_k S_c^{*k})] + \xi_{ct}
\end{aligned}
\tag{1.4}
$$

In both cases standard error are clustered at the city level, and as it is recommended by literature the same model with different degrees of polynomials is estimated[19].

1.4 Pre/Post Strategy

In this framework the dataset is split into two subsamples, cities below 5,000 inhabitants (from now on *small cities*), cities between 5,000 and 15,000 inhabitants (*medium cities*). This estimation framework exploits a pre-post approach to identify the effect of the reform on the incumbent probability of being re-elected, in the two different group of cities. Applying this strategy it can be estimated the effect of the transition from a plurality system with *panachage*, for small cities, and from a party-list proportional system, for medium cities, to a plurality system with single-round.

Thus, for city c in year t, a linear probability model of this form is estimated:

$$
Y_{ct} = \beta_1 R_{ct} + \delta X_{ct} + \alpha_c + u_{ct} \tag{1.5}
$$

where Y_{ct} denotes a dummy that is 1 if the mayor (assessor or councillor) is re-elected 0 otherwise. R_{ct} is a binary indicator equal to 1 in the year of the first election under the new reform and all the year thereafter. The specification includes also citiy fixed effects (α_c) and a number of time-varying variables X_{ct} on the mayor (assessor, councillor) characteristics. Standard error are clustered at the city level.

The parameter of interest is β_1, which identifies the average effect of the introduction of the new regime. Also in this framework it is performed a specification that allows for heterogeneous effect of the reform. Thus, comparing the effect between the last election with the old system and the first election with the new regime, and between the first election

[19] As recommended by Lee and Lemieux (2010).

and the second election with the new electoral system.

$$Y_{ct} = \beta_2 R_{ct} + \beta_3 SE_{ct} + \delta X_{ct} + \alpha_c + u_{ct} \tag{1.6}$$

where R_{ct} is the same variable as before and SE_{ct} is a dummy variable that takes value 1 for all the second election after the reform and 0 otherwise. Also in this case standard error are clustered at the city level. In this model, β_2 identifies the effects of the first election after the reform with respect to the old electoral system, β_3 identifies the effects of the second election with the new system, as opposed to the first election. Finally, $\beta_2 + \beta_3$ identifies the long term effects of the reform.

1.5 Data

The original dataset contains the mayoral terms elected from 1985 to 2000 for more than 8,000 Italian municipalities[20]. It includes information about gender, age, education, political affiliation and previous job of the elected mayor, of the members of the executive committee (assessors) and of the members of the city council (councillors)[21].

Table A.4 reports some descriptive statistics about the main variables, by group, for the sample of the cities used for the diff-in-disc analysis, as discussed in the previous sections. While in Table A.5 are reported the statistics of the same variables for the large sample of cities used for the pre/post analysis. The first (second) sample contain information on 1,471 (5,873) municipalities with about 3 (3) terms for each city, 488 (1,222) medium cities and 983 (4,651) small cities [22].

The population size comes from the 1991 Census. Note that one of the identifying assumptions for the Difference-in-Discontinuities design is that the local government had (at most) imprecise control over the number of local resident. Given that the population size used to assign the electoral system is based on to the latest census available, then every ten years, it is unlikely that a politicians can manipulate the population of their city.

Table A.4 shows that the percentage of mayors re-elected is higher in small cites, about 12 percentage point more than medium, considering the whole period. Furthermore, it is

[20]Data are available on the website of the Italian Ministry of Internal Affairs.

[21]Due to the high amount of errors and the lack of the specific name for the party, political affiliation is not used in the present work.

[22]Municipalities in region with special autonomy have been dropped because both before and after the reform they are ruled by different electoral systems

interesting to note that observing only the period pre-reform, this difference is even more pronounced. The percentage of mayors re-elected in small cities is 21 point higher than medium cities. However, this differences is greatly reduced in the post-reform period. On the other hand, this gap observed among the two sample of cities on the percentage of mayors re-elected almost disappears in the case of the percentage of councillors and assessors re-elected.

Figures A.7(a) and A.7(b) show the distribution of elections by year, respectively for small and medium municipalities. Although there are municipalities that go for election every year, elections are concentrated in the years 1990, 1995 and 1999. This concentration is more pronounced for small municipalities. This happens because small municipalities are more stable than medium cities, then the probability of early dissolution of the office is lower in small municipalities, as it will be shown in the next sections of the paper.

1.6 Results

1.6.1 The Effect of the Electoral System

Table A.6 presents the main results of the Diff-in-Disc strategy, the effect of the majoritarian system on the incumbent probability of re-election. Panel A reports the results for mayors, while panel B and C, present the results for councillors and assessors, respectively. Columns (1) and (2) present the estimates of a local linear regression model, according to equation (1). The optimal bandwidth h is estimated either following Imbens and Kalyanaraman (2012) (Column 1), or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (013a,b) (Column 2). Columns (3) and (4) show the results for a spline polynomial approximation as in equation (3), and two different orders of the polynomial are presented (i.e., 2^{nd} and 3^{rd})[23]. All the subsequent tables present results following the scheme described above.

In majoritarian systems the mayors' probability of re-election is higher than in proportional systems and the point estimate ranges from 12.13 percentage point (when $h = 1,992$)

[23]In order to show that results are not affected by different specifications or samples size, as recommended by Lee and Lemieux (2010), the graphs of Fig A.9 are presented. The graphs present the results of nearly two thousand Diff-in-Disc estimations with different bandwidth. In the vertical axis, the coefficients (center line), and confidence intervals (lateral lines), are reported. In the horizontal axis, at 0, the bandwidth used is $h = 2,000$ and at 1990, $h = 10$. As prescribed by the literature, in linear models (top graphs) the bandwidth choice has no effect on the significance of the coefficients, except for estimates really near to the threshold. In non-linear models (bottom graphs) the significance decreases as h approaches to 1,000 for the second degree, and as h approaches to 1,500 with the third degree of the polynomial.

to 18.87 percentage point (when $h = 693$). The coefficient is statistically significant even when a spline polynomial approximation of the third degree is estimated. As panel B and C of table A.6 show, the effect of the majoritarian system on the probability of re-election for councillors and assessors, even if always positive, is never statistically different from zero. It is also observed that the magnitude of the coefficients is small.

Table A.7 reports the results of the Diff-in-Disc strategy controlling for the heterogeneous effect between the first and the second election after the introduction of the new regime, according to equation (2) and (4)[24]. Even these estimates support the evidence shown above: the effect of the majoritarian system is positive and statistically significant for mayors, but never statistically different from zero for councillors and assessors. Finally, in Table A.8 the estimates of equation (2) and (4) for the mayors' probability of re-election are reported, including either year and city fixed effect (panel A), or time invariant geographical characteristics as control (panel B)[25]. The results are also robust to these further controls.

The top graphs of the figures A.1, A.2 and A.3 illustrate a polynomial fit of the difference between the probability of re-election after and before the reform, for mayors, assessors and councilors respectively. The central graphs illustrate, separately, the probability of re-election before the reform (left) and the probability of re-election after the reform (right)[26]. These descriptive graphs are perfectly consistent with the results shown above. Indeed, in the top graphs of Figure A.1 the probability of re-election for mayors exhibits a sharp jump when moving from the left to the right of the threshold. Even looking at the graph that illustrates the period before the reform, when the electoral law changes, a jump is observed at the threshold. Instead, a discontinuity is not observed in the period after the reform, when both groups of city are ruled by the same system. Considering assessors and councillors, in none of the graphs presented in Figure A.2 and A.3 a discontinuity is observed.

Table A.9 presents the results for the probability of having a library[27]. This variable is a dummy that takes value 1 if during the office a public library in the city is built[28].

[24] As will be shown later in the paper this specification is the most appropriate, given that the introduction of the reform does not have an homogeneous effect between the first and second election after the introduction of the reform.

[25] The following variables are included; Area Size, Capital Altitude, River, Sea Distance, Seismicity Class, Urbanization, Average Grid, Region Fixed Effect.

[26] In the two bottom graphs the probability of re-election after the reform is split in the two period, the first election after the reform (left) and the second election after the reform (right).

[27] Data on libraries come from the webpage of the Register of Italian Libraries: http://anagrafe.iccu.sbn.it/opencms/opencms/.

[28] In order to have results comparable with those presented above, it is used the same sample that was used for the analysis of Mayors. Also using the whole sample that start from 1970 the results are unchanged.

In majoritarian system, the probability of having a library is higher than in proportional system. The point estimate ranges from 16.23 percentage point ($h = 826$) to 23.07 point ($h = 465$). The results are also robust when it is controlled for the heterogeneous effect of the reform (panel B). In this case, an additional check is performed. Given that the size of the city for the construction of a library is an important factor, the sample is restricted to cities between 4,000 and 6,000 inhabitants and the optimal bandwidth h is estimated again. The results are also robust to this additional control. The graphs in Figure A.4 confirm what has been just shown, the probability of having a library increases significantly in municipalities with less than 5,000 inhabitants before the reform, while no jumps are observed at the threshold after the introduction of the new regime. Although building a public library in so small municipalities does not represent the sole effort of the mayors of the cities, certainly the mayors have an important role.

Italian municipalities before 1993 were ruled by a parliamentary form of government, then it is possible that during a term within the same elected council there has been more then one government. As already pointed out and stressed by political scientists, changes of the majority and the executive commette members occur often, especially in cities ruled by a proportional system. The variable reshuffling is the fraction of politicians who have held more than a role (e.g. councilor and assessor or assessor and mayor) over the total number of members who have held at least one seat during the same term of the city council. In panel A of Table A.10 the variable reshuffling is dichotomized into a dummy taking value 1 for reshuffling involving more than one-third of the council members, zero otherwise. This panel shows that the effect of the majoritarian system on the probability of having a fraction of reshuffling higher than the one-third is positive but never statistically different from zero. Instead, looking at panel B of Table A.10 it can be seen that, in a majoritarian system there is a lower probability of having a fraction of reshuffling lower than the 40%. The coefficients are negative and statistically significant in all cases. The result is also confirmed looking at the probability of a reshuffling higher than the 50% and the probability of a reshuffling higher than the 60% of all the members of the city council. The graphs in Figure A.5 also confirm the results just shown. This finding confirms evidence shown by political scientists, according to whom low levels of reshuffling are present also in majoritarian systems. Tensions within the majority about some issues can arise also within the majoritarian system and then in some cases it is necessary to reorganize the majority. In contrast, proportional systems are subject to really high levels of reshuffling, with some extreme cases where about all of the members of city council have held at least two roles.

1.6.2 The Effect of the Introduction of the New Regime

Panel A of Table A.15 reports the pre-post estimates for small cities, that is the effect of the introduction of the new regime in cities ruled by a plurality system with *panachage*. Column (1) of panel A shows that the probability of re-election for mayors is 4.38 percentage point higher after the reform. However, controlling for the heterogeneous effect of the reform, as in equation 1.6, it is observed (Column 2) that the effect of the reform is negative in the first election after the reform, by about 4 percentage point, and positive in the second election after the reform, about 10 point higher. The result are robust controlling either for mayors specific characteristics or for citiy fixed effects.

Panel B of Table A.15 shows the results for medium cities, that is the effect of the introduction of the new regime in cities ruled by a party-list proportional system. The average effect of the reform for mayors is higher then in small cities, 16.37 percentage point. In contrast to small towns an increase is already observed in the first election after the reform, about 7 percentage point (Column 4), and a further increase in the second election, about 19 point. This finding point out that a screening effect on incumbent mayors is not observed during the transition from a proportional system to a plurality system. Instead, a slight decrease in the probability of being re-elected is observed in those cities where the mayors had already a high probability of being re-elected. The screening effect of the introduction of the new regime is active only on mayors that were already accountable, even if the magnitude of the effect is small.

1.6.3 Validity test

As already discussed, the estimation of the causal effect of the electoral system by the Diff-in-Disc strategy relies on some Assumptions. This section is devoted to provide evidence in support of these assumptions.

The first assumption is that mayors have (at most) imprecise control over the number of local residents. If mayors can manipulate the population size of their cities estimates would suffer from selection bias. It is unlikely that a mayor can manipulate the size of their cities by forcing resident to leave the city to change the electoral system and at the cost of a lower wage. Moreover, the population size used to assign the electoral system is based on the latest census available (census are made every ten years)[29]. Nevertheless, a continuity test for the density of the population size at 5,000 is performed. The result shows the absence

[29]The Census is run independently by the National Statistical Office

of manipulation, there is no discontinuity of the density at the threshold[30].

Tables A.12, A.13 and A.14 report the estimates of the Diff-in-Disc strategy, that is the causal effect of the electoral system, by using as dependent variables some time-varying politicians' characteristics. The results show that, at the threshold, the mayors elected according to a plurality system are no different in terms of age, years of education, probability of being a male and previous job with respect to mayors elected according to a party-list proportional system. In addition, the average schooling of the city council members and the average schooling of the cabinet of the mayors do not show a jump at the threshold. Fig A.7 graphically presents results shown in the Tables A.12, A.13 and A.14. Panel A and B of Table A.14 show that majoritarian systems are more stable than proportional systems[31]. Indeed, the probability of early dissolution of the office is lower in majoritarian system, and the average length of the legislature is longer than proportional system.

Tab A.17 reports the results of the balance tests of time-invariant characteristics of municipalities which belong to the sample. A Diff-in-Disc estimation is implemented using as dependent time-invariant characteristics, in order to assess whether the fraction of cities with certain fixed characteristics varies at the threshold. Time-invariant characteristics do not display a statistically significant jump at the threshold.

Table A.16 illustrates the results of a falsification test on the introduction of the new regime. First, years before the introduction of the new regime are dropped (before 1993). Then, the causal effect of being a cities with less than 5,000 inhabitant between 1993 and 1997 is identified[32]. As it is observed in Table A.16 for all the outcome variables the false majoritarian system is not statistically different from zero. In addition, although the tables are not reported, cross-sectional regression discontinuity estimates are performed separately, for the pre-reform period, for the first election after the reform and for the second election after the reform. Only before the introduction of the new regime a positive and statistically significant effect is observed.

In order to further test Assumption 2, Diff-in-Disc estimates at the threshold of 3,000 and 10,000 are performed. As it is observed in Table A.1 at the threshold of 3,000 and 10,000 the wage of the mayors changes but not the electoral system. These estimates identify the interaction between the income of the mayor and the introduction of the new electoral law

[30]The graphs of these tests are not reported for a matter of space. Several papers have already tested this assumption in the same framework, among others Grembi, Nannicini, and Troiano (2012).

[31]Although the result is not robust.

[32]Using either 1996 or 1998 as the false year of the introduction of the new regime does not change the qualitative results of the test

on the probability of being re-elected. Table A.17 illustrates the results of these tests for the mayors' probability of re-election and for the probability of having a library. In almost all cases the income of the mayor does not interact with the introduction of the new electoral regime.

Finally, a set of tests in the spirit of DellaVigna and La Ferrara (2010) are performed. A set of Diff-in-Disc estimates at false population threshold below and above 5,000 are carried out (at any point from 4,000 to 4,990 and any point from 5,010 to 5,600). Although the test is severe, Fig A.8 shows that for the re-election probability of the mayor and the probability of having a library there is no evidence of systematic effect similar to our baseline (vertical red line).

1.7 Discussion

The first important implication of the evidence shown so far is that politicians elected under a majoritarian system do not differ from politicians elected by a proportional system in term of several characteristics. This suggests that majoritarian systems do not select better qualified politicians than proportional system[33]. Another important piece of evidence to support this conclusion is the analysis of the effect of the introduction of the new regime. If the majoritarian system was more able to select most qualified politicians it should be observed a sharp drop in the probability of being re-elected in the transition from a proportional system to a majoritarian system. Instead, it is observed exactly the opposite schema. In addition, it is interesting to note that the screening effect of the introduction of the new regime is observed only in municipalities where a plurality system was already in force. Only mayors who are already at the center of the political scene can be punished. Instead, mayors who do not have many opportunities to undertake decisions about policy outcome can not be punished.

Table A.11 report Diff-in-Disc estimates, where the sample of the mayors is split according some fixed characteristics of the town, in order to observe if the causal effect of the majoritarian system is heterogeneous according this characteristics. In Panel A of Table A.11 the sample is split according to the share of votes that the first party took in the city at the general election of 1992. This is a good approximation of the degree of fragmentation of the political framework and therefore of the number of parties that form the majority of the mayors. Panel A of Table A.11 shows that among cities where the first party took

[33] Although for a complete analysis the candidate pool should be to observed.

more than 34 percentage point of votes (the median of the sample), the effect of the majoritarian system is positive and statistically significant, while among cities below the median the effect is never statistically different from zero[34]. In addition, among cities above the median the magnitude of the effect is higher than the baseline estimate, between 30 and 50 percentage point. Moreover, in Panel B Table A.11 the sample is split according to the number of daily newspaper that circulate at province level. Evidence shows that the effect of the majoritarian system is significantly differ from zero only when there is a higher daily newspaper circulation.

These additional findings, together with those already presented, complete the picture and give a clear view of the issue under discussion. In majoritarian systems there is a higher probability of being re-elected because the mayors have more visibility and they can better signal their activities to the community. When policy outcomes are the result of a long bargaining process among a high number of players (party secretaries, councillors, assessors, mayors, etc.), and the mayor is just one of the actors of the decision-making process, his chance of being re-elected is much lower. When the mayor enjoys a stable homogeneous majority and there are lower level of reshuffling, he has a higher decision-making power and the allocation of responsibility is concentrated in his hands, he has a high probability of being re-elected.

1.8 Concluding Remarks

This paper studies the effect of majoritarian systems, as opposed to proportional systems, on the incumbent probability of being re-elected. Exploiting a particular feature of the local Italian electoral systems that were in place before the introduction of a new regime in 1993 the work identifies the causal effect of the electoral systems.

Evidences show that in a majoritarian system mayors have a higher probability of being re-elected than in proportional system, about 25 percentage point. In contrast, the majoritarian system has no effect on the incumbent probability of re-election for councillors and assessors.

The paper shows that the higher probability of re-election for mayors is mainly due to a concentration of accountability in the hands of the mayors. On the contrary, there is no evidence that the majoritarian systems select better qualified politicians. Unfortunately,

[34]Wald tests are presented to test if the coefficients of the two sample are statistically different from each other.

this paper is not able to determine whether this allocation of responsibility wold actually translate into a better administration of public affairs or if instead this is only a high concentration of power.

Chapter 2

Separated Under the Same Roof: Fiscal Inefficiency of Parties' Fragmentation and Mayor's Political Power[1]

2.1 Introduction

The increase in public debts in advanced economies in the last 40 years raises the question of whether a large number of decision makers, with different preferences, is able to contain public spending. The common pool resource problem, investigated by Weingast et al. (1981) and Shepsle and Weingast (1981), suggests that enlarging the number of actors involved in the fiscal decision making process leads to larger total spending. These dynamics rely on having a specific misaligned incentive between the contribution that a group makes to the pool, and the benefit that it can extract. Indeed, if the benefit is group specific and the contribution is uniform across groups, every group has an incentive to free ride and total spending increases. But if the benefit is common across groups, and the contribution is group specific, each group will tend to underprovide to the pool, which results in the classic underprovision of public good. So it is not ex ante clear, theoretically and empirically, how a larger fragmentation of the political decision making process affects total spending.

This paper investigates the effect of an increase of the political fractionalization of a majority coalition on fiscal outcomes, such as spending and revenues. We analyse a model of fiscal decision making by a ruling coalition in a municipal council. The ruling coalition is made of parties, each of which represents a single group of citizens in the municipality. Each group values only one public good, among the ones provided by the local government. Each party chooses the level of taxation for the group she represents. The resources are pooled together and subject to a bargaining among parties that determines the share that

[1]This chapter is joint Matteo Cervellati and Paolo Roberti (University of Bologna).

accrues to each group specific public good. Each party also selects how much of the public good valued by its group to be financed through public debt. Total debt is repaid at a future date equally by each group. We find that the level of debt increases with the number of parties in the ruling coalition of the municipal council, because the benefit of an increase in debt is completely internalized, while the cost is shared by all parties. The sum of group specific taxations decreases with the fragmentation of the majority, because the contribution of each group is then pooled in the bargaining and split in the group specific public goods, thus the benefit of an increase in contribution decreases with the number of actors involved in the bargaining, while the cost is completely internalized by each party. If fiscal rules impose a tight budget constraint, the fragmentation of parties reduces total public spending, via a reduction of total contribution. We then analyze how the political power of the mayor interacts with fragmentation in determining fiscal policies. The mayor maximizes the welfare of the voters who elected her. In order to achieve the best outcome for voters, she can promise that the contribution of each group will be spent directly in the public good valued by that group. If she is politically strong enough to keep her promise, she solves the problem of underprovision to the pool induced by fragmentation, because each party internalizes both the benefit and the cost of contribution. If she is politically too weak to impose her will to the coalition, the bargaining takes place. Parties anticipate this outcome and underprovide to the pool. In this case, the inefficiency induced by the fragmentation of parties is kept.

We test the implications of this model, focusing on all Italian municipalities with more than 15.000 inhabitants, in the period between 2002 and 2012. In municipalities with a population exceeding 15.000 inhabitants a majority system with runoff is in force. Each candidate for mayor can be connected to more than one party. The voter can cast at most two votes in a ballot, one for the mayor and one for a party. The candidate who gets most votes is elected mayor, if the share of votes exceeds 50%, or the first two candidates get to the runoff. The coalition of parties associated with the mayor gets 60% of the available seats in the city council that are distributed proportionally to the parties inside the alliance, according to their share of votes. Depending on the distribution of votes across parties within coalition, the budget allocation can involve a large number of actors. When choosing the budget allocation, each municipality faces an extremely tight fiscal rule imposed by law, that makes the creation of deficit an unfeasible option.

One particular feature of the Italian electoral law for municipalities is exploited to identify the causal effect of political fractionalization on fiscal outcomes. The position in the ballot of the parties of the same coalition is randomized by state officials. We use this characteristic to instrument the fractionalization of the winning majority. In particular, we take advantage of a peculiar disposition of names and symbols in the ballot which creates a focal point for voters. We verify that the party which is positioned close to the name of the candidate for mayor receives on average 4% share of votes more within coalition. Moreover, the probability of obtaining at least one seat in the city council is on average 10 percentage point higher. If a small party ends up in the focal point, she receives a boost of votes and seats, at the expenses of the other parties of the coalition. Thus fractionalization increases. The opposite happens when a large party is randomly located in the focal point. Thus, the ballot order provides an exogenous variation of fractionalization, which conveniently coded can be used as an instrument.

The first finding is that an increase in fractionalization in the winning coalition causes a reduction in total expenditure, both capital and current. The effect is sizable: an increment of 10% in the fractionalization index at mean value implies a reduction of 5.7% in total expenditure. Morever, a larger fractionalization does not only reduce spending, but it is also matched with a decrease in total revenues. This effect is driven by a reduction in fees and tariffs, that target specific groups in the population.

Secondly, we proxy the political power of the mayor by the share of votes she received in the first round. In particular, if the mayor in the first round got less than 50% of the votes she is denoted as politically weak. Otherwise she is strong. We show that the reduction of spending and revenues implied by a larger fractionalization is concentrated on weak mayors. For politically strong mayors, a larger fragmentation of the majority does not decrease significantly either spending or revenues. These results are confirmed when a regression discontinuity design is performed on the threshold of 50 % of votes obtained by the mayor. This test is particularly demanding because there is no difference in terms of allocation of seats among the mayors who took slightly more than 50% of the votes and mayors who took slightly less than the majority of votes. Both of them have 60% of the seats in the council. The weak mayors only had to face two more weeks of electoral campaign. We also verify that that there are no new alliances formed between the first election and the runoff.

These two results are in line with the predictions of the model. In particular, they suggest that a fragmented majority, that cannot finance spending through deficit, could be affected by a systematic underspending. Moreover, the political power of the mayor, despite being in our empirical setting independent from the the size of the majority in the municipal council, is shown to be a strong determinant of fiscal policies.

The research on this topic, always performed at a country level, see for example Perotti and Kontopoulos (2002) Volkerink and De Haan (2001) and Ricciuti (2004), has usually found a positive correlation between the fragmentation of the decision making process, expressed either as the number of parties in the majority or the number of spending ministers, and public expenditure, providing support for the common pool resource problem. This increase was paired with an expansion of public deficit.

The setting of this empirical exercise is different from previous works for a number of reasons. Former research on fractionalization and public spending has been conducted on a country level, where political institutions, different electoral laws and forms of government can be a strong confounding factor. Furthermore, the presence of other omitted variables is likely to invalidate the causal interpretation of country studies on this topic. Finally, most of these studies analysed countries in a period of time in which they faced a slack budget constraint, because the stock of government debt was relatively low. In this work not only the institutional environment is common to all units of observation, but also all mayors have a stable majority. Moreover Italian municipalities in this window of years faced a balanced budget constraint imposed by law which forced them to rely on their own resources to finance public spending. This limitation is the same that many national governments face nowadays, with either debt ceiling laws as in the US, or convergence criteria, as in the European Union.

2.2 The Model

This section outlines a stylized model, where parties independently choose a level of taxation for the group of citizens they represent, and a level of debt. While debt is repaid at a future date, the taxes are pooled together and are subject to a bargaining, which determines the share of resources, which added to the level of debt chosen by each party, are devoted to each group specific public good. Increasing the fragmentation of parties reduces total contribution, because each party completely internalizes the cost of contribution, but only a fraction of the benefit, the rest of which is shared among the other groups. Fragmentation increases total debt, because the benefit is completely internalized by each party, and the cost is shared among all groups. If fiscal rules impose a tight budget constraint, the fragmentation of parties reduces total public spending, via a reduction of total contribution.

A welfare-maximizing mayor can promise to link directly the contribution of each party to the group specific public good. If she is politically strong enough to keep her promise, she solves the problem of underprovision to the pool induced by fragmentation, because each party internalizes both the benefit and the cost of contribution. If she is politically too weak to impose her will, the bargaining takes place. Parties anticipate this outcome and underprovide to the pool. In this case, the inefficiency induced by the fragmentation of parties is kept.

2.2.1 Parties

Let us consider a game where N parties form the political coalition that supports the mayor of a municipality. The aggregated wealth of the groups of citizens represented in the ruling coalition is denoted by w. Each party $i \in S = \{1, ..., N\}$ represents a group of citizens holding a fraction $\frac{1}{N}$ of wealth w. An individual of group i has utility $u_1(c_i)$ by private consumption c_i, and has utility $u_2(g_i)$ by the consumption of a group specific public good g_i. Each individual perceives the burden of debt b for the next generation as a cost, shared among the individuals of all groups: $\frac{1}{k}c(\frac{b}{N})$, where $k \in]0, \infty[$.

2.2.2 The determination of fiscal policies

Party i chooses how much of the wealth of group i to dedicate to a group specific taxation t_i and to private consumption. There is a bargaining among the parties about the share of the total taxation $T := \sum_{j=1}^{N} t_j$ that finances public goods g_1,...,g_N. Party i selects also debt b_i to finance public good g_i. Total debt is $b := \sum_{i=1}^{N} b_i$.

The problem party i faces can be represented as follows:

$$\max_{t_i, c_i, b_i} u_1(c_i) + u_2\left(g_i(T, b_i)\right) - \frac{1}{k}c\left(\frac{b}{N}\right), \tag{2.1}$$

such that

$$\begin{cases} c_j + t_j & = \frac{1}{N}w, \;\; j \in S, \\ g_j & = f_j(T) + b_j, \;\; j \in S. \end{cases} \tag{2.2}$$

The vector $(f_1(T), ..., f_N(T))$ is the result of the bargaining among the parties, where $\sum_{j=1}^{N} f_j(T) = T$. Let us assume that the bargaining delivers the following partition: $f_j(T) = \frac{1}{N}T$, so that the revenues accruing from the group specific taxation are shared equally.

Let us find the Nash equilibrium in pure strategies of this game for the case in which $u_1(\cdot) = u_2(\cdot) = \log(\cdot)$, $c(\cdot) = \frac{1}{2}(\cdot)^2$. Problem (2.1) becomes

$$\max_{t_i \geq 0, b_i \geq 0} \log\left(\frac{1}{N}w - t_i\right) + \log\left(\frac{1}{N}T + b_i\right) - \frac{1}{2k}\left(\frac{b}{N}\right)^2. \tag{2.3}$$

The first order conditions for party i are the following:

$$\frac{1}{N}\left(\frac{1}{N}T + b_i\right)^{-1} - \left(\frac{1}{N}w - t_i\right)^{-1} = 0. \tag{2.4}$$

$$\left(\frac{1}{N}T + b_i\right)^{-1} - \frac{1}{N}\frac{b}{kN} = 0. \tag{2.5}$$

In equation (2.4) party i internalizes fully the cost $\left(\frac{1}{N}w - t_i\right)^{-1}$ of an increase in t_i, but only a fraction $1/N$ of the benefit $\left(\frac{1}{N}T + b_i\right)^{-1}$. The opposite is true in equation (2.5) for an increase in debt b_i: party i internalizes fully the benefit $\left(\frac{1}{N}T + b_i\right)^{-1}$, but only a fraction $1/N$ of the cost $\frac{b}{kN}$. Aggregating equation (2.4) for all $i \in S$ we derive the following relation between total taxation T and total debt b: $T = \max\{\frac{w-Nb}{N+1}, 0\}$. Substituting $T = \frac{w-Nb}{N+1}$ in equation (2.5) and aggregating it for all $i \in S$ we obtain the following expression for total debt:

$$b = \frac{-w + \sqrt{w^2 + 4kN^3(N+1)}}{2}. \tag{2.6}$$

The public spending of this municipality, represented by the sum of all group specific public goods $\sum_{j=1}^{N} g_i = T + b$ is the following:

$$T + b = \frac{w + \sqrt{w^2 + 4kN^3(N+1)}}{2(N+1)}. \tag{2.7}$$

Notice that T could have a corner solution and be equal to 0, if $w - Nb < 0$, which is true if N and/or k are sufficiently high. If the fragmentation of parties is high and/or the cost of debt is low the municipality does not resort to groups' taxation and finances spending only through debt. [comparative statics] The debt b increases with N and k. The sum of group specific transfers T decreases with N and k. The public spending $T + b$ of the municipality increases with N if k is above a threshold $\bar{k} > 0$, it decreases with N if k is below $\bar{k}$. The public spending increases with k. Hence, if the cost of debt is sufficiently low, the parties of the ruling coalition face a common pool resource problem, adding a party to the coalition will increase the level of spending because that party will ask for an additional public good, the cost of which will be only partially internalized. If instead the cost of debt is high, the parties of the coalition face a problem of underprovision of taxation. Parties have to finance spending through taxes on local groups, because they cannot resort anymore to debt. But they cannot control how their contribution will be spent, because all contributions are pooled together. Thus, an additional party will reduce the willingness of groups to donate to the pool, because that party will receive a part of their contribution. In the case we are considering, municipalities face tight fiscal rules, that impose them to avoid the creation of debt, therefore we expect them to face a problem of underprovision of group specific taxation.

Now, let us consider case in which the municipality cannot issue debt. Notice that the problem faced by a coalition welfare maximizer, in this situation, is the following:

$$\max_{t_1,\ldots,t_N} \sum_{j=1}^{N} u_1\left(\frac{1}{N}w - t_j\right) + N u_2\left(\frac{1}{N}T\right). \tag{2.8}$$

If $u_1(\cdot) = u_2(\cdot) = \log(\cdot)$, $c(\cdot) = \frac{1}{2}(\cdot)^2$, the first order condition for contribution t_i is:

$$\left(\frac{1}{N}T\right)^{-1} - \left(\frac{1}{N}w - t_i\right)^{-1} = 0 \tag{2.9}$$

The coalition welfare maximizer fully internalizes the benefit and the cost of in increase in t_i, because she considers also the effect of t_i on the public goods accruing to the other $N-1$ groups. Aggregating equation (2.9) for all $i \in S$ we obtain the following expression for the welfare maximizing revenues: $T^W = w/2$.

Let us assume that a mayor, whose objective is to maximize the total welfare of the voters who elected her, can partially commit with party i to devote the contribution t_i to public good g_i. With probability p the mayor is able to keep this promise, with the complementary probability there is a bargaining that determines the share of revenues T that is devoted to finance the group specific public good g_i. We interpret p as the political power of the mayor. A politically powerful mayor is able to impose her will to the ruling coalition. Let us assume that the share f_i determined by the bargaining is equal to $1/N$. The problem party i faces can be represented as follows:

$$\max_{t_i} p\left[u_1\left(\frac{1}{N}w - t_i\right) + u_2\left(t_i\right)\right] + (1-p)\left[u_1\left(\frac{1}{N}w - t_i\right) + u_2\left(\frac{1}{N}T\right)\right]. \tag{2.10}$$

Let us assume that $u_1(\cdot) = u_2(\cdot) = \log(\cdot)$, $c(\cdot) = \frac{1}{2}(\cdot)^2$. The first order condition for group $i \in S$ is the following:

$$p\left(t_i\right)^{-1} + (1-p)\frac{1}{N}\left(\frac{1}{N}T\right)^{-1} - \left(\frac{1}{N}w - t_i\right)^{-1} = 0. \tag{2.11}$$

If the mayor successfully commits, group i internalizes the whole benefit of an increase in t_i, while if the mayor fails to commit, group i internalizes only a fraction $\frac{1}{N}$ of the benefit. Aggregating equation (2.11) for all $i \in S$ we obtain the following expression for the equilibrium revenues T:

$$T = \frac{1-p+Np}{N+1-p+Np}w. \tag{2.12}$$

[The political power of the mayor] Revenues and public spending increase with the probability p of commitment by the mayor. In particular, if $p = 1$, the revenues T are equal to the welfare maximizing revenues. [The interaction between p and N] A larger probability p of commitment by the mayor reduces the negative effect of N on revenues and public spending If the mayor is weak, the parties will underprovide taxation, because they will not internalize the benefit of their taxation on the public goods of the other groups. This creates an inefficient provision of public goods in the municipality. If the mayor is sufficiently strong, the parties will believe that she will link their contribution to their public good, and that will induce the parties to increase their contribution up to the welfare mazimizing revenues. Moreover, the reduction in taxation implied by a larger fragmentation is mitigated by a larger political power of the mayor.

2.3 Evidence from Italian municipalities

In this section we first estimate the effect of parties' fragmentation of the ruling coalition on fiscal policies, using data on Italian municipalities. We present the results of a cross-section analysis. Hereinafter, we propose a strategy that allows us to identify the causal effect of parties fractionalization on government policies. In the second part, we use a Regression Discontinuity Approach in order to identify the effect of mayors' political power on fiscal policies. Finally, we discuss the main results and we show how the effect of parties' fragmentation and the effect of mayors' power strongly interact each other.

Italian municipalities (*Comuni*) are the third-level administrative division of the State. They are ruled by a city council (*Consiglio Comunale*) and an executive committee (*Giunta*), headed by a mayor (*Sindaco*). Each municipality provides many of the basic civil functions, which are, among others: registry of births and deaths, registry of deeds, contracting for local roads and public works. Furthermore, it is in charge for the supply of a wide range of services, such as waste management, municipal police, infrastructures, welfare, housing and water supply.

2.3.1 Electoral System

Since 1993, in municipalities with a population exceeding 15,000 inhabitants a majoritarian system with runoff is in place. The mayors are directly elected by voters, together with the members of the city council. Each mayor can be connected to more than one party (*lista*). The ballot paper is the same for both the election of the mayor and the city council. As shown in Figure B.2, the name and surnames of the running mayors are written within a specific rectangle, at whose side are the symbols of the party or parties connected to her. A resident in the municipality has the opportunity to express at most two votes: one for the mayor and one for the party. The mayor and the party voted by a resident do not need to be connected.

Given these characteristics, the results of the election can lead to different outcomes: (1) if a candidate gets more than 50% votes, she is elected mayor; (2) if no candidate gets more than 50% votes, there is a runoff election in 2 weeks among the two running mayors who received the largest share of votes. Between the first and the second round, parties which were not connected with the two candidates that run at the runoff, with a formal procedure and with the approval of the candidate, can endorse one of the two runoff candidates (*Apparentamento*). In this case they are fully part of the coalition of parties supporting a candidate. The winner of the runoff election is elected mayor.

The distribution of seats in the city council is decided as follows: (1) if the coalition of parties connected to the mayor receives a total share of votes larger than 60%, they get a share of seats equivalent to their total share of votes; (2) If the total share of votes of the coalition is between 40% and 60%, the total share of seats going to the mayor's coalition is 60% (*Majority bonus*); (3) if the total share of votes of the mayor's coalition is lower than 40% the total share of seats going to the mayor's coalition corresponds to their total share of votes (*Mayor of minority*).[2] Inside the ruling coalition seats are allocated proportionally to votes received by each party. Minority seats are distributed proportionally to all other parties that obtain more than 3% of votes.

2.3.2 Database and Municipal Budget

The database contains the mayoral terms from 2002 to 2012 for about 1,000 Italian municipalities.[3] Data for this project come from multiple sources. The first source contains information on all the election results from 1993 to today, and is available on the website of the Italian Ministry of Internal Affairs.[4] As shown in Table B.1, it contains information on the share of votes obtained by each candidate (for mayor) and party, the number of seats assigned to each party and the electoral turnout. It contains also the name of every candidate and party. The names of running parties helped us determining whether the party is right-wing or left-wing and, for each year, whether the mayor's coalition is aligned with the

[2] This is indeed a very rare event.

[3] Some of the exercises that we perform in the following of the paper do not need all the data collected. In these cases the exercises are performed with larger samples. The results do not show any significant difference depending on the sample.

[4] http://elezionistorico.interno.it/.

central government or not.[5] Finally, from this source, we are able to determine whether, between the two rounds, the winning mayor has been endorsed by parties that were linked with other candidates in the first round.

The second source of information has been manually assembled by the authors, from printed documents of the Italian Ministry of Internal Affairs. It contains information on the name of the candidates and parties and their position on the ballot paper from 2002 to 2012. Thanks to this database we can associate for all parties, their position in the ballot with their share of votes. Since 1990, in Italy, after the approval of the Law No. 53/1990, the position of names of candidates and symbols of parties in the ballot paper is randomly determined by the state officials. In particular symbols of parties are randomized inside the rectangle representing a single coalition. The main motivation of the law, as stated by the proponents of law, was that it is common knowledge, although not scientifically proven, that there are some positions in the ballot which give a boost in terms of votes. For this reason, at every election, parties strongly competed in order to get the best positions.[6]

The third database contains all the details of the budgets of Italian municipalities from 1997 to 2014. It is also available on the website of the Italian Ministry of Internal Affairs.[7] The budget is the instrument through which the local government programs activities and services for the current year. It shows the details of revenues and spending defined according the needs and priorities of the municipalities. The budget formal procedure prescribes three main stages. First, the mayor, together with assessors, prepares the first draft of the budget. The main focus of this stage are the sources of revenues for the budget. Secondly, the municipal government presents the draft to the city council, where a bargaining process to define items takes place. Third, the final bill of the budget has to be approved with 50% plus one of votes. Usually, the mayor and the parties of her coalition engage in a bargaining in the different stages of the drafting procedure, in particular when spending items are decided.

There are features of the budget procedure that are important to mention. By law, after the introduction of the Domestic Stability Pact (*Patto di Stabilitá Interno*) in 1999, municipalities face a tight budget constraint. Municipalities were constrained to keep the growth of their fiscal gap - defined as deficit, net of transfers and debt service - under tight control.

[5] In order to classify parties we apply the same method by Bracco et al. (2015).

[6] By the draft legislation: "Beyond any consideration on the merits of this effect, the fact is that these races for the positions on the ballot resulted often in unpleasant episodes ... causing inopportune disturbance of the climate of the electoral."

[7] http://finanzalocale.interno.it/apps/floc.php/in/cod/4.

The main revenue items analyzed in this work are: (1) *Taxes*: the real estate tax (*IMU*), the income tax (*IRPEF*) and the tax on waste collection; (1) *Fees & Tariffs* that include revenues from the supply of public services (fees for kindergarten, retirement homes, sports facilities etc.), from exercising certain functions (fines made by the local police, parking lots and public land rent) and from the management of certain activities or from ownership of properties; (3) *Central Transfers* come from higher administrative level, mainly from the state, but also from provinces and regions; (4) *New Debt* revenues from taking out loans serving to finance investments.

The main expenditure items analysed in this work are: (1) *Current Expenditure* which is used to fund ordinary management of services; (2) *Capital Expenditure* which is intended to finance public works and real estates that produce repeated benefits over time, i.e. investments.

Finally, the database has been enriched with a series of information on time invariant geographical characteristics of the municipality and the available characteristics of the elected mayor. Table B.1 shows some of these variables: the municipal area, the degree of urbanization, the seismicity class, the distance from the sea, the population, the presence of a river, the altitude and finally the church density. Furthermore: the age, the sex, the level of education and previous job of the elected mayors.

2.4 Empirical Strategy & Results

2.4.1 Cross-sectional analysis

In this framework we are interested in studying the effect of parties fragmentation F_{cl} on fiscal policies. Our main explanatory variable F_{cl} is the normalized fractionalization index of the ruling coalition. More in detail, we define F_{cl} as:

$$F_{cl} := \frac{\sum_{i=1}^{N} s_i\,(1 - s_i)}{1 - \frac{1}{N}} \tag{2.13}$$

where the normalizing factor $(1 - \frac{1}{N})$ includes N,[8] the number of running parties within the coalition of mayors in the ballot; s_i is the share, within the ruling coalition, of seats in the city council of each party i. As our interest lies in the fragmentation inside the city council, we use N, which is a measure of the fragmentation before elections take place, in

[8] The unnormalized fractionalization goes from 0 to $1 - \frac{1}{N}$.

the normalization. As it will be clear when we will present the IV estimation, we are able to exploit random shocks on the fractionalization index, that keep N constant.

We exploit an index of fractionalization, instead of the number of parties in the ruling coalition, in order to account for asymmetries in the distribution of seats inside the ruling coalition. It is important to emphasize that the index of fractionalization and the number of parties are highly correlated. We have performed all exercises with different measure of fractionalization.[9] Qualitatively, the key findings of the paper do not change.

Let Y_{ct} be one of the items of the municipal budget presented in the previous section. For example, the current expenditure per capita of municipality c in year t. Our basic specification is:

$$\log(Y_{ct}) = \alpha_0 + \alpha_1 F_{cl} + \alpha_2 V_{cl} + \alpha_3 M_{cl} + \alpha_4 X_c + \alpha_5 \log(Y_{cl-1}) + \mu_t + \sigma_e + \theta_p + \epsilon_{ctel} \quad (2.14)$$

where V_{cl} are control variables relative to electoral outcomes of the legislature l of city c, as from panel A of Table B.1: the level of turnout, the percentage of votes obtained by the mayor, if the mayor is elected at the runoff, if she is endorsed by parties other than her original coalition and if they get seats, if the mayor is at her first or second term of office and finally the main political ideology of the ruling coalition. M_{cl} are control variables relative to mayor's personal characteristics elected for the term l in city c. As from panel C of Table B.1: age, sex, schooling and previous job of the elected mayor. The specification includes time invariant geographical characteristics X_c, from panel B of Table B.1: the area of the municipality in square kilometers, the degree of urbanization, the seismicity class, the sea distance, the population size, the presence of a river, the altitude of the municipality and the church density. Then, the specification also include the average level over the past legislature of the dependent variable $\log(Y_{cl-1})$, year fixed effect μ_t, year of the legislature fixed effect σ_e and number of running parties within the coalition of the mayor θ_p fixed effect. Standard errors are clustered at the municipality level.

Results: Cross-sectional analysis

Table B.3 presents the main results of our basic cross-sectional analysis, the effect of parties' fractionalization on fiscal outcomes. Panel A of Table B.3 reports the results for public expenditure and in particular panel A.1 total expenditure, panel A.2 current expenditure and panel A.3 capital expenditure. The first columns of each sub-panel (1), (5) and (9)

[9] The effective number of parties, several index of fractionalization and the minimum winning coalition.

report the specifications that include year fixed effect, year of the legislature fixed effect, number of running parties fixed effect and the average level over the past legislature of the dependent variable. The second columns (2), (6) and (11) include also the electoral outcomes of the legislature. The specification of the third columns (3), (7) and (11) include also all the time invariant geographical characteristics of the municipality. Finally, the fourth column of each sub-panel include also the controls relative to mayor's personal characteristics. The panels B and C of table B.3 present results on revenues following the scheme described above.

Results show that the effect of parties' fractionalization on public expenditure is negative and statistically significant in all the specifications. Higher is the parties fragmentation of the ruling coalition lower is the total level of public expenditure. The effect of fractionalization is negative for both current and capital spending.

Panels B & C of Table B.3 report the results for public revenues. Evidence shows that the effect of parties' fractionalization is negative on total revenues. In this case, in contrast to public expenditure, the effect of political fractionalization is not negative on all revenue items. Indeed, from panel B.2 we can see that the effect of parties fragmentation is negative but never statistically different from zero for taxes. Instead, the coefficients are negative and always statistically different from zero in the estimates of the effect of fractionalization on fees & tariffs. Panel C shows that the effect of parties fragmentation is positive but never statistically different from zero for central transfers, panel C.2. Furthermore, the effect is positive and statistically different from zero in column (3) & (4) for new debt. Finally, from panel C.3 estimates show that the effect of fractionalization is never statistically different from zero and the point estimates of coefficients are much smaller than in the empirical exercices already presented. The estimates of the effect of fractionalization on the deficit are coherent with the results on total spending and revenues of panel A.1 & B.1. Indeed, given that the effect of fractionalization is almost equal for total spending and total revenues, it follows that the effect on their difference is zero.[10].

So far, we have seen that a higher level of fractionalization of the ruling coalition is associated with a lower lever of both total spending and total revenues. Furthermore, parties fractionalization has a negative effect only on revenues that come from fees and tariffs. Fees and tariffs are a good proxy of taxation, analysed in our theory, that target groups of residents who use specific public goods. Finally, evidence corroborates the results

[10]As a proxy of the deficit we use also the fiscal gap and the results are equivalent with those of panel C.3.

by Grembi et al. (2015). Indeed, there is no effect of fractionalization on deficit, this is further evidence that the budget constraint is binding.

The estimates are robust to various specifications and controls. In particular, it is important to emphasize that including the number of running parties fixed effect we are estimating the effect of the fragmentation of parties that are present in the city council, controlling for any possible effect driven by a possible pre-election bargaining. Nevertheless, all of these results have a potential econometric problem: omitted unobservable confounding factors that can affect both the fragmentation of parties and fiscal policy. Mainly, unobservable characteristics of the mayor or latent characteristics of the municipality could drive the results.

In order to solve this potential econometric problem in the next session we present an IV strategy. As in an experiment, we exploit a random boost of votes which modifies the fractionalization of the ruling coalition of a municipality in a given legislature.

2.4.2 IV estimate

The Ballot Order Effect

The ballot order effect defined as the relation between the order of symbols of parties and/or names of candidates on a voting ballot and the distribution of votes. The existence and relevance of this relation has been the focus of a part of the political science literature. Some empirical works provide evidence of this of effects (i.e., Miller and Krosnick (1998), Ho and Imai (2008) and Meredith and Salant (2013)). The empirical literature has shown that, when parties are simply listed in the ballot, the first and the last party get a boost of votes . However, as shown in Figure B.2, in this setting the parties are not simply listed in the ballot. Indeed, it can be seen that the combination of symbols and names of the Italian ballot is quite articulated. Cervellati et al. (2016), using the same database of this paper, show that the focal point of this ballot is the party whose symbol is closer to the name of the candidate (for mayor). Since 1990, the positions in the ballot paper of candidates and of parties within each coalition are randomly determined by state officials. Due to the feature of the Italian system, the authors identify the causal effect of the position on the percentage of votes obtained by each running mayor and party. First, Cervellati et al. (2016) show that there is no evidence of a specific pattern in the distribution of positions, suggesting that indeed the order is randomly assigned. Furthermore, authors show that there is no effect of the position of the candidates on their share of votes.[11]

In particular, Cervellati et al. (2016) provide evidence of a focal point in the box of a coalition, that seems to attract a disproportionate amount of voters. The symbol of the party, which is located on the right of the name of the candidate, has on average a larger share of votes, within coalition.

Hence, the main specification that Cervellati et al. (2016) estimate in order to identify the effect of the focal point position follows:

$$SV_i = \delta_0 + \delta_1 FP_i + \delta_3 V_{lc} + \mu_t + \eta_c + \theta_p + \varepsilon_{ctel} \tag{2.15}$$

where SV_i is the share of votes within the coalition of party i and FP_i (*Focal Point*) is a dummy that takes value 1 if the party's symbol is on the right of the name candidate, 0 otherwise. The specification includes control variables relative to electoral outcomes of the legislature l of city c, year fixed effect μ_t, number of running parties within the coalition θ_p fixed effect and city fixed effect η_c. Standard errors are clustered at the municipality level.

It is important to underline that when there is an odd number of running parties within the coalition, the name of candidate is always aligned with a symbol of a party. For example, as can be seen in Figure B.2, in the case of three parties the name of the candidate is close to the second party. Instead, when there is an even number of running parties within the coalition, the name of the candidate is in the middle between two parties. For example, in the case of four running parties the name of the candidates is in the middle between the second and the third party. When an even number of running parties are running, the variable FP_i takes values one only for the first of the two median parties. For example, in the case of four running parties it takes value one only for the second party.

Figure B.3 shows the share of votes of parties within coalition, by position in the ballot paper according the number of running parties in the coalition. These figure show that on average the party that is in the focal point gets more votes. When three parties are running, due to randomization, each party on average should obtain the 33% of votes, if no ballot order effect is active. However it is observed that the first and the last party on average obtain less than 33% of votes and the party in the focal point obtains more than 33% of votes. The same path is observed in all other graphs of Figure B.3.

Panel A of Table B.4 reports the estimates of specification (2.15). Column (1) to column

[11] Discussing and understanding the causes of the Ballot Order Effect is outside the scope of this paper. However, Cervellati et al. (2016) provide a deep discussion aimed at understanding the causes.

(7) report the results by number of running parties, separately. In Column (8) and (9), respectively, are reported all the coalitions with more than three and less than seven running parties and all the coalitions with more than three and less than ten parties. Finally, in column (10) are reported the results with all the coalitions with more than three parties. Parties that randomly end up at the focal position gets more votes than others parties. From column (1), coalition with three lists, the party at the focal point obtains 5.25% point more votes within the coalition than other parties. Panel B of Table B.4 shows that the estimates are robust to various specifications and controls. Overall, evidence show that the effect is larger when the number of parties in the coalition is odd. Probably, the two parties close two the name of the candidate share part of the boost of votes when there is an even number of parties.

From a political point of view the magnitude of the effect is extremely high. Due to the proportional distribution of seats a reallocation of 4 percentage of point, significantly change the balances of power within the ruling coalition. The minimum threshold to get at least one seats in many cases is lower the 4 percentage point. Panel B of table B.5 shows the effect of the focal point on the probability that the party gets at least one seats. The dependent variable is a dummy that takes value one if the party has obtained at least one seat, 0 otherwise. The party in the focal point has an higher probability to get at least one seat that ranges from 5 to 18 percentage points than other parties. Practically, this means that in Italy on average the 10% of councilors is elected by pure chance.

The Instrument

The intuition behind the instrument is quite simple. If a party that is relatively small, in term of electoral support, is randomly located in focal point, the distribution of seats within the ruling coalition of the mayor is more fractionalized. On the other side, if a relatively large party is randomly located in the focal point the distribution of seats would be, by chance, more concentrated. In order to proxy the relative electoral support of the party that is treated within the coalition we build the variable RP_{fp} (*Ranking of the Party in the Focal Point*). For example, when the coalition is composed by three running parties, the variable RP_{fp} takes value 1 if the treated party takes the largest share of votes, it takes value 2 if the party receives the second largest share of votes and 3 if the treated party takes the smallest share of votes. From Figure B.4 we can notice that there is a negative relationship between the ranking of a party in the focal point and its share of votes. Thus, we have a good proxy for the relative size of the treated party within the coalition. Moreover, Figure B.5 shows that there is a positive relationship between the ranking of the treated party and the fractionalization index F_{cl}. That is, smaller is the treated party, larger is the parties' fractionalization within the ruling coalition.

In order to identify the causal effect of parties' fractionalization on fiscal policies we implement a two-stage least squares model where the first stage is

$$\widehat{F_{cl}} = \beta_0 + \beta_1 RP_{fp} + \beta_2 V_{cl} + \beta_3 M_{cl} + \beta_4 X_c + \beta_5 \log\left(Y_{cl-1}\right) + \mu_t + \sigma_e + \theta_p + \upsilon_{ctel} \quad (2.16)$$

and the second stage is

$$\log\left(Y_{ct}\right) = \pi_0 + \pi_1 \widehat{F_{cl}} + \pi_2 V_{cl} + \pi_3 M_{cl} + \pi_4 X_c + \pi_5 \log\left(Y_{cl-1}\right) + \mu_t + \sigma_e + \theta_p + u_{ctel} \quad (2.17)$$

Both specifications include all the controls already presented in section 2.4.1. Standard errors are clustered at the municipality level.

Is the Ranking a Valid Instrument?

For this IV methodology to correctly identify the causal effect of fractionalization on fiscal outcomes, the instrument must satisfy three conditions: (a) the ranking of the party in the focal point is correlated with the fractionalization index (first stage relevance); (b) the ranking of the party is uncorrelated with the econometric error u (second stage independence); and (c) the ranking of the party has no impact on $\log\left(Y_{ct}\right)$ other than through fractionalization index (second stage exclusion).

Table B.6 report the estimates of equation (2.16). Panel A.2 of Table B.6 contains the sample of all the candidates, while panel B.2 contains the sample with only the elected mayors. Results show that the ranking of the party in the focal point has a strong positive effect on both the fractionalization index and the number of parties within the ruling coalition of the mayor. The coefficients are always statistically significant at the 99% level. The results are pretty robust both when we estimate the coefficients including in the sample all running coalitions, panel A.2, and when we use only the subsample of mayors, panel B.2 of Table B.6.

For what concerns the exogeneity of the instrument, by construction, the treated party is randomly drawn by the state officials which means that is uncorrelated with the econometric error u.

The exclusion restriction imposes that the ranking of the party in the focal point does not affect fiscal outcomes other than through an increase in the fragmentation of the ruling coalition. Panel A.1 and B.1 show the estimates of equation (2.16) using some characteristics of the ruling coalition as dependent variable other than the fractionalization index. In column (1) and (2) the share of votes of the running mayor is used as dependent variable. In column (3) and (4) the total number of seats obtained by the coalitions. Column (5) and (6) report the results for the probability of runoff alliances, while column (7) and (8) report the probability that new parties endorsing the mayor obtain seats with the city council. Finally, in column (9) and (10) the probability that the coalition candidate goes to the runoff is used as depend variable and in column (11) and (12) the probability of becoming a mayor. These estimates show that the ranking of the party in the focal point has on none effect of this variable. The ranking of the party in the focal point does not affect any of the characteristics of the coalition as a whole. This is because the ballot order effect does not affect the total number of votes of a coalition but only the distribution of seats within coalition.

As a further evidence, we estimates 2000 times the coefficient β_1 using the ranking of a randomly drawn party within the coalition. The graphs of Figure B.6 shows the results of the estimates, using the fractionalization index (graph on the left) and the number of parties (graph on the right). Only in the 5% of the cases the coefficients are statistically different from zero (orange points), and they are equally distributes around zero. In contrast, in the 95% of the cases estimated coefficients are not statistically different from zero, and also in this case they are homogeneously distributed around zero. This shows that is indeed the boost of votes obtained by the focal party that has an effect on the fractionalization index.

However, a main concern can arise coding the ballot order effect in this way. In order to build the variable *Ranking of the Party at the Focal Point* (RP_{fp}) we are using the post treatment distribution of votes. Ideally, in order to build the variable RP_{fp}, we would like to use the votes that parties would have obtained excluding the boost induced by the ballot order effect. Indeed, the focal point has an effect also on the ranking of the party. We have two main arguments against this possible issue. First, it lowers the power of our instrument. Indeed, if we could have used the pretreatment ranking the point estimate of the coefficient $beta_1$ would have been higher. Second, as long as the ballot order effect increases the ranking of the party in the focal point on average only by one position, the monotonicity assumption holds.[12]

[12] We cannot directly test this assumption.

Results: IV Strategy

Table B.7 presents the results of the IV strategy, the effect of parties' fractionalization on fiscal outcomes. Panel A of Table B.7 reports the results for public expenditure, while panels B and C of table B.3 present results on public revenues. The results are listed following the scheme described in section 2.4.1.

The IV estimates indicate that the parties' fractionalization has a negative effects on total public expenditure, panel A.1. The coefficients are negative and statistically significant at the 95% level. The effect of fractionalization is negative for both current and capital spending. However, in the last two columns of panel A.3, the effect of parties' fragmentation on capital expenditure is not statistically different from 0. The point estimate of coefficients is quite high, although not statistically significant, indicating that the effect is highly heterogeneous.

At the bottom row of panel A, we show that the ranking of the party in the focal point is a strong instrument for parties' fractionalization, with F statistics is beyond the typical rules-of-thumb values.

In addition, the results on revenues are in line with those shown in the cross-section analysis. The effect of fractionalization on total revenues is negative and statistically different from 0. Again, the effect on revenues is completely concentrated on fees & tariffs. The estimates of all revenues items other than fees & tariffs do not show any significant coefficients. It is important to underline that the point estimate of coefficients of new debt, panel C.1, is high, although not statistically significant suggesting that the effect of fractionalization on new debt is highly heterogeneous. At the bottom row of panel B are reported first stage F statistics. Also in case we can conclude that the instrument is strong.

Overall, the IV approach yields consistent evidence with those of the cross-section analysis presented in section 2.4.1. Fractionalization has a strong negative effect on spending and revenues. The estimates of Table B.7 show that the effect is sizable. An increment of 10% in the fractionalization index at mean value implies a reduction of about 5.7% in total expenditure and total revenues and a reduction of fees and tariffs of about 7.1%.

2.4.3 Regression Discontinuity Design (RDD)

This estimation framework identifies the effect of being elected at the second round, as opposed of being elected at the first round, on fiscal outcomes. In this setting we compare mayors that have barely won at the first round, the ones that have obtained slightly more than 50% votes, with those who barely go at the second round because they obtained slightly less than 50%. The identifying assumption in this regression discontinuity analysis is that mayor close to the threshold of the 50% are randomly assigned across the rounds, independently of mayors characteristics. This assumption could be criticized if elections are rigged, such that winning at the first round could depend on personal characteristics of the mayors that are also correlated with spending behavior. However, the graph of Figure B.7 shows that there is no evidence of such manipulation around the threshold, which is the focus of this exercise. In a small window around the threshold, mayors elected at the first round and mayors elected at the second round are identical in terms of many observable characteristics such as age, schooling and previous job of the elected. Also the characteristics of the cities do not show significant differences at the threshold, such as population, having a river, sea distance, north and south cities and most important, the level of turnout at the election, the number of running mayors and the total number of running parties within the city council.[13] The graph of Figure B.8 show that the raw densities of mayors do not do show a systematic selection of mayor in one of the two rounds. This is a further evidence that there is no manipulation at the threshold. Finally, the two bottom graph of Figure B.9 show that mayors elected at the first round and mayors elected at the second round do not differ also with respect to our main independent variable of the previous section, the parties fractionalization and the number of parties of the ruling coalition.

Let Y_{ct} be one of the items of the municipal budget, the variable R_m is 1 if the mayor is not elected at the first round, 0 otherwise. Then, P^*_m is the normalized share of votes $P^*_m = P_m - P_s$, where P_m is share of votes obtained by the mayor and P_s is equal to 50. Thus, the sample is restricted to the interval $P_m \in [P_m - h, P_m + h]$ and a model of this form is estimated.

$$\begin{gathered}\log\left(Y_{ct}\right) = \varphi_0 + \varphi_1 R_m + \varphi_2 \sum_{n=1}^{N} P^{*\,n}_m + \varphi_3 \sum_{n=1}^{N} (R_m \times P^{*\,n}_m) + \\ + \varphi_4 V_{cl} + \varphi_5 M_{cl} + \varphi_6 X_c + \varphi_6 \log\left(Y_{cl-1}\right) + \mu_t + \sigma_e + \theta_p + \xi_{ctel}\end{gathered} \tag{2.18}$$

As suggested by the literature, both local linear regression, with $n = 1$, and spline polynomial approximation, with $n > 1$, are performed. Equation (2.18) contains all the control and fixed effect presented in the previous sections. Standard errors are clustered at the municipality level.

[13]We perform also the RDD estimates on these variables and none of them results statistically different from zero. Results available upon request.

Results: Regression Discontinuity Design

Results are reported in Table B.7. Panel A lists the results for public expenditure: in panel A.1 the outcome is total expenditure, in panel A.2 current expenditure and in panel A.3 capital expenditure. The first two columns of each sub-panel present the results of a local linear regression model, according (2.18). The optimal bandwidth h is estimated either following Imbens and Kalyanaraman (2012) (Columns (1), (5) and (9)), or implementing the algorithm presented by Calonico et al. (013a,b) ((2), (6) and (11)). The last two columns of each sub-panel show the results for a spline polynomial approximation as in equation (2.18), and two different orders of the polynomial are presented. A 2^{nd} order approximation in columns (2), (6) and (11), and a 3^{rd} order approximation in columns (3), (7) and (11). The panels B and C of table B.7 present results for revenues following the scheme described above.

Results reported in panel A.1, A.2 and A.3 of Table B.7 show that if a mayor is elected at the second round, she has a lower expenditure. In fact, the coefficients of all the regressions are negative, but rarely statistically different from 0. Column (5) shows that a second round mayor spends 10% less on current expenditure than a mayor elected at the first round.

Column (9)-(12) al panel B.3 show that the effect of being elected at the runoff has a strong negative effect on fees and tariffs. A mayor elected at the second round collect about 30% less revenues from fees and tariffs than a mayor elected at the first round. Again, the effect is concentrated on fees and tariffs.

Overall, standard errors are quite large, indicating that the effect of being elected at the second round is highly heterogeneous. This does not allow to accurately identify the effect.

A graphical representation of the results on fiscal policies is provided in Figure B.11. The overall message that we obtain from these graphs is that mayors elected at the first round, those on the right of the threshold in the graphs, on average spend more and collect more revenues. However, the jump at the threshold are not always statistically different from 0.

2.4.4 Results: Interaction

In this section we are interested in studying if the effect of parties fractionalization on fiscal policies is heterogeneous between mayors who barely are elected at the second round and mayors who barely are elected at the first round. In other words, we want to verify if the two effects studied in the previous sections, the effect of political fractionalization and the effect of mayors' political power, interact each other.

In order to identify this effect we estimate the following full-interacted model:

$$\begin{aligned} \log\left(Y_{ct}\right) = \psi_0 + \psi_1 R_m + \psi_2 F_{cl} + \psi_3 R_m \times F_{cl} + \psi_4 \sum_{n=1}^{N} P_m^{*\,n} + \\ + \psi_5 \sum_{n=1}^{N} (R_m \times P_m^{*\,n}) + \psi_6 F_{cl} \times \sum_{n=1}^{N} P_m^{*\,n} + \psi_7 F_{cl} \sum_{n=1}^{N} \left(R_m P_m^{*\,n}\right) + C + \omega_{ctel} \end{aligned} \tag{2.19}$$

where, $C = \psi_8 V_{cl} + \psi_9 M_{cl} + \psi_1 0 X_c + \psi_1 1 \log\left(Y_{cl-1}\right) + \mu_t + \sigma_e + \theta_p$, are the controls already presented in section 2.4.1. The sample is restricted to the interval $P_m \in [P_m - h, P_m + h]$ and both local linear regression, with $n = 1$, and spline polynomial approximation, with $n > 1$, are performed. We are interested at the following coefficients: ψ_2 which identifies the effect of parties' fractionalization on fiscal policies for mayors that are elected at the first round; $\psi_2 + \psi_3$ which identifies the effect of parties' fractionalization for mayors that are elected at the second round; and finally ψ_3, which shows if the effect of fractionalization on fiscal policies is statistically different between the two different mayors. Standard errors are clustered at the municipality level.

Panel A of Table B.9 reports the estimates of the model (2.19). The columns of the panels A, B and C are presented following the scheme described in section 2.4.3. In the first row of each panel we reporter the coefficient ψ_2, the effect for mayors elected at the first round. In the second row the effect for mayors elected at the second round $\psi_2 + \psi_3$. Finally, in the bottom row of each panel the difference between the two effect, ψ_3 is reported. Panel A of Table B.9 shows that the effect of parties' fractionalization is highly heterogeneous between the two mayors. The first row shows that the effect on total expenditure is positive, although never statistically different from 0, for mayors elected at the first round. On the contrary, from the second row, the effect of parties' fractionalization is shown to be highly negative and in all specifications statistically significant at 99% level for mayors elected at the second round. In all specifications listed in panel A.1 the difference between the two coefficients is statistically different from 0, indicating that indeed the effect between the two groups of mayors is highly heterogeneous. The results for current and capital expenditure almost follow those of the total expenditure. The effect of fractionalization for mayors who win at the first round disappears completely.

Panel B of Table B.9 shows the same pattern observed in section 2.4.1. The coefficients of parties' fractionalization on total revenues are similar to those of total spending for mayors that are elected at the second round. Also in this case the effect for mayors elected at the first round is never statistically different from 0. An important thing to emphasize is that the only case in which coefficients are still statistically significant for mayors elected at the first round are those of fees and tariffs. Indeed, frow the first rom of panel B.3, we can see that the effect is negative and statistically significant, the point estimate is about -0.65. This means that an increase of 10% in the fractionalization index at mean value implies a reduction of about 4.6% in fees and tariffs for mayors elected at the first round. The second row of panel B.3 shows that the effect almost double for mayors elected at the second round. The point estimate is about 1.21. This means that an increase of 10% in the fractionalization index at mean value implies a reduction of about 8.5% in fees and tariffs for mayors elected at the second round. Also in this case the difference between the two coefficients is statistically different from 0, as become clear in the third row of panel B.3.

Panel C of Table B.9 shows that there are no differences between the two groups of mayors for what concerns the effect of parties fractionalization on new debt, central transfer and deficit. Although, it is important to underline that the effect of parties frationalization on new debt is positive and statistically significant for mayors elected at the first round.

2.5 Conclusion

The lack of fiscal responsability induced by large political coalitions in modern democracies is often deemed as one of the main drivers of the substantial increase in public expenditure in the last 40 years, up to levels far higher than what a benevolent social planner would have chosen. In this paper we show that this is not always the case.

We study the effect of the political fragmentation of a ruling coalition on fiscal policies. We show that when a government has a tight budget constraint, a larger number of parties in the majority coalition reduces revenues and spending. Each party internalizes the whole cost of the contribution made by the group of citizens she represents, but only a fraction of the benefit. Moreover, we show that a politically strong mayor can solve this problem of underprovision making a credible commitment about the link between what the group gives as taxation and what the group receives in terms of public spending. We test this theory using a new database on the ballot order of parties in Italian municipal elections and introducing a novel instrument for parties' fragmentation of the ruling coalition. Since 1990, in Italy the position of parties in the ballot paper is randomized. By exploiting the ballot order effect, the paper identifies the causal effect of party fragmentation on fiscal policies. Moreover, exploiting a regression discontinuity design at the voting threshold that determines the runoff, we identify the effect of the political power of the mayor on fiscal policy and the effect of its interplay with the parties' fragmentation of the ruling coalition. Empirical evidence confirms our predictions.

Our theory makes it possible to analyse the welfare implications of a reduction of spending and revenues, implied by a large political fragmentation. Specifically, it suggests that increasing the fragmentation of a ruling coalition gives rise to underspending, with respect to the welfare maximizing level of public expenditure.

We should be careful in providing policy implications. Indeed, electoral rules that reduce the number of parties, would on one side minimize the undercontribution analysed in this work, but on the other side could lead to lower political representation, damaging the welfare of the individuals whose interests are not defended in the ruling coalition. Still, the empirical analysis on the polical power of the mayor suggests that a careful design of political institutions, that keeps potentially a large number of parties in the decision making process, balancing them with a strong leader, could lead to substantial welfare gains.

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Appendix A

Do Electoral Systems Affect the Incumbent Probability of Re-election?

A.1 Tables and Figures

Table A.1: Legislative Thresholds for Italian Municipalities

	Pre-Reform n. 81 of 1993			**Post-Reform n. 81 of 1993**			
Population	Ex. Com. Size	Council Size	Electoral Rule	Ex. Com. Size	Council Size	Electoral Rules	**Wage Mayor**
Below 1,000	4	15	Plurality System with *Panachage*	4	12	Plurality System Single-Round	1,291
1,000-3,000	4	15	Plurality System with *Panachage*	4	12	Plurality System Single-Round	1,446
3,000-5,000	6	20	Plurality System with *Panachage*	4	16	Plurality System Single-Round	2,169
5,000-10,000	6	20	Party-List Proportional System	4	16	Plurality System Single-Round	2,789
10,000-15,000	6	30	Party-List Proportional System	6	20	Plurality System Single-Round	3,099
15,000-30,000	6	30	Party-List Proportional System	6	20	Majority System with Runoff	3,099
30,000-50,000	8	40	Party-List Proportional System	6	30	Majority System with Runoff	3,460
50,000-100,000	8	40	Party-List Proportional System	6	30	Majority System with Runoff	4,132
100,000-250,000	12	50	Party-List Proportional System	10	40	Majority System with Runoff	5,010
250,000-500,000	15	60	Party-List Proportional System	12	46	Majority System with Runoff	5,784
Above 500000	16-18	80	Party-List Proportional System	14-16	50-60	Majority System with Runoff	7,798

Note. *Population* is the number of inhabitants living in a city measured by the last available Census. Since in Italy is made every ten years, in this work I used the Census of 1991. *Executive Committee* is the maximum number of Assessors that the Mayor can appointed. *Council Size* is the number of seats available in the city council. *Electoral Rules* is the specific electoral system in force in that municipality. The number of members of the executive committee, the number of seats available in the city conical and the electoral systems vary according to the population size of the city. Moreover on march 25, 1993, the law 81 on the direct election of the mayor has modified both the number of the heading organs of local government that the electoral systems. *Wage Mayor* refer to the monthly gross wage of the mayor in 2000 and is measured in euros. The *Pre-Reform n. 81 of 1993*, with respect to our analysis, refers to the period from 1985 to 1992, and *Post-Reform n. 81 of 1993* refers to the period from 1993 to 2000.

Table A.2: Electoral Systems Before and After Law no. 81 of 1993, According to Some Analysis Dimensions and the Population Threshold

	Befor the Reform		**After the Reform**	
	Population Threshold		**Population Threshold**	
	<5000 inhabitants	>5000 inhabitants	<15,000 inhabitants	>15,000 inhabitants
Ballot Type	Ordinal with Limited Vote: *panachage*	Categorical	Categorical	Categorical
Number of Preferences	Each voter has a number of votes equal to the 4/5 of seats in the city council	4 in municipalities <500,000 inhabitants 5 in municipalities >500,000 inhabitants	Single; to a candidate of the list associated to the mayor	Single; to a candidate of any list.
Connection Mayor-List			Each Mayor Candidate with only one List	Each Mayor Candidate with one or more List
Electoral Formula	Plurality System Plurinominal	Proportional System (D'Hondt method)	Mixed System [2/3 Plurality System, 1/3 Proportional System (D'Hondt method)]	Mixed System [60% Majority System; Proportional System (D'Hondt method)]
Threshold for the Application of the Premium				50% of the votes (40% from 1999**), if the mayor is elected at the first round; as long as other lists do not exceed 50%
Electoral Districts	Single	Single	Single	Single

Note: The Table has been taken and translated from Baldini and Legnante (2000)
**Changes introduced by Law no. 20 of 1999

Table A.3: Electoral Systems and the Consequences of the Vote for the Formation of the Municipal Government

	Befor the Reform		**After the Reform**	
	Population Threshold		**Population Threshold**	
	<5000 inhabitants	>5000 inhabitants	<15,000 inhabitants	>15,000 inhabitants
Electoral System	Plurality System with *Panachage*	Party-List Proportional System	Plurality System Single-Round	Majority System with Runoff
Decisiveness of the Election for the Appointment of Mayor	High and poorly mediated by political parties (competition between parties)	Low and strongly mediated by political parties	Direct election of the Mayor (single-round)	Direct election of the Mayor (runoff)
Outcome of the vote for the formation of the government majority	Election of the City Council and subsequent agreements between the parties for the formation of the majority and the election of the mayor	Election of the City Council and subsequent agreements between the parties for the formation of the majority and the election of the mayor	Single Outcome: 1. *Mayor with his majority* (2/3 seats in the mayor's list, 1/3 to the opposition)	Three possible outcomes: 1. if both the Mayor and the Lists exceed the threshold: *Mayor with his majority* 2. The mayor exceeds the threshold but his lists do not exceed the threshold: *Mayor of minority* 3. Other lists exceed the threshold: *Mayor of minority*

Note: The Table has been taken and translated from Baldini and Legnante (2000)

Table A.4: Descriptive Statistics, Difference-in-Discontinuities Design Sample

	The Whole Period		**Pre-Reform n. 81**		**Post-Reform n. 81**	
	Cities above 5,000	Cities below 5,000	Cities above 5,000	Cities below 5,000	Cities above 5,000	Cities below 5,000
N. of City	488	983	488	983	488	983
N. of Election per City	2.83	2.85	1.04	1.02	1.95	1.96
% of Mayors Re-elected	37.36	42.17	25.11	36.64	42.90	44.68
% of Re-elected Councillors	33.61	29.82	42.06	36.36	28.55	26.12
% of Re-elected Assessors	23.37	21.75	23.74	22.75	23.03	20.91
% Libraries Activated	6.78	8.80	18.83	24.48	1.36	1.70
Fraction of Reshuffling	27.75	27.00	42.15	40.88	21.18	20.63
% of Early dissolution	10.93	6.95	21.86	9.13	5.99	5.96
Length of the Legislature	4.30	4.43	4.57	4.83	3.86	4.87
Schooling of the City Council	12.85	12.14	12.59	11.76	12.97	12.46
Schooling of the Board	13.25	12.82	12.75	12.07	13.58	13.16
Schooling of Mayors	14.62	14.49	14.21	13.98	14.81	14.71
% of Mayors Male	0.92	0.94	0.95	0.95	0.91	0.93

Note. *The whole period* refers to the period from 1985 to 2000. Then, the *Pre-Reform n. 81 of 1993* refers to the period from 1985 to 1992, and *Post-Reform n. 81 of 1993* refers to the period from 1993 to 2000. *Cities above 5,000* include cities between 5,000 and 7,000 thousand inhabitants, and *Cities below 5,000* refer to cities between 3,000 and 5,000 inhabitants. *Number of Election per City* is the average number of observation that I have for each cities in that specific period of time. *% of Mayors Re-elected* is the percentage of Mayors re-elected in a specific time span. *% of Councillors and Assessors Re-elected*is the percentage of Councillors and Assessors re-elected on the total political population, excluded the Mayors, it is not the average of the percentage of the re-elected by cities. *% Libraries Activated* is the percentage of libraries opened or activated in a specific time span. *Fraction of Reshuffling* is the fraction of elected politicians that during the legislature have held more than role *% of Early dissolution* is the percentage of Municipalities that have faced an anticipated dissolution of the legislative term. *Length of the Legislature* in the average length of the legislative term in year.*Schooling of the City Council, of the Board, of the Mayors* are the average of years of education for the Councillors, Assessors and Mayors. *Ratio of Male Mayors*is the fraction of male that have been elected as Mayor.

Table A.5: Descriptive Statistics, Pre/Post Sample

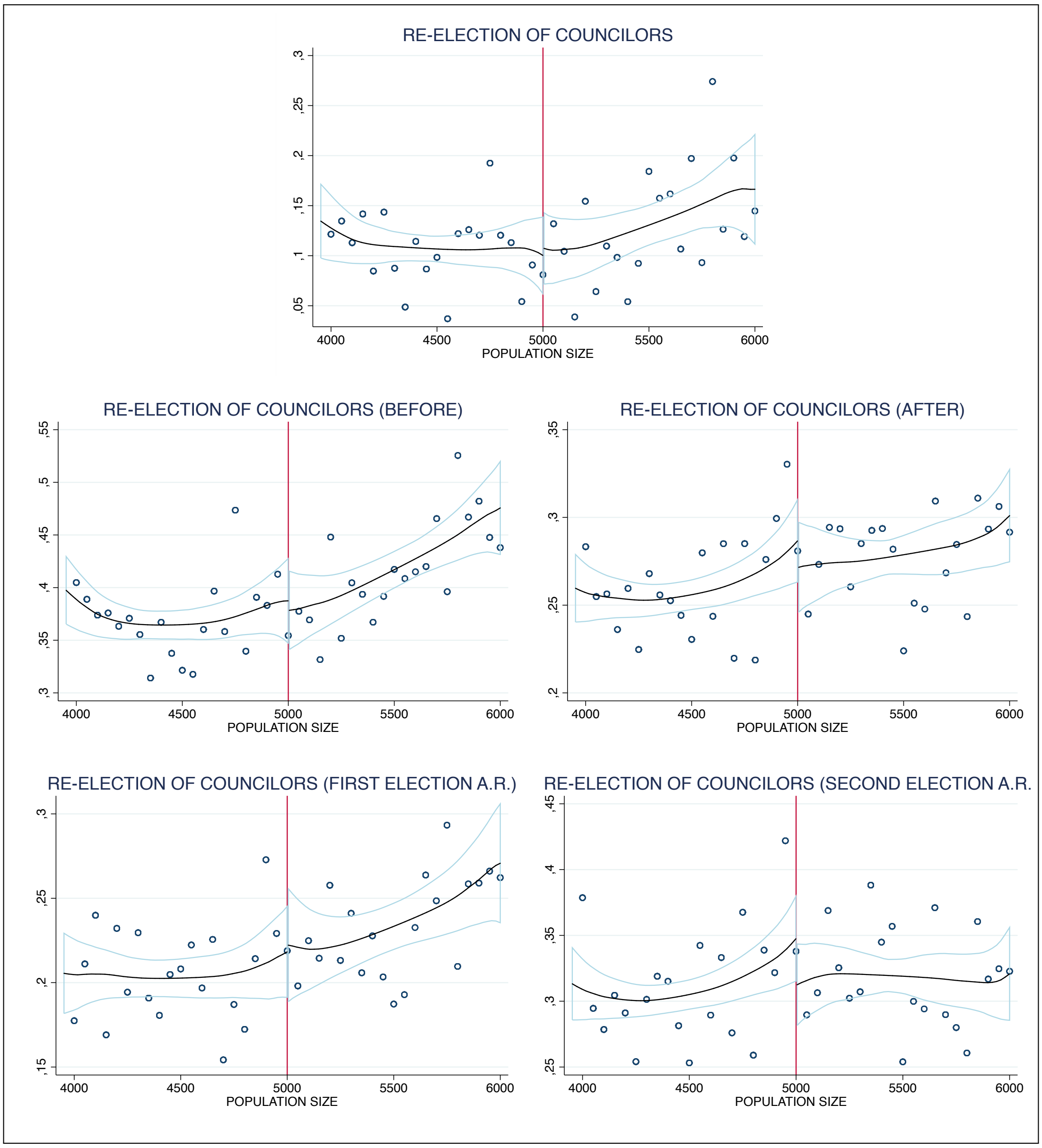
	The Whole Period		**Pre-Reform n. 81**		**Post-Reform n. 81**	
	Cities above 5,000	Cities below 5,000	Cities above 5,000	Cities below 5,000	Cities above 5,000	Cities below 5,000
Number of City	1,222	4,651	1,222	4,651	1,222	4,651
Number of Election per City	2.81	2.85	1.03	1.01	1.96	1.97
% of Mayors Re-elected	37.37	49.48	25.84	46.45	42.37	50.84
% of Councillors Re-elected	33.77	34.41	42.30	45.06	28.64	30.50
% of Assessors Re-elected	22.56	25.51	22.88	27.42	22.30	23.25
% of Early dissolution	12.57	5.04	24.20	5.75	7.53	4.71
Length of the Legislature	4.27	4.48	4.56	4.89	3.82	3.88
Schooling of the City Council	13.04	11.33	12.75	10.79	13.16	11.58
Schooling of the Board	13.55	11.67	12.97	10.93	13.81	12.00
Schooling of the Mayors	14.72	13.56	14.18	13.05	14.96	13.79
Ratio of Male Mayors	0.92	0.94	0.94	0.96	0.91	0.93

Note. *The whole period* refers to the period from 1985 to 2000. Then, the *Pre-Reform n. 81 of 1993* refers to the period from 1985 to 1992, and *Post-Reform n. 81 of 1993* refers to the period from 1993 to 2000. The all sample of cities is divided in to two subsample. The *Medium* incluse cities between 5,000 and 15,000 thousand inhabitants, and finally *Small* that refers to cities with less than 5,000 thousand inhabitants. *Number of Election per City* is the average number of observation that I have for each cities in that specific period of time. *% of Mayors Re-elected* is the percentage of Mayors re-elected in a specific time span. *% of Councillors and Assessors Re-elected*is the percentage of Councillors and Assessors re-elected on the total political population, excluded the Mayors, it is not the average of the percentage of the re-elected by cities. *% of Early dissolution* is the percentage of Municipalities that have faced an anticipated dissolution of the legislative term. *Length of the Legislature* in the average length of the legislative term in year.*Schooling of the City Council, of the Board, of the Mayors* are the average of years of education for the Councillors, Assessors and Mayors. *Ratio of Male Mayors* is the fraction of male that have been elected as Mayor.

Figure A.1: Difference-in-Discontinuities for Mayors Re-elected

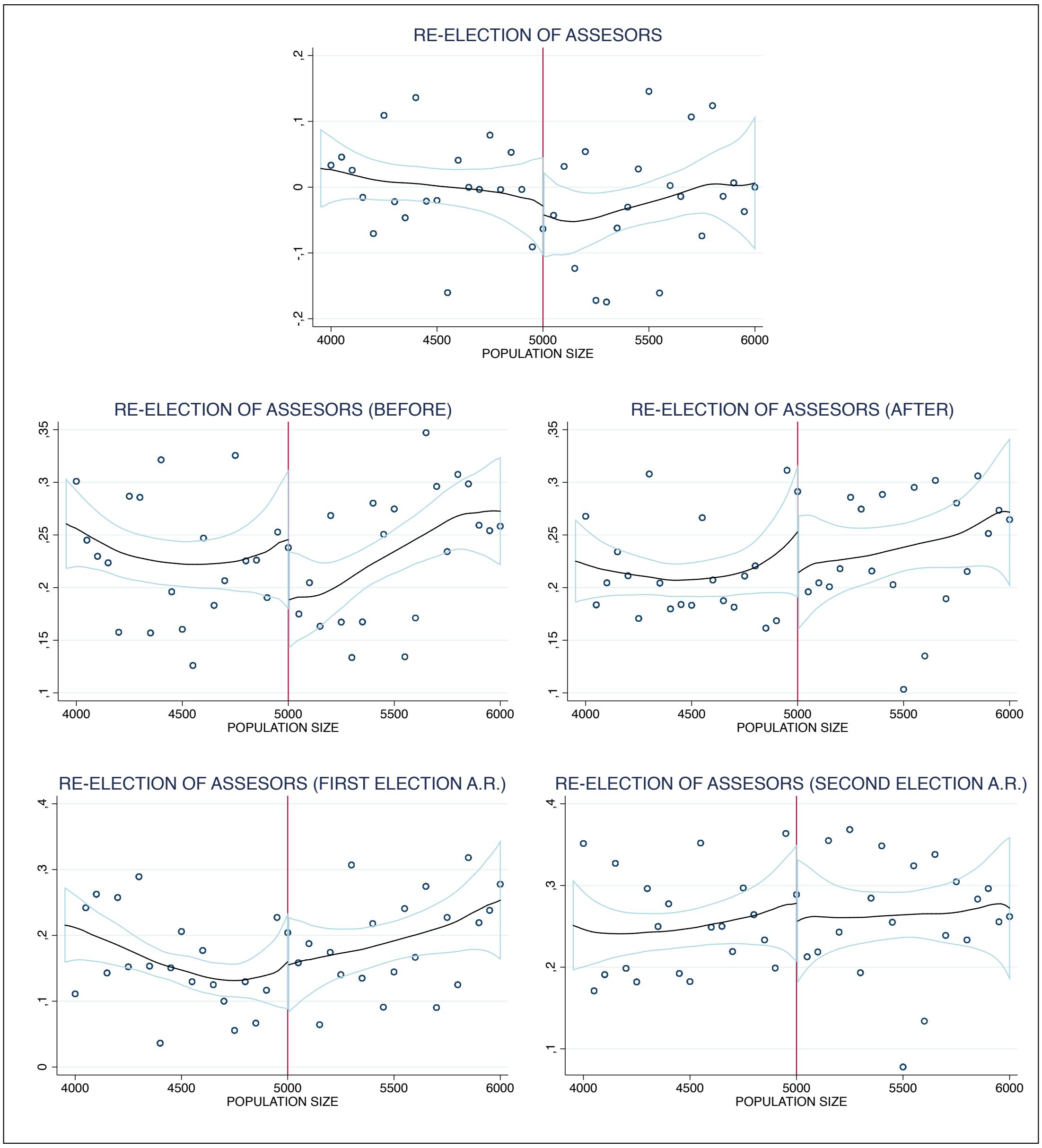
Note. Municipalities between 3,000 and 7,000 thousand inhabitants. **Top graph**: difference-in-discontinuities. Vertical axis: difference between the probability of re-election for mayor before the reform (i.e. before 1993) and the probability of re-election for mayor after the reform (i.e. after 1993, included). **Central graph** (left): regression discontinuity. Vertical axis: the probability of re-election for mayor before the reform (i.e. before 1993). **Central graph** (right): regression discontinuity. Vertical axis: the probability of re-election for mayor after the reform (i.e. before 1993). **Bottom graph** (left): regression discontinuity. Vertical axis: the probability of re-election for mayor in the first election after the reform. **Bottom graph** (right): regression discontinuity. Vertical axis: the probability of re-election for mayor in the second election after the reform. Horizontal axis (for all graphs): 1991 census population size minus 5,000. The central line is a spline 3^{rd}-order polynomial fit; the latter lines represent the 95% confidence interval. Scatter points are averaged over intervals of 50 inhabitants.

Figure A.2: Difference-in-Discontinuities for Councillors Re-elected



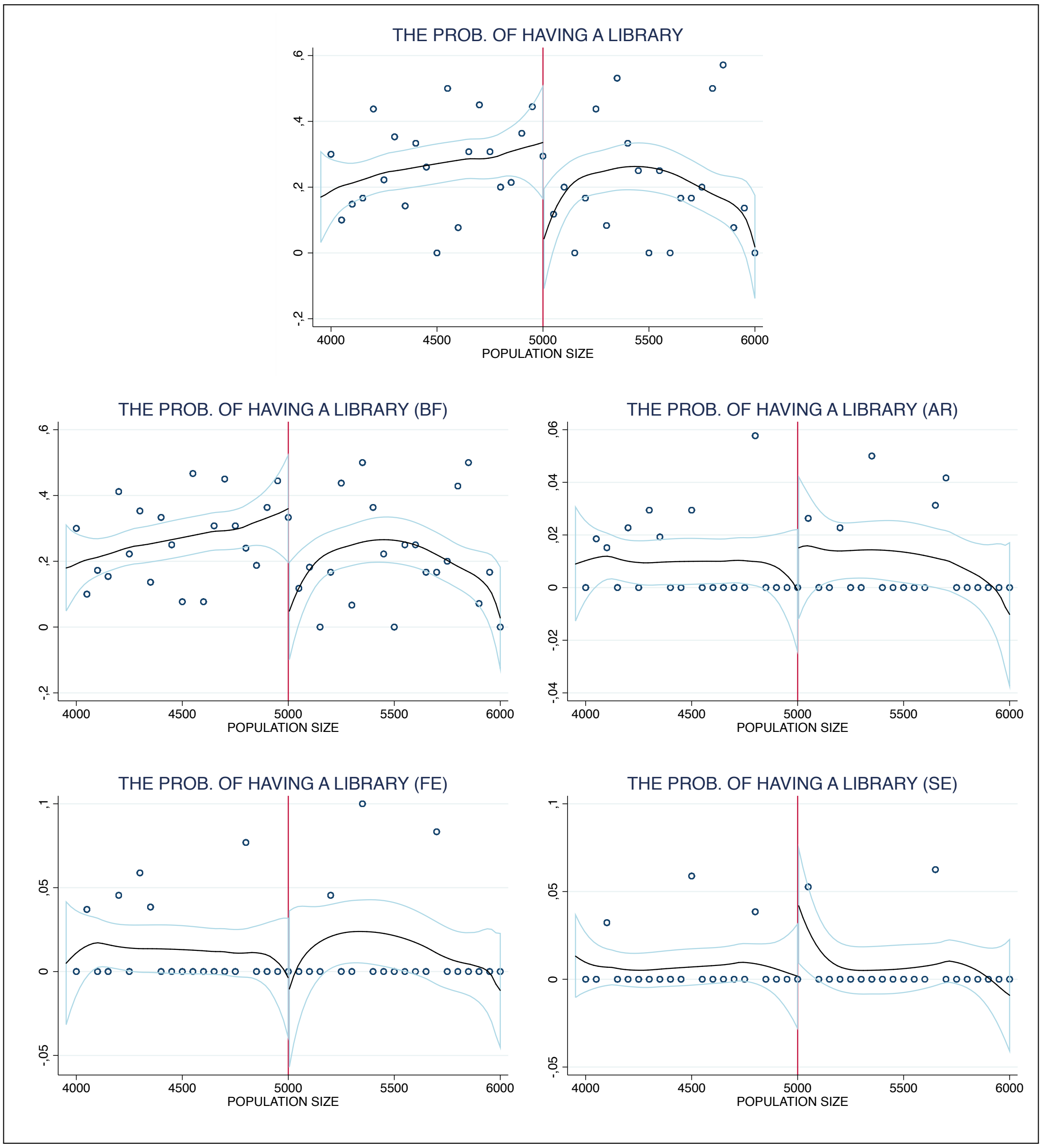
Note. Municipalities between 3,000 and 7,000 thousand inhabitants. **Top graph**: difference-in-discontinuities. Vertical axis: difference between the probability of re-election for councillors before the reform (i.e. before 1993) and the probability of re-election for councillors after the reform (i.e. after 1993, included). **Central graph** (left): regression discontinuity. Vertical axis: the probability of re-election for councillors before the reform (i.e. before 1993). **Central graph** (right): regression discontinuity. Vertical axis: the probability of re-election for councillors after the reform (i.e. before 1993). **Bottom graph** (left): regression discontinuity. Vertical axis: the probability of re-election for councillors in the first election after the reform. **Bottom graph** (right): regression discontinuity. Vertical axis: the probability of re-election for councillors in the second election after the reform. Horizontal axis (for all graphs): 1991 census population size minus 5,000. The central line is a linear fit; the latter lines represent the 95% confidence interval. Scatter points are averaged over intervals of 50 inhabitants.

Figure A.3: Difference-in-Discontinuities for Assessors Re-elected



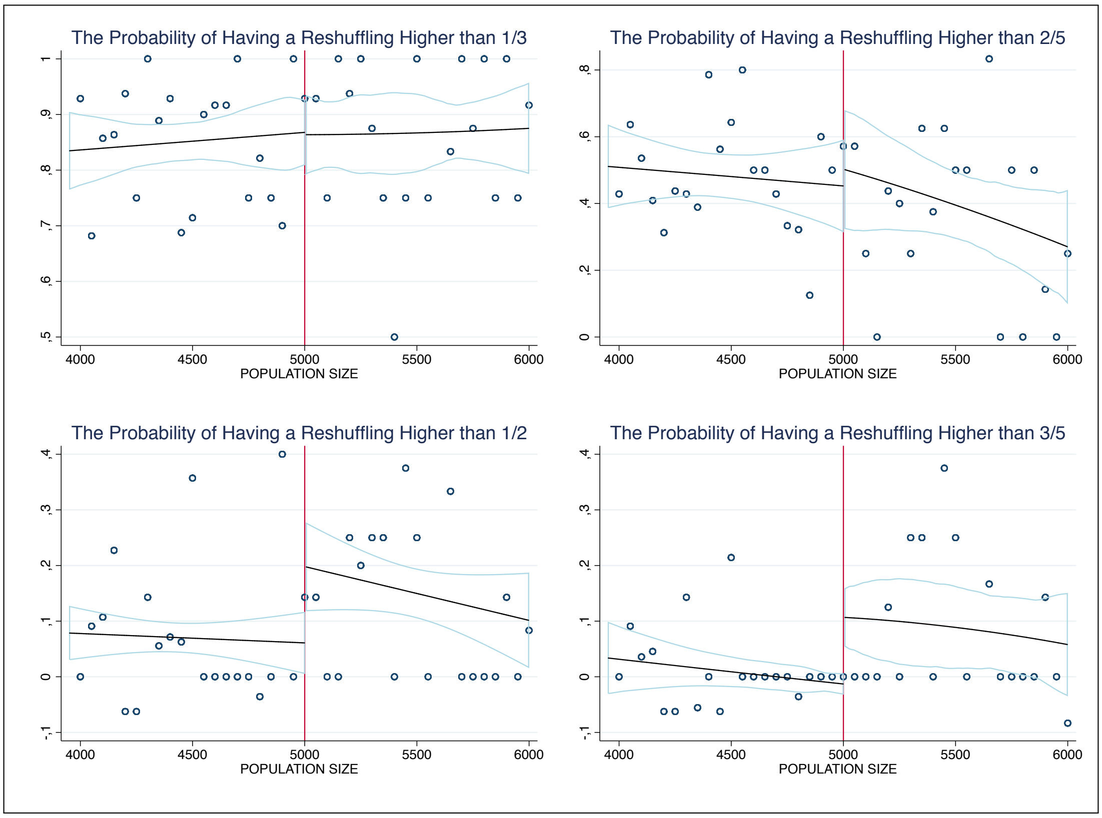
Note. Municipalities between 3,000 and 7,000 thousand inhabitants. **Top graph**: difference-in-discontinuities. Vertical axis: difference between the probability of re-election for assessors before the reform (i.e. before 1993) and the probability of re-election for assessors after the reform (i.e. after 1993, included). **Central graph** (left): regression discontinuity. Vertical axis: the probability of re-election for assessors before the reform (i.e. before 1993). **Central graph** (right): regression discontinuity. Vertical axis: the probability of re-election for assessors after the reform (i.e. before 1993). **Bottom graph** (left): regression discontinuity. Vertical axis: the probability of re-election for assessors in the first election after the reform. **Bottom graph** (right): regression discontinuity. Vertical axis: the probability of re-election for assessors in the second election after the reform. Horizontal axis (for all graphs): 1991 census population size minus 5,000. The central line is a linear fit; the latter lines represent the 95% confidence interval. Scatter points are averaged over intervals of 50 inhabitants.

Figure A.4: Difference-in-Discontinuities for Having a Library



Note. Municipalities between 3,000 and 7,000 thousand inhabitants. **Top graph**: difference-in-discontinuities. Vertical axis: difference between Probability of Having a Library before the reform (i.e. before 1993) and Probability of Having a Library after the reform (i.e. after 1993, included). **Central graph** (left): regression discontinuity. Vertical axis: Probability of Having a Library before the reform (i.e. before 1993). **Central graph** (right): regression discontinuity. Vertical axis: Probability of Having a Library after the reform (i.e. before 1993). **Bottom graph** (left): regression discontinuity. Vertical axis: Probability of Having a Library in the first election after the reform. **Bottom graph** (right): regression discontinuity. Vertical axis: Probability of Having a Library in the second election after the reform. Horizontal axis (for all graphs): 1991 census population size minus 5,000. The central line is a linear fit; the latter lines represent the 95% confidence interval. Scatter points are averaged over intervals of 50 inhabitants.

Figure A.5: Difference-in-Discontinuities for the Probability of Having a Reshuffling Higher than $\frac{1}{3}/\frac{2}{5}/\frac{1}{2}/\frac{3}{5}$



Note. Municipalities between 3,000 and 7,000 thousand inhabitants. **Top graph** (left): difference-in-discontinuities. Vertical axis: difference between the probability of having a reshuffling higher than $\frac{1}{3}$ before the reform (i.e. before 1993) and the probability of having a reshuffling higher than $\frac{1}{3}$ after the reform (i.e. after 1993, included). **Top graph** (right): difference-in-discontinuities. Vertical axis: difference between the probability of having a reshuffling higher than $\frac{2}{5}$ before the reform (i.e. before 1993) and the probability of having a reshuffling higher than $\frac{2}{5}$ after the reform (i.e. after 1993, included). **Bottom graph** (left): difference-in-discontinuities. Vertical axis: difference between the probability of having a reshuffling higher than $\frac{1}{2}$ before the reform (i.e. before 1993) and the probability of having a reshuffling higher than $\frac{1}{2}$ after the reform (i.e. after 1993, included). **Bottom graph** (right): difference-in-discontinuities. Vertical axis: difference between the probability of having a reshuffling higher than $\frac{3}{5}$ before the reform (i.e. before 1993) and the probability of having a reshuffling higher than $\frac{3}{5}$ before the reform after the reform (i.e. after 1993, included). Horizontal axis (for all graphs): 1991 census population size minus 5,000. The central line is a linear fit; the latter lines represent the 95% confidence interval. Scatter points are averaged over intervals of 50 inhabitants.

Table A.6: The Effect of the Majoritarian System, Difference-in-Discontinuities Estimates

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A. Dependent Variable:	**Re-election Probability of Mayor**			
Majoritarian System	0.1213*	0.1895*	0.1387	0.2826**
	(0.065)	(0.112)	(0.099)	(0.136)
h.	1,992	693	2,000	2,000
Observations	4,178	1,322	4,201	4,201
R-squared	0.0150	0.0216	0.0163	0.0178
F-test Population var. p-value			0.361	0.0431
B. Dependent Variable:	**Re-election Probability of Councilor**			
Majoritarian System	0.0088	0.0101	-0.0118	0.0032
	(0.029)	(0.031)	(0.028)	(0.036)
h.	898	705	2,000	2,000
Observations	30,112	23,517	72,863	72,863
R-squared	0.0175	0.0155	0.0168	0.0170
F-test Population var. p-value			0.161	0.0885
C. Dependent Variable:	**Re-election Probability of Assessors**			
Majoritarian System	0.0155	0.0347	0.0030	0.0388
	(0.031)	(0.045)	(0.042)	(0.054)
h.	1,751	756	2,000	2,000
Observations	15,999	6,612	19,127	19,127
R-squared	0.0017	0.0012	0.0016	0.0018
F-test Population var. p-value			0.235	0.233

Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Dependent variable: Panel A The probability of being re-elected for a mayor. Panel B The probability of being re-elected for a councilor. Panel C The probability of being re-elected for an assessor. Difference-in-discontinuities design to estimate the causal effect of the plurality system with *panachage*. Estimation methods: Local linear probability model as in equation (3) from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation (5). The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.7: The Effect of the Majoritarian System, Difference-in-Discontinuities Estimates Controlling for Heterogeneous Effect of the Introduction of the New Regime.

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A. Dependent Variable:	**Re-election Probability of Mayor**			
Majoritarian System	0.2003***	0.2714**	0.2181*	0.3449**
	(0.076)	(0.129)	(0.114)	(0.156)
h.	1,992	693	2,000	2,000
Observations	4,178	1,322	4,201	4,201
R-squared	0.0375	0.0522	0.0391	0.0406
F-test Population var. p-value			0.162	0.0678
B. Dependent Variable:	**Re-election Probability of Councilor**			
Majoritarian System	0.0010	0.0025	-0.0127	-0.0087
	(0.032)	(0.035)	(0.032)	(0.040)
h.	898	705	2,000	2,000
Observations	30,112	23,517	72,863	72,863
R-squared	0.0247	0.0235	0.0233	0.0235
F-test Population var. p-value			0.908	0.911
C. Dependent Variable:	**Re-election Probability of Assessors**			
Majoritarian System	0.0112	0.0259	-0.0126	0.0292
	(0.036)	(0.054)	(0.049)	(0.064)
h.	1,751	756	2,000	2,000
Observations	15,999	6,612	19,127	19,127
R-squared	0.0067	0.0081	0.0069	0.0071
F-test Population var. p-value			0.468	0.419

Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Dependent variable: Panel A The probability of being re-elected for a mayor. Panel B The probability of being re-elected for a councilor. Panel C The probability of being re-elected for an assessor. Difference-in-discontinuities design to estimate the causal effect of the plurality system with *panachage*. Estimation methods: Local linear probability model as in equation (4) from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation (6). The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.8: The Effect of the Majoritarian System, Difference-in-Discontinuities Estimates City and Year Fixed Effects & Time Invariant Geographical Characteristics

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A. Dependent Variable:	**Re-election Probability of Mayor**			
Majoritarian System	0.2129***	0.2594*	0.2019*	0.3513**
	(0.078)	(0.133)	(0.116)	(0.156)
City Fixed Effects	√	√	√	√
Year Fixed Effects	√	√	√	√
h.	1,992	693	2,000	2,000
Observations	4,178	1,322	4,201	4,201
R-squared	0.0660	0.1011	0.0684	0.0696
B. Dependent Variable:	**Re-election Probability of Mayor**			
Majoritarian System	0.2075***	0.2689**	0.2071*	0.3401**
	(0.076)	(0.126)	(0.114)	(0.156)
Time Invariant Geographical Characteristics	√	√	√	√
h.	1,992	693	2,000	2,000
Observations	4,178	1,322	4,201	4,201
R-squared	0.0499	0.0637	0.0514	0.0534

Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Dependent variable: Panel A The probability of being re-elected for a mayor. Panel B The probability of being re-elected for a mayor. Difference-in-discontinuities design to estimate the causal effect of the plurality system with *panachage*. Estimation methods: Local linear probability model as in equation (3) from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation (5). The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.9: The Effect of the Majoritarian System, Difference-in-Discontinuities Estimates Probability of Having a Library between 1980 & 1993

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A. Dependent Variable:		**Probability of Having a Library**		
Majoritarian System	0.1623**	0.2307**	0.1131	0.2056**
	(0.080)	(0.105)	(0.075)	(0.097)
h.	826	465	2,000	2,000
Observations	1,546	879	4,201	4,201
R-squared	0.1658	0.1844	0.1328	0.1341
F-test Population var. p-value			0.989	0.618
B. Dependent Variable:		**Probability of Having a Library**		
Majoritarian System	0.1590*	0.2413**	0.1021	0.2138**
	(0.081)	(0.107)	(0.076)	(0.099)
Controlling for H.E.	✓	✓	✓	✓
h.	826	465	2,000	2,000
Observations	1,546	879	4,201	4,201
R-squared	0.1659	0.1849	0.1331	0.1345
F-test Population var. p-value			0.989	0.519
C. Dependent Variable:		**Probability of Having a Library**		
Majoritarian System	0.1607**	0.2693**	0.2049**	0.3128**
	(0.080)	(0.119)	(0.103)	(0.134)
Constant	0.0158	0.0097	0.0128	0.0167
	(0.011)	(0.017)	(0.015)	(0.020)
h.	819	345	1,000	1,000
Observations	1,543	698	1,965	1,965
R-squared	0.1660	0.1842	0.1578	0.1596
F-test Population var. p-value			0.172	0.953
D. Dependent Variable:		**Probability of Having a Library**		
Majoritarian System	0.1574*	0.2889**	0.2117**	0.3388**
	(0.081)	(0.122)	(0.105)	(0.138)
Controlling for H.E.	✓	✓	✓	✓
h.	819	345	1,000	1,000
Observations	1,543	698	1,965	1,965
R-squared	0.1661	0.1856	0.1580	0.1600
F-test Population var. p-value			0.405	0.369

Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Dependent variable: Panel A, B, C & Probability of Having a Library. Difference-in-discontinuities design to estimate the causal effect of the plurality system with *panachage*. Estimation methods: Local linear probability model as in equation (4) from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation (6). The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. In panel A and B the optimal bandwidth h is calculated from a sample that includes $h = 2,000$, in panel C and D from a sample that includes $h = 1,000$. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.10: The Effect of the Majoritarian System, Difference-in-Discontinuities Estimates Reshuffling of Positions

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A. Dependent Variable:	**The Probability of Having a Reshuffling Higher than** 1/3			
Majoritarian System	0.0682	0.0811	0.0354	0.1480
	(0.062)	(0.071)	(0.069)	(0.091)
Controlling for H.E.	√	√	√	√
h.	1,122	833	2,000	2,000
Observations	2,209	1,568	4,201	4,201
R-squared	0.6160	0.6127	0.5963	0.5968
B. Dependent Variable:	**The Probability of Having a Reshuffling Higher than** 2/5			
Majoritarian System	-0.1096***	-0.1689***	-0.1220***	-0.1925***
	(0.039)	(0.053)	(0.046)	(0.060)
Controlling for H.E.	√	√	√	√
h.	1,318	618	2,000	2,000
Observations	2,561	1,156	4,201	4,201
R-squared	0.0254	0.0390	0.0201	0.0228
C. Dependent Variable:	**The Probability of Having a Reshuffling Higher than** 1/2			
Majoritarian System	-0.1163**	-0.1789**	-0.1672**	-0.2022**
	(0.047)	(0.072)	(0.068)	(0.091)
Controlling for H.E.	√	√	√	√
h.	1,989	803	2,000	2,000
Observations	4,175	1,512	4,201	4,201
R-squared	0.0695	0.0819	0.0703	0.0715
D. Dependent Variable:	**The Probability of Having a Reshuffling Higher than** 3/5			
Majoritarian System	-0.1154***	-0.1742***	-0.1254**	-0.1863***
	(0.043)	(0.060)	(0.051)	(0.067)
Controlling for H.E.	√	√	√	√
h.	1,318	618	2,000	2,000
Observations	2,561	1,156	4,201	4,201
R-squared	0.0332	0.0468	0.0316	0.0347

Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Dependent variable: Panel A The probability of having a reshuffling higher than $\frac{1}{3}$. Panel B The probability of having a reshuffling higher than $\frac{2}{5}$. Panel C The probability of having a reshuffling higher than $\frac{1}{2}$. Panel D The probability of having a reshuffling higher than $\frac{3}{5}$. Difference-in-discontinuities design to estimate the causal effect of the plurality system with *panachage*. Estimation methods: Local linear probability model as in equation (4) from column (1) to (3); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation (6). The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)- IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. In panel A and B the optimal bandwidth h is calculated from a sample that includes $h = 2,000$, in panel C and D from a sample that includes $h = 1,000$. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.11: The Effect of the Majoritarian System, Difference-in-Discontinuities Estimates Share of Votes of the First Party at the Parliamentary Elections of 1992 & Daily Newspaper Circulation

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A. Dependent Variable:	**Re-election Probability of Mayor**			
Share of Votes of the First Party Above Median				
Majoritarian System	0.2845**	0.4221*	0.3662*	0.5452**
	(0.135)	(0.227)	(0.197)	(0.268)
Observations	2,081	616	2,092	2,092
Share of Votes of the First Party Below Median				
Majoritarian System	0.1389	0.1258	0.0568	0.1784
	(0.137)	(0.236)	(0.205)	(0.273)
Observations	2,097	706	2,109	2,109
Difference Between the Two Subsamples	0.1456	0.2963	0.3094	0.3668
	(0.191)	(0.319)	(0.283)	(0.383)
Wald test p-value	0.442	0.397	0.282	0.371
B. Dependent Variable:	**Re-election Probability of Mayor**			
Daily Newspaper Circulation Above Median				
Majoritarian System	0.1786	0.3473*	0.2699*	0.4227*
	(0.110)	(0.181)	(0.162)	(0.221)
Observations	1,905	684	2,145	2,145
Daily Newspaper Circulation Below Median				
Majoritarian System	0.1723	0.1605	0.1796	0.1913
	(0.113)	(0.179)	(0.159)	(0.213)
Observations	1,785	644	2,059	2,059
Difference Between the Two Subsamples	0.0063	0.1868	0.0903	0.2314
	(0.158)	(0.254)	(0.226)	(0.307)
Wald test p-value	0.968	0.463	0.690	0.451

Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Dependent variable: Panel A & B The probability of being re-elected for a mayor. Panel A Difference-in-discontinuities design to estimate the causal effect of the plurality system with *panachage* in different subsamples (that is, above vs. below median share of vote of the first party at the parliamentary elections of 1992). Panel B Difference-in-discontinuities design to estimate the causal effect of the plurality system with *panachage* in different subsamples (that is, above vs. below median Daily Newspaper Circulation). Estimation methods: Local linear probability model as in equation (3) from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation (5). The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. The Wald test p-value evaluates whether the estimates are statistically different in the two subsample. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.12: The Effect of the Majoritarian System, Difference-in-Discontinuities Estimates Characteristics of The Elected Mayor

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A. Dependent Variable:		**Schooling of the Mayor**		
Majoritarian System	-0.4888	-0.4815	-0.6269	-0.3762
	(0.561)	(0.749)	(0.686)	(0.899)
h.	1,422	747	2,000	2,000
Observations	2,779	1,403	4,186	4,186
R-squared	0.0128	0.0153	0.0110	0.0117
F-test Population var. p-value			0.949	0.787
B. Dependent Variable:		**The Probability of Elect a Male Mayor**		
Majoritarian System	0.0824	0.0860	0.1057*	0.1026
	(0.053)	(0.062)	(0.057)	(0.071)
h.	1,021	738	2,000	2,000
Observations	2,011	1,390	4,201	4,201
R-squared	0.0098	0.0060	0.0070	0.0088
F-test Population var. p-value			0.487	0.723
C. Dependent Variable:		**Age of the Mayor**		
Majoritarian System	0.0106	-1.8192	-0.2404	-0.5157
	(1.556)	(2.250)	(1.745)	(2.271)
h.	1,100	556	2,000	2,000
Observations	2,179	1,027	4,200	4,200
R-squared	0.0410	0.0672	0.0335	0.0348
F-test Population var. p-value			0.692	0.515

Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Dependent variable: Panel A: Schooling of the mayors; Panel B: The probability of elect a male mayor; Panel C: Age of the mayors. Difference-in-discontinuities design to estimate the causal effect of the plurality system with *panachage*. Estimation methods: Local linear probability model as in equation (3) from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation (4). The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.13: The Effect of the Majoritarian System, Difference-in-Discontinuities Estimates Previous Job of the Elected Mayor

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A. Dependent Variable:	**The Probability of Elect a High Skilled Blue Collar**			
Majoritarian System	-0.0114	0.0072	-0.0052	-0.0276
	(0.027)	(0.047)	(0.035)	(0.048)
h.	1,488	557	2,000	2,000
Observations	2,932	1,033	4,204	4,204
R-squared	0.0093	0.0232	0.0077	0.0087
F-test Population var. p-value			0.132	0.277
B. Dependent Variable:	**The Probability of Elect a High Skilled White Collar**			
Majoritarian System	-0.0487	-0.1128	-0.1457	-0.1342
	(0.072)	(0.117)	(0.104)	(0.140)
h.	1,948	725	2,000	2,000
Observations	4,003	1,368	4,204	4,204
R-squared	0.0031	0.0046	0.0042	0.0049
F-test Population var. p-value			0.111	0.100
C. Dependent Variable:	**The Probability of Elect a Low Skilled Blue Collar**			
Majoritarian System	-0.0040	-0.0016	-0.0115	-0.0136
	(0.024)	(0.028)	(0.024)	(0.030)
h.	889	739	2,000	2,000
Observations	1,692	1,395	4,204	4,204
R-squared	0.0055	0.0084	0.0030	0.0057
F-test Population var. p-value			0.822	0.808
D. Dependent Variable:	**The Probability of Elect a Low Skilled White Collar**			
Majoritarian System	0.0577	0.1493	0.0668	0.1975
	(0.079)	(0.106)	(0.090)	(0.123)
h.	1,215	682	2,000	2,000
Observations	2,375	1,300	4,204	4,204
R-squared	0.0062	0.0080	0.0059	0.0100
F-test Population var. p-value			0.705	0.0116

Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Dependent variable: Panel A: The probability of elect a high skilled blue collar; Panel B: The probability of elect a high skilled white collar; Panel C: The probability of elect a low skilled blue collar; Panel D: The probability of elect a low skilled white collar. Difference-in-discontinuities design to estimate the causal effect of the plurality system with *panachage*. Estimation methods: Local linear probability model as in equation (3) from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation (4). The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.14: The Effect of the Majoritarian System, Difference-in-Discontinuities Estimates Duration of the Office Schooling of the city Council

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A. Dependent Variable:	**The probability of Early Dissolution**			
Majoritarian System	-0.1507***	-0.1096	-0.1606**	-0.0564
	(0.051)	(0.076)	(0.071)	(0.094)
h.	1,822	749	2,000	2,000
Observations	3,632	1,411	4,201	4,201
R-squared	0.0324	0.0311	0.0329	0.0338
F-test Population var. p-value			0.697	0.566
B. Dependent Variable:	**Duration of the Office**			
Majoritarian System	0.2169**	0.1570	0.2121*	0.0163
	(0.096)	(0.132)	(0.128)	(0.152)
h.	1,575	663	2,000	2,000
Observations	3,110	1,249	4,201	4,201
R-squared	0.1133	0.1289	0.1204	0.1211
F-test Population var. p-value			0.420	0.913
C. Dependent Variable:	**Average Schooling of the Council**			
Majoritarian System	0.0526	0.1829	0.0688	0.4396
	(0.228)	(0.266)	(0.244)	(0.302)
h.	1,036	706	2,000	2,000
Observations	1,999	1,307	4,123	4,123
R-squared	0.0746	0.0680	0.0984	0.1011
F-test Population var. p-value			0.390	0.0210
D. Dependent Variable:	**Average Schooling of the Cabinet of the Mayor**			
Majoritarian System	0.4503	0.7033	0.0652	0.7250
	(0.390)	(0.460)	(0.398)	(0.529)
h.	935	645	2,000	2,000
Observations	1,776	1,183	4,124	4,124
R-squared	0.0594	0.0728	0.0652	0.0668
F-test Population var. p-value			0.869	0.286

Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Dependent variable: Panel A: The probability of early dissolution of the office; Panel B: Average duration of the office in years; Panel C: Average schooling of the councillors; Panel D: Average schooling of the assessors; Panel E: Average schooling of the mayors; Panel F: Average age of the mayors; Panel G: Fraction of male mayors. Difference-in-discontinuities design to estimate the causal effect of the plurality system with *panachage*. Estimation methods: Local linear probability model as in equation (3) from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation (4). The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.15: The Effect of the Introduction of the New Regime

A. City below 5,000 inhabitants

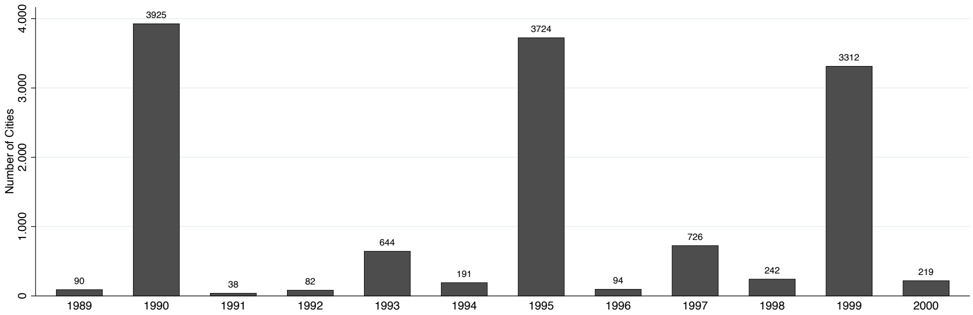
Dependent Variable:	**Re-election Probability of Mayor**					
	(1)	(2)	(3)	(4)	(5)	(6)
Average Effect of the Reform	0.0438***			0.0400***		
	(0.009)			(0.009)		
1^{st} Election After Reform		-0.0206*	-0.0221**		-0.0225**	-0.0394***
		(0.011)	(0.010)		(0.011)	(0.010)
2^{nd} Election After Reform		0.1305***	0.1153***		0.1281***	0.0998***
		(0.010)	(0.010)		(0.010)	(0.010)
Male			0.1332***			0.1130***
			(0.018)			(0.026)
Years of Schooling			-0.0069***			0.0016
			(0.001)			(0.002)
Age			0.0091***			0.0165***
			(0.000)			(0.001)
Constant	0.4646***	0.4646***	0.0152	0.4672***	0.4667***	-0.4092***
	(0.008)	(0.008)	(0.033)	(0.007)	(0.007)	(0.054)
City Fixed Effects	×	×	×	√	√	√
Observations	13,287	13,287	13,287	13,287	13,287	13,287
R-squared	0.0016	0.0134	0.0602	0.0020	0.0196	0.0879
Number of Cities	4,651	4,651	4,651	4,651	4,651	4,651

B. City between 5,000 and 15,000 inhabitants

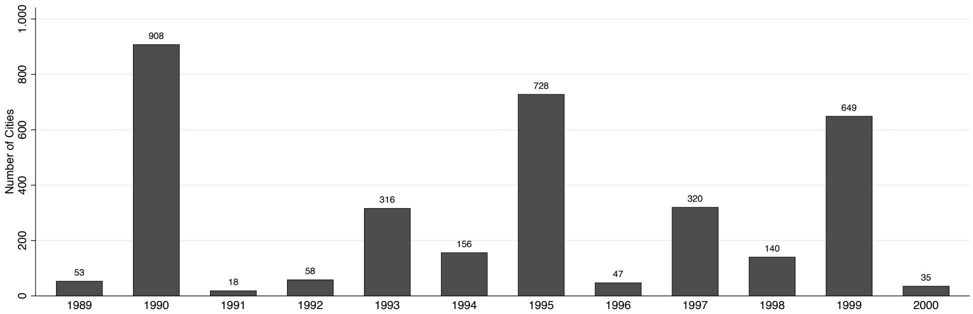
A. Dependent Variable:	**Re-election Probability of Mayor**					
	(1)	(2)	(3)	(4)	(5)	(6)
Average Effect of the Reform	0.1637***			0.1845***		
	(0.017)			(0.018)		
1^{st} Election After Reform		0.0599***	0.0672***		0.0828***	0.0684***
		(0.020)	(0.020)		(0.021)	(0.021)
2^{nd} Election After Reform		0.2118***	0.2062***		0.2113***	0.1922***
		(0.020)	(0.020)		(0.020)	(0.019)
Male			0.1130***			0.1495***
			(0.028)			(0.042)
Years of Schooling			-0.0158***			-0.0096***
			(0.002)			(0.004)
Age			0.0037***			0.0108***
			(0.001)			(0.001)
Constant	0.2606***	0.2606***	0.2195***	0.2461***	0.2447***	-0.2222**
	(0.014)	(0.014)	(0.057)	(0.013)	(0.013)	(0.088)
City Fixed Effects	×	×	×	√	√	√
Observations	3,353	3,353	3,353	3,353	3,353	3,353
R-squared	0.0241	0.0575	0.0818	0.0424	0.0915	0.1275
Number of Cities	1,200	1,200	1,200	1,200	1,200	1,200

Note. *Panel A* Municipalities below 5,000 thousand inhabitants. *Panel B* Municipalities between 5,000 and 15,000 thousand inhabitants. Dependent variable: *Panel A* The probability of being re-elected for a mayor. *Panel B* The probability of being re-elected for a mayor. Pre/Post strategy to estimate the effect of the introduction of the new electoral system. Estimation methods: Linear probability model as in equation (1) in column (1) and (4). Linear probability model as from the equation (2) in column (2), (3), (5) and (6). The variable *Average Effect of the Reform* identifies the average effect of the introduction od the new reform. The variable 1^{st} *Election After Reform* identifies the difference between the period before the reform and the fist election after the reform. The variable 2^{nd} *Election After Reform* identifies the difference between first election after the reform and the second election after the reform. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10 % level is represented by *, at the 5% level by **, and at the 1% level by ***.

Figure A.6: Distribution of Election by Year



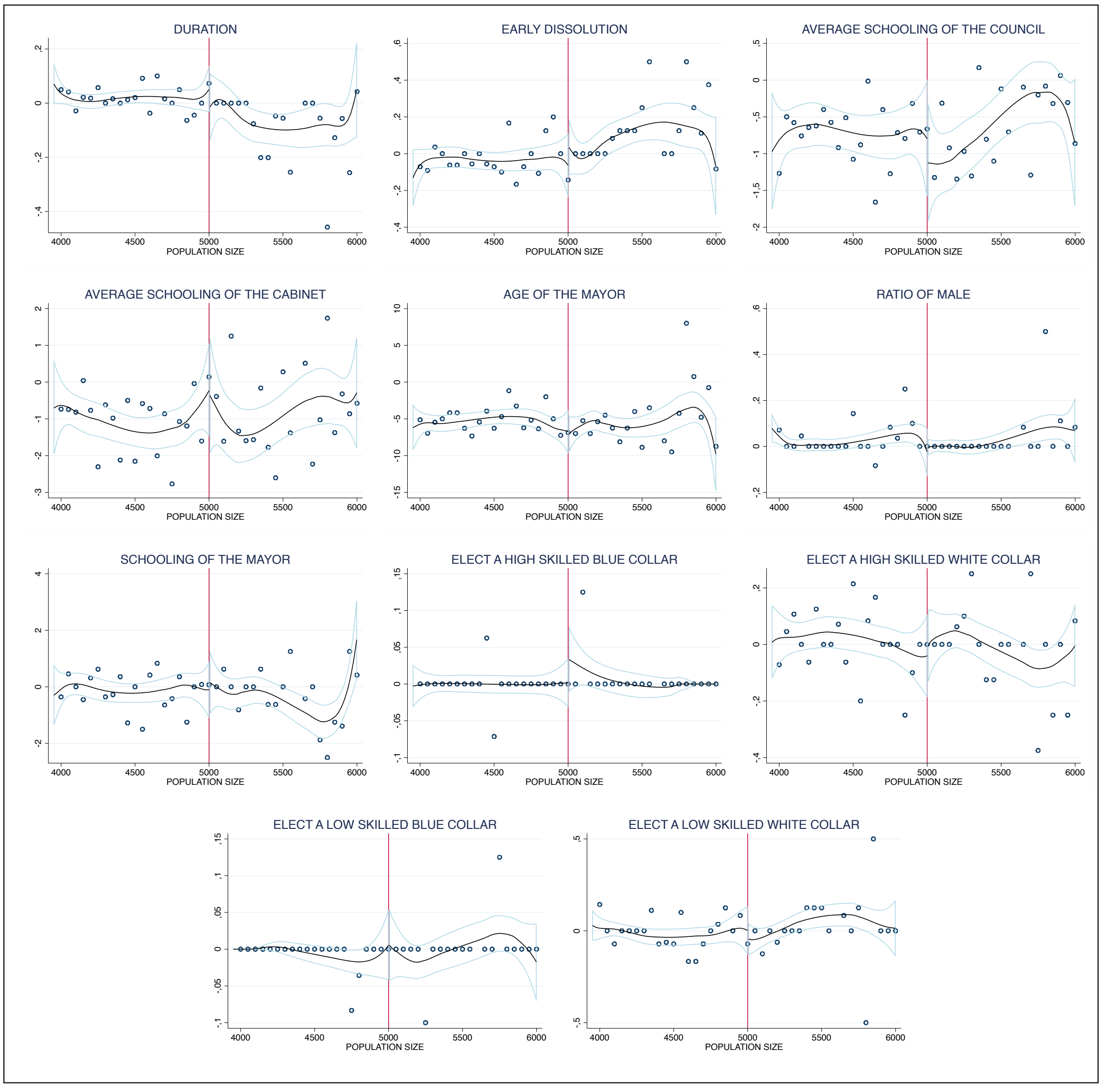
(a) City below 5,000 inhabitants (by Year)



(b) City between 5,000 and 15,000 inhabitants (by Year)

Note. Municipalities below 5,000 thousand inhabitants. Fig. *(a)* The number of cities below 5,000 inhabitants that go for election in every year. Fig. *b* The number of cities between 5,000 and 15,000 inhabitants that go for election in every year.

Figure A.7: Difference-in-Discontinuities for Several Variables



Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Vertical axis: difference between the value of each variable pre-reform (i.e before 1993) and the value of each variable post-reform (i.e after 1993). Horizontal axis (for all graphs): 1991 census population size minus 5,000. The variables used are: 1. Average duration of the office in years. 2. Probability of early dissolution of the office. 3. Average schooling of the councillors. 4. Average schooling of the assessors. 5. Schooling of the mayor. 6. Age of the mayor. 7. The probability of elect a male mayor. 8. The probability of elect a high skilled blue collar. 9. The probability of elect a high skilled white collar. 10. The probability of elect a low skilled blue collar. 11. The probability of elect a low skilled white collar. The central line is a spline 3^{rd}-order polynomial fit; the latter lines represent the 95% confidence interval. Scatter points are averaged over intervals of 50 inhabitants.

Table A.16: Falsification Test After 1993

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A. Dependent Variable:	**Re-election Probability of Mayor**			
False Majoritarian System	-0.1393	-0.1378	-0.1547	-0.1223
	(0.085)	(0.130)	(0.108)	(0.139)
h.	1,562	607	2,000	2,000
Observations	2,111	767	2,893	2,893
R-squared	0.0304	0.0491	0.0344	0.0362
B. Dependent Variable:	**Re-election Probability of Councilor**			
Majoritarian System	0.0210	0.0429	0.0036	0.0257
	(0.028)	(0.035)	(0.028)	(0.036)
h.	869	577	2,000	2,000
Observations	18,148	11,605	45,992	45,992
R-squared	0.0128	0.0147	0.0121	0.0124
C. Dependent Variable:	**Re-election Probability of Assessors**			
False Majoritarian System	0.0509	0.0103	0.0482	0.0308
h.	1,156	467	2,000	2,000
Observations	5,493	2,167	10,152	10,152
R-squared	0.0103	0.0165	0.0113	0.0115
D. Dependent Variable:	**Probability of Having a Library**			
False Majoritarian System	0.0074	0.0217	-0.0217	0.0164
	(0.018)	(0.031)	(0.027)	(0.034)
h.	1,982	550	2,000	2,000
Observations	2,848	695	2,893	2,893
R-squared	0.0026	0.0044	0.0041	0.0052

Note. Municipalities between 3,000 and 7,000 thousand inhabitants, only between 1993 and 2000. Dependent variable: Panel A The probability of being re-elected for a mayor. Panel B The probability of being re-elected for a councilor. Panel C The probability of being re-elected for an assessor. Panel D Probability of Having a Library. Difference-in-discontinuities design to estimate the (false) causal effect of the plurality system after 1993 (when both groups of city below and above 5,000 inhabitants have the same plurality system). Estimation methods: Local linear probability model from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial. The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***

Table A.17: Test at Other Thresholds (3,000 10,000).
Interaction Between the Electoral Law and the Wage of the Mayor

A. Dependent Variable:	**Re-election Probability of Mayor**			
	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
A1. Test at 3,000				
Lower Wage of the Mayor Before 1993	-0.0051	-0.0268	0.0093	0.0007
	(0.055)	(0.085)	(0.082)	(0.109)
h.	2,000	855	2,000	2,000
Observations	8,959	3,337	8,959	8,959
R-squared	0.0218	0.0307	0.0225	0.0231
F-test Population var. p-value			0.0844	0.100
A2. Test at 10,000				
Lower Wage of the Mayor Before 1993	-0.0084	-0.2752	-0.1438	-0.3116
	(0.164)	(0.232)	(0.206)	(0.270)
h.	1,446	757	2,000	2,000
Observations	785	386	1,087	1,087
R-squared	0.0693	0.0747	0.0630	0.0655
F-test Population var. p-value			0.217	0.192
B. Dependent Variable:	**Probability of Having a Library**			
B1. Test at 3,000				
Lower Wage of the Mayor Before 1993	0.0490	0.0181	-0.0185	0.0099
	(0.035)	(0.054)	(0.051)	(0.068)
h.	1,997	815	2,000	2,000
Observations	8,941	3,164	8,959	8,959
R-squared	0.1176	0.1215	0.1181	0.1185
F-test Population var. p-value			0.592	0.320
B2. Test at 10,000				
Lower Wage of the Mayor Before 1993	-0.0748	-0.0949	-0.2793*	-0.2298
	(0.096)	(0.169)	(0.157)	(0.220)
h.	1977	773	2,000	2,000
Observations	1,072	395	1,088	1,088
R-squared	0.0866	0.1144	0.0996	0.1019
F-test Population var. p-value			0.462	0.733

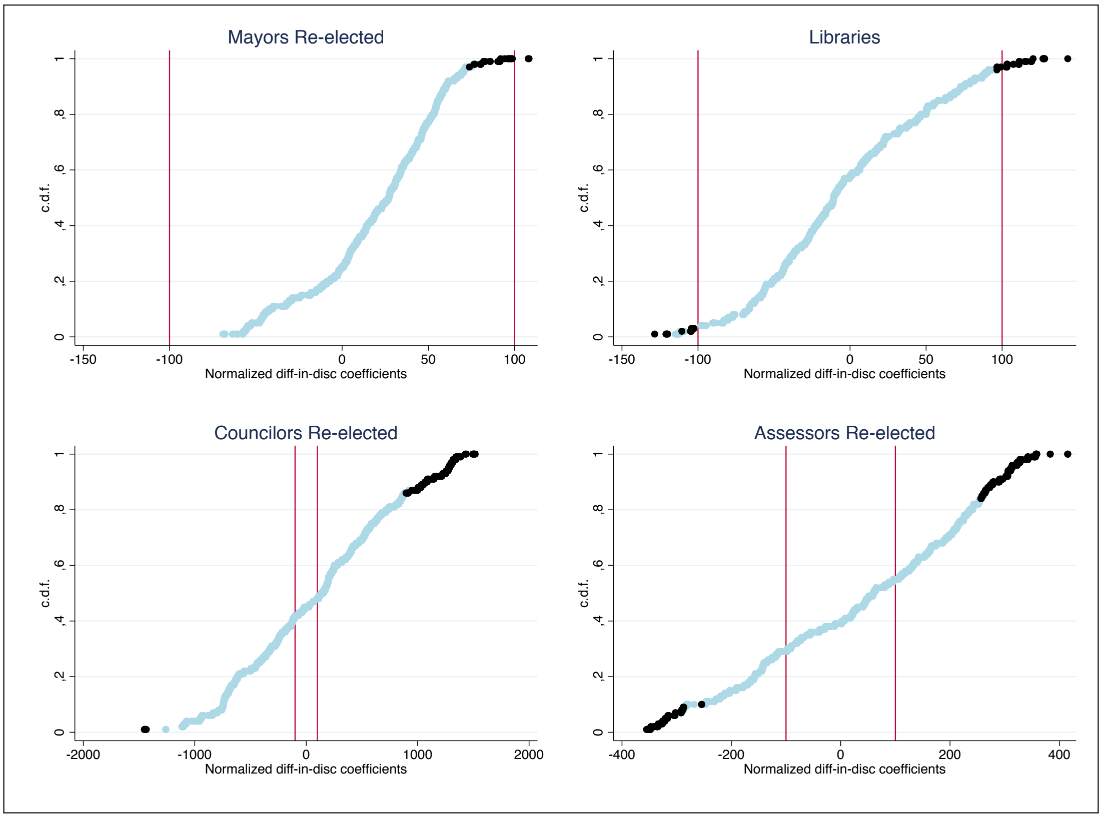
Note. Municipalities between 1,000 and 5,000 thousand inhabitants in panel A and between 8,000 and 12,000 in panel B. Dependent variable: Panel A & B The probability of being re-elected for a mayor.Difference-in-discontinuities design to estimate the causal effect of the interaction between the electoral law and the wage of the mayor (at 3,000 and 10,000 inhabitants the two groups of city below and above the threshold have the same electoral system before and after the reform but different wage. If there is interaction between wage and electoral system the two groups of city should react in a different way to the introduction to the same electoral system). Estimation methods: Local linear probability model from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial. The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***

Table A.18: Balance Tests of Time-Invariant Characteristics

	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}
Area Size	-1.9054	-2.7382	-3.3923	-3.2876
	(1.610)	(2.155)	(2.266)	(2.532)
Observations	3,748	1,356	4,207	4,207
Capital Altitude	-5.2904	-7.3320	-9.8102	-5.6691
	(10.416)	(12.232)	(11.906)	(15.664)
Observations	2,854	1,453	4,207	4,207
River	0.0017	-0.0019	-0.0061	0.0219
	(0.019)	(0.020)	(0.020)	(0.022)
Observations	2,294	1,416	4,207	4,207
Sea Distance	858.4592	2,378.5121	2,945.9318	-453.8499
	(3,250.099)	(3,546.279)	(3,306.945)	(3,815.525)
Observations	1,921	1,203	4,207	4,207
Seismicity Class	0.0102	0.0239	-0.0008	-0.0075
	(0.072)	(0.073)	(0.066)	(0.084)
Observations	1,718	1,532	4,207	4,207
Urbanization	-0.0484	-0.0414	-0.0398	-0.0349
	(0.034)	(0.039)	(0.036)	(0.047)
Observations	2,153	1,359	4,207	4,207
Average Grid	-8.2036	-1.9913	-5.5633	-3.0669
	(10.497)	(11.833)	(11.052)	(13.616)
Observations	1,751	1,096	4,207	4,207

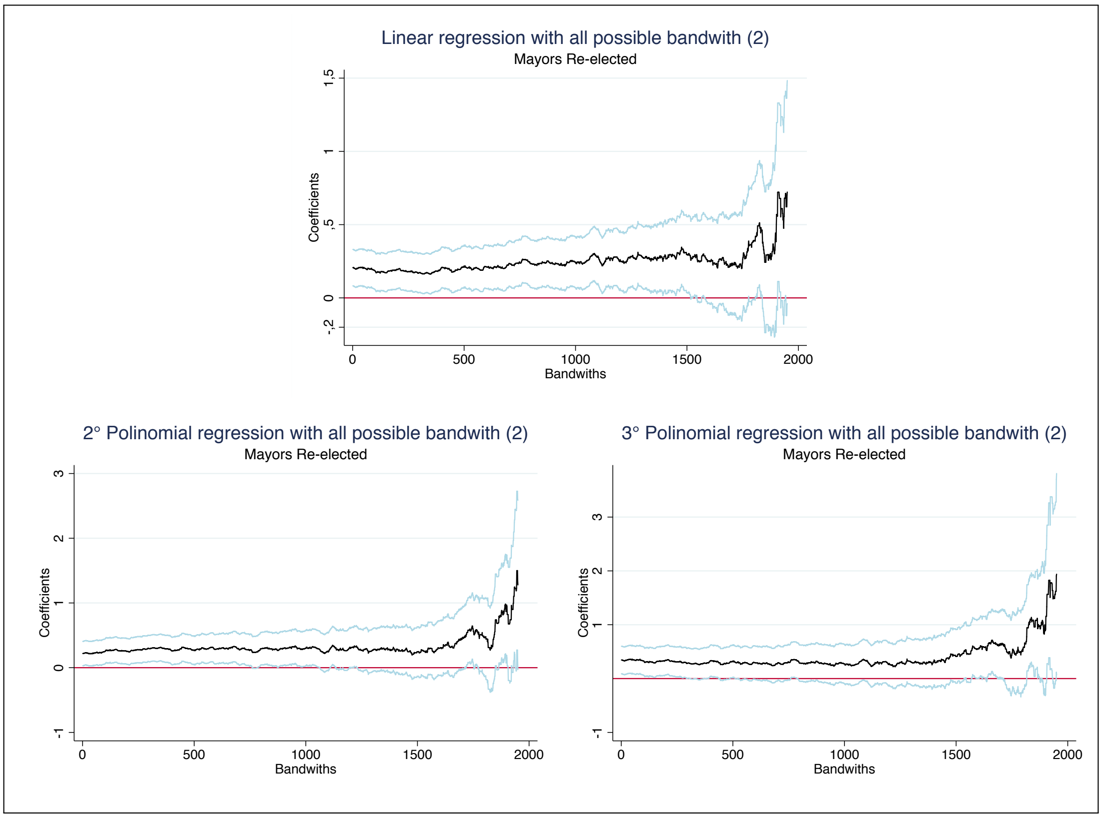
Note. Municipalities between 3,000 and 7,000 thousand inhabitants. Difference-in-discontinuities design for time-Invariant characteristics. Estimation methods: Local linear probability model from column (1) to (2); spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial. The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***

Figure A.8: Placebo test for Re-elected



Note. Placebo tests based on permutation methods for the probability of re-election. **Top graph** (left): the probability of re-election of mayor; **Top graph** (right): the probability of of having a library; **Bottom graph** (left): the probability of re-election for councillors ; **Bottom graph** (right): the probability of re-election for assessors. The figures reports the empirical c.d.f. of normalized point estimates from a set of diff-in-disc estimations at 500 false thresholds below and 500 false thresholds above the true thresholds at 5,000 (namely any point from 4,990 to 4,000 and any point from 5,010 to 5,600). Estimation methods: spline polynomial approximation with 3^{rd}-order polynomial. The vertical line indicates our benchmark estimate for deficit from Table A.6 (i.e. true coefficient normalized to 100) and its negative value.

Figure A.9: Two Thousand Regression for Mayors Re-elected, Difference-in-Discontinuities Estimates



Note. Difference-in-discontinuities estimate with all the possible bandwidth. Vertical axis: Central line are coefficients of difference-in-discontinuities estimate, the latter lines represent the 90% confidence interval. Horizontal axis: at 0 the bandwidth used to estimate the coefficient of the difference-in-discontinuities estimate is $h = 2,000$ and. At 1990 the bandwidth used is $h = 10$. **Top graph**: Coefficients of local linear probability model according to equation (4).**Bottom graph** (left): Coefficients of spline polynomial approximation with 2^{nd}-order according to equation (6). **Bottom graph** (right): Coefficients of spline polynomial approximation with 3^{rd}-order according to equation (6).

Appendix B

Separated Under the Same Roof

B.1 The model

Proof of proposition (2.2.2)
The derivative of b with respect to N is the following: $\frac{4k(4N^3+3N^2)}{4\sqrt{w^2+4kN^3(N+1)}}$, which is positive. The derivative of b with respect to k is the following: $\frac{4N^3(N+1)}{4\sqrt{w^2+4kN^3(N+1)}}$, which is positive. The derivatives of T with respect N, k are zero if T has a corner solution. Otherwise, the derivative of T with respect to N is negative, because N enters at the denominator in T, and in the numerator with a negative sign. Moreover T depends negatively on b, which is an increasing function of N. The derivative of T with respect to k is negative, because T depends negatively on b, which is an increasing function of N. The public spending $T+b$ decreases with N if $k=0$, because N enters only the denominator. The derivative of public spending with respect to N is the following:

$$\frac{4kN^4+10kN^3+6kN^2-w^2-w\sqrt{w^2+4kN^3(N+1)}}{2(N+1)^2\sqrt{w^2+4kN^3(N+1)}}. \tag{B.1}$$

If k goes to infinity the derivative goes to infinity, while if k is equal to 0 the derivative is negative. Moreover, the derivative of expression (B.1) with respect to k is positive because expression (B.1) can be rewritten as follows:

$$\frac{4N^4+10N^3+6N^2}{2(N+1)^2\sqrt{w^2/k^2+4N^3(N+1)/k}}-\frac{w^2}{2(N+1)^2\sqrt{w^2+4kN^3(N+1)}}-\frac{w}{2(N+1)^2}. \tag{B.2}$$

The first and second addenda depend positively on k, while the third addendum does not depend on k. The derivative of $T+b$ with respect to N is an increasing function of k. Hence, for the intermediate value theorem, there must be a $\bar{k}$ such that, if $k<\bar{k}$ the derivative of public spending with respect to N is negative, while if $k>\bar{k}$, the derivative is positive.

The derivative of $T+b$ with respect to k is the following: $\frac{4N^3(N+1)}{4(N+1)\sqrt{w^2+4kN^3(N+1)}}$, which is positive. **Proof of proposition** (2.2.2)
The derivative of T with respect to p in expression (2.12) is $\frac{(N-1)N}{(N+1-P+NP)^2}$, which is positive. Public spending are equal to total taxation, because there is no debt. If $p=1$, the total revenues are equal to $w/2$, which is the welfare maximizing revenues. **Proof of proposition** (2.2.2)
The cross derivative of T with respecto to N and p is $\frac{(1-p)(2N-1)+N(1+p)}{(N+1-p+Np)^3}$, which is positive.

Let me solve problem (2.1) with CRRA utility functions and a general convex cost function, $u_1(\cdot)=u_2(\cdot)=\frac{1}{1-\gamma}(\cdot)^{1-\gamma}, \gamma \in \mathbb{R}^+, \gamma>1$, $c(\cdot)$, $\dot{c}>0$, $\ddot{c}>0$. The first order conditions are the following:

$$-\left(\frac{w}{N}-t_i\right)^{-\gamma}+\frac{1}{N}\left(\frac{1}{N}T+b_i\right)^{-\gamma}=0, \tag{B.3}$$

$$\left(\frac{1}{N}T+b_i\right)^{-\gamma}-\frac{1}{kN}\dot{c}\left(\frac{b}{N}\right)=0. \tag{B.4}$$

Equation (B.3) can be rewritten as follows:

$$N^{\frac{1}{\gamma}}\left(\frac{1}{N}T+b_i\right)=\frac{1}{N}-t_i, \tag{B.5}$$

I sum the left hand side and right hand side of the last equation, for every $i \in S$, and solve for T:

$$T=\max\left\{\frac{w-N^{\frac{1}{\gamma}}b}{N^{\frac{1}{\gamma}}+1},0\right\}. \tag{B.6}$$

Equation (B.4) can be rewritten as follows, substituting $T=\frac{w-N^{\frac{1}{\gamma}}b}{N^{\frac{1}{\gamma}}+1}$:

$$\frac{w-N^{\frac{1}{\gamma}}b}{N^{\frac{1}{\gamma}}+1}+b_iN=N(kN)^{\frac{1}{\gamma}}\left[\dot{c}\left(\frac{b}{N}\right)\right]^{-\frac{1}{\gamma}}. \tag{B.7}$$

I sum the left hand side and right hand side of the last equation, for every $i \in S$:

$$w+b=k^{\frac{1}{\gamma}}\left(N^{\frac{2+\gamma}{\gamma}}+N^{\frac{1+\gamma}{\gamma}}\right)\left[\dot{c}\left(\frac{b}{N}\right)\right]^{\frac{-1}{\gamma}}. \tag{B.8}$$

Notice that T is positive only if $w-N^{\frac{1}{\gamma}}b$ is positive, otherwise there is a corner solution and T is equal to 0.
Proof of proposition (2.2.2) **for the case** $u_1(\cdot)=u_2(\cdot)=\frac{1}{1-\gamma}(\cdot)^{1-\gamma}, \gamma \in \mathbb{R}^+, \gamma>1$**,** $c(\cdot)$**,**

$\dot{c} > 0$, $\ddot{c} > 0$

The derivative of b with respect to N is given by the following expression:

$$\frac{\partial b}{\partial N} = k^{\frac{1}{\gamma}} \frac{\left(\frac{2+\gamma}{\gamma} N^{\frac{2}{\gamma}} + \frac{1+\gamma}{\gamma} N^{\frac{1}{\gamma}}\right) \left[\dot{c}\left(\frac{b}{N}\right)\right]^{\frac{-1}{\gamma}} + \frac{1}{\gamma}\left(N^{\frac{2+\gamma}{\gamma}} + N^{\frac{1+\gamma}{\gamma}}\right) \left[\dot{c}\left(\frac{b}{N}\right)\right]^{-\frac{1+\gamma}{\gamma}} \ddot{c}\left(\frac{b}{N}\right) \frac{b}{N^2}}{1 + \frac{1}{\gamma} k^{\frac{1}{\gamma}} \left(N^{\frac{2+\gamma}{\gamma}} + N^{\frac{1+\gamma}{\gamma}}\right) \left[\dot{c}\left(\frac{b}{N}\right)\right]^{-\frac{1+\gamma}{\gamma}} \ddot{c}\left(\frac{b}{N}\right) \frac{1}{N}}. \tag{B.9}$$

This expression is positive. The derivative of b with respect to k is given by the following expression:

$$\frac{\partial b}{\partial k} = \frac{\frac{1}{\gamma} k^{\frac{1-\gamma}{\gamma}} \left(N^{\frac{2+\gamma}{\gamma}} + N^{\frac{1+\gamma}{\gamma}}\right) \left[\dot{c}\left(\frac{b}{N}\right)\right]^{\frac{-1}{\gamma}}}{1 + \frac{1}{\gamma} k^{\frac{1}{\gamma}} \left(N^{\frac{2+\gamma}{\gamma}} + N^{\frac{1+\gamma}{\gamma}}\right) \left[\dot{c}\left(\frac{b}{N}\right)\right]^{-\frac{1+\gamma}{\gamma}} \ddot{c}\left(\frac{b}{N}\right) \frac{1}{N}} \tag{B.10}$$

This expression is positive. The derivate of T with respect to N, k is zero if T has a corner solution. Otherwise, the derivative of T with respect to N is given by the following expression:

$$\frac{\partial T}{\partial N} = -\frac{\left(N^{\frac{1}{\gamma}} + 1\right) \left[\frac{1}{\gamma} N^{\frac{1-\gamma}{\gamma}} b + N^{\frac{1}{\gamma}} \frac{\partial b}{\partial N}\right] + \frac{1}{\gamma}\left(w - N^{\frac{1}{\gamma}} b\right) N^{\frac{1-\gamma}{\gamma}}}{\left(N^{\frac{1}{\gamma}} + 1\right)^2}. \tag{B.11}$$

Th derivative $\frac{\partial b}{\partial N}$ is positive. Moreover, expression $w - N^{\frac{1}{\gamma}} b$ is positive if there is no corner solution, hence the derivative of T with respect N is negative. The derivative of T with respect to k is given by $-\frac{N^{\frac{1}{\gamma}}}{N^{\frac{1}{\gamma}}+1} \frac{\partial b}{\partial k}$, hence it is negative. The total spending $T + b$ can be rewritten as follows:

$$T + b = \frac{w + b}{N^{\frac{1}{\gamma}} + 1}. \tag{B.12}$$

This expression depends on k only through b. If $k = 0$, the first order condition (B.4) is negative, hence b has a corner solution in 0. Therefore the derivative of $T + b$ with respect to N is negative. If $k \to \infty$, the first order condition (B.4) is positive, consequently $b \to \infty$, which means that T has a corner solution in 0, hence the derivative of $T + b$ with respect to N is equal to the derivative of b with respect to N, which is positive. In order to prove that there is a unique value $\bar{k}$ such that, if $k < \bar{k}$, the derivative of $T + b$ with respect to N is negative, and above which the derivative of $T + b$ with respect to N is positive, we would need to prove that $\frac{\partial^2}{\partial k \partial N}(T + b) > 0$. We are not able to assess the sign of this cross derivative, because of computational difficulty. By the mean value theorem we can still assess that there are thresholds $\bar{k}_1$, and $\bar{k}_2$, with $\bar{k}_1 \leq \bar{k}_2$, such that, if $k < \bar{k}_1$, the derivative of $T + b$ with respect to N is negative, and if $k > \bar{k}_2$ the derivative of $T + b$ with respect to N is positive.

Let me solve problem (2.10) with CRRA utility functions. The first order condition is the following:

$$-(w-T)^{-\gamma}+\frac{1-p}{N}T^{-\gamma}+pT^{-\gamma}=0. \tag{B.13}$$

In this equation we substituted $t_i = T/N$, considering that the first order conditions are the same for all groups, hence the solution t_i is identical. Moreover, we multiplied the left hand side and right hand side by $N^{-\gamma}$.

Proof of proposition (2.2.2) **with CRRA utility functions**

Using the implicit function theorem I compute the derivative of T, as determined by equation (B.13), with respect to p:

$$\frac{\partial T}{\partial p}=\frac{1}{\gamma}\frac{-\frac{T^{-\gamma}}{N}+T^{-\gamma}}{\frac{1-p}{N}T^{-\gamma-1}+pT^{-\gamma-1}+(w-T)^{-\gamma-1}}. \tag{B.14}$$

The derivative is positive because $-\frac{T^{-\gamma}}{N}+T^{-\gamma}>0$. If $p=1$, equation (B.13) results in the following expression:

$$(t_i)^{-\gamma}=\left(\frac{1}{N}w-t_i\right)^{-\gamma}. \tag{B.15}$$

Applying degree $-1/\gamma$ to both sides of the equation, and summing the left hand side and right hand side, for every $i \in S$ I obtain the following result: $T = w/2$.

The first order condition on t_i for the welfare maximizer problem is the following:

$$-\left(\frac{1}{N}w-t_i\right)^{-\gamma}+\frac{N}{N}\left(\frac{T}{N}\right)^{-\gamma}=0, \tag{B.16}$$

which delivers $T = w/2$. The welfare maximizer internalizes the effect of an increase in t_i on the level of public goods g_j, $j \neq i$. **Proof of proposition** (2.2.2) **with CRRA utility functions**

???

Let us consider the case in which groups have different sizes in the municipality, in particular group i has size s_i, she holds $s_i w$ of the wealth of the municipality, $\sum_{j=1}^{N} s_j = 1$. The groups cannot finance the public goods through debt. I assume that the bargaining on the share of revenues T that is devoted to finance the group specific public good g_i delivers the following result: $g_i = f_i(s_1, ..., s_N)T$, where $\sum_{j=1}^{N} f_j(s_1, ..., s_N) = 1$, and $\frac{\partial f_i}{\partial s_i} > 0$, $\frac{\partial f_i}{\partial s_j} < 0, j \neq i$.[1] An example of $f := (f_1, ..., f_N)$, that satisfies the previous conditions is

[1]Let us assume that if s_i increases all other shares decrease with the same margin: $\frac{\partial s_j}{\partial s_i} = \frac{1}{N-1}$.

$f = (s_1, ..., s_N)$, or $f = (s_1^2, ..., s_N^2) / \sum_{j=1}^N s_j^2$.

The problem party i faces can be represented as follows:

$$\max_{t_i} u_1 (s_i w - t_i) + u_2 (f_i T) . \tag{B.17}$$

Let me consider solve this problem with CRRA utility functions and a general convex cost function.

The first order condition is the following:

$$- (s_i w - t_i)^{-\gamma} + f_i (f_i T)^{-\gamma} = 0. \tag{B.18}$$

This equation can be rewritten as follows:

$$f_i^{1-\gamma} T^{-\gamma} = (s_i w - t_i)^{-\gamma} . \tag{B.19}$$

I apply degree $-1/\gamma$ to both sides of the last equation, and I sum the left hand side and right hand side, for every $i \in S$:

$$\sum_j f_j^{1-\frac{1}{\gamma}} T = w - T \Rightarrow T = \frac{w}{1 + \sum_{j=1}^N f_j^{1-\frac{1}{\gamma}}}. \tag{B.20}$$

The revenues T are equal to the public spending of the municipality, because public goods cannot be financed through debt. If public goods cannot be financed through debt, the public spending of the municipality is a decreasing function of the fractionalization of parties in the municipality council. **Proof**

The index $F := \sum_{j=1}^N f_j^{1-\frac{1}{\gamma}}$ is a quasi-concave function of the party share vector $(s_1, ..., s_N)$.??? As discussed in Esteban and Ray (2008), from the quasi-concavity of this index derive the properties of a fractionalization index.

B.2 Tables and Figures

Table B.1: Descriptive Statistics

A. Election Characteristics

	N	mean	sd	min	max
Fractionalization Index	932	0,71	0,21	0	1
Number of Parties	932	4,15	1,32	1	10
Turnout	932	75,92	6,13	55,52	90,98
Percentage of Votes Mayor	932	50,39	11,72	19,39	88,99
Runoff	932	0,55	0,50	0	1
Runoff Alliances	932	0,09	0,29	0	1
Runoff Alliances with Seats	932	0,05	0,22	0	1
Assessors Replaced	907	1,87	2,76	0	23
Second Term Mayor	932	0,29	0,45	0	1
Duration of the Office	706	4,66	0,86	1	5
Mayor Re-elected	706	0,28	0,45	0	1
Right-Wing Coalition	932	0,32	0,47	0	1
Left-Wing Coalition	932	0,65	0,48	0	1
Aligned	932	0,78	0,41	0	1

B. Geographical Characteristics

	N	mean	sd	min	max
Municipal Area	932	88,33	104,37	1,62	1307,71
Degree of Urbanization	932	2,37	0,62	1	3
Seismicity	932	2,94	0,91	1	4
Sea Distance	932	54683,60	49211,70	655,98	206403,59
Population	932	46344,40	116200,93	9588	2724347
River	932	0,61	0,49	0	1
Altitude	932	4,09	1,12	1	5
Church Density	932	0,00070	0,00061	0,00002	0,00542

C. Mayors Characteristics

	N	mean	sd	min	max
Age	932	49,85	8,75	27	74
Male Mayors	932	0,91	0,29	0	1
No High School	932	0,04	0,20	0	1
High School	932	0,29	0,46	0	1
At Least Bachelor	932	0,60	0,49	0	1
Low Blue C.	932	0	0,03	0	1
High Blue C.	932	0,01	0,08	0	1
Low White C.	932	0,26	0,44	0	1
High White C.	932	0,59	0,49	0	1
Others Job	932	0,08	0,27	0	1

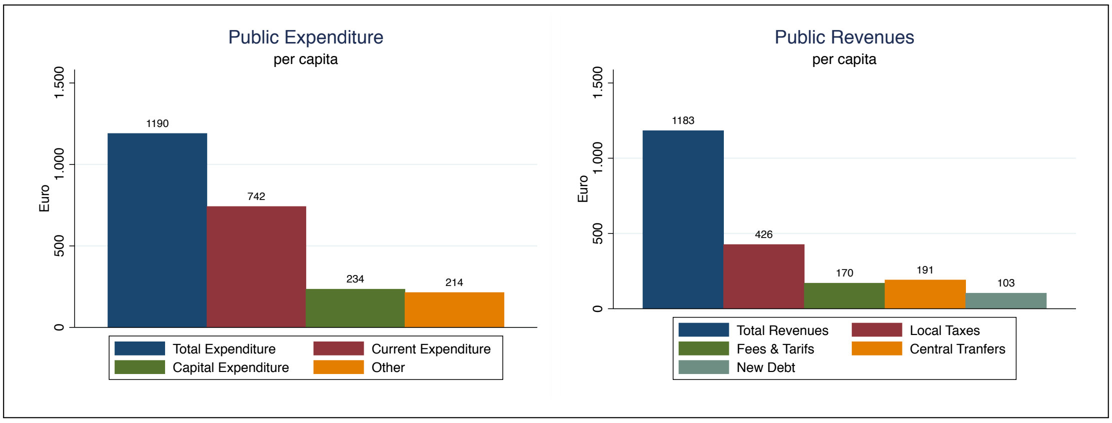
Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. **Panel A** *Fractionalization Index* is one minus the fractionalization index, as from equation (2.13). *Number of Parties* is the number of parties of the ruling coalition. *Turnout* is the percentage of voter turnout. *Percentage of Votes Mayor* is the percentage of votes obtained by the winning mayor. *Runoff* is one if the mayor is elected at the second round. *Runoff Alliances* is one if the mayor as been endorsed by other parties between the two rounds. *Runoff Alliances with Seats* is one if parties who endorse the mayor obtain seats within the city council. *Assessors Replaced* is the number of assessors replaced over the total number of assessors. *Second Term Mayor* is one if the mayor is at his second term. *Duration of the Office* is the number of years of the legislature. *Mayor Re-elected* is one if the mayor will be re-elected. *Right-Wing Coalition* is one if the coalition of the mayor is right-wing. *Left-Wing Coalition* is one if the coalition of the mayor is left-wing. *Aligned* is one if the coalition of the mayor is aligned with the central government. **Panel B** *Municipal Area* is the area of the municipality in square kilometers. *Degree of Urbanization* takes a value from 1 to 5 according to the degree of urbanization.*Seismicity* takes a value from 1 to 3 according to the degree of seismicity. *Sea Distance* is the distance from the sea. *Population* is the resident population of the city. *River* is one if the municipality is crossed by a river. *Altitude* is the altitude of the municipality in meters. *Church Density* is the number of church of the city over the population. **Panel C** *Age* is the age of the mayor. *Male Mayors* is the sex of the mayor. *No High School* is one if the mayor does not have the diploma. *High School* is one if the mayor has the diploma. *At Least Bachelor* is one if the mayor has at least the bachelor. *Low Blue Collar* is one if the mayor was a low level blue collar. *High Blue Collar* is one if the mayor was a high level blue collar. *Low White Collar* is one if the mayor was a low level white collar. *High White Collar* is one if the mayor was a high level white collar. *Others Job* is one if the mayor was doing other jobs than the one of the previous categories.

Table B.2: Descriptive Statistics of Fiscal Outcomes

	A. Municipal Budget				
	N	**mean**	**sd**	**min**	**max**
Total Expenditure	4076	1189.91	431.69	57.21	4643.93
Current Expenditure	4076	741.66	200.90	49.11	2558.37
Capital Expenditure	4076	234.36	216.65	0.81	2518.03
Total Revenues	3959	1183.03	436.36	63.14	5530.95
Local Taxes	3959	426.32	175.58	31.21	4641.61
Fees & Tariffs	3959	169.68	105.05	3.75	1217.38
New Debt	3959	190.90	131.82	0	2028.38
Central Transfers	3957	103.13	192.32	1	2637.05
Deficit	3957	83154.60	200000	1.01	600000

Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. *Total Expenditure* is the total amount of expenditure of the municipality. *Current Expenditure* is the portion of expenditure of the municipality that is used to fund ordinary management of services. *Capital Expenditure* is the portion of expenditure of the municipality which it is intended to finance public works and real estates that produce repeated benefits over time. *Total Revenues* is the total amount of revenues of the municipality. *Local Taxes* is the portion of revenues that comes from municipal taxes. *Fees & Tariffs* include revenues from the supply of public services, from exercising certain functions and from the management of certain activities or from ownership of properties. *New Debt* revenues from taking out loans serving to finance investments. *Central Transfers* revenues that come from higher administrative level, mainly from the State, the Province and the Region. *Deficit* is the differenze between *Total Expenditure* and *Total Revenues*.

Figure B.1: Composition of Public Expenditure & Total Revenues



Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. **Left graph**. composition of total public expenditure: (Navy) *Total Expenditure*; (Red) *Current Expenditure*; (Green) *Capital Expenditure*; (Orange) *Other*. **Left graph**. composition of total revenues: (Navy) *Total Revenues*; (Red) *Local Taxes*; (Green) *Fees & Tariffs*; (Orange) *Central Transfers*; (Blue) *New Debt*.

2

Table B.3: The Effect of Fractionalization on Fiscal Outcomes (OLS)

Panel A.	**Public Expenditure**											
Dependent Variable:	**A.1 Total Expenditure**				**A.2 Current Expenditure**				**A.3 Capital Expenditure**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fractionalization Index	-0.1801***	-0.1576**	-0.1161**	-0.1231**	-0.2045***	-0.1969***	-0.1435***	-0.1490***	-0.3633***	-0.3094***	-0.2100**	-0.2237**
	(0.068)	(0.064)	(0.055)	(0.055)	(0.065)	(0.062)	(0.050)	(0.049)	(0.104)	(0.098)	(0.090)	(0.088)
Running Parties FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year of the Legislature FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✗	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓
T. I. Geographical C.	✗	✗	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓
Mayors Characteristics	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓
Observations	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053
R-squared	0.3199	0.3259	0.3532	0.3649	0.3391	0.3478	0.3763	0.3885	0.2772	0.2809	0.3006	0.3053
Panel B.	**Revenues (1)**											
Dependent Variable:	**B.1 Total Revenues**				**B.2 Local Taxes**				**B.3 Fees & Tariffs**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fractionalization Index	-0.1747**	-0.1504**	-0.1068*	-0.1137**	-0.1203	-0.1175	-0.0975	-0.1053	-0.3491***	-0.2833***	-0.3039***	-0.3133***
	(0.069)	(0.064)	(0.056)	(0.055)	(0.083)	(0.080)	(0.067)	(0.069)	(0.095)	(0.082)	(0.082)	(0.084)
Running Parties FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year of the Legislature FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✗	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓
T. I. Geographical C.	✗	✗	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓
Mayors Characteristics	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓
Observations	3,929	3,929	3,929	3,929	3,927	3,927	3,927	3,927	3,929	3,929	3,929	3,929
R-squared	0.3312	0.3365	0.3636	0.3756	0.5420	0.5541	0.5662	0.5397	0.6146	0.6302	0.6356	0.6313
Panel C.	**Revenues (2)**											
Dependent Variable:	**C.1 New Debt**				**C.2 Central Transfers**				**C.3 Deficit**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fractionalization Index	0.3692	0.3709	0.5841**	0.5748**	0.1042	0.0894	0.1170	0.1195	0.0019	0.0058	0.0045	0.0038
	(0.280)	(0.283)	(0.289)	(0.280)	(0.086)	(0.087)	(0.077)	(0.079)	(0.014)	(0.015)	(0.011)	(0.011)
Running Parties FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year of the Legislature FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✗	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓
T. I. Geographical C.	✗	✗	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓
Mayors Characteristics	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓
Observations	3,927	3,927	3,927	3,927	3,928	3,928	3,928	3,928	3,927	3,927	3,927	3,927
R-squared	0.2799	0.2812	0.3050	0.3138	0.6327	0.6357	0.6592	0.6607	0.9960	0.9960	0.9960	0.9960

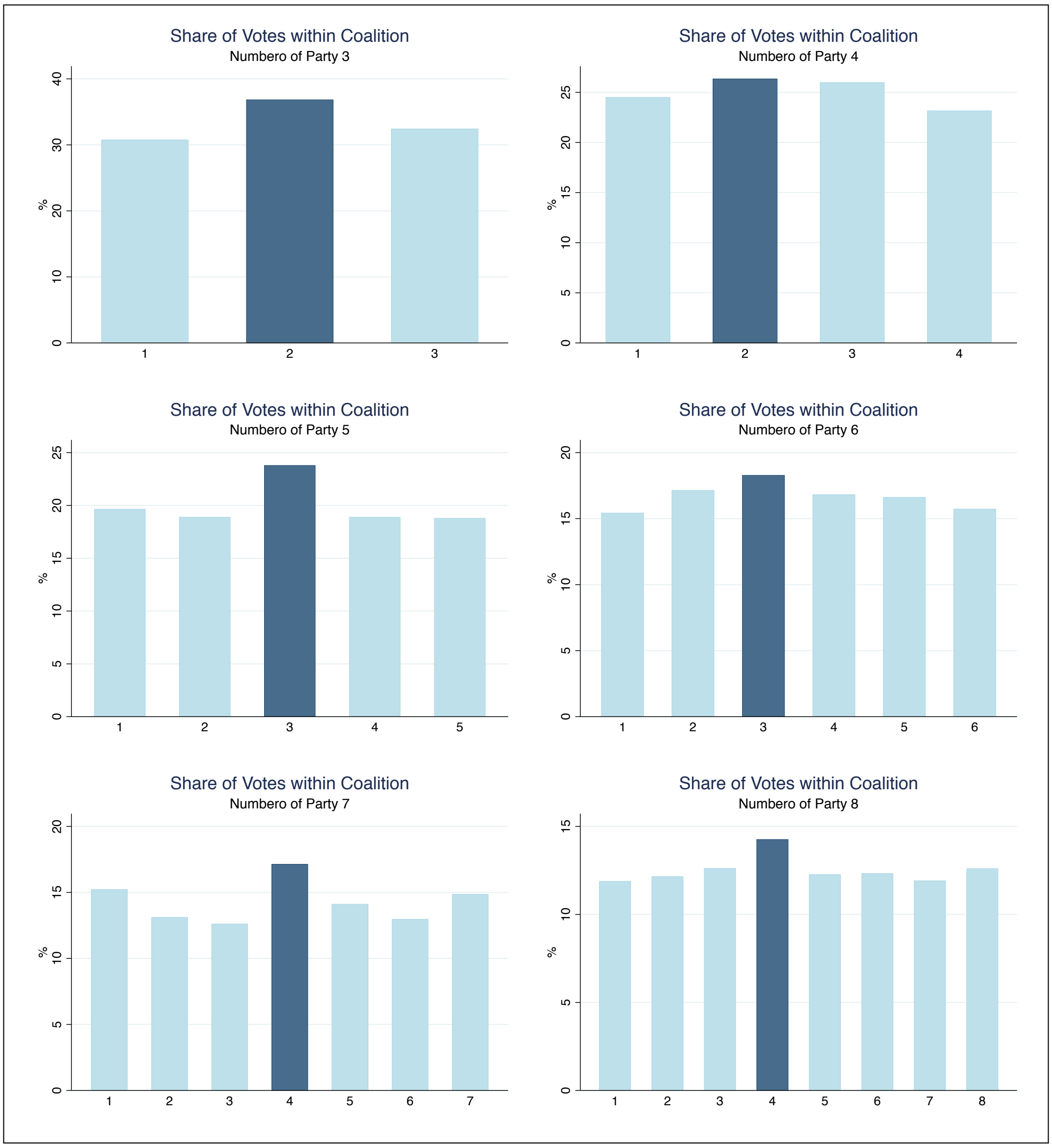
Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. Dependent variable: Panel A.1 Total Expenditure. Panel A.2 Current Expenditure. Panel A.2 Capital Expenditure. Panel B.1 Total Revenues. Panel B.2 Local Taxes. Panel B.3 Fees & Tariffs. Panel C.1 New Debt. Panel C.2 Central Transfers. Panel C.3 Deficit. Estimation methods: ordinary least squares estimation as in equation (2.14). Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

B.2.1 IV Strategy

Figure B.2: The Italian Municipality Ballot Paper - Facsimile

Note. Facsimile ballot paper of municipalities with more than 15,000 inhabitants

Figure B.3: Share of Votes of the Party by Position in the Ballot Paper



Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains all the running mayors which have at least three running parties within the coalition. **Top graph** (left): share of votes of parties by position in the ballot - running mayors with a coalition of three parties. **Top graph** (right): share of votes of parties by position in the ballot - running mayors with a coalition of four parties. **Central graph** (left): share of votes of parties by position in the ballot - running mayors with a coalition of five parties. **Central graph** (right): share of votes of parties by position in the ballot - running mayors with a coalition of six parties. **Botton graph** (left): share of votes of parties by position in the ballot - running mayors with a coalition of seven parties. **Botton graph** (right): share of votes of parties by position in the ballot - running mayors with a coalition of eight parties.

Table B.4: The Ballot Order Effect - The Effect of the Focal Point on the Share of Votes within Coalition of the Party

	(1) OLS List=3	(2) OLS List=4	(3) OLS List=5	(4) OLS List=6	(5) OLS List=7	(6) OLS List=8	(7) OLS List=9	(8) OLS List=3-7	(9) OLS List=3-10	(10) OLS List≥=3
A. Dependent Variable:	**Share of Votes of the Party**									
Focal Point	5.2631***	1.7936*	4.6700***	1.9373**	3.3113***	2.0072*	1.6336	3.4596***	3.2185***	3.1725***
	(1.226)	(1.047)	(0.933)	(0.959)	(1.024)	(1.183)	(1.321)	(0.516)	(0.458)	(0.452)
Running Parties FE	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓
Observations	1,965	2,612	3,010	2,472	1,757	1,416	720	11,816	14,392	14,855
R-squared	0.0140	0.0017	0.0122	0.0022	0.0071	0.0027	0.0022	0.1208	0.1525	0.1623

	(1) OLS List=3	(2) OLS List=4	(3) OLS List=5	(4) OLS List=6	(5) OLS List=7	(6) OLS List=8	(7) OLS List=9	(8) OLS List=3-7	(9) OLS List=3-10	(10) OLS List≥=3
B. Dependent Variable:	**Share of Votes of the Party**									
Focal Point	5.2575***	1.7920	4.6698***	1.9372*	3.3111***	2.0072	1.6326	3.4596***	3.2185***	3.1725***
	(1.384)	(1.142)	(1.003)	(1.029)	(1.093)	(1.258)	(1.402)	(0.530)	(0.469)	(0.462)
Running Parties FE	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
T. I. Geographical C.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
City FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,965	2,612	3,010	2,472	1,757	1,416	720	11,816	14,392	14,855
R-squared	0.0143	0.0018	0.0122	0.0022	0.0071	0.0027	0.0022	0.1208	0.1525	0.1623

Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains all the running mayors which have at least three running parties within the coalition. Dependent variable: Panel A. share of votes of the party. Panel B share of votes of the party. Estimation method: ordinary least squares estimation as in equation (2.14). Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

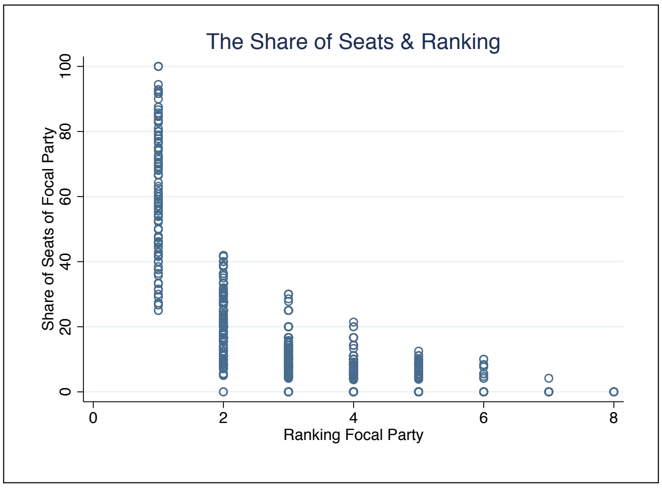
Table B.5: The Ballot Order Effect - The Effect of the Focal Point on the Share of Seats of the Party & on the Probability to Get at Least a Seat

	(1) OLS List=3	(2) OLS List=4	(3) OLS List=5	(4) OLS List=6	(5) OLS List=7	(6) OLS List=8	(7) OLS List=9	(8) OLS List=3-7	(9) OLS List=3-10	(10) OLS List≥=3
A. Dependent Variable:					**Share of Seats of the Party**					
Focal Point	6.4727***	3.4575**	5.6997***	2.5261*	4.2696***	2.1394	2.1910	4.5971***	4.2447***	4.1852***
	(2.053)	(1.683)	(1.425)	(1.429)	(1.506)	(1.598)	(1.896)	(0.763)	(0.675)	(0.666)
Running Parties FE	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
City FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,965	2,612	3,010	2,472	1,757	1,416	720	11,816	14,392	14,855
R-squared	0.1327	0.0343	0.0163	0.0076	0.0066	0.0041	0.0023	0.0527	0.0651	0.0698

	(1) OLS List=3	(2) OLS List=4	(3) OLS List=5	(4) OLS List=6	(5) OLS List=7	(6) OLS List=8	(7) OLS List=9	(8) OLS List=3-7	(9) OLS List=3-10	(10) OLS List≥=3
B. Dependent Variable:					**The Probability to Get at Least a Seat**					
Focal Point	0.0719***	0.0380*	0.1537***	0.0853***	0.1878***	0.0539	0.1569***	0.0984***	0.0953***	0.0962***
	(0.023)	(0.022)	(0.021)	(0.026)	(0.029)	(0.039)	(0.053)	(0.010)	(0.009)	(0.009)
Running Parties FE	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
City FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,965	2,616	3 5	2,478	1,750	1,416	720	11,814	14,390	14,853
R-squared	0.4336	0.2844	0.2337	0.1951	0.1736	0.1426	0.1432	0.1866	0.1617	0.1598

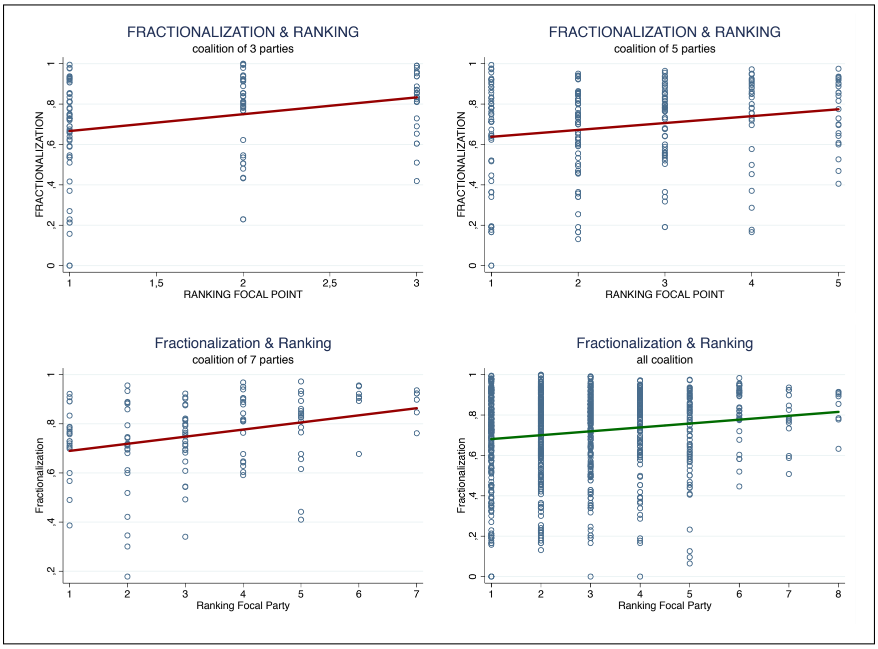
Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains all the running mayors which have at least three running parties within the coalition. Dependent variable: Panel A. share of seats of the party. Panel B the probability to get at least a seat. Estimation method: ordinary least squares estimation as in equation (2.14). Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Figure B.4: Ranking of the Party at the Focal Point & The Share of Seats



Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only parties that are at the focal point of the ballot within the coalition of the mayors. Vertical axis: share of seats of the party at the focal point of the ballot. Horizontal axis: the ranking position of the votes that the parties get at the elections among all the parties within the coalition of the mayor.

Figure B.5: Ranking of the Party at the Focal Point & The Fractionalization Index



Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only parties that are at the focal point of the ballot within the coalition of the mayors. Vertical axis: s one minus the fractionalization index, as from equation (2.13). Horizontal axis: the ranking position of the votes that the parties get at the elections among all the parties within the coalition of the mayor. **Top graph** (left): The sample contains only coalition with three running parties. **Top graph** (right): The sample contains only coalition with three running parties. **Bottom graph** (left): The sample contains only coalition with seven running parties. **Bottom graph** (right): The sample contains all the coalitions of the running mayors.

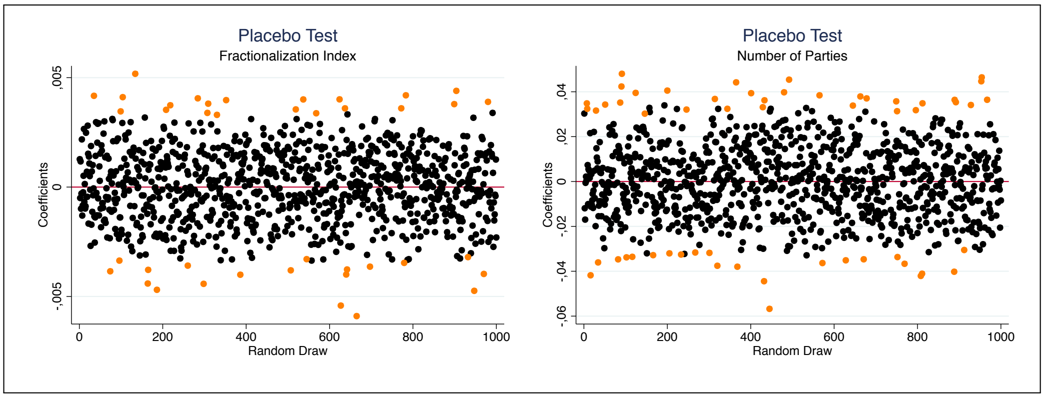
Table B.6: The Effect of the Ranking of the Party at the Focal Point on Political Outcomes - Placebo & First Stage

Panel A.	**All the Coalitions**															
	A.1 Placebo												**A.2 First Stage**			
Dependent Variable:	Votes Mayor		Seats C.		Runoff Alliances		Alliances & S.		Prob. Runoff		Prob. Mayor		Fractionalization I.		N. Parties	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Ranking Party F.P.	0.0235	0.1013	-0.0566	-0.0525	-0.0077	-0.0075	0.0015	0.0008	0.0017	0.0006	-0.0061	-0.0056	0.0069***	0.0053***	0.0641***	0.0502***
	(0.184)	(0.134)	(0.066)	(0.056)	(0.006)	(0.006)	(0.005)	(0.003)	(0.003)	(0.002)	(0.005)	(0.005)	(0.002)	(0.002)	(0.019)	(0.018)
Running Parties FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓
T. I. Geographical C.	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓
Observations	2,745	2,745	2,745	2,745	2,745	2,745	2,745	2,745	2,745	2,745	2,745	2,745	2,725	2,725	2,745	2,745
R-squared	0.3089	0.6494	0.1131	0.3891	0.2957	0.3348	0.0192	0.5723	0.0187	0.5593	0.4846	0.4893	2,726	2,726	2,745	2,745
F-test Ranking	0.0163	0.573	0.739	0.894	1.802	1.740	0.0995	0.0624	0.263	0.0575	1.336	1.146	10.85	7.514	11.42	7.833

Panel B.	**Only Mayors**													
	B.1 Placebo										**B.2 First Stage**			
Dependent Variable:	Votes Mayor		Seats C.		Runoff Alliances		Alliances & S.		Prob. Runoff		Fractionalization I.		N. Parties	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Ranking Party F.P.	0.1070	0.0260	-0.0829	-0.0782	-0.0069	-0.0041	0.0031	0.0009	0.0037	0.0009	0.0136***	0.0117***	0.0956***	0.0862***
	(0.199)	(0.142)	(0.094)	(0.079)	(0.009)	(0.006)	(0.006)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.023)	(0.022)
Running Parties FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓
T. I. Geographical C.	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓
Observations	1,174	1,174	1,174	1,174	1,174	1,174	1,174	1,174	1,174	1,174	1,173	1,173	1,174	1,174
R-squared	0.2437	0.6113	0.1658	0.3904	0.2276	0.6028	0.0294	0.5913	0.0286	0.5858	0.2348	0.3712	0.3944	0.4542
F-test Ranking	0.289	0.0334	0.780	0.974	0.599	0.428	0.307	0.0606	0.687	0.0894	18.13	17.05	17.65	15.95

Note. Panel A The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only parties that are at the focal point of the ballot within all the coalitions. Panel B The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only parties that are at the focal point of the ballot within only the coalitions of the mayors. Dependent variable. *Votes Mayor* is the percentage of votes obtained by the winning mayor. *Seats C.* is the total number of seats that the ruling coalition obtained at elections. *Runoff Alliances* is one if the mayor as been endorsed by other parties between the two rounds. *Alliances & S.* is one if parties who endorse the mayor obtain seats within the city council. *Prob. Runoff* is one if the mayor is elected at the second round. *Fractionalization I.* is one minus the fractionalization index, as from equation (2.13). *N. Parties* is the number of parties of the ruling coalition. Estimation method: ordinary least squares estimation as in equation (2.14). Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Figure B.6: Placebo Test - The Effect of the Ranking of a Randomly Drawn Party of the Coalition
on Fractionalization Index & Number of Parties



Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains all the running parties within the coalition of the running mayors which have at least three running parties. Vertical axis: coefficients of ordinary least squares estimations as in equation (). This are coefficients as from regression in table B.6, panel A and column (14) & (16). However, differently from the former regression the it is not used the ranking of the median party, but the ranking of a randomly draw party within the coalition. **Left graph**: the dependent variable is the *Fractionalization Index* which is one minus the fractionalization index, as from equation (2.13). **Right graph**: the dependent variable is the *Number of Parties* which is the number of parties of the ruling coalition. Horizontal axis: the sequence of extraction of random parties within the coalition.

Table B.7: The Effect of Fractionalization on Fiscal Outcomes (IV)

Panel A.						**Public Expenditure**						
Dependent Variable:	**A.1 Total Expenditure**				**A.2 Current Expenditure**				**A.3 Capital Expenditure**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fractionalization Index	-0.9516**	-0.8748**	-0.8504**	-0.8144**	-0.8873**	-0.7995**	-0.7950**	-0.7683**	-1.2828*	-1.2017*	-1.0896	-0.9847
	(0.401)	(0.369)	(0.394)	(0.387)	(0.367)	(0.326)	(0.346)	(0.335)	(0.757)	(0.706)	(0.760)	(0.738)
Running Parties FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year of the Legislature FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✗	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓
T. I. Geographical C.	✗	✗	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓
Mayors Characteristics	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓
Observations	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053
						First Stage						
Dependent Variable:	**Fractionalization Index**				**Fractionalization Index**				**Fractionalization Index**			
Ranking Party Focal Point	0.0162***	0.0175***	0.0156***	0.0160***	0.0157***	0.0170***	0.0153***	0.0157***	0.0161***	0.0174***	0.0156***	0.0160***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
F-Test Ranking	16.18	19.39	18.35	19.20	15.29	18.44	17.66	18.47	15.57	18.69	17.97	18.88

Panel B.						**Revenues (1)**						
Dependent Variable:	**B.1 Total Revenues**				**B.2 Local Taxes**				**B.3 Fees & Tariffs**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fractionalization Index	-0.9020**	-0.8373**	-0.8136**	-0.7873**	-0.5007	-0.5199	-0.5797	-0.5486	-1.0700*	-0.9354*	-1.0708*	-1.0043*
	(0.397)	(0.367)	(0.392)	(0.387)	(0.429)	(0.395)	(0.440)	(0.420)	(0.627)	(0.561)	(0.619)	(0.602)
Running Parties FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year of the Legislature FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✗	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓
T. I. Geographical C.	✗	✗	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓
Mayors Characteristics	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓
Observations	3,929	3,929	3,929	3,929	3,927	3,927	3,927	3,927	3,929	3,929	3,929	3,929
F-Test Ranking	15.50	18.60	17.95	18.83	14.27	17.36	16.62	17.43	13.85	16.96	16.35	17.25

Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. Dependent variable: Panel A.1 Total Expenditure. Panel A.2 Current Expenditure. Panel A.2 Capital Expenditure. Panel B.1 Total Revenues. Panel B.2 Local Taxes. Panel B.3 Fees & Tariffs. Panel C.1 New Debt. Panel C.2 Central Transfers. Panel C.3 Deficit. Estimation methods: two stage least squares as in equation () & (). Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

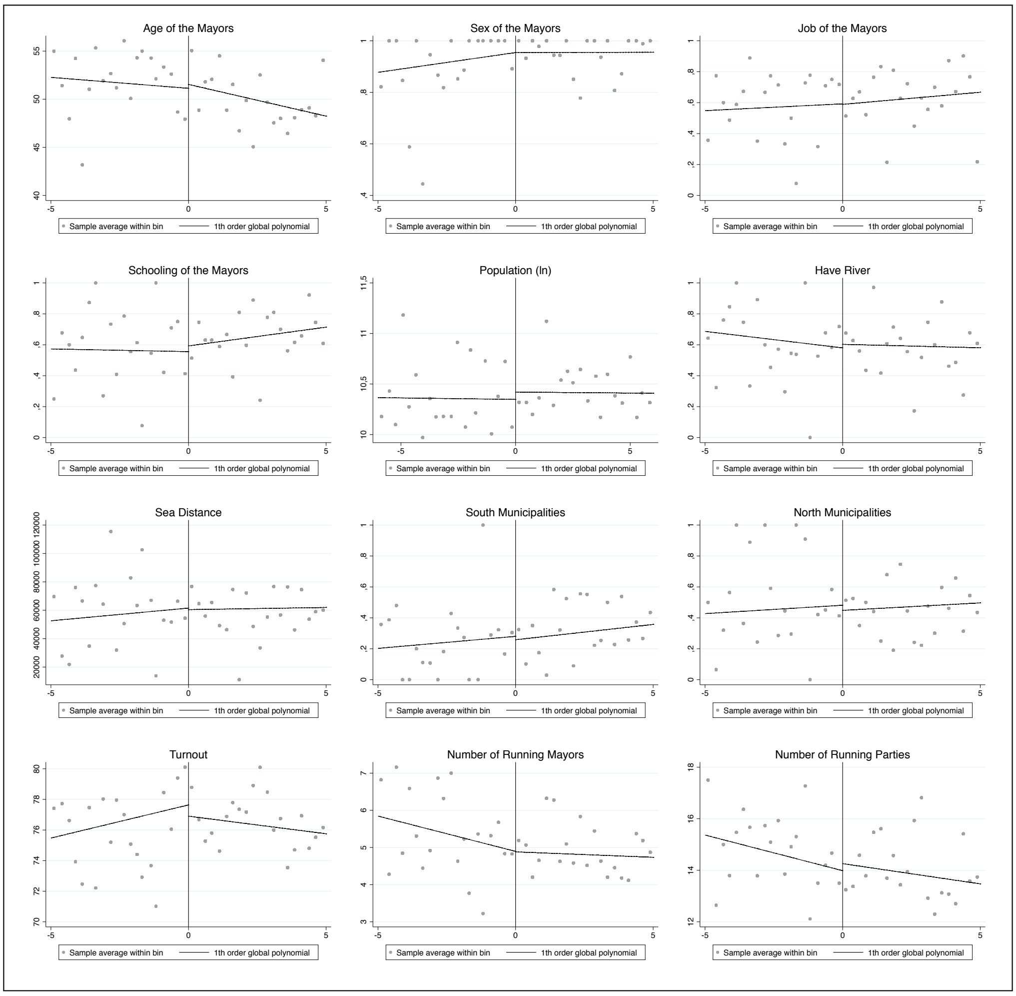
Table B.7: The Effect of Fractionalization on Fiscal Outcomes (IV) (cont'd)

Panel C.	**Revenues (2)**											
Dependent Variable:	**C.1 New Debt**				**C.2 Central Transfers**				**C.3 Deficit**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fractionalization Index	-4.4950	-4.2920	-3.5524	-3.7791	-0.6556	-0.5129	-0.2961	-0.2714	0.1646	0.1441	0.1552	0.1518
	(3.119)	(2.815)	(2.751)	(2.680)	(0.636)	(0.593)	(0.671)	(0.645)	(0.148)	(0.134)	(0.153)	(0.147)
Running Parties FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year of the Legislature FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Election Day C.	✗	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓
T. I. Geographical C.	✗	✗	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓
Mayors Characteristics	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓
Observations	3,927	3,927	3,927	3,927	3,928	3,928	3,928	3,928	3,927	3,927	3,927	3,927
F-Test Ranking	12.61	15.33	15.68	16.35	15.92	19.06	17.68	18.54	15.97	18.91	18.13	18.91

Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. Dependent variable: Panel C.1 New Debt. Panel C.2 Central Transfers. Panel C.3 Deficit. Estimation methods: two stage least squares as in equation () & (). Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

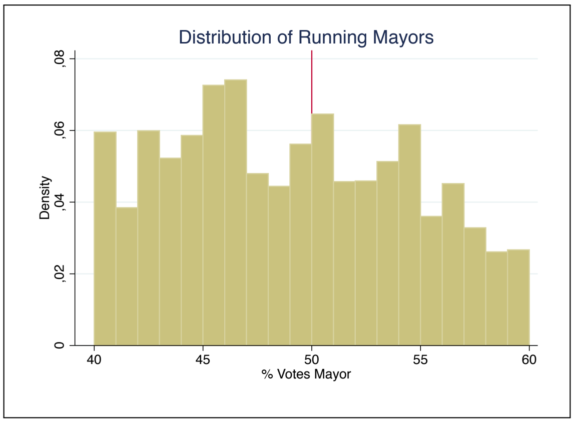
B.2.2 RDD Strategy

Figure B.7: Regression Discontinuity Design - Several Variables



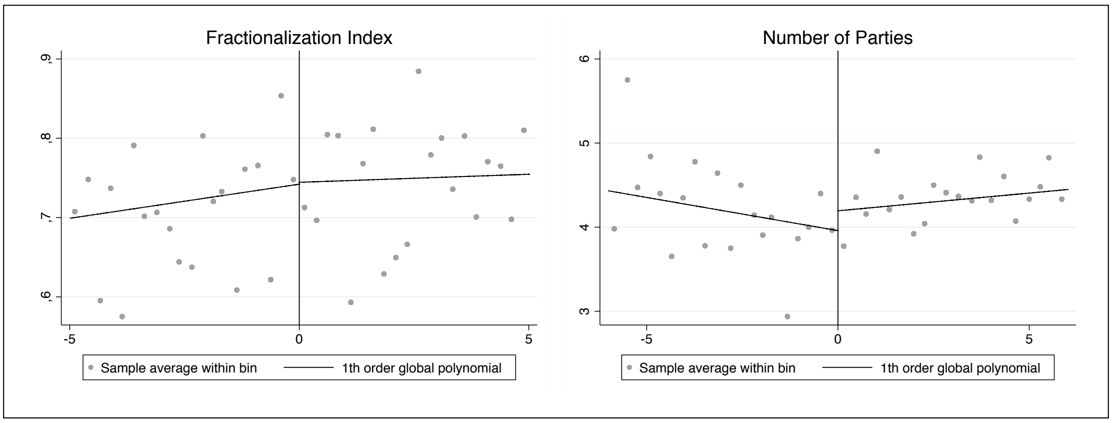
Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. Vertical axis: the values of each variable. The variables used are: 1. age of the elected mayor. 2. sex of the elected mayor. 3. previous job of the elected mayor. 4. schooling of the elected mayor. 5. population of the municipality. 6. the variable is a dummy that take values one if the municipality is crossed by a river. 7 it is the discount of the municipality from the sea. 8 it is a dummy that takes value one if the municipality is from south. 9. it is a dummy that take value one if the municipality if from north. 10. it is the percentage of voter turnout. 11. It is the number go running mayor in the municipality. 12 .it is the number of running parties in the municipality. Horizontal axis: it is the normalized distance from the from the 50 percent threshold. In detail, is the percentage of the votes obtained by the mayor minus 50. On the right of the threshold there are the mayors that have win at the first round. On the left of the threshold there are the mayors that have win at the second round. The central line is a linear fit. Scatter points are averaged over intervals of 0.25 percentage point.

Figure B.8: Regression Discontinuity Design - Density of Running Mayors at the Threshold



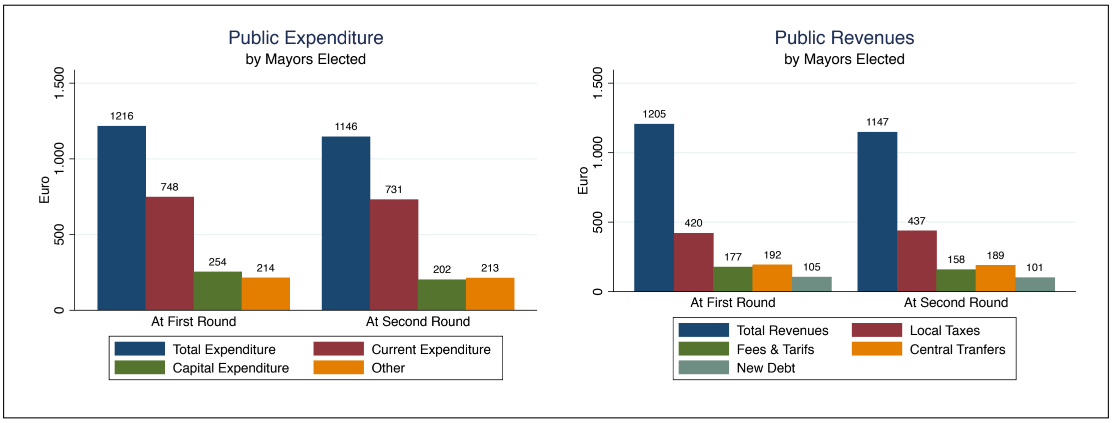
Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains all the running mayors which have at least three running parties within the coalition. Test of the continuity at the threshold. Vertical axis: density of running mayors. Horizontal axis: the percentage of votes obtained by the running mayors.

Figure B.9: Regression Discontinuity Design - Fractionalization Index & Number of Parties



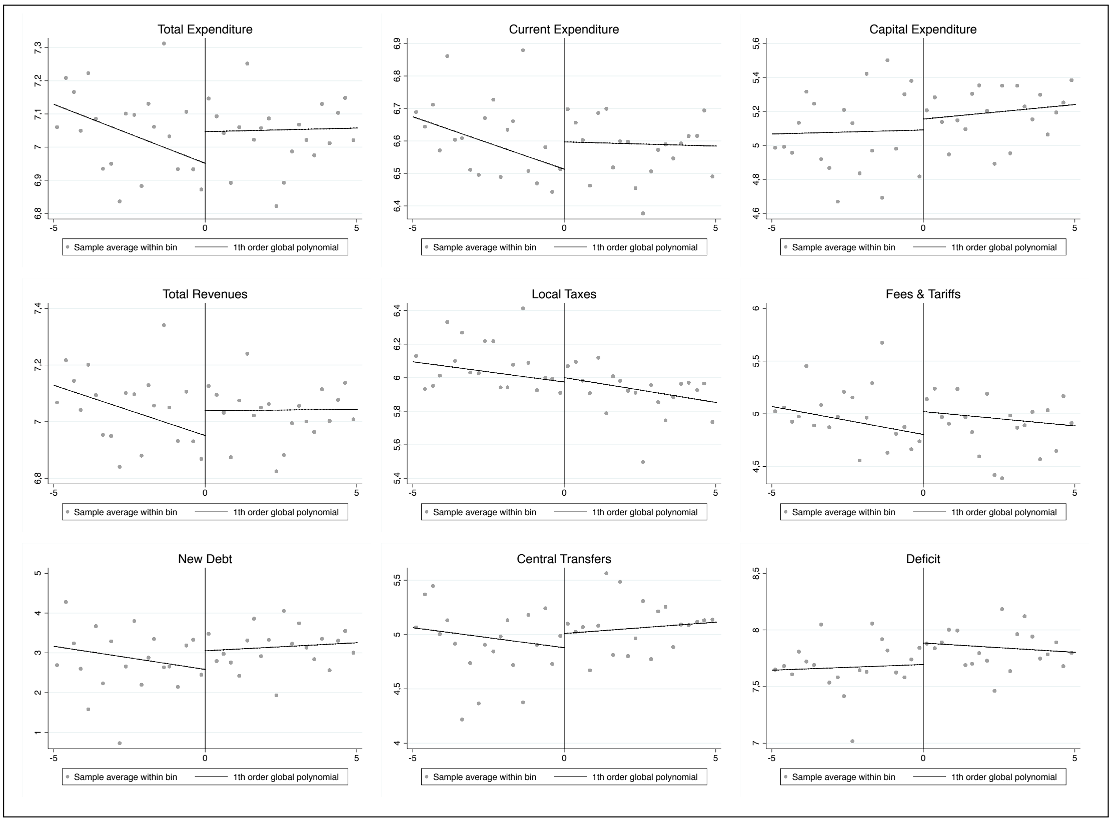
Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. Vertical axis: the values of each variable. The variables used are: 1. it is one minus the fractionalization index, as from equation (2.13). 2. it is the number of parties of the ruling coalition. Horizontal axis: it is the normalized distance from the from the 50 percent threshold. In detail, is the percentage of the votes obtained by the mayor minus 50. On the right of the threshold there are the mayors that have win at the first round. On the left of the threshold there are the mayors that have win at the second round. The central line is a linear fit. Scatter points are averaged over intervals of 0.25 percentage point.

Figure B.10: Composition of Public Expenditure & Total Revenues by Round of Election



Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. **Left graph**. composition of total public expenditure by round of election of the Mayor: (Navy) *Total Expenditure*; (Red) *Current Expenditure*; (Green) *Capital Expenditure*; (Orange) *Other*. **Left graph**. composition of total revenues by round of election of the Mayor: (Navy) *Total Revenues*; (Red) *Local Taxes*; (Green) *Fees & Tariffs*; (Orange) *Central Transfers*; (Blue) *New Debt*

Figure B.11: Regression Discontinuity Design - Fiscal Outcomes



Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. Vertical axis: the values of each variable. The variables used are: 1. Total Expenditure is the total amount of expenditure of the municipality. 2 Current Expenditure is the portion of expenditure of the municipality that is used to fund ordinary management of services. 3. Capital Expenditure is the portion of expenditure of the municipality which it is intended to finance public works and real estates that produce repeated benefits over time. 4. Total Revenues is the total amount of revenues of the municipality. 5. Local Taxes is the portion of revenues that comes from municipal taxes. 6. Fees & Tariffs include revenues from the supply of public services, from exercising certain functions and from the management of certain activities or from ownership of properties. 7. New Debt revenues from taking out loans serving to finance investments. 8. Central Transfers revenues that come from higher administrative level, mainly from the State, the Province and the Region. 9. Deficit is the differenze between Total Expenditure and Total Revenues. Horizontal axis: it is the normalized distance from the from the 50 percent threshold. In detail, is the percentage of the votes obtained by the mayor minus 50. On the right of the threshold there are the mayors that have win at the first round. On the left of the threshold there are the mayors that have win at the second round. The central line is a linear fit. Scatter points are averaged over intervals of 0.25 percentage point.

Table B.8: The Effect of Mayors Elected at Runoff on Fiscal Outcomes - Regression Discontinuity Design

Panel A.	**Public Expenditure**											
Dependent Variable:	**A.1 Total Expenditure**				**A.2 Current Expenditure**				**A.3 Capital Expenditure**			
	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}	(5) IK	(6) CCT	(7) poly 2^{rd}	(8) poly 3^{rd}	(9) IK	(10) CCT	(11) poly 2^{rd}	(12) poly 3^{rd}
Mayors Elected at Runoff	-0.0514	-0.1925*	-0.0669	-0.1222	-0.1022*	-0.1848**	-0.0586	-0.1125	-0.0648	-0.3151	-0.0765	-0.1529
	(0.044)	(0.110)	(0.066)	(0.090)	(0.054)	(0.079)	(0.058)	(0.077)	(0.088)	(0.204)	(0.129)	(0.172)
Observations	2,443	532	2,483	2,483	1,142	600	2,483	2,483	2,443	536	2,483	2,483
R-squared	0.3615	0.4151	0.3625	0.3642	0.4224	0.5266	0.4044	0.4085	0.3037	0.3828	0.3048	0.3081
h.	9.692	3.346	10	10	3.933	2.639	10	10	9.692	4.337	10	10
Panel B.	**Revenues (1)**											
Dependent Variable:	**B.1 Total Revenues**				**B.2 Local Taxes**				**B.3 Fees & Tariffs**			
	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}	(5) IK	(6) CCT	(7) poly 2^{rd}	(8) poly 3^{rd}	(9) IK	(10) CCT	(11) poly 2^{rd}	(12) poly 3^{rd}
Mayors Elected at Runoff	-0.0526	-0.1652*	-0.0691	-0.1252	-0.0414	-0.0971	-0.0406	-0.1175	-0.3144**	-0.5150***	-0.2416**	-0.3310**
	(0.046)	(0.097)	(0.067)	(0.091)	(0.057)	(0.061)	(0.067)	(0.080)	(0.123)	(0.180)	(0.121)	(0.159)
Observations	2,351	548	2,389	2,389	1,154	908	2,387	2,387	1,102	577	2,420	2,420
R-squared	0.3661	0.4490	0.3666	0.3684	0.5917	0.6109	0.5718	0.5743	0.3307	0.4824	0.2791	0.2817
h.	9.692	4.689	10	10	4.177	4.177	10	10	3.933	3.165	10	10
Panel C.	**Revenues (2)**											
Dependent Variable:	**C.1 New Debt**				**C.2 Central Transfers**				**C.3 Deficit**			
	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}	(5) IK	(6) CCT	(7) poly 2^{rd}	(8) poly 3^{rd}	(9) IK	(10) CCT	(11) poly 2^{rd}	(12) poly 3^{rd}
Mayors Elected at Runoff	0.0555	0.0917	-0.3105	-0.3886	-0.0559	-0.0636	-0.0497	-0.1142	0.0113	0.0019	-0.0144	-0.0016
	(0.234)	(0.350)	(0.294)	(0.385)	(0.061)	(0.097)	(0.095)	(0.119)	(0.011)	(0.012)	(0.013)	(0.009)
Observations	2,349	739	2,387	2,387	2,351	886	2,389	2,389	2,349	1,070	2,387	2,387
R-squared	0.3150	0.3506	0.3182	0.3196	0.6660	0.6909	0.6694	0.6698	0.9974	0.9974	0.9974	0.9974
h.	9.692	3.321	10	10	9.692	7.451	10	10	9.692	5.706	10	10

Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. Dependent variable: Panel A.1 Total Expenditure. Panel A.2 Current Expenditure. Panel A.2 Capital Expenditure. Panel B.1 Total Revenues. Panel B.2 Local Taxes. Panel B.3 Fees & Tariffs. Panel C.1 New Debt. Panel C.2 Central Transfers. Panel C.3 Deficit. Estimation methods: Local linear probability model as in equation () from column (1) to (2) of each panel; spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation () from column (3) to (4) of each panel. The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table B.9: The Effect of Fractionalization on Fiscal Outcomes by Round of Election of Mayors - Regression Discontinuity Design

Panel A. **Public Expenditure**

Dependent Variable:	**A.1 Total Expenditure**				**A.2 Current Expenditure**				**A.3 Capital Expenditure**			
	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}	(5) IK	(6) CCT	(7) poly 2^{rd}	(8) poly 3^{rd}	(9) IK	(10) CCT	(11) poly 2^{rd}	(12) poly 3^{rd}
	Elected Mayor at First Round											
Fractionalization Index	0.0356	0.1582	0.0221	0.0170	0.0151	0.0471	-0.0538	-0.0590	0.0725	-0.0408	0.0418	0.0354
	(0.065)	(0.127)	(0.064)	(0.065)	(0.078)	(0.097)	(0.061)	(0.061)	(0.121)	(0.325)	(0.121)	(0.122)
	Mayors Elected at Runoff											
Fractionalization Index	-0.3337***	-0.6412***	-0.3220***	-0.3271***	-0.4312***	-0.4613***	-0.3571***	-0.3563***	-0.4505***	-0.5998	-0.4469***	-0.4690***
	(0.099)	(0.219)	(0.097)	(0.096)	(0.103)	(0.143)	(0.076)	(0.076)	(0.154)	(0.429)	(0.153)	(0.152)
Difference	-0.3693***	-0.7994***	-0.3441***	-0.3441***	-0.4463***	-0.5085***	-0.3033***	-0.2973***	-0.5230***	-0.5590	-0.4887***	-0.5044***
	(0.106)	(0.264)	(0.103)	(0.102)	(0.127)	(0.177)	(0.083)	(0.083)	(0.184)	(0.495)	(0.185)	(0.181)

Panel B. **Revenues (1)**

Dependent Variable:	**B.1 Total Revenues**				**B.2 Local Taxes**				**B.3 Fees & Tariffs**			
	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}	(5) IK	(6) CCT	(7) poly 2^{rd}	(8) poly 3^{rd}	(9) IK	(10) CCT	(11) poly 2^{rd}	(12) poly 3^{rd}
	Elected Mayor at First Round											
Fractionalization Index	0.0471	0.1292	0.0352	0.0302	0.0816	0.0816	0.0104	0.0032	-0.4237**	-0.0158	-0.6427***	-0.6505***
	(0.066)	(0.118)	(0.065)	(0.066)	(0.113)	(0.113)	(0.086)	(0.087)	(0.201)	(0.296)	(0.147)	(0.149)
	Mayors Elected at Runoff											
Fractionalization Index	-0.3190***	-0.7038***	-0.3074***	-0.3134***	-0.3628**	-0.3628**	-0.2076**	-0.2082**	-1.3979***	-1.2103***	-1.2106***	-1.2103***
	(0.100)	(0.216)	(0.098)	(0.097)	(0.154)	(0.154)	(0.089)	(0.088)	(0.252)	(0.334)	(0.208)	(0.211)
Difference	-0.3661***	-0.8330***	-0.3426***	-0.3436***	-0.4443**	-0.4443**	-0.2180**	-0.2114**	-0.9743***	-1.1945**	-0.5680**	-0.5599**
	(0.105)	(0.254)	(0.103)	(0.101)	(0.186)	(0.186)	(0.098)	(0.098)	(0.319)	(0.467)	(0.228)	(0.229)

Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. Dependent variable: Panel A.1 Total Expenditure. Panel A.2 Current Expenditure. Panel A.2 Capital Expenditure. Panel B.1 Total Revenues. Panel B.2 Local Taxes. Panel B.3 Fees & Tariffs. Estimation methods: Local linear probability model as in equation () from column (1) to (2) of each panel; spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation () from column (3) to (4) of each panel. The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table B.9: The Effect of Fractionalization on Fiscal Outcomes by Round of Election of Mayors - Regression Discontinuity Design (cont'd)

Panel C.						**Revenues (2)**						
Dependent Variable:	**C.1 New Debt**				**C.2 Central Transfers**				**C.3 Deficit**			
	(1) IK	(2) CCT	(3) poly 2^{rd}	(4) poly 3^{rd}	(5) IK	(6) CCT	(7) poly 2^{rd}	(8) poly 3^{rd}	(9) IK	(10) CCT	(11) poly 2^{rd}	(12) poly 3^{rd}
	Elected Mayor at First Round											
Fractionalization Index	0.9713**	1.0592*	1.0088**	1.0069**	0.0736	-0.0193	0.0572	0.0510	0.0105	-0.0245	0.0094	0.0106
	(0.439)	(0.625)	(0.436)	(0.430)	(0.120)	(0.213)	(0.115)	(0.116)	(0.016)	(0.025)	(0.016)	(0.016)
	Mayors Elected at Runoff											
Fractionalization Index	0.0393	-0.8279	0.1324	0.0972	-0.0689	-0.0786	-0.0676	-0.0683	0.0203	0.0206	0.0204	0.0211
	(0.566)	(1.190)	(0.567)	(0.565)	(0.118)	(0.215)	(0.114)	(0.114)	(0.026)	(0.040)	(0.026)	(0.026)
Difference	-0.9320	-1.8870	-0.8764	-0.9097	-0.1425	-0.0593	-0.1248	-0.1194	0.0098	0.0450	0.0111	0.0105
	(0.625)	(1.293)	(0.611)	(0.601)	(0.148)	(0.285)	(0.143)	(0.144)	(0.029)	(0.039)	(0.029)	(0.029)

Note. The sample includes cities with more than 15,000 inhabitants and refers to the period from 2002 to 2012. The sample contains only mayors which have at least three running parties within the coalition. Dependent variable: Panel C.1 New Debt. Panel C.2 Central Transfers. Panel C.3 Deficit. Estimation methods: Local linear probability model as in equation () from column (1) to (2) of each panel; spline polynomial approximation with 2^{nd}-order or 3^{rd}-order polynomial, as in equation () from column (3) to (4) of each panel. The optimal bandwidth h is estimated either following Imbens and Kalayanaraman (2012)-IK-in the first column, or implementing the algorithm presented by Calonico, Cattaneo, and Titiunik (2013a, 2013b)-CTT-in the second column. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.