A Few Signatures Matter: Candidates' Entry Requirements in Italian Local Elections

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Abstract

Signature requirements (that is, asking potential candidates to collect signatures among eligible voters to participate in an election) are used in democracies all around the world to regulate the submission of political candidatures. This paper examines the causal effect of signature requirements on different electoral outcomes. I use data on Italian municipalities and apply a regression discontinuity design (RDD) -exploiting that signature requirements are only present in municipalities of more than 1000 inhabitants- to estimate the effect of these requirements on electoral competition, candidates' selection and voters participation. I find that asking citizens to collect subscriptions significantly reduces the number of candidates and non-marginal candidates, decreases electoral competition, and leads to an older pool of candidates. Signature requirements lead also to a large drop in voters' electoral participation. These results allow to disentangle the mechanisms at play, pointing to signature requirements acting more as non-trivial running costs discouraging potentially non-marginal candidates than just as a screening tool to avoid frivolous ones. I propose a model that incorporates the notion of signature requirements as running costs and considers civic capital (understood as the prevalence of social norms that constraint incumbents' misbehaviour and sectarianism) as a factor affecting the relative importance of these costs. Empirical results -using blood donations and trust attitudes to capture the underlying level of civic capital- support the model's interpretation of signature requirements and help discard alternative explanations. Findings highlight that the impact of signature requirements goes beyond the stated goal of ensuring the representativeness of the candidates, and call for a careful normative evaluation of this policy.

JEL codes: D72, H70, Z10, C14.
Keywords: signature requirements, electoral competition, running costs, civic capital, regression discontinuity design.

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1 Introduction.

Democracy and universal suffrage require that everyone can stand as a candidate for public office. However, even in mature democracies, this right is explicitly limited by different regulations, from age and nationality requirements to filing fees. Ballot access regulations (particularly those requiring some action or imposing costs to run) are justified by the need of limiting the number of candidates to reduce the administrative burden of organizing an election, and to ensure the representativeness of those who stand as candidates.[1] These regulations are meant to prevent frivolous candidates from running, who could confuse voters and lead to unnecessary dispersion of votes and misrepresentation of majorities.

Signature requirements (that is, asking potential candidates to collect a certain number of signatures among eligible voters) is one of the most widespread ways to regulate the submission of political candidatures in current democracies.[2] Despite its ubiquity and general acceptance, there is relatively little evidence on whether these requirements achieve the stated goals or not, what are the mechanisms at play, and if there are other effects on electoral outcomes.

This paper addresses these questions. I use a regression discontinuity design (RDD) to estimate the causal effect of signature requirements on electoral outcomes in small Italian municipalities, exploiting that signature requirements are only present in cities with more than 1000 inhabitants. I use information on more than 5000 mayoral elections in municipalities with 250 to 1750 inhabitants. I consider the period 1993-2000, when the jump in signature requirements did not coincide with any other policy change, allowing me to credibly identify the causal effect of these requirements.

I find that the number of candidates significantly falls, and that the drop persists also when only considering candidates obtaining a substantial amount of votes. This finding underscores that the fact that "only the most marginal parties seem to have any difficulty

[1] Abrams (1996) examines the US Supreme Court's reviews of state ballot access laws, presenting arguments for and against them. In *Storer v. Brown* (1974), for example, the US Court recognized the "substantial state interest" in providing the electorate with an understandable ballot, and therefore supported "reasonable requirements for ballot position". In Italy, signature requirements are intended to prove the representativeness of candidates (*Istruzioni per la presentazione e l'ammissione delle candidature*, Italian Ministry of Internal Affairs).

[2] Afghanistan, Albania, Algeria, Andorra, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Burundi, Canada, Croatia, Denmark, Ethiopia, Germany, Grenada, Guyana, Hungary, Iceland, Italy, Kazakhstan, Libya, Liechtenstein, Lithuania, Luxembourg, Mauritius, Mongolia, Montenegro, Netherlands, Norway, Palau, Paraguay, Poland, Russian Federation, Rwanda, Senegal, Slovenia, Suriname, Switzerland, Tonga, Turkey, Turkmenistan, Tuvalu, and United Kingdom are among the countries indicated by the Inter-Parliamentary Union (IPU) as requiring signatures or nominations from electors to participate in parliamentary elections. In some countries, these requirements apply only to independent candidates, or to just one of the chambers. Information obtained from: www.ipu.org (accessed: October 3rd, 2017).

gathering the requisite number of signatures"[3] is not enough to assess the effect of this policy, as many potential candidates might be discouraged by the presence of signature requirements and not even try to meet them. The result is therefore in line with signature requirements not only giving voters a pre-electoral screening mechanism to avoid frivolous candidates, but also imposing a burden to potential candidates, who, independently of their winning chances, might be deterred from running (especially when the perks of office do not compensate the extra effort).

In municipalities just below the threshold, few candidates run and most of them obtain substantial support: 80 percent of elections races have one or two candidates, and runners-up obtain, on average, more than 200 votes (33% vote share).[4] Signature requirements thus lead to a reduction in political competition, as measured by the number of unopposed races, the winner's share and the winner's margin. The reduction in political competition and the fall in the number of non-marginal candidates do not align with the aim of avoiding frivolous candidates, which, if voters concentrate on the first two candidates, could instead lead to greater competition.

Estimated impact of signature requirements is statistically significant, and quantitatively relevant. The average number of candidates falls 0.22, a 10 percent drop relative to the mean observed just below the threshold. Frequency of unopposed races almost doubles, from 11.5 to 19.5 percent; and average winners' margin increases 11.9 percentage points, from 31.8 to 43.7 percent.

To further assess the impact of signature requirements on local politics, I estimate their effect on the characteristics of the pool of candidates. I find that candidates' average age rises 2.5 years, as younger candidates are disproportionately affected by the stricter ballot access regulation. There are no robust effects on candidates' gender (with more than 90 percent of male candidates both above and below the threshold) or educational attainment.

Most likely through the described effects on the number and characteristics of candidates, and on the extent of electoral competition, signature requirements lead to a large drop in voter turnout (3.3 percentage points), and a -less precisely estimated- increase in the number of blank and null votes. The impact on voters' behaviour, which could be explained both by a rational response to a less competitive environment or by an expressive reaction to the absence of a candidate of choice, again points to signature requirements acting more as a discouragement device for potentially non-marginal candidates rather than as a screening tool to avoid frivolous ones.

[3] European Commission for Democracy through Law (2003). *Code of Good Practice in Electoral Matters.* Council of Europe Publishing. p.16.

[4] Figures computed from elections in municipalities with 850 to 1000 inhabitants.

Citizen-candidate models, starting with the work by Osborne and Slivinski (1996) and Besley and Coate (1997), provide a theoretical framework to examine the effect of running costs on electoral outcomes. Importantly, these models identify the benefits of winning the election and voters' preferences distribution as two key features of the political context that interact with running costs in the determination of the equilibrium pool of candidates. In Besley and Coate's (1997) model, for example, if running costs are sufficiently low, one-candidate equilibria exist only if voters preferences allow for a Condorcet winner.

The interaction between running costs and these local factors is especially important in the Italian context, characterized by large heterogeneity across regions. In small municipalities, where there is arguably low intrinsic value of office, and national politics' considerations do not seem to interfere (less than 10% of candidates belong to national parties), differences in civic or social capital are deemed to be relevant. These differences -highlighted by Banfield (1958) and Putnam (1993), and further examined by several studies (Guiso, Sapienza, and Zingales, 2011)- are related both to the existence (or lack of) social constraints on public officials and to the degree of concern for aggregate welfare among individuals. Higher civic capital (narrowly understood as the prevalence of social norms or preferences that constraint incumbents' misbehaviour and sectarianism) is therefore associated to higher public good provision (Nannicini et al, 2013), and can affect the incentives to run for office.[5]

To formalize these relationships and link them to the setting studied in this paper, I propose a citizen-candidate model, where members of two different groups in a municipality decide whether to run for the mayor's seat. The level of civic capital in the municipality is assumed to influence incumbents' choices: higher civic capital leads to more general public goods and less group-specific club goods (a behaviour that could be rationalized both by the presence of social constraints or by a greater concern for aggregate welfare).

Building on the empirical findings, the model treats signature requirements as running costs. Potential candidates are characterized by their competence to manage the municipality, and by their ability to deal with these costs. If running costs are sufficiently low (as assumed to be if there are no signature requirements), the most competent potential candidate in each group runs. This result relies on the assumption that, even in high-civic-capital cities, there are relevant group-specific interests. As running costs increase, competent candidates weigh these costs with the expected welfare loss from having someone else taking office. If civic capital is low and *unconstrained* incumbents mainly favor their own group, each group still has a candidate in equilibrium. Electoral competition is not affected, but competent candidates might prefer to avoid running costs and leave their places to other ingroup members (thus leading to a fall in candidates' average competence).

[5] As discussed by Guiso, Sapienza and Zingales (2011), the concept of social capital has been used in various and ambiguous ways in the literature. I therefore relate to the narrower idea of civic capital, as defined above and closely related to the definition in Guiso, Sapienza and Zingales (2011).

If civic capital is high and *constrained* incumbents provide a fair amount of public good, increasing running costs might lead to one-candidate races, as potential candidates in a group are discouraged by highly-competent outgroup candidates.

This framework provides some implications about the effect of signature requirements: (i) the fall in the number of candidates and electoral competition is greater in high-civic-capital municipalities; (ii) a change in the composition of the pool of candidates might be observed even if there are no changes in the number of candidates; and (iii) average candidates' competence falls in low-civic-capital municipalities.

To test the model's predictions, I use anonymous blood donations per capita and trust attitudes collected from individual survey responses (Guiso, Sapienza and Zingales, 2004; Nannicini et al, 2013) as proxies for preference heterogeneity and social constraints on the executive. I split the sample according to the first principal component of these variables (which I take as the underlying level of civic capital), and assess heterogeneous effects. Results are largely consistent with the predictions of the model: the effect on number of candidates and electoral competition is concentrated in high-civic-capital municipalities, while we still observe changes in candidates' characteristics in low-civic-capital ones. I also estimate the effect of signature requirements on municipal administrative efficiency, using the observed speed of payments (that is, the ratio between paid and committed outlays within the year). Signature requirements lead to a decrease in administrative efficiency among low-social-capital municipalities, a result consistent with the model's implications on candidates' competence.

Importantly, the observed heterogeneity goes against alternative explanations for the effects of signature requirements on electoral outcomes. It has been argued that, on top of acting as screening and discouragement tools, signature requirements provide entrenched political or economic groups with an institutional lever to diminish political competition.[6] While this might certainly be the case in other countries, there haven't been major complaints in this regard in Italy.[7] Indeed, under such explanation, it would be expected to observe a greater fall in number of candidates among low-civic-capital cities, where coercion from powerful groups is arguably more likely. The fact that the fall in electoral competition is larger in high-civic-capital settings, validates the discouragement argument provided by the model.

[6] Abrams (1996) presents this argument for some states in the United States. The *Code of Good Practice in Electoral Matters* (European Commission for Democracy through Law, 2003) warns about the manipulation of these requirements to bar candidates from running.

[7] Signature collection has been scrutinized by the public as some breaches in the collection process in a few municipalities made it to the media, but there haven't been major concerns of manipulation to bar candidates.

The paper is related to three strands of literature. First, there is a set of articles that studies the impact of ballot access restrictions on political competition. Ansolabehere and Gerber (1996) find that both signature requirements and filing fees significantly reduce contestation in US congressional elections. Drometer and Rincke (2009) exploit a US Supreme Court's decision that reduced signature requirements in the State of Ohio, and, using a difference-in-difference strategy, find that the ruling led to a significant increase in the number of independent and minor party candidates running for a seat in US Congress. Afzal (2014) examines the introduction of a minimum education requirement for legislators in Pakistan that prevented several incumbents from running again. The incumbent disqualification had an heterogeneous effect on political competition, reducing it in constituencies with low literacy rates and increasing it where the incumbent had been politically strong.

Second, the literature that examines the interaction between social capital and the functioning of institutions, much of which has focused on the differences within Italy. The seminal research by Putnam (1993) examined Italian regional governments and hypothesized that the variation in performance across them was due to differences in social capital. This innovative argument spurred numerous articles that provided theoretical mechanisms and empirical evidence relating social capital and different political and economic outcomes, including financial development (Guiso, Sapienza and Zingales, 2004), growth and development (Knack and Keefer, 1997), and corruption and political accountability (Nannicini et al, 2013).

Third, in terms of methodology, the paper relates to a growing strand of literature that uses regression discontinuity designs based on population thresholds to assess the impact of different policies on political and economic outcomes. For Italian municipalities, recent articles have examined the effects of politicians' remuneration (Gagliarducci and Nannicini, 2013), electoral rules (Bordignon et al, 2016) and fiscal rules (Grembi et al, 2016). Eggers et al (2016) provide a brief review of this literature and warn about manipulation of population figures in Italy and other European countries, which could invalidate the regression discontinuity assumptions and the causal interpretation of the results. In the case examined in this paper, population data is predetermined to the policy change, ruling out the possibility of strategic sorting around the threshold. Nonetheless, I provide different validity checks that reveal no evidence of manipulation.

This paper has two main contributions. First, I contribute to the literature on ballot access restrictions by providing evidence of their impact based on a novel identification strategy, and for a setting significantly different than previously analyzed ones. Results highlight the importance of these institutional details for electoral outcomes: the introduction of signature requirements changes the observed extent of both contestation and participation, two dimensions considered central to the functioning of democracies.

Second, I provide evidence on the mechanism through which signature requirements impact on political outcomes, underscoring their role as a discouragement device rather than as a tool used for screening or elite capture. This observation highlights that the impact of signature requirements might go beyond the goals of ensuring the representativeness of the candidates and avoiding frivolous ones, and calls for a careful normative evaluation of this policy. Furthermore, the mechanism stresses the relevance of the interaction between institutional, political and cultural factors in shaping politicians' and voters' incentives, pointing to the need of understanding the local environment to design efficient institutions.

The remainder of the paper is organized as follows. Section 2 describes Italian municipalities' institutional setting, and the empirical strategy. Section 3 describes the data set used. In section 4, I present the empirical results. Section 5 describes the theoretical framework that rationalizes the observed results, and discusses further implications of it. In Section 6, I assess heterogeneous effects, testing the predictions of the model. Section 7 presents some concluding remarks.

2 Signature Requirements in Italian Municipalities.

Municipalities are the smallest administrative units in Italy and are in charge of the provision of a number of public services (including different social services, and waste management). Each municipal government is composed by a mayor, an executive committee and a local council. These local institutions are regulated by national laws, which have been modified in different occasions during the last decades. In particular, in 1993, the National Parliament overhauled the municipalities' institutional framework, and established the direct election of the mayor in replacement of the existent proportional parliamentary system.[8] The changes also strengthened the role of the mayor, who became responsible for the administration and representation of the municipality, and got the right to appoint the members of the executive committee. The local council, also elected by the voters and previously the main local institution, remained as a supervisory body, controlling governmental activities and voting on the local budget.[9]

In municipalities with less than 15,000 inhabitants, each mayoral candidate must be supported by a single list of candidates for the local council. Elections consist of a single round and voters cannot split their decision: they vote jointly for mayor and council mem-

[8] Until 1993, citizens voted on lists for the council. The elected council would then choose the mayor. Law 81/1993 introduced the direct election of the mayor and established the institutional setting for Italian municipalities until the year 2000 (when it was replaced by *Legislative Decree 267/2000*). The law specified, among other things, the electoral rules, the requirements for potential candidates, and the responsibilities of elected officials and government bodies.

[9] The council can terminate the mayoral term by approving a vote of no confidence. That decision, which is really infrequent in Italian municipalities, implies also the dissolution of the council itself.

bers. The candidate with most votes wins the mayor position, and her supporting list gets 2/3 of the seats in the council.[10] In order to participate in the election, each candidate must file an administrative programme and a petition undersigned by a number of eligible voters (who cannot be among the list of candidates for the local council). Each citizen can only subscribe to one of the lists, and signatures must be certified either by a public notary or by the local authorities. Signature requirements are intended to avoid frivolous candidates, ensuring the representativeness of those who participate in the electoral race.[11] The amount of signatures needed to stand as a candidate depends on the population of the municipality, as computed by the last available national Census, and jumps at nine different thresholds.

Table 1: Minimum Signature Requirements by Population Scale

Inhabitants		Signature Req.		Change in Req.	
From	To	Number	% Inhabs.	Number	% Inhabs.
1.000.001		2000	0,20%	1000	0,10%
500.001	1.000.000	1000	0,20%	300	0,06%
100.001	500.000	700	0,70%	300	0,30%
40.001	100.000	400	1,00%	150	0,37%
20.001	40.000	250	1,25%	50	0,25%
10.001	20.000	200	2,00%	120	1,20%
5.001	10.000	80	1,60%	40	0,80%
2.001	5.000	40	2,00%	10	0,50%
1.000	2.000	30	3,00%	30	3,00%
1	999	0	0,00%		

[a] Article N. 3. Law N. 81, March 25, 1993. Published in *Gazzetta Ufficiale* N. 72, March 27, 1993.

Table 1 shows the minimum signature requirements for candidates running in municipalities in the different population scales.[12] Signature requirements are greater in higher population scales. In municipalities with less than 1000 inhabitants, candidates do not need to present signatures. From that population threshold onwards, all candidates must collect (and certify) some amount of subscriptions to participate in local elections, going from 30 in municipalities with one thousand to two thousand inhabitants to 2000 in cities with population larger than one million (Rome and Milan). The number of signatures needed to

[10] Only if the two most voted candidates receive the exact same amount of votes, there is a second round.

[11] *Istruzioni per la presentazione e l'ammissione delle candidature.* Italian Ministry of Internal Affairs. 2015. p.13

[12] These requirements are detailed in article 3 of Law 81/1993. In 2000, requirements and scales were slightly modified. The empirical analysis will focus on the period 1993-1999.

run as a candidate as a percentage of the local population is smaller in larger cities: while candidates in municipalities with 1000 inhabitants must collect signatures from 3 percent of the local population, those in the largest municipalities need the subscription of 0,2 percent of it.[13]

These jumps in signature requirements facilitate the use of a regression discontinuity design to assess the causal effect of stricter ballot access restrictions on local political outcomes. However, in some cases, changes in signature requirements coincide with changes in other features of local institutions, compromising the plausibility of the identification assumptions.[14] In the 5,000 and 100,000 thresholds, mayors and council members remuneration increases. In the 10,000, 500,000 and one million thresholds, the size of the council increases. Out of the others, I focus the empirical analysis on the 1,000 inhabitants threshold for two main reasons. First, signature requirements are introduced at this threshold, thus permitting to compare two qualitatively different scenarios: *with* and *without* signature requirements (as opposed, for example, to the 2,000 threshold for which the change happens only in the *intensive* margin). The introduction of signature requirements implies that candidates have to face a pre-electoral screening phase and to deal with a greater amount of bureaucratic procedures (both absent in municipalities below the threshold). Second, a practical consideration: sample size is large around the threshold and allows for a sensible statistical analysis.

For the empirical analysis, I consider just the period 1993-2000, since a law passed in the year 2000 (*Legislative Decree 267/2000*) set a 10 percent increase in the mayors wage at the 1000 inhabitants threshold, introducing a potential confounding factor and compromising the soundness of the assumption needed to identify a causal effect. The period and the threshold chosen are particularly fit for the analysis for one additional reason: population figures used to determine the level of signature requirements come from the 1991 population census, and therefore were already determined when the jump in signature requirements at the 1000 inhabitants threshold was introduced in 1993.[15] This is crucial to overcome potential concerns on strategic manipulation of population figures that could invalidate the conclusions of the empirical analysis.

[13] A 3-percent signature requirement is high relative to the uses in other Western democracies. In US, for example, those states with signature requirements generally ask for less than 1 percent of eligible voters (Ansolabehere and Gerber, 1996). The *Code of Good Practice in Electoral Matters* (European Commission for Democracy through Law, 2003) argues explicitly for signature requirements being lower than 1% of the constituency concerned.

[14] Gagliarducci and Nannicini (2013) and Eggers et al (2016) provide a description of the policy changes in Italian municipal institutions occurring at the different population thresholds. Their nonetheless detailed description overlooks the changes in signature requirements.

[15] Before 1993, signature requirements for council lists in municipalities with less than 5000 inhabitants followed the following scale: 10 for municipalities with up to 2000 inhabitants, and 30 for the others. (*Decree 570/1960*, with subsequent modifications.) No policies were set to change at the 1000 inhabitants threshold.

3 Data and Empirical Strategy.

To assess the impact of signatures requirements on local political outcomes, I collected information on Italian municipalities with population between 250 and 1750 inhabitants for the period 1993-2000. The sample consists of a total of 5321 electoral races (in 2693 municipalities), and includes information on electoral results, and candidates' personal characteristics.

3.1 Elections and Candidates.

I obtained the information on municipal elections from the Historical Elections Archives published by the Italian Ministry of Internal Affairs. The information includes the names of all mayoral candidates and their party affiliations, the number of eligible voters, the number of votes to each candidate, and the number of seats in the local council obtained by each list for municipal elections since 1993.[16]

I use the information and compute a set of electoral outcomes to assess the impact of signatures requirements on local politics, and obtain insights on the mechanisms at play. First, I count the *number of candidates* standing in each election, independently of the amount of votes they got. In the sample, the average number of candidates running is 2.06: 16.4 percent of the electoral races have only one candidate, 64.7 percent two candidates, and 18.8 percent more than two. I then compute the *number of non-marginal candidates* by counting candidates who obtain the votes of more than 25% of the eligible voters (that is around 230 votes in municipalities close to the threshold or more than 7 times the amount of signatures needed to run) or get at least 85% of winner's number of votes. The idea behind this variable is to leave aside frivolous candidates, and measure how many people with substantial popular support participate in the election.

I construct also other measures of political competition that capture different features of the electoral races: the *winner's share*, computed as the percentage of votes obtained by the winning candidate; and the *winner's margin*, calculated as the difference between the votes obtained by the winner and those obtained by the runner-up divided by the sum of the votes they got. These two measures are negatively associated to the closeness of the electoral result. Finally, I build also a dummy variable, *unopposed*, indicating if there is only one candidate in the electoral race. It is important to note that these variables are not mechanically related to each other or with the number of candidates, and therefore can provide valuable information about signature requirements' impact on local politics. For example, *winner's margin*, considered a key measure to assess the competitiveness of

[16]The information was downloaded from the website: http://elezionistorico.interno.it/ (accessed on April 2nd, 2016). The data set does not include information on municipalities in Sicilia, Valle d'Aosta, Friuli-Venezia Giulia and Trentino-Alto Adige. These regions have a different statute and the electoral information is not systematically reported in the consulted sources.

elections, could both decrease or increase after a fall in the number of candidates depending on who leave the electoral race and how their votes are distributed among the remaining candidates. Also, the number of *unopposed* races could be unaffected by a change in the average number of candidates if such changes involve just the third or subsequent candidates in the electoral races.

The Register of Local Administrators published by the Italian Ministry of Internal Affairs provides age, gender, place of birth, and self-reported measures of educational attainment and occupation for all members of municipal governments (mayors, members of the executive committee, and councilmen) since 1993. Using this information, I retrieve personal characteristics of more than 10 thousand candidates to assess whether the introduction of signature requirements affects the traits of the pool of citizens participating in local elections.[17] I construct the following variables: *age* (in years); a dummy indicating if the candidate's gender is *female*; educational attainment (in years); and, following Gagliarducci and Nannicini (2013), I classify self-reported occupations into either *white collar* or *blue collar*.

In addition to measures of electoral competition and candidates' characteristics, I compute measures of voters' electoral participation: *turnout*, given by the ratio of total votes over the number of eligible voters; the ratio of *blank and null votes* over the total amount of eligible voters; and the share of *valid votes* (computed as the difference between *turnout* and *blank and null votes*). These variables are not only of interest in themselves (voters' participation is an essential aspect of democratic elections), but can also help to understand the nature of the changes in the other electoral outcomes and the mechanisms at play. In particular, voters' reaction to signature requirements (both from a rational or an expressive perspective) is likely to happen only if these requirements modify the extent of political competition or the candidates' pool in a more substantial way than just discouraging frivolous candidates.

3.2 Empirical Strategy.

Estimating the impact of signature requirements on the described electoral outcomes is not trivial since it is necessary to resolve the endogeneity problem that arises if these requirements are correlated with other (potentially unobservable) variables that also determine the outcomes of interest (as it is likely to happen, for example, if signature requirements are a constant fraction of constituencies' population). To deal with this basic endogeneity issue, I use a (sharp) regression discontinuity design (RDD), exploiting the fact that signature

[17] I use the names of the candidates to match the information of the Register of Local Administrators with the data in the Historical Elections Archives. The algorithm is able to match more than 90 percent of all candidates.

requirements are introduced at the 1000 inhabitants threshold. This institutional setting generates arguably exogenous variation in signature requirements, allowing me to estimate their causal effect on local political outcomes.

Following Hahn, Todd and Van der Klaaw (2001), I use the Rubin causal framework to state the identification assumption that allows to estimate the (local) effect of signature requirements. Let $X_i(r)$ be the potential outcome X in municipality i given an institutional setting (r), which can be either "no signature requirements" (n) or "signature requirements" (s). The potential outcome is the value a variable would take under either institutional arrangement and might depend on population (P). I make the following assumption:

Assumption 1. $E[X_i(s)|P = p]$ and $E[X_i(n)|P = p]$ are continuous in P at P_0.

The assumption states that the potential outcomes of the variables of interest do not show a discontinuity at the relevant threshold. Under this continuity assumption, a jump in these variables at that threshold can be interpreted as an effect of the introduction of signature requirements. Hence, the local average treatment effect at the threshold $\tau_{SRD} \equiv E[X_i(s) - X_i(n)|P = P_0]$ can be identified by:

$$\tau_{SRD} = \mu_+ - \mu_- \quad \text{with} \quad \mu_+ \equiv \lim_{p \to P_0^+} E[X_i(s)|P = p] \quad \text{and} \quad \mu_- \equiv \lim_{p \to P_0^-} E[X_i(n)|P = p]$$

For estimation and inference, I follow Calonico et al (2014a, 2014b) and use a local-linear estimator of τ_{SRD}, obtained by computing the difference in intercepts of two first-order local polynomial estimators, one from each side of the threshold. The estimator $(\hat{\tau}_{SRD})$ is formally given by:

$$\begin{aligned}
\hat{\tau}_{SRD}(h^+, h^-) &= b_0^+ - b_0^- \\
(b_0^+, b_1^+) &= \arg\min_{b_0, b_1} \sum_{i=1}^{n} \mathbf{1}(P > P_0)(X_i - b_0 - P_i b_1)^2 K\left(\frac{P_i - P_0}{h}\right) \\
(b_0^-, b_1^-) &= \arg\min_{b_0, b_1} \sum_{i=1}^{n} \mathbf{1}(P \leq P_0)(X_i - b_0 - P_i b_1)^2 K\left(\frac{P_i - P_0}{h}\right)
\end{aligned}$$

where $K(\cdot)$ is a kernel function, h is a positive bandwidth and $\mathbf{1}(\cdot)$ denotes the indicator function. The kernel function (that assigns greater weights to observations close to P_0) and the bandwidth localize the fit of the regression near to the threshold. I estimate the regression using mean squared error optimal bandwidth (h) and compute robust (to choice of bandwidth) confidence intervals, which are shown to provide better empirical coverage than the alternatives available in the literature (Calonico et al, 2014b). In the appendix, I provide the robustness of the results to alternative bandwidths $(h/2$ and $2h)$ and to other estimation methods (namely, 3rd and 4th order global polynomial approximations).

4 Empirical Results: Main.

In this section, I present the RDD estimates of the effect of signature requirements on different electoral outcomes. I first discuss different validity checks that support the plausibility of the RDD assumptions and the causal interpretation of the estimates.

4.1 Validity of RDD Assumptions.

To credibly interpret the RDD results as showing the causal effects of the introduction of signature requirements, it is crucial that municipalities do not manipulate population figures to strategically sort into either side of the threshold. Eggers et al (2016) discuss the potential problems of using population thresholds in the Italian context, indicating there is suggestive evidence of manipulation around some of these thresholds. However, their evidence refers mainly to thresholds where municipal authorities' salaries change, something that does not occur in the setting analyzed here. In the period 1993-2000, the only policy change at the 1000 population threshold was the introduction of signature requirements.[18] Furthermore, as stated in Section 2, population figures used during that period to determine the level of signature requirements were those of the 1991 population census. These were determined before the jump in signature requirements at the 1000 inhabitants threshold was introduced, in 1993.[19] The fact that population figures were predetermined when the bill was proposed in 1992 (*Bill C.72, April 23rd 1992, XI Italian Legislature*) eliminates the possibility of strategic sorting around the threshold.[20]

Nonetheless, to further address these concerns, I test for the existence of a discontinuity in the density of the running variable (population) at the 1000 inhabitants threshold, which could evidence the presence of bunching on one side of the threshold. Column (1) in table A.1 (included in the appendix) reports the results of the test: the null hypothesis of no jump cannot be rejected (p-value equal to 0.784).

I also check for discontinuities at the 1000 inhabitants threshold in a set of pre-determined socio-demographic variables obtained from the 1991 census (referring to educational attaintments, age, employment, and density); and on the different measures of civic capital used. The results, reported in tables A.2 in the appendix, show no signs of systematic discontinuities at the threshold, providing further support to the validity of the empirical design.

[18] Eggers et al (2016) provide a detailed list of different policies changing at specific population thresholds, but they overlook changes in signature requirements. The only jump reported at the 1000 inhabitants threshold is the increase in wages that was introduced in the year 2000 (*Decreto Legislativo 267/2000*). I confirmed this by doing an independent institutional background check.

[19] In 1991, municipalities' institutional framework was given by *Decree 570/1960* and its subsequent modifications. There were no policies changing at the 1000 inhabitants threshold.

[20] The draft of the bill introduced to the legislature didn't even mention explicit population thresholds for signature requirements, which were introduced in later readings.

Table 2: Signature Requirements and Political Competition

	Candidates	Non-Marginal	Unopposed	W's Share	W's Margin
Effect	-0.217***	-0.228***	0.080*	0.070***	0.119***
	(0.079)	(0.076)	(0.042)	(0.024)	(0.044)
N	5321	5321	5321	5321	5321
Effective N	1343	1202	1866	1176	1343
Bandwidth	185	166	258	164	184
Mean(Y)	2.107	1.632	0.115	0.642	0.318
SE(Y)	0.625	0.494	0.320	0.163	0.301

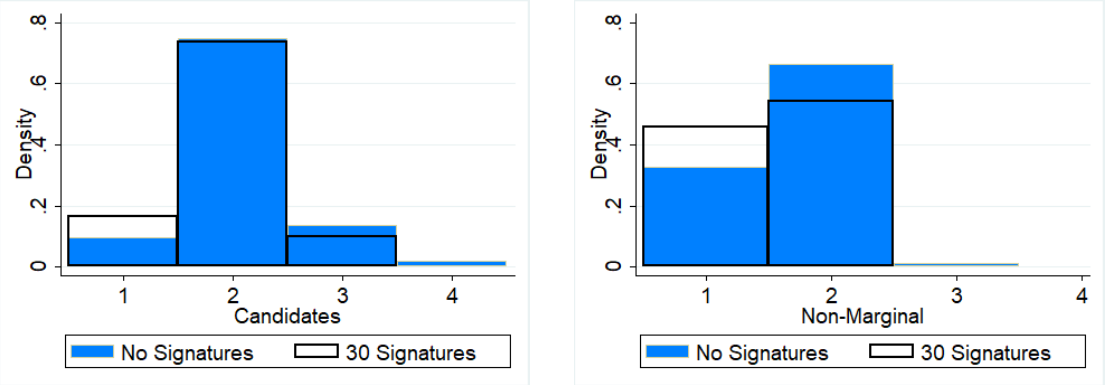
[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).
[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.
[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.
[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

4.2 Signature Requirements and Electoral Competition.

I first examine the impact of signature requirements on electoral competition. Table 2 reports the RDD estimates using the baseline estimation method (local linear regression with mean-square-error optimal bandwidth). Table A.3, included in the appendix, reports results using two alternative bandwidths, and a 3rd-order global polynomial regression.

Baseline results show that signature requirements reduce the *number of candidates* (first column) by 0.217, a ten-percent drop with respect to the observed mean in municipalities just below the threshold. Importantly, the fall persists when considering only *non-marginal candidates* (second column), showing that also those who receive substantial support are affected by the introduction of signature requirements. Figure 1 shows the distribution of the *number of candidates* and *non-marginal candidates* in elections for municipalities just around the threshold (with 950 to 1050 inhabitants), and helps contextualize the above results. The histograms reveal two key facts about mayoral elections in these municipalities: First, even in the absence of signature requirements, there are few candidates running (almost 80 percent of the races have just two candidates). Second, in these municipalities, most of the candidates get substantial support, with runners-up obtaining, on average, more than 230 votes (or almost 8 times the number of signatures needed to run in cities above the threshold). This electoral context implies that changes in the number of candidates are likely to result also in changes in the extent of political competition. In fact, table 2 shows that signature requirements lead to a significant fall in electoral competition, as measured by the number of *unopposed* races (column 3), the *winner's share* (column 4), and the

Figure 1: Signature Requirements and Political Competition



[a] Left panel: raw number of candidates. Right panel: non-marginal candidates (as defined in Section 3.1). Frequencies computed using information from elections in municipalities with 950 to 1050 inhabitants. Number of elections below (above) the threshold: 166 (170).

winner's margin (column 5). Estimated effects are statistically significant, quantitatively relevant, and largely robust to different RDD bandwidths and estimation methods (table A.3). In the baseline specification, frequency of unopposed races almost doubles, from 11.5 to 19.5 percent; average winners' share increases 7 percentage points; and average winners' margin increases 11.9 percentage points, from 31.8 to 43.7 percent.

Results show that signature requirements have a large and significant impact on local electoral races, which does not necessarily align with the goals of ensuring the representativeness of the candidates and avoiding frivolous ones. These findings support the idea that signature requirements not only give voters a pre-electoral screening mechanism to avoid frivolous candidates, but also impose a burden to potential candidates, who, independently of their winning chances, might be deterred from running (especially when the perks of office do not compensate the extra effort). This has two important implications: First, that the normative evaluation of this policy should carefully weigh the potential benefits of avoiding frivolous candidates against the potential costs of discouraging non-marginal ones. Second, that the fact that "only the most marginal parties seem to have any difficulty gathering the requisite number of signatures"[21] cannot be used as a sound criterion for such evaluation.

[21] European Commission for Democracy through Law (2003). *Code of Good Practice in Electoral Matters*. Council of Europe Publishing. p.16.

Table 3: Signature Requirements and Candidates' Selection

	Education	Age	Age ≤ 40	Age 40-60	Age ≥ 60
Effect	0.251	2.505***	-0.090**	0.075*	0.052*
	(0.282)	(0.936)	(0.038)	(0.040)	(0.028)
N	10221	10333	10333	10333	10333
Effective N	2891	2331	3955	3666	1888
Bandwidth	202	166	279	259	136
Mean(Y)	13.037	45.875	0.322	0.568	0.111
SE(Y)	3.349	10.663	0.467	0.496	0.314

[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).
[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.
[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.
[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

4.3 Signature Requirements and Selection.

To further assess the impact of signature requirements on local politics, I estimate their effect on the characteristics of the pool of mayoral candidates. Table 3 reports the baseline RDD estimates of the effects on candidates' educational attainment (measured by the years of schooling) and candidates' age. Table A.4 in the appendix reports results obtained using alternative bandwidths and estimation methods.

Signature requirements raise the average age of candidates by 2.5 years (second column), and cause a small -not statistically significant- increase in years of schooling (first column). The increase in candidates' age is driven by the fall in the incidence of young candidates (up to 40 years old), who are disproportionately affected by the stricter ballot access regulation. This result is consistent with older citizens being more able to bear the costs associated to signatures collection, something that could be explained, for example, by them having better connections among neighbours or more spare time to devote to the associated bureaucratic procedures.

Table A.5 in the appendix reports RDD estimates of the effect on candidates' *gender* and broad occupational class. There is no evidence of an effect of signature requirements on these characteristics of the candidates' pool. In particular, male candidates account for more than 90 percent of all candidates both above and below the threshold.

Table 4: Signature Requirements and Voters' Participation

	Turnout	Blank/Null	Valid Votes
Effect	-0.033**	0.011	-0.043***
	(0.016)	(0.009)	(0.016)
N	5321	5321	5321
Effective N	1798	1528	1838
Bandwidth	247	208	254
Mean(Y)	0.811	0.058	0.753
SE(Y)	0.106	0.059	0.116

[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).
[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.
[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.
[d] Stars denote significance level: *** p < 0.01, ** p < 0.05 and * p < 0.1.

4.4 Signature Requirements and Voters Participation.

In addition to electoral competition and candidates' selection, I estimate the impact of signature requirements on voters' electoral participation. Baseline RDD estimates, reported in Table 4, indicate that signature requirements lead to a drop of 3.3 percentage points in *turnout* (first column), and an increase -not statistically significant- in *null and blank votes* (second column). These effects add up to a large and significant fall (4.3 percentage points) in the number of *valid votes* (that is, votes casted for one of the candidates in the election). Results are robust to using different bandwidths and estimation methods (as shown in table A.6, included in the appendix).

These results are not only of interest in themselves, but, given that voters' reaction to signature requirements is likely to be mediated by their impact on political competition or on the candidates' pool, they also help to assess the nature of the effects on these other electoral outcomes and the mechanisms at play. The drop in turnout and in the number of valid votes, which could be explained both by a rational response to the fall in electoral competition or by an expressive reaction to the absence of a candidate of choice, points to signature requirements acting more as a discouragement device for potentially non-marginal candidates than as a screening tool to avoid frivolous ones. If they reflect either the anticipation of a less competitive election or the lack of an appealing candidate, the observed changes in voters' behaviour would not systematically happen if signature requirements were just discouraging or screening out marginal candidates.

5 Signature Requirements as Running Costs: A Theoretical Framework

Results in Section 4 point to signature requirements increasing the costs of standing as a candidate. In the political economics literature, citizen-candidate models (Osborne and Slivinski, 1996; Besley and Coate, 1997) have provided a general theoretical framework to examine the effect of running costs on electoral outcomes. An important lesson of this theoretical framework is that running costs should be considered in relation to the *value of being elected*, which is affected by the intrinsic perks of office and the competence and interests of other potential candidates in the constituency.

The interaction between running costs and these local factors in the determination of the equilibrium pool of candidates is especially important in the Italian context, characterized by large heterogeneity across regions. In small municipalities, as the ones analyzed, where there is arguably low intrinsic value of office and national politics do not seem to interfere (less than 10% of candidates belong to national parties), differences in civic capital are potentially relevant. These differences -highlighted by Banfield (1958) and Putnam (1993), and further examined by several studies (Guiso, Sapienza, and Zingales, 2011)- are related both to the existence (or lack of) social constraints on public officials and to the degree of concern for aggregate welfare among individuals (Nannicini et al, 2013). These two dimensions of civic capital are likely to affect the *value of being elected* (altering what others are able and willing to do if elected) and the assessment of the relative importance of running costs when deciding to stand as a candidate.

In this section, I propose a simple citizen-candidate model that formalizes these relationships and links them to the setting studied in this paper. The idea is not to provide a general theory of how citizens decide to run as candidates, but to (a) highlight an intuition of how the impact of introducing signature requirements (understood as an increase in running costs) can be moderated by the civic capital in the constituency, and (b) obtain testable implications that could help better understand the mechanisms behind the observed effects.

5.1 A Simple Model.

The model incorporates several features specific to small constituencies and tries to fit the institutional and political setting observed in small Italian municipalities (as those studied in the empirical analysis).

Let M be a municipality formed by two equally sized groups of voters ($J \in \{A, B\}$). The municipality is administered by a mayor, elected in a "first past the post" system. In each

group, there are two potential candidates that decide whether to run for the mayor's seat.[22] There is no intrinsic value in being the mayor, but citizens (and the potential candidates themselves) value the services and goods provided by the municipality. A potential candidate (i) is characterized by the group she belongs to (J), her competence ($\beta_i^J \in (0,1]$) and a personal trait $\gamma_i^J \in (0,1]$. These characteristics are all common knowledge. Candidates' competence captures their ability to run the municipality, and determines the total amount of goods that they can provide if elected. Their other personal trait is associated to their capability to handle running costs, in particular, collecting signatures and dealing with the associated bureaucratic burden. I order the potential candidates with respect to their competence within each group, and assume that $\beta_1^A = 1$ and that $\beta_1^J > \beta_2^J$ for $J \in \{A, B\}$.

Incumbents can provide either public goods (g) or club goods (m^J), enjoyed only by members of their group. Utility is linear in both goods: $u_i^J = g + m^J$. Incumbents' choice is assumed to be influenced by the level of civic capital in the municipality (θ). In particular, a politician with competence β_i^J in a municipality with civic capital θ provides an amount $\theta\beta_i^J$ of the public good, and an amount $(1-\theta)\beta_i^J$ of the club good. The model tries to capture in this way two specific dimensions of civic capital: (i) indirectly, the diffusion of a generalized morality and of concern about aggregate welfare, both associated to less preference heterogeneity and greater public good provision; and (ii) directly, the existence of social constraints on public officials' behaviour, which could derive from the mentioned generalized morality (Nannicini et al, 2013) or from other social norms prevailing in the municipality.

In the electoral stage, I assume each voter supports the candidate that delivers highest utility for her (sincere voting). In short, they just compare the competence of ingroup and outgroup candidates, adjusting the latter by the level of civic capital. Since members of a given group share the same preferences, they all vote for the same candidate and there are at most two serious candidates (that is, candidates that receive a positive amount of votes).[23] If each group supports a different candidate, I assume the position is taken with $1/2$ probability by each of them.

In the entry stage, potential candidates simultaneously decide whether to run. The decision to participate carries some running costs (c) that include the utility and monetary costs of satisfying all bureaucratic requirements (among them, collecting signatures if required). These costs might be borne differently by different potential candidates, and therefore carry a utility loss equal to $\gamma_i^J c$. The fact that signature requirements are modeled as being part of the running costs imply that all potential candidates (even those who

[22] We could assume that every member of the group faces this choice. However, having more than two potential candidates in each group would complicate the analysis without providing substantial insights.

[23] If the members of a group are indifferent between more than one candidate, I assume they coordinate on one of them.

wouldn't get any vote in the election) are, in principle, capable to satisfy this requirement (that is, in the setting analyzed, that everyone doing a sufficiently high effort can get the required 30 signatures). It is important to note that these costs are assumed to capture the attention, effort and time needed not only to get the people to sign, but to set the candidature on time, and to understand and correctly comply with all the different bureaucratic steps involved in that process.[24]

The static game played by the potential candidates is formally represented by (i) the set of players: $\{1^A, 2^A, 1^B, 2^B\}$; (ii) the set of strategies for each of the players: {run, not run}; and (iii) a payoff function ($\pi_i^J(\cdot)$) for each of the players, which depends on her action (a_i^J), the other players' actions (a_{-i}^J, a_1^{-J}, a_2^{-J}), and the set of parameter values (Γ):

$$\begin{aligned} \pi_i^J(\text{run}, a_{-i}^J, a_1^{-J}, a_2^{-J}; \Gamma) &= p^J\beta^J + p^{-J}\theta\beta^{-J} - \gamma_i^J c \\ \pi_i^J(\text{not run}, a_{-i}^J, a_1^{-J}, a_2^{-J}; \Gamma) &= p^J\beta^J + p^{-J}\theta\beta^{-J} \end{aligned}$$

where β^J is the competence of group J's most competent (running) candidate (equal to 0 if no potential candidate in the group runs); and p^J is the probability that group J's most competent candidate wins (also equal to 0 if there is no candidate from that group).[25] If nobody runs, the payoff of all potential candidates is zero.

To obtain (testable) implications from the model and capture some aggregate features of elections in the Italian municipalities studied, I impose that running costs are relatively moderate ($c \in [0, \frac{1}{4}]$); that even in high civic capital municipalities there are relevant group-specific interests ($\theta \in [0, \frac{1}{2}]$); and that both groups have a relatively competent potential candidate in their ranks ($\beta_1^B \in (\frac{1}{2}, 1)$). These parameter restrictions: (i) rule out scenarios where campaigning costs are so expensive that no potential candidate runs; and (ii) ensure that voters in each group support the most competent potential candidate in their group when she runs.[26]

To assess the model's implications on the impact of signature requirements, I compare the Nash equilibria of the game with different running costs: a situation with low running

[24] Instructions for the submission of candidatures in Italian municipalities are detailed in the document: *Istruzioni per la presentazione e l'ammissione delle candidature* (Italian Ministry of Internal Affairs, 2015)

[25] The payoff of each agent is given by the sum of three terms: the probabiility that the most competent ingroup candidate wins multiplied by her competence ($p^J\beta^J$), the probability that the most competent outgroup candidate wins multiplied by her competence and adjusted by the level of civic capital ($p^{-J}\theta\beta^{-J}$), and a utility loss ($\gamma_i^J c$) incurred only if the agent runs.

[26] The upper bound to the civic capital parameter is crucial to avoid scenarios where there is only one serious candidate for all levels of running costs. Note that if $\theta \simeq 1$, all voters support the most competent candidate, independently of the group she belongs to. The restrictions are therefore critical for the results that follow.

costs ($c \to 0$), which I associate to the case *without* signature requirements; and a case with higher running costs (or *with* signature requirements). It is fairly straightforward to observe that, if running costs are sufficiently low, the most competent candidate in each group runs. This follows from the fact that candidates themselves prefer a competent mayor to a less competent one, and that both groups are assumed to have a relatively competent potential candidate in their ranks that can represent their group-specific interests.

Proposition 1 ***(No signature requirements)*** If running costs (c) are sufficiently low, the most competent potential candidate in each group runs.

Proof. See appendix.

As running costs increase, competent candidates weigh these costs with the expected welfare loss from having someone else taking office. Increasing running costs introduce a greater wedge between voters and potential candidates' preferences. Hence, even if voters prefer the most competent potential candidates to run for mayor, these might be better-off eluding running costs, and having someone else taking office (especially if dealing with signature requirements is burdensome for them, or the other candidates are highly competent). Incumbents' behaviour (and, therefore, the civic capital in the municipality) is crucial for this comparison. If civic capital is low, having an outgroup incumbent is not an attractive alternative and therefore, in equilibrium, each group still has a candidate (although not necessarily the most competent one). If civic capital is high, incumbents provide a fair amount of public good independently of their group, and a highly-competent candidate might deter all potential candidates in the other group to stand in the election (even if they would be supported by their group if decided to run).

Proposition 2 ***(Signature requirements)*** In the Nash equilibria of the game with greater running costs: (i) most competent potential candidates do not necessarily run; (ii) if social capital is high enough ($\theta > \max_i \frac{1}{\beta^A}\left(\beta_i^B - 2\gamma_i^B c\right)$), just one candidate runs.

Proof. See appendix.

The model has multiple equilibria and comparative statics are not simple. However, the comparison of the characteristics of the different equilibria *with* and *without* signature requirements provides some clear implications. For given competence levels and personal traits, the level of civic capital is key to determine the impact of signature requirements. In low-civic-capital settings, increasing running costs do not change electoral competition, but might lead to within-group substitution of candidates that results in a drop in candidates'

average competence.[27] In high-civic-capital municipalities, increasing running costs lead to one-candidate races, reducing electoral competition.[28] If the candidate running is extremely competent ($\beta \to 1$), competence increases relative the case *without* signature requirements. However, there might be equilibria where this is not the case, and therefore the effect on average candidates' competence is ambiguous.[29]

This framework provides some implications about the effect of signature requirements: (i) the fall in the number of candidates and electoral competition is greater in high-civic-capital municipalities; (ii) a change in the composition of the pool of candidates might be observed even if there are no changes in the number of candidates; and (iii) average candidates' competence (weakly) falls in low-civic-capital municipalities.

5.2 From the Model to the Data: Civic Capital and Performance.

Civic Capital.

In order to empirically assess the validity of the model's implications it is crucial to obtain a measure of civic capital that captures the extent of diffusion of a generalized morality or the presence of social norms supporting virtuous behaviour. I resort to two measures previously used by the literature. Guiso, Sapienza and Zingales (2004) and Nannicini et al (2013) use anonymous blood donations. The variable *blood donations* is measured by the number of blood bags (16 ounces each) per million inhabitants collected by the Italian association of blood donors (AVIS) in 1995 at the province level. Its use responds to the fact that donating blood is a voluntary and arguably disinterested action mainly driven by social influence or internalized values.[30]

I also follow Tabellini (2010) who, among other indicators, uses individual trust attitudes from the World Value Survey to assess the diffusion of generalized morality across

[27] If civic capital is low ($\theta < \max_i \frac{1}{\beta^A}\left(\beta_i^B - 2\gamma_i^B c\right)$), candidates' average competence in all Nash equilibria *with* signature requirements is smaller or equal than in the equilibrium *without* signature requirements: $\frac{1}{2}\left(\beta^A + \beta^B\right) \leq \frac{1}{2}\left(1 + \beta_1^B\right)$.

[28] Group A is assumed to have the most competent potential candidate of all in its ranks (recall that $\beta_1^A = 1 > \beta_i^J \ \forall i, J$). The restrictions on c and θ ensure that she is always better off running than letting an outgroup candidate run alone. This does not imply that she will always run: if the other candidate in group A is competent enough and runs for mayor, she might find optimal to stay out of the election and avoid running costs.

[29] In the Nash equilibria in which the most competent candidate in group A runs, average competence *with* signature requirements is greater than *without* signature requirements ($1 > \frac{1}{2}\left(1 + \beta_1^B\right)$). However, as stated in the previous footnote there might be equilibria in which only the other candidate in group A runs. In these equilibria, average competence *with* signature requirements can be lower than *without* signature requirements ($\beta_2^A \lesseqgtr \frac{1}{2}\left(1 + \beta_1^B\right)$)

[30] A more detailed description of the variable and of the Italian association of blood donors (AVIS) can be found in the appendix of the article by Guiso, Sapienza and Zingales (2004).

European regions. Respondents are asked to say whether, generally speaking, (i) most people can be trusted, or (ii) you cannot be too careful in dealing with people. The variable *trust* is then computed as the percentage of respondents who believe that most people can be trusted. As discussed by Tabellini (2010) and suggested by previous evidence, trust attitudes are associated with individual trustworthiness, and both these traits (trust and trustworthiness) are associated, at the community level, with better behaviour of politicians and the reduction of nepotism and corruption. The answers to this question thus capture a feature that closely resembles what the theoretical model considers as civic capital.[31]

The information on both proxies for civic capital is available online at the province level, and as cross-section.[32] I assign the province average to each municipality within the province, relying on the fact that cultural traits are slow-moving and show a strong spatial persistence in Italy. The variable *blood donations* is available for 4794 electoral races, while *trust* is available for 4763. The correlation between the two variables is positive and high (0.31), but not perfect. To reduce the reliance on a single measure, I compute the first principal component of the two variables (*civic capital*) to capture the main underlying factor driving them. The first principal component (available for 4431 elections) is strongly and positively correlated with both variables: *blood donations* (0.83) and *trust* (0.78).

Performance Indicators.

To obtain a grasp on incumbents' competence, I consider one main indicator of administrative efficiency in Italian municipalities: *speed of revenues*, computed as the ratio of expenses paid (cash basis) and expenses pledged (accrual basis).[33] I use yearly information for the period 1993-2000. In the absence of reliable measures of, for example, the quality of public goods provided by local governments, this variable is used as an indicator of governmental performance since: (i) it is under the direct control of the mayor; (ii) it is constructed using budgetary data, which is comparable across municipalities and it is relatively reliable; and (iii) it is arguably less affected by citizens' preferences than other available measures, such as the size and composition of government revenues and expenditures.

6 Empirical Results: Heterogeneous Effects.

In this section, I examine the empirical validity of the theoretical framework discussed above, relying on the heterogeneity in civic capital across Italy. To do so, I split the sample of municipalities according to the *civic capital* variable (described in Section 5.2), and

[31] There is information for around 8000 respondents (from 5 different waves, conducted between 1981 and 2010), but the sample is representative only at the national level, adding noise to the lower-level measures.

[32] The data was downloaded from Tommaso Nannicini's website at http://tommasonannicini.eu/ (accessed on June 22nd, 2016).

[33] Gagliarducci and Nannicini (2013) generously shared this information. They obtained the data from the *Associazione Nazionale Comuni Italiani* (ANCI). See the cited paper, section 3.2.

obtain RDD estimates of the effect of signature requirements in each of the two subsamples.

Even if the arguments supporting the absence of multiple treatments or strategic sorting (section 4.1) hold also for these subsamples, I further assess the validity of the RDD assumptions in each of them by testing the continuity of the density of the running variable (results reported in the appendix, table A.1), and checking for discontinuities at the 1000 inhabitants in a set of pre-determined variables and in the different civic capital measures (tables A.7, A.8, and A.9, included in the appendix).

Electoral Competition.

The first (and clearest) prediction of the model in Section 5 is that the effect of signature requirements on electoral competition is concentrated among high-civic-capital municipalities. Baseline RDD estimates reported in table A.10 in the appendix largely confirm this hypothesis: In the high-civic-capital sample, signature requirements lead to a 0.42 decrease in the average *number of candidates* (column 1), a 20-percent fall with respect to the mean just below the threshold. In the low-civic-capital sample, the fall is significantly smaller (0.12) and not statistically different from zero (at standard confidence levels). In all other measures of electoral competition considered, the same pattern is observed: the effect of signature requirements on the number of *non-marginal candidates*, the frequency of *unopposed* races, the *winner's share* and the *winner's margin* is large and significant among high-social-capital municipalities, and small -not statistically different from zero- among low-social-capital ones. Estimates are therefore consistent with the two main assumptions of the model: (i) that signature requirements add non-trivial running costs and may discourage non-marginal candidates from running for office; and (ii) that the prevalence of social norms or preferences that constraint incumbents' misbehaviour (that is, high civic capital) influences the relative assessment of such costs.

Candidates' Selection.

The model indicates that the pool of candidates (and thus observed candidates' traits) might be affected by signature requirements even in low-social-capital municipalities, where there are no changes in electoral competition. Baseline RDD results, reported in table A.11 in the appendix, confirm this hypothesis: as observed in the full sample of municipalities (table 3), candidates' average age increases in both subsamples, driven by a fall in the incidence of young candidates (up to 40 years old). The change is more precisely observed among low-civic-capital municipalities (something not implied by the model), but differences in estimates are not statistically different from zero.

The intuition in the model for this result is that collecting signatures might require certain skills or knowledge (such as the ability to organize things in advance, or being the friend of a public authority who can certify the signatures) that are not crucial in the

absence of this regulation. Relative to a scenario without signature requirements, the introduction of these requirements might discourage people lacking these skills from standing in the election and promote a within-group substitution of candidates.

Candidates' Performance.

If in the absence of signature requirements competence matters the most, the within-group substitution of candidates spurred by signature requirements will likely lead to a fall in their average competence (especially, but not exclusively, if competence and the other skills are not strongly correlated). This is the prediction of the model for low-civic-capital settings, where both groups have always a candidate standing in the election. To obtain a grasp on the empirical validity of this prediction, I estimate the effect of signature requirements on the *speed of payments*, an indicator of administrative efficiency and arguably related to incumbents' competence as administrators. RDD estimates, reported in table A.12 in the appendix, show no aggregate impact of signature requirements on this variable (first column), but point to an heterogeneous effect across municipalities with different levels of civic capital: there is a positive effect among high-civic-capital municipalities (second column), and a negative effect among low-civic-capital ones (third column). The magnitude of the effects is not small: they represent 0.18 and 0.28 of a standard deviation, respectively.[34] As far as administrative efficiency can be associated to mayors' competence, results are largely consistent with the implications of the model.

Alternative Explanations: Elite Capture.

It has been argued that, on top of acting as screening and discouragement tools, signature requirements provide entrenched political or economic groups with an institutional lever to diminish political competition (Abrams, 1996; Venice Commission, 2003). This mechanism could as well rationalize the observed falls in the number of non-marginal candidates and the extent of electoral competition, and, following the same arguments as before, explain the reaction in voters' behaviour. While this mechanism is more likely to be valid in contexts where elites can dictate the amount of signatures required or establish exceptions for certain candidates (for example, those belonging to national parties), the mere presence of additional bureaucratic and legal procedures associated to these requirements might open the door to manipulation.

The observed heterogeneity goes against this alternative explanation for the effects of signature requirements on electoral outcomes. In particular, under such explanation, it would be expected to observe a greater fall in number of candidates (and electoral competition) among low-civic-capital cities, where coercion from powerful groups is arguably more likely. The fact that the fall in electoral competition is larger in high-civic-capital settings,

[34] The positive effect in high-social-capital cities would raise the median observation to the 58th percentile. The negative effect in low-social-capital ones would lower the median observation to the 40th percentile.

validates the discouragement argument provided by the model. It is also reassuring that there haven't been major complaints in this regard in Italy.

7 Concluding Remarks.

This paper examines the causal effect of signature requirements on electoral competition, candidates' selection and voters' participation. I use data on small Italian municipalities and apply a regression discontinuity design (RDD), exploiting that these requirements are only present in municipalities with more than 1000 inhabitants.

I find that signature requirements significantly reduce the number of candidates and non-marginal candidates, decrease electoral competition (as measured by the winner's margin, the winner's share, and the number of unopposed races), and lead to an older pool of candidates. Signature requirements lead also to a large drop in voters' electoral participation, measured both as turnout and the number of valid votes. The different results help to grasp the mechanisms at play, pointing to signature requirements acting more as a discouragement device for potentially non-marginal candidates than as a screening tool to avoid frivolous ones.

To further test the validity of this interpretation and obtain additional insights, I propose a model that incorporates the notion of signature requirements as running costs and, relying on previous literature (Besley and Coate, 1997; Guiso, Sapienza, and Zingales, 2011), introduces civic capital (narrowly understood as the prevalence of social norms or preferences that constraint incumbents' misbehaviour and sectarianism) as a factor affecting the relative importance of these costs. Empirical results -using the first principal component of blood donations and trust attitudes to capture the underlying level of civic capital- align with the predictions of the model. In particular, the impact of signature requirements on electoral competition is concentrated in high-social-capital municipalities, supporting the model's interpretation of signature requirements and going against an alternative explanation relying on elite capture.

These findings highlight that the impact of signature requirements might go beyond the goals of ensuring the representativeness of the candidates and avoiding frivolous ones. The normative evaluation of this policy should therefore carefully weigh the potential benefits of avoiding frivolous candidates against the potential costs of discouraging non-marginal ones, a trade-off that, as argued, is likely to be affected by local political and cultural factors.

From a broader perspective, the paper serves to: (a) highlight the importance of institutional details: the introduction of signature requirements have a large and significant

impact on local electoral races, changing the observed extent of both contestation and participation (two dimensions considered central to the functioning of democracies); and (b) provide an interesting example and explanation about the need to understand the local environment (including, for example, prevailing social norms) in order to design efficient institutions.

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A Appendix

I first define the notation:

- i^J is the potential candidate i of group J.
- a_i^J is the action taken by i^J.
- a is an action profile $\left(a_1^A, a_2^A, a_1^B, a_2^B\right)$.
- *not* denotes the action "not run".
- $\pi_i^J(a)$ is the payoff of potential candidate i^J given a profile a.
- β^J is the competence of the most competent running candidate of group J.
- p^J is the probability the most competent running candidate of group J wins the election.

Proposition 1: Proof

Proposition 1 follows from the fact that in all Nash equilibria of the game with no running costs ($c = 0$), the most competent potential candidate of each group runs. I prove this by showing that, independently of other players' choice, the most competent potential candidate in each group is better off running.

The relevant action profiles to examine are: (a) no other potential candidate runs; (b) only other ingroup candidate runs; (c) only an outgroup candidate runs; and (d) both an ingroup and an outgroup candidate runs.

In case (a) the payoff of running is equal to her competence level, as she would secure the mayor position if she decided to run. The payoff of not runnnig is equal to zero.

$$\pi_1^J(\text{run, no other candidate}) = \beta_1^J > 0 = \pi_1^J(\text{not, no other candidate}) \tag{1}$$

In case (b) the payoff of running is also equal to her competence level, since again she would secure the mayor's seat. The payoff of not running is equal to the competence of the other candidate in her group, which is assumed to be strictly smaller than hers.

$$\pi_1^J(\text{run, only ingroup}) = \beta_1^J > \beta_2^J = \pi_1^J(\text{not, only ingroup}) \tag{2}$$

In case (c) the payoff of running is given by the sum of (i) the probability that she wins times her competence level, and (ii) the probability she loses multiplied by the outgroup candidate competence level, adjusted by the level of civic capital (θ). The payoff of not

running is equal to the opponent's competence level, adjusted by the civic capital (θ). From the parameters restrictions, it follows that $\beta_1^J > \theta\beta^{-J}$. Hence, members of group J will support 1^J and the probability of winning is: $p^J \geq 1/2$.

$$\pi_1^J(\text{run, only outgroup}) = p^J\beta_1^J + (1-p^J)\theta\beta^{-J} > \theta\beta^{-J} = \pi_1^J(\text{not, only outgroup}) \quad (3)$$

The above inequality follows directly from $\beta_1^J > \theta\beta^{-J}$. If participation is costless, the most competent candidate in a group is always better off running than letting an outgroup candidate win.

In case (d) there are both an ingroup and an outgroup candidate. The payoff of running is equal to that of case (c). The payoff of not running instead is equal to the sum of (i) the probability that the other ingroup candidate (2^J) wins times her competence level and (ii) the probability that the other ingroup candidate loses multiplied by the outgroup candidate competence level, adjusted by the level of civic capital. Let p_2^J be the probability that 2^J wins, and p_1^J be the probability that 1^J wins. From voters' behaviour, it follows that: $p_1^J \geq p_2^J$, and, by assumption, we know that $\beta_1^J > \beta_2^J$.

If $p_2 = 0$ (that is, not even the members of group J support candidate 2^J), the situation is equivalent to case (c). If, instead, $p_2 > 0$, then:

$$\pi_1^J(\text{run, i + o}) = p_1^J\beta_1^J + (1-p_1^J)\theta\beta^{-J} > p_2^J\beta_2^J + (1-p_2^J)\theta\beta^{-J} = \pi_1^J(\text{not, i + o}) \quad (4)$$

The above inequality requires again that $\beta_1^J > \theta\beta^{-J}$. The most competent candidate (weakly) reduces the probability that the outgroup candidate wins, and increases the utility obtained from winning the election.

Note that all inequalities (1) to (4) are strict and therefore are kept when introducing a sufficiently low cost $c \to 0$.

Proposition 2: Proof

Preliminary Step: In all Nash Equilibria there is a group A candidate.

This can be proved by noting that if player 2^A is not running (or she is running but getting no votes), player 1^A is better off running, independently of what the other players do. The relevant action profiles to analyze are (a) no group B candidate runs, and (b) at least one group B candidate runs.

In case (a) the payoff of running is equal to her competence level minus the running cost, as she would secure the mayor position. The payoff of not running is equal to zero. [Recall that $\beta_1^A = 1$]

$$\pi_1^J(\text{run, no other candidate}) = 1 - \gamma_1^A c > 0 = \pi_1^J(\text{not, no other candidate}) \quad (5)$$

The inequality follows from the fact that running costs are assumed to be moderate ($c \in [0, \frac{1}{4}]$) and that $\gamma_1^A \in (0,1)$. Hence, $\gamma_1^A c < \frac{1}{4} < 1 = \beta_1^A$.

In case (b) the payoff of running is given by the sum of (i) the probability that she wins times her competence level, (ii) the probability she loses multiplied by the outgroup candidate competence level, adjusted by the level of civic capital, and (iii) the utility cost of running. The payoff of not running is equal to the opponent's competence level, adjusted by the civic capital. From the parameters restrictions, it follows that: $\beta_1^A > \theta\beta^B$. Hence, members of group A will support 1^A and the probability she wins the election is $p^A \geq 1/2$.

$$\pi_1^J(\text{run, only outgroup}) = p^A + (1-p^A)\theta\beta^B - \gamma_1^A c > \theta\beta^B = \pi_1^J(\text{not, only outgroup}) \quad (6)$$

The inequality follows from $1 - \gamma_1^A c > \theta\beta^B$. Running costs are never high enough to discourage player 1^A from running and letting an outgroup candidate secure the election.

In the Nash equilibria of the game with greater running costs: (i) most competent potential candidates do not necessarily run;
(ii) if social capital is high enough ($\theta > \max_i \frac{1}{\beta^A}\left(\beta_i^B - 2\gamma_i^B c\right)$), just one candidate runs.

Statement (ii): if social capital is high enough ($\theta > \max_i \frac{1}{\beta^A}\left(\beta_i^B - 2\gamma_i^B c\right)$), just one candidate runs.

From the *preliminary step*, we get that in every Nash equilibria of the game, there is a group A candidate. I then assess the conditions under which potential candidates in group B prefer to stand in the election. Player i^B finds optimal to run if:

$$\pi_i^B(\text{run, only outgroup}) = \tfrac{1}{2}\beta_i^B + \tfrac{1}{2}\theta\beta^A - \gamma_i^B c > \theta\beta^A = \pi_i^B(\text{not, only outgroup}) \quad (7)$$

The inequality holds if and only if $\theta\beta^A < \beta_i^B - 2\gamma_i^B c$. Hence, if $\theta > \max_i \frac{1}{\beta^A}(\beta_i^B - 2\gamma_i^B c)$, no group B candidate runs.

Statement (i): most competent potential candidates do not necessarily run;

This statement indicates that there are Nash equilibria in which the most competent potential candidate in a group does not run, but the other one does. From the proof of *statement (ii)*, we get that if:

$$\beta_2^B - 2\gamma_2^B c \;>\; \theta\beta^A \;>\; \beta_1^B - 2\gamma_1^B c$$

player 2^B prefers to compete against the candidate from A, while player 1^B prefers to stay out. Note that for the above inequality to hold, it must that $\beta_2^B > \theta\beta^A$. Player 2^B is supported by the members of her own group. Is this an equilibrium? In order to assess this, it is necessary to check if player 1^B is willing to deviate when 2^B runs. This is true if:

$$\pi_1^B(\text{run, i + o}) = \tfrac{1}{2}\beta_1^B + \tfrac{1}{2}\theta\beta^A - \gamma_1^B c > \tfrac{1}{2}\beta_1^B + \tfrac{1}{2}\theta\beta^A = \pi_1^B(\text{not, i + o}) \tag{8}$$

The inequality holds if and only if $\beta_1^B - 2\gamma_1^B c > \beta_2^B$, which contradicts the previous condition. Hence, if $\beta_2^B - 2\gamma_2^B c > \theta\beta^A > \beta_1^B - 2\gamma_1^B c$, there is a Nash equilibrium of the game in which the least competent potential candidate in group B runs for mayor. Note that this is only possible if $\gamma_2^B < \gamma_1^B$. In other words, the least competent potential candidate is better at dealing with signature requirements and other campaigning efforts than player 1^B.

It is also possible to observe equilibria in which the most competent player in group A does not run. Consider a situation where $\beta_2^A\theta > \max_i(\beta_i^B - 2\gamma_i^B c)$. Under this condition, there are no candidates from group B willing to run for mayor against any of the potential candidates in A. Note that if:

$$\pi_1^A(\text{run, only ingroup}) = \beta_1^A - \gamma_1^A c < \beta_2^A = \pi_1^A(\text{not, only ingroup})$$

player 1^A is better off not running and avoiding the associated costs.

Table A.1: Continuity of the Population Density

	(1) Full Sample	(2) High CK	(3) Low CK
T-Statistic	-0.274	-0.329	-0.022
P-Value	0.784	0.742	0.982
N	2693	1075	1168
Effective N	1311	394	656

[a] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.
[b] Manipulation test based on Cattaneo, Jansson, and Ma (2015).
[c] High (Low) Sample: municipalities with *social capital pc* higher (lower) than median value.

Table A.2: Continuity in Predetermined Variables

I. Predetermined Variables

	BA Degree	Labor Force	Unemployment	High-Skilled	Low-Silled
Jump	-0.024	-0.776	1.434	0.059	-0.819
	(0.974)	(1.175)	(2.007)	(0.848)	(1.523)
N	5321	5321	5321	5321	5321
Effective N	1306	1210	1490	1840	1066
Bandwidth	180	168	202	256	148
Mean(Y)	14.515	46.858	15.111	15.535	10.755
SE(Y)	4.903	6.155	11.582	5.602	7.272

II. Predetermined Variables (Cont.)

	Density	Men-Women	Less 6yr.	More 75yr.
Jump	81.112	-1.348	0.241	0.157
	(93.791)	(1.257)	(0.217)	(0.579)
N	5321	5321	5321	5321
Effective N	1735	1250	1640	1386
Bandwidth	239	174	225	189
Mean(Y)	87.729	96.922	5.137	9.877
SE(Y)	81.298	5.645	1.550	3.589

[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).
[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.
[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.
[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table A.3: Signature Requirements and Political Competition

I. Estimates from LLR with bandwidth **half** of the MSE optimal.

	Candidates	Non-Marginal	Unopposed	W's Share	W's Margin
Effect	-0.170	-0.218**	0.124*	0.079**	0.152**
	(0.119)	(0.107)	(0.064)	(0.036)	(0.066)
N	5321	5321	5321	5321	5321
Effective N	682	627	925	611	682
Bandwidth	92	83	129	82	92
Mean(Y)	2.107	1.632	0.115	0.642	0.318
SE(Y)	0.625	0.494	0.320	0.163	0.301

II. Estimates from LLR with bandwidth **double** of the MSE optimal.

	Candidates	Non-Marginal	Unopposed	W's Share	W's Margin
Effect	-0.195***	-0.136***	0.078***	0.050***	0.083***
	(0.056)	(0.052)	(0.029)	(0.017)	(0.030)
N	5321	5321	5321	5321	5321
Effective N	2695	2422	3721	2394	2692
Bandwidth	369	333	517	327	369
Mean(Y)	2.107	1.632	0.115	0.642	0.318
SE(Y)	0.625	0.494	0.320	0.163	0.301

III. Estimates from global polynomial regressions (3rd order)

	Candidates	Non-Marginal	Unopposed	W's Share	W's Margin
Effect	-0.172**	-0.124**	0.079*	0.046**	0.082**
	(0.067)	(0.061)	(0.041)	(0.020)	(0.037)
N	5321	5321	5321	5321	5321
Effective N	5321	5321	5321	5321	5321
Bandwidth					
Mean(Y)	2.107	1.632	0.115	0.642	0.318
SE(Y)	0.625	0.494	0.320	0.163	0.301

[a] Panels (I) and (II) report estimates obtained from local linear regressions with triangular kernel and different bandwidths (Calonico, Cattaneo and Titiunik, 2014). Panel (III) reports estimates from global polynomial regressions (3rd order).

[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.

[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.

[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table A.4: Signature Requirements and Candidates' Selection

I. Estimates from LLR with bandwidth **half** of the MSE optimal.

	Education	Age	Age $\leq$ 40	Age 40-60	Age $\geq$ 60
Effect	0.088	2.623*	-0.087	0.030	0.059
	(0.385)	(1.377)	(0.058)	(0.061)	(0.043)
N	10221	10333	10333	10333	10333
Effective N	1407	1195	1919	1807	937
Bandwidth	101	83	140	130	68
Mean(Y)	13.037	45.875	0.322	0.568	0.111
SE(Y)	3.349	10.663	0.467	0.496	0.314

II. Estimates from LLR with bandwidth **double** of the MSE optimal.

	Education	Age	Age $\leq$ 40	Age 40-60	Age $\geq$ 60
Effect	0.230	1.438**	-0.067**	0.068**	0.013
	(0.210)	(0.648)	(0.026)	(0.027)	(0.019)
N	10221	10333	10333	10333	10333
Effective N	5736	4727	7794	7300	3864
Bandwidth	404	331	559	519	271
Mean(Y)	13.037	45.875	0.322	0.568	0.111
SE(Y)	3.349	10.663	0.467	0.496	0.314

III. Estimates from global polynomial regressions (3rd order)

	Education	Age	Age $\leq$ 40	Age 40-60	Age $\geq$ 60
Effect	0.217	1.619*	-0.082*	0.085*	-0.003
	(0.301)	(0.912)	(0.043)	(0.045)	(0.026)
N	10221	10333	10333	10333	10333
Effective N	10221	10333	10333	10333	10333
Bandwidth					
Mean(Y)	13.037	45.875	0.322	0.568	0.111
SE(Y)	3.349	10.663	0.467	0.496	0.314

[a] Panels (I) and (II) report estimates obtained from local linear regressions with triangular kernel and different bandwidths (Calonico, Cattaneo and Titiunik, 2014). Panel (III) reports estimates from global polynomial regressions (3rd order).

[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.

[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.

[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table A.5: Signature Requirements and Candidates' Selection (Other)

	White Collar	Blue Collar	Retired	Female
Effect	-0.043	-0.005	0.056	-0.010
	(0.056)	(0.049)	(0.042)	(0.030)
N	10212	10212	10212	10333
Effective N	1924	2259	1882	2265
Bandwidth	141	162	137	162
Mean(Y)	0.314	0.450	0.201	0.091
SE(Y)	0.464	0.498	0.401	0.287

[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).
[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.
[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.
[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table A.6: Signature Requirements and Voters' Participation

I. Estimates from LLR with bandwidth **half** of the MSE optimal.

	Turnout	Blank/Null	Valid Votes
Effect	-0.052***	0.014	-0.066***
	(0.020)	(0.014)	(0.021)
N	5321	5321	5321
Effective N	890	749	915
Bandwidth	124	104	127
Mean(Y)	0.811	0.058	0.753
SE(Y)	0.106	0.059	0.116

II. Estimates from LLR with bandwidth **double** of the MSE optimal.

	Turnout	Blank/Null	Valid Votes
Effect	-0.026**	0.007	-0.033***
	(0.012)	(0.006)	(0.012)
N	5321	5321	5321
Effective N	3536	3039	3669
Bandwidth	495	416	508
Mean(Y)	0.811	0.058	0.753
SE(Y)	0.106	0.059	0.116

III. Estimates from global polynomial regressions (3rd order)

	Turnout	Blank/Null	Valid Votes
Effect	-0.032**	0.006	-0.038**
	(0.016)	(0.008)	(0.016)
N	5321	5321	5321
Effective N	5321	5321	5321
Bandwidth			
Mean(Y)	0.811	0.058	0.753
SE(Y)	0.106	0.059	0.116

[a] Panels (I) and (II) report estimates obtained from local linear regressions with triangular kernel and different bandwidths (Calonico, Cattaneo and Titiunik, 2014). Panel (III) reports estimates from global polynomial regressions (3rd order).

[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.

[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.

[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table A.7: Continuity in Predetermined Variables (High CK Sample)

I. Predetermined Variables

	BA Degree	Labor Force	Unemployment	High-Skilled	Low-Silled
Jump	0.441	-0.739	-0.534	0.145	-1.092
	(1.215)	(1.553)	(1.107)	(1.340)	(0.866)
N	2118	2118	2118	2118	2118
Effective N	477	596	433	483	415
Bandwidth	167	202	154	170	147
Mean(Y)	14.461	48.470	9.164	15.378	8.020
SE(Y)	4.464	5.983	5.680	5.072	4.146

II. Predetermined Variables (Cont.)

	Density	Men-Women	Less 6yr.	More 75yr.
Jump	-17.160	-1.146	0.372	0.273
	(32.655)	(2.115)	(0.311)	(0.823)
N	2118	2118	2118	2118
Effective N	562	435	648	1013
Bandwidth	188	154	222	346
Mean(Y)	112.988	96.735	4.974	9.589
SE(Y)	98.603	5.712	1.403	3.897

[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).

[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.

[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.

[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table A.8: Continuity in Predetermined Variables (Low CK Sample)

I. Predetermined Variables

	BA Degree	Labor Force	Unemployment	High-Skilled	Low-Silled
Jump	0.016	2.031	1.026	0.810	-2.620
	(1.500)	(1.384)	(2.769)	(1.234)	(3.020)
N	2313	2313	2313	2313	2313
Effective N	677	469	878	916	447
Bandwidth	208	152	277	290	143
Mean(Y)	14.321	44.607	21.408	15.571	13.688
SE(Y)	5.308	5.474	12.588	5.773	8.827

II. Predetermined Variables (Cont.)

	Density	Men-Women	Less 6yr.	More 75yr.
Jump	220.198	-2.516*	0.375	-0.777
	(228.948)	(1.450)	(0.370)	(0.675)
N	2313	2313	2313	2313
Effective N	800	706	721	582
Bandwidth	252	219	223	183
Mean(Y)	60.776	97.425	5.217	10.394
SE(Y)	47.775	5.618	1.596	3.169

[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).

[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.

[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.

[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table A.9: Continuity in Social Capital Indicators

I. Full Sample

	Trust	Blood Dtios.	First PC
Jump	-0.015	-0.004	-0.181
	(0.023)	(0.004)	(0.189)
N	4763	4794	4431
Effective N	1332	1486	1794
Bandwidth	202	224	296
Mean(Y)	0.309	0.033	0.052
SE(Y)	0.137	0.024	1.142

II. High Sample

	Trust	Blood Dtios.	First PC
Jump	-0.022	-0.003	-0.135
	(0.025)	(0.005)	(0.175)
N	2118	2118	2118
Effective N	437	912	568
Bandwidth	157	312	192
Mean(Y)	0.397	0.049	1.030
SE(Y)	0.094	0.022	0.576

III. Low Sample

	Trust	Blood Dtios.	First PC
Jump	-0.001	-0.002	-0.099
	(0.017)	(0.003)	(0.128)
N	2313	2313	2313
Effective N	727	876	1015
Bandwidth	227	277	319
Mean(Y)	0.208	0.019	-0.884
SE(Y)	0.089	0.013	0.664

[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).

[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.

[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.

[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table A.10: Signature Requirements and Political Competition

I. High Civic Capital Sample

	Candidates	Non-Marginal	Unopposed	W's Share	W's Margin
Effect	-0.417***	-0.341***	0.158***	0.126***	0.202***
	(0.104)	(0.091)	(0.055)	(0.028)	(0.050)
N	2118	2118	2118	2118	2118
Effective N	586	435	834	477	566
Bandwidth	198	155	285	167	191
Mean(Y)	2.061	1.645	0.158	0.660	0.356
SE(Y)	0.654	0.498	0.365	0.175	0.322

II. Low Civic Capital Sample

	Candidates	Non-Marginal	Unopposed	W's Share	W's Margin
Effect	-0.116	-0.069	0.016	0.023	0.037
	(0.086)	(0.091)	(0.053)	(0.024)	(0.045)
N	2313	2313	2313	2313	2313
Effective N	910	733	853	999	976
Bandwidth	287	230	269	314	309
Mean(Y)	2.160	1.639	0.084	0.626	0.287
SE(Y)	0.623	0.490	0.278	0.153	0.283

III. Difference

	Candidates	Non-Marginal	Unopposed	W's Share	W's Margin
Difference	-0.301	-0.272	0.142	0.103	0.165
Standard Error	(0.135)	(0.129)	(0.076)	(0.037)	(0.068)
T-Statistic	-2.227	-2.114	1.861	2.798	2.443
P-Value	[0.026]	[0.035]	[0.063]	[0.005]	[0.015]

[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).
[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.
[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.
[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table A.11: Signature Requirements and Candidates' Selection

I. High Civic Capital Sample

	Education	Age	Age $\leq$ 40	Age 40-60	Age $\geq$ 60
Effect	0.443	2.173	-0.049	0.037	0.042
	(0.450)	(1.439)	(0.067)	(0.052)	(0.040)
N	3957	4030	4030	4030	4030
Effective N	664	1026	1186	1725	1094
Bandwidth	128	183	214	308	194
Mean(Y)	13.017	45.993	0.317	0.575	0.109
SE(Y)	3.380	10.886	0.466	0.495	0.311

II. Low Civic Capital Sample

	Education	Age	Age $\leq$ 40	Age 40-60	Age $\geq$ 60
Effect	0.323	3.478***	-0.149***	0.111**	0.078**
	(0.362)	(1.024)	(0.041)	(0.050)	(0.032)
N	4519	4540	4540	4540	4540
Effective N	1032	903	1373	1286	777
Bandwidth	165	147	216	199	125
Mean(Y)	13.082	45.434	0.339	0.559	0.102
SE(Y)	3.214	10.308	0.474	0.497	0.303

III. Difference

	Education	Age	Age $\leq$ 40	Age 40-60	Age $\geq$ 60
Difference	0.120	-1.305	0.101	-0.074	-0.036
Standard Error	(0.578)	(1.766)	(0.078)	(0.072)	(0.051)
T-Statistic	0.208	-0.739	1.288	-1.033	-0.700
P-Value	[0.835]	[0.460]	[0.198]	[0.302]	[0.484]

[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).
[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.
[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.
[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table A.12: Signature Requirements and Speed of Payments

	Full Sample	High CK	Low CK
	Pay. Speed	Pay. Speed	Pay. Speed
Effect	0.003	0.013**	-0.020***
	(0.007)	(0.006)	(0.007)
N	15648	6215	6913
Effective N	4958	738	1616
Bandwidth	234	93	172
Mean(Y)	0.812	0.812	0.813
SE(Y)	0.072	0.071	0.075

[a] Estimates obtained from local linear regressions with triangular kernel and mean square error optimal bandwidth (Calonico, Cattaneo and Titiunik, 2014).
[b] Robust standard errors adjusted for clusters at the municipality level reported between parentheses.
[c] Mean(Y) and SE(Y) are the mean and standard deviation of the dependent variable calculated for municipalities in the sample with 850 to 1000 inhabitants.
[d] Stars denote significance level: *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.
[e] High (Low) Sample: municipalities with *social capital pc* higher (lower) than median value.