Fiscal Rules and the selection of politicians: evidence from Italian municipalities*

Matteo Gamalerio

Institut d'Economia de Barcelona (IEB), University of Barcelona

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Abstract

Despite the wide adoption, there is little evidence on the consequences of fiscal rules for the quality of government. I use data from Italian municipalities to study how fiscal rules affect the selection of politicians. In 1999, the Italian government applied fiscal rules to all municipalities. In 2001, it removed them for municipalities with less than 5000 inhabitants. Using a Difference-in-Discontinuity design, which enables control for an institutionally mandated increase in the wage paid to politicians at the 5000 inhabitants threshold, I show that fiscal rules negatively affect politicians' level of education. The result highlights a trade-off to fiscal rules. Reducing policymaking discretion may alleviate inter-jurisdictional externalities, but it may also lower the quality of the political class.

Keywords: fiscal rules, selection of politicians, deficit, difference-in-discontinuity.

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1 Introduction

This paper studies how a reduction in policymaking discretion can affect the selection of politicians. I implement the analysis using data on Italian municipalities and exploiting cross-sectional and time variation in the application of fiscal rules, which represent a limit in governments' ability to accumulate public debt and run deficits. The paper's results show that fiscal rules negatively affect politicians' level of education. Besides, I provide evidence that municipalities with a low level of past deficit drive this effect, which is consistent with a framework in which educated individuals enter politics if they can enjoy a sufficient level of discretion in setting fiscal policies. The paper also provides evidence that the introduction of fiscal rules effectively offsets the positive selection effect of the wage rise that operates across the sample of municipalities studied.

In recent years, the political economy literature has analyzed the different mechanisms through which politicians are selected (Besley, 2005; Braendle, 2016). The aim is to understand which institutions succeeded in attracting the most competent individuals into the political arena. From a theoretical perspective, this has been made possible by the introduction of the citizen-candidate framework (Besley and Coate, 1997); Osborne and Slivinski, 1996). On the other side, the empirical literature has provided evidence about how different types of institutions affect the quality of individuals who enter politics. Examples are the wage paid to politicians (Besley, 2004; Ferraz and Finan, 2011; Gagliarducci and Nannicini, 2013; Kotakorpi and Poutvaara, 2011; Dal Bo et al., 2013; Fisman et al., 2013; Braendle, 2015), the role of outside earnings (Gagliarducci et al., 2010; Fedele and Naticchioni, 2013; Grossman and Hanlon, 2013), the role of monitoring institutions (Grossman and Hanlon, 2013; Artiles et al., 2020), grants from higher levels of government and the level of fiscal autonomy (Brollo et al., 2013; Bordignon, Gamalerio, and Turati, 2020), electoral rules (Beath et al., 2015), gender quotas (Baltrunaite et al., 2014) and criminal organizations (Daniele and Geys, 2015). As far as I know, no study to date has investigated the potential effect of policymaking discretion on the selection of politicians.[1]

Fiscal rules are rules that constrain fiscal policies. In particular, central governments use

[1] A close paper is the one by Revelli (2016), who uses variation in tax limits across Italian municipalities to study their impact on turnout and local elections outcomes. My paper differs in that Revelli (2016) studies a different policy, which imposes a cap on the local income tax rate. I analyze the effect of a constraint on the overall municipal budget balance. Besides, I provide new results on the selection of politicians.

fiscal rules to discipline the fiscal behavior of local governments to reduce their incentives to accumulate debt and run deficits. As reported by Grembi et al. (2016), in recent years, many countries have adopted rules to constrain the fiscal policies of local governments. These include Argentina, Austria, Brazil, Canada, China, Colombia, Czech Republic, Denmark, Italy, Mexico, Poland, Spain, Sweden, and Turkey. One of the most famous examples is the European Stability Pact, which was introduced in 1997 by the European Union and applied to member countries. Despite the extensive use of fiscal rules, there is no definitive evidence in the economics literature about whether they foster fiscal stability. Some studies (Alesina and Perotti, 1996, and Wyplosz, 2012) indicate that fiscal rules may not work for reasons of commitment. From this point of view, the most recent advancement in the literature is Grembi et al. (2016). Using data on Italian municipalities, they have shown that fiscal rules can effectively reduce the deficit run by local governments. Other recent papers are Coviello et al. (2019), who study the impact of fiscal rules on public infrastructure expenditures and the size of firms, and Daniele and Giommoni (2020), who show that fiscal rules may lead to a reduction in corruption. As already mentioned, I am not aware of any study of the effect of fiscal rules on the selection of politicians.

This paper claims that fiscal rules may affect the ex-ante quality of the political class by reducing the level of policymaking discretion. Both the theoretical (Battaglini and Coate, 2008; Halac and Yared, 2014; Azzimonti, Battaglini, and Coate, 2016; Halac and Yared, 2018; Halac and Yared, 2019) and the empirical (Grembi et al., 2016; Coviello et al., 2019) literature have described why we can consider the application of fiscal rules as a reduction in policymaking discretion. In a nutshell, the trade-off behind the application of fiscal rules is between commitment and discretion. On one side, fiscal rules provide commitment, limiting the incentives toward excessive spending. On the other side, there is a cost in terms of reduced flexibility and discretion, given that fiscal rules limit governments' ability to respond to unexpected shocks.

Fiscal rules represent a limit on what a politician can do, and a constraint on economic outcomes affected by fiscal policies, such as public goods and income growth. Hence, fiscal rules can change the value of holding office, with heterogeneous effects on individuals with different outside options and different levels of competence, and in particular different levels of education. The focus on education is justified by the literature, which shows that education

has a positive effect on socio-economic outcomes such as wages (Card, 1997) and measures of citizenship (Dee, 2004). More importantly for this paper, the literature has provided evidence that electing more educated political leaders can have a positive effect on economic growth (Besley et al., 2011) and the production of public goods (Martinez-Bravo, 2017).[2] This evidence suggests that imposing a constraint on how fiscal policies can affect economic growth or the production of public goods can reduce the value of holding office more for educated individuals than for less-educated ones. Hence, more educated individuals may find it less attractive to enter politics (i.e., self-selection channel). Besides, the reduction in policymaking discretion may make it less relevant for voters to select more educated individuals (i.e., selection by part of voters). In sum, fiscal rules can negatively affect the quality of the political class, and, specifically, the level of education of politicians. This effect can work through two mechanisms, which are not necessarily exclusive channels. This paper provides empirical evidence on both of them.

To produce this empirical evidence, I use data on Italian municipalities from 1993 to 2012. Italian municipalities are an interesting framework for the empirical question investigated in this paper. In fact, in 1999, the Italian government introduced fiscal rules, intending to limit the incentives to accumulate debt and run deficits. These rules initially applied to all municipalities and were introduced under the name of "Domestic Stability Pact" (DSP). In 2001, the central government removed the rules for all municipalities with less than 5000 inhabitants. The reason for the 2001 relaxation was to avoid imposing additional constraints on municipalities disadvantaged by economies of scale. This relaxation remained in place until 2013 when the cutoff was move changed from 5000 to 1000.

This institutional framework would be ideal for a Regression Discontinuity Design if fiscal rules were the only policy that changes at the 5000 inhabitants threshold. However, as described by Gagliarducci and Nannicini (2013) and Grembi et al. (2016), at the same cutoff, there is a sharp increase in the wage paid to the mayor and the municipal ministers, based on a policy introduced by the Italian government in the 1960s. This policy represents a confounding factor, as Gagliarducci and Nannicini (2013), using data on Italian municipalities between 1993 and 2001, have already shown that the wage increase at 5000 affects the

[2]Education is also an indicator extensively used in the political selection literature (e.g., Gagliarducci and Nannicini, 2013; Galasso and Nannicini, 2011).

selection of politicians attracting more educated individuals into politics. For this reason, following Grembi et al. (2016), I exploit the 2001 removal of fiscal rules for municipalities below 5000 to estimate a Difference-in-Discontinuity (*Diff-in-Disc*) model, which allows estimation of the effect of fiscal rules on political selection separately from that of the wage increase. Besides, in an additional exercise, I extend the data to 2015, and I exploit the 2013 variation in the application of fiscal rules.

The main results show that fiscal rules negatively affect the level of education of politicians.[3] More in detail, fiscal rules induced a reduction in the share of graduate mayoral candidates, which is between 11 and 14 % points, depending on the specification considered. At the same time, fiscal rules negatively affected the probability of electing a graduate mayor, with a reduction between 19 and 29 % points, depending on the specification. I also provide evidence that fiscal rules reduced the share of all municipal politicians with a university degree. The negative effect on both mayoral candidates and mayors suggests that fiscal rules offset the positive selection effect induced by the higher wage paid to mayors above the 5000 inhabitants threshold (Gagliarducci and Nannicini, 2013). The negative effect is also consistent with the two selection mechanisms described above. First, the effect on candidates suggests that fiscal rules could have made educated individuals less likely to enter politics (i.e., self-selection mechanism). Second, the effect on elected mayors suggests that fiscal rules could have made less important for voters to elect educated individuals (i.e., selection by part of voters).[4]

This paper claims that the effect of fiscal rules on the selection of politicians is due to a reduction in the discretion in setting fiscal policies. I reinforce this intuition in two ways. First, I implement a heterogeneity analysis based on the level of the inherited deficit. The same logic described for the effect of fiscal rules on the selection of politicians may apply to municipalities not affected by fiscal rules but burdened by a high inherited deficit, which

[3]In the Appendix, I also show that other politicians' characteristics are affected by fiscal rules. More specifically, characteristics correlated with education such as the past professional background and the politicians' age change following the expected sign (i.e., a decrease in the share of politicians from high skills occupation and an increase in the share of older politicians). On the opposite, gender and past political experience are not affected by fiscal rules.

[4]The results of the main specification survive a series of robustness checks. First, through a falsification test, I show that municipalities just below and above the 5000 inhabitants threshold were on parallel trends before the 2001 relaxation. Then, I show that other potential outcomes and municipal characteristics are balanced around the threshold before and after 2001. Finally, I exclude the possibility of manipulative sorting of population figures around the cutoff before and after 2001.

also represents a constraint on fiscal policies. Consistent with this logic, the heterogeneity analysis shows that the main results are driven by the group of municipalities characterized by a low level of inherited deficit. Conversely, there are no differences across the threshold in the group of municipalities with a high level of past deficit. Second, using a regression discontinuity design based on mixed electoral competitions between graduate and non-graduate mayors, I show that graduate mayors tend to run higher deficits, compared to non-graduate ones. Crucially, this difference in terms of fiscal behavior emerges only in municipalities not constrained by fiscal rules and that have been hit by a negative income shock. This evidence suggests that more educated politicians use fiscal policies to counterbalance adverse income shocks and to stimulate the economy. Reducing the discretion in setting fiscal policies may make it more complicated for educated politicians to use fiscal policies this way. This evidence explains why fiscal rules may make politics less attractive for educated individuals, or why they may reduce the importance for voters to elect educated politicians.

In conclusion, the results of this paper highlight an interesting trade-off to fiscal rules. Reducing policymaking discretion may alleviate inter-jurisdictional externalities, but it may also lower the quality of the political class. Besides, the results suggest that, while paying politicians high wages may be a good idea, as more skilled individuals are attracted by high remunerations (Gagliarducci and Nannicini, 2013), competent persons may decide to enter politics for many different reasons. The evidence in this paper suggests that reducing the discretion in setting policies may negatively affect the selection of skilled individuals.

2 Conceptual framework

This paper does not provide a theoretical model that illustrates the relationship between policymaking discretion and politicians' selection. However, it is useful to provide a conceptual framework based on the existing literature, which illustrates the direction of the relationship between policymaking discretion and the selection of politicians. This conceptual framework has two main goals. First, explaining why we can see the introduction of fiscal rules as a reduction in policymaking discretion. Second, illustrating the two main potential mechanisms through which a reduction in policymaking discretion can affect the selection of politicians, and precisely their level of education.

The intuition about why we can consider the application of fiscal rules as a reduction in policymaking discretion comes from both the theoretical and the empirical literature. First, the theoretical literature (Battaglini and Coate, 2008; Halac and Yared, 2014; Azzimonti, Battaglini, and Coate, 2016; Halac and Yared, 2018; Halac and Yared, 2019) illustrates the fundamental trade-off between commitment and discretion behind the application of fiscal rules. On one side, fiscal rules provide commitment, limiting the incentives in policymaking toward excessive spending, deficits, and accumulated debt. On the other side, there is a cost in terms of reduced flexibility and discretion, given that fiscal rules limit governments' ability to respond to unexpected shocks. More specifically, the reduction in flexibility derives from fiscal constitutions' inability to write down policy recipes that are good for every single shock or contingency.

Second, recent empirical papers studying the impact of fiscal rules on fiscal policies show why we can consider the introduction of fiscal rules as a reduction in policymaking discretion. More specifically, in the context of Italian municipalities, Grembi et al. (2016) show that fiscal rules have been effective in limiting the use of fiscal deficits run by part of municipal governments. Grembi et al. (2016) also show that municipalities affected by fiscal rules had to increase taxes to comply with the rules. Besides, Coviello et al. (2019) show that fiscal rules caused a reduction in infrastructure spending for the Italian municipalities affected by the rules. These papers illustrate how fiscal rules can potentially limit governments' ability to use fiscal policies to respond to unexpected shocks (Grembi et al., 2016), to stimulate the economy and produce public goods (Coviello et al., 2019).

Given that we can consider the introduction of fiscal rules as a reduction in policymaking discretion, why should we expect fiscal rules to affect the selection of individuals with different levels of education into politics? Based on the existing literature on the selection of politicians, there are two potential mechanisms. First, fiscal rules may make politics less attractive for more educated individuals (i.e., self-selection channel). Second, the reduction in policymaking discretion may make it less relevant for voters to select more educated individuals (i.e., selection by part of voters).

For what concerns the self-selection channel, the existing literature has shown how education matters for measures of citizenship (Dee, 2004), and how having educated political leaders may positively affect economic growth (Besley et al., 2011) and the production of

public goods (Martinez-Bravo, 2017). Hence, imposing a constraint on how fiscal policies can affect economic growth or the production of public goods can potentially reduce the value of holding office for more educated individuals, who seem to care about these policy aspects more than less educated individuals.

Besides, the seminal paper by Besley (2005) on political selection indicates the level of policy discretion and the scope of authority enjoyed by elected politicians as some of the factors that can make the political office potentially attractive for competent individuals. This idea can also be seen in a simple formal way, applying the intuitions of the citizen-candidate framework (Osborne and Slivinski, 1996; Besley and Coate, 1997; Caselli and Morelli, 2004). For example, assuming that an individual who enters politics is elected with probability P, we can think about a framework where private citizens run for office if the following condition applies:

$$P(\pi) + (1 - P)(w_j) \geq w_j \tag{1}$$

where π is the reward for being in office, while w_j is the private sector wage, which depends on the type of individual. More specifically, we can imagine two types of individual $j = (e, ne)$, with $w_e > w_e$ (i.e., in the private sector the wage of more educated individuals e is higher than the wage of less-educated individuals ne). In practice, the left-hand side of equation 1 is the expected return from running for office, while the right-hand side is the return from remaining employed in the private sector. In this context, an individual enters politics if the expected return from running from office is greater than or equal to what she can earn in the private sector.

To understand the role of policymaking discretion in affecting the selection of politicians, we need to think about what determines the reward from office π. For example, following the literature (Besley, 2005), we could think $\pi = s + r + d$, where s is the wage paid to politicians in office, r are rents that can be extracted from being in office and d represents policy discretion. While the role of s and r has already been studied in the literature on political selection, less attention has been put on the role of d. We can imagine politicians being attracted by d for both egoistic and altruistic reasons. For example, some individuals may benefit from enjoying the social status and the power associated with policy discretion. In contrast, others may use policy discretion to serve their jurisdiction and derive ego rents

from this service.

Applying this definition of π and the condition $w_e > w_{ne}$, we can see from equation 1 that a reduction of d determined by the introduction of fiscal rules would make the political office less attractive in relative terms for individuals with a higher outside option in the private sector compared to those with a lower outside option. At the same time, following the literature on the effect of educated political leaders on economic growth and public goods (Besley et al., 2011; Martinez-Bravo, 2017), we could think about situations in which individuals with different levels of education receive different rewards from being in office. For example, educated individuals may be attracted only by s and d, while less educated individuals only by s and r.[5] Even in this context, we can see how a reduction in d would make the political office less attractive in relative terms for more educated individuals.[6]

A reduction in policymaking discretion may also make it less critical for voters to elect more educated individuals. We can see why this is the case with another simple formal framework. Imagine that voters have the following utility function:

$$u = y + g \tag{2}$$

where y is the private sector income and g is the utility that voters receive for the level of public expenditures decided by the politician in office. In particular, imagine that g depends on the status of the economy s and on the policy choice about the level of expenditures e taken by the politician in office. For example, we could think $g = (1 - s)e + s(1 - e)$, with $s = (0, 1)$ and $e = (0, 0.5, 1)$. In practice, in this example voters receive a higher utility if the politician in office chooses low levels of expenditure (i.e. $e = 0$) when the economy is doing well (i.e. $s = 1$), or if the politician chooses high levels of expenditures (i.e. $e = 1$) when the economy is not doing well (i.e. $s = 0$). Intermediate levels of expenditures (i.e. $e = 0.5$) always produce the same level of utility $g = 0.5$.

In this context, we could think a high educated politician as the one who always takes the correct policy choice and delivers a level of utility $u = 1$, and a low educated politician

[5]Consistent with this idea, Daniele and Giommoni (2020) find that the negative effect of fiscal rules on corruption is more substantial in municipalities with more educated mayors. In the analysis below, I also provide some results consistent with their analysis.

[6]Another possibility is that fiscal rules change P, the probability of being (re)-elected. In the analysis below, I show that this does not seem to be the case in the context studied.

as the one delivering $u = 0$. This assumption is consistent with the evidence that educated political leaders have a positive impact on the economy (Besley et al., 2011). It also suggests that more educated politicians may be more able to understand the status of the economy compared to less educated ones.

We now need to introduce fiscal rules to understand how a reduction in fiscal policymaking discretion may make it less relevant for voters to elect educated politicians. For example, we could imagine fiscal rules as a cap that bans a level of expenditures $e = 1$. Hence, under the assumption that the more educated individuals take the best decision in any state of the world and the less educated the worst, fiscal rules potentially reduce the difference between the utility received by voters from high educated politicians and the utility received from low educated ones. While, without fiscal rules, the difference was equal to 1, in the new context with fiscal rules, the difference becomes 0.5. This difference could even become 0 with more stringent fiscal rules which impose a level of expenditures $e = 0$. This simple numerical example illustrates how fiscal rules may make it less critical for voters to elect more educated individuals.

3 Institutional Setting

3.1 Italian municipalities

In Italy, there are 8047 municipalities, of which 70.5 % have less than 5000 inhabitants. Municipalities are responsible for a large number of services: municipal police, infrastructure, transport, welfare, housing, environmental services (e.g., garbage collection), public utilities (e.g., water supply). They manage 10 % of total public expenditures, and around 20 % of their revenues come from local taxes, while the rest is made up of discretionary transfers from higher levels of government [7]. Among local taxes, the most important are the property tax and a surcharge on the personal income tax of residents. The property tax was introduced in 1993 by Legislative Decree 504/1992, while the surcharge on the personal income tax was introduced in 1999.

[7] In particular transfers come from provinces, regions and the central state. It is important to notice that the level of fiscal dependence on grants from higher levels of government has been historically heterogeneous between the North and the South of Italy. For example, in 2000 municipalities in the North were able to finance 70 % of their budget using local taxes and revenues, while in the South grants covered 60-70 % of total expenditures (Bordignon, Gamalerio and Turati, 2019).

Since 1993 (see Law 81 in 1993), mayors of Italian municipalities are directly elected by voters. In municipalities below 15,000 inhabitants, mayors are elected using a single round plurality rule, while a run-off system is used above the same threshold. Mayors are elected for a term of five years and for a maximum of two consecutive terms, i.e., they face a two-term limit. In the context of the municipal government, mayors are quite powerful, as they can choose and dismiss the ministers that form part of the municipal government. Besides that, if the municipal council wants to dismiss the mayor, new elections must be held.

3.2 The "Domestic Stability Pact" (DSP)

The main focus of this paper is to analyze the effect of a reduction in policymaking discretion on the selection of politicians. For this purpose, I study the effect of fiscal rules on the characteristics of Italian municipal politicians. Fiscal rules for municipal governments were introduced in Italy in 1999, following the introduction of the European Stability and Growth Pact (SGP), which was signed in 1997 by different European countries. Some of the countries that adhered to the SGP, to respect the limits imposed by it, introduced subnational fiscal rules aimed at disciplining local governments, whose budgets form part of the total budget of the State. The subnational rules in Italy were called the "Domestic Stability Pact" (DSP) [8].

The DSP is intended to reduce the incentives for local governments to accumulate debt and run deficits. Table 1 describes the temporal evolution over time of the target imposed by the DSP to Italian municipalities for the years 1999-2015. As we can see, the target has not been constant over time, even though, excluding the years 2005-2006, the main target has been the balancing of local governments' budgets for most of the years. More specifically, as indicated by Grembi et al. (2016), the definition of budget balance used as a target for most of the years has been the so-called fiscal gap, which is defined as municipal deficit net of transfers and debt service. The limits imposed on the target have been changing over time: in some years, municipalities were asked to apply a cap to the growth of the target, while in other years municipal governments were asked to cut the target. The limits imposed on the target have always been calculated with reference to past values of the target in specific

[8] Domestic Stability Pact stays for the Italian *Patto Interno di Stabilita'*. The Law that introduced the DSP in Italy is the number 448, 23 December 1998, article 28.

reference years.

The main reason for applying such as a specific definition of the municipal budget balance as a target is that the items excluded from the calculation (i.e., transfers and debt service) were initially used as a tool for the enforcement of the DSP by part of the central government (Grembi et al., 2016). In fact, the initial penalties introduced by the central government for not complying with the rules were: 1) a 5 % cut in grants transferred by the national government; 2) a cut on reimbursement and non-absenteeism bonuses for municipal employees; 3) a ban on new municipal hires. Municipalities complying with the rules were rewarded with a cut in the expenses for interests on loans received by the central government. In 2008, as described by Coviello et al. (2018), the penalties for not complying with the rules have been made harsher. The new penalties introduced in 2008 included a reinforced cut in central government grants and an automatic 30 % cut in the wage paid to mayors and municipal councilors.

As we can see from Table 1, in the first two years (1999-2000) fiscal rules applied to all municipalities, without distinction between small and large populations. In 2001, the central government removed the fiscal rules for all the municipalities below 5000 inhabitants, a decision taken to lift onerous constraints on municipalities disadvantaged by economies of scale. In 2002, Regions with Special Statute (i.e. Sardegna, Sicilia, Valle d'Aosta, Trentino-Alto Adige, Friuli-Venezia Giulia) were allowed to establish their own fiscal rules. For this reason, the municipalities in these regions are excluded from the analysis. The 5000 threshold remained in place until 2013, when the threshold was reduced from 5000 to 1000 inhabitants for the years 2013-2015. Finally, the DSP has been abolished in 2016 and replaced by a new set of balanced budget rules for all municipalities.

This paper exploits the application of fiscal rules to a sub-sample of municipalities to study the effect of a reduction in policymaking discretion on the selection of politicians. In fact, the evidence provided by Grembi et al. (2016) show that the DSP has been effective in reducing the deficit run by Italian municipalities. Also, Grembi et al. (2016) provide evidence that municipalities affected by the DSP had to increase taxes in order to comply with the rules. Besides, Coviello et al. (2018) show that the DSP caused a reduction in infrastructure expenditures for the municipalities affected by the fiscal rules. Hence, the evidence from Grembi et al. (2016) and Coviello et al. (2019) exemplifies why the fiscal rules

introduced by the DSP can be thought as a reduction in (fiscal) policymaking discretion for Italian municipal governments.

Finally, the analysis developed in the paper exploits variation in the application of fiscal rules for municipalities around the 5000 inhabitants threshold. As explained in Section 4, this is done using a Difference-in-Discontinuity approach (Grembi et al., 2016), as the presence of other policies that change at the 5000 threshold does not allow the use of a standard Regression Discontinuity Design model. In fact, as described in Table 2, which reports the legislative population thresholds that apply to municipalities with less than 15,000 inhabitants, the wages paid to the mayor and the municipal ministers change at the 5000 threshold (Gagliarducci and Nannicini, 2013). This wage increase at the 5000 threshold is a policy that dates to the 1960s (Gagliarducci and Nannicini, 2013), and it has remained constant in real terms until today. As described in Section 4, the Difference-in-Discontinuity approach allows the estimation of the effect of fiscal rules on the selection of politicians while controlling for the wage increase.

4 Empirical Strategy

Difference-in-discontinuity. This paper investigates how a reduction in policymaking discretion affects the selection of individuals who enter politics. I implement the analysis exploiting the variation over time in the application of fiscal rules around the 5000 inhabitants threshold in the context of Italian municipalities, as described in section 3.2. In the absence of other policies changing across the 5000 inhabitants threshold, this institutional setup would be appropriate for an RDD approach applied to the electoral terms between 2001 and 2012. However, as described in section 3.2, the wage paid to the mayor and the executive officers is higher above the 5000 inhabitants threshold, a policy that dates back to the 1960s. This wage increase is a confounding policy that would invalidate the RDD approach, as it would not be possible to disentangle its effect from that of fiscal rules. For example, Gagliarducci and Nannicini (2013), using data on Italian municipalities between 1993 and 2001, have shown that the wage increase at 5000 affects the selection of politicians, attracting more educated individuals. For this reason, a standard RDD approach is not appropriate in this context. However, as described by Grembi et al. (2016), the removal of fiscal rules in 2001

for municipalities below 5000 can be exploited to implement a Difference-in-Discontinuity (*Diff-in-Disc*) approach, which allows estimation of the effect of fiscal rules separately from that of the wage increase.

The *Diff-in-Disc* approach represents a recent methodology (Lalive, 2008; Campa, 2011; Leonardi and Pica, 2013; Casas-Arce and Saiz, 2015; Grembi et al., 2016) which combines the *pre/post treatment* variation typical of a Difference-in-Differences design with a *just below/just above a threshold* variation that characterizes an RDD approach. In the Italian context, the idea is to combine the change generated by the 2001 reform with the just below/just above 5000 threshold variations. This strategy, under some assumptions described below, enables estimation of the effect of fiscal rules on the selection of politicians, while controlling for the wage increase, which is constant in real terms over time. Besides, the approach proposed by Grembi et al. (2016) can also be extended to the electoral years after 2012, exploiting the 2013 reduction of the fiscal rules application threshold to 1000 inhabitants. This extension allows me to evaluate whether the eventual effect of fiscal rules estimated around the 2001 variation disappears across the 5000 inhabitants threshold once fiscal rules are applied again in the same way across the threshold.

Following Grembi et al. (2016), I estimate the following empirical model, using data at the municipality and electoral year level:

$$Y_{it} = \rho_0 + \rho_1 R_{it} + (> 5000_i) * (\beta_0 + \beta_1 R_{it}) + (Post_t) * [\pi_0 + \pi_1 R_{it} + (> 5000_i) * (\phi_0 + \phi_1 R_{it})] + \eta_{it} \quad (3)$$

where $R_{it} = P_{it} - P_{5000}$ is the normalized population which measures the distance of municipality i from the 5000 inhabitants threshold P_{5000} at time t. The population P_{it} comes from the most recent census produced by the Italian Statistical Office (Istat), which is either in 1991 or 2001. The dummy variable $(> 5000_i)$ is 1 if municipality i is above the 5000 inhabitants threshold. The dummy variable $(Post_t)$ is equal to 1 for elections starting from 2001.[9] The temporal dummy variable $(Post_t)$ has been built in this way because the selection of (new) politicians can happen only during electoral years, and not during the electoral mandate (i.e., far away from elections). The treatment variable is the interaction term between $(> 5000_i)$ and $(Post_t)$. The coefficient of interest is ϕ_0, which captures the

[9]For example, for a municipality that voted in 1995, 1999, 2004 and 2009, $(Post_t)$ is 0 for the electoral terms 1995 and 1999 and equal to 1 for 2004 and 2009.

effect of fiscal rules on the selection of politicians, comparing municipalities that continue to apply fiscal rules and municipalities that are exempt from their application starting from 2001. The dependent variable Y_{it} measures the level of education of politicians.

There are three reasons for selecting municipalities above the 5000 inhabitants threshold as the treatment group and the electoral years from 2001 as the treatment period. First, fiscal rules started to apply differently across the 5000 inhabitants threshold only from 2001. Thus, we can expect the differential effect of fiscal rules on the selection of politicians to emerge across the cutoff only from 2001. Second, as described in the analysis below, for many municipalities, elections in the years around the 1999 introduction of fiscal rules represent just the second election after the 1993 institutional reforms (see section 3.1), which introduced a two-term limit for mayors. Thus, for many municipalities, these elections are not open-seat elections (i.e., elections without the incumbent), for which we can expect a low turnover in the selection of politicians and the re-election of the incumbents elected just after 1993. Third, only municipalities which voted in 1999 and 2000 are potentially affected in terms of the selection of politicians in the years before 2001. For the remaining municipalities, the treatment kicks in only in the electoral years from 2001. Hence, for these three reasons, we can expect the effect of fiscal rules on the selection of politicians to emerge only in the years after 2001.

I estimate model 3 by local linear regression (Gelman and Imbens, 2018), using the subsample of observations which lie in the interval $R_{it} \in [-h, +h]$ around the threshold, where the optimal bandwidth h is calculated following the Calonico, Cattaneo, and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth. In the analysis below, I show that the estimates are robust to the use of different bandwidths. This identification strategy requires three main assumptions, which I test in the analysis below. First, municipalities just below and just above the 5000 inhabitants threshold must be on parallel trends before the 2001 relaxation, as is typical in a difference-in-differences analysis. Besides, as indicated by Grembi et al. (2016), there must be no interaction between fiscal rules and the differential wage paid across the 5000 inhabitants threshold. This assumption is required to demonstrate that high-wage municipalities did not react differently to the introduction of fiscal rules compared to low-wage towns. Second, there must not be manipulative sorting of the running variable R_{it} around the 5000 inhabitants threshold before and after 2001, such

that municipalities must not be able to self-select themselves and decide on which side of the cutoff to stay. I test this assumption with a density test (McCrary, 2008) of the population around the cutoff. Third, other potential outcomes and municipal characteristics must be balanced around the threshold before and after 2001. I test this assumption running model 3 using municipal characteristics as dependent variables.

Regression discontinuity design. This paper claims that a change in policymaking discretion affects the selection of politicians, and specifically, their level of education. I test this claim using model 3. To provide further evidence, in the analysis below, I investigate whether educated politicians, compared to the less educated ones, make different decisions in terms of fiscal policies and whether they differently affect the economy. Crucially, I study whether the differences in behavior between more and less educated politicians disappear where fiscal rules apply. Such evidence would help to understand the mechanism behind the effect of a change in policymaking discretion on the level of education of politicians. I produce this evidence using a Regression Discontinuity Design (RDD) strategy based on close mixed electoral competitions, in which graduate mayors compete against non-graduate ones. I exploit the fact that, in mixed races decided by a narrow margin, the election outcomes are determined by random factors and not by systematic municipal characteristics that could also affect policy outcomes. Hence, under certain assumptions, municipalities where mayors with a university degree barely lost can be used as a counterfactual for municipalities where they barely won.

Following the recent developments introduced by Calonico, Cattaneo and Titiunik (2014), Calonico, Cattaneo and Farrell (2018), and Gelman and Imbens (2018), I implement the following RDD strategy, which I estimate by local linear regression (LLR):

$$Y_{it} = \rho_0 + \rho_1 MV_{it} + \beta_0 Graduate_{it} + \beta_1 Graduate_{it} \cdot MV_{it} + \eta_{it} \tag{4}$$

where the dependent variable Y_{it} captures fiscal policies measured in municipality i at time t. The treatment is the dummy variable $Graduate_{it}$, which is equal to 1 for mayors with a university degree and 0 otherwise. The assignment to treatment is uniquely determined by the margin of victory MV_{it}, which is the difference between the vote share of the graduate candidate minus the votes share of the non-graduate one. At the threshold $MV_{it} = 0$ the level of education of the mayor sharply changes from 0 to 1, such that we have that $Graduate_{it} = 1$

and $MV_{it} > 0$ in municipalities in which the graduate candidate won and $Graduate_{it} = 0$ and $MV_{it} < 0$ in the opposite cases.

I run model 4 on the sub-sample of municipalities in the interval $MV_{it} \in [-h, +h]$, where the optimal bandwidth h is calculated following Calonico, Cattaneo and Titiunik (2014), and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth. The coefficient of interest is β_0, which identifies the average treatment effect (ATE) of mayors with a university degree at the threshold $MV_{it} = 0$. There are two main assumptions required for this identification to work correctly, which I test below. First, there must be no sorting around the threshold $MV_{it} = 0$, such that voters in municipalities with narrow mixed electoral competitions are not able to manipulate the running variable MV_{it}. I test this assumption using the McCrary (2008) test. Second, observable municipal and mayoral characteristics should vary smoothly at the threshold $MV_{it} = 0$. This assumption is required to guarantee that municipalities on one side of the threshold are a proper counterfactual for municipalities on the other side of the cutoff.

5 Data

This study uses data on politicians elected in Italian municipalities with less than 15,000 inhabitants from 1993 to 2015. There are various reasons for this choice of the sample. First, municipalities with less than 15,000 inhabitants use a single-ballot majoritarian electoral system, while municipalities above the threshold use a run-off system. To keep electoral institutions constant, I exclude municipalities with more than 15,000 inhabitants. Second, in 1993, following a corruption scandal called *Mani Pulite* (*Clean Hands*), new electoral municipal laws and a municipal property tax were introduced (Bordignon, Gamalerio, and Turati, 2020). At the same time, the DSP, introduced in 1999 by the central government, has remained in place until 2015. For these reasons, I have collected data on municipal politicians and municipalities' characteristics for the 1993-2015 period. Finally, municipalities from Special Regions (i.e., Sardegna, Sicilia, Valle d'Aosta, Trentino-Alto Adige, Friuli-Venezia Giulia) are excluded, given that they have different political and fiscal institutions, and since 2002 apply a different set of fiscal rules.

The dataset contains information on the characteristics of all municipal politicians elected

between 1993 and 2015. The main observable characteristics are gender, age, years of past political experience at all levels of politics, political orientation (i.e., left, right or independent), past professional background, education. The Italian Home Office provides information about these characteristics. As already explained above, the main focus is on the level of education of mayors and mayoral candidates. Specifically, I study the impact of fiscal rules on the share of mayoral candidates with a university degree and on the probability of electing a mayor with a university degree. The mayor's level of education can be directly found in the dataset on municipal politicians provided by the Home Office. To reconstruct the level of education of mayoral candidates, I have merged the data on elected municipal politicians with the electoral data provided by the Home Office. The dataset on elected politicians does not indicate who were the mayoral candidates during the election. However, it provides the level of education for all politicians, including councilors elected by opposition parties. Hence, merging the names of elected politicians with the names of mayoral candidates found in the electoral data allows reconstructing the level of education of mayoral candidates.

Information on municipalities' characteristics comes from the Italian Statistical Office (Istat), and it includes the following municipal characteristics: 1) share of the population with a university degree measured in 2001; 2) share of the active population (i.e., the population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e., population above 65 years old) measured in 2001; 4) income per capita measured in 2001; 5) the number of firms per capita measured in 2005; 6) the number of no-profit associations per capita measured in 2005; 7) area of the municipality in square kilometers; 8) population density measured in 2001. I use all these variables as control variables in the analysis below. I have collected the data on municipal budget outcomes used in the paper from the Aida PA database, an online archive managed by the Bureau Van Dijk. The data contains information on all the fiscal items of the budget of all Italian municipalities, and it covers the year from 2000 up to 2015. Finally, data on average income and income growth at the municipal level are provided by the Italian Ministry of Economics and Finance and cover the years from 2000 up to 2016.

The final sample consists of 26,064 electoral terms and 6166 municipalities. I use this sample to calculate the Calonico, Cattaneo, and Titiunik (2014) and Calonico, Cattaneo, and Farrell (2018) MSE-optimal bandwidth around the 5000 inhabitants threshold. Table 3 reports the summary statistics of this sample, distinguishing between municipalities below

and municipalities above the cutoff.

6 Results

6.1 The effect of fiscal rules on the selection of politicians

Main results. This sub-section provides evidence about how fiscal rules affect the characteristics of individuals who enter politics. I produce this evidence studying the 1993-2012 period and exploiting the 2001 fiscal rules relaxation. The focus is on the level of education of mayors and mayoral candidates, an indicator extensively used in the literature on the selection of politicians (Besley, 2005; Besley and Reynal-Querol, 2011; Brollo et al., 2013; Gagliarducci and Nannicini, 2013). The focus on education is justified by the evidence that shows how educated leaders matter for economic growth (Besley et al., 2011) and the production of public goods (Martinez-Bravo, 2017), economic outcomes potentially affected by fiscal rules. There are two justifications for the focus on elected mayors and mayoral candidates. First, as described in section 3.1, Italian mayors are powerful at the municipal level. Second, the seminal paper on political selection by Besley (2005) suggests that the scope of authority enjoyed by elected politicians should affect the selection of directly elected chief executives such as presidents, governors, and mayors rather than politicians in positions with less direct power. Thus, we can expect a reduction in policymaking discretion to have a more significant effect on politicians in powerful positions like mayors rather than on politicians in less prominent positions, like municipal councilors. However, as a robustness check, I also provide evidence on the effect of fiscal rules on the level of education of all elected municipal politicians.

Figures 1 and 2 report evidence, which gives a preliminary idea about how politicians' education evolved in the years before and after the 2001 relaxation of fiscal rules. I produce this evidence running a regression discontinuity design (RDD) separately for the electoral years before and after 2001. In Figure 1, I report the evidence obtained running a global RDD on the entire sample of municipalities below 15,000 inhabitants using a split fourth-order polynomial of the outcome variable in the normalized population, fitted separately on each side of the threshold. Figure 2 restricts the sample to municipalities below 10,000 inhabitants and uses a a split second-order polynomial.[10] Two facts emerge from Figures 1-2. First, there

[10]The same evidence emerges if I use different polynomial orders or a more local approach, e.g., using the

is a discontinuity across the 5000 inhabitants threshold for the electoral years before 2001. In the years during which fiscal rules did not apply differently across the threshold, the share of graduate mayoral candidates and elected mayors is higher in municipalities just above the threshold. This result is consistent with the fact that municipalities above 5000 inhabitants pay a higher wage to the mayor, which enables them to attract more skilled politicians, as demonstrated by Gagliarducci and Nannicini (2013). Second, the discontinuity around the 5000 inhabitants threshold disappears in the years from 2001 up to 2012. The effect of the wage disappears from 2001, since when fiscal rules apply differently across the cutoff.

To confirm this evidence, I implement the *Diff-in-Disc* analysis, and I run model 3 on the sample of municipalities individuated by the Calonico, Cattaneo, and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth selector. The baseline results from the *Diff-in-Disc* analysis are in Tables 4-5. In both Tables, I report the estimates obtained running model 3 using the optimal bandwidth and half of the optimal bandwidth with a linear function in the running variable, and the coefficients obtained using the double of the optimal bandwidth with a quadratic function in the running variable. I do not control for municipal covariates in Tables 4-5. Tables A1-A2 show that the baseline results are robust if I add municipal covariates and regional and year of election fixed effects to the *Diff-in-Disc* model. Two main results emerge from Tables 4-5. First, the positive coefficients in front of the dummy variable ($> 5000_i$) indicate that in the years before 2001 (i.e., when fiscal rules applied in the same way across the cutoff), municipalities just above 5000 inhabitants were selecting more educated politicians. This is consistent with the evidence in Figures 1-2 and with the analysis implemented by Gagliarducci and Nannicini (2013). Second, the negative coefficients in front of the interaction term between ($> 5000_i$) and ($Post_t$) suggests that the application of fiscal rules from 2001 in municipalities above 5000 inhabitants offsets the positive selection effect induced by the higher wage paid. The results of Table 4 indicate that fiscal rules induced a reduction in the share of graduate mayoral candidates, which is approximately between 11 and 14 % points, depending on the specification considered. The results of Table 5 suggest that fiscal rules negatively affected the probability of electing a graduate mayor with a reduction approximately between 19 and 29 % points, depending on

Calonico, Cattaneo, and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth estimator and a linear polynomial. Results can be made available upon request.

the specification.

The fact that fiscal rules affected both the share of graduate mayoral candidates and the share of graduate mayors is consistent with the two mechanisms discussed in section 2. On the one hand, the reduction in the discretion in setting fiscal policies could have made politics less attractive for more educated individuals, through a self-selection channel consistent with the negative effect of fiscal rules on the share of graduate mayoral candidates. Second, when fiscal rules represent a strong constraint on fiscal policies, it may be less relevant for voters to select more qualified individuals, leading to the election of a smaller share of highly educated mayors. Both mechanisms seem to be in place in this context. Finally, while the focus of the analysis is on mayors, Table A3 shows that similar results emerge when the dependent variable used is the share of all municipal politicians with a university degree.

Evolution of the effect over time and pre-trends. After describing the baseline effect of fiscal rules on the selection of politicians, I provide further evidence on the evolution over time of politicians' education in municipalities below and above the 5000 inhabitants threshold. The evidence produced here has two goals. First, to provide a more precise and transparent picture of how politicians' education evolved before and after the 2001 relaxation of fiscal rules. Second, to test one of the three assumptions of the *Diff-in-Disc* methodology, which is that municipalities just below and just above the 5000 inhabitants threshold must be on parallel trends before the 2001 reform. To provide this evidence, I run the following modified version of model 3:

$$Y_{it} = \rho_0+\rho_1 R_{it}+(>5000_i)*(\beta_0+\beta_1 R_{it})+(>=2001_t)*[\pi_0+\pi_1 R_{it}+(>5000_i)*(\phi_0+\phi_1 R_{it})]+ (>=2008_t)*[\pi_2+\pi_3 R_{it}+(>5000_i)*(\phi_2+\phi_3 R_{it})]+(Pre_t)*[\pi_4+\pi_5 R_{it}+(>5000_i)*(\phi_4+\phi_5 R_{it})]+u_{it} \quad (5)$$

where $(>=2001_t)=1$ for the electoral terms 2001-2007, and $(>=2008_t)=1$ for the electoral years 2008-2012. The coefficients of interest are ϕ_0 and ϕ_2, which are the parameters in front of the interaction terms between the temporal dummy variables $(>=2001_t)$ and $(>=2008_t)$, and the dummy variable $(>5000_i)$. The coefficients ϕ_0 and ϕ_2 allow the estimation of the effect of fiscal rules on the selection of politicians in a more dynamic way compared to model

3, showing how the effect has changed over time.[11] The dummy variable (Pre_t) is equal to 1 for the electoral terms immediately before the 2001 fiscal rules removal. [12] The parameter in front of the interaction term (Pre_t)*($> 5000_i$), ϕ_4, allows testing for parallel trends between the treatment and the control groups during the pre-treatment period.

Table 6 reports the coefficients ϕ_0, ϕ_2, and ϕ_4 estimated through model 5. The dependent variable in columns 1-3 is the share of mayoral candidates with a university degree, while the dependent variable in columns 4-6 is the dummy variable equal to 1 for graduate mayors. The coefficients in columns 1-2 and 4-5 are estimated without adding control variables, while the coefficients in columns 3 and 6 are obtained controlling for municipal characteristics, and regional and electoral year fixed effects. Table A4, which is an extended version of Table 6, reports all the coefficients of model 5. Besides, Figure 3 provides a graphical representation of the results in Tables 6 and A4. Specifically, the two top graphs in Figure 3 report the coefficients ϕ_0, ϕ_2, and ϕ_4 from columns 2 and 5 of Table 6. The two bottom graphs in Figure 3 describe the evolution of the shares of graduate politicians over time, which I have reconstructed summing up the *Diff-in-Disc* coefficients from columns 2 and 5 of Table A4.[13]

Two main facts emerge from the evidence in Tables 6 and A4, and Figure 3. First, municipalities just below and just above the 5000 inhabitants threshold were following parallel trends in the pre-treatment period between the first election available in the dataset since 1993 and the election immediately before the 2001 fiscal rules relaxation. More in detail, the bottom graphs in Figure 3 show that the share of graduate mayoral candidates was declining in both treatment and control groups, while the share of graduate mayors is not changing in both groups of municipalities. As described above, this behavior can be explained by the fact that the elections immediately before the 2001 fiscal rule relaxation constitute the second

[11] For example, this more dynamic specification allows to check whether the effect has changed after the penalties for not complying with the rules have been made harsher in 2008 (see Coviello et al., 2019, and section 3.2).

[12] For example, for a municipality that voted in 1995, 1999, 2004 and 2009, (Pre_t) is equal to 1 for the electoral term 1999 and to 0 otherwise. For a municipality that voted in the years 1994, 1998, 2003 and 2008, (Pre_t) is equal to 1 for the electoral term 1998 and to 0 otherwise.

[13] Specifically, the value of dependent variable for the first election available in the dataset is equal to $\hat{\rho_0}$ for municipalities below 5000 inhabitants, and equal to $\hat{\rho_0}+\hat{\beta_0}$ for municipalities above 5000 inhabitants. The dependent variable for the "pre-trends" elections is $\hat{\rho_0}+\hat{\pi_4}$ for towns below the cutoff, and $\hat{\rho_0}+\hat{\beta_0}+\hat{\pi_4}+\hat{\phi_4}$ for towns above the threshold. The value of the outcome variable for the 2001-2007 elections is $\hat{\rho_0}+\hat{\pi_0}$ for municipalities above the threshold, and $\hat{\rho_0}+\hat{\beta_0}+\hat{\pi_0}+\hat{\phi_0}$ for municipalities above the threhsold. Finally, the dependent variable for the elections after 2007 is $\hat{\rho_0}+\hat{\pi_2}$ for towns with less than 5000 inhabitatns, and $\hat{\rho_0}+\hat{\beta_0}+\hat{\pi_2}+\hat{\phi_2}$ for towns with more than 5000 inhabitants.

election after the 1993 institutional reforms (see section 3.1), which introduced a two-term limit for mayors. Hence, for most of the municipalities, these elections are not open-seat (i.e., elections without the incumbent), for which we can expect a lower political turnover and the likely re-election of the incumbents elected in the first election just after 1993. Figure A1 provides evidence on this fact: the elections between 1997 and 2000 are characterized by a high share of second-term mayors, while this share declined in the subsequent years. The likely re-election of incumbents in the elections immediately before the 2001 reform explains why the share of graduate mayors does not change in the pre-treatment period. At the same time, the decline in the share of graduate mayoral candidates is consistent with the evidence provided by Galasso and Nannicini (2011), who show that a lack of political competition can hurt the quality of politicians.

Second, the level of education of elected mayors and mayoral candidates decreased in elections from 2001 in municipalities just above the 5000 inhabitants cutoff. Conversely, the share of educated politicians increased in municipalities just below the cutoff. The decline in the share of educated politicians in municipalities above the threshold is consistent with the central claim of this paper, i.e., that a reduction in policymaking discretion makes the political office less appealing for highly educated individuals. As already described, this effect started to emerge after 2001 because many municipalities re-elected the incumbent in the elections immediately before the 2001 fiscal rules relaxation (Figure A1) and because only a subsample of municipalities voted in 1999 and 2000. The increase in the share of graduate politicians in municipalities not affected by fiscal rules after 2001 is consistent with the general increase in the level of education in the Italian population, as represented by Figure A2.

Finally, Tables A5 and A6 provide further evidence on the evolution of the fiscal rules' effect over time. Tables A5 tests an additional requirement of the *Diff-in-Disc* methodology. As suggested by Grembi et al. (2016), there must be no interaction between fiscal rules and the differential wage paid across the cutoff. This assumption is required to demonstrate that towns across the threshold did not react differently to the introduction of fiscal rules. To test this requirement, I split the dummy variable (Pre_t) into two different variables: ($Pre_{t,1}$) is equal to 1 for elections immediately before 2001 fiscal rules removal, but not for the electoral years 1999-2000, during which fiscal rules already applied for all municipalities; ($Pre_{t,2}$) is

equal to 1 for the electoral years 1999-2000. I interact these two dummy variables with the dummy variable ($> 5000_i$), and I rerun model 5 with these interaction terms. The fact that the coefficient of the interaction $(Pre_{t,2}) * (> 5000_i)$ is never statistically different from zero suggests that municipalities across the threshold did not react differently to the introduction of fiscal rules. In Table A6, I rerun model 5 using all the electoral years between 1993 and 2015 and adding an interaction term between a dummy variable equal to 1 for elections from 2013 and the dummy variable ($> 5000_i$). The fact that the coefficients in front of $(>= 2013_t) * (> 5000_i)$ are not statistically different from zero indicates that the effect of fiscal rules estimated using the 2001 variation disappeared after the re-introduction of fiscal rules for municipalities with less than 5000 inhabitants.

6.2 Heterogeneity analysis: the role of policy discretion

The role of policy discretion. This section provides evidence that supports the claim that the effect of fiscal rules on the selection of politicians is due to a reduction in the level of policymaking discretion. I provide evidence on this in tow ways. First, in Table 7, I repeat the *Diff-in-Disc* analysis distinguishing between municipalities that, at the time of the first election since 2001, inherited a high level of fiscal deficit compared to those that inherited a low deficit. The intuition of this heterogeneity analysis is that a high deficit inherited from the previous electoral term represents a constraint on what a mayor can do, which can reduce the discretion in setting fiscal policies as well as much as fiscal rules. Hence, municipalities not constrained by fiscal rules, but which inherited a high level of the deficit, should behave as municipalities constrained by fiscal rules. If the central claim of this paper is correct, we should expect the baseline effect to be driven by the group of municipalities that inherited low deficits.

To test this idea, in columns 1 and 3 of Table 7, I run the *Diff-in-Disc* using only the subsample of municipalities with a level of the inherited deficit below the median. In columns 2 and 4, I run the regressions keeping only the municipalities with a level of municipal inherited deficit above the median. The results in Table 7 provide further support to the claim of this paper: the negative effect of fiscal rules on the education of politicians is driven by municipalities that inherited a low fiscal deficit. At the same time, there are no differences between municipalities just above and just below the threshold in the subsample of towns that

inherited a high fiscal deficit. This evidence further confirms that more educated politicians enter politics with a lower probability where they cannot enjoy a high level of discretion in setting fiscal policies.[14]

Second, I run the RDD model described by equation 4 to investigate whether educated politicians, compared to the less educated ones, make different decisions in terms of fiscal policies when they enjoy a higher level of discretion in setting fiscal policies. Besides, I study whether the differences in behavior between more and less educated politicians disappear where fiscal rules apply. I implement this analysis using the subsample of mixed electoral competitions between graduate and non-graduate mayoral candidates, considering only electoral terms between 2001 and 2012. Besides, to better connect the results of this part with the *Diff-in-Disc* results, I implement RDD analysis keeping only municipalities within the optimal bandwidth around the 5000 inhabitants threshold used for the *Diff-in-Disc* analysis. More specifically, I keep only municipalities between 3687 and 6313 inhabitants. These choices leave me with an initial sample of 992 electoral terms and 692 municipalities around the 5000 inhabitants threshold. I use this initial sample is used to calculate the Calonico, Cattaneo, and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth around the $MV_{it} = 0$ threshold.

I report the results of this analysis in Table 8, in which the dependent variable used is the average deficit over the electoral term as a fraction of total municipal revenues. The focus on the deficit as the dependent variable is justified by the fact that the deficit was one of the main targets of the 1999 Italian fiscal rules. Panel A of 8 reports the results for municipalities not constrained by fiscal rules in the period 2001-2012, and Panel B the results of municipalities affected by fiscal rules. In column 1, I run model 4 without control variables, while in columns 2-4, I progressively add mayoral and municipal characteristics, besides regional and electoral year fixed effects. The results of Table 8 show that, where fiscal rules do not apply, educated mayors run higher deficits, compared to less educated ones. Conversely, in municipalities affected by fiscal rules, I do not find differences between graduate and non-graduate mayors.

Finally, in Table 9, I provide evidence that graduate mayors, compared to non-graduate

[14]In Table 7, I do not control for municipal characteristics. Table A7 repeats the same analysis of Table 7 adding control variables, and regional and electoral year fixed effects.

ones, run higher deficits in those municipalities hit by a negative income shock. More in detail, in Table 9, I rerun model 4 distinguishing between municipalities with a yearly percentage growth rate of municipal income below the median and those with an income growth rate above the median. The results of Table 9 show that, when considering only municipalities not affected by fiscal rules, graduate mayors run higher deficit only in the subsample of towns with an income growth rate below the median. I do not find statistically significant differences between graduate and non-graduate mayors in municipalities not constrained by fiscal rules and with an income growth rate above the median or municipalities affected by fiscal rules. The evidence in Table 9 indicates that more educated politicians use fiscal policies to counterbalance adverse income shocks and to stimulate the economy. This evidence is consistent with the intuitions described in section 2 and with existing literature, which shows how educated leaders matter for economic growth (Besley et al., 2011). Where this discretion in the setting fiscal policies is constrained, educated individuals are less likely to enter politics or are less likely to be selected by voters.

Alternative stories. In this paragraph, I show that alternative explanations of why educated politicians are less likely to enter politics where fiscal rules apply find less support in the data. More specifically, I deal with two potential alternative explanations. First, educated mayors may be more corrupt than non-graduate ones. If this were the case, the introduction of fiscal rules may make it more difficult to extract rents, reducing the holding office value for more educated individuals. Second, the differential impact of graduate mayors on fiscal and economic outcomes in municipalities below and above the 5000 threshold may be due to the higher wage paid by municipalities above the 5000 threshold.

To deal with the first alternative interpretation, I use the web archive of one of the main Italian newspapers (La Repubblica), to find episodes of corruption linked to the mayors in my analysis. More specifically, using an algorithm based on the first and last names of the mayor, the name of the city, the years of the legislature and a series of key words recalling episodes of corruption, I create a database of newspapers' articles reporting episodes of corruption linked to the mayors in my dataset. I use this database to create a dummy variable equal to 1 for mayors found to be corrupt, and 0 otherwise. The coefficients reported in Table A11 are estimated using this dummy variable as the dependent variable. As we can see from this Table, graduate mayors do not appear to be more corrupt, compared to non-graduate ones.

The different results found for municipalities below and above the 5000 thresholds may be due to the different wages paid to the mayors by the two groups of municipalities (Gagliarducci and Nannicini, 2013). To rule out this possibility, I repeat the RDD exercise using only fiscal outcomes measured in the years 2000 and 2013-2015, which are the only years in my dataset in which municipalities below and above the 5000 inhabitants threshold are affected equally by fiscal rules. In these years, the wage increase across the threshold was in place, given that it was introduced by a policy developed in the 1960s which has never been changed in real terms. The results of this exercise are reported in Table A12. As we can observe in this Table, once I analyze a year in which fiscal rules also apply in municipalities below 5000 inhabitants, all the differences in terms of fiscal policies between graduate and non-graduate mayors disappear. The estimates obtained through this exercise seem to rule out that the results of the second part of the analysis are due to the higher wage paid above the 5000 threshold.

6.3 Robustness checks

Diff-in-disc robustness checks. This sub-section describes a series of robustness checks and potential alternative stories and specifications considered in the analysis. First, as described in section 4, the *Diff-in-Disc* specification requires three main assumptions to be met. The first assumption is that there must not be manipulative sorting of the running variable R_{it} around the 5000 inhabitants threshold before and after 2001, such that municipalities must not be able to self-select themselves and decide which side of the cut-off to stay on. In Figure A3, I present scatters and 4th-order polynomial estimates for Assumption 1 to test the null hypothesis of the continuity of the density of the population around the 5000 threshold. This test is applied to both 1991 and 2001 census populations, which are the two different measures of the population used in the empirical analysis. In the top two graphs of Figure A3, there is no evidence of discontinuity at the 5000 threshold. To ensure that there has not been sorting over time, with the municipality trying to manipulate population numbers between the 1991 Census and 2001 one, in Figure A3, I also test the continuity of the difference between the density of the 2001 census population and the density of the 1991 census population. As we can observe in the bottom graph, there is no evidence of sorting or discontinuity. These results are consistent with those of Grembi et al. (2016).

The second assumption required for the *Diff-in-Disc* estimator is that other potential outcomes and municipal characteristics must be balanced around the 5000 threshold before and after 2001. This assumption is required in order to guarantee that the effects found on the selection of politicians are not driven by other observable and/or unobservable factors. This is tested running the *Diff-in-Disc* model 3 using municipal characteristics as dependent variables. The results are reported in Table A8, which is divided into two panels. First, Panel A reports the results of different characteristics of the municipal population. As we can see, all the characteristics are balanced around the 5000 threshold before and after 2001. Second, Panel B describes the balance tests for the geographical characteristics of the municipalities in the sample of interest. As we can see, all these geographical dummy variables are balanced around the 5000 threshold before and after 2001. The only variable that is not balanced in Table A8 is the level of deficit, which is lower in municipalities that apply fiscal rules after 2001. In sub-section 6.2, I show that this imbalance does not seem to represent a threat to the identification strategy used in this paper.

Tables 4 and 5 show that the results are robust to different specifications and bandwidths. This robustness is also confirmed by Figures A4 and A5, which show how the estimated coefficients change with the bandwidth used: as it is typical in an RDD set up, moving toward smaller bandwidths produces bigger coefficients (i.e., smaller bias) but also larger confidence intervals (i.e., more inefficiency). Finally, I implement the following three robustness checks. First, to make sure that the results found are not due to random chances, I run a series of *Diff-in-Disc* local linear regressions at 500 fake thresholds below and 500 fake thresholds above the 5000 threshold (i.e., thresholds from 4900 to 4400, and from 5100 to 5600). Figure A6 reports the c.d.f. of the t-statistics obtained from these regressions. As we can see, the c.d.f. indicates that most of the t-statistics lie in the interval (-2,2), suggesting that it is not possible to find statistically significant results when the diff-in-disc model is run at fake thresholds. Second, in Table A9, I run the *Diff-in-Disc* model on other personal characteristics of local politicians, such as past professional background, age, gender, and past political experience. For the characteristics that are more potentially correlated with education, the estimated coefficient goes in the expected direction (i.e., a decline in the share of politicians from high skills occupations and an increase in the share of older individuals). On the other hand,

gender and years of political experience do not seem to be affected by fiscal rules.[15] Third, in Table A10, I report the estimates obtained running a simple difference-in-differences model on the entire original sample. As we can see, while the results go in the same direction of the *Diff-in-Disc* model, the parallel trends assumption does not seem to apply in this context. The violation of this assumption provides a justification for the use of the *Diff-in-Disc* model.

RDD robustness checks. There are three main assumptions required for the RDD identification to work properly. First, there must be no sorting around the zero threshold $MV_{it} = 0$, such that voters in municipalities with narrow mixed electoral competitions are not able to manipulate the running variable MV_{it}. This is tested in Figures A7 and A8, in which the McCrary (2008) test on the continuity of the density of the running variable at the zero threshold $MV_{it} = 0$ excludes that sorting is happening across the threshold. Second, all the observable municipal characteristics should vary smoothly at the zero threshold $MV_{it} = 0$. This assumption is required to guarantee that municipalities on one side of the threshold are a good counterfactual for municipalities on the other side of the cutoff. Tables A13 and A14 confirm that municipal covariates are balanced across the zero threshold.

Third, all the observable individual characteristics of the mayors should vary smoothly at the zero threshold $MV_{it} = 0$. This assumption is required to make sure that the estimated effect of the level of education of a mayor on budget outcomes is not due to other individual observable and unobservable characteristics. As we can see from Table A15, some individual characteristics of the mayor are not balanced around the zero threshold. This imbalance of individual covariates could be an issue for the RDD estimates (Alesina, Cassidy and Troiano, 2018; Brollo and Troiano, 2016). However, the results in columns 2-3 of Table 8 show that controlling for these unbalance mayoral characteristics does not affect the estimated coefficients. This evidence reduces the concern that the effect may be due to an imbalance in observable and unobservable mayoral characteristics.

[15] For data limitations, it was possible to reconstruct the past political experience only for elected mayors, and not for mayoral candidates. The lack of an effect for political experience rules out a potential alternative interpretation of the results, which is that the application of fiscal rules may require the selection of more politically experienced politicians, who may be less educated.

7 Concluding remarks

This paper investigates the effect of a reduction in policymaking discretion on the selection of politicians. Specifically, it shows that a reduction in policymaking discretion induced by the application of fiscal rules negatively affects the level of education of politicians. The results of this paper have three implications for future research. First, it would be interesting to know whether the elections of fewer educated politicians could have negative consequences for the policies implemented. The existing literature (Besley et al., 2011; Martinez-Bravo, 2017) on the implications of educated leaders suggests that electing fewer educated politicians could negatively affects policy outcomes. For example, the results in Table A11 seem to indicate that the election of fewer educated politicians may lead to more corruption, evidence consistent with the analysis developed by Daniele and Giommoni (2020). However, more research on the policy implications of educated politicians is needed.

Second, this paper analyzes the ex-ante quality of the political class, but it does not say anything about the political class's representativeness relative to the electorate. As suggested by the recent literature (Dal Bo et al., 2020), the fact that the election of fewer educated and skilled politicians represents a decrease in quality is only one side of the story. On the other side, the elections of fewer competent individuals may lead to a better representation of marginalized groups in terms of labor market performance and socioeconomic background. Based on the existing literature, we do not know much about whether a better representation of marginalized groups may lead to more targeted policies towards these groups. This intuition calls for more research on the representativeness of the political class.

Finally, this paper provides evidence using data from one country and methodologies as *Diff-in-Disc* and RDD. Using local data from one country allows the paper to avoid the limits of cross-countries analysis. The methodologies used in the paper have strong internal validity and provide casual estimates. However, the limit of the analysis is a potential cost in terms of external validity. This potential limitation calls for further research using data from other countries, which would enable researchers to understand whether the evidence provided in this paper also applies in other contexts.

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Tables and Figures

Table 1: Fiscal rules in Italy: the Domestic Stability Pact (DSP)

Year	Target	Reference Year	Covered municipalities
1999	Budget Balance	1997	All
2000	Budget Balance	1998	All
2001	Budget Balance	1999	> 5000
2002	Budget Balance	2000	> 5000
	Current Expenditures	2000	
2003	Budget Balance	2001	> 5000
2004	Budget Balance	2003	> 5000
2005	Total Expenditures	2002-2004	> 5000
2006	Current Expenditures	2004	> 5000
	Capital Expenditures	2004	
2007	Budget Balance	2003-2005	> 5000
2008	Budget Balance	2003-2005	> 5000
2009	Budget Balance	2007	> 5000
2010	Budget Balance	2007	> 5000
2011	Budget Balance	2006-2008	> 5000
2012	Budget Balance	2006-2008	> 5000
2013	Budget Balance	2007-2009	> 1000
2014	Budget Balance	2009-2011	> 1000
2015	Budget Balance	2010-2012	> 1000

Notes. Domestic Stability Pact: fiscal rules decided by the Italian central government which apply year by year to the covered municipalities. Columns definition: "Year" = year of application of the rule; "Target" = target decided by the central government for a specific year. The limits on the target decided by the central government are imposed with respect to specific past reference years, which are reported in the column "Reference years"; "Covered municipalities" = this indicates the municipalities that must apply the fiscal rules. Legislative sources: annual national budget law (Legge Finanziaria) from 1999 to 2015. Other sources: Grembi et al. (2016); Chiades and Mengotto (2013). As described by Grembi et al. (2016), the main definition of budget balance used during the years as been the so called fiscal gap, which is defined as municipal deficit net of transfers and debt service.

Table 2: Legislative population thresholds in Italy: Municipalities below 15,000

Population	Wage Mayor	Wage Ministers	Size Government	Size Council
< 1000	1,291	15 %	4	12
1000-3000	1,446	20 %	4	12
3000-5000	2,169	20 %	4	16
5000-10,000	2,789	50 %	4	16
10,000-15000	3,099	55 %	6	20

Notes. Legislative population thresholds that apply to Italian municipalities with less than 15000 inhabitants. Columns definition: Population = municipal population as measured by the last Census; Wage Mayor = it is the wage paid to the mayor, expressed in Euros at 2000 prices; Wage Ministers = wage paid to the ministers as a percentage of the wage of the mayor; Size Government = maximum numer of ministers that can be appointed in the municipal government; Size Council = numer of seats in the municipal council. All the wage thresholds date back to 1960, except the 1000 and 10,000 thresholds, which were introduced in 2000. Sources: Gagliarducci and Nannicini (2013); Grembi et al. (2016).

Table 3: Descriptive statistics:
Municipalities below 5000 vs. Municipalities above 5000

	(1) Below 5000	(2) obs	(3) Above 5000	(4) obs	(5) p-value
Politicians characteristics					
Female mayors	0.088	4848	0.095	1318	0.199
Age mayors	48.235	4848	47.807	1318	0.031
High skills job mayors	0.227	4848	0.314	1318	0.000
Graduate mayors	0.373	4848	0.519	1318	0.000
Political experience mayors	8.252	4848	8.172	1318	0.494
Female mayoral candidates	0.105	4848	0.109	1318	0.267
Age mayoral candidates	48.106	4848	48.139	1318	0.830
High skills job mayoral candidates	0.213	4848	0.313	1318	0.000
Graduate mayoral candidates	0.356	4848	0.506	1318	0.000
Municipal characteristics					
South	0.251	4848	0.292	1318	0.002
Centre	0.135	4848	0.167	1318	0.003
North-West	0.503	4848	0.305	1318	0.000
North-East	0.108	4848	0.234	1318	0.000
Population density	146.346	4848	497.971	1318	0.000
Area	25.222	4848	43.254	1318	0.000
No profit associations	9.136	4848	33.898	1318	0.000
Firms per capita	0.075	4848	0.081	1318	0.000
Income per capita	9103	4848	10,294	1318	0.000
% elderly	0.228	4848	0.177	1318	0.000
% 15-64 years old	0.643	4848	0.677	1318	0.000
% graduate	0.043	4848	0.051	1318	0.000

Notes. Municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. *Below 5000* = 1 for municipalities below 5000 inhabitants. *Above 5000* = 1 for municipalities above 5000 inhabitants. Columns (1) and (3) report the mean values for the two samples; *obs* is the number of observations; *p-value* is the p-value of the difference between the means of the two samples.

Table 4: Effect of fiscal rules on the education of mayoral candidates

	(1)	(2)	(3)
Mayoral candidates with university degree			
Control Function	Linear	Linear	Quadratic
Bandwidth	h	h/2	2h
Controls	No	No	No
(> 5000)	0.085**	0.106*	0.095**
	(0.040)	(0.058)	(0.042)
(Post)	0.053*	0.043	0.049
	(0.032)	(0.048)	(0.033)
(Post)*(> 5000)	-0.109**	-0.137*	-0.108**
	(0.049)	(0.073)	(0.051)
Observations	4,059	1,978	9,110
Bandwidth	1313	656.6	2627

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Variables in the Table: 1) (> 5000) = 1 for municipalities with more than 5000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2001; 3) (Post)*(> 5000) = interaction term between (> 5000) and Post. The outcome variable is the share of mayoral candidates with a university degree. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 5: Effect of fiscal rules on the education of mayors

	(1)	(2)	(3)
	Mayors with university degree		
Control Function	Linear	Linear	Quadratic
Bandwidth	h	h/2	2h
Controls	No	No	No
(> 5000)	0.066	0.152*	0.073
	(0.057)	(0.082)	(0.060)
(Post)	0.112**	0.155**	0.109**
	(0.048)	(0.070)	(0.049)
(Post)*(> 5000)	-0.188***	-0.289***	-0.167**
	(0.072)	(0.103)	(0.076)
Observations	4,408	2,142	10,345
Bandwidth	1438	718.9	2876

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Variables in the Table: 1) (> 5000) = 1 for municipalities with more than 5000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2001; 3) (Post)*(> 5000) = interaction term between > 5000 and Post. The outcome variable is = 1 for mayors with a university degree. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 6: The effect of fiscal rules on the education of politicians
Evolution of the effect over time and pre-trends

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variables	Share mayoral candidates with university degree			= 1 for Mayors with university degree		
Control Function	Linear	Linear	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h	h	h
Controls	No	No	Yes	No	No	Yes
(>= 2001)*(> 5000)	-0.101*	-0.130**	-0.107*	-0.164**	-0.170**	-0.146*
	(0.054)	(0.061)	(0.057)	(0.079)	(0.085)	(0.083)
(>= 2008)*(> 5000)	-0.120**	-0.149**	-0.121**	-0.219**	-0.225**	-0.196**
	(0.057)	(0.063)	(0.060)	(0.085)	(0.091)	(0.087)
(Pre)*(> 5000)		-0.057	-0.023		-0.012	0.027
		(0.047)	(0.046)		(0.055)	(0.054)
Observations	4,059	4,059	4,059	4,408	4,408	4,408
Bandwidth	1313	1313	1313	1438	1438	1438

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Variables in the Table: 1) (>= 2001)*(> 5000) = interaction between dummy = 1 for electoral years 2001-2007 and dummy = 1 for municipalities with more than 5000 inhabitants; 2) (>= 2008)*(> 5000) = interaction between dummy = 1 for electoral years 2008-2012 and dummy = 1 for municipalities with more than 5000 inhabitants; 3) (Pre)*(> 5000)= interaction between dummy = 1 for election immediately before 2001 fiscal rules removal and dummy = 1 for municipalities with more than 5000 inhabitants. The outcome variable is the share of mayoral candidates with a university degree in columns 1-3, while it is = 1 for mayors with a university degree in columns 4-6. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election and Regions fixed effects added in columns 3 and 6. Control variables in columns 3 and 6: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 7: The role of past deficit

	(1)	(2)	(3)	(4)
Dependent variable	*Mayoral candidates with university degree*		*Mayors with university degree*	
Control Function	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h
Controls	No	No	No	No
Sample	*Deficit<median*	*Deficit>median*	*Deficit<median*	*Deficit>median*
(> 5000)	0.119**	0.033	0.108	0.058
	(0.060)	(0.047)	(0.088)	(0.078)
(Post)	0.071	0.049	0.168**	0.052
	(0.047)	(0.036)	(0.074)	(0.066)
(Post)*(> 5000)	-0.199***	-0.025	-0.325***	-0.117
	(0.072)	(0.057)	(0.114)	(0.098)
Observations	1,918	2,785	1,781	2,455
Bandwidth	1342	1701	1242	1494

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Sub-samples: 1) *(Deficit < median)* = municipalities with a level of past deficit as a fraction of total revenues below the median; 2) *(Deficit > median)* = municipalities with a level of past deficit as a fraction of total revenues above the median. Variables in the Table: 1) (> 5000) = 1 for municipalities with more than 5000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2001; 3) (Post)*(> 5000) = interaction term between > 5000 and Post. The outcome variable is the share of mayoral candidates with a university degree in column 1-2 and it is = 1 for mayors with a university degree in column 3-4. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 8: The effect of graduate mayors on deficit

	(1)	(2)	(3)	(4)
Control Function	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h
Additional covariates	No	No	Yes	Yes
Panel A: municipalities below 5000				
Graduate	0.018**	0.017**	0.021**	0.021**
	(0.007)	(0.008)	(0.009)	(0.009)
Political experience		0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)
High skills job		0.002	0.002	0.002
		(0.004)	(0.004)	(0.004)
Past deficit				0.072
				(0.127)
Observations	277	277	277	277
Bandwidth	13.54	13.54	13.54	13.54
Panel B: municipalities above 5000				
Graduate	-0.005	-0.002	-0.008	-0.007
	(0.008)	(0.007)	(0.009)	(0.009)
Political experience		0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)
High skills job		-0.006*	-0.002	-0.003
		(0.004)	(0.004)	(0.004)
Past deficit				0.121*
				(0.063)
Observations	204	204	204	204
Bandwidth	14.80	14.80	14.80	14.80

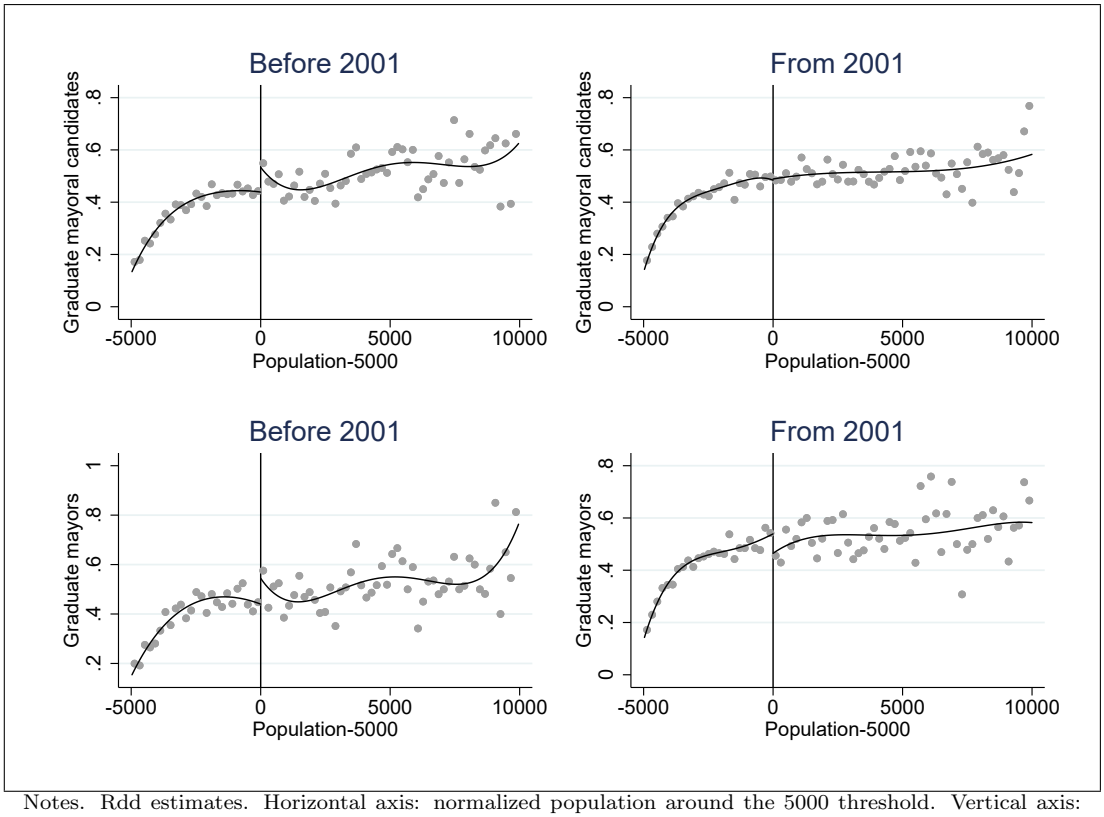
Notes. Municipalities between 3687-6313 inhabitants. Electoral terms between 2001 and 2012. Dependent variable: average deficit as a fraction of total revenues. Treatment variable: Graduate is a dummy variable =1 when the mayor has a university degree, 0 otherwise. Estimation by RDD-LLR using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election fixed effects included in all columns. Region fixed effects included in columns 3 and 4. Mayoral covariates included in columns 2, 3 and 4: 1) political experience = years of past political experience of the mayor at any level of politics; 2) high skills job = 1 if mayor worked in a high skills occupation in the past; 3) past deficit = value of deficit measured as a fraction of total revenues from previous term. Mayoral covariates included in columns 3 and 4: 1) female = 1 if mayor is a woman; 2) age = age of the mayor at the beginning of the term; 3) independent = 1 if mayor is not affiliated to national political parties; 4) unemployed = 1 if mayor is unemployed. Municipal covariates in columns 3 and 4: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 9: The effect of graduate mayors on deficit
Heterogeneity based on income growth

	(1)	(2)	(3)	(4)
Control Function	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h
Covariates	No	Yes	No	Yes
Municipalities	Below 5000		Above 5000	
Panel A: income growth < median				
Graduate	0.024**	0.030**	-0.007	0.001
	(0.010)	(0.014)	(0.012)	(0.013)
Observations	133	133	105	105
Bandwidth	11.94	11.94	16.72	16.72
Panel B: income growth > median				
Graduate	0.009	0.009	-0.004	-0.006
	(0.009)	(0.008)	(0.006)	(0.008)
Observations	150	150	130	130
Bandiwdth	16.27	16.27	22.89	22.89

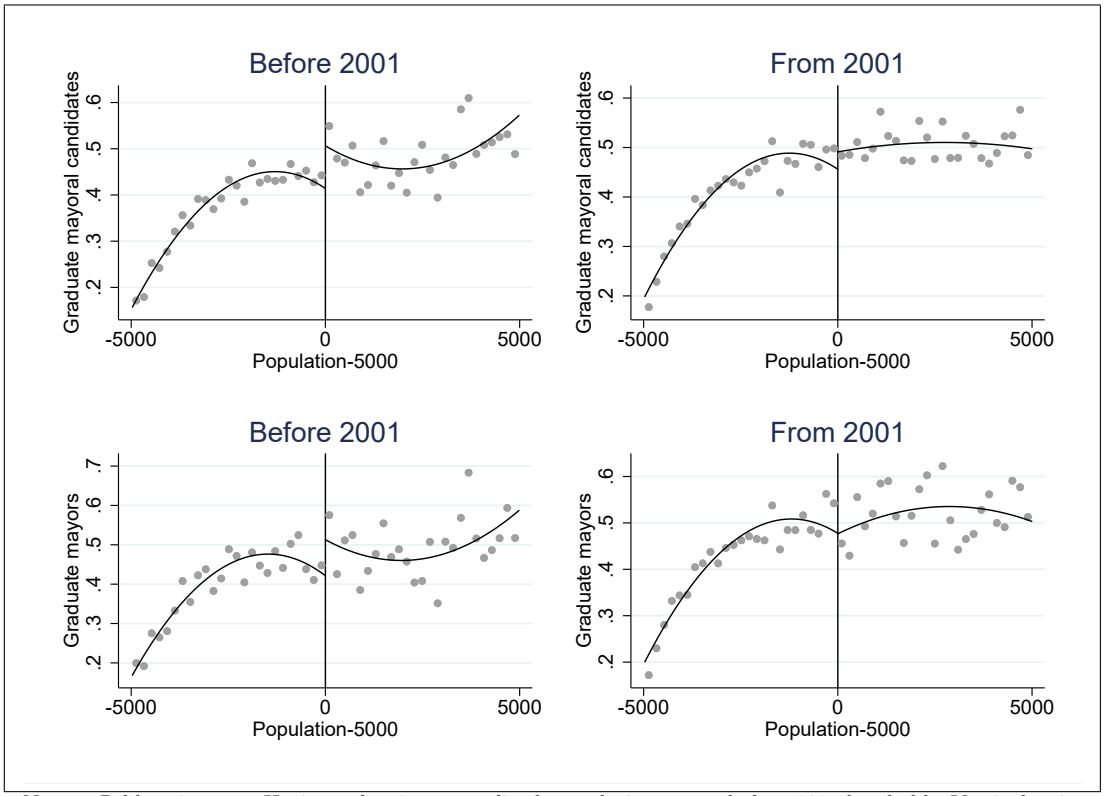
Notes. Municipalities between 3687-6313 inhabitants. Electoral terms between 2001 and 2012. Dependent variable: average deficit as a fraction of total revenues. Treatment variable: Graduate is a dummy variable =1 when the mayor has a university degree, 0 otherwise. Estimation by RDD-LLR using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election fixed effects included in all columns. Region fixed effects included in columns 2 and 4. Mayoral covariates included in columns 2 and 4: 1) political experience = years of past political experience of the mayor at any level of politics; 2) high skills job = 1 if mayor worked in a high skills occupation in the past; 3) past deficit = value of deficit measured as a fraction of total revenues from previous term; 4) female = 1 if mayor is a woman; 5) age = age of the mayor at the beginning of the term; 6) independent = 1 if mayor is not affiliated to national political parties; 7) unemployed = 1 if mayor is unemployed. Municipal covariates in columns 2 and 4: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Figure 1: RDD evidence: all municipalities below 15,000



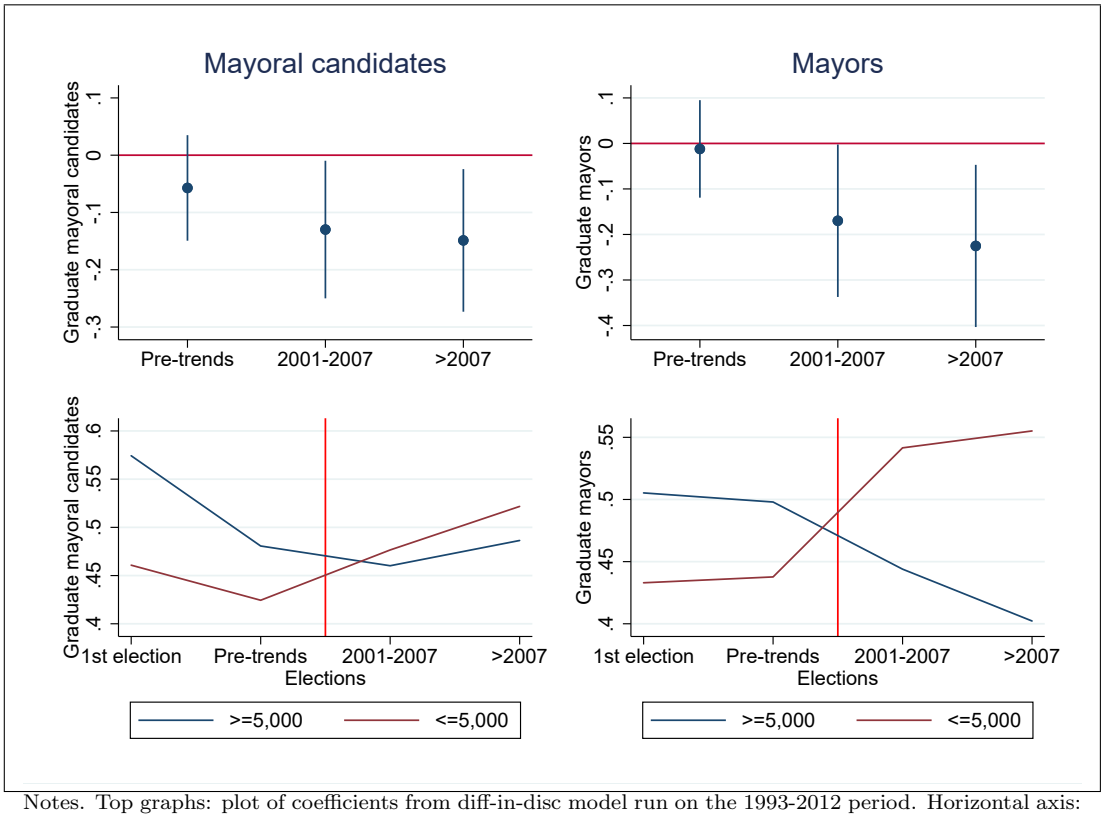
Notes. Rdd estimates. Horizontal axis: normalized population around the 5000 threshold. Vertical axis: share of graduate mayoral candidates in the top graphs and dummy=1 for graduate mayors in the bottom graphs. Scatter points are averaged over bins of 200 inhabitants. The central black line represents a split fourth-order polynomial of the outcome variable in the normalized population, fitted separately on each side of the threshold.

Figure 2: Rdd evidence: municipalities below 10,000



Notes. Rdd estimates. Horizontal axis: normalized population around the 5000 threshold. Vertical axis: share of graduate mayoral candidates in the top graphs and dummy=1 for graduate mayors in the bottom graphs. Scatter points are averaged over bins of 200 inhabitants. The central black line represents a split second-order polynomial of the outcome variable in the normalized population, fitted separately on each side of the threshold.

Figure 3: Diff-in-disc coefficients



Notes. Top graphs: plot of coefficients from diff-in-disc model run on the 1993-2012 period. Horizontal axis: name of cofficients: a) Pre-trends: interaction between dummy for municipalities above 5000 population treshold and dummy for election immediately before the 2001 fiscal rule removal; b) 2001-2007: interaction between dummy for municipalities above 5000 population treshold and dummy for the 2001-2007 period; c) >2007: interaction between dummy for municipalities above 5000 population treshold and dummy for the 2008-2012 period. Bottom graphs: evolution of shares of graduate politicians over time, obtained summing up the diff-in-disc coefficients reported in columns 2 and 5 of Table 6. Horizontal axis description: a) 1st election: first election available in the dataset; b) Pre-trends: election immediately before the 2001 fiscal rule removal; b) 2001-2007: elections in the 2001-2007 period; c) >2007: elections in the 2008-2012 period.

A1 Appendix [For Online Publication]

Table A1: Effect of fiscal rules on the education of mayoral candidates
Adding control variables

	(1)	(2)	(3)
Mayoral candidates with university degree			
Control Function	Linear	Linear	Quadratic
Bandwidth	h	h/2	2h
Controls	Yes	Yes	Yes
(> 5000)	0.061*	0.092*	0.066*
	(0.037)	(0.053)	(0.038)
(Post)*(> 5000)	-0.101**	-0.138**	-0.099**
	(0.045)	(0.066)	(0.047)
Observations	4,059	1,978	9,110
Bandwidth	1313	656.6	2627

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Variables in the Table: 1) (> 5000) = 1 for municipalities with more than 5000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2001; 3) (Post)*(> 5000) = interaction term between (> 5000) and Post. The dummy variable (Post) is not reported here because it is absorbed by year of election fixed effects. The outcome variable is the share of mayoral candidates with a university degree. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election and Regions fixed effects added in all columns. Control variables in all columns: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A2: Effect of fiscal rules on the education of mayors
Adding control variables

	(1)	(2)	(3)
	Mayors with university degree		
Control Function	Linear	Linear	Quadratic
Bandwidth	h	h/2	2h
Controls	Yes	Yes	Yes
(> 5000)	0.043	0.126	0.042
	(0.055)	(0.077)	(0.058)
(Post)*(> 5000)	-0.182***	-0.261***	-0.157**
	(0.069)	(0.097)	(0.073)
Observations	4,408	2,142	10,345
Bandwidth	1438	718.9	2876

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Variables in the Table: 1) (> 5000) = 1 for municipalities with more than 5000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2001; 3) (Post)*(> 5000) = interaction term between (> 5000) and Post. The dummy variable (Post) is not reported here because it is absorbed by year of election fixed effects. The outcome variable is = 1 for mayors with a university degree. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election and Regions fixed effects added in all columns. Control variables in all columns: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A3: Effect of fiscal rules on the education of all municipal politicians

	(1)	(2)	(3)
Municipal politicians with university degree			
Control Function	Linear	Linear	Quadratic
Bandwidth	h	h/2	2h
Controls	No	No	No
(> 5000)	0.019	0.032	0.020
	(0.017)	(0.025)	(0.017)
(Post)	0.062***	0.068***	0.066***
	(0.013)	(0.021)	(0.014)
(Post)*(> 5000)	-0.035*	-0.056*	-0.044**
	(0.021)	(0.033)	(0.022)
Observations	4,082	2,002	9,211
Bandwidth	1324	662.2	2649

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Variables in the Table: 1) (> 5000) = 1 for municipalities with more than 5000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2001; 3) (Post)*(> 5000) = interaction term between (> 5000) and Post. The outcome variable is the share of municipal politicians with a university degree. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A4: The effect of fiscal rules on the education of politicians
Evolution of the effect over time and pre-trends
Complete Table

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variables	Share mayoral candidates with university degree			= 1 for Mayors with university degree		
Control Function	Linear	Linear	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h	h	h
Controls	No	No	Yes	No	No	Yes
(> 5000)	0.085**	0.113**	0.073	0.066	0.072	0.029
	(0.040)	(0.048)	(0.046)	(0.057)	(0.064)	(0.062)
(>= 2001)	0.034	0.016		0.106**	0.109*	
	(0.036)	(0.041)		(0.054)	(0.057)	
(>= 2001)*(> 5000)	-0.101*	-0.130**	-0.107*	-0.164**	-0.170**	-0.146*
	(0.054)	(0.061)	(0.057)	(0.079)	(0.085)	(0.083)
(>= 2008)	0.079**	0.061		0.120**	0.122**	
	(0.037)	(0.041)		(0.055)	(0.057)	
(>= 2008)*(> 5000)	-0.120**	-0.149**	-0.121**	-0.219**	-0.225**	-0.196**
	(0.057)	(0.063)	(0.060)	(0.085)	(0.091)	(0.087)
(Pre)		-0.036			0.005	
		(0.032)			(0.035)	
(Pre)*(> 5000)		-0.057	-0.023		-0.012	0.027
		(0.047)	(0.046)		(0.055)	(0.054)
Constant	0.443***	0.461***		0.435***	0.433***	
	(0.028)	(0.033)		(0.039)	(0.043)	
Observations	4,059	4,059	4,059	4,408	4,408	4,408
BW Loc. Poly. (h)	1313	1313	1313	1438	1438	1438

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Variables in the Table: 1) (> 5000) = dummy = 1 for municipalities with more than 5000 inhabitants; 2) (>= 2001) = dummy = 1 for electoral years 2001-2007; 3) (>= 2001)*(> 5000) = interaction between (> 5000) and (>= 2001); 4) (>= 2008) = dummy = 1 for electoral years 2008-2012; 5) (>= 2008)*(> 5000) = interaction between (> 5000) and (>= 2008); 6) (Pre) = dummy = 1 for election immediately before 2001 fiscal rules removal; 7) (Pre)*(> 5000) = interaction between (Pre) and (> 5000); 8) Constant = intercept of the regression model. The outcome variable is the share of mayoral candidates with a university degree in columns 1-3, while it is = 1 for mayors with a university degree in columns 4-6. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election and Regions fixed effects added in columns 3 and 6. Control variables in columns 3 and 6: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A5: The effect of fiscal rules on the education of politicians
Evolution of the effect over time and pre-trends
Controlling for introduction fiscal rules

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variables	Share mayoral candidates with university degree			= 1 for Mayors with university degree		
Control Function	Linear	Linear	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h	h	h
Controls	No	No	Yes	No	No	Yes
(>= 2001)*(> 5000)	-0.101*	-0.130**	-0.108*	-0.164**	-0.170**	-0.148*
	(0.054)	(0.061)	(0.056)	(0.079)	(0.085)	(0.083)
(>= 2008)*(> 5000)	-0.120**	-0.149**	-0.122**	-0.219**	-0.225**	-0.198**
	(0.057)	(0.063)	(0.060)	(0.085)	(0.091)	(0.087)
$(Pre_1) * (> 5000)$		-0.090	0.005		-0.146	-0.033
		(0.079)	(0.067)		(0.112)	(0.095)
$(Pre_2) * (> 5000)$		-0.059	-0.041		0.046	0.059
		(0.057)	(0.057)		(0.067)	(0.067)
Observations	4,059	4,059	4,059	4,408	4,408	4,408
Bandwidth	1313	1313	1313	1438	1438	1438

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Variables in the Table: 1) (>= 2001)*(> 5000) = interaction between dummy = 1 for electoral years 2001-2007 and dummy = 1 for municipalities with more than 5000 inhabitants; 2) (>= 2008)*(> 5000) = interaction between dummy = 1 for electoral years 2008-2012 and dummy = 1 for municipalities with more than 5000 inhabitants; 3) $(Pre_1) * (> 5000)$ = interaction between dummy = 1 for election immediately before 2001 fiscal rules removal (excluding electoral years 1999-2000) and dummy = 1 for municipalities with more than 5000 inhabitants; 4) $(Pre_2) * (> 5000)$ = interaction between dummy = 1 for electoral years during which fiscal rules apply for all municipalities (i.e. electoral years 1999-2000) and dummy = 1 for municipalities with more than 5000 inhabitants. The outcome variable is the share of mayoral candidates with a university degree in columns 1-3, while it is = 1 for mayors with a university degree in columns 4-6. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election and Regions fixed effects added in columns 3 and 6. Control variables in columns 3 and 6: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A6: The effect of fiscal rules on the education of politicians
Evolution of the effect over time and pre-trends
Years 1993-2015

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variables	Share mayoral candidates with university degree			= 1 for Mayors with university degree		
Control Function	Linear	Linear	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h	h	h
Controls	No	No	Yes	No	No	Yes
(>= 2001)*(> 5000)	-0.101*	-0.130**	-0.109*	-0.164**	-0.170**	-0.149*
	(0.054)	(0.061)	(0.057)	(0.079)	(0.085)	(0.083)
(>= 2008)*(> 5000)	-0.120**	-0.149**	-0.123**	-0.219**	-0.225**	-0.199**
	(0.057)	(0.063)	(0.060)	(0.085)	(0.091)	(0.087)
(>= 2013)*(> 5000)	-0.028	-0.056	-0.047	0.012	0.006	0.001
	(0.091)	(0.096)	(0.090)	(0.098)	(0.103)	(0.100)
(Pre)*(> 5000)		-0.057	-0.022		-0.012	0.028
		(0.047)	(0.046)		(0.055)	(0.054)
Observations	4,690	4,690	4,690	5,104	5,104	5,104
Bandwidth	1313	1313	1313	1438	1438	1438

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2015. Variables in the Table: 1) (>= 2001)*(> 5000) = interaction between dummy = 1 for electoral years 2001-2007 and dummy = 1 for municipalities with more than 5000 inhabitants; 2) (>= 2008)*(> 5000) = interaction between dummy = 1 for electoral years 2008-2012 and dummy = 1 for municipalities with more than 5000 inhabitants; 3) (>= 2013)*(> 5000) = interaction between dummy = 1 for electoral years 2013-2015 and dummy = 1 for municipalities with more than 5000 inhabitants; 4) (Pre)*(> 5000) = interaction between dummy = 1 for election immediately before 2001 fiscal rules removal and dummy = 1 for municipalities with more than 5000 inhabitants. The outcome variable is the share of mayoral candidates with a university degree in columns 1-3, while it is = 1 for mayors with a university degree in columns 4-6. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election and Regions fixed effects added in columns 3 and 6. Control variables in columns 3 and 6: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A7: The role of past deficit
Adding control variables

	(1)	(2)	(3)	(4)
Dependent variable	*Mayoral candidates with university degree*		*Mayors with university degree*	
Control Function	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h
Controls	Yes	Yes	Yes	Yes
Sample	*Deficit<median*	*Deficit>median*	*Deficit<median*	*Deficit>median*
(> 5000)	0.083	0.026	0.047	0.055
	(0.055)	(0.044)	(0.086)	(0.075)
(Post)*(> 5000)	-0.185***	-0.026	-0.288***	-0.127
	(0.067)	(0.054)	(0.110)	(0.096)
Observations	1,918	2,785	1,781	2,455
Bandwidth	1342	1701	1242	1494

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Sub-samples: 1) *(Deficit < median)* = municipalities with a level of past deficit as a fraction of total revenues below the median; 2) *(Deficit > median)* = municipalities with a level of past deficit as a fraction of total revenues above the median. Variables in the Table: 1) (> 5000) = 1 for municipalities with more than 5000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2001; 3) (Post)*(> 5000) = interaction term between > 5000 and Post. The outcome variable is the share of mayoral candidates with a university degree in column 1-2 and it is = 1 for mayors with a university degree in column 3-4. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election and Regions fixed effects added in all columns. Control variables in all columns: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A8: Balance test on municipal covariates
Diff-in-Disc

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Characteristics municipal population								
Dependent variables	% university degree	% 15-64	% 65+	(log) income per capita	# firms	no-profit ass	area	population density
(Post)*(> 5000)	0.002	-0.005	0.002	0.038	0.003	0.363	-0.149	-51.766
	(0.003)	(0.006)	(0.008)	(0.060)	(0.004)	(1.480)	(5.265)	(65.112)
Observations	2,954	2,602	2,476	3,751	2,450	3,474	3,855	3,385
Bandwidth	942.3	852.1	818.4	1216	811.6	1126	1249	1091
Panel B: Geographical characteristics municipalities, deficit and re-election/re-run status								
Dependent variables	NE	NW	CEN	SOU	deficit	Second term mayor	Re-elected	Re-run
(Post)*(> 5000)	0.050	-0.018	0.057	-0.076	-0.011**	0.046	-0.030	-0.084
	(0.074)	(0.084)	(0.047)	(0.080)	(0.005)	(0.058)	(0.070)	(0.065)
Observations	3,476	3,363	4,633	3,349	2,955	2,611	3,271	3,541
Bandwidth	1127	1080	1501	1073	1252	854	1627	1752

Notes. Diff-in-disc estimates of the impact of fiscal rules on municipal covariates. Municipalities between 0-15,000. Electoral years between 1993 and 2012. Variables in the Table: 1) (> 5000) = 1 for municipalities with more than 5000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2001; 3) (Post)*(> 5000) = interaction term between > 5000 and Post. The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A9: The effect of fiscal rules on other characteristics

	(1)	(2)	(3)	(4)
Control Function	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h
Covariates	No	No	No	No
Dependent Variables	High skill	Age	Female	Pol Experience
Panel A: mayoral candidates				
(Post)*(> 5000)	-0.102*	1.952**	-0.014	
	(0.052)	(0.857)	(0.032)	
Observations	3,077	4,700	3,568	
Bandwdith	985.1	1527	1158	
Panel B: mayors				
(Post)*(> 5000)	-0.136**	4.178***	0.066	-0.719
	(0.069)	(1.509)	(0.043)	(0.865)
Observations	3,703	3,659	4,139	3,701
Bandwdith	1218	1198	1339	1204

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Original sample: municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2000, excluding 2005 and 2006. Variables in the Table: 1) (> 5000) = 1 for municipalities with more than 5000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2001; 3) (Post)*(> 5000) = interaction term between (> 5000) and Post. The outcome variables are: 1) high skill = for politicians from high skill occupations; 2) Age = age of the politicians; 3) Female = 1 for female politicians; 4) Pol Experiences = years of politicial experience at any level of politics (for mayors only). The bandwidth is calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A10: The effect of fiscal rules on the education of politicians
Difference-in-differences estimates

	(1)	(2)	(3)	(4)
Dependent Variables	Share mayoral candidates with university degree		= 1 for Mayors with university degree	
(> 5000)	0.159***	0.177***	0.140***	0.146***
	(0.010)	(0.012)	(0.014)	(0.016)
(Post)	0.037***	0.035***	0.025***	0.022***
	(0.005)	(0.006)	(0.007)	(0.008)
(Post)*(> 5000)	-0.022**	-0.040***	-0.000	-0.006
	(0.010)	(0.012)	(0.016)	(0.019)
Pre		-0.005		-0.005
		(0.005)		(0.006)
(Pre)*(> 5000)		-0.037***		-0.011
		(0.011)		(0.015)
Observations	26,064	26,064	26,064	26,064
Controls	No	No	No	No

Notes. Difference-in-differences estimates of the impact of fiscal rules on the education of politicians. Municipalities between 0 and 15,000 inhabitants. Electoral terms between 1993 and 2012. Variables in the Table: 1) (> 5000) = 1 for municipalities with more than 5000 inhabitants; 2) (Post) = 1 for electoral terms starting from 2001; 3) (Post)*(> 5000) = interaction term between (> 5000) and Post; 4) (Pre) = 1 for election immediately before 2001 fiscal rules removal; 5) (Pre)*(> 5000) = interaction term between (> 5000) and (Pre). The outcome variable is the share of mayoral candidates with a university degree in columns 1 and 2, while it is = 1 for mayors with a university degree in columns 3 and 4. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A11: The effect of graduate mayors on corruption

	(1)	(2)	(3)	(4)
Control Function	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h
Covariates	No	Yes	No	Yes
Municipalities	Below 5000		Above 5000	
Dependent variable = 1 if mayor corrupt				
Graduate	-0.113	-0.072	-0.344**	-0.235
	(0.096)	(0.094)	(0.164)	(0.199)
Observations	349	349	157	157
Bandwidth	18.54	18.54	10.26	10.26

Notes. Municipalities between 3687-6313 inhabitants. Electoral terms between 2001 and 2012. Treatment variable: Graduate is a dummy variable =1 when the mayor has a university degree, 0 otherwise. Estimation by RDD-LLR using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election fixed effects included in all columns. Region fixed effects included in columns 2 and 4. Mayoral covariates included in columns 2 and 4: 1) female = 1 if mayor is a woman; 2) age = age of the mayor at the beginning of the term; 3) political experience = years of past political experience of the mayor at any level of politics; 4) independent = 1 if mayor is not affiliated to national political parties; 5) high skills job = 1 if mayor worked in a high skills occupation in the past; 7) unemployed = 1 if mayor is unemployed. Municipal covariates in columns 2 and 4: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A12: The effect of graduate mayors on deficit
In year 2000 and after 2012

	(1)	(2)	(3)	(4)
Control Function	Linear	Linear	Linear	Linear
Bandwidth	h	h	h	h
Covariates	No	Yes	No	Yes
Municipalities	Below 5000		Above 5000	
Panel A: year 2000				
Graduate	-0.009	-0.011	0.023	-0.009
	(0.016)	(0.019)	(0.017)	(0.034)
Observations	115	115	56	56
Bandwidth	14.90	14.90	9.134	9.134
Panel B: years 2013-2015				
Graduate	0.003	0.008	0.007	0.021
	(0.020)	(0.024)	(0.015)	(0.028)
Observations	124	124	94	94
Bandwidth	14.37	14.37	18.59	18.59

Notes. Municipalities between 3687-6313 inhabitants. Year 2000 in Panel A. Years 2013-2015 in Panel B. Dependent variable: average deficit as a fraction of total revenues. Treatment variable: Graduate is a dummy variable =1 when the mayor has a university degree, 0 otherwise. Estimation by RDD-LLR using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector. Year of election fixed effects included in all columns. Region fixed effects included in columns 2 and 4. Mayoral covariates included in columns 2 and 4: 1) female = 1 if mayor is a woman; 2) age = age of the mayor at the beginning of the term; 3) political experience = years of past political experience of the mayor at any level of politics; 4) independent = 1 if mayor is not affiliated to national political parties; 5) high skills job = 1 if mayor worked in a high skills occupation in the past; 7) unemployed = 1 if mayor is unemployed. Municipal covariates in columns 2 and 4: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A13: Balance test on municipal covariates
RDD, below 5000

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Characteristics municipal population								
Dependent variables	% university degree	% 15-64	% 65+	(log) income per capita	# firms	no-profit ass	area	population density
Graduate	-0.002	0.007	-0.011	-0.087	0.004	-2.195	4.827	-114.234
	(0.004)	(0.007)	(0.009)	(0.067)	(0.005)	(1.781)	(8.261)	(81.180)
Observations	327	284	285	309	333	293	309	259
Bandwidth	16.86	13.90	14.03	15.67	17.43	14.59	15.54	12.56
Panel B: Geographical characteristics municipalities								
Dependent variables	NE	NW	CEN	SOU	Past deficit			
Graduate	0.086	-0.110	-0.061	0.052	-0.000			
	(0.086)	(0.111)	(0.101)	(0.095)	(0.007)			
Observations	339	271	302	360	247			
Bandwidth	18.03	13.21	15.03	19.13	11.90			

Notes. RDD estimates of the impact of fiscal rules on municipal covariates. Municipalities between 3687-5000 inhabitants. Electoral years between 2001 and 2012. Treatment variable in the Table: Graduate = 1 for mayors with a university degree. Year of election fixed effects included in all columns. Municipal dependent variables in Panel A: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. In Panel B, the dependent variables are geographical dummy variables for different areas of Italy (i.e. North-West, North-East, Centre, South) and the deficit as a fraction of total revenues from the previous term. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A14: Balance test on municipal covariates
RDD, above 5000

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Characteristics municipal population								
Dependent variables	% university degree	% 15-64	% 65+	(log) income per capita	# firms	no-profit ass	area	population density
Graduate	-0.003	-0.005	0.013	0.017	-0.008	-4.010	-3.686	17.132
	(0.005)	(0.008)	(0.012)	(0.106)	(0.007)	(3.072)	(11.452)	(93.197)
Observations	199	193	193	152	176	155	140	213
Bandwidth	13.87	13.32	13.35	10.10	11.52	10.22	9.156	15.82
Panel B: Geographical characteristics municipalities								
Dependent variables	NE	NW	CEN	SOU	Past deficit			
Graduate	-0.078	0.008	0.088	-0.030	-0.011			
	(0.105)	(0.146)	(0.104)	(0.157)	(0.007)			
Observations	162	192	181	157	149			
Bandwidth	10.68	13.27	11.98	10.35	9.621			

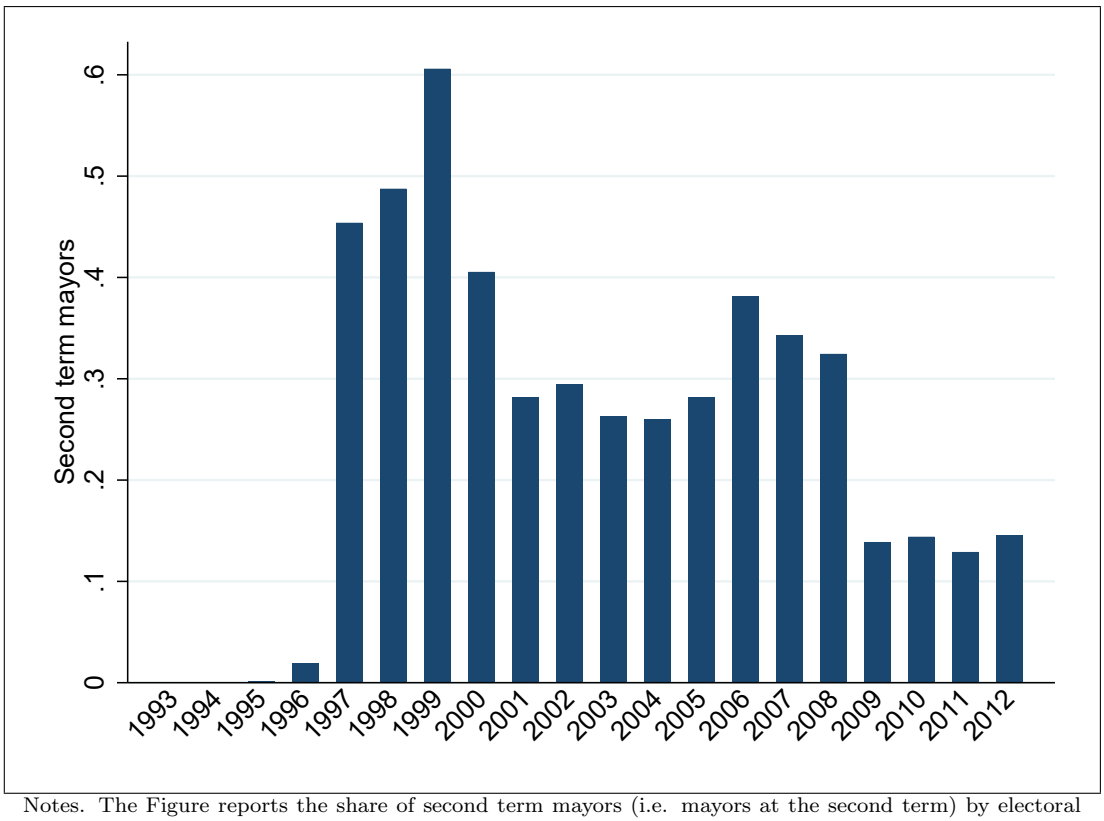
Notes. RDD estimates of the impact of fiscal rules on municipal covariates. Municipalities between 5000-6313 inhabitants. Electoral years between 2001 and 2012. Treatment variable in the Table: Graduate = 1 for mayors with a university degree. Year of election fixed effects included in all columns. Municipal dependent variables in Panel A: 1) share of population with a university degree measured in 2001; 2) share of active population (i.e. population between 15 and 64 years old) measured in 2001; 3) share of elderly (i.e. population above 65 years old) measured in 2001; 4) log of income per capita measured in 2001; 5) number of firms per capita; 6) number of no-profit associations per capita; 7) area of municipality in square km; 8) population density measured in 2001. In Panel B, the dependent variables are geographical dummy variables for different areas of Italy (i.e. North-West, North-East, Centre, South) and the deficit as a fraction of total revenues from the previous term. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A15: Balance test on mayoral covariates
RDD

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: municipalities below 5000								
Dependent variables	female	age	pol experience	high skill	unemployed	independent	left	right
Graduate	0.078	-2.050	-4.845***	0.362***	-0.102	0.118	-0.061	-0.033
	(0.067)	(2.269)	(1.797)	(0.099)	(0.065)	(0.104)	(0.061)	(0.081)
Observations	390	286	326	271	333	256	268	290
Bandwidth	21.13	14.21	16.79	13.29	17.26	12.36	13.17	14.54
Panel B: municipalities above 5000								
Dependent variables	female	age	pol experience	high skill	unemployed	independent	left	right
Graduate	0.083	-1.968	-5.268**	0.407***	0.019	0.160	-0.034	-0.017
	(0.105)	(2.615)	(2.089)	(0.120)	(0.094)	(0.123)	(0.088)	(0.099)
Observations	149	223	185	184	202	152	173	172
Bandwidth	9.602	16.97	12.53	12.12	14.28	10.14	11.28	11.18

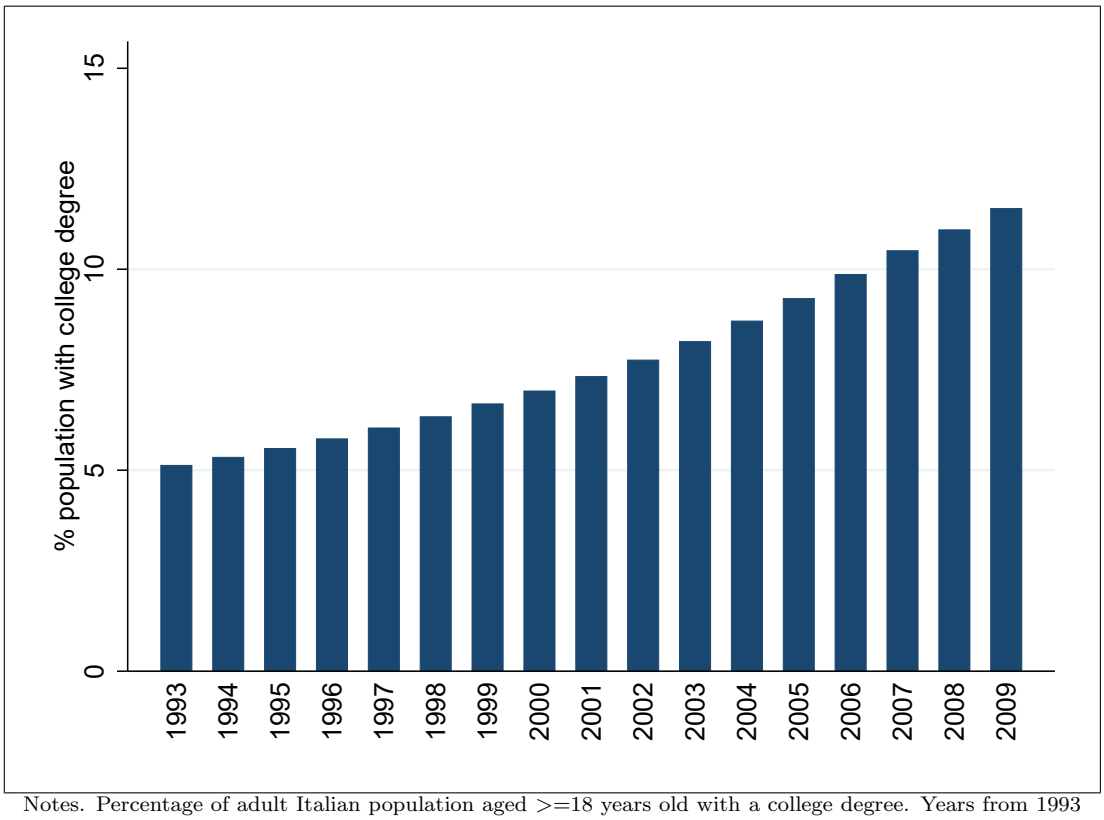
Notes. RDD estimates of the impact of fiscal rules on mayoral covariates. Municipalities between 3687-6313 inhabitants. Electoral years between 2001 and 2012. Treatment variable in the Table: Graduate = 1 for mayors with a university degree. Year of election fixed effects included in all columns. Mayoral dependent variables: 1) female = 1 if mayor is a woman; 2) age = age of the mayor at the beginning of the term; 3) political experience = years of past political experience of the mayor at any level of politics; 4) high skills job = 1 if mayor worked in a high skills occupation in the past; 5) unemployed = 1 if mayor is unemployed; 6) independent = 1 if mayor is not affiliated to national political parties; 7) Left = 1 for mayors affiliated to left-wing national parties; 8) Right = 1 for mayors affilated to righ-wing national parties.

Figure A1: Share second term mayors by electoral year



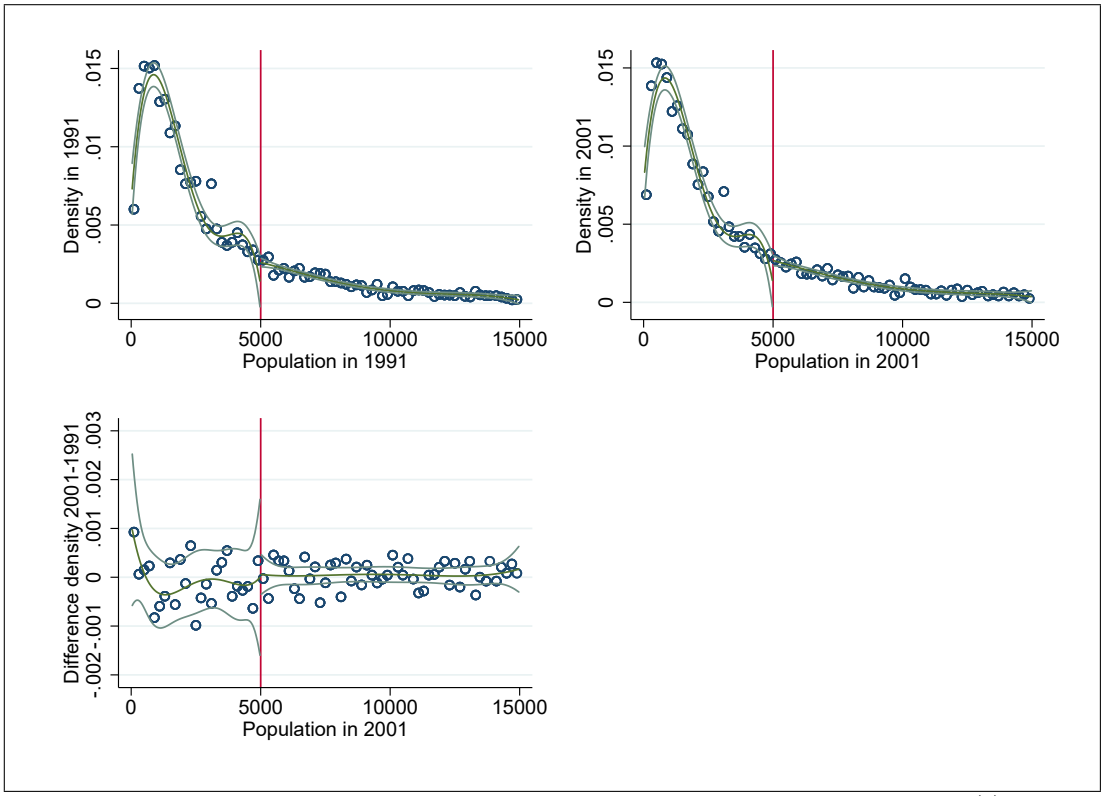
Notes. The Figure reports the share of second term mayors (i.e. mayors at the second term) by electoral year.

Figure A2: Percentage Italian population with a college degree



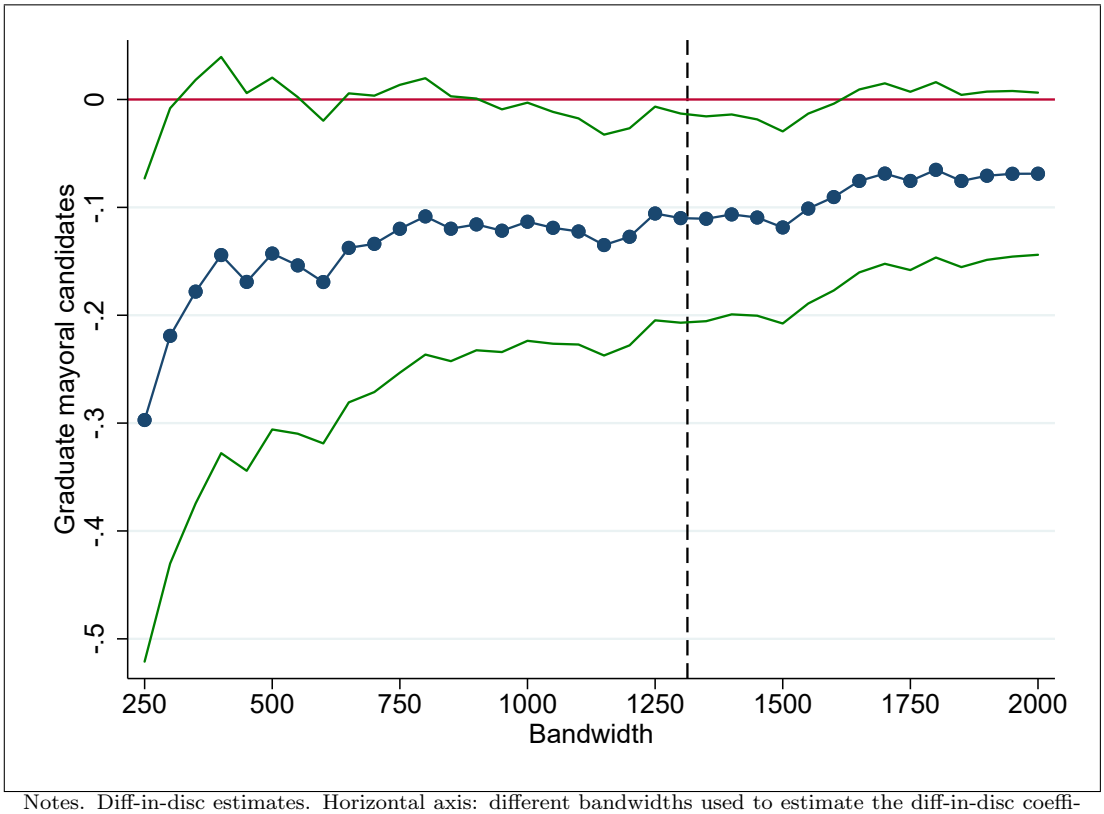
Notes. Percentage of adult Italian population aged >=18 years old with a college degree. Years from 1993 to 2009. Source: Italian Statistical Office (Istat).

Figure A3: Density test on the running variable



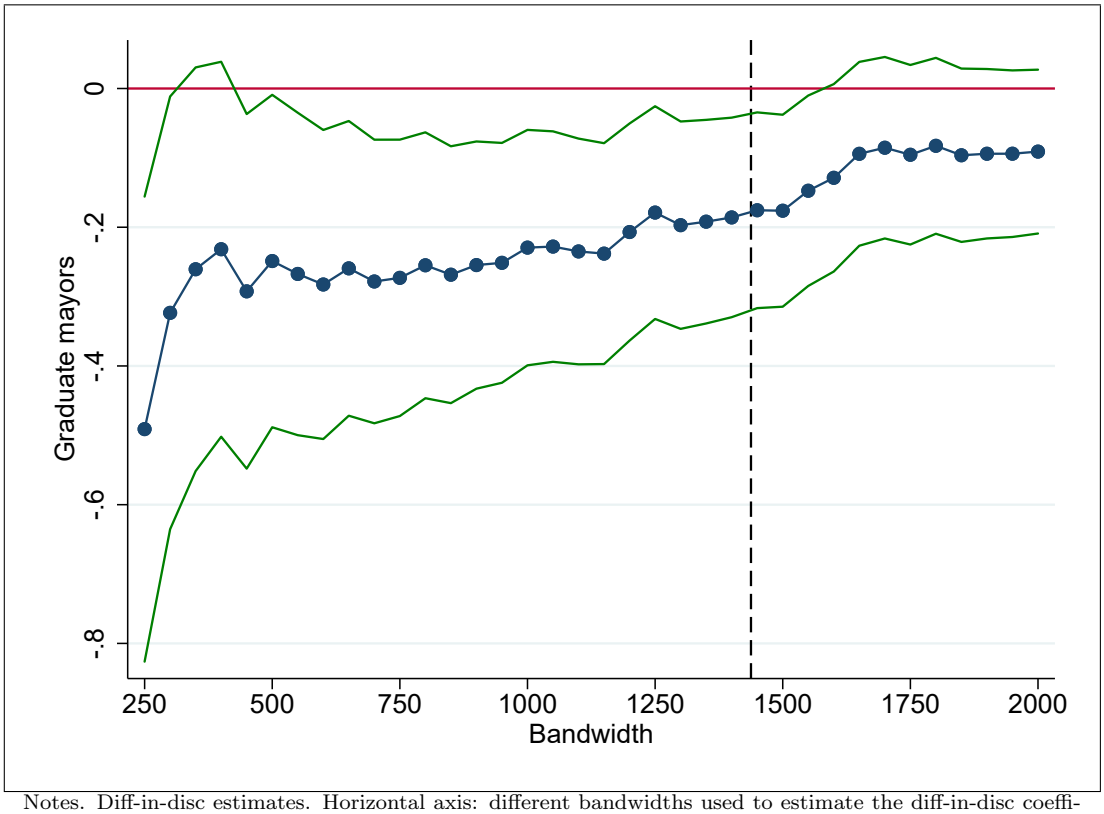
Notes. Discontinuity test for the density of the population at the 5000 thresold. Top graphs: (1) density test for the population as measured by the 1991 Census; (2) density test for the population as measured by the 2001 Census. Bottom graph: (1) discontinuity test for the difference between the density of the 2001 Census population and the density of the 1991 Census population. The central green line represents a split fourth-order polynomial of the outcome variable in the normalized population, fitted separately on each side of the threshold. The grey lines represent the 95 percent confidence interval.

Figure A4: Diff-in-disc estimates: different bandwidths
Graduate mayoral candidates



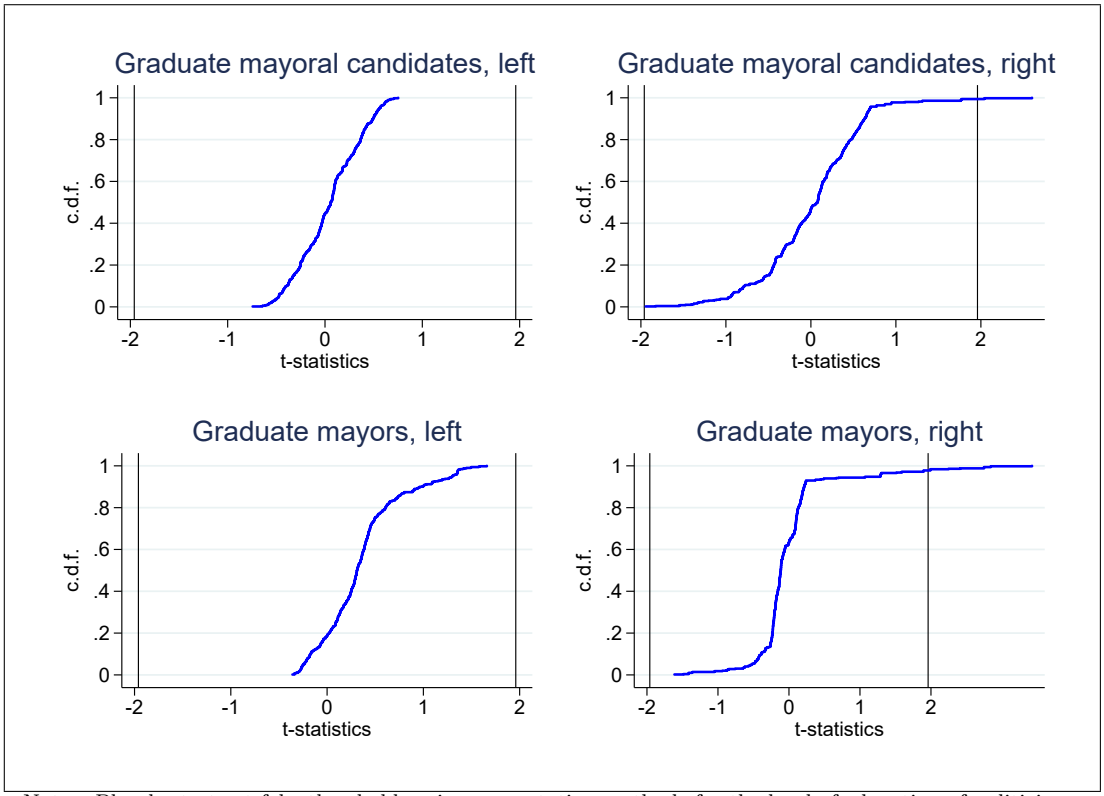
Notes. Diff-in-disc estimates. Horizontal axis: different bandwidths used to estimate the diff-in-disc coefficients. Vertical axis: diff-in-disc coefficients. Dashed vertical line: optimal bandwidth calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector.

Figure A5: Diff-in-disc estimates: different bandwidths
Graduate mayors



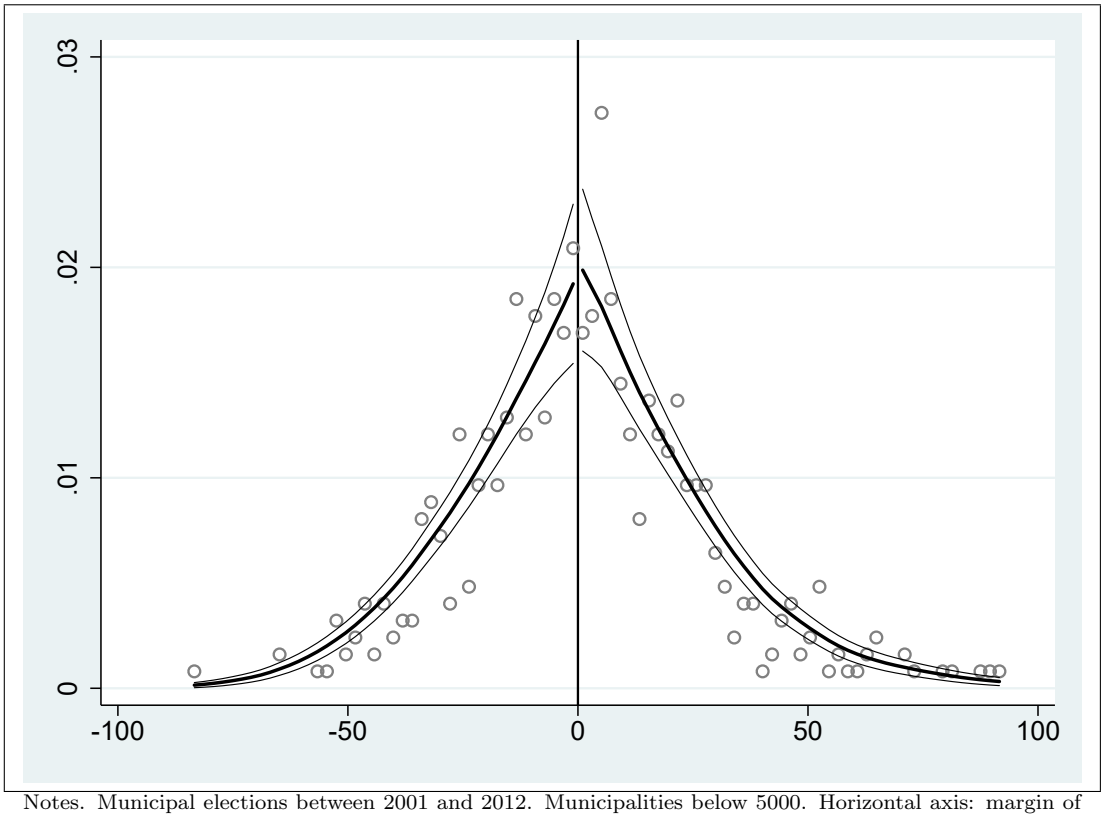
Notes. Diff-in-disc estimates. Horizontal axis: different bandwidths used to estimate the diff-in-disc coefficients. Vertical axis: diff-in-disc coefficients. Dashed vertical line: optimal bandwidth calculated using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth h selector.

Figure A6: Diff-in-Disc
Placebo thresholds



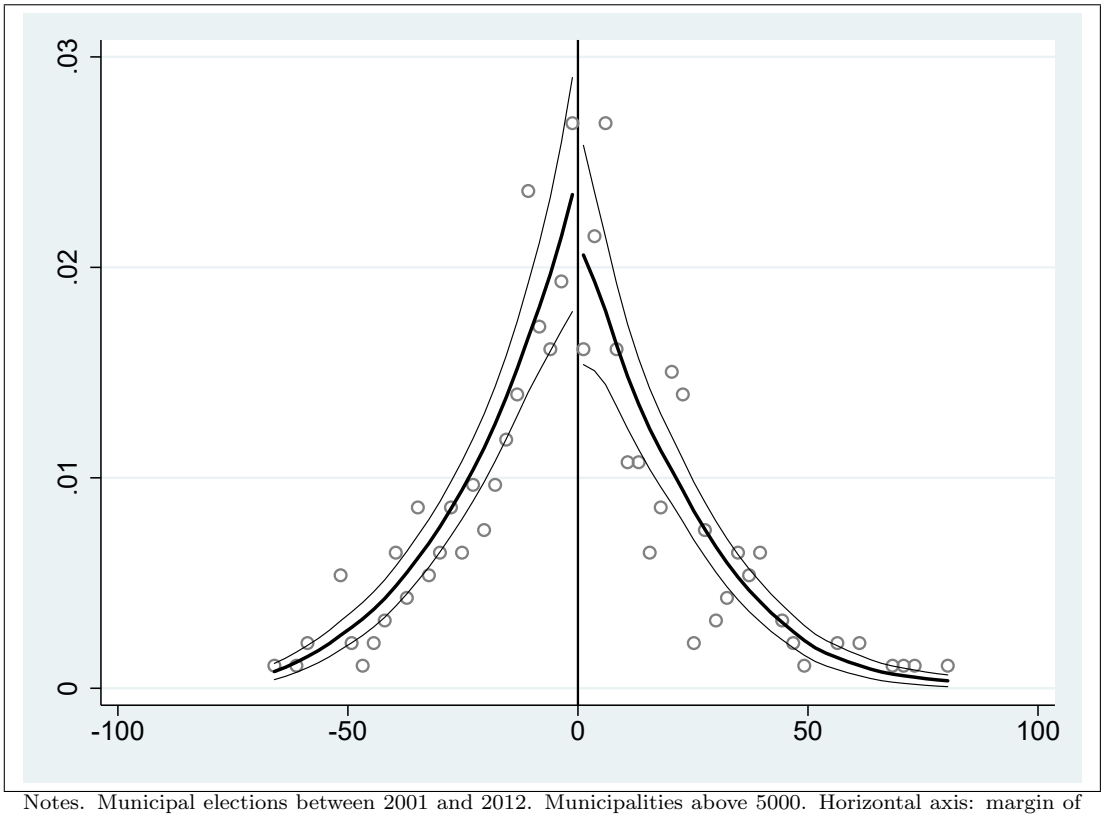
Notes. Placebo tests at fake thresholds using permutation methods for the level of education of politicians. The figure reports the c.d.f. of the t-statistics of a set of diff-in-disc regressions at 500 fake thresholds below and 500 fake thresholds above the 5000 threshold (i.e. thresholds from 4900 to 4400, and from 5100 to 5600). The diff-in-disc model is run using a local linear regression. The vertical lines indicate t-statistics of -2 and 2. The top graphs report the c.d.f. of the t-statistics for the share of mayoral candidates with a university degree (respectively to the left and to the right of the 5000 threshold). The bottom graphs report the c.d.f. of the t-statistics for the share of mayors with a university degree (respectively to the left and to the right of the 5000 threshold).

Figure A7: McCrary (2008) test on the margin of victory
Municipalities below 5,000



Notes. Municipal elections between 2001 and 2012. Municipalities below 5000. Horizontal axis: margin of victory MV_{it} of a candidates with a college degree vs. a candidate without a college degree. Vertical axis: density of the margin of victory MV_{it}. $MV_{it} > 0$ when the winning candidate has a college degree, $MV_{it} < 0$ when the winning does not have a college degree.

Figure A8: McCrary (2008) test on the margin of victory
Municipalities above 5,000



Notes. Municipal elections between 2001 and 2012. Municipalities above 5000. Horizontal axis: margin of victory MV_{it} of a candidates with a college degree vs. a candidate without a college degree. Vertical axis: density of the margin of victory MV_{it}. $MV_{it} > 0$ when the winning candidate has a college degree, $MV_{it} < 0$ when the winning does not have a college degree.