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POLITICAL SELECTION AND MONETARY INCENTIVES IN LOCAL PARLIAMENTARY SYSTEMS

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Choosing not to lead:
Monetary incentives and Political Selection in Local Parliamentary Systems *

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Abstract

Using a rich database covering all local politicians in Italian municipalities, we implement a regression-discontinuity analysis to evaluate the causal effect of monetary incentives on political selection in local parliamentary systems. We find that higher expected wages lead to the selection of more educated council members and executives, but do not result into better educated mayors. Low-wage councils tend to elect mayors with almost two years more schooling than the median councillor, but this this difference vanishes in high-wage councils. We rationalize this finding in a model where better educated councillors shy away from better-paid but full-time positions (such as mayor) and prefer less-paid but part-time positions (executives) that allow them to devote more time to work while in office. An analysis by politicians' occupation and retirement status supports this explanation. Our findings thus highlight that the effects of monetary incentives are not invariant across different institutional settings, especially when the election systems include a parliamentary stage.

JEL Classification: M52, D72, J45, H70.
Keywords: Political Selection, Monetary Incentives, Parliamentary System, Local Politicians, Moonlighting

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1 Introduction

This paper analyses the interplay between indirect election systems and monetary incentives and how this affects the selection of local politicians. Higher wages for leading positions are typically found to attract better candidates when the election system is direct, i.e., when the voters directly cast ballots for the persons or political party that they desire to see elected (Gagliarducci and Nannicini, 2013). However, in a system where the voters elect a body that in turn elects the officeholder, whether higher wages translate into better-educated leaders is more debatable.

To address this question, we investigate the impact of a remuneration policy on the relative quality of the elected leader within the body, that is, the quality gap between the leader and those who elected her.[1] We study a large sample of Italian municipalities between 1985 and 1990, when the remuneration for local administrators was based on a step-function of the municipality population. We leverage this feature to implement a regression-discontinuity analysis around the 5,000 inhabitants threshold – where mayor's wage increases by almost 30% – to evaluate the causal effect of higher remuneration on the characteristics of the elected councillors and the (council-elected) mayor and executives. To account for the presence of a confounding treatment around the same population threshold – the electoral rule also changes from a majoritarian to a proportional representation system for municipalities above 5,000 inhabitants – we limit our sample to *stronghold* municipalities, where the leading party is expected to win the majority of the votes (albeit still with a significant degree of uncertainty). By doing so, we make sure that the probability that a party achieves a self-sufficient majority (i.e., that it obtains the majority of seats in the council, and thus can form a single-party government) is similar below and above the threshold, regardless of whether seats are allocated under a majoritarian or proportional rule.

We provide three main findings. Consistent with the existing literature on the selection of local politicians, we find that (i) higher expected wages result in more educated members of the local council (+0.8 year of schooling on average) and in (ii) better educated executives (+0.6 years of schooling). However, (iii) higher expected wages do not result in better educated mayors: while mayors in control (low-wage) councils are almost 2 years more educated than the median councillor and the median executive, this difference nearly vanishes in high-wage councils.

To rationalize this counterintuitive finding, we adapt and extend the model by Gagliarducci, Nannicini, and Naticchioni (2010). The proposed mechanism is based

[1] As emphasized by Dal Bó and Finan (2018), quality is a loaded term but in the political economy literature it usually indicates performance-relevant traits like competence or integrity. In this paper we focus on the competence (i.e. skills) aspect of quality and, following the literature, we mainly use educational attainment (years of schooling) to proxy the individual quality of an elected politician. However, we also propose alternative measures of politicians' skills for robustness checks in support of our results such as previous occupations.

on a key assumption: moonlighting (i.e. the possibility to work and earn outside income in the private sector while in office) is easier for executives rather than for mayors. We show that under some plausible conditions, better educated councillors shy away from better paid but full-time positions (mayors), rather opting for less-paid but more flexible positions (executives) which allow them to enjoy an income outside their public office. We provide evidence for this mechanism by exploiting the heterogeneity in the possibility of "moonlighting" associated to different occupations. We find that appointed councillors and executives are more likely to be employed in occupations that allow them to moonlight – for instance, self-employed professionals such as lawyers and engineers. Conversely, mayors are more likely to be retired (often with a degree), and thus their outside income does not depend on the time spent in political activities.

Our study suggests that the effects of monetary incentives can vary across institutional settings. Comparing our results to those of Gagliarducci and Nannicini (2013) – who perform a similar regression-discontinuity strategy to identify the effect of wage bonuses on political selection *after 1993* – leads to opposite conclusions. The authors find that candidate mayors in high-wage municipalities are positively selected, and that this result in *better* educated mayors. However, in the framework studied by Gagliarducci and Nannicini (ibid.), mayors were directly elected by citizens and executives were appointed by the mayor, even from outside the council. Conversely, in our context the executives, as well as the mayor, are elected within and by the council. These institutional differences are key to explain the discrepancy in the two results, and why we find that elected mayors are on average *worse* than average in high-pay municipalities. In this perspective, our findings highlight that the parliamentary stage of the election process can undo the positive selection effect of monetary incentives. We believe that this result has important implications, as parliamentary forms of government are still widespread in many countries.[2]

More generally, our results are related to the literature on political selection and its implication on general well-being. Good policies are also the result of good politicians, both at the national (Besley, Montalvo, and Reynal-Querol (2011); Jones and Olken (2005) among others) and the local level (Chattopadhyay and Duflo (2004) and Meyersson (2014) among others). The thriving literature on topics related to political selection seems, therefore, highly motivated.[3] One question that received more attention is whether we can "buy" better politicians. However, the evidence on whether higher rewards from office improve politicians' quality remains inconclusive. On one hand, some recent works support a positive causal relationship between the wage and quality (commonly proxied with educational attainment and previous occupations) of elected local politicians. Besides the above-cited Gagliarducci and Nannicini (2013) (for

[2]Local parliamentary system are in place in Ireland, France, Portugal, Sweden, Czech Republic, Croatia, Denmark, Estonia, Finland, Latvia, Lithuania, Norway and in most UK and Russian municipalities (`http://www.citymayors.com/government/europe_mayors.html`)

[3]Recent developments on political selection are surveyed and discussed by Dal Bó and Finan (2018).

Italian municipalities), these works include Dal Bó, Finan, and Rossi (2013) (for Mexican municipalities), Ferraz and Finan (2009) (for Brazilian municipalities), and Dal Bó et al. (2017) (for Sweden municipalities). On the other hand, other works focusing on politicians at the national or supranational level find no significant evidence of a positive causal relationship between pay and quality (as in Kotakorpi and Poutvaara (2011) and Hoffman and Lyons (2015), focusing respectively on Finnish and U.S. legislators) or even suggest that such a relationship is negative (as in Fisman et al. (2015) and Braendle (2015), both focusing on members of the European Parliament).

We also relate to other recent works dealing with the impacts of electoral rules. Gulino (2021) also uses micro-level data on Italian municipal elections to evaluate how the change from majority to proportional rule at the 5,000 threshold affects the probability of re-election of mayors.[4] Hessami (2018) exploits a quasi-experiment at the level of German municipalities to study the effect of the selection rule for mayors on their policy choices, finding that directly elected mayors attract significantly more grants in election years while there is no cycle for council-elected mayors. Finally, Enikolopov (2014) focuses on U.S. local government to study the difference between directly elected vs. council-appointed mayors on politically motivated targeted redistribution finding that appointed bureaucrats are less likely to use targeted redistribution than elected politicians and that this difference is, at least in part, driven by the difference in their career concerns.

The rest of the paper is organized as follows. Section 2 outlines the institutional setting. Section 3 presents the data and the identification strategy. Section 4 is devoted to the description of the main results while Section 5 discusses the possible mechanisms. Finally, section 6 concludes.

2 Institutional setting

2.1 Local government in Italy

We focus on the elections of mayors in Italian municipalities from 1985 to 1990. Municipalities are the third and last level of administrative divisions in the Italian state. They are responsible for the provision of essential public goods such as local transportation, water supply, waste management, housing, and other welfare policies.

The government of the municipality is composed of the following bodies:

- **The elected council** (*Consiglio Comunale*) is the local parliament and holds the legislative power together with the mayor, as it has the power to approve or reject

[4] Micro-level data on Italian municipalities (1985-1992) are also used by Daniele and Geys (2015) to show that the average education level of local politicians significantly increases when active mafia infiltration of local politics is remedied through the implementation of a stricter legal-institutional framework.

Table 1: *Legislative thresholds for Italian Municipalities 1985-1992*

(1) Population	(2) Size Council	(3) Size Ex. comm.	(4) Wage mayor	(5) Wage Ex. comm.	(6) Wage Council	(7) Fee Council	(8) Electoral Rule
Below 3,000	15	4	1,446	0%	0%	18	Majority
3,000-5,000	**20**	**6**	**2,169**	**0%**	**0%**	**18**	**Majority**
5,000-10,000	**20**	**6**	**2,789**	**45%**	**0%**	**18**	**Proportional**
10,000-30,000	30	6	3,099	45%	0%	22	Proportional

Notes: This table describes how the institutional features of the Italian municipalities vary depending on the municipality population. The wage of the mayor is defined as the gross wage measured in euros at 2000 prices. The wage of the executive committee and the wage of the councillors are expressed as a percentage of the wage of the mayor. Fee Council is the per-session reimbursement (in euros) paid to councillors. The table is adapted from Gagliarducci and Nannicini (2013) and Grembi, Nannicini, and Troiano (2016).

policies promoted by the local government;

- **The mayor** (*Sindaco*) is the head of the local government and holds the legislative and executive power;
- **The executive committee** (*Giunta*) is the municipality government.

Until 1992, all Italian municipalities were ruled by a parliamentary system.[5] Hence, citizens could only vote for parties and local members of the council. After the election, the elected councillors appoint the mayor and the executive committee from *within their ranks*.

2.2 Politicians' wage and electoral rules across population thresholds

Since 1963, the remuneration of the mayor has been an increasing step function of the population size in the municipality, as measured by the national Census. Table 1 from Gagliarducci and Nannicini (2013) and Grembi, Nannicini, and Troiano (2016) reports the details of this step function for the period 1985-1992.[6] Our analysis focuses on the

[5] In March 25, 1993, the National Parliament approved the Law no. 81 which represented a radical change in the form of the local government as the system shifted from a parliamentary to a presidential one.

[6] Nominal salaries have been adjusted almost every year to account for price inflation, so that real values within each population bracket have remained almost unchanged, in line with the trend in national per capita income. As observed by Gagliarducci and Nannicini (2013), "The average real disposable income remained almost unchanged from the beginning to the end of the 1990s in Italy, decreasing in the first half and returning to the initial level in the second half. Since adjustments were applied uniformly to all municipalities, the relative wage between different population brackets also

Table 2: *Electoral systems*

	Below 5,000	**Above 5,000**
Electoral System	Plurality system plurinominal; Majority bonus to the party that obtains the relative majority which allows the latter to obtain the majority of seats in the council	Party-List Proportional (D'hondt method): council seats allocated to lists proportionally to the votes they obtain
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
Electoral districts	Single	Single
Number of preferences	4/5 of seats in the council	4

Notes: This table summarizes the electoral system in municipalities above and below the 5,000 inhabitants thresholds during the 1985-1992 period. The table is adapted from Baldini (2002) and Gulino (2021).

5,000 inhabitants threshold which induces a sharp increase in the mayor's wage from 2,169 to 2,789 euros (measured in terms of 2000 prices), corresponding to an increase of almost 30%. The same threshold also determines an increase in the executives' remuneration, which is directly tied to the mayor's wage. While members of the executive committee do not receive compensation in municipalities smaller than 5,000 inhabitants, they receive a salary defined as the 45% of the mayor's one and thus equivalent to 1,255 euros in 2000 prices. By contrast, the remuneration of councillors is invariant across the 5,000 threshold. However, since the councillors appoint both mayors and executives among themselves, each councillor has an ex-ante positive expected wage, and the latter sharply increases above the 5,000 threshold.[7]

The remuneration of mayors and executives is not the only policy that varies across

remained identical across time." (p. 377).

[7]To give an example, assuming that the probability of being appointed as mayor for the *representative* councillor is equal to $\frac{1}{Council\ size}$ while that of becoming executive is $\frac{Giunta\ size-1}{Council\ size}$, then the expected wage of the representative member of the council in a municipality with population p, $E[w_{c,p}]$, is

$$E[w_{c,p}] = w_{m,p}\frac{1}{Council\ size_p} + f_p\frac{Giunta\ size_p - 1}{Council\ size_p}$$

where $w_{m,p}$ is the mayor's wage in municipalities with population p (Column 4) and f_p is the remuneration of executives in municipalities with population p expressed as fraction of the mayor's remuneration (Column 5). This expression entails an increase of the expected wage for the representative councillor from around 108 euros below 5,000 inhabitants to around 453 euros above 5,000.

thresholds. In particular, the 5,000 threshold also determines the electoral rule. Table 2 summarizes the electoral system at the two sides of this threshold. The main difference between these two systems is the rule transforming votes to seats. Below 5,000 inhabitants, the party obtaining the relative majority of votes gains the absolute majority of seats (i.e. not less than 10) whatever their share of citizens' votes. This is not the case in municipalities above 5,000 inhabitants, where council seats are allocated to each party-list proportionally to the share of citizens' votes according to the D'Hondt method. Accordingly, a party-list obtains the absolute majority of seats only if the share of votes received is large enough. A major implication of this feature, which is crucial for our identification strategy, is that municipalities below the 5,000 inhabitants are relatively much more likely to display a *single-party government* compared to municipalities above the 5,000 thresholds where different parties are more likely to negotiate to find a post-election agreement and which are therefore relatively more likely to display a *coalition government.*

3 Data and Identification Strategy

3.1 Data

Our analysis exploits rich administrative data from the Italian Ministry of Internal Affairs. Information on the characteristics of elected officials (mayors, councillors, and executives) come from the *Anagrafe degli amministratori locali e regionali*, an online database that is updated annually.[8] This database includes all members of the regional, provincial, and municipal governments and councils and covers all local elections from 1987 to nowadays. For each politician, the *Anagrafe* reports the position, date of appointment and election, and personal information such as age, gender, highest educational attainment, party affiliation, and (self-declared) previous occupation. As these data do not include the number of votes and the vote share of each party in the local elections, we gather this information from historical reports, available only in paper format at the Ministry of Internal Affairs. We also collect municipality-level data on the national elections from 1983 to 1992, reporting, for each municipality, the number of votes received by each party.

We combine these data sources in a council-level panel dataset, covering all the municipal elections held in Italy from 1985 to 1990. For most municipalities in our sample, we have two data points (in 1985 and 1990), although for a smaller group (about 1,100 municipalities) we only observe one election (in 1988).

[8] Anagrafe degli Amministratori Locali e Regionali - https://dait.interno.gov.it/elezioni/anagrafe-amministratori

3.2 Empirical strategy

We assess the causal effect of monetary incentives on the characteristics of local politicians in a Regression Discontinuity Design (RDD) framework by exploiting the population thresholds described in Table 1. Specifically, we focus on the 5,000 population threshold as it entails large wage increase while limiting the number of possible confounders. Differently from the case of the 3,000 and 10,000 thresholds, the size of both the Council and the Executive Committee does not vary when crossing the 5,000 population threshold.[9]

We estimate the following equation

$$X_{itn} = \delta + Above5000_{it}\gamma + f(P^*_{it})\lambda + \varepsilon_{itn} \tag{1}$$

where X_{itn} is a vector of characteristics of the Politician n in municipality i in electoral term t, P^*_{it} is the distance, in terms of population, of municipality i from the 5,000 inhabitants threshold, $Above5000$ is a dummy variable equal to 1 when $P_i \geq P_c$, and $f(\cdot)$ is a function of the distance from the threshold $P^*_{it} = P_{it} - P_c$. The municipality population is based on the last National Census before the election. Errors ε_{itn} are clustered at municipal level. We estimate Equation (1) non-parametrically (LLR) within the symmetrical MSE-optimal bandwidth defined following Calonico et al. (2017).

Our identification strategy relies on the assumption that municipalities just above and below the thresholds are (on average) identical except for the wage increase (the treatment) of the local administrators. Two potential issues threaten the validity of this assumption: 1) the presence of confounding treatments; 2) strategic sorting around the thresholds.[10] In the following two subsections, we discuss in detail these issues.

3.3 Confounding treatments

In the period under study, the 5,000-inhabitants cutoff also determines the change from a majority to a proportional rule. Hence, this additional treatment can hamper the interpretation of the threshold crossing effect as the pure impact of the wages politicians' characteristics. Majority and proportional representation systems differ in how vote share translates into seat shares, as the former implies a winner-takes-all principle. Hence, municipalities to the left of the 5,000 cutoff – that is, under a majoritarian system – are relatively more likely to display a single-party government than municipalities to the right of the cutoff – under a proportional representation system – where coalition

[9] Also Gagliarducci and Nannicini (2013) consider the 5,000 population threshold to assess the impact of wage increase in the quality of mayor for the period 1993-2001 (when a direct election and a local presidential system was in place). Our analysis can thus be directly compared to theirs so as to evaluate the impact of different institutional arrangements.

[10] For an extensive review of RD design based on population threshold see Eggers et al. (2018).

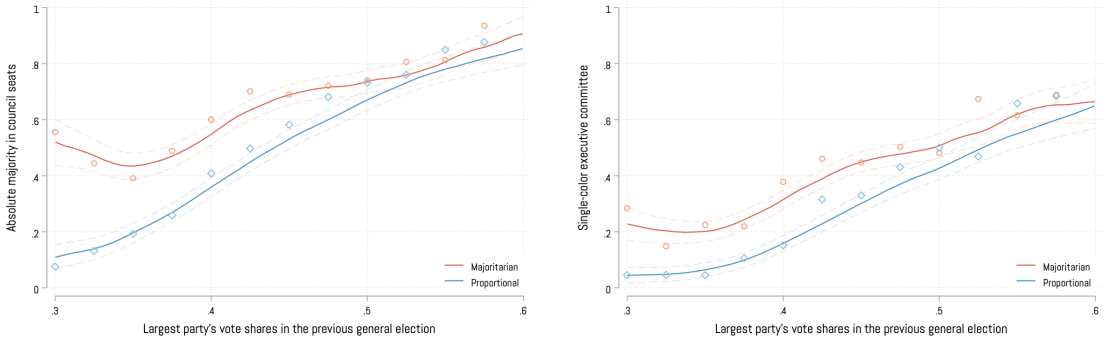
governments are much more common.[11] This difference can have direct implications on the choice of the mayor – or the electoral committee – if coalition and single-party governments have different preferences regarding the characteristics of the leaders. Hence, this treatment is a possible confounder to our analysis as it can impact the education of local politicians on the two sides of the cutoff even in the absence of a wage increase.

To address this concern, throughout our analysis we (also) focus on a subset of municipalities where the leading party is expected to have a large-enough electoral support win to neutralize the difference in the seat allocation system. An (expected) clear-cut win – a single party receiving about half of the votes – guarantees that under a proportional representation or a majoritarian system the winner has the same probability of obtaining the absolute majority of councillors and, in turn, choosing the mayor and executive committee. We proxy the expected vote shares with the result of the last general election (at the municipal level). We do so as the electoral system in the general election – a pure proportional representation system in the period under study – does not change with a municipality population, and thus mirrors each party's local support. Conversely, defining strongholds by using the outcome of the local election itself would lead to overestimate their number when the electoral system is majoritarian. A majority electoral system, according to the well-known Duverger's law (Duverger, 1959), may induce voters to concentrate their preferences on one of the major parties (strategic voting). This hypothesis is confirmed in Appendix Figure A2, where we plot the distribution of the vote share obtained by the leading party in the municipal (Panel A) and general elections (Panel B), separately for municipalities under a majoritarian or proportional system in the municipal elections. In Panel A, the vote distribution in majoritarian municipalities is shifted to the right compared to that in proportional representation ones. In Panel B, the two distributions overlap almost perfectly.

Several empirical exercises lend support to our strategy by showing that, when the leading party has a high-enough level of political support, it achieves a self-sufficient majority regardless of the electoral system. The two panels of Figure 1 summarize this result, by showing the relationship between a party (expected) consensus, defined as its vote share in the previous general election, and the probability of gaining the majority of seats in the city council (Panel A) and the probability of forming a single-party executive committee (Panel B). Both panels reveal that municipalities under a majoritarian or proportional representation system have diverging patterns when there is not a clear leading party ('battleground' municipalities). However, they converge to the same path when the political support for the largest party approaches 50% ('stronghold' munici-

[11] On the different implications of majoritarian and proportional system, see for instance Cox (1990) and Lijphart, Aitkin, et al. (1994). Also, Persson, Roland, Tabellini, et al. (2007) propose a model to study how different electoral rules affect government spending. They argue that the impact of the electoral rule is only indirect: proportional elections induce a more fragmented party system and a larger incidence of coalition governments than do majoritarian elections and electoral competition inside coalition governments induces higher spending than under single party governments.

Figure 1: *Single-party governments under a majoritarian and proportional electoral system*



a. Absolute majority of seats *b. Single-party executive committee*

Notes. The figure depicts how the probability of a single-party government varies with the share of votes obtained by the largest party in the previous general election, separately for municipalities under the majoritarian or proportional electoral rule. In Panel A, the outcome considered is the probability that a party has the absolute majority of seats in the council. In panel B, it is the probability of observing a single-party executive committee. Circles and diamonds represent bin-specific averages (of width 0.025). The solid line displays the predicted values from kernel-weighted local polynomial regression, along with the associated 95% confidence bands.

palities). To provide further support to this argument, in Table 3 we present the results from estimating a series of regression-discontinuity equation of the form of Equation 1, where the outcomes are the same proxies for a single-party majority considered in Figure 1. In Column 1, we present the results for the whole sample of municipalities, while in Column 2 to 5 we define battleground and stronghold municipalities by splitting the sample into four groups based on the quartiles of the largest party's expected vote share. The estimates reported in both Panels suggest that the electoral system becomes irrelevant in terms of seat allocation when the leading party has an expected vote share of at least 45%. In the whole sample, crossing the 5,000 inhabitants threshold – that is, moving from a majority to a proportional system, determines a significant reduction in the probability that a party gains the absolute majority of seats of 12 percentage points (Panel A). Similarly, the regression discontinuity coefficient is negative and significant (-0.07) when we look at the probability that we observe a single-party executive committee (Panel B). However, this difference is fully driven by municipalities where there is not a clear leading party. When restricting the sample to municipalities where the vote share of the leading party exceeds 45%, this difference is no longer significant as it converges towards a precise zero.

Importantly, our definition of stronghold and battleground municipalities does not necessarily imply that the outcome of the election is ex-ante fully predictable. The evidence presented in Figure 1, as well as the mean of the dependent variable reported

Table 3: *Party electoral support and seats allocation*

***Panel A*: Absolute majority in council**					
	Whole sample	By largest party's vote share			
	(1)	(2)	(3)	(4)	(5)
		<38%	38-45%	45-53%	>53%
> 5000 pop	-0.118***	-0.215***	-0.252***	-0.023	-0.063
	(0.039)	(0.069)	(0.066)	(0.058)	(0.074)
Mean dep. var.	0.630	0.380	0.551	0.723	0.879
BW	3158.53	3311.14	3352.84	3803.69	2259.53
Observations	5661	1415	1815	1966	741

***Panel B*: Single-party executive committee**					
	Whole sample	By largest party's vote share			
	(1)	(2)	(3)	(4)	(5)
		<38%	38-45%	45-53%	>53%
> 5000 pop	-0.067*	-0.081*	-0.192***	-0.009	-0.066
	(0.037)	(0.043)	(0.059)	(0.066)	(0.107)
Mean dep. var.	0.431	0.216	0.333	0.497	0.690
BW	4189.29	3462.24	4105.73	4180.60	2254.60
Observations	9418	1515	2571	2287	741

Notes. This table describes how the probability of a single-party municipal government varies depending on the vote share of the leading party. The table reports the coefficient from a regression discontinuity equation of the form of Equation 1, where the dependent variable is a binary indicator that takes value one if a party achieves the absolute majority in the city council (Panel A), or a binary binary indicator that takes value one if the there is a single-party executive committee (Panel B). The unit of analysis is a municipality×election. In Column 1, the sample includes all observations. In Column 2 to 5, the sample is restricted to observation according to the vote share that the largest party received in the general election preceding the municipal election. The four subsamples in Column 2 to 5 are defined based on the quartiles of the vote share distribution. $> 5,000$*pop. is an indicator that takes value one for municipalities whose population falls above the 5,000 inhabitants threshold, and zero otherwise. The table also reports the MSR optimal bandwidth computed following Calonico, Cattaneo, and Titiunik (2014), and the mean of the dependent variable and the number of observations within the bandwidth. SE are clustered at the municipality level.* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

at the bottom of Table 3 suggest that, even in stronghold municipalities, there is a non-negligible probability that the party expected to win does not actually gains the absolute majority of seats. Moreover, the probability of imposing a single-party executive committee is below 70% even when we consider municipalities where a single party achieved more than 53% of the total number of votes in the general election (thus being in the top quartile). Hence, by imposing the stronghold sample restriction we are not implicitly eliminating the incentives for politicians to compete for higher expected wages for candidates, as there is scope for both within- and between-party competition. Appendix Figures A3 provide additional support along these lines, by showing that even in stronghold municipalities the probability that the leading party loses the ma-

jority between two elections ranges between 25% and 40% (depending on the variable considered). Furthermore, while the likelihood that councillors from a minority party are appointed as executives or mayor in subsequent elections is lower in strongholds than in battleground municipalities, the probability is still significantly greater than zero in the latter case.

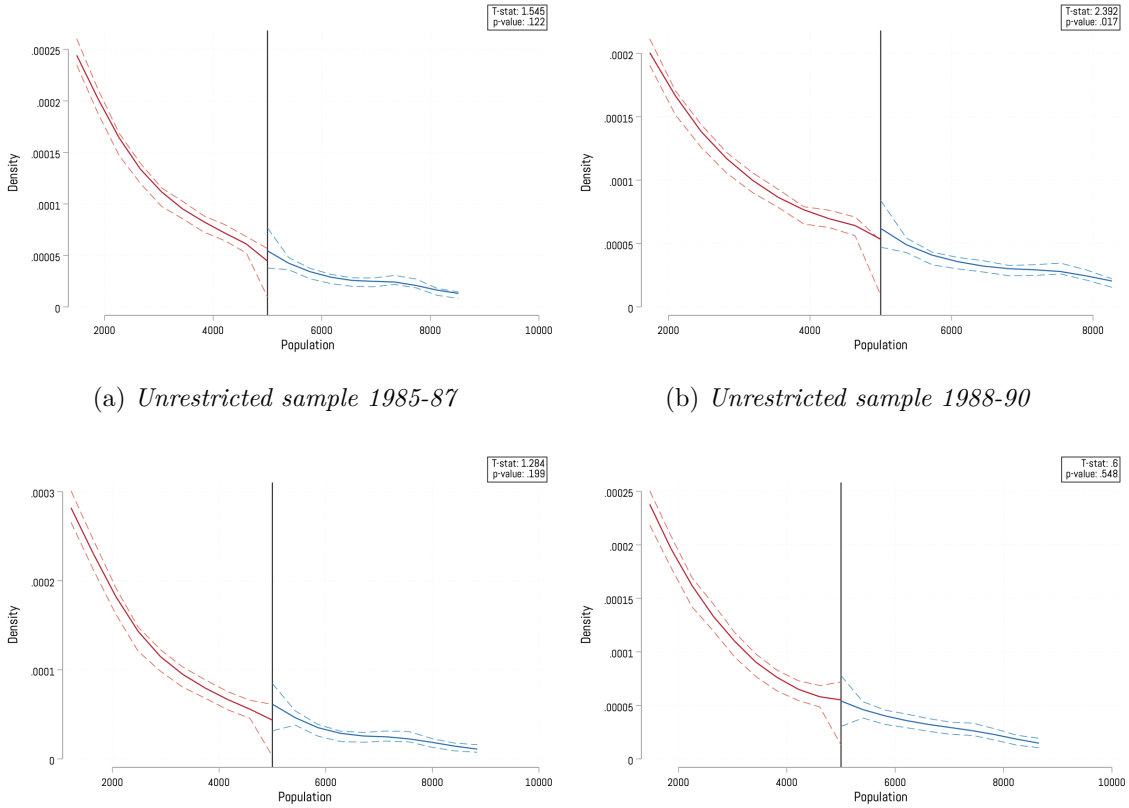
Lastly, in Appendix Table A1, we report some summary statistics on the characteristics of the councillors, members of the executive committee, and mayors considering both the overall sample and the subset of stronghold municipalities. The two samples do not exhibit meaningful differences in terms of all of the politicians' characteristics considered (which include age, gender, and education).

3.4 Validity tests

The validity of our identification strategy relies on the assumption that municipalities cannot sort across the population threshold. Manipulation of the running variable would jeopardize the exogeneity of the treatment and the evaluation of its causal effect. We test for the validity of this assumption by implementing the manipulation test developed by Cattaneo, Jansson, and Ma (2018) based on a local-polynomial density estimation technique.

In Figure 2, we present the results from the manipulation test for the entire sample of municipalities (Panels A and B) as well as for the sample of stronghold municipalities (Panels C and D). Our sample covers at least two electoral cycles, so we observe each municipality and its running variable at least twice. For this reason, we report the test results separately for two electoral cycles: 1985-1987 and 1988-1990. The estimated densities in Figure 2 show no significant discontinuity when considering our stronghold sample. Although we observe a statistically significant discontinuous jump for the second electoral term (1988-1990) in the overall sample, this finding is specific to one electoral term and disappears when we focus on strongholds. Furthermore, we find no discontinuity in any of the samples when we test for covariate smoothness at the cutoff. Our treated (barely above-cutoff) and control (barely below-cutoff) municipalities do not exhibit any significant difference for any of the pre-determined variables considered. The results from this exercise are presented in Tables A2 and A3 in the Appendix. Taken together, these findings strongly support our identification strategy, alleviating the concerns about possible manipulation of the running variable.

Figure 2: *Manipulation test*



(a) *Unrestricted sample 1985-87*

(b) *Unrestricted sample 1988-90*

(c) *Strongholds 1985-87*

(d) *Strongholds 1988-90*

Notes. This figure illustrates the results from the manipulation diagnostics developed by Cattaneo, Jansson, and Ma (2018). We present the test results separately for two electoral cycles: 1985-1988 and 1990-1990. Manipulation test for the whole sample of municipalities are reported in Panels A and B, while Panel C and D considers only the sample of stronghold municipalities.

4 Results

Here we report the results of the regression discontinuity analysis described above. We present these results separately for the entire sample and the stronghold sample of municipalities. The latter group is defined – based on the discussion in Section 3.3 – as those municipalities where the largest party received at least 45% of the votes in the previous general elections. Nonetheless, we show in the Appendix that our findings remain robust for different definitions of this cutoff vote share (Appendix Figure A5).

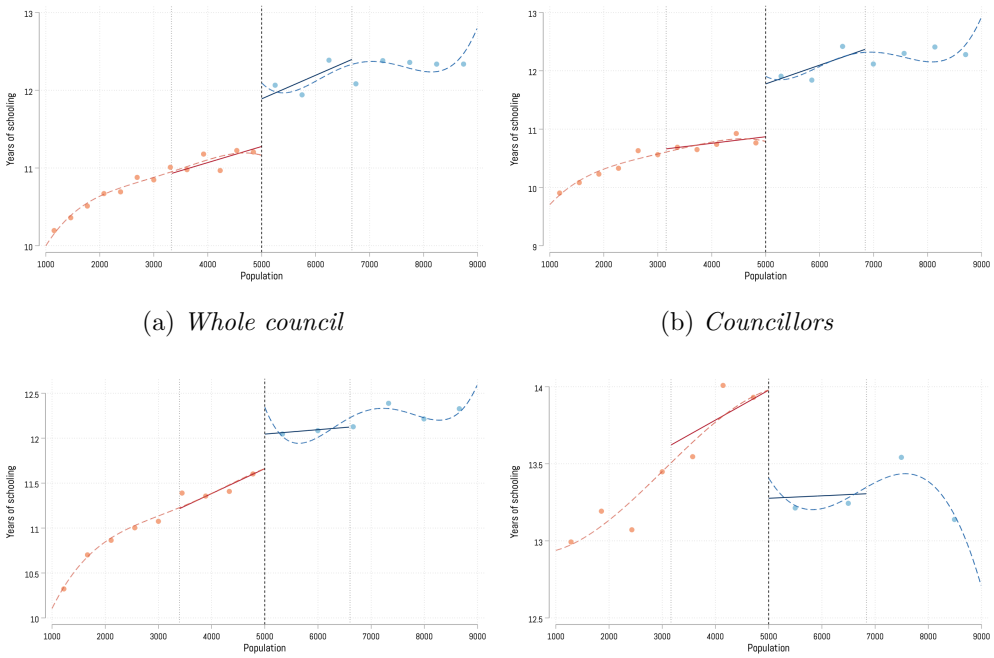
Figure 3 depicts the discontinuity in the education of politicians around the 5,000 inhabitants threshold for the stronghold sample. The four panels present our main

measure of education – years of schooling – considering four different subgroups: the whole set of members of the elected council (Panel A), those who are councillors but neither mayor nor executives (Panel B), those who are appointed executives (Panel C) and those who are appointed as mayor (Panel D).

Figure 3 shows that local politicians elected in (barely) above-cutoff municipalities have, on average, more years of schooling than their counterparts in municipalities that are (barely) below the cutoff. Panel A shows a positive discontinuity for the whole council, which includes councillors, executives, and mayors. When looking at the different political offices separately, we observe a similar pattern for both the councillor-only (Panel B) and executive sample (Panel C), although the magnitude of the discontinuity is smaller in the latter case. By contrast, Panel D shows a *negative* jump for mayors. This suggests that a more educated council does not necessarily result in a more educated mayor, and in fact, it may lead to a *less* educated one. Importantly, this finding is unlikely to be explained by a "ceiling" effect, according to which the education of councillors increases more than that of mayors because the latter is already high, thus making it difficult to increase further. As shown in Figure 4, the predicted distribution of education within councils in control (low-wage) and treated (high-wage) municipalities indicates that the appointed mayor ranks 7th out of 20 in control municipalities and 8th out of 20 in high-wage municipalities, which implies that the mayor's education level is far from being at its maximum. Additionally, Figure 4 reveals that the increase in councillors' education due to higher wages is mainly concentrated in the mid-top and mid-bottom of the skill distribution.

These findings are also presented in Table 4. In Panel A we consider the entire sample of municipalities, while in Panels B and C we focus on stronghold municipalities. In the overall sample, we find that higher wages induce an increase in the education of council members of about 0.7 years of schooling. This effect is statistically significant at the 99% confidence level and sizable, representing a 6% increase compared to the control group mean (i.e., the average education in below-threshold councils). The effect is driven by a positive selection of councillors (+0.9 years of schooling) and executives (+0.3 years of schooling). Conversely, the effect of threshold crossing on the education level of mayors is negative, although not statistically significant. This pattern becomes even more evident when we account for the change from the majority to the proportional rule – which also occurs around the same cutoff – by restricting the analysis to the sample of stronghold municipalities. Panel B shows that higher wages result in a council that is, on average, 0.8 years more educated (+7%). This increase is common to all political offices, except for mayors (-0.49 years of schooling, non-significant). Finally, in Panel C, we report the estimates for the effect of the high remuneration policy on politicians' education expressed in relative terms. Specifically, we report the threshold-crossing effect on the education gap between the mayor and the median councillor (Column 1), the mayor and the median executive (Column 2), and the median executive and the median councillor (Column 3). Low-wage councils tend to elect mayors with

Figure 3: *The effect of higher wages on politicians' education*

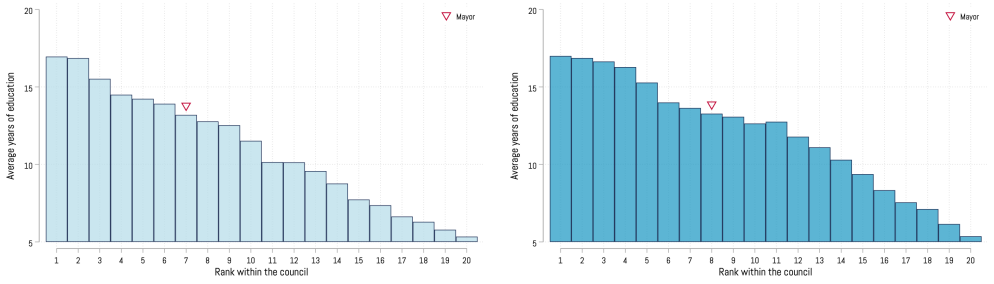


(a) *Whole council* (b) *Councillors*

(c) *Executives* (d) *Mayors*

Notes. This figure depicts how the education of local politicians change depending on the municipality population. Panel A considers the whole council, which includes councillors, executives, and the mayor. Panel B, C, and D focus on each of these offices separately. The solid lines represent the prediction from a local linear regression within an optimal symmetric bandwidth – the vertical dotted lines – while the dashed lines the prediction from a 3rd order polynomial approximation of the outcome variable. Circles represent bin-averages, where bins are defined using the data-driven approach proposed by Calonico, Cattaneo, and Titiunik (2015). The sample includes only stronghold municipalities.

Figure 4: *Within-council education distribution*



(a) *Low-wage municipalities* (b) *High-wage municipalities*

Notes: This figure depicts the predicted distribution of councillors below (Panel A) and above (Panel B) the threshold. In both panels, predictions are obtained from a set of RD regressions of the form of Equation 1 where the outcome is the number of years of schooling of the councillor ranked j (for $j \leq 20$) within the council education distribution. Triangles indicate the predicted within-council education rank of the mayor. The sample includes only stronghold municipalities.

Table 4: *The effect of higher wages on politicians' characteristics (I)*

***Panel A*: All sample**

	Whole Council	By appointment		
	(1)	(2) Councillors	(3) Executives	(4) Mayor
> 5000 pop	0.695***	0.899***	0.306*	-0.433
	(0.121)	(0.136)	(0.167)	(0.323)
Mean dep. var.	11.672	11.422	11.855	13.542
BW	1534.86	1650.99	1726.36	2289.37
Observations	43847	31786	13746	3523
N. of municipalities	1331	1433	1508	2107

***Panel B*: Stronghold sample**

	Whole Council	By appointment		
	(1)	(2) Councillors	(3) Executives	(4) Mayor
> 5000 pop	0.803***	1.006***	0.563**	-0.487
	(0.160)	(0.186)	(0.286)	(0.592)
Mean dep. var.	11.474	11.206	11.665	13.596
BW	1669.65	1850.80	1595.25	1843.87
Observations	22316	16884	5903	1266
N. of municipalities	724	813	697	808

***Panel C*: Stronghold sample (between-offices education gap)**

	(1) Mayor-Median counc.	(2) Mayor-Median exe.	(3) Median exe.-Median counc.
> 5000 pop	-1.568***	-1.354**	-0.233
	(0.532)	(0.590)	(0.348)
Mean dep. var.	1.942	1.820	0.131
BW	2544.25	2443.13	2306.88
Observations	1956	1827	1674
N. of municipalities	1258	1177	1073

Notes: This table reports the threshold-crossing effect on the education – as measured by the number of years of schooling – of the elected council members. The table reports the coefficient from a regression discontinuity equation of the form of Equation 1, when considering the overall sample of municipalities (Panel A) and the stronghold sample (Panel B and C). The dependent variable is the number of years of schooling in Panel A and B, while it is expressed in relative terms (that is, the education gap in terms of years of schooling) in Panel C. Each column in Panel A and B reports the estimated effect for the whole sample of council members (Column 1), the sample of councillors who are not appointed as executive or mayor (Column 2), the sample of executives (Column 3), and the sample of mayors (Column 4). $> 5,000pop.$ *is an indicator that takes value one for municipalities whose population falls above the 5,000 inhabitants threshold, and zero otherwise. The table also reports the mean of the dependent variable for municipalities whose population falls within the interval* $[-BW; 0]$ *(where BW is the MSR optimal bandwidth computed following Calonico, Cattaneo, and Titiunik (2014) and reported below) and the number of within-bandwidth observations. SE are clustered at the council level in Columns (1) to (3), while at the municipality level in Column (4).* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

almost two years more schooling than the median councillor and executive (1.94 and 1.82, respectively), but this difference nearly vanishes in high-wage councils. However, the education gap between the median councillor and the median executive remains close to zero in both low- and high-wage municipalities.

Columns 1-3 of Table 5 report the effect of wages on politicians' education, but

Table 5: *The effect of higher wages on politicians' characteristics (II)*

***Panel A*: Whole Council**

	Education Level			Other Characteristics		
	(1)	(2)	(3)	(4)	(5)	(6)
	< Secondary	Secondary	Degree	Age	Female	Born elsewhere
> 5000 pop	-0.096***	0.049***	0.049***	-0.169	-0.014**	0.024
	(0.018)	(0.015)	(0.013)	(0.318)	(0.007)	(0.025)
Mean dep. var.	0.398	0.376	0.215	39.667	0.076	0.331
BW	1659.94	2058.81	2027.85	3011.46	3885.58	2087.08
Observations	22297	29055	28828	45375	67940	29608
N. of municipalities	723	949	939	1603	2490	964

***Panel B*: Councillors**

	Education Level			Other Characteristics		
	(1)	(2)	(3)	(4)	(5)	(6)
	< Secondary	Secondary	Degree	Age	Female	Born elsewhere
> 5000 pop	-0.124***	0.077***	0.051***	-0.168	-0.010	0.029
	(0.022)	(0.018)	(0.015)	(0.366)	(0.008)	(0.026)
Mean dep. var.	0.429	0.362	0.202	39.188	0.079	0.340
BW	1860.62	2210.43	2268.73	3140.40	4481.65	2121.37
Observations	17082	20804	21315	32310	60365	20330
N. of municipalities	822	1018	1048	1688	3302	985

***Panel C*: Executive committee**

	Education Level			Other Characteristics		
	(1)	(2)	(3)	(4)	(5)	(6)
	< Secondary	Secondary	Degree	Age	Female	Born elsewhere
> 5000 pop	-0.054	-0.014	0.064**	-0.006	-0.023	0.058
	(0.035)	(0.034)	(0.027)	(0.696)	(0.016)	(0.042)
Mean dep. var.	0.372	0.407	0.216	39.935	0.080	0.323
BW	1512.77	1739.80	2234.47	2070.66	2550.39	1520.88
Observations	5511	6423	8518	8070	9920	5578
N. of municipalities	651	759	1034	956	1261	656

***Panel D*: Mayor**

	Education Level			Other Characteristics		
	(1)	(2)	(3)	(4)	(5)	(6)
	< Secondary	Secondary	Degree	Age	Female	Born elsewhere
> 5000 pop	0.051	-0.015	-0.048	-1.270	0.020	-0.008
	(0.071)	(0.078)	(0.074)	(1.310)	(0.023)	(0.073)
Mean dep. var.	0.178	0.425	0.390	43.780	0.025	0.279
BW	1793.58	2163.73	2376.62	2285.61	3095.84	2302.63
Observations	1222	1561	1770	1655	2620	1674
N. of municipalities	781	1000	1135	1059	1663	1071

Notes: This table reports the threshold-crossing effect on the education attainment and demographics of the elected council members for the sample of stronghold municipalities. Panel A reports the estimated effect for the whole sample of council members; Panel B, C and D report the analogous estimates for the sample of councillors-only (those who are not appointed as executive or mayor), the sample of executives, and the sample of mayors, respectively. In all panels, the dependent variables in Column 1 to 3 are a set of binary indicators taking value one if the politicians education attainment is below secondary, secondary, or above secondary (degree), respectively. In Column 4 to 6 these are a set of demographic variables: age (in years), gender, and a binary indicator for politicians who are born in a different municipality. $> 5,000$*pop. is an indicator that takes value one for municipalities whose population falls above the 5,000 inhabitants threshold, and zero otherwise. The table also reports the mean of the dependent variable for municipalities whose population falls within the interval* $[-BW; 0]$ *(where BW is the MSR optimal bandwidth computed following Calonico, Cattaneo, and Titiunik (2014) and reported below) and the number of within-bandwidth observations. SE are clustered at the council level in Panels A to C, while at the municipality level in Panel D* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

considering three indicators for the attainment levels instead of the continuous measure (years of schooling). The estimates show that the increase in the average education of council members is mostly determined by a decrease in the share of the councillors with a below-secondary education level, and a symmetric increase in the proportion of both those who have completed secondary education, or with a degree. This pattern is especially true for councillors, while for member of the executive committee, we observe a much larger share of graduates (+6 pp.) in treated compared to control municipalities. This coefficient is sizable, as it corresponds to an increase of about 30% compared to the baseline value. The negative coefficient observed for the years of schooling of mayors are mostly due to a decrease in the share of mayors who hold a degree and even high-school diploma (-0.05 p.p.), even if again the estimates are non-significant.

As described in Section 2, councillors have no direct compensation on either side of the threshold. Hence, the discontinuous jump we observe in councillors' education should be interpreted as the impact of an increase in the *expected* wage. Since mayors and executives – whose actual wage is higher above the cutoff – are appointed by and within the council, the expected wages of candidate councillors are also higher *ex-ante*. Importantly, this is true even in stronghold municipalities, where the outcome of the election is far from being fully predictable. In Section 3.3, we document that a substantial degree of uncertainty remains even in municipalities where the largest party is expected to gain over 50% of the total votes. This means that – even in strongholds – there is scope for both inter- and within-party competition, and thus that candidates of all parties have the incentives to compete for these positions and run for higher expected wages. To further corroborate this point, in Appendix Figure A6 we decompose the effect of the wage increase on the probability of observing a more educated council member depending on whether she belongs to the leading party or a minority party. Specifically, we decompose the threshold crossing effect on the probability of observing a graduate council member (+4.9 pp., also reported in Column 3 of Table 5, Panel A) by party affiliation. We find that about half of this effect is driven by (graduate) candidates from the largest party (2.7 pp.). However, we also observe a statistically significant effect for candidates from one of the minority parties (+2.2 pp.). Importantly, these may not necessarily be opposition parties but could also include potential allies, as our data do not allow us to reconstruct the political alliances at the local level. In this light, the uncertainty over the electoral outcome implies that higher expected wages could attract better-educated candidates from opposition parties – who may end up overturn the predictions, even in stronghold – from alleys party – who may enter the government when a narrower-than-expected victory does not guarantee an absolute majority to the leading party – or from the leading party itself – because of intra-party competition for offices.

In Columns 4-6 of Table 5, we examine other characteristics of politicians and find no evidence that the high-wage policy affects the selection and appointment of politicians based on age and gender. We find a large but imprecisely estimated increase

in the proportion of 'foreign-borns' councillors (i.e., from another municipality) when politicians' remuneration is higher, suggesting that higher wages may attract a larger pool of candidates.[12].

These findings are robust to a battery of robustness tests, that we present in Appendix A.2. In particular, our findings are unchanged if we use a different method for the calculation the optimal bandwidth (Table A4), we define stronghold municipalities based on regional and provincial elections rather than the general elections (Table A5), or use different cutoff values to split our sample into battleground and stronghold municipalities (Figure A5). Therefore, our analysis provides robust evidence that a higher remuneration policy leads to positive selection of council members but, surprisingly, does not result in more educated mayors. This finding is novel in the literature, as previous research (Gagliarducci and Nannicini, 2013) found that higher pay increases the education of mayors and candidate mayors in the elections 1993-2001 (when a direct election with a majoritarian system was in place). In the next section, we propose a potential mechanism to explain this seemingly counterintuitive finding.

5 Moonlighting executives

The results we discussed in the previous sections are counterintuitive at first sight. The remuneration of mayors is higher than that of executives, both below and above the 5000 inhabitants threshold. Yet, our regression discontinuity estimates suggest that monetary incentives lead to better-educated executives, but less-educated mayors. In this section, we propose a theoretical model that rationalizes these empirical findings. The intuition behind this model is that in high-pay municipalities more educated individuals would run for a council seat attracted mainly by the probability of becoming executives, as this position allows them to moonlight – i.e., continuing to work on the previous occupation – more easily than the mayor's office. To better formalize this intuition, in the following subsections we explore (and test) the implications of an adapted version of the model proposed by Gagliarducci, Nannicini, and Naticchioni (2010) to study the ex-ante self-selection decision and ex-post behavior of moonlighting politicians.

5.1 Theoretical framework

Our framework considers an indirect electoral system where individuals first decide whether to run for a council seat and subsequently, if elected, decide whether to compete for the mayor or executive position based on the option that provides the highest

[12]This estimates becomes significant at the 90% confidence level when we use an alternative specification for the optimal bandwidth, as shown in Appendix Table A4

expected payoff.[13]

To this purpose, we extend and adapt the model of Gagliarducci, Nannicini, and Naticchioni (2010). There is a population of individuals with ability a, uniformly distributed in the interval $(0, a_{\max})$. The market value of ability is $M(a)$ so that each individual with ability $\tilde{a}$ can earn a market income equal to $M(\tilde{a})$ if she decide to work in the private sector. Income is increasing in ability so that $M'(a) > 0$.

Each individual has the alternative of becoming a politician. In this case the reward is both monetary and psychological. The monetary reward is equal to W_p^k where $k = m, g$ is the type of political office (m = mayor; g = executive) and $s = l, h$ is the municipality population which can be high (h) or low (l). Consistent with the institutional setting presented in Section 2, we assume that $W_h^m > W_l^m > W_h^g > W_l^g = 0$. On the psychological side, we assume that ego-rents accrue from spending time in the council. Most precisely, we assume that a politician of type k obtains an ego-rent $R^k = R$ for each unit of time spent doing politics.[14]

A crucial feature of this model is the possibility, for political office g but not for m, to earn money in the private sector while in office. The motivation behind this assumption is that being a mayor requires a full-time commitment which prevents politicians from moonlight. This is not the case for a member of the executive committee, which could potentially devote (part of) her time to work in the private sector while in office[15]. Potential outside income is assumed to be a function $P(a)$ strictly increasing in ability: $P'(a) > 0$. To start with, as in Gagliarducci, Nannicini, and Naticchioni (ibid.), we remain agnostic on whether the returns to ability $P'(a)$ (for a given time) is higher, lower, or equal to $N'(a)$. $P'(a)$ might be higher than $N'(a)$ when, for instance, the demand for professional services (this could be the case for lawyers and engineers) is boosted by the reputation gained as a politician. On the other hand, $P'(a)$ might be lower than $N'(a)$ if the political activity negatively impacts the productivity of market activities (e.g. because of lack of attention, stress, overburdening, etc.).

Time is scarce, so if politicians devote their time to working in the private sector, their time for political activities (and thereby the rewards from doing politics R) will be lower. Assuming that each individual is endowed with 1 unit of time, we define $e^k \in [0, 1]$ the time spent in political activities for office $k = m, g$.

[13] We model the process of candidate (self-)selection but not the election process. Clearly, the implicit assumption is that less skilled candidate mayors result in less skilled elected mayors or, in other words, that candidates' self-selection has a primary influence on the characteristics of elected politicians.

[14] Gagliarducci, Nannicini, and Naticchioni (2010) assume that positive payoffs (ego rents) accrue both from *being* a politician and from *doing* politics. In other words they assume that ego rents from becoming a politician are made up of both payoff attached to the position itself and payoffs attached to the time spent doing politics. For the sake of simplicity, and without loss of generality, we assume the first to be included in the monetary payoff W.

[15] Notice that main results of the model hold even if moonlighting is also a feasible for mayors but it is sufficiently less "rewarding". Formally, this is the case if their returns to ability $P'(a)$ is not zero but still sufficiently lower than those for executives.

An individual with ability a running for political office k can be elected with a probability of $q^k \in (0,1)$, which is taken as a given. Although this probability is assumed to be invariant across municipalities, it may vary across offices. While this heterogeneity is not crucial to our findings, it does provide some interesting testable predictions. For the purpose of our analysis, we assume that $q^g > q^m$, which implies that individuals believe that they are more likely to be elected as executives than as mayors. This assumption is consistent with the institutional framework we investigate, where, all else being equal, a councilor has a 1/20 chance of becoming a mayor and a 5/20 chance of becoming an executive. In the event that an individual runs for office but is not elected (an occurrence with a probability of $\left(1-q^k\right)$), they will work in the private sector and earn $N(a)$.

In municipality s, each individual with ability $\tilde{a}$ compares their expected payoffs to make three interdependent decisions: 1) whether to run for a political office or not; 2) which political office to run for; and 3) (if they decide to run for the executive office) whether to moonlight and to what extent. In making these decisions, the individual considers their *net* expected payoff, denoted as $E\left(\pi_s^k(a)\right)$, which is defined as follows.

$$E\left(\pi_s^k(a)\right) = \underbrace{q^k\left[W_s^k + e^k R + \left(1-e^k\right)P(a)\right] + \left(1-q^k\right)N(a)}_{\text{Expected payoff from running for office } k} - \underbrace{N(a)}_{\text{Payoff from not running}}, \tag{2}$$

which simplifies into

$$E\left(\pi_s^k(a)\right) = q^k\left[W_s^k + e^k R + \left(1-e^k\right)P(a) - N(a)\right]. \tag{3}$$

An individual with ability a in municipality $s = h, l$ will only run for a political office k if $E\left(\pi_s^k(a)\right)$ is strictly positive.[16] In such a case, the individual will choose $k = m, g$ and the value of $e^k \in [0,1]$ to maximize $E\left(\pi_s^k(a)\right)$ subject to $e^m = 1$ (since mayors cannot moonlight).

Note that we make the simplifying assumption that R, $N(a)$, and $P(a)$ are invariant across political office, implying that mayors and executives share the same psychological reward from politics and the same rule linking ability to market and outside income. Although this assumption may not hold in reality, relaxing it would not generate any relevant additional insight. For clarity and without loss of generality, we assume constant returns to ability, such that $N(a) = na$ and $P(a) = pa$, where n and p are positive constants. Therefore, the net expected payoff becomes

$$E\left(\pi_s^k(a)\right) = q^k\left[W_s^k + e^k R + \left(1-e^k\right)pa - ma\right] \tag{4}$$

[16] For simplicity and without loss of generality, we assume that individuals decide not to run if the expected payoff from running is zero.

5.1.1 Moonlighting and non-moonlighting executives

The decision to run for mayor is simple as it does not influenced by the decision on moonlighting. Thus, by setting $k = m$ and $e^m = 1$ in (4), we obtain the expected payoff from running for mayor in municipality $s = h, l$:

$$E\left(\pi_s^m\left(a\right)\right) = q^m\left[W_s^m + R - na\right] \tag{5}$$

An individual with ability a decides whether to run for mayor based on whether the expected payoff is positive and higher than the expected payoff associated with other political offices.

On the other hand, the decision to run for executive is more complex since it depends on the decision to moonlight. If elected, an executive will choose a value of e that maximizes their net expected payoff, which is the difference between the psychological rewards R and their outside income while in office pa. Conditional on being elected, given the linearity in e of the payoff (4), an executive will choose a value of e which is either 1 or 0, depending on whether psychological rewards R are higher or lower than its outside income while in office pa.[17] More precisely, imposing $k = g$ in (4), the expected payoff of an individual of ability a from running for an executive position in municipality s conditional on the value of e is

$$\begin{aligned} E\left(\pi_s^g\left(a\right)|e^g = 1\right) &= q^g\left[W_s^g + R - na\right] &(6)\\ E\left(\pi_s^g\left(a\right)|e^g = 0\right) &= q^g\left[W_s^g + \left(p - n\right)a\right]. &(7) \end{aligned}$$

As in Gagliarducci, Nannicini, and Naticchioni (2010) we first analyze the decision to moonlight or not (if elected) and later the decision to run for executive. An elected executive is willing to moonlight ($e = 0$) if

$$W_s^g + \left(p - n\right)a > W_s^g + R - na \Leftrightarrow a > \hat{a} \equiv \frac{R}{p}$$

Accordingly, only individuals with sufficient level of ability are willing to moonlight once elected.[18] The decision to run for an executive position hence differs depending on whether the individual is a potential moonlighter ($k = g0$, for $a > \frac{R}{p}$) or a non-moonlighter ($k = g1$, for $a \leq \frac{R}{p}$).

Accordingly we treat moonlighting executives $k = g0$ and non-moonlighting executives $k = g1$ as two distinct political offices

[17] We can of course think of a model where the optimal value of e is an interior solution, but such a complication would not add any relevant insight to our mechanism. Specifically, as long as psychological rewards are less sensitive to ability with respect to outside income, our argument still holds.

[18] To avoid the uninteresting results we assume $\hat{a} < a_{\max}$.

5.1.2 Sorting individuals with different abilities across offices

Our model differs from that of Gagliarducci, Nannicini, and Naticchioni (2010) in three aspects. First, we allow for the possibility of running for three different political offices, each with a different probability of being elected. Second, we restrict moonlighting as being a feature of the executive position only. Third, wages are differentiated across offices and locations. In this framework, we examine how individuals of varying abilities decide to run for office, how they sort into different positions, and how their decisions are influenced by monetary incentives. We focus on the case where returns to ability are lower while in office ($p < n$), which, although not the most empirically relevant scenario, rules out the unrealistic case where no upper bound on ability exists for running as a moonlighting executive. Furthermore, this scenario is the most conservative as our main theoretical predictions hold for a broader range of parameter values when $p > n$.

We now identify the conditions under which the model rationalizes the evidence reported above, i.e. that higher wages increase the ability of candidates for an executive position, but not that of candidates for the mayor office. Accordingly, we start by restricting the parameters' space to the values which are compatible with this prediction. We first define $\gamma = p/n$ – i.e. the returns to ability while in office *relative* to that while not in office – and $z = \frac{q^g}{q^m}$ – i.e the ratio between the probability of being elected executives over that of being elected mayor. We then introduce the following assumption:

Assumption 1.

$$\frac{1}{1-\gamma} > \frac{W_h^m + R}{W_h^g} > z > max\left(\frac{W_h^m + R}{W_h^g + R}, 1 + \frac{W_l^m}{R}\right).$$

The condition $z > max\left(\frac{W_h^m+R}{W_h^g+R}, 1 + \frac{W_l^m}{R}\right)$ ensures that there is a sufficiently high probability of being elected as an executive compared to mayor, which in turn ensures that there is a non-empty set of individuals willing to run for a position of non-moonlighting executives in both small and large municipalities. Similarly, the condition $z < \frac{W_h^m+R}{W_h^g} < \frac{1}{1-\gamma}$ ensures that the same probability is small enough that less-skilled individuals prefer to run for mayor rather than for a moonlighting executive position in large municipalities.

Given the general expected payoffs defined above, we can state the following

Proposition 1 (Ability sorting in small municipalities)**.** *If Assumption 1 holds, the support of the ability distribution in small municipalities is partitioned as follows*

- *Individuals with ability* $a \in \left(0, \frac{R}{n} - \frac{W_l^m}{n}\frac{1}{z-1}\right) \equiv \left(0, a_l^{g0}\right)$ *run for (non-moonlighting) executive*
- *Individuals with ability* $a \in \left[\frac{R}{n} - \frac{W_l^m}{n}\frac{1}{z-1}, \frac{R+W_l^m}{n}\right) \equiv \left[a_l^{g0}, a_l^m\right)$ *run for mayor*

- *Individuals with ability* $a \in \left[\frac{R+W_l^m}{n}, a_{\max}\right)$ *do not run for any office*

Proof. See Appendix A.3 □

Since the individuals' ability is uniformly distributed along each interval, we can easily compute the average ability $\bar{a}_l^k$ of the pool of candidates for political office $k = m, g$ in city l which is, respectively

$$\bar{a}_l^g = \frac{a_l^{g0}}{2} \equiv \frac{1}{2n}\left(R - W_l^m \frac{1}{z-1}\right) \tag{8}$$

$$\bar{a}_l^m = \frac{a_l^{g0} + a_l^m}{2} \equiv \frac{1}{2n}\left(2R + W_l^m \frac{z}{z-1}\right) \tag{9}$$

Since $\bar{a}_l^g < \bar{a}_l^m$, the average ability of pool of candidates for mayor is higher than that for executives in small municipalities (a result which we show in Table 4).

A similar proposition can be stated for large municipalities.

Proposition 2 (Ability sorting in large municipalities)**.** *If Assumption 1 holds, the support of the ability distribution in large municipalities is partitioned as follows.*

- *Individuals with ability* $a \in \left(0, \frac{R}{n} + \frac{zW_h^g - W_h^m}{(z-1)n}\right) \equiv \left(0, a_h^{g1}\right)$ *sort into a non-moonlighting executive position*
- *Individuals with ability* $a \in \left[\frac{R}{n} + \frac{zW_h^g - W_h^m}{(z-1)m}, \frac{W_h^m + R - zW_h^g}{n(1-z(1-\gamma))}\right) \equiv \left[a_h^{g1}, a_h^m\right)$ *sort into the mayor position*
- *Individuals with ability* $a \in \left[\frac{W_h^m + R - zW_h^g}{n(1-z(1-\gamma))}, \frac{W_h^g}{n-p}\right) \equiv \left[a_h^m, a_h^{g0}\right)$ *sort into a moonlighting executive position*
- *Individuals with ability* $a \in \left[\frac{W_h^g}{n-p}, a_{\max}\right) \equiv \left[a_h^{g0}, a_{max}\right)$ *do not run for any office.*

Proof. See Appendix A.3 □

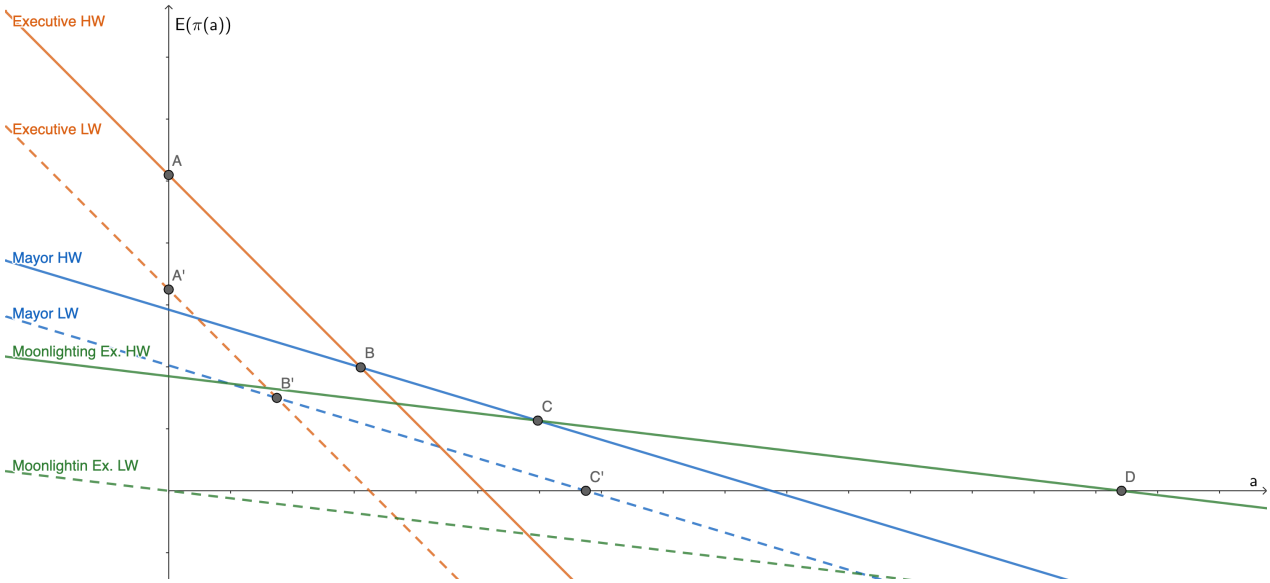
Once again, since abilities are uniformly distributed, we can compute the average ability of the pool of candidates for each position.

$$\bar{a}_h^{g0} = \frac{1}{2}\left(\frac{W_h^g}{n-p} + \frac{W_h^m + R - zW_h^g}{n - z(n-p)}\right) \tag{10}$$

$$\bar{a}_h^m = \frac{1}{2}\left(\frac{W_h^m + R - zW_h^g}{n - z(n-p)} + \frac{R}{n} + \frac{zW_h^g - W_h^m}{(z-1)n}\right) \tag{11}$$

$$\bar{a}_h^{g1} = \frac{1}{2}\left(\frac{R}{n} + \frac{zW_h^g - W_h^m}{(z-1)n}\right) \tag{12}$$

Figure 5: *Ability sorting across offices and municipalities*



Notes. The straight lines are the sixe expected payoffs as function of ability a. Colors indicate the different political offices (green for moonlighting executives, blue for mayors, orange for non-moonlighting executives), while expected payoffs in high and low-wage municipalities are depicted respectively with a thick and a dashed line.

Where, if Assumption 1 holds,

$$\bar{a}_h^{g0} > \bar{a}_h^m > \bar{a}_h^{g1}$$

Notice that the average ability of the pool of candidates for both positions of executive is given by the average between $\bar{a}_h^{g1}$ and $\bar{a}_h^{g0}$

$$\bar{a}_h^g = \frac{1}{4}\left(\frac{W_h^g}{n-p} + \frac{W_h^m + R - zW_h^g}{n - z\,(n-p)} + \frac{R}{n} + \frac{zW_h^g - W_h^m}{(z-1)\,n}\right)$$

Figure 5 provides an illustration of how ability sorting takes place across political offices and municipalities. In small municipalities, individuals with abilities greater than that corresponding to point C' do not run for any office. The candidates for mayor are those with intermediate abilities associated with the segment $B'C'$, while those with lower abilities associated with the segment $A'B'$ prefer to run for a non-moonlighting executive position. In large municipalities, ability sorting is more complex, as there are also candidates for a moonlighting executive position, for which (in this case) the expected payoff is positive when a is sufficiently small. In this case, individuals with abilities greater than the value associated with point D do not run for any political office. Individuals with upper-intermediate ability associated with the segment CD run for a moonlighting executive position, while those with lower-intermediate ability

associated with segment BC run for mayor. Finally, the position of non-moonlighting executive is left to less-skilled individuals with ability associated to segment AB.

The difference in average abilities between the two segments, BC and $B'C'$, determines the "ability jump" for mayors. If the slope of the thick green line (which represents the expected payoffs for moonlighting executives in high-wage municipalities) decreases due to a higher return to moonlighting (p, for instance), point C shifts to the left. This shift reduces the average ability of the pool of candidates for mayoral positions in high-wage municipalities, which may cause the ability jump to become negative, even if wages increase.

Using (11) and (9), we can analitically express the change in the average pool of mayor candidates from low to high-wage municipalities as

$$\bar{a}_h^m - \bar{a}_l^m = \frac{1}{2n}\left[\frac{Rz\,(1-\gamma)}{(1-z\,(1-\gamma))} + \frac{(W_h^m - zW_h^g)\,z\,(2-\gamma)}{(1-z\,(1-\gamma))\,(z-1)} - W_l^m \frac{z-2}{z-1}\right]. \tag{13}$$

Note that the expression (13) can take either positive or negative values depending on the parameter values. If $z < min(\frac{W_h^m}{W_h^g}, 2)$, then it is surely positive since every term inside the square brackets is positive. However, this may not hold if z is large enough, as the first and second terms inside the brackets may become negative and dominate, in absolute value, over the first term, which is always positive.

More generally, the analytical expression for $\bar{a}_h^m - \bar{a}_l^m$ allows us to analyze how each ingredient of the model affects the ability jump for mayors. Specifically, some computations lead to the following comparative statics results holding under Assumption 1:

- $\frac{\partial\left(\bar{a}_h^m - \bar{a}_l^m\right)}{\partial\gamma} < 0$: higher relative returns to ability while in office reduce the ability jump for mayors. An increase in γ makes moonlighting activities more attractive in high-wage municipalities. This implies that more skilled individuals decide to run for a moonlighting executive position rather than for the mayor office, thereby reducing the average ability of mayor above the population cutoff. This theoretical prediction is key in understanding the role of moonlighting in our model and its visual representation has been suggested above.
- $\frac{\partial\left(\bar{a}_h^m - \bar{a}_l^m\right)}{\partial R} > 0$: higher ego-rents increase the ability jump. That happens because, all else being equal, the mayor position in high-wage municipalities becomes relatively more attractive than that of a moonlighting executive and so more skilled individuals prefer to self-select into the former.
- $\frac{\partial\left(\bar{a}_h^m - \bar{a}_l^m\right)}{\partial W_l^m} \geq (<0) \Leftrightarrow z \geq (<) 2$: the impact of higher wages for mayors below the threshold is a-priori ambiguous and its sign depends on the value of z. This is because an higher W_l^m attracts candidates from two disjoint sets: 1) the set

of (relatively low-skilled) individuals formerly running for non-moonlighting positions; 2) the set of (relatively high-skilled) formerly not running for any position. Intuitively, the second effects dominates if the probability of being elected mayor is relatively low as compared to that of executives, so if z is relatively high.

- $\frac{\partial\left(\bar{a}_h^m - \bar{a}_l^m\right)}{\partial W_h^m} > 0$: higher wages for in high-wage municipalities increase the ability jump for mayor. Higher W_h^m makes the mayor position in high-wage municipalities more attractive for skilled and less-skilled individuals but the effect of the former always dominates.
- $\frac{\partial\left(\bar{a}_h^m - \bar{a}_l^m\right)}{\partial W_h^g} < 0$: higher executives' wages in high-wage municipalities reduce the ability jump for mayors. Both skilled and less-skilled individuals in high-wage municipalities are attracted by higher wages for executives position and relatively less attracted by the mayor's one. The effect on skilled individuals always dominates so ability jump for mayors is reduced.
- $\frac{\partial\left(\bar{a}_h^m - \bar{a}_l^m\right)}{\partial z} < 0$: higher probability of being elected executive relative to mayor reduces the ability jump for mayors. An increase in z has three main effects: 1) it makes the moonlighting executive position more attractive in high-wage municipalities so that less high-skilled individuals run for mayor; 2) it makes the non-moonlighting executive position in low-wage municipalities more attractive so less low-skilled individuals run for mayor; 3) it makes the non-moonlighting executive position in high-wage municipalities more attractive so less low-skilled individuals run for mayor. The first two effects lower the ability jump for mayor while the third raises it. However, the first two effects dominate.

5.1.3 A numerical example

To illustrate how a change in either the relative probability of being elected (z) or the ego-rents (R) could affect the ability jump for mayors at the cutoff, we present a simple numerical example. We focus on these two parameters because they are particularly sensitive to changes in the institutional setting, as explained below. Specifically, we examine the parameter vector Ψ_0 in the space Ψ, where Ψ_0 is given by $(W_l^m; W_l^m; W_h^g; R; n; p; q^m; q^g) = (11; 8; 3.7; 7; 1; 0.87; 1; 0.3)$, which satisfies the restriction imposed in Assumption 1, so all of our propositions apply. The average ability of candidates for a (non-moonlighting) executive and mayor position in low-wage municipalities are respectively and approximatively

$$\begin{aligned} \bar{a}_l^{g1}(\Psi_0) &= = 1.784 \\ \bar{a}_l^{m}(\Psi_0) &= = 9.285 \end{aligned}$$

By contrast, the average ability of candidates for non-moonlighting executives, mayor, and moonlighting executives in high-wage municipalities are respectively and

approximatively

$$\begin{aligned} \bar{a}_h^{g0}(\Psi_0) &= 19.231 \\ \bar{a}_h^{m}(\Psi_0) &= 8.786 \\ \bar{a}_h^{g1}(\Psi_0) &= 3.785 \end{aligned}$$

Accordingly, the ability jump at the cutoff for mayor and executives (both moonlighting or not) is defined as

$$\begin{aligned} \bar{a}_h^{m}(\Psi_0) - \bar{a}_h^{l}(\Psi_0) &= -0.499 \\ \frac{\bar{a}_h^{g1}(\Psi_0) + \bar{a}_h^{g1}(\Psi_0)}{2} - \bar{a}_l^{g1}(\Psi_0) &= 9.723 \end{aligned}$$

Thus, despite the increase in wages at the cutoff for mayors, this parametrization results in a negative jump for mayors and a positive jump for executives. Therefore, this numerical example is in line with the empirical evidence presented in Section 4.

Furthermore, we can explore the impact of changes to the parameters of our model on the ability jump for mayors. For example, given the initial parametrization Ψ_0, we can calculate the ability jump for different values of the ego-rents R and/or the probability of election for executives q^g. Consider the case where, in the parametrization Ψ_1, R increases from 7 to 10 while keeping everything else identical to Ψ_0 and, in the parametrization Ψ_2, q^g decreases from 1 to 0.75 while keeping everything else identical to Ψ_0. By focusing on the ability jump for mayors, we find that

$$\begin{aligned} \bar{a}_h^{m}(\Psi_1) - \bar{a}_h^{l}(\Psi_0) &= 0.648 \\ \bar{a}_h^{m}(\Psi_2) - \bar{a}_h^{l}(\Psi_0) &= 1.064 \end{aligned}$$

Hence, an increase in ego-rents or a decrease in $z = \frac{q^g}{q^m}$ leads to an upward shift in the ability of mayors. This modification to the parameter values is particularly interesting because it captures key differences between the institutional setting under study and the post-1993 setting examined by Gagliarducci and Nannicini (2013). In the framework they consider, the mayor is directly elected by citizens, rather than indirectly elected by and within the council. Moreover, members of the executive committee are appointed by the mayor and can also be external to the council. This makes the path towards an appointment as executive less clear than under our setting, where higher-ability individuals can self-select into an executive position by first running for a council seat and then competing only with other councillors. This institutional difference can be interpreted as a reduction in the relative probability of being elected executive z. As a lower z may result in positively selected mayoral candidates, while a higher z may result in negatively selected mayors (and positively selected executives), our theoretical framework helps to explain why we find that wages reduce mayor's education while

Gagliarducci and Nannicini (2013) find the opposite.[19] The same reasoning applies to the case of ego-rents. After 1993, the mayor's office gained importance as it entailed additional political power. For instance, under the post-reform direct electoral system, a mayor could no longer be removed and replaced by the council. Hence, as long as additional political power generated additional ego-rents from *doing* politics, the predictions of the model – that higher ego-rents raise the ability of mayors – are consistent with the opposite result we find compared to Gagliarducci and Nannicini (ibid.).

5.2 Empirical support for the proposed mechanism

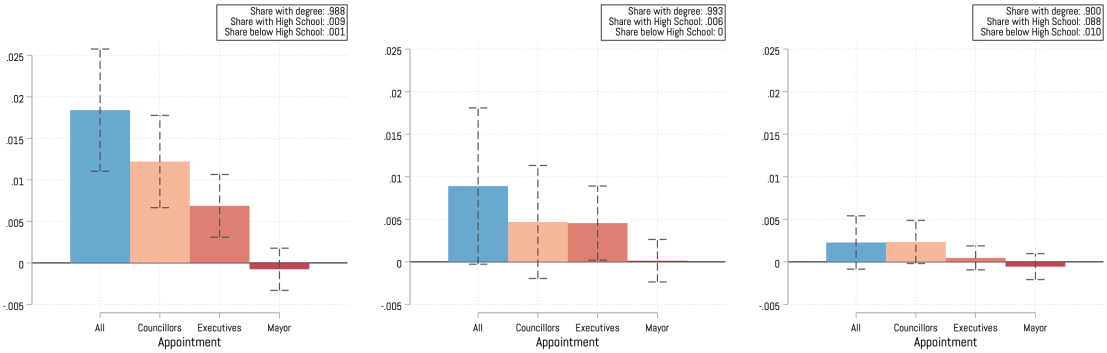
To provide empirical support to the model's prediction described above, we exploit a peculiar feature of our dataset. The *Anagrafe* reports, for each individual, her occupation as of the appointment date. We can thus test whether politicians respond differently to monetary incentives depending on their occupation, which indeed represents a key determinant of their possibility to moonlight. Figure 6 summarizes the result of this heterogeneity exercise. Since our main results highlight that high-wages result in a pool of better educated council members, here we focus on the occupations of high-skilled politicians by considering the three largest represented occupation: professionals (including lawyers and engineers), physicians, and professors. In the Appendix we also present the analogous of Figure 6 for low- and mid-skilled politicians (Figure A7).

Specifically, in Figure 6 we report the estimated coefficients – along with their confidence interval – from a battery of regressions where the dependent variable is an indicator for each of the three high-skilled occupation considered. Consistent with the main results, monetary incentives lead to a higher probability of electing high skilled, self-employed professionals. However, this larger inflow translates into a higher probability of observing, in high-wage councils, high-skilled professionals among the councillors and executives, but not among mayors. When focusing on mayors – an office that, differently from the others, offers fewer opportunities to moonlight – the coefficient is statistically indistinguishable from zero. This result is thus in line with the proposed mechanism, as it suggests that professionals who are attracted by the higher (expected) wage may prefer becoming executives rather than mayors.

Moreover, higher wages have a much weaker effect on the selection of politicians employed in occupations less suitable to moonlight. This is the case, for instance, of physicians and professors, who typically experience a less flexible work schedule. The wage policy induces a weaker selection effect, as the probability of observing politicians in these occupations is not statistically different in low- and high-wages councils. Moreover, the three panels of figure 6 highlight a decreasing gradient in the probability of

[19] Gagliarducci and Nannicini (2013) also study how wages impact the selection of the executive officers (appointed by the mayor). They find that this effect is much smaller for executives than for mayors (and statistically insignificant). Once again, this result highlights the importance of the institutional differences between the two settings.

Figure 6: *Political selection and occupation*



(a) *High-skilled professionals* (b) *Physicians* (c) *Teachers and Professors*

Notes. This figure depicts the coefficients and confidence interval from a set of regression discontinuity equations of the form of Equation 1 where the dependent variable is a politician's previous occupation. In each of the three panels, the left-hand-side bar indicates the point estimate from a regression where the dependent variable is a binary indicator taking the value of one if the appointed council is a high-skilled professional, a professor, or a physician, respectively. The middle- and right-hand-side bars decompose the magnitude of these estimates by appointment. In these cases, the dependent variable is the interaction between the indicator for a politician's occupation and a binary indicator that takes the value of one if the politicians is appointed as councillor, executive, or mayor. We estimate each of the appointment-specific regressions within the MSR optimal bandwidths computed – following Calonico, Cattaneo, and Titiunik (2014) – for the all-appointments regression. By doing this, we make sure that the sum of the point estimates for the councillors, executives, and mayor regressions equal that for the whole council (that is, that the sum of the middle- and right-hand-side bars is equal to the left-hand-side bar). Numbers in the upper-right box indicates, for each profession, the share of observations by education attainment.

observing a high-skilled executive depending on her possibility to moonlight. Physicians, and even more teachers and professors – who are characterized by a rigid work schedule being public employees – are rarely appointed as executives.

Table 6 provides additional evidence in this direction. Here we look at the effect of higher wages on political selection depending on politicians' retirement status. The estimates in Column (1) reveal that monetary incentives have a significant impact (+1.6 pp.) on the probability of observing a retired politician among the council members. In this case, however, we also observe a much larger share of retired mayors in high-pay councils. The estimated coefficient in Column (4) shows that the mayor's positions in high-pay councils are much more likely (+14 pp.) to be filled by retired politicians than in low-pay councils. No significant effect emerges for executives (Column 3).

Moreover – and consistently with wage increases attracting high-skilled individuals – this result is driven by more retired politicians *who hold a degree* (see Column 4 of Panel B). Hence, this evidence is complementary to that presented in Figure 6: the mayor's office does not attract those who have the opportunity to moonlight, who instead opt for an executive position. High-wage councils are more likely to appoint retired politician, whose outside income does not depend on the time spent in political

Table 6: *Political selection and retirement status*

Panel A: Retired				
	Whole Council	By appointment		
	(1)	(2) Councillors	(3) Executives	(4) Mayor
$>$ 5000 pop	0.016*	0.014	0.011	0.135**
	(0.009)	(0.009)	(0.019)	(0.061)
Mean dep. var.	0.080	0.073	0.079	0.172
BW	1744.46	1927.38	1606.50	1749.15
Observations	23520	18040	5955	1198
N. of municipalities	760	863	699	764

Panel B: Retired & degree				
	Whole Council	By appointment		
	(1)	(2) Councillors	(3) Executives	(4) Mayor
$>$ 5000 pop	0.008***	0.009***	0.001	0.055**
	(0.002)	(0.003)	(0.005)	(0.027)
Mean dep. var.	0.010	0.009	0.008	0.045
BW	2984.82	3277.06	2555.79	1853.07
Observations	44710	34328	9865	1278
N. of municipalities	1587	1821	1262	815

Notes: this table describes the threshold-crossing effects on the probability of observing retired members of the council. The table reports the coefficients from a set of regression discontinuity equations of the form of Equation 1, where the dependent variable is a binary indicator taking value one when a politician's occupation is defined as "retired" (Panel A), or an indicator for "retired" politicians whose education attainment is above secondary (Panel B). The sample includes only stronghold municipalities. $> 5,000 pop.$ *is an indicator that takes value one for municipalities whose population falls above the 5,000 inhabitants threshold, and zero otherwise. The table also reports the mean of the dependent variable for municipalities whose population falls within the interval* $[-BW; 0]$ *(where BW is the MSR optimal bandwidth computed following Calonico, Cattaneo, and Titiunik (2014) and reported below) and the number of within-bandwidth observations. SE are clustered at the municipality level.* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

activities, as a mayor.

6 Conclusion

Our study examines the impact of monetary incentives on the selection of local politicians in an indirect election system in Italy, where citizens elect members of a local parliament who then elect the mayor and executive committee. Consistent with previous research (Gagliarducci and Nannicini, 2013), we find that higher expected wages result in, on average, a more educated local council. However, we also find that this does not lead to a more educated mayor. To rationalize this latter finding, we propose a model that predicts that, under plausible conditions, better-educated candidates may

prefer an executive position to a (less-flexible) mayor position so as to benefit from the possibility of working while in office. We provide empirical support for this proposed mechanism by investigating the heterogeneity of the selection effect depending on politicians' occupations and retirement status (which proxy for the possibility of moonlighting). Our work implies that the positive impact of monetary incentives can be undone or even reversed in the parliamentary stage of the election process. More generally, our findings highlight that the effects of monetary incentives are not consistent across different institutional settings.

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A Appendix

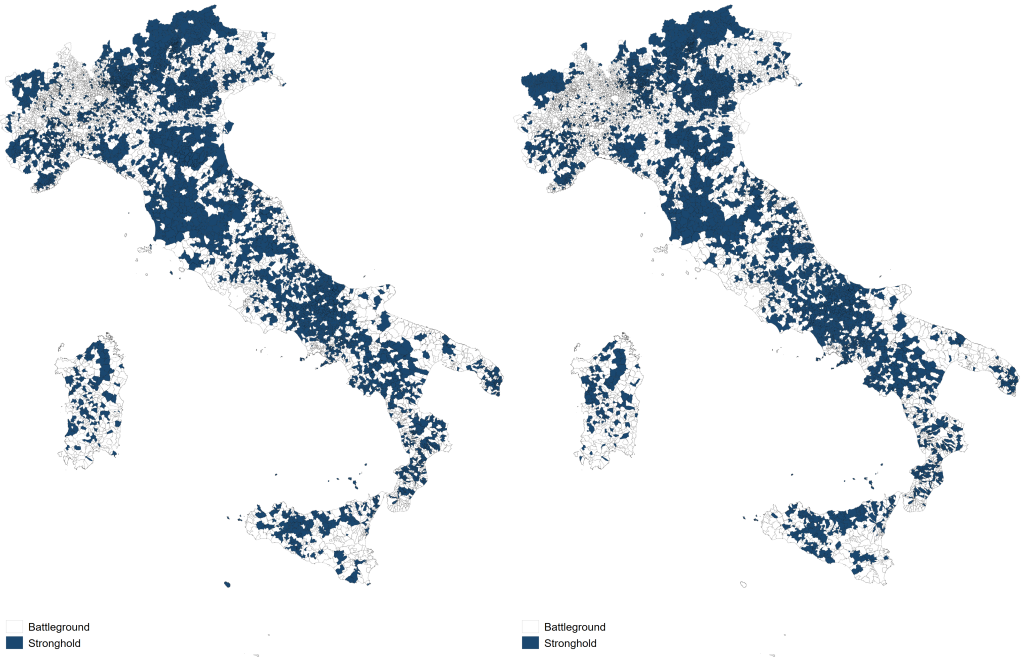
A.1 Summary statistics

Table A1: *Summary statistics*

***Panel A*: Councillors**				
	Whole Sample		Stronghold Sample	
	Mean	Sd	Mean	Sd
Years of education	11.03	4.22	10.59	4.22
Degree	0.20	0.40	0.17	0.38
Secondary education	0.35	0.48	0.33	0.47
Below secondary education	0.45	0.50	0.50	0.50
Age	40.18	10.92	39.52	10.95
Female	0.09	0.28	0.08	0.28
Born in other municipality	0.41	0.49	0.37	0.48
Observations	170462		78089	
***Panel B*: Executive Committee**				
	Whole Sample		Stronghold Sample	
	Mean	Sd	Mean	Sd
Years of education	11.24	4.12	10.88	4.16
Degree	0.20	0.40	0.18	0.38
Secondary education	0.38	0.49	0.37	0.48
Below secondary education	0.42	0.49	0.45	0.50
Age	41.14	10.15	40.45	10.18
Female	0.08	0.26	0.07	0.26
Born in other municipality	0.38	0.49	0.33	0.47
Observations	59847		27824	
***Panel C*: Mayors**				
	Whole Sample		Stronghold Sample	
	Mean	Sd	Mean	Sd
Years of education	12.90	3.80	12.82	3.85
Degree	0.33	0.47	0.33	0.47
Secondary education	0.43	0.49	0.42	0.49
Below secondary education	0.24	0.43	0.25	0.43
Age	45.24	10.07	44.48	10.10
Female	0.03	0.17	0.03	0.16
Born in other municipality	0.34	0.47	0.30	0.46
Observations	13551		6543	

Notes: This table reports the summary statistics for our sample of local politicians, separately for the entire sample of municipalities (left columns) (left columns) and the stronghold sample (right columns).

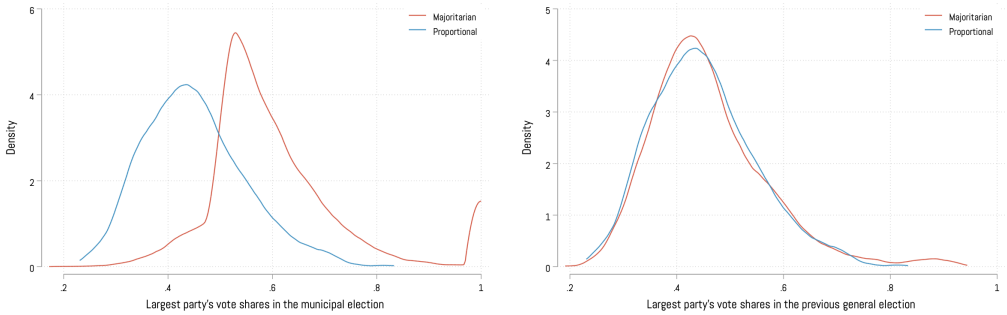
Figure A1: *Geographical Distribution of Stronghold Municipalities*



(a) *General elections 1983* (b) *General elections 1987*

Notes: This figure illustrates the geographic distribution of stronghold and battleground municipalities, defined based on the 1983 (Panel A) and 1987 (Panel b) general elections.

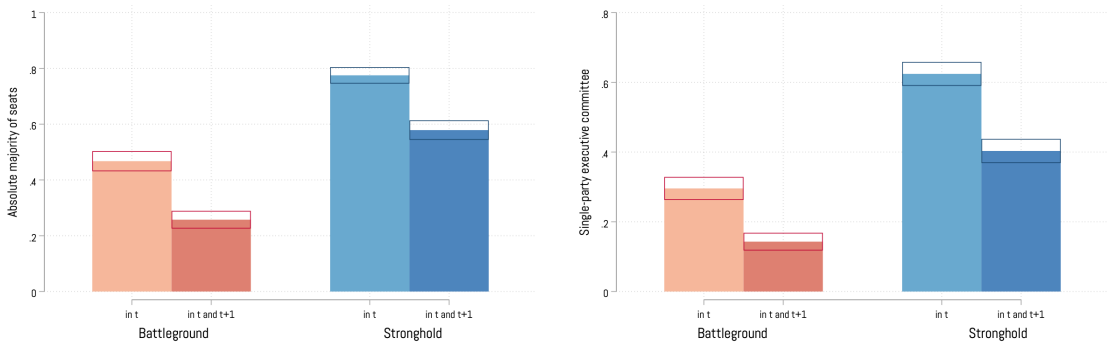
Figure A2: *Vote distribution in the municipal and general elections*



(a) *Municipal elections* (b) *National elections*

Notes: This figure depicts the distribution of the vote share of the largest party in the general (Panel A) and municipal elections (Panel B), separately for municipalities under a majoritarian or proportion representation electoral rule. The unit of observation is a municipality×term.

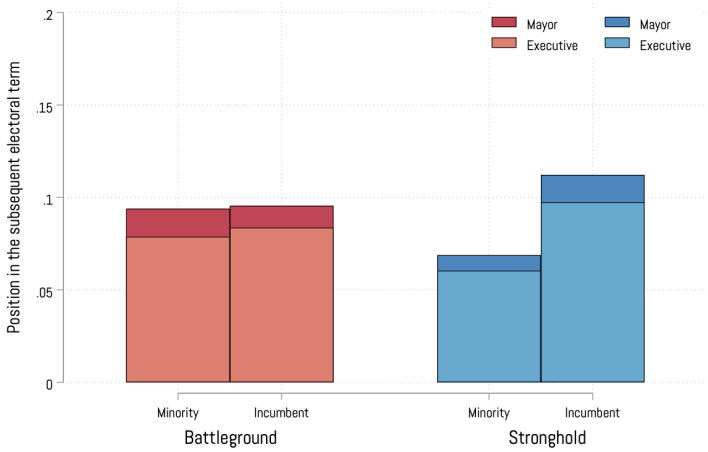
Figure A3: *Between-election dynamics in stronghold vs. battleground municipalities (I)*



a. Absolute majority of seats *b. Single-color executive committee*

Notes. This figure depicts how the electoral outcomes vary between two electoral cycles (1985-87 and 1988-1990), separately for our sample of stronghold and battleground municipalities. In Panel A, each bar indicates the share of municipalities where a single party obtains the absolute majority of seats in the baseline election (the lighter columns), and both in the baseline and the following election (the darker columns), separately for battleground and stronghold municipalities. Panel B is the analogous of Panel A, but considers the share of municipalities where we observe a single-party executive committee.

Figure A4: *Between-election dynamics in stronghold vs. battleground municipalities (II)*



Notes. This figure depicts the probability to be appointed executive or mayor in the subsequent electoral round ($t+1$) for candidates who belong to the incumbent or a minority party (defined based on the elections in t), separately for battleground and stronghold municipalities.

A.2 Robustness checks and additional analysis

Table A2: *Covariates smoothness I: political characteristics*

	(1) Strongholds	(2) N. voters	(3) Share 1st party	(4) Share 2nd party	(5) 1st party is DC	(6) 1st party is PCI
***Panel A*: All terms**						
> 5000 pop	0.0194	6.904	0.00348	-0.00524	0.0364	-0.0352
	(0.0410)	(24.42)	(0.00859)	(0.00705)	(0.0382)	(0.0383)
Mean dep. var.	0.471	1790.424	0.461	0.240	0.709	0.249
BW	3551.87	5278.85	3673.82	2528.70	3924.77	3631.41
Observations	7382	12908	7830	4355	8846	7696
***Panel B*: Term 1985-87**						
> 5000 pop	0.0492	12.12	0.00621	-0.00580	0.0433	-0.0453
	(0.0500)	(24.97)	(0.00986)	(0.00828)	(0.0460)	(0.0453)
Mean dep. var.	0.494	1688.815	0.466	0.242	0.691	0.265
BW	3572.00	5307.00	3664.00	2656.00	4055.00	3997.00
Observations	3261	5732	3416	2014	4130	4022
***Panel C*: Term 1988-90**						
> 5000 pop	0.0102	16.40	0.00349	-0.00767	0.0307	-0.0338
	(0.0430)	(29.91)	(0.00888)	(0.00712)	(0.0389)	(0.0386)
Mean dep. var.	0.460	1829.170	0.457	0.237	0.724	0.236
BW	3713.72	5093.77	3738.26	2573.95	3890.69	3457.02
Observations	4288	6855	4348	2414	4681	3792

Notes: this table reports the threshold-crossing effect on a set of pre-determined political characteristics. These are a binary indicator for our sample of stronghold municipalities (Column 1), the number of voters (Column 2), the vote share of the leading (Column 3) and the second party (Column 4), and two indicators taking value one if the leading party is Democrazia Cristiana or Partito Comunista (Column 5 and 6, respectively). In all columns, the outcome variable is defined based on the votes in the previous national election. Panel A reports the estimates for the overall sample of municipalities × term, while Panel B and C consider separately the first (1985-87) and second (1988-92) electoral term. The table reports the coefficient from a regression discontinuity equation of the form of Equation 1, for the overall sample of municipalities. $> 5,000$*pop. is an indicator that takes value one for municipalities whose population falls above the 5,000 inhabitants threshold, and zero otherwise. The table also reports the mean of the dependent variable for municipalities whose population falls within the interval* $[-BW; 0]$ *(where BW is the MSR optimal bandwidth computed following Calonico, Cattaneo, and Titiunik (2014) and reported below) and the number of within-bandwidth observations. SE are clustered at the municipality level.* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A3: *Covariates smoothness II: geographical characteristics*

	(1) Coastal	(2) Mountain	(3) Area km2	(4) North-West	(5) North-East	(6) Centre	(7) South	(8) Islands
$>$ 5000 pop	-0.0109	0.0672	1.807	-0.0467	0.0281	-0.0121	0.0340	0.0269
	(0.0262)	(0.137)	(3.873)	(0.0490)	(0.0361)	(0.0292)	(0.0421)	(0.0282)
Mean dep. var.	0.057	3.271	39.061	0.262	0.211	0.132	0.253	0.098
BW	5041.11	2903.84	3122.02	1960.60	3591.03	3616.46	2329.51	4243.15
Observations	6914	2896	3209	1746	4126	4174	2127	5562

Notes: this table reports the threshold-crossing effect on a set of time invariants geographical characteristics. These are a binary indicator for municipalities located on a coastal (Column 1) or mountain area (Column 2), the municipal area in squared km (Column 3), and a set of five indicators taking value one if the municipality belongs to the corresponding Italian macro-area (Columns 4 to 8). The table reports the coefficient from a regression discontinuity equation of the form of Equation 1, for the overall sample of municipalities. Each observation is a municipality. $> 5,000pop.$ *is an indicator that takes value one for municipalities whose population falls above the 5,000 inhabitants threshold, and zero otherwise. The table also reports the mean of the dependent variable for municipalities whose population falls within the interval* $[-BW; 0]$ *(where BW is the MSR optimal bandwidth computed following Calonico, Cattaneo, and Titiunik (2014) and reported below) and the number of within-bandwidth observations.* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A4: *Robustness to alternative definitions of the optimal bandwidth*

***Panel A*: Whole Council**

	Education Level				Other Characteristics		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Ys of schooling	< Secondary	Secondary	Degree	Age	Female	Born elsewhere
> 5000 pop	0.895***	-0.113***	0.062***	0.046***	-0.125	-0.009	0.052*
	(0.205)	(0.023)	(0.018)	(0.016)	(0.389)	(0.008)	(0.031)
Mean dep. var.	11.539	0.391	0.384	0.222	39.524	0.081	0.336
BW	1075.77	1069.52	1326.51	1306.57	1940.32	2503.52	1344.73
Observations	13855	13836	17312	17167	26921	36495	17676
N. of municipalities	448	447	559	553	871	1227	567

***Panel B*: Councillors**

	Education Level				Other Characteristics		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Ys of schooling	< Secondary	Secondary	Degree	Age	Female	Born elsewhere
> 5000 pop	1.098***	-0.142***	0.092***	0.044**	-0.096	-0.005	0.057*
	(0.237)	(0.028)	(0.022)	(0.018)	(0.444)	(0.009)	(0.033)
Mean dep. var.	11.267	0.420	0.371	0.206	39.084	0.084	0.345
BW	1192.72	1199.05	1424.48	1462.04	2023.78	2887.58	1367.08
Observations	10479	10539	12758	13047	19559	29708	12117
N. of municipalities	502	504	616	630	939	1504	577

***Panel C*: Executive committee**

	Education Level				Other Characteristics		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Ys of schooling	< Secondary	Secondary	Degree	Age	Female	Born elsewhere
> 5000 pop	0.583*	-0.072*	0.014	0.062**	0.050	-0.016	0.064
	(0.332)	(0.040)	(0.039)	(0.030)	(0.797)	(0.018)	(0.048)
Mean dep. var.	11.748	0.363	0.413	0.223	39.918	0.082	0.324
BW	1028.01	974.86	1121.16	1439.93	1334.36	1643.51	980.08
Observations	3656	3421	3978	5257	4837	6111	3468
N. of municipalities	430	405	467	622	565	717	408

***Panel D*: Mayor**

	Education Level				Other Characteristics		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Ys of schooling	< Secondary	Secondary	Degree	Age	Female	Born elsewhere
> 5000 pop	-0.248	0.046	-0.021	-0.041	-1.104	0.020	0.023
	(0.672)	(0.082)	(0.088)	(0.082)	(1.477)	(0.027)	(0.082)
Mean dep. var.	13.653	0.176	0.424	0.398	43.829	0.026	0.269
BW	1216.44	1183.27	1427.46	1567.91	1507.54	2041.94	1518.76
Observations	799	784	965	1075	1016	1479	1026
N. of municipalities	507	497	617	687	648	943	655

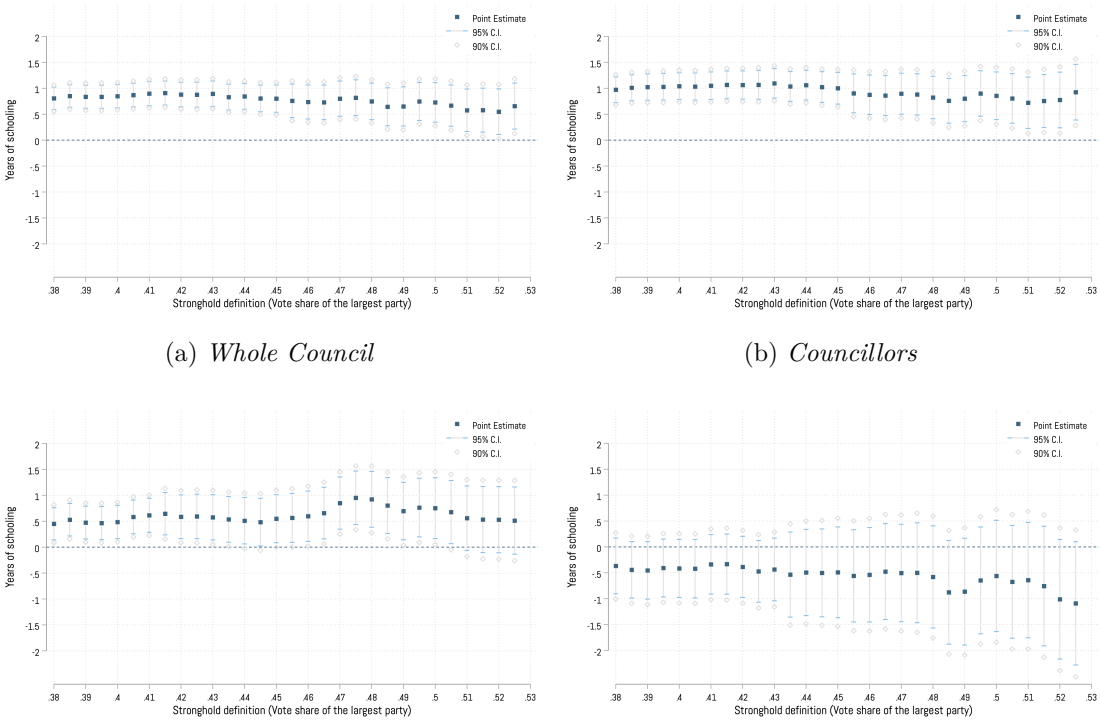
Notes: This table reports the threshold-crossing effect on the education attainment and demographics of the elected council members under a different method to compute the optimal bandwidth. Panel A reports the estimated effect for the whole sample of council members; Panel B, C and D report the analogous estimates for the sample of councillors-only (those who are not appointed as executive or mayor), the sample of executives, and the sample of mayors, respectively. In Column 1 the dependent variable is the number of years of schooling; in Column 2 to 4 it is a binary indicator taking value one if the politicians education attainment is below secondary, secondary, or above secondary (degree), respectively; in Column 5 to 7 these are a set of demographic variables: age (in years), gender, and a binary indicator for politicians who are born in a different municipality. $> 5,000pop.$ *is an indicator that takes value one for municipalities whose population falls above the 5,000 inhabitants threshold, and zero otherwise. The table also reports the mean of the dependent variable for municipalities whose population falls within the interval* $[-BW; 0]$ *(where BW is the CER optimal bandwidth computed following Calonico, Cattaneo, and Titiunik (2014) and reported below) and the number of within-bandwidth observations. SE are clustered at the council level in Panels A to C, while at the municipality level in Panel D* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A5: *Robustness to alternative definitions of stronghold municipalities (I)*

	(1) Whole Council	(2) Councillors	(3) Ex. committee	(4) Mayors
***Panel A*: National election ($t+1$)**				
$>$ 5000 pop	0.706***	0.932***	0.408	-0.701
	(0.229)	(0.277)	(0.336)	(0.655)
Mean dep. var.	11.392	11.118	11.522	13.782
BW	1740	1944	1679	1656
Observations	15665	12353	4065	762
N. of municipalities	628	731	603	599
***Panel B*: Regional election**				
$>$ 5000 pop	0.701***	0.932***	0.443*	-0.674*
	(0.162)	(0.188)	(0.235)	(0.391)
Mean dep. var.	11.452	11.177	11.593	13.466
BW	1698	1887	1936	2438
Observations	23325	18066	7542	1877
N. of municipalities	820	935	966	1294
***Panel C*: Provincial election**				
$>$ 5000 pop	0.757***	0.939***	0.458	-0.719
	(0.217)	(0.258)	(0.336)	(0.598)
Mean dep. var.	11.589	11.363	11.728	13.762
BW	1522	1588	1872	1958
Observations	13711	9797	4812	950
N. of municipalities	407	431	520	562

Notes: This table reports the threshold-crossing effect on the education of the council members using different electoral data to define the sample of stronghold municipalities. Panel A uses the national elections that took place after – rather than before – the municipal ones; Panel B uses the previous regional elections, while Panel C uses the previous provincial elections. In all panels, the dependent variable is the number of years of schooling of all council members (Column 1), councillors-only (Column 2), executives (Column 3), and mayors (Column 4). $> 5,000pop.$ *is an indicator that takes value one for municipalities whose population falls above the 5,000 inhabitants threshold, and zero otherwise. The table also reports the mean of the dependent variable for municipalities whose population falls within the interval* $[-BW; 0]$ *(where BW is the MSR optimal bandwidth computed following Calonico, Cattaneo, and Titiunik (2014) and reported below) and the number of within-bandwidth observations. SE are clustered at the council level in Columns (1) to (3), while at the municipality level in Column 4.* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Figure A5: *Robustness to alternative definitions of stronghold municipalities (II)*

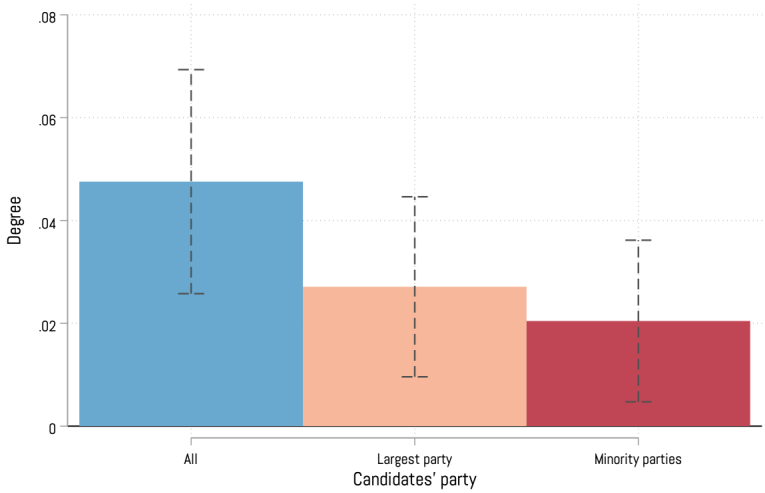


(a) *Whole Council* (b) *Councillors*

(c) *Executives* (d) *Mayor*

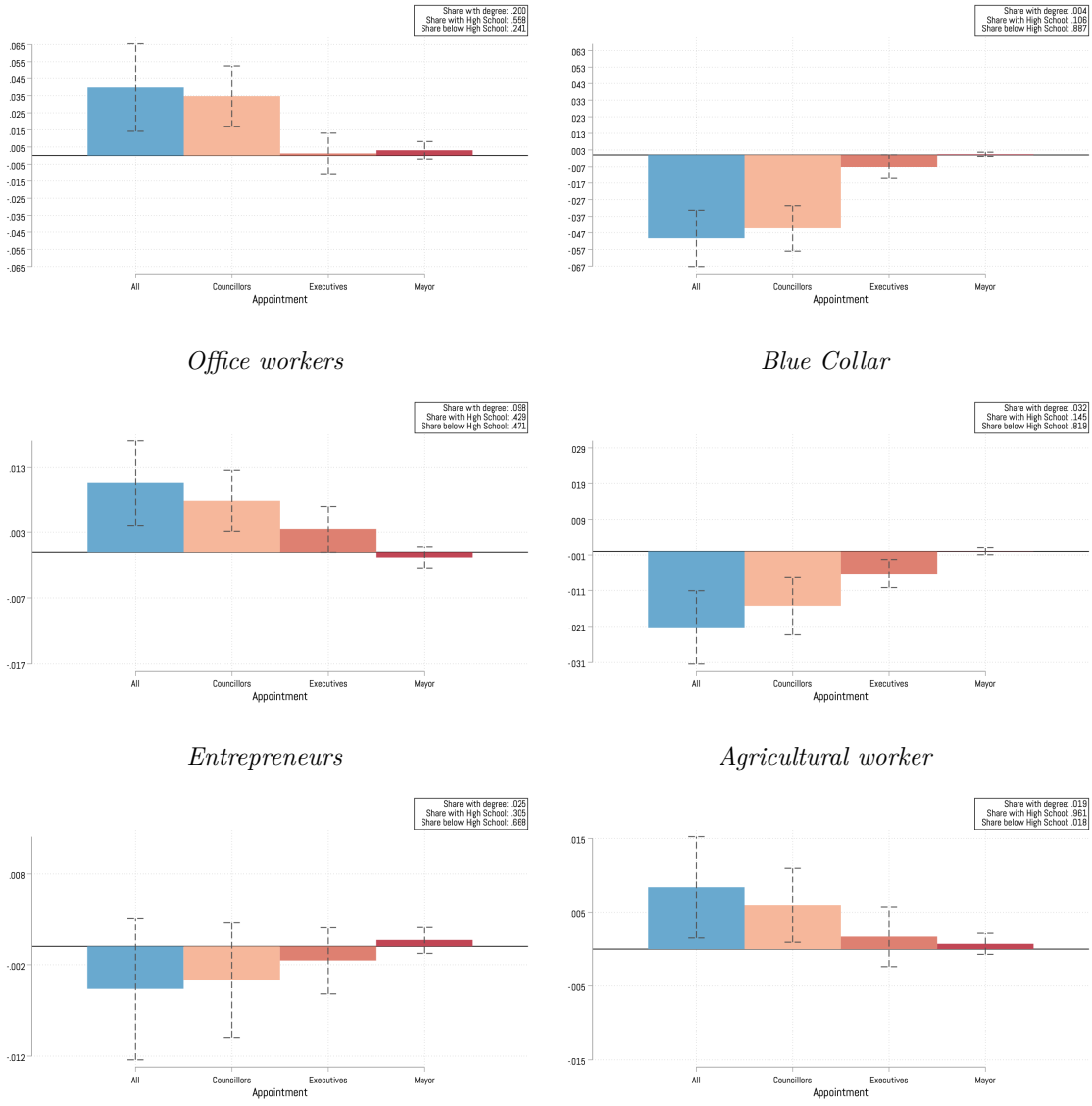
Notes: This figure depicts the robustness of the estimates presented in Table 4 to alternative choices for the threshold that identifies the sample of stronghold municipalities. Each square indicates the point estimates from a regression discontinuity regression of the form of Equation 1 where the dependent variable is the number of year of education of council members and we limit the sample to municipalities where the leading party in the national election has a vote share $\geq j$*, for* $j \in (0.38, 0.53)$ *(the two middle quartiles of the distribution). Panel A considers all council members, while Panel B, C, and D consider the sample of councillors-only (those who are not appointed as executives or mayor), executives, and mayors, respectively.*

Figure A6: *Effect decomposition by candidates' party*



Notes. This figure depicts the threshold crossing effect on the probability of observing a graduated council member, separately for politicians belonging to the leading or a minority party. Specifically, the left hand side bar depicts the point estimates from a regression discontinuity equation of the form of Equation 1, where the outcome is defined as a binary indicator that takes value one for council members who hold a degree. In the other two bars, the outcome variable is the interaction between the former and another indicator that takes the value of one if the council members belongs to the leading party (middle bar) or a minority party (right hand side bar). The figure also depicts the 90% confidence interval. We estimate each the party-specific regressions within the MSR optimal bandwidths computed – following Calonico, Cattaneo, and Titiunik (2014) – for the main regression. By doing this, we make sure that the sum of the point estimates relative to the leading and minority party equal that for all council members (that is, that the sum of the middle- and right-hand-side bars is equal to the left-hand-side bar).

Figure A7: *Political selection and occupation*



Notes. This figure depicts the coefficients and confidence interval from a set of regression discontinuity equations of the form of Equation 1 where the dependent variable is a politician's previous occupation. In each of the eight subfigures, the left-hand-side bar indicates the point estimate from a regression where the dependent variable is a binary indicator taking the value of one if the appointed council is an office-worker, a blue collar worker, an entrepreneur, an agricultural worker, a small business owner, or a technician, respectively. The middle- and right-hand-side bars decompose the magnitude of these estimates by appointment. In these cases, the dependent variable is the interaction between the indicator for a politician's occupation and a binary indicator that takes the value of one if the politicians is appointed as councillor, executive, or mayor. We estimate each of the appointment-specific regressions within the MSR optimal bandwidths computed – following Calonico, Cattaneo, and Titiunik (2014) – for the all-appointments regression. By doing this, we make sure that the sum of the point estimates for the councillors, executives, and mayor regressions equal that for the whole council (that is, that the sum of the middle- and right-hand-side bars is equal to the left-hand-side bar). Numbers in the upper-right box indicates, for each profession, the share of observations by education attainment.

A.3 Proofs

A.3.1 Proof of Proposition 1 (Ability sorting in small municipalities)

Proof. First notice that the assumption $p < n$, together with $W_l^g = 0$, implies that, using (7), the net expected payoff of moonlighting executives is negative: $E\left(\pi_l^{g0}(a)\right) = q^g(p-n)a < 0$. Accordingly, nobody will run for a moonlighting executive position in municipality l. The two remaining options are running for non-moonlighting executive or for mayors, whose related expected payoffs – by imposing $s = l$ in respectively (5) and (6) – are given by

$$E\left(\pi_l^{g1}(a)\right) = q^g[R - na] \tag{14}$$

and

$$E\left(\pi_l^m(a)\right) = q^m[W_l^m + R - na] \tag{15}$$

An individual will *run for a (non-moonlighting) executive position in low-wage municipalities* if $E\left(\pi_l^g(a)\,|e^g = 1\right)$ is positive and larger than $E\left(\pi_l^m(a)\right)$. Using (14) and (15), this happens when

$$a < a_l^{g0} \equiv \frac{R}{n} - \frac{W_l^m}{n}\frac{1}{z-1} \tag{16}$$

a_l^{g0} is positive because Assumption 1 ensures that $z > 1 + \frac{W_l^m}{R}$.

An individual will run for mayor in low-wage municipalities if $E\left(\pi_l^m(a)\right)$ is positive and larger than $E\left(\pi_l^g(a)\,|e^g = 1\right)$. Using (14) and (15), that happens when

$$a_l^{g0} \leq a < a_l^m \equiv \frac{R + W_l^m}{n} \tag{17}$$

Finally, an individual *will not run for any office in low-wage municipalities* if both $E\left(\pi_l^m(a)\right)$ and $E\left(\pi_l^g(a)\,|e^g = 1\right)$ are non-positive which, using (14) and (15), happens when

$$a \geq a_l^m \equiv \frac{R + W_l^m}{n}$$

It is easy to see that, under Assumption 1, $0 < a_l^{g1} < a_l^m$. This proves the proposition. □

A.3.2 Proof of Proposition 2 (Ability sorting in large municipalities)

Proof. In large municipalities, wages of mayors and executives increase so that $W_h^m > W_l^m > W_h^g > W_l^g = 0$. The expected payoff from running for mayor, non-moonlighting- and moonlighting-executives position are obtained by using respectively (5), (6):

$$E\left(\pi_h^m\left(a\right)\right) = q^m\left[W_h^m + R - na\right] \tag{18}$$

$$E\left(\pi_h^{g1}\left(a\right)\right) = q^g\left[W_h^g + R - na\right] \tag{19}$$

$$E\left(\pi_h^{g0}\left(a\right)\right) = q^g\left[W_h^g - \left(n-p\right)a\right] \tag{20}$$

The sorting pattern across offices in this case is enriched by the presence of moonlighting executives. Here, we investigate the conditions under which the expected payoff from running for a non-moonlighting executive position – $E\left(\pi_h^g\left(a\right)|e^{g1}\right)$ – is positive and larger than that from running for the mayor position $E\left(\pi_h^m\left(a\right)\right)$. Using the expressions above, we find that – even in large municipalities – less-skilled individuals tend to sort into non-moonlighting executive positions:

$$E\left(\pi_h^{g1}\left(a\right)\right) > E\left(\pi_h^m\left(a\right)\right) \Leftrightarrow a < a_h^{g1} \equiv \frac{R}{n} + \frac{zW_h^g - W_h^m}{\left(z-1\right)n} \tag{21}$$

where we ensure the positivity of a_h^{g1} by having assumed that $z > \frac{R+W_h^m}{R+W_h^g}$

Secondly, we want to find the condition such that the mayor position is more attractive than that of moonlighting executives. Using (18) and (20) we find that, since by assumption $z < \min\left(\frac{W_h^m+R}{W_h^g}, \frac{n}{n-p}\right)$

$$E\left(\pi_h^m\left(a\right)\right) > E\left(\pi_h^{g0}\left(a\right)\right) > 0 \Leftrightarrow a < a_h^m \equiv \frac{W_h^m + R - zW_h^g}{n\left(1 - z\left(1-\gamma\right)\right)}$$

Finally, under our parameter restrictions, becoming a moonlighting executive is an attractive option if

$$E\left(\pi_h^{g0}\left(a\right)\right) > 0 \Leftrightarrow a < a_h^{g0} \equiv \frac{W_h^g}{n-p}$$

It is easy to see that, under Assumption 1, $a_h^{g1} < a_h^m < a_h^{g0}$. This proves the proposition. □

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