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ABSTRACT: This paper investigates how the interplay between politics and firms influences the profiles of political candidates and their policy decisions. Specifically, we analyze the effects of an anti-revolving door law, which impose a mandatory “cooling-off” period before former politicians can take significant positions in the bureaucracy or in state-owned enterprises. We develop a political agency model where politicians can access “politically connected outside options” (PCOs), and examine how the reduction in the expected value of these PCOs impacts candidate selection and policymaking. Our findings suggest that a decline in the value of PCOs disproportionately affects individuals with lower human capital, thereby increasing the proportion of high human capital candidates. Simultaneously, this shift heightens the likelihood that low human capital politicians will pander toward the voters, even when such policies are suboptimal. We test those predictions using data from Italian municipalities. Leveraging a population threshold that triggers the implementation of anti-revolving door policies, we employ a difference-in-discontinuity approach. Our results show that the cooling-off period raises the average education levels of candidates and elected mayors. Additionally, we find that the reform reduces the probability that low human capital mayors adopt electorally costly policies.

JEL Codes: D72, D73, H75

Keywords: Revolving doors, selection of politicians, policymaking, difference-in-discontinuity

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1 Introduction

This paper shows that the availability of connections between politics, businesses and the bureaucracy affects who runs for office and what they do once in power. Furthermore, the precise way in which politicians are compensated once in office matters in influencing the pool of available candidates. We uncover those results studying the political effects of anti-revolving door policies.

A healthy relationship between politics, bureaucracy, and businesses is crucial for a well-functioning democracy and economic development (Besley et al., 2021). Some of the issues that may arise in those relationships have received wide attention in the literature. Regulatory capture (Stigler, 1971; Laffont and Tirole, 1991) is one example, with a broadly related literature interested in the effects of “revolving doors” between politics and lobbying (Blanes i Vidal et al., 2012; McCrain, 2018), or on the influence of lobbying on policymaking (Wolton et al., 2021). More recent literature has focused on how political incentives may affect bureaucratic performance (Gratton et al., 2021; Gratton and Lee, 2023; Sasso and Morelli, 2021; Bellodi et al., 2022; Snowberg and Ting, 2019; Colonnelli et al., 2022)¹ and how political turnover (Akhtari et al., 2022) or political connections and patronage (Brassiolo et al., 2020; Colonnelli et al., 2020) may negatively affect public sector hirings and their performance. Similar issues may arise also in the relationship between politics and businesses, with politicians having an incentive to use connected firms at their advantage (Shleifer and Vishny, 1994).²

One side of the relationship, however, has been largely overlooked so far: the effect of those connections between politics, businesses and bureaucracies on the incentives for those who become, or are, politicians, in terms of whether they run or which policies they choose.³ For example, officeholders may want to exploit their power or their connections to find a good job after their career in politics is done, as documented for example by Diermeier et al. (2005), Eggers and Hainmueller (2009) and Palmer and Schneer (2016).⁴ This behaviour does not necessarily mean that they are instrumental to regulatory capture: the possibility of a “parachute” in the

¹In general, a growing body of theoretical literature stresses the importance of studying how the presence and the incentives of bureaucrats affect policymaking and accountability. See for example Gailmard and Patty (2007); Turner (2019); Li et al. (2023).

²For example, Sapienza (2004) documents a politically-influenced behaviour of state-owned banks, while Baltrunaite et al. (2021) and Akcigit et al. (2023) study how political connections, in terms of “political” board appointments in State-owned enterprises (SOE) or the hiring of politically connected employees, affect firms’ performance. Li et al. (2020) and Inoue (2020) show that SOEs behaviour and performance are affected by political considerations, like the timing of elections.

³Relevant exceptions are Shepherd and You (2020) and Bils and Judd (2020), but their main focus is on the incentives of staff members that may turn into lobbyists. In our case, the focus is on politicians that may get a job into a state-controlled firm or in the bureaucracy. Therefore, we focus on a case where electoral incentives are of crucial importance. Closer to us, Fisman et al. (2025) studies the effect of anti-revolving door policies on political selection, but with a different focus and in a different context.

⁴In particular, Eggers and Hainmueller (2009) finds that serving in office doubles the wealth of conservative MPs, with no effect on labour MPs, and Palmer and Schneer (2016) finds that candidates marginally winning a senatorial or gubernatorial seat are 30% more likely to serve in the board of a publicly traded company later on.

bureaucracy or on the board of a State-owned firm⁵ is a way to increase the expected benefits of a political career. However, it may distort the allocation of talents in those firms, their performance in the market (Baltrunaite et al., 2021; Akcigit et al., 2023; Cingano and Pinotti, 2013; Green and Homroy, 2022; Bertrand et al., 2018) or their credit rating (Diegmann et al., 2024), and affect what motivates people to join politics in the first place. Does the relationship between politics, bureaucracy and businesses matter for political incentives? Do anti-revolving door laws affect the type of candidates and the policies they implement once in office? This paper shows, both theoretically and empirically, that anti-revolving door policies can be a double-edged sword. They improve the human capital of the pool of candidates, but they also increase the incentive to implement electorally rewarding policies, even when they may be inferior.

To study those questions, we exploit the introduction of an anti-revolving door law in Italy (“Legge Severino”), that mandates “cooling off” periods for former politicians.⁶ This period is a gap of a few years between holding a political office and being allowed to obtain high-level positions in State-owned enterprises (SOEs) or in the bureaucracy. On top of this, the law forbids politicians to obtain those positions while in office. This type of laws is expected to affect corruption (De Angelis et al., 2020; de Blasio et al., 2020) or, more generally, to insulate politicians from regulatory capture and the bureaucracy from political patronage. Importantly, however, those laws may also directly affect the political side of the equation, changing politicians’ choices and incentives. Italy provides an excellent case study for our research question, as there is variation both in time (the law is approved in 2013) and in space in the application of the law. More precisely, it applies to politicians in municipalities with a population above 15,000 inhabitants, allowing us to use difference-in-discontinuity techniques, as it is not the sole policy changing at this population threshold.

Note that the sign of the effect (if any) is ex-ante unclear. On the one hand, adding a constraint on the type of jobs that out-of-office politicians can do reduces the expected benefits from holding a political office, impacting aspiring politicians with higher human capital and better outside options, hence potentially reducing the overall human capital of candidates (Caselli and Morelli, 2004). On the other hand, the policy may impact the incentives of those choosing a political career just as a stepping-stone to use the connections to be appointed to a board of SOEs or in the bureaucracy. Furthermore, politicians in office face an increased cost of losing, as their potential parachutes may open only in a few years. Removing this parachute may motivate more effort (Ashworth and De Mesquita, 2014) or increase the incentives toward choosing suboptimal policies (Canes-Wrone et al., 2001; Maskin and Tirole, 2004). Importantly, the combination of those incentives differentiates anti-revolving door policies from a simple re-

⁵By “State-owned firm” we mean firms controlled either by national or local Governments.

⁶Several other countries, as well as the European Union, adopted similar laws.

duction in office wages. A wage reduction decreases the value of a political career by making a political career generally less valuable, relative to not running and relative to losing office. Anti-revolving door policies also reduce the total value of a political career, but they do that by decreasing the outside option once this career ends. Hence, conditional on being in office, a *reduction* in the value of the outside option is similar to an *increase* in office wages, because it increases the cost of losing. Those effects may have a differential impact depending on the human capital of politicians, thus affecting the overall human capital of those running for office and the incentives once in office.

In this paper, we first build a simple theoretical model of endogenous entry into politics, policymaking, and politically connected outside options (PCOs). It suggests that the reduction in the value of politically-related outside options, implied by the introduction of cooling off periods, should *increase* the human capital of those willing to run for office, on average. This happens because high human capital individuals have better outside options, hence the reduction in the politically-related one is less likely to affect their incentives. Furthermore, they are relatively less likely to need it (or they need it only later in their life), as their political career tends to be longer. For the same logic, the reduced availability of PCOs should affect the in-office behaviour of low human capital politicians relatively more (and, in general, it should affect the behaviour of non-term limited politicians). In particular, the model shows that a reduction in the PCOs' expected value can increase the range of parameters where low human capital politicians find it optimal to choose the ex-ante popular action, rather than the action that is optimal given the information they possess. This happens because the cost of losing office is suddenly higher, and this increases the incentive to choose a policy more likely to bring to re-election, even if it is not necessarily optimal. Finally, the model shows that a reduction in office wages and the implementation of anti-revolving door policies, such as cooling off periods, despite having the same effect on the expected value of a political career, can have opposite effects on the quality of the pool of candidates: once the equilibrium feedback effects between policymaking and re-election strategies are taken into account, the difference appears. Lower wages decrease the share of high human capital candidates, while a reduction in the value of the politically connected outside option increases it.

Guided by the model, we bring its predictions to the data using a difference-in-discontinuity design (Grembi et al., 2016; Gamalerio and Trombetta, 2024). In particular, we compare the average years of education for mayoral candidates and mayors in Italian municipalities around the 15,000 inhabitants threshold, pre and post 2013. We show that indeed the introduction of the anti-revolving door policy cooling increases the average years of education of both mayoral candidates and elected mayors by approximately 2 years, consistently with the prediction of the model. The relative cost of the policy are higher for individuals with lower outside options, as

they are more likely to need this type of political appointments. As a consequence, the introduction of this anti-revolving door policy discourages low human capital perspective politicians relatively more than high human capital perspective candidates, thus increasing the overall share of the latter. If better educated mayors lead to better policy outcomes,⁷ this is good news for the voters.

Finally, we exploit the staggered election calendar of Italian municipalities to study the effect of the anti-revolving door policy on in-office performance, disentangling it as much as possible from selection. Theoretically, the model predicts more pandering by low human capital politicians, because of the increased cost of losing office. Moreover, only non-term limited individuals should change their behaviour, as they are motivated by re-election concerns (and in particular by the fact that re-election becomes relatively more valuable, due to the decreased value of the outside option). Outside the realm of the model, this implies that low human capital politicians should be relatively more prone to choose policies not likely to upset voters, irrespective of whether they are socially optimal or not. Moreover, any change in behaviour induced by the introduction of cooling off periods should be stronger for non-term limited politicians.

Empirically, we move to a municipality-year dataset and we compare the in office behaviour of mayors elected before the approval of the reform (hence unaffected by the change in selection incentives outlined above), pre and post 2013, in municipalities just above and just below 15,000 inhabitants. For those mayors, the reform essentially implies that the possibility of a PCO is taken away for one or two years (in municipalities above 15,000), hence losing the next election may be costlier. Our first outcome variable is the share of recycled waste, as a proxy for a policy that can be welfare improving but electorally costly. Second, we examine the effect on per capita revenues and the tax rate of the municipal component of the income tax, as politicians who are more concerned about re-election may be tempted to lower local taxes.

We find that low human capital mayors slow down the share of separate waste collection because of the Severino law, while there is no statistically significant effect for high human capital mayors. Furthermore, we find a negative effect of the reform on local income tax revenues, almost entirely driven by low human capital mayors. Using the logic of the model, we interpret this result as low human capital politicians being relatively more concerned about losing the next elections, because they cannot immediately join the board of a SOE, and hence being less willing to implement eco-friendly but electorally costly policies (more recycling implies more monitoring of citizens' behaviour, perhaps a more costly service), and more willing to cut local taxes. To further strengthen this interpretation, we can further split the sample and run our diff-in-disc for non-graduate non term limited and term limited mayors separately. Consistent

⁷Few papers argue against this idea (Carnes and Lupu, 2016), but most of the recent empirical results (Carreri, 2021; Sørensen, 2023; Meriläinen, 2022; Gamalerio and Trombetta, 2024) find a positive effect of politicians' education on outcomes.

with the model, we find that only non-term limited non graduate mayors change their behaviour because of the introduction of the anti-revolving door policy, and they do so by slowing down recycling and cutting local income taxes.

Taken together, our results suggest that anti-revolving door policies can be a double-edged sword. On the one hand, they improve the average human capital of politicians. On the other hand, they may increase the incentives to implement inferior but electorally rewarding policies, because the cost of losing elections increases. More broadly, our paper highlights the importance of connections between politics and other sectors in shaping politicians' incentives. Furthermore, it shows that it is not enough to simply pay politicians more, in order to get more candidates with higher human capital. The way in which they are paid, and the asymmetric effect of different policies across different types of candidates, are also crucial.

Contributions to the related literature This paper contributes to several strands of the literature. First, we contribute to the literature on political consequences of revolving doors. While Blanes i Vidal et al. (2012), Bertrand et al. (2014) and McCrain (2018) focus on “revolving door lobbyists”, i.e. former politicians that continue their career in lobbying firms, we study a different type of revolving doors, namely those between politics and high-level positions in the State bureaucracy or in publicly-owned firms.⁸

This is also one of the main differences between this paper and Fisman et al. (2025). They study the effects of a similar type of policy (cooling-off periods) on political selection, in terms of re-running decision, ideology and human capital. They find that cooling off periods tend to increase the probability that politicians in office re-run and to discourage entry of moderate candidates, without affecting much those with more extreme views. They also tend to reducing human capital of candidates. In this paper we consider a different institutional setting (Italian mayors rather than US state congresspeople) and a different type of revolving door (with respect to SOEs rather than lobby firms), and we believe those differences may explain the different results we obtain. In our setting, PCOs are likely to be available to former politicians irrespective of their human capital, while lobbying firms in the US may be more selective.⁹ Another important difference is that our focus on an executive political office allows us to measure also the effect of anti-revolving door policies on policymaking.

We are also close to Shepherd and You (2020), who studies how career concerns and the possibility of a job in the lobbying industry affects the behaviour of congressional staffers, finding that it increases the productivity of their congressperson. Egerod (2022) in a similar flavour

⁸In a different framework, Luechinger and Moser (2020) finds abnormal stock returns for firms hiring former EU commissioner.

⁹As shown in Appendix B, our model can be extended to accommodate for positive selection in the allocation of PCOs. When it is sufficiently strong, the effect of cooling off periods on the human capital of candidates is indeed reversed.

finds that US senators are more likely to choose a private sector career when they observe their colleagues being successful. Bils and Judd (2020) build a model of revolving door labour market, where individuals can choose to work for the government and then revolve to lobbying. As their model is about government employees, they abstract away from electoral incentives and focus on the importance of connections for the value of lobbying, and study the effect of cooling off periods and salary on lobbying decisions and intrinsic motivation of government workers. In this paper we take a complementary approach by studying how future career opportunities affect in-office behaviour of *politicians*, and also their selection into politics, hence in a sense we take for granted the (potential) return from political connections shown by the literature (Diermeier et al., 2005; Eggers and Hainmueller, 2009; Palmer and Schneer, 2016). Importantly, in our case this type of career opportunities can be heavily affected by their political roles, so connections are probably less central, while the interaction between out of office opportunities and re-election incentives is of crucial importance. Moreover, the type of out-of-office opportunities we focus on is not much in the lobbying industry, but rather in state-owned firms or in the bureaucracy. Therefore, in our model the action politicians take is not supposed to affect the lobbyist fortunes, but rather voters' welfare (and hence re-election chances). Finally, De Angelis et al. (2020) studies the effect of the same policy change on white collar crimes, finding no significant result. We focus on different outcomes and adopt a different identification strategy (diff-in-disc, rather than diff-in-diff) in order to focus our comparison on municipalities that are more similar. Furthermore, we have data on a longer time horizon after the approval of the law.

Second, we contribute to the literature on the consequences of political connections and patronage. On the former, Akcigit et al. (2023) finds that market leaders are more likely to hire politically-connected employees, but they are less innovative. Furthermore, political connections seem not to increase firms' productivity. Diegmann et al. (2024) finds that German firms connected with MPs improve their credit ratings and are less likely to leave the market, but they do not get preferential access to grants and procurements. Amore and Bennedsen (2013) finds that Danish firms connected with local politicians increase their profitability when the power of those politicians increases. Bertrand et al. (2018), instead, finds that French politically connected firms alter their decisions in order to help local politicians' re-election effort, without seeing an economic return. Colonnelli and Prem (2022) finds that politically-connected firms are negatively affected by anti-corruption audits. Cingano and Pinotti (2013) documents a revenue-premium for politically-connected firms in Italy because of a shift of public demand in their favour, with a negative effect on the provision of public goods. This is also consistent with Bartlett (2023). Closer to our work, Baltrunaite et al. (2021) finds that the combination of the "Severino law" and the introduction of quota for women in SOEs lead to an increase in the quality of the board and the appointment of fewer former politicians, increasing firms' prof-

itability. In terms of patronage, both Akhtari et al. (2022) and Colonnelli et al. (2020) find that political connections play a major role in appointments in Brazilian bureaucracies, leading to the selection of less competent individuals or to a decrease in schools' test scores. Brassiolo et al. (2020) documents the role of political patronage in bureaucratic appointments in Ecuador.¹⁰ We study the other side of the equation: taking for granted the (potential) distortions that can arise because of political connections or patronage, we show that regulations discouraging this type of behaviour have also positive effects on political selection. This is consistent with Golden et al. (2022), showing that the abolition of patronage appointments increases the re-election rate of US State legislators.

Third, we contribute to the literature on political selection (Caselli and Morelli, 2004; Besley, 2004; Mattozzi and Merlo, 2008; Dal Bó and Finan, 2018; Hall, 2019; Gulzar, 2021; Casey et al., 2021; Auerbach, 2022) and performance. In particular, we focus on the role of external rewards on politicians' behaviour (Fisman et al., 2014; Weschle, 2022) and on how career incentives for politicians affect the composition of the pool of candidates, in terms of human capital, and their in office decisions. Although there is extensive literature on politicians wages (Gagliarducci and Nannicini, 2013) and on the impact of rewarding schemes on political careers (Groseclose and Krehbiel, 1994; Fiorina, 1994; Hall and Van Houweling, 1995; Diermeier et al., 2005),¹¹ we point out that this type of “revolving doors” are substantially different in terms of their incentives, given the different desirability for different types of politicians. In this sense, our result on the (positive) effect of a reduction in the value of PCOs is similar to Keane and Merlo (2010): they find that restricting private sector employment after leaving congress disproportionately induce “achievers” (i.e. those good in passing laws in congress) politicians to stay, as it increases the value of holding a seat. Moreover, a reduction in office wages discourages “skilled” (i.e. those good in getting re-elected) politicians. Our approach differs from their paper in three ways. First, we look how the reduction in PCOs affects the pool of *candidates*, while they focus on *elected* politicians. This is important: in their paper, the private sector ban increases the value of a seat *conditional on being in office*. This is true also for cooling off periods in our model. But, as we also include entry into politics, we are able to pick also the effect on the whole value of a political career, and the asymmetries on that respect. Second, we are able to say something also about effects of this policy on the in-office behaviour, in particular in terms of the type of policies that are chosen. Third, we use quasi-experimental design (a difference-in-discontinuity), rather than a structural model.

¹⁰Related with those, Riaño (2021) documents the strong presence of bureaucratic nepotism in Colombia, that negatively affects the performance of public sector agencies. Differently from the above, this paper looks at family-related, rather than politically-related, nepotism. More broadly, Mocetti and Orlando (2019) shows that the presence of corruption worsens the selection of personnel disproportionately more in the public sector, vis-a-vis the private one.

¹¹Importantly, they typically look at the ex post career of elected politicians, while we can look at the entry decision as well.

Overall, we believe that our result is important for this literature for two reasons. First, it contributes to the broader understanding of how institutional features affect the type of candidates willing to run. Second, it qualifies the idea that policies increasing the benefit of a political career should improve the pool of candidates (as suggested, at least for polarization, by Hall (2019)). Our paper shows the importance of taking into account the possibility of asymmetric effects of those policies across different types of perspective candidates. Moreover, our paper adds evidence on the importance of the political role of SOEs.¹²

Finally, we focus on education as a relevant outcome variable as it has been shown to positively affect economic growth (Besley et al., 2011), the production of public goods (Martinez-Bravo et al., 2017), service provision (Sørensen, 2023; Gamalerio and Trombetta, 2024), fiscal sustainability (Meriläinen, 2022). Furthermore, it positively correlates with measures of administrative competence (Carreri, 2021) and it reduces the electoral performance of populist parties (Boffa et al., 2023). In general, it is a proxy for competence extensively used in the political selection literature (Besley and Reynal-Querol, 2011; Gagliarducci and Nannicini, 2013; Galasso and Nannicini, 2011).

2 Model

To guide the empirical analysis, we build a theoretical model of endogenous political selection and policymaking where a PCO is available to politicians, and we study how changes in its value affect the composition of the pool of candidates and the choices politicians make once in office. The model shows that a decrease in the value of the PCO reduces the expected value of holding office in a relatively more detrimental way for low-human capital candidates, thus improving the share of high human capital candidates. At the same time, however, a reduction in the value of the PCO makes losing office relatively more costly, increasing low human capital politicians' incentives to choose policies that are popular with the voters even at the cost of ignoring valuable private information.

2.1 Set up

Our model builds on the seminal literature on political agency and pandering (Canes-Wrone et al., 2001), and in particular we are close to the set up used in the benchmark model by Ashworth and Shotts (2010).

As in their approach, politicians (she) and a representative voter V (he) live for two periods. Politicians can be of high or low human capital, captured by $\phi \in \{\phi_L, \phi_H\}$ with $1 = \phi_H > \phi_L$. The state of the economy θ_t is binary and iid in every period, i.e. $\theta_t \in A, B$, and such that A is

¹²See Bo et al. (2025) for a comprehensive literature review on SOEs in developed economies.

the ex-ante most likely state, namely we assume $Pr(\theta_t = A) = \pi > 0.5$. The state is unknown to all the players, but the politician in office receives an informative signal s_t . Politicians' human capital determines the precision of the signal about the state of the world they receive in every period, namely $Pr(s_t = \theta_t | \theta_t) = \phi > \pi$. Finally, the level of human capital is private information of the individual politicians, and can be learned by employers if individuals join the private sector. Voter's beliefs about the probability that a politician is a high type are denoted by κ , and are updated in equilibrium. In every period, the politician in office chooses an action $x_t \in \{A, B\}$. The voter gets a payoff u^V of 1 if $x_t = \theta_t$ and 0 otherwise. We assume that the voter, before the elections, always observes x_1 . On top of that, he may observe u^V with probability ρ . The politician in office gets a payoff of $u + E$ if $x_t = \theta_t$ and of E otherwise. Hence, α captures the degree of policy motivation and E captures the value of office-related perks.

We add two elements to this standard political agency setup. First, we assume that politicians, if they are not re-elected, can opt for a politically connected outside option (PCO) in the second period of their life. O is the value of the PCO, that can be chosen only by former politicians who are no longer in office. Of course, they may also go back to the private market if more convenient for them.

Second, we add a selection phase at the beginning of the game. Formally, there is a continuum of measure 1 of potential candidates, each of them with human capital ϕ . The pool is such that $Pr(\phi = 1) = \kappa_0$, common knowledge. At the beginning of the game, one of the perspective candidates is randomly drawn and can choose between a political career or staying in the private market. If she chooses to stay in the private market ($d = mkt$), she earns a salary $w(\phi)$ in each of the two periods, where of course $w(\phi_L) < w(\phi_H)$, and a new perspective candidate is drawn. The first perspective candidate that accepts ($d = pol$) becomes the incumbent politician in period 1. She observes s_1 and chooses x_1 . At the end of the period, she faces an exogenously given candidate whose level of human capital is the same as her ex-ante level, namely $\kappa := Pr(\phi = 1 | d = pol)$. If voted out at the end of period 1, she can either go to the private market and earn $w(\phi)$, or opt for the PCO and earn O . To make the running choice smoother, we assume that there is an element of noise, modelled as an idiosyncratic shock ϵ uniformly distributed on $\left[-\frac{1}{\psi}, \frac{1}{\psi}\right]$, with support sufficiently large to avoid 0 probability cases. Shocks are independent across individuals. In practice, this means that an individual with ability ϕ becomes a politician in $t = 1$ if

$$\mathbb{E}u^P(pol|\phi) + \epsilon \geq \mathbb{E}u^P(mkt|\phi) \tag{1}$$

where $\mathbb{E}u^P(pol|\phi)$ is the expected utility of a political career and $\mathbb{E}u^P(mkt|\phi)$ is the expected utility of a career in the private sector at that point in time. We assume that $O > w(\phi_L)$, otherwise no politician would ever be interested in O and thus it would be irrelevant. Furthermore,

we assume $E > \max[w(\phi_H), O]$, so that politicians are always interested in pursuing re-election, and that $u - w(\phi_H) \geq \phi_L u - O$, so that high h.c. types are at least as motivated as low h.c. types in being re-elected.

2.1.1 Timing and solution concept

To sum up, timing is as follows:

Period 1:

1. Perspective politicians choose between market ($w(\phi)$ forever) or politics: the first perspective candidate accepting is in office in period 1.
2. Politician in office observes s_1 and chooses x_1 ;
3. V observes x_1 and, with probability ρ , also u_1^V , and update beliefs on κ ;
4. There is an exogenous challenger with the same (ex ante) expected ability as period 1 politician;
5. V votes;

Period 2:

1. If kicked out, the politician chooses between O and $w(\phi)$. Whoever is in office, observes signal s_2 and chooses policy x_2 .
2. Payoffs are paid and the game ends.

Our solution concept is Perfect Bayesian Nash equilibrium (PBNE). As in Ashworth and Shotts (2010), we define full accountability equilibria those where politicians of every type choose $x_t = s_t$. Note that those equilibria maximize V's welfare, at the policymaking stage. We focus on full accountability equilibria, whenever available. When they are absent, we choose equilibria where the incumbent is retained with the highest probability.

2.1.2 Discussion

The model implicitly assumes a different level of information between employers and voters: only the former know the true ϕ . This assumption can be justified on several grounds (employers have relatively higher stakes than voters in determining the true “ability” level of an employee, and they typically have access to more information). Moreover, it is not necessary for our results. In fact, results are qualitatively unchanged if we assume that employers have the same information as voters, and that the true level of ϕ is revealed to everyone after the elections, at the beginning of period 2. Furthermore, all the results on political selection would be exactly

the same if ϕ was observable by everyone from the beginning of the game. Some uncertainty on it, from the voters' side, is needed to generate the signalling incentives behind the policymaking part of the game.¹³

On the technical side, it is not obvious how to model the expected quality of period 2 challenger. Allowing endogenous entry in the second period is of course possible, but it would imply a decision based on one period only (rather than on two), and therefore quite different from period 1's entry decision. Hence, we decided to make assumptions on voters' beliefs: we assume that the voter expects the challenger to have the same expected quality as the first period incumbent. This would be the outcome in a stationary equilibrium of the fully dynamic, infinite horizon version of this game, but agency models lose tractability very quickly in those cases. In practice, when making their entry decision, perspective politicians anticipate that the voter will have the same expectation on the challenger as the one (pre-policy but of course post-entry) on the incumbent. This is of course an equilibrium object, from the point of view of the entry choice, but it will be "sunk" when the voter chooses how to vote. And the voter's action is the only thing that matters for the entry decision.

2.2 Analysis

2.2.1 Policymaking

We start from the policymaking phase. Note, in fact, that in the second period every politician in office chooses $x_2 = s_2$, and as a consequence the voter's sequentially rational election strategy is to keep the incumbent if, in expectation, she is more likely than the challenger to be a high human capital type. Therefore, denoting by $r(\Omega)$ the probability that V confirms the incumbent when his information is Ω , we have that in every equilibrium

$$r(\Omega) = \begin{cases} 0, & \text{if } \hat{\kappa} < \kappa \\ [0, 1], & \text{if } \hat{\kappa} = \kappa \\ 1, & \text{otherwise} \end{cases}$$

where $\hat{\kappa}$ denotes the updated beliefs over the human capital of the incumbent after observing the policy choice and possibly the outcome. κ instead is the belief that the running politician is a high human capital type (which is also an equilibrium object and depends on the entry decision, but it is determined at this point). Given this strategy, our model replicates Lemma 3 of the working paper version of Ashworth and Shotts (2010):

¹³In the empirical application we use education as a proxy for human capital. Education is, of course, observable. However, it is only a noisy proxy of human capital. Our empirical results on policymaking are consistent with a theoretical model where there is some value from signalling, hence either voters do not focus too much on the education of candidates or low education candidates have, on average, stronger signal incentives than high education candidates.

Lemma 1 *In every equilibrium where $r(\theta_1 = x_1) = 1$ and $r(\theta_1 \neq x_1) = 0$, for any parameters at which a low human capital incumbent wants to follow a B signal, a high human capital incumbent also wants to follow a B signal.*

This implies that, whenever the low h.c. politician is indifferent between action A and B after observing a signal B, the high h.c. politician strictly prefers B. Hence, pandering incentives are stronger for the low h.c. politician. The rest of the analysis is also very similar, thus we refer to the original paper. In a nutshell, choosing the ex-ante more popular policy ($x_1 = A$) gives an electoral advantage when u^V is unobserved. This creates the incentive to ignore s_1 whenever its realization is B, despite the fact that $Pr(\theta_1 = B|s_1 = B) > Pr(\theta_1 = A|s_1 = B)$, given the informativeness of the signal. This incentive is stronger for low human capital politician, because their signal is less precise, and it is mitigated by ρ , because incumbents producing $u^V = 0$ are surely voted out, in equilibrium. Thus, there is a level of ρ sufficiently high so that a perfect accountability equilibrium is incentive compatible. The only difference with respect to (Ashworth and Shotts, 2010), at this stage, is the presence of the PCO, that is always chosen by low human capital politicians. This modifies slightly the condition on ρ that guarantees the existence of perfect accountability equilibria:

Lemma 2 *There exists a perfect accountability equilibrium iff $\rho \geq \frac{(v(L)-O)-(1-2\lambda_B)u}{2(1-\lambda_B)(v(L)-O)} := \bar{\rho}$, where $\lambda_B = Pr(\theta_1 = A|s_1 = B) < 0.5$ and $v(L) = u\phi + E$.*

In this perfect accountability equilibrium, $r(x_1 = \theta_1) = 1$, $r(x_1 \neq \theta_1) = 0$, $r(x_1 = A) = 1$ and $r(x_1 = B) = 0$. When ρ is too small, the perfect accountability equilibrium is no longer sustainable, because the low human capital politician has a strong incentive not to follow s_1 when it points toward the least likely state. In this case, multiple equilibria exists. We select and characterize the equilibrium with the highest probability that the incumbent is retained.¹⁴

Lemma 3 *If $\rho < \bar{\rho}$, there exists an equilibrium where the high human capital incumbent chooses $x_1 = s_1$ and the low human capital incumbent chooses $x_1 = s_1$ if $s_1 = A$ and mixes choosing $x_1 = A$ with probability σ if $s_1 = B$. V always re-elects when $x_1 = \theta_1$, re-elects with probability 1 if $x_1 = A$ and θ_1 is unobserved and re-elects with probability r_B if $x_1 = B$ and θ_1 is unobserved.*

In this case, $r_B = 1 - (1 - 2\lambda_B) \frac{(v(L)-O)\rho+u}{(1-\rho)(v(L)-O)}$ and $\sigma = 1 - \frac{1-\pi}{\pi(1-\phi_L)+(1-\pi)\phi_L}$. As in Canes-Wrone et al. (2001), σ captures the probability that an incumbent chooses to pander, i.e. picks the ex ante popular action ignoring valuable private information. We are now in the position to state the first main result of our model.

¹⁴Note: there is at least another equilibrium that is welfare-equivalent from V's perspective. However, we focus on the equilibrium where the incumbent is retained with the highest probability. For the "selection" analysis, this choice is not fully wlog.

Proposition 1 *As O decreases, the range of parameters where there is a full accountability equilibrium decreases and the range of parameters where there is a pandering equilibrium increases.*

The intuition behind Proposition 1 is simple. Conditional on being in office, a reduction in O is like an increase in E : it makes losing costlier, or holding the seat more valuable.¹⁵ This affects the basic trade-off faced by low human capital politicians when they receive $s_1 = B$. By choosing the action most likely to be correct ($x_1 = B$), they risk not to be re-elected, if θ_1 is not revealed before the election. By choosing the ex ante popular action, they are more likely to stay in office. If the cost of losing increases, because O decreases, the full accountability equilibrium will be incentive compatible for a smaller range of parameters. Figure 1 provides an illustration of this point. A further point to be noted is that, in a pandering equilibrium, only low human capital politicians choose to pander. Thus the reduction in O should not change the behaviour of high human capital politicians (they keep following the signal), while low human capital individual should have a stronger incentive to implement suboptimal, but electorally rewarding, policies. Finally, the model predicts that a change in behaviour should be observed for individuals that can run for office after the policy is implemented. Individuals in their last term are less affected by the introduction of cooling off periods. Therefore, any effect on policymaking should be stronger for non-term limited, low human capital individual.

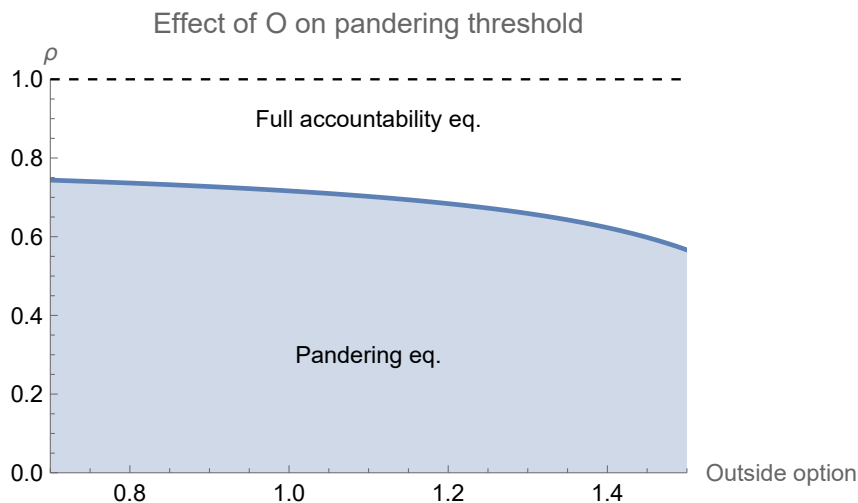


Figure 1: Values of ρ where the full accountability or the pandering equilibrium exists, as a function of O .

2.2.2 Selection into politics

We now move to the selection choice, that happens at the beginning of the first period. The “outcome variable” we are interested in is the probability that someone choosing to run for office

¹⁵As pointed out also by Keane and Merlo (2010).

is a high h.c. individual, i.e. κ . In every equilibrium, applying Bayes' rule,

$$\kappa = \frac{1}{1 + \frac{Pr(run|\phi_L) \frac{1-\kappa_0}{\kappa_0}}{Pr(run|\phi_H)}}$$

where the probability that candidates of different types choose to run are determined in equilibrium, as a function of their expected payoff from pursuing different careers. Given our distributional assumption on the random shock, in every equilibrium of the game

$$Pr(run|\phi) = \frac{1}{2} - \frac{\psi}{2} (\mathbb{E}u^P(mkt|\phi) - \mathbb{E}u^P(pol|\phi))$$

Finally, note that

$$\frac{\partial \kappa}{\partial O} < 0 \Leftrightarrow \frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial O} Pr(run|\phi_H) > \frac{\partial \mathbb{E}u^P(pol|\phi_H)}{\partial O} Pr(run|\phi_L)$$

As $O > w(\phi_L)$, so a not re-elected L politician chooses O. A H politician chooses O if $O > w(\phi_H)$ and the private sector salary otherwise. $\mathbb{E}u^P(pol|\phi)$ depends on the equilibrium that will be played in the policymaking phase. However, we can show that, in both the equilibria we consider for the policymaking case, $\frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial O} > Max[\frac{\partial \mathbb{E}u^P(pol|\phi_H)}{\partial O}, 0]$. In other words, the direct effect of O is always stronger for low h.c. politicians.¹⁶ They are more likely to choose the PCO (high h.c. politicians may prefer the private market, when $O < w(\phi_H)$) and, at least in perfect accountability equilibria, they are always more likely to need it, because they are more likely to lose office. However, this is not always enough to cause a negative effect of O on κ , because it may be that $Pr(run|\phi_L) > Pr(run|\phi_H)$. Proposition 2 shows the existence of a sufficient condition for the direct effect to always dominate the “level effect”.

Proposition 2 *There exists a sufficiently small ψ such that $\frac{\partial \kappa}{\partial O} < 0$.*

It is important to stress that Proposition 2 shows the existence of a sufficient condition, but weaker conditions (or even conditions that do not depend on ψ) can also be found. Second, the equilibrium selection choice may play a role here. Different pandering equilibria can, indeed, have different implications, depending on the importance of the indirect effect that O has on politicians' welfare through re-election probabilities. Finally, it is worth making the explicit comparison between O and the office perks E . Both of them tend to increase the benefit from a political career, but they do so in different ways and, in fact, they have different effects.

¹⁶Together with the first effect of making a political career more attractive, O has also a second effect going through r_B in pandering equilibria. Intuitively, an increase in O must be compensated by a decrease in r_B , in equilibrium, in order to keep the low type indifferent between policy A and B after $s_1 = B$ (without the decrease in r_B , an increase in O would increase the incentive to choose B rather than A). This second effect is always dominated by low types, but it may actually dominate in case of high human capital candidates. For them, an increase in O may actually decrease the benefits from a political career. See the proof of Proposition 2 for more details.

Proposition 3 *There exists a sufficiently small ψ such that $\frac{\partial \kappa}{\partial E} > 0$.*

The intuition is exactly the opposite. E has a positive direct effect on $\mathbb{E}u^P(pol)$ for both types, but it is stronger for high h.c. types, that are more likely to remain in office in a full accountability equilibrium. Figures 2 and 3 show the effect on κ of O and E .

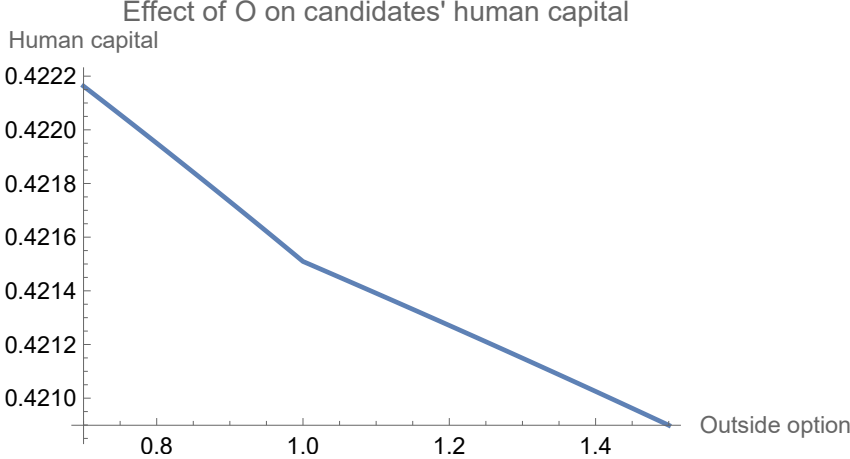


Figure 2: Effect of O on κ .

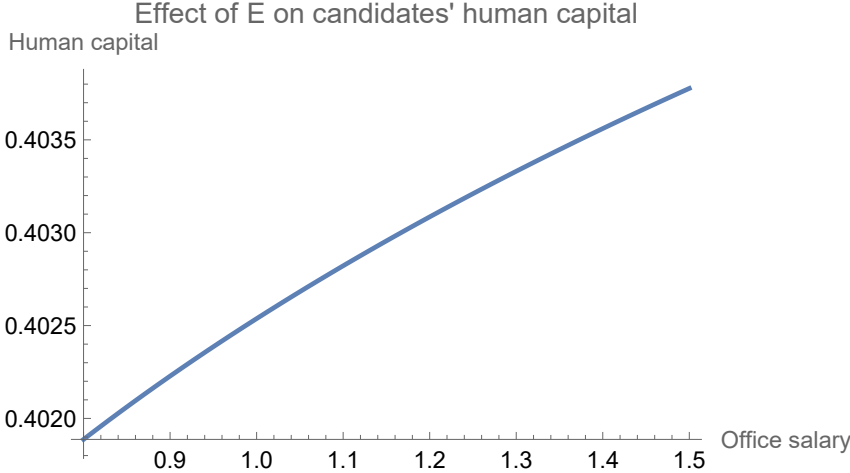


Figure 3: Effect of E on κ .

Propositions 2 and 3 show that two policies affecting the overall value of a political career in the *same direction*, such as a reduction in O or a reduction in E , can have *completely opposite* effects in terms of composition of the pool of candidates.¹⁷ When the equilibrium strategies of

¹⁷In Keane and Merlo (2010), a private sector ban increases one dimension of the “quality” of congresspeople, as well as an increase in wages. However, as they focus on sitting congresspeople, those policies effectively move in the same direction (i.e. they both increase the value of holding office, conditional on being in office). Our model allows us to study also the effect of those policies on the overall value of a political careers, and the asymmetries that arise.

re-election, policymaking and entry are considered, it becomes clear that high h.c. politicians are disproportionately more affected by a change in office wages (vis-a-vis low h.c. politicians) and disproportionately less affected by changes in the value of politically connected outside options. Therefore, the overall effect of those policies on the pool of candidates can be very different. More broadly, this stresses the importance of taking into account the nuances of rewarding schemes for politicians.

3 Institutional setting

3.1 Italian municipalities

Italy is comprised of 8,047 municipalities, with a majority (70.5%) having populations of fewer than 5,000 residents. These municipalities bear responsibility for essential services such as municipal police, infrastructure, welfare, housing, garbage collection, and water supply. Managing approximately 10% of the nation's public expenditures, municipalities allocate an average of 1856 euros per capita, based on data from 2015-2017 (Aida Pa, Bureau Van Dijk). Local taxes contribute around 20% of their revenue, with significant sources being the property tax introduced in 1993 under Legislative Decree 504/1992, and a surcharge on residents' income tax implemented in 1999. The remaining funds are derived from discretionary transfers provided by higher levels of government, including provinces, regions, and the central State. Mayors wield significant influence within municipal governments as they possess the authority to appoint and dismiss ministers who serve as part of the municipal administration (called "giunta"). Furthermore, if the municipal council decides to dismiss the mayor, the council is dismissed as well and a new one is elected.

Direct elections have been in place since 1993 (Law 81 of 1993) for Italian municipal mayors. An important difference arises at the same population threshold we are using for this paper: in municipalities with populations below 15,000, mayors are elected through a single round plurality rule, while larger municipalities employ a run-off system. However, note that this distinction has remained constant from 1993 onward. Mayors hold office for five years and are eligible for a maximum of two consecutive terms.

3.2 The "Legge Severino"

We consider one of the decrees composing the so called "Legge Severino" (d.l. 8th April 2013 number 39), which introduced a series of anti-corruption measures, applied to the whole spectrum of municipalities. On top of that, it introduced "cooling off" periods for mayors, members of the municipal executive and members of the municipal council for municipalities above 15,000 inhabitants. More in details, they have to wait one year after the end of their political term

in office before they can take leading positions in the bureaucracy or in publicly owned enterprises controlled the regional administration, provincial administrations or municipalities with a population bigger than 15,000 inhabitants within the same region where their municipality is located (art. 7). The cooling off period is extended to two years if the public entity controlling the publicly owned enterprise is the same municipality where they served. Furthermore, they have to wait for two years before they can be appointed as director of the “local health authority” (“azienda sanitaria locale”) whose area of responsibility includes their municipality (art. 8). Furthermore, the law mandates that current mayors, executive members, and council members of municipalities whose population is above 15,000 inhabitants cannot be appointed to leading positions in State owned enterprises controlled by regional, provincial governments, or large municipalities within the same region, or to leading positions in the bureaucracy or health authorities. Politicians already serving in large municipalities and holding leading positions in State owned enterprises or in the bureaucracy or in health authorities within the same region must choose between the two roles. Importantly, it applies to politicians already in office in 2013 (artt. 12-14). ANAC (Anti-corruption authority), AGCOM (Anti-trust authority) and Corte dei Conti are in charge of enforcement and sanctions. In particular, ANAC can declare null and void appointments in contrast with the Law (art. 16) and as a consequence employment contracts are immediately revoked. Furthermore, members of the administration making an illegal appointment are personally responsible for the economic consequences of that actions (art. 18). ANAC is also in charge of monitoring.

3.3 State-owned firms in Italy

State-participated (SPE) and State-owned enterprises (SOE) represent an important component of the Italian economy. The State holds shares in some of the biggest public companies in the Milano Stock Exchange, such as ENI, ENEL, and Leonardo. In 2023, the capitalization of the 13 SPEs accounted for 30% of the total capitalization of the Italian stock market.¹⁸ According to the Italian Statistical institute (Istat, 2024b), 7808 SPEs were active in Italy in 2021. Of those, 3517 are SOEs. They employ around 580.000 people, the 4.3% of the total number of employees for industry and services (Istat, 2024a). Besides, 41% of all the SOEs are controlled by local governments (Provinces or municipalities). They employ 146.000 people and two-thirds of them are active either in the transportation sector or in the water and waste management sector (Istat, 2024b). According to the Ministry of Economics and Finance, between 2014 and 2021 Italian municipalities appointed 23,235 people (or 68,567 positions x year) in 5177 different enterprises. Of those, 11,423 people received a salary (12.6% as CEOs, 62.6% as board mem-

¹⁸See: <https://www.ansa.it/sito/notizie/economia/2023/12/14/borsa-partecipate-statali-pesano-30-della-capital-36d76117-dde2-433a-964d-3797c112fe0d.html>.

bers), implying that each municipality appointed 1.4 people in paid positions in the 8 years span. In their compensation structure, SOEs must abide with the law D.lgs. 17 (2016). The maximum amount that a person can receive from SOEs is 240.000 euros (gross, per year), as per art. 6. This applies to every position. Moreover, the threshold is measured at the individual level, therefore a person paid by multiple SOEs cannot get more than 240.000 euros per year in total. For CEOs, at least 30% of the total remuneration (still within the limit) must be linked to specific objectives.

4 Empirical Evidence

4.1 Empirical strategy

We use Italian municipality-level data for 1993-2019 and exploit the introduction of an anti-revolving door policy (Legge Severino) in 2013. Among other norms aimed at safeguarding the bureaucracy from political influence and fighting corruption (whose application extended to the whole set of politicians and institutions), the law prescribed a “cooling-off” period of one or two years for those holding a political office, and forbids politicians from holding also some positions in SOEs or in the bureaucracy. This “cooling-off” period means politicians cannot be appointed to a high-level position in the bureaucracy or State-owned enterprises’ board for two years after leaving politics. However, this type of provision is limited to politicians (from a member of the city council upward) serving in a municipality with at least 15,000 inhabitants. Politicians holding office in towns below that threshold are not affected by this part of the law. In addition, the application is limited to State-owned enterprises and bureaucratic positions belonging to the same region of the municipality where they held office.

This threshold provides the necessary variation to causally identify the effect of the anti-revolving doors policy on a series of outcomes. Specifically, we can compare municipalities slightly above and below the 15,000 inhabitants threshold, pre-post-2013. More in detail, we estimate the effect of the anti-revolving doors policy using the following difference-in-discontinuity approach (Grembi et al., 2016; Gamalerio and Trombetta, 2024):

$$Y_{it} = \rho_0 + \rho_1 R_{it} + (> 15000_i) * (\beta_0 + \beta_1 R_{it}) + (Post_t) * [\pi_0 + \pi_1 R_{it} + (> 15000_i) * (\phi_0 + \phi_1 R_{it})] + \eta_{it} \quad (2)$$

where Y_{it} is our outcome variable (candidates and elected mayors’ education, measures of policymaking). The variable $R_{it} = P_{it} - P_{15000}$ is the normalized population which measures the distance of municipality i from the 15,000 inhabitants threshold P_{15000} at time t . The population P_{it} comes from the most recent census produced by the Italian Statistical Office (Istat) in

1991, 2001, or 2011. The dummy variable ($> 15000_i$) is 1 if municipality i is above the 15,000 inhabitants threshold. The dummy variable ($Post_t$) equals 1 for elections starting from 2013. The temporal dummy variable ($Post_t$) has been built in this way because the selection of (new) politicians can happen only during electoral years and not during the electoral mandate (i.e., far away from elections). The treatment variable is the interaction term between ($> 15000_i$) and ($Post_t$). The coefficient of interest is ϕ_0 , which captures the effect of the anti-revolving door policy on the selection of politicians, comparing municipalities in which the policy applies and municipalities in which it does not. We estimate model 2 by local linear regression (Gelman and Imbens, 2018), using the subsample of observations which lie in the interval $R_{it} \in [-h, +h]$ around the threshold, where the optimal bandwidth h is calculated following the Calonico et al. (2014) Calonico et al. (2018) MSE-optimal bandwidth. Standard errors are clustered at the municipality level.

This approach relies on three core assumptions, each of which we systematically evaluate in subsequent sections of the paper. The first assumption centers on the requirement that there is no evidence of manipulative sorting of the running variable R_{it} around the 15,000-inhabitant threshold, both prior to and following the year 2013. This implies that municipalities should not have the capability to selectively position themselves on one side of the threshold. The second assumption pertains to the necessity of balance in other potential outcomes and municipal characteristics around the threshold before and after 2013. This entails an examination of whether various factors, aside from the running variable, exhibit disparities on either side of the threshold. To scrutinize this assumption, we employ model (2) with municipal characteristics as dependent variables. The third assumption stipulates that municipalities positioned just below and just above the 15,000-inhabitant threshold should follow parallel trends leading up to the 2013 reform. This parallel trend assumption, a common requirement in difference-in-differences analyses, is tested in Section 4.3.2.

4.2 Data

To study the political effects of anti-revolving door policies we combine several datasets. We have municipality-level data for the period 1993-2022, organized by election year (i.e. one observation every 5 years per municipality) or by year. Those datasets include information on socio-demographic variables (from ISTAT), electoral results (from the Ministry of Interior), waste collection (from the “Catasto rifiuti”), balance sheet (from Aida PA) and revenues coming from the local add-on on the national income tax (“addizionale Irpef”, from the Ministry of Economics and Finance). On top of this, we have individual level information on elected politicians and candidate mayors, which include demographics, education, occupational experience and political career (from the “Anagrafe degli amministratori locali”).

4.3 Main results

4.3.1 Selection of politicians

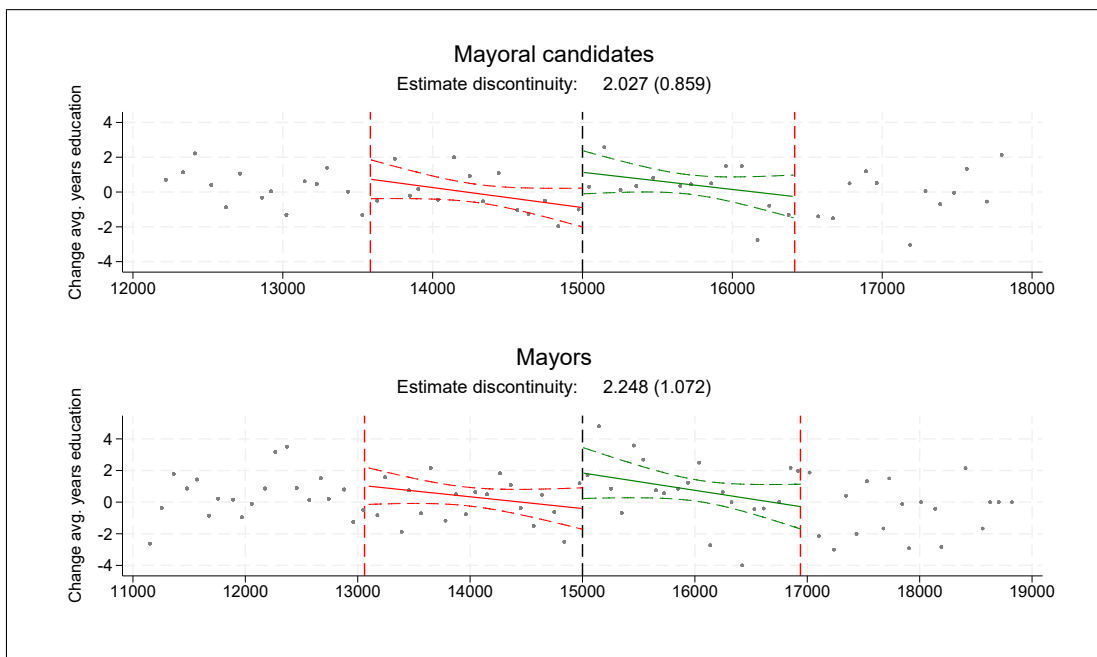
Using the difference-in-discontinuity approach described above, we show that the anti-revolving doors policy increases the average education of mayoral candidates, consistently with the prediction of the model. We report the results of the difference-in-discontinuity analysis in Table 1 and Figure 4. Specifically, Table 1 and Figure 4 provide evidence that, in municipalities just above the 15,000 thresholds compared to municipalities just below the cutoff, the anti-revolving door policy led to an increase in the average years of education of mayoral candidates. The coefficient of interest, in both columns, is the interaction between Post and (> 15000), capturing the effect of the reform just around the relevant population threshold. As the outcome variable is the average years of education of mayoral candidates, measured at municipality level, those coefficients imply an increase of about 2 years. This is approximately a 13% increase, given the average of 15 years of education. This piece of evidence confirms the model’s prediction, i.e., the elimination of PCO reduces the expected value of holding office relatively more for candidates of lower human capital, thus improving the share of high-human capital candidates. A similar effect translates into the average education of elected mayors.

Table 1: The effect of anti-revolving door policy on the education of politicians

	(1)	(2)
Dep. Var.	Average years education mayoral candidates	Average years education elected mayor
Control Function	Linear	Linear
Bandwidth	CCT	CCT
Controls	No	No
(> 15000)	-0.927 (0.687)	-1.276 (0.823)
Post	-0.892 (0.569)	-0.403 (0.669)
Post*(> 15000)	2.027** (0.859)	2.248** (1.072)
Observations	577	773
Bandwidth	1416	1939
Mean outcome	15.66	15.83

Notes. Diff-in-disc estimates of the impact of anti-revolving door on the education of politicians. Initial sample: municipalities between 10,000 and 30,000 inhabitants. Electoral terms between 2003 and 2022. Variables in the Table: 1) (> 15000) = 1 for municipalities with more than 15,000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2013. The outcome variable is the average years of education of mayoral candidates in column 1, and the average years of education of elected mayors in column 2. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Figure 4: Diff-in-Disc graphical evidence



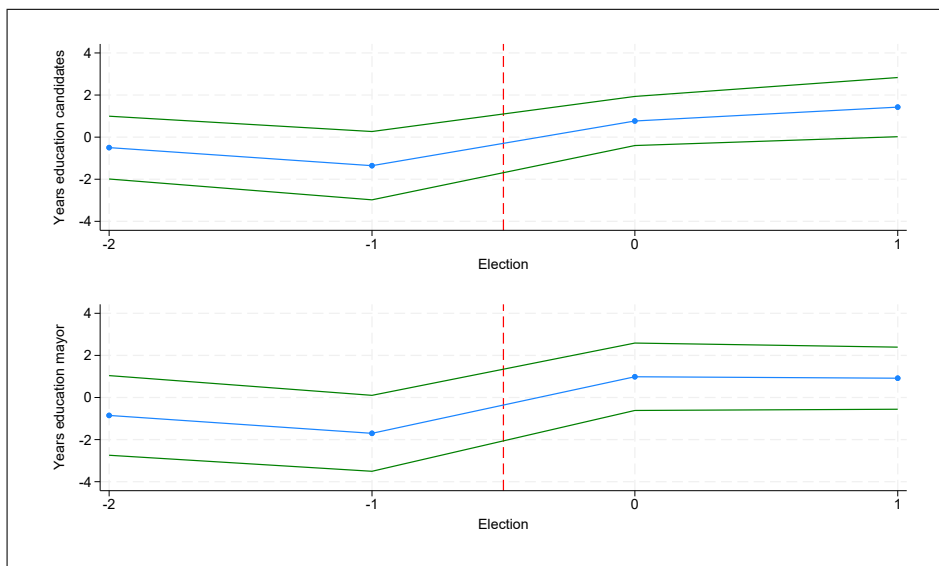
Notes. Diff-in-Disc estimates. Horizontal axis: population around the 15,000 threshold. Vertical axis: change in the average years of education of graduate mayoral candidates in the top graph and change in average years of education of elected mayors in the bottom graph. Scatter points are averaged over bins of 100 inhabitants. The central red and green lines represent a split linear polynomial of the outcome variable in the normalized population, fitted separately on each side of the threshold. The dashed lines capture the 95% confidence interval. The estimated discontinuity is the $(Post) * (> 15000)$ coefficients and standard errors as reported in Table 1.

4.3.2 Robustness

Our findings are robust to a series of checks. First, since the diff-in-disc approach relies on the same assumptions as difference-in-differences, we examine whether municipalities just below and just above the 15,000-inhabitant threshold followed parallel trends prior to 2013. Evidence supporting the parallel trends assumption is presented in Figure 5. Specifically, we run a series of cross-sectional RDD regressions comparing the educational attainment of politicians in municipalities just below and just above the threshold. Observations from different municipalities are grouped in a single regression based on the electoral year’s distance from the 2013 reform. For example, as shown on the x-axis of the two panels in Figure 5, a value of 0 corresponds to the first elections held immediately after the 2013 reform. A value of -1 refers to the elections held just before the reform, while -2 denotes the elections prior to those at time -1. We conduct the cross-sectional RDD regressions using the same CCT optimal bandwidths employed in Table 1: specifically, a bandwidth of 1416 for mayoral candidates and 1939 for mayors.

Crucially for the parallel trends assumption, the RDD coefficients are stable between elections -2 and -1, indicating that municipalities just below and above the threshold followed similar trends in the pre-2001 period. Consistent with evidence of a positive effect of the anti-revolving door law on political selection, Figure 5 clearly shows that the magnitude of the coefficients increases after 2013 (i.e., in elections 0 and 1) compared to the pre-2013 period.

Figure 5: Cross-sectional RDD coefficients over time



Notes. RDD coefficients capturing the effect of being above the 15,000-inhabitant thresholds vs. being below it. On the x-axis, which goes from -2 to 1, we report the elections before and after the 2013 introduction of the anti-revolving door law, where 0 indicates the elections immediately after the introduction of the law. We run the cross-section RDD regressions using the same CCT optimal bandwidths reported in Table 1 (i.e., a bandwidth equal to 1416 for mayoral candidates and a bandwidth equal to 1939 for mayors). The blue lines connect the estimated coefficients, while the green lines represent the 95% confidence interval.

Second, consistent with the assumptions of the regression discontinuity design, Table 2 shows that pre-determined covariates are balanced around the 15,000-inhabitant threshold before and after 2013. To assess this, we conduct a difference-in-discontinuity analysis using these covariates as outcome variables. In none of the columns do we find a significant coefficient, providing no evidence that any other covariates experience a discontinuous jump at the population threshold we exploit.

Table 2: Balance test at 15,000 inhabitant threshold

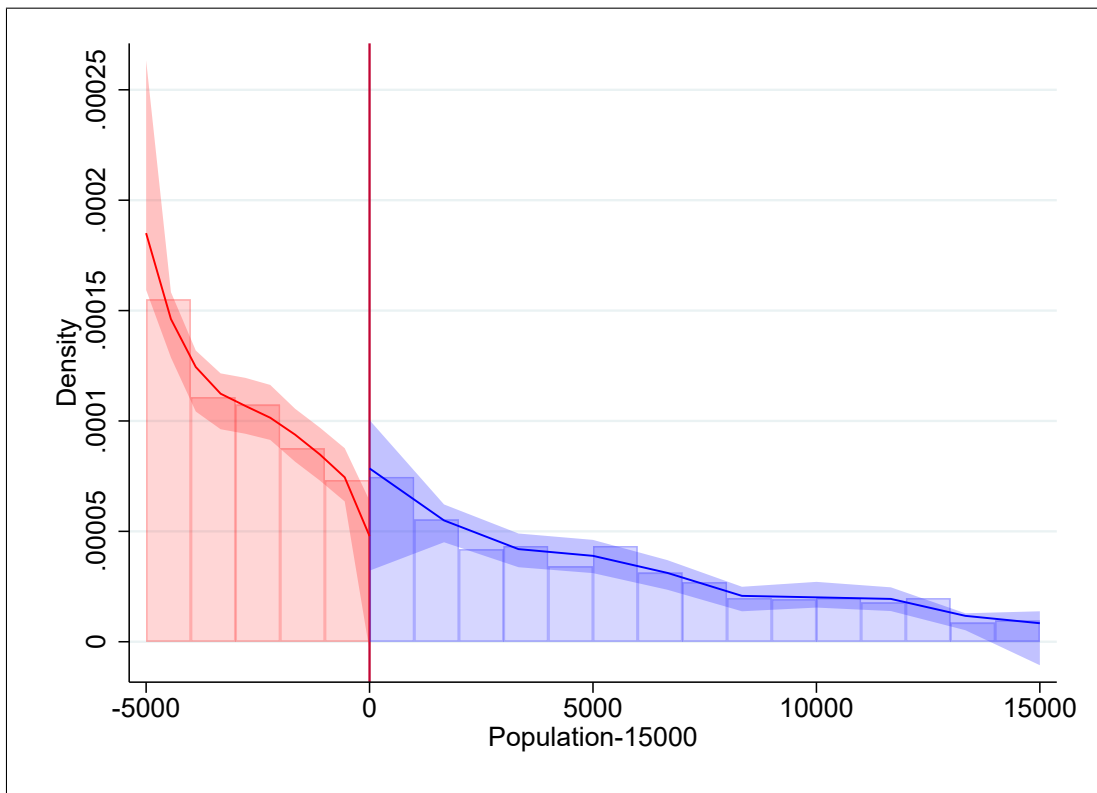
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	unempl.	college	foreign	income	no-profit	perc 0-14	perc 65	latitude	longitude
(Post)*(> 15000)	0.017 (0.027)	-0.010 (0.009)	0.016 (0.017)	-995.719 (1,565.782)	-0.001 (0.001)	0.008 (0.009)	-0.011 (0.014)	-0.781 (1.015)	0.754 (1.196)
Observations	877	1,195	970	797	1,184	813	1,256	854	1,227
Bandwidth	1300	1836	1476	1176	1771	1199	1886	1269	1819
Mean outcome	0.107	0.088	0.067	13058	0.004	0.145	0.196	43.51	12.36

Notes. Diff-in-disc estimates. Variables in the Table: 1) (> 15000) = 1 for municipalities with more than 15,000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2013. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Third, Figure 6 shows that the running variable is continuous at the 15,000 inhabitants threshold, thus there are no evidence of manipulation. In particular, Figure 6 plots an histogram with the density of the running variable and test the null hypothesis of no discontinuity of the density of the running variable using the procedure recently developed by Cattaneo et al. (2018). Figure 6 provides evidence of no discontinuity and we fail to reject the null hypothesis of no discontinuity (p-value 0.141).

Fourth, in Table 3, we repeat the analysis excluding candidates from the Five Star Movement (M5S). This exclusion is motivated by the fact that the M5S rose to prominence in Italy around the same time as the policy change: they received 25.56% of the vote in the 2013 parliamentary elections, while being virtually non-existent in 2008. Moreover, existing evidence shows that they tend to perform better in municipalities with a run-off electoral system—i.e., those with more than 15,000 inhabitants (Bordignon and Colussi, 2020). It is therefore possible that the rise of the M5S interacts with how we define the treatment group, both across time and across municipalities. To ensure our results are not driven by this, Table 3 shows that the baseline findings remain robust when all candidates from this party are excluded.

Figure 6: Density of the running variable



Notes. Discontinuity test for the density of the population at the 15,000-inhabitant threshold.

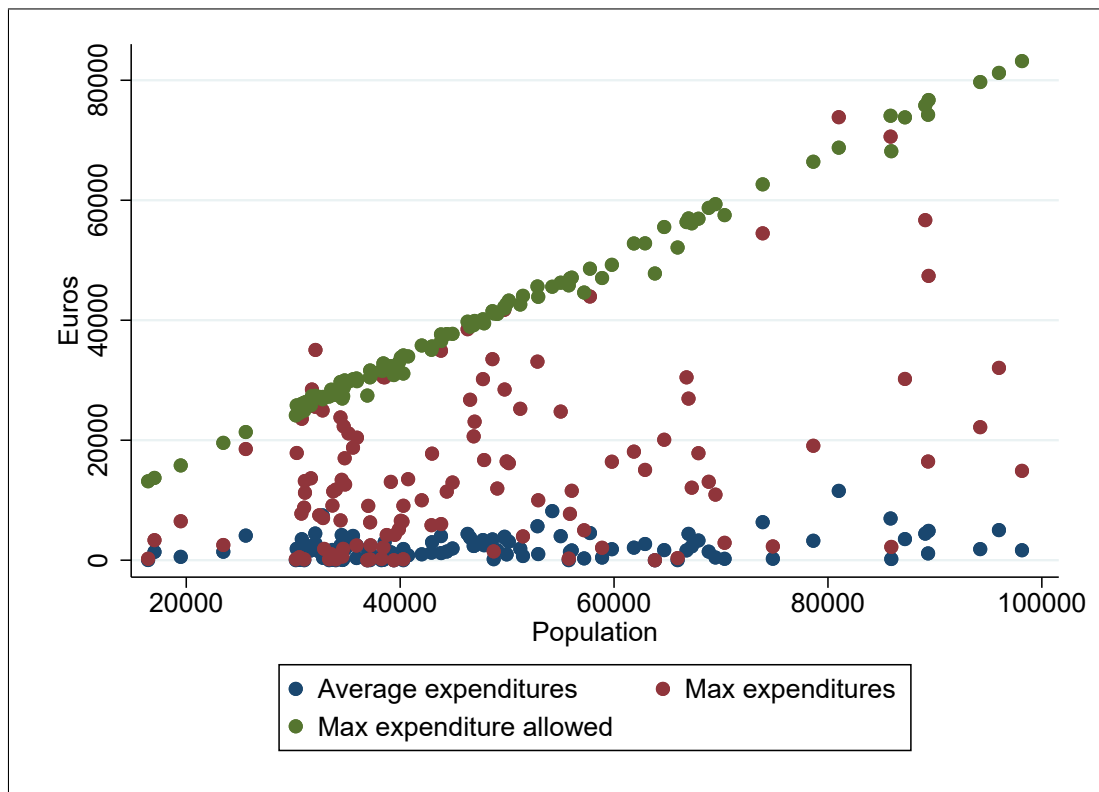
Table 3: The effect of anti-revolving door policy on the education of politicians
Excluding Five Star candidates

	(1)	(2)
Dep. Var.	Average years education mayoral candidates	Average years education elected mayor
Control Function	Linear	Linear
Bandwidth	CCT	CCT
Controls	No	No
(> 15000)	-1.289** (0.629)	-1.923*** (0.663)
(Post)	-0.140 (0.557)	-0.407 (0.603)
(Post)*(> 15000)	1.590* (0.928)	2.621** (1.026)
Observations	648	953
Bandwidth	1097	1695
Mean outcome	15.59	15.81

Notes. Diff-in-disc estimates of the impact of anti-revolving door on the education of politicians. Original sample: municipalities between 10,000 and 30,000 inhabitants. We exclude candidates belonging to M5S. Electoral terms between 1993 and 2022. Variables in the Table: 1) (> 15000) = 1 for municipalities with more than 15,000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2013; 3) (Post)*(> 15000) = interaction term between (> 15000) and Post. The outcome variable is the average years of education of mayoral candidates in column 1, and it the average years of education of elected mayors in column 2. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Fifth, Figure 7 shows that the legal limits on campaign expenditures imposed in municipalities with more than 15,000 inhabitants are quite generous and rarely binding when compared to the actual average and maximum spending by political parties and lists. These limits—essentially a fixed amount per registered voter in each municipality¹⁹—were introduced by Article 13 of Law No. 96, passed on July 6, 2012. As such, they overlap both temporally and geographically with the reform we study. To show that this policy is unlikely to drive our results on political selection, we digitized list-level campaign expenditure data for a sample of municipal elections from the Corte dei Conti²⁰, available at banchedati.corteconti.it.²¹ We then plotted the average and maximum campaign expenditures per list in each municipality against the corresponding legal limits and found that actual spending falls well below the cap. This suggests that the introduction of campaign spending limits is unlikely to account for the effects we observe.

Figure 7: Campaign expenditures



Notes. Evidence on limits to campaign expenditures for political parties. Green dots: maximum allowed expenditures per list in a given municipality. Blue dots: average expenditures. Red dots: maximum expenditures observed.

¹⁹Specifically, the limit is calculated as an amount proportional to the number of registered voters.

²⁰The Italian Court of Auditors, responsible for monitoring public sector spending, including compliance with campaign expenditure limits in municipalities with more than 30,000 inhabitants.

²¹We searched for "rendicontazione spese elettorali comunali + legge 96 del 2012 + 30.000 abitanti" and downloaded all available documents.

4.3.3 Performance of mayors

Exploiting the fact that the law applies to local politicians already in office in 2013, along with the staggered timing of Italian local elections, we can also assess the effect of the anti-revolving door law on the in-office performance of mayors elected before 2013—that is, before any selection effects could take place. As a first outcome, we examine the efficiency of waste management, measured by the percentage of separate waste collection. This variable offers several advantages. First, it reflects a clear policymaking trade-off: increasing separate waste collection signals a more eco-friendly and potentially more efficient policy, but it also makes waste management more complex and may be perceived by citizens as burdensome and time-consuming. Moreover, responsibility for waste management lies squarely with the mayor and the municipal council, making it a suitable indicator of local government performance. Adopting a more recycling-oriented policy may therefore come at a political cost if it alienates parts of the electorate. Second, we consider per capita revenues and the local surcharge on the national income tax. This tax rate is set at the municipal level, giving mayors discretion to adjust local tax policy. Mayors who are more concerned about losing office may be more inclined to lower taxes in an effort to win voter support and maximize their chances of re-election.

For this analysis, we use municipality-by-year data. To isolate the in-office effect of the anti-revolving door law from potential selection effects, we restrict the sample to mayors elected before 2013 whose mandates extended beyond that year. This allows us to observe both pre- and post-reform periods for the same mayor, thereby avoiding confounding effects from changes in political selection. We focus on the period 2009–2016, which provides up to four years of pre-treatment data and between one and four years of post-treatment data per municipality, depending on the timing of the first election after 2013. Using the percentage of recycled waste, per capita revenues, and the tax rate of the municipal surcharge on income tax as outcome variables, we estimate a difference-in-discontinuity model similar to Equation (2).

Consistent with the logic of the model, Table 4 shows that the introduction of the anti-revolving door policy affects the policymaking behavior of low human capital politicians only, those for whom the reduced value of outside options is most consequential. In line with the pandering literature (Maskin and Tirole, 2004; Besley, 2006; Merzoni and Trombetta, 2022), these politicians appear more likely to adopt strategies that minimize the risk of alienating voters. Table 4 presents the analysis across three columns: column (1) reports results for all mayors, column (2) focuses on non-graduate mayors, and column (3) on graduate mayors. For each group, the table estimates the impact of the policy based on municipality size and whether the observation falls before or after the policy’s implementation, as indicated by the “Post” variable. The variable (> 15000) identifies municipalities with more than 15,000 inhabitants, and “Post”

is a binary indicator equal to 1 for years following the 2013 policy change. The interaction term “Post \times (> 15000)” captures the differential effect of the policy in larger municipalities, where the law was actually applied—hence identifying its causal impact. In column (1), the results indicate that, on average, the anti-revolving door policy had no statistically significant effect on the percentage of separate waste collection. The same holds for graduate mayors in column (3). However, in column (2), we find a significant effect for non-graduate mayors: the coefficient on the interaction term “Post \times (> 15000)” is negative and statistically significant at the 5% level. This suggests that the introduction of the anti-revolving door policy reduced separate waste collection rates by approximately 38 percentage points in larger municipalities governed by non-graduate mayors after 2013.

Table 4: The effect of anti-revolving door policy on the performance of mayors
Separate Waste Collection

	(1)	(2)	(3)
Dep. Var.	Separate waste collection All sample	Separate waste collection Non-graduate mayors	Separate waste collection Graduate mayors
Control Function	Linear	Linear	Linear
Bandwidth	CCT	CCT	CCT
Controls	No	No	No
(> 15000)	4.832 (7.508)	31.237*** (10.962)	-9.931 (8.715)
Post	15.870** (7.657)	34.088*** (11.534)	6.229 (8.565)
Post*(> 15000)	-8.589 (10.606)	-38.723*** (14.099)	4.665 (10.722)
Observations	650	217	435
Bandwidth	1401	1019	1671
Mean outcome	49.10	49.67	47.03

Notes. Diff-in-disc estimates of the impact of anti-revolving door on the performance of mayors. Initial sample: municipalities between 10,000 and 30,000 inhabitants. Years between 2009 and 2016. Variables in the Table: 1) (> 15000) = 1 for municipalities with more than 15,000 inhabitants; 2) (Post) = 1 for years starting from 2013. The outcome variable is the percentage of separate waste collection. Samples: 1) all sample in column 1; 2) only non-graduate mayors in column 2; c) only graduate mayors in column 3. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Panel A of Table 5 presents similar findings: the introduction of the anti-revolving door policy is associated with a general reduction in local income tax revenues (column 1), an effect driven almost entirely by low human capital mayors (column 2). As in the previous table, column (1) reports results for all mayors, column (2) focuses on non-graduate mayors, and column (3) on graduate mayors. The interaction term “Post \times (> 15000)” captures the differential effect of the policy in municipalities above the 15,000-inhabitant threshold after the reform, and thus identifies the causal impact of the anti-revolving door policy on local tax policy. In column (1), the results show that the policy leads to a statistically significant reduction in per capita revenues from the local income tax, consistent with the notion that mayors may reduce taxes to increase their chances of re-election. However, when disaggregating the results by education level, it becomes evident that the effect is driven by non-graduate mayors (column 2), with

no significant effect for graduate mayors (column 3). This finding aligns with the theoretical framework: the decrease in the value of politically connected outside options has a stronger impact on low human capital politicians, prompting a more pronounced behavioral response. Panel B of Table 5 reports similar results for the local income tax rate.

Table 5: The effect of anti-revolving door policy on the performance of mayors
Income tax

	(1)	(2)	(3)
Dep. Var.	Income tax All sample	Income tax Non-graduate mayors	Income tax Graduate mayors
Control Function	Linear	Linear	Linear
Bandwidth	CCT	CCT	CCT
Controls	No	No	No
Panel A: per capita revenues			
(> 15000)	-13.704 (9.683)	2.793 (14.123)	-17.214 (11.386)
Post	26.228** (11.418)	49.058*** (17.319)	15.338 (12.833)
Post*(> 15000)	-26.156* (14.751)	-48.389** (21.637)	-13.286 (18.829)
Observations	705	343	398
Bandwidth	1216	1378	1205
Mean outcome	63.87	69.76	61.90
Panel B: tax rates			
(> 15000)	-0.113 (0.085)	-0.083 (0.123)	-0.106 (0.077)
Post	0.069 (0.085)	0.254** (0.120)	0.039 (0.087)
Post*(> 15000)	-0.061 (0.111)	-0.162 (0.157)	0.069 (0.132)
Observations	470	261	457
Bandwidth	831.9	1020	1425
Mean outcome	0.523	0.507	0.497

Notes. Diff-in-disc estimates of the impact of anti-revolving door on the performance of mayors. Initial sample: municipalities between 10,000 and 30,000 inhabitants. Years between 2009 and 2016. Variables in the Table: 1) (> 15000) = 1 for municipalities with more than 15,000 inhabitants; 2) (Post) = 1 for years starting from 2013. The outcome variable is the per capita revenues from the municipal surcharge on to the income tax (Addizionale Irpef) in Panel A and the average tax rates in Panel B. Samples: 1) all sample in column 1; 2) only non-graduate mayors in column 2; c) only graduate mayors in column 3. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Finally, in Tables 6 and 7, we take a closer look at the mechanism driving the change in policymaking among low-educated mayors. Specifically, we split the sample between mayors who were term-limited and those who were not, and estimate the same difference-in-discontinuity specification using the outcome variables from Tables 4 and 5. According to the theoretical model, the politicians most likely to increase pandering behavior following the introduction of the anti-revolving door policy are those with low education who are not term-limited. The evidence in Tables 6 and 7 supports this prediction. In both cases, the overall effect observed for non-graduate mayors (column 1) is clearly driven by those eligible for re-election after the policy change: the interaction term in column (2) is consistently large and statistically significant. By

contrast, the interaction coefficient in column (3), which focuses on non-graduate mayors who are term-limited, is smaller and not statistically different from zero. We interpret this as evidence that the effects we observe are indeed driven by the mechanism outlined in the theoretical model.

Table 6: The effect of anti-revolving doors policy on share recycled waste (non-graduate, term limits)

	(1)	(2)	(3)
Dep. Var.	Separate waste Non-graduate All	Separate waste Non-graduate No term limit	Separate waste Non-graduate Term limit
Control Function	Linear	Linear	Linear
Bandwidth	CCT	CCT	CCT
Controls	No	No	No
(> 15000)	31.237*** (10.962)	28.033 (17.602)	6.993 (13.938)
Post	34.088*** (11.534)	18.314 (17.275)	36.004*** (12.177)
Post*(> 15000)	-38.723*** (14.099)	-39.606* (19.678)	-21.242 (18.163)
Observations	217	141	121
R-squared	0.188	0.161	0.237
Bandwidth	1019	1116	1837
Mean outcome	49.67	47.38	52.28

Notes. Diff-in-disc estimates of the impact of anti-revolving door on the performance of mayors. Initial sample: municipalities between 10,000 and 30,000 inhabitants. Years between 2009 and 2016. Variables in the Table: 1) (> 15000) = 1 for municipalities with more than 15,000 inhabitants; 2) (Post) = 1 for years starting from 2013. The outcome variable is the percentage of separate waste collection. Samples: 1) only non-graduate mayors in column 1; 2) only non-term limited non-graduate mayors in column 2; c) only term limited non-graduate mayors in column 3. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

5 Conclusion

Our paper studies how anti-revolving door policies affect political selection and in-office performance. Guided by a theoretical model, we show that the introduction of a “cooling off” period between political position and important roles in SOEs or in the bureaucracy increases the human capital level of those running for office. On the other hand, it may also increase the incentives to choose policies that help re-election, even when they may be suboptimal.²²

We believe those results are important and policy-relevant, as they help a comprehensive assessment of this type of anti-revolving door policies, going beyond the concerns about regulatory capture or patronage. Furthermore, they underline the importance of studying how institutional features of a political system affect the type of candidates willing to run. As far as we know, this is the first paper able to comprehensively analyse the impact of anti-revolving door policies on both entry into politics and policymaking. Moreover, the model shows that, in order to fully understand the effect of different policies on the composition of the pool of

²²In a different context, Deserranno et al. (2021) studies the effect of meritocratic promotions on public sector employees’ performance. In our case, shutting down a not-meritocratic channel may actually worsen performance.

Table 7: The effect of anti-revolving doors policy on local income tax (non-graduate, term limits)

	(1)	(2)	(3)
Dep. Var.	Income tax Non-graduate All	Income tax Non-graduate No term limit	Income tax Non-graduate Term limit
Control Function	Linear	Linear	Linear
Bandwidth	CCT	CCT	CCT
Controls	No	No	No
Panel A: per capita revenues			
(> 15000)	2.793 (14.123)	-0.905 (16.683)	-1.210 (22.071)
Post	49.058*** (17.319)	67.090*** (16.604)	30.218 (20.086)
Post*(> 15000)	-48.389** (21.637)	-72.399*** (23.107)	-25.432 (24.121)
Observations	343	194	139
R-squared	0.116	0.171	0.186
Bandwidth	1378	1222	1613
Mean outcome	69.76	65.19	72.71
Panel B: tax rates			
(> 15000)	-0.083 (0.123)	-0.065 (0.159)	0.015 (0.143)
Post	0.254** (0.120)	0.429*** (0.123)	0.040 (0.115)
Post*(> 15000)	-0.162 (0.157)	-0.389** (0.171)	0.035 (0.176)
Observations	261	161	131
R-squared	0.193	0.255	0.186
Bandwidth	1020	1025	1488
Mean outcome	0.507	0.481	0.542

Notes. Diff-in-disc estimates of the impact of anti-revolving door on the performance of mayors. Initial sample: municipalities between 10,000 and 30,000 inhabitants. Years between 2009 and 2016. Variables in the Table: 1) (> 15000) = 1 for municipalities with more than 15,000 inhabitants; 2) (Post) = 1 for years starting from 2013. The outcome variable is the per capita revenues from the municipal surcharge on to the income tax (Addizionale Irpef) in Panel A and the average tax rates in Panel B. Samples: 1) only non-graduate mayors in column 1; 2) only non-term limited non-graduate mayors in column 2; c) only term limited non-graduate mayors in column 3. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

candidates, it is necessary to look beyond the effect on the overall value of a political career: asymmetries induced by different policy choices and re-election probabilities are also crucial.

Finally, it would be important to expand the scope of the inquiry, looking at different anti-revolving door policies and different political environments. According to the model, our empirical results are driven by the fact that PCOs are relatively more attractive for low human capital individuals than for high human capital individuals. As a consequence, reducing their availability hurts the former relatively more. The result would be the opposite if, instead, PCOs are more valuable for high human capital individuals, for example if they were private sector jobs where relatively less educated individuals are unlikely to be hired. Those are also potentially important “revolving doors”. The policy change we focus on does not allow us to study them as well, because it concerns only public sector jobs (or jobs controlled by the State), but there is evidence that shutting down the revolving doors toward private sector jobs for highly educated

individuals obtain the opposite effect in terms of political selection (Fisman et al., 2025).

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Appendix

A Proofs

Proof of Lemma 1. We drop the time subscript for convenience. This proof follows very closely the proof of Lemma 3 in the working paper version of Ashworth and Shotts (2010).

Suppose there exists an equilibrium where $r(x = \theta) = 1$ and $r(x \neq \theta) = 0$. Furthermore, suppose $s = B$. A low human capital incumbent gets the following expected payoff by choosing $x = A$ and $x = B$ respectively:

$$\mathbb{E}u_L^P(x = A, s = B) = u\lambda_B + (\rho\lambda_B + (1 - \rho)r_A)v(L) + (\rho(1 - \lambda_B) + (1 - \rho)(1 - r_A))O \quad (\text{A.1})$$

$$\mathbb{E}u_L^P(x = B, s = B) = u(1 - \lambda_B) + (\rho(1 - \lambda_B) + (1 - \rho)r_B)v(L) + (\rho\lambda_B + (1 - \rho)(1 - r_B))O \quad (\text{A.2})$$

where $v(L) = \phi_L u + E$ and $\lambda_B = Pr(\theta = A | s = B) = \frac{\pi(1 - \phi_L)}{\pi(1 - \phi_L) + (1 - \pi)\phi_L} < \frac{1}{2}$. The difference between (A.1) and (A.2) measures the net benefit of pandering for the low type, and it is equal to

$$\Delta\mathbb{E}u_L^P = -(1 - 2\lambda_B)(u + \rho(v(L) - O)) + (1 - \rho)(r_A - r_B)(v(L) - O) \quad (\text{A.3})$$

A high human capital incumbent gets the following expected payoff by choosing $x = A$ and $x = B$ respectively:

$$\mathbb{E}u_H^P(x = A, s = B) = (1 - \rho)r_A v(H) + (\rho + (1 - \rho)(1 - r_A))\max[O, w(\phi_H)] \quad (\text{A.4})$$

$$\mathbb{E}u_H^P(x = B, s = B) = u + (\rho + (1 - \rho)r_B)v(H) + (1 - \rho)(1 - r_B)\max[O, w(\phi_H)] \quad (\text{A.5})$$

where $v(H) = u + E$. The difference between (A.4) and (A.5) measures the net benefit of pandering for the high type, and it is equal to

$$\Delta\mathbb{E}u_H^P = -(u + \rho(v(H) - \max[O, w(\phi_H)])) + (1 - \rho)(r_A - r_B)(v(H) - \max[O, w(\phi_H)]) \quad (\text{A.6})$$

As in the working paper version of Ashworth and Shotts (2010), we show that the difference between (A.3) and (A.6) is always positive. Therefore, whenever the L type prefers to choose $x = B$ (i.e. whenever $\Delta\mathbb{E}u_L^P$ is negative), the H type must prefer it as well. To see this, note

that

$$\begin{aligned}
\Delta \mathbb{E}u_L^P - \Delta \mathbb{E}u_H^P &= 2\lambda_B(u + \rho(v(L) - O)) + \rho(v(H) - \max[O, w(\phi_H)] - v(L) + O) + \\
&\quad - (1 - \rho)(r_A - r_B)(v(H) - \max[O, w(\phi_H)] - v(L) + O) \\
&\geq 2\lambda_B(u + \rho(v(L) - O)) + \rho(v(H) - \max[O, w(\phi_H)] - v(L) + O) + \\
&\quad - (1 - \rho)(v(H) - \max[O, w(\phi_H)] - v(L) + O)
\end{aligned}$$

where the second line follows from the fact that $v(H) - \max[O, w(\phi_H)] - v(L) + O = (1 - \phi_L)u - (\max[O, w(\phi_H)] - O)$ is positive by assumption and hence the negative part of the difference is maximized when $r_A = 1$ and $r_B = 0$. Furthermore, setting $\rho = 0$ we obtain

$$RHS(\rho = 0) = 2\lambda_B u - ((1 - \phi_L)u - (\max[O, w(\phi_H)] - O))$$

Since $\max[O, w(\phi_H)] - O$ is weakly positive, a sufficient condition for $RHS(\rho = 0) > 0$ is

$$\begin{aligned}
2\lambda_B &> 1 - \phi_L \\
2\pi &> \pi(1 - \phi_L) + (1 - \pi)\phi_L
\end{aligned}$$

that is always verified because $\pi > 0.5$. Hence, at $\pi = 0.5$ we have $2 > \frac{1}{2}$. As π increases, the inequality is easier to be satisfied. Therefore, $RHS(\rho = 0) > 0$. Furthermore, we show that

$$\begin{aligned}
\frac{\partial RHS(\rho)}{\partial \rho} &= 2\lambda_B(v(L) - O) + 2(v(H) - \max[O, w(\phi_H)] - v(L) + O) \\
&> 0
\end{aligned}$$

therefore, $\Delta \mathbb{E}u_L^P - \Delta \mathbb{E}u_H^P > 0$. ■

Proof of Lemma 2. Suppose a perfect accountability equilibrium exists. Then, note that in every perfect accountability equilibrium, $Pr(\phi = 1|x = A) = \frac{\kappa\pi}{\kappa\pi + (1-\kappa)(\pi\phi_L + (1-\pi)(1-\phi_L))} > \kappa$ and $Pr(\phi = 1|x = B) = \frac{\kappa(1-\pi)}{\kappa(1-\pi) + (1-\kappa)((1-\pi)\phi_L + \pi(1-\phi_L))} < \kappa$. Therefore, $r_A = 1$ and $r_B = 0$. Finally, a perfect accountability equilibrium requires $\Delta \mathbb{E}u_L^P \leq 0$. Therefore,

$$\begin{aligned}
-(1 - 2\lambda_B)(u + \rho(v(L) - O)) + (1 - \rho)(v(L) - O) &\leq 0 \\
\frac{(v(L) - O) - (1 - 2\lambda_B)u}{2(1 - \lambda_B)(v(L) - O)} &\leq \rho := \bar{\rho}
\end{aligned}$$

Note that, because of Lemma 1, it is enough to focus on the low type incentives. Finally, note that if $\rho \geq \bar{\rho}$ we can always construct a perfect accountability equilibrium. ■

Proof of Lemma 3. Suppose $\rho < \bar{\rho}$. In any equilibrium where the L type mixes after observing

$s = B$, the H type strictly prefers $x = B$. Thus, the H type must choose $x = s$ for every signal. For such an equilibrium to exist, r_A and r_B must be such that $\Delta \mathbb{E}u_L^P = 0$. Two cases are possible: either V is indifferent after observing $x = A$ or after observing $x = B$. As we focus on equilibria that maximize the re-election chances of the incumbent, we choose the equilibrium where V is indifferent after $x = B$. Therefore, r_A must be 1. Define $\sigma := Pr(x = A | s = B, \phi_L)$. In this equilibrium, it must be that $\hat{\kappa}(x = B) = \frac{(1-\pi)\kappa}{(1-\pi)\kappa + (1-\kappa)(\pi(1-\phi_L) + (1-\pi)\phi_L)(1-\sigma)} = \kappa$. Therefore, it must be that

$$\sigma = 1 - \frac{1 - \pi}{\pi(1 - \phi_L) + (1 - \pi)\phi_L}$$

Furthermore, the low type must be kept indifferent between the two actions after observing $s = B$. Hence, since $r_A = 1$, r_B must be such that

$$-(1 - 2\lambda_B)(u + \rho(v(L) - O)) + (1 - \rho)(1 - r_B)(v(L) - O) = 0$$

Hence,

$$r_B = 1 - (1 - 2\lambda_B) \frac{(v(L) - O)\rho + u}{(1 - \rho)(v(L) - O)}$$

Note that both the equilibrium σ and the equilibrium r_B are between 0 and 1 for the range of parameters we are considering, therefore the desired equilibrium exists. ■

Proof of Proposition 1. Recall that $\bar{\rho} = \frac{(v(L)-O)-(1-2\lambda_B)u}{2(1-\lambda_B)(v(L)-O)}$. To prove this proposition, we show that $\frac{\partial \bar{\rho}}{\partial O}$ is negative. To see this:

$$\begin{aligned} \frac{\partial \bar{\rho}}{\partial O} &= \frac{-2(1 - \lambda_B)(v(L) - O) + 2(1 - \lambda_B)((v(L) - O) - (1 - 2\lambda_B)u)}{(2(1 - \lambda_B)(v(L) - O))^2} \\ &= \frac{-2(1 - \lambda_B)(1 - 2\lambda_B)u}{(2(1 - \lambda_B)(v(L) - O))^2} \\ &< 0 \end{aligned}$$

■

Proof of Proposition 2. When choosing whether to enter politics or not, perspective candidates anticipate the type of equilibrium that will be in place. Importantly, this equilibrium does not depend on κ , but just on the other parameters of the model and in particular on the relationship between ρ and $\bar{\rho}$. In practice, when making the entry choice, perspective politicians anticipate that the voter assigns to the challenger the same (pre-policy choice) expected human capital. Therefore, the re-election chances are those outlined above.

Irrespective of the equilibrium in the political game, we can define the utility of a career in the private sector as $\mathbb{E}u^P(mkt|\phi) = 2w(\phi) \forall \phi \in \{\phi_H, \phi_L\}$. We now move to the entry decision in the two equilibria we are considering.

First, consider the pandering equilibrium. We calculate the expected utility from a political office for both types.

$$\begin{aligned}
\mathbb{E}u^P(pol|\phi_L) &= E + (\pi\phi_L + \pi(1 - \phi_L)\sigma + (1 - \pi)\phi_L(1 - \sigma))u + \pi\phi_L v(L) + & (A.7) \\
&+ \pi(1 - \phi_L)[\sigma v(L) + (1 - \sigma)(\rho O + (1 - \rho)(r_B v(L) + (1 - r_B)O))] + \\
&+ (1 - \pi)\phi_L[\sigma(\rho O + (1 - \rho)v(L)) + (1 - \sigma)(\rho v(L) + (1 - \rho)(r_B v(L) + (1 - r_B)O))] + \\
&+ (1 - \pi)(1 - \phi_L)(\rho O + (1 - \rho)v(L)) = \\
&= 2v(L) - \frac{(\phi_L - \pi)(1 - \phi_L)(2\pi - 1)}{\pi(1 - \phi_L) + (1 - \pi)\phi_L}u - \rho(v(L) - O)(1 - \pi) - (1 - 2\lambda_B)(1 - \pi)u
\end{aligned}$$

where r_B , σ and λ_B are defined above.

$$\begin{aligned}
\mathbb{E}u^P(pol|\phi_H) &= E + u + \pi v(H) + \\
&+ (1 - \pi)[\rho v(H) + (1 - \rho)(r_B v(H) + (1 - r_B)max[w(\phi_H), O])]
\end{aligned}$$

Where $v(H) = E + u$. If $w(\phi_H) < O$, this simplifies to

$$\begin{aligned}
\mathbb{E}u^P(pol|\phi_H, w(\phi_H) < O) &= 2v(H) - (1 - \pi)(v(H) - O)(1 - 2\lambda_B)\rho + & (A.8) \\
&- \frac{(1 - \pi)(v(H) - O)(1 - 2\lambda_B)u}{v(L) - O}
\end{aligned}$$

If $w(\phi_H) > O$, this simplifies to

$$\begin{aligned}
\mathbb{E}u^P(pol|\phi_H, w(\phi_H) > O) &= 2v(H) - (1 - \pi)(v(H) - w(\phi_H))(1 - 2\lambda_B)\rho + & (A.9) \\
&- \frac{(1 - \pi)(v(H) - w(\phi_H))(1 - 2\lambda_B)u}{v(L) - O}
\end{aligned}$$

We now differentiate all the expected utilities with respect to O :

$$\begin{aligned}
\frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial O} &= \rho(1 - \pi) \\
\frac{\partial \mathbb{E}u^P(pol|\phi_H, w(\phi_H) < O)}{\partial O} &= \rho(1 - \pi)(1 - 2\lambda_B) - \frac{(1 - \pi)(1 - 2\lambda_B)u(v(H) - v(L))}{(v(L) - O)^2} \\
\frac{\partial \mathbb{E}u^P(pol|\phi_H, w(\phi_H) > O)}{\partial O} &= - \frac{(1 - \pi)(v(H) - w(\phi_H))(1 - 2\lambda_B)u}{(v(L) - O)^2}
\end{aligned}$$

It is immediate to see that, irrespective of the ranking between $w(\phi_H)$ and O , $\frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial O}$ is positive and strictly bigger than $\frac{\partial \mathbb{E}u^P(pol|\phi_H)}{\partial O}$. Moreover, those derivatives show the two different effects that an increase in O has on the expected payoffs from politics. The direct effect is obvious, and always positive for all the types interested in the PCO, i.e. such that $w(\phi_P) < O$. However, there is also a second effect. In the pandering equilibrium, an increase in O increases

the incentives to choose $x_1 = B$, for the low h.c. type receiving $s_1 = B$. As she must be kept indifferent in equilibrium, an increase in O must also imply a reduction in r_B . In fact,

$$\frac{\partial r_B}{\partial O} = -(1 - 2\lambda_B) \frac{(1 - \rho)u}{((1 - \rho)(v(L) - O))^2} < 0$$

This decrease in r_B hurts high h.c. types, especially when they are not interested in O as an outside option. In fact, $\frac{\partial \mathbb{E}u^P(pol|\phi_H, w(\phi_H) > O)}{\partial O} < 0$.

To complete the proof, note that $\frac{\partial \kappa}{\partial O} < 0$ implies $\frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial O} Pr(run|\phi_H) > \frac{\partial \mathbb{E}u^P(pol|\phi_H)}{\partial O} Pr(run|\phi_L)$. Clearly, whenever $w(\phi_H) > O$, the condition is satisfied. Suppose instead that $\frac{\partial \mathbb{E}u^P(pol|\phi_H)}{\partial O}$ is positive. In this case, we have

$$\begin{aligned} & \rho(1 - \pi) \left(\frac{1}{2} - \frac{\psi}{2} [2w(\phi_H) - \mathbb{E}u^P(pol|\phi_H)] \right) > \\ & \rho(1 - \pi)(1 - 2\lambda_B) - \frac{(1 - \pi)(1 - 2\lambda_B)u(v(H) - v(L))}{(v(L) - O)^2} \left(\frac{1}{2} - \frac{\psi}{2} [2w(\phi_L) - \mathbb{E}u^P(pol|\phi_L)] \right) \\ & 2\lambda_B + \frac{(1 - \pi)(1 - 2\lambda_B)u(v(H) - v(L))}{(v(L) - O)^2} > \\ & \psi [2(w(\phi_H) - w(\phi_L)) - \mathbb{E}u^P(pol|\phi_H) + \mathbb{E}u^P(pol|\phi_L)] \end{aligned}$$

The sign of the RHS is ambiguous, while the LHS is positive. Therefore, either the RHS is negative, and so the condition is always satisfied, or the RHS is positive and so there exists a sufficiently small ψ such that the inequality is satisfied.

Consider now the full accountability equilibrium, where all the players choose $x_1 = s_1$.

$$\begin{aligned} \mathbb{E}u^P(pol|\phi_L) &= E + \phi_L u + \pi \phi_L v(L) + \pi(1 - \phi_L)[\rho O + (1 - \rho)O] + \\ &+ (1 - \pi)\phi_L[\rho v(L) + (1 - \rho)O] + (1 - \pi)(1 - \phi_L)(\rho O + (1 - \rho)v(L)) \end{aligned} \quad (\text{A.10})$$

$$\mathbb{E}u^P(pol|\phi_H) = E + u + \pi v(H) + (1 - \pi)[\rho v(H) + (1 - \rho)\max[w(\phi_H), O]] \quad (\text{A.11})$$

We now differentiate all the expected utilities with respect to O :

$$\frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial O} = \pi + \phi_L - 2\pi\phi_L - (1 - \pi)(2\phi_L - 1)\rho > 0$$

To see the last inequality, note that the derivative is positive even for the biggest possible ρ , i.e. $\rho = 1$.

$$\begin{aligned} \frac{\partial \mathbb{E}u^P(pol|\phi_H, w(\phi_H) < O)}{\partial O} &= (1 - \pi)(1 - \rho) \\ \frac{\partial \mathbb{E}u^P(pol|\phi_H, w(\phi_H) > O)}{\partial O} &= 0 \end{aligned}$$

In order to be able to use the same logic of the first part of the proof, we need to show that $\frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial O} > \frac{\partial \mathbb{E}u^P(pol|\phi_H, w(\phi_H) < O)}{\partial O} = (1 - \pi)(1 - \rho)$. To see this, note that:

$$\begin{aligned} \pi + \phi_L - 2\pi\phi_L - (1 - \pi)(2\phi_L - 1)\rho &> (1 - \pi)(1 - \rho) \\ \pi(1 - \phi_L) + (1 - \pi)\phi_L - (1 - \pi)(2\phi_L - 1)\rho - (1 - \pi) + \rho(1 - \pi) &> 0 \\ \pi(1 - \phi_L) - (1 - \pi)(1 - \phi_L) + (1 - \pi)\rho 2(1 - \phi_L) &> 0 \\ (1 - \phi_L)(2\pi - 1) + (1 - \pi)\rho 2(1 - \phi_L) &> 0 \end{aligned}$$

that is always verified. The same steps as in the previous part complete the proof. ■

Proof of Proposition 3.

We use the same logic as in the previous proof. First, consider the pandering equilibrium. We differentiate (A.7), (A.8) and (A.9) with respect to E :

$$\frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial E} = 2 - \rho(1 - \pi) > 0$$

$$\begin{aligned} \frac{\partial \mathbb{E}u^P(pol|\phi_H, w(\phi_H) < O)}{\partial O} &= 2 - \rho(1 - \pi)(1 - 2\lambda_B) + \\ &+ \frac{(1 - \pi)(1 - 2\lambda_B)u(v(H) - v(L))}{(v(L) - O)^2} \end{aligned}$$

$$\begin{aligned} \frac{\partial \mathbb{E}u^P(pol|\phi_H, w(\phi_H) > O)}{\partial O} &= 2 - \rho(1 - \pi)(1 - 2\lambda_B) + \\ &+ \frac{(1 - \pi)(1 - 2\lambda_B)u((v(H) - v(L)) - (w(\phi_H) - O))}{(v(L) - O)^2} \end{aligned}$$

To complete the proof, note that $\frac{\partial \kappa}{\partial E} > 0$ implies $\frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial E} Pr(run|\phi_H) < \frac{\partial \mathbb{E}u^P(pol|\phi_H)}{\partial E} Pr(run|\phi_L)$. As it is clear that $\frac{\partial \mathbb{E}u^P(pol|\phi_H)}{\partial E} > \frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial E}$, we can use the same logic as above to find a sufficiently small ψ .

Consider now the full accountability equilibrium. We differentiate (A.10) and (A.11) with respect to E :

$$\frac{\partial \mathbb{E}u^P(pol|\phi_L)}{\partial E} = 1 + \pi\phi_L + (1 - \pi)\phi_L\rho + (1 - \pi)(1 - \phi_L)(1 - \rho)$$

$$\frac{\partial \mathbb{E}u^P(pol|\phi_H)}{\partial E} = 1 + \pi + (1 - \pi)\rho$$

In order to be able to use the same logic of the first part of the proof, we need to show that

$\frac{\partial \mathbb{E}u^P(\text{pol}|\phi_L)}{\partial E} < \frac{\partial \mathbb{E}u^P(\text{pol}|\phi_H)}{\partial E}$. To see this, note that:

$$\begin{aligned} & 1 + \pi + (1 - \pi)\rho - 1 - \pi\phi_L - (1 - \pi)\phi_L\rho - (1 - \pi)(1 - \phi_L)(1 - \rho) = \\ & \pi(1 - \phi_L) + (1 - \pi)\rho(2 - 2\phi_L) - (1 - \pi)(1 - \phi_L) = \\ & (1 - \phi_L)(2\pi - 1) + (1 - \pi)\rho 2(1 - \phi_L) > 0 \end{aligned}$$

that is always verified. The same steps as in the previous part complete the proof. ■

B Extension: Positive selection on the PCO

In this extension, we show that a sufficiently strong positive selection on the PCO may imply the opposite effect in the comparative statics between O and the average human capital of candidates.

More formally, suppose that the PCO can be obtained by former politicians with high human capital with probability z_H , and by politicians with low human capital with probability z_L , with $z_H > z_L$. If they do not obtain the PCO, they go back to the private market earning $w(\phi)$. The assumption that $z_H > z_L$ captures the idea that, conditional on asking for a PCO, high human capital politicians are more likely to obtain it. We do not think this is likely to be the case in the context of our empirical application (local politicians and SOEs in Italy), but it may well be the case in other contexts, like state-level politicians and lobbying firms in the United States (Fisman et al., 2025).

Given our assumption on the probability of getting O , we can now define $O_H := z_H O + (1 - z_H)w(\phi_H)$ and $O_L := z_L O + (1 - z_L)w(\phi_L)$. Furthermore, we focus on full accountability equilibria where $O > w(\phi_H)$ (otherwise, a decrease in O would only discourage low human capital politicians, and therefore it cannot improve the average human capital of candidates). The expected utility from a political career is now given by

$$\begin{aligned} \mathbb{E}u^P(\text{pol}|\phi_L) &= E + \phi_L u + \pi \phi_L v(L) + \pi(1 - \phi_L)[\rho O_L + (1 - \rho)O_L] + \\ &+ (1 - \pi)\phi_L[\rho v(L) + (1 - \rho)O_L] + (1 - \pi)(1 - \phi_L)(\rho O_L + (1 - \rho)v(L)) \end{aligned} \quad (\text{B.12})$$

$$\mathbb{E}u^P(\text{pol}|\phi_H) = E + u + \pi v(H) + (1 - \pi)[\rho v(H) + (1 - \rho)O_H] \quad (\text{B.13})$$

We now differentiate all the expected utilities with respect to O :

$$\frac{\partial \mathbb{E}u^P(\text{pol}|\phi_L)}{\partial O} = z_L [\pi + \phi_L - 2\pi\phi_L - (1 - \pi)(2\phi_L - 1)\rho] > 0$$

$$\frac{\partial \mathbb{E}u^P(\text{pol}|\phi_H)}{\partial O} = z_H(1 - \pi)(1 - \rho)$$

In order to be able to use the same logic of the benchmark model, we need to show that $\frac{\partial \mathbb{E}u^P(\text{pol}|\phi_L)}{\partial O} < \frac{\partial \mathbb{E}u^P(\text{pol}|\phi_H)}{\partial O}$. Re-arranging, we find that the inequality above requires

$$\frac{z_H}{z_L} > \frac{\pi + \phi_L - 2\pi\phi_L - (1 - \pi)(2\phi_L - 1)\rho}{(1 - \pi)(1 - \rho)} \quad (\text{B.14})$$

When condition (B.14) is satisfied, we can then find conditions on ψ such that the direct effect of O prevails on the level effect in the comparative statics on the average human capital of candidates, and therefore an increase in O increases the average human capital of candidates.

Note that condition (B.14) is more likely to be satisfied the stronger the positive selection is, i.e. the bigger is z_H compared to z_L . In those contexts, where PCOs are sufficiently valuable (i.e. $O > w(\phi_H)$) and there is a sufficiently strong positive selection, a reduction in O can actually lead to a reduction in the average human capital of candidates. We believe those conditions are likely to be met in the case considered by Fisman et al. (2025), and much less likely to be met in our application.

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- 2021/01, **Rusteholz, G.; Mediavilla, M.; Pires, L.**: “Impact of bullying on academic performance. A case study for the community of Madrid”
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