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

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Abstract

Many countries have recently introduced fiscal rules to constrain governments' fiscal policies and action. 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, and in 2001 it removed them for municipalities with less than 5000 inhabitants. Using a Difference-in-Discontinuity (Diff-in-Disc) design, which enables control for an institutionally mandated increase in the wage paid to politicians at the 5000-inhabitant threshold, I provide the following empirical evidence: 1) fiscal rules negatively affect the quality of politicians, and in particular their level of education; 2) consistent with the idea that competent individuals enter politics if they are given enough discretion, the effect is driven by municipalities with low deficits; 3) fiscal rules offset the positive effect of the wage increase on the selection of politicians.

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

JEL Classification: C23, D72, H62, H70, H72.

1 Introduction

In this paper, I study how fiscal rules designed to constrain the fiscal policies decided by a government can affect the selection of politicians. In particular, using data on Italian municipalities, I provide the following empirical evidence: 1) I show that the imposition of fiscal rules, aimed at reducing incentives to accumulate debt and run deficits, has a negative effect on the quality of politicians; 2) the effect is stronger in municipalities with low levels of past deficit, a result that is consistent with a framework in which competent individuals enter politics if they can enjoy a sufficient level of discretion; 3) I demonstrate that the introduction of fiscal rules effectively offsets the positive selection effect of the wage rise that operates across the sample of municipalities studied.

One of the goals of the political economy literature is to study how to improve the political process in ways that generate benefits for voters. Historically, the focus of the literature has been on how to give the right incentives to politicians (Barro, 1973; Ferejohn, 1986). In particular, the literature, under the assumption that politicians are all self-interested, has put a lot of attention on re-election as a disciplining device. However, as noted by Besley (2005), assuming that all politicians are self-interested implies that voters can replace bad politicians with others who are just as bad.

For this reason, in recent years the political economy literature has started to study the different mechanisms through which politicians are selected (Besley, 2005). The main goal of this recent literature is to study how institutions affect the ex-ante quality of the political class, and in particular to understand which institutions succeed in attracting the most competent individuals into the political arena.

From a theoretical point of view, this has been made possible by the introduction of the citizen-candidate framework developed by Besley and Coate (1997) and Osborne and Slivinski (1996), who have started to treat political candidates as endogenous. On the other side, the empirical literature has provided evidence about how different types of institutions can affect the quality of individuals who enter in politics. Among the institutions studied we can find: 1) 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); 2) the role of outside earnings (Gagliarducci et al., 2010; Fedele

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and Naticchioni, 2013; Grossman and Hanlon, 2013); 3) the role of monitoring institutions (Grossman and Hanlon, 2013); 4) grants from higher levels of government and the level of fiscal autonomy (Brollo et al., 2013; Bordignon et al., 2015); 5) electoral rules (Beath et al., 2015); 6) gender quotas (Baltrunaite et al., 2014) and 7) criminal organizations (Daniele and Geys, 2015). As far as I know, no study to date has investigated the potential effect of fiscal rules on the selection of politicians.

Fiscal rules are rules that constrain fiscal policies. In particular, National central governments generally use fiscal rules to discipline the fiscal behaviour of local governments, to reduce their incentives to accumulate debt and run deficits. The rationale for fiscal rules is that fiscal indiscipline at the local level represents a negative externality for the rest of the country. This is particularly the case in decentralized countries in which the local governments are financed through transfers from higher levels of governments, and local governments may not entirely internalize the cost of spending.

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. Maybe the most famous rule is the European Stability Pact, which was introduced in 1997 by the European Union and applied on member countries. In spite of the wide use of fiscal rules, there is no definitive evidence in the economics literature about whether they foster fiscal stability. In fact, some studies (Alesina and Perotti, 1996, and Wyplosz, 2012) indicate that for reasons of commitment, fiscal rules may not work. From this point of view, the most recent advancement in the literature is Grembi et al. (2016), who, using data on Italian municipalities, have shown that fiscal rules can be effective in reducing the deficit run by local governments. Another recent paper is Coviello et al. (2016), who study the impact of fiscal rules on public infrastructure expenditures and the size of firms. As already mentioned, I am not aware of any study of the effect of fiscal rules on the selection of politicians.

The claim of this paper is that the imposition of fiscal rules on local governments may have a negative effect on the ex-ante quality of the political class. The idea behind this claim is that competent and skilled individuals may find it less attractive to enter the political arena if the power, the flexibility and the discretion of a government are constrained by the

fiscal rules. In fact, fiscal rules, while they may be effective in decreasing the incentives to accumulate debt and run deficits, may reduce the flexibility enjoyed by a local government in setting its own fiscal policies. This negative effect on the selection of politicians may be even stronger if competent and skilled individuals enter the political arena with the goal of pursuing a political career (i.e. they are more career oriented compared to less competent individuals), as politicians constrained by fiscal rules may find it more difficult to reach this goal.

In this paper, I directly investigate whether the introduction of fiscal rules in Italian municipalities has negatively affected the level of human capital of the political class. The main measure of politicians' competence used in this paper is their level of education, which is an indicator of the ex-ante quality of the political class that has been widely used in the literature on the selection of politicians (e.g., Gagliarducci and Nannicini, 2013; Galasso and Nannicini, 2011). In particular, competence is measured by both average years of education and the proportion of politicians with a college degree. I provide evidence on other individual characteristics of the politicians, such as gender, age, employment status and political experience.

The empirical analysis uses data on Italian municipalities from 1993 to 2012. Italian municipalities are an interesting framework for the empirical question investigated in this paper. In fact, as described in Section 2, in 1999 the Italian government introduced fiscal rules, with the goal of limiting 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. This was done to avoid imposing additional constraints on municipalities disadvantaged by economies of scale. This relaxation remained in place until 2013, when the cutoff was moved 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 threshold. However, as described by Gagliarducci and Nannicini (2013) and Grembi et al. (2016), at the same cut-off 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 represents a counfounding policy, as Gagliarducci and Nannicini (2013), using data on Italian municipalities between 1993 and

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2001, have already shown that the wage increase at 5000 affects the 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.

The main results of this paper show that fiscal rules have a negative effect on the level of education of politicians. In fact, following the 2001 removal of fiscal rules for municipalities below the 5000 threshold, the level of education of politicians increased more in the municipalities just below the threshold, compared to those just above. In particular, the main specification used indicates that, following the 2001 removal of fiscal rules, the percentage of all municipal politicians with a college degree increased by approximately 12 % in municipalities just below the threshold, compared to those just above. This implies a relative rise in the average years of education equal to 0.64 years (i.e. approximately 7.68 months of education). At the same time, the same main specification shows that, following the 2001 relaxation of fiscal rules, the percentage of mayors with a college degree increased by around 27.2 % in the municipalities just below the threshold, compared to those affected by fiscal rules. This implies a relative increase in the average years of education of mayors of about 1.5 years.

It is important to highlight two important features of these main results: 1) in the graphical analysis, I show that the rise in the level of education of politicians in municipalities just below the 5000 threshold is consistent with a general increasing trend in the level of education in both the Italian population and the entire sample of all municipal politicians. Thus, the presence of fiscal rules offset this increasing trend in education in towns just above 5000 inhabitants, while those just below were free to grow [1]; 2) while in the years before 2001, given the higher wage paid above 5000 inhabitants to both the mayors and the municipal ministers (see Gagliarducci and Nannicini, 2013), municipalities just above the threshold were selecting

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[1]The fact that, as shown in Section 5.2, the level of education of politicians was increasing in the entire sample of all Italian municipalities may indicate that the same thing was happening in the bigger municipalities excluded from the analysis of this paper (i.e. those far away from the 5000 threshold). In fact, this was the case, even though these municipalities were affected by fiscal rules as well. This can be explained by the fact that bigger municipalities, compared to those considered in this paper, may offer politicians bigger opportunities in terms of visibility and career perspectives. In fact, the spirit of the *Diff-in-Disc* analysis used in this paper is to compare municipalities just below the 5000 threshold with those just above, which represent a much better and more similar comparison group.

more educated politicians, this difference disappeared after the 2001 removal of fiscal rules for municipalities below the 5000 threshold. This suggests that the imposition of fiscal rules, which reduced the power and the discretion of municipal governments, apparently cancelled the positive effect of the wage increase on the level of education of politicians.

Thus, the empirical evidence described by the main results of this paper can be seen as an indication that, while paying politicians high wages may be a good idea, as more skilled individuals are attracted by high remunerations, competent persons may decide to enter politics for many different reasons: the empirical results of this paper suggest that reducing the power and discretion of a government through the imposition of fiscal rules may have a negative effect on the selection of skilled individuals.

The results of the main specification survive a series of robustness checks: first of all, I show that the results in terms of political selection are not driven by the imbalance in the level of deficit around the 5000 threshold before and after 2001, due to the fact that municipalities just below the 5000 threshold, if compared to those just above, started to run higher deficits after the 2001 relaxation (see Grembi et al., 2016). To the contrary, I show that the main results are driven by municipalities characterized by a low level of deficit, if not by a surplus. This is consistent with the idea that competent individuals want to enter politics if they are given enough power and discretion, conditions that probably are not guaranteed by those municipalities not constrained by fiscal rules, but characterized by high deficits.

Secondly, through a falsification test implemented using pre-2001 data, I show that municipalities just below and just above the 5000 threshold did not react differently to the introduction of fiscal rules in 1999. This indicates that high-wage and low-wage municipalities did not react differently to the introduction of fiscal rules, excluding a potential interaction between the two policies that may have affected the selection of politicians. This falsification test also provide evidence that the two groups of municipalities around the 5000 threshold were on parallel trends before the 2001 relaxation. Then, I show that other potential outcomes and municipal characteristics are balanced around the 5000 threshold before and after 2001. Finally, I exclude the possibility of manipulative sorting of population figures around the 5000 threshold before and after 2001.

This paper is connected to two strands of literature. The first is the literature on the selection of politicians described above. As already noted, this literature has produced both

theoretical insights (Besley and Coate, 1997; Osborne and Slivinski, 1996; Caselli and Morelli, 2004) and empirical results (for a survey see Braendle, 2016) about how different types of institutions can affect the ex-ante quality of the political class. The second is the literature about the effectiveness of fiscal rules. Most of the empirical evidence that comes from this literature has been produced through cross-country comparisons (Alesina et al., 1996; Hallerberg and Von Hagen, 1999; Debrun et al., 2008) or using data on U.S. States (Poterba, 1994; 1996). As previously stated, two recent papers have produced significant progresses in the study of fiscal rules using Italian data: 1) Grembi et al. (2016), who, using data on Italian municipalities, have shown that fiscal rules can be effective in reducing the deficit run by local governments; 2) Coviello et al. (2016), who study the impact of fiscal rules on public infrastructure expenditures and the size of firms. As already said, I am not aware of any study on the effect of fiscal rules on the selection of politicians.

The paper proceeds as follows. Section 2 describes the Italian institutional framework. Section 3 describes the data used in the paper. Section 4 lays out the empirical strategy used in the paper. Section 5 discusses the empirical results and the validity tests. Section 6 concludes.

2 Institutional Setting

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 are made up of discretionary transfers from higher levels of government [2]. 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.

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[2]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 et al., 2015).

Since 1993 (see Law 81 in 1993) mayors of Italian municipalities are directly elected by the voters. In municipalities below 15,000 inhabitants they 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.

The main focus of this paper is on the effect of fiscal rules on the selection of 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) [3].

The DSP is intended to reduce the incentives of local governments to accumulate debt and run deficits. Table 1 describes the temporal evolution over time of the target and the limits imposed on the target for the years 1999 to 2010. As we can see, the target has not been constant over time, though, for most the years, the main target has been the balancing of local governments' budgets. 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 with respect to a specific reference year, while in other years municipal governments were asked to cut the target by a specific amount. Besides that, in some years (e.g. 2007) the limits imposed on the target have been differentiated depending on the past fiscal performance of a municipality (i.e. one limit applied to virtuous municipalities, while another was applied to undisciplined towns).

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

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[3]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.

scale. This decision by the central government remained valid until 2013, when the threshold was reduced from 5000 to 1000.

In this paper, I study the effect of fiscal rules on the selection of politicians, exploiting the 2001 removal of fiscal rules for municipalities below the 5000 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 15000 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). 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.

Finally, as mentioned in Section 1, the claim of this paper is that the imposition of fiscal rules on local governments makes entering in the political arena less attractive for skilled and competent individuals. This is because skilled individuals may find a job whose power and flexibility are constrained by fiscal rules less attractive. This may be even more true if skilled individuals enter politics with the goal of pursuing a political career (i.e. they are more career oriented), as politicians constrained by fiscal rules may find it more difficult to reach this goal. From this point of view, Italian municipalities offer an interesting framework for studying how the imposition of fiscal rules affects the characteristics of the individuals who enter politics. This is because Grembi et al. (2016), using yearly data on Italian municipalities and the same reform exploited in this paper, have shown that fiscal rules have been effective in constraining the fiscal behaviour of the municipal governments. For this reason, I have decided to use this institutional setting to study whether fiscal rules affect the selection of politicians.

3   Data

This dataset contains information about all politicians of Italian municipalities with a population between 3000 and 7000 inhabitants elected between 1993 and 2012. It includes

observable characteristics of politicians such as gender, age, education level, professional background and past political experience. This information comes from the Italian Ministry of Domestic Affairs.

Information about the municipalities comes from the Italian Statistical Office (Istat), and it includes the following municipal charcateristics: 1) geographical information as longitude, latitude, altitude and area; 2) the level of education of the municipal population (e.g. percentage of the population with a college degree); 3) socio-economic indicators such as income per capita; 4) other characteristics of the municipal population such as population density, the percentage of foreign individuals and the percentage of population in different age ranges.

Finally, data on the budget outcomes for the years 2000 to 2012 comes from the Italian Ministry of Domestic Affairs.

4   Empirical Strategy

This paper investigates the effect of fiscal rules on the selection of politicians. In particular, the goal is to study how the imposition of fiscal rules, which constrain the power and the discretion of local governments, affects the types of people that decide to enter politics. The ideal framework to pursue this goal would be represented by an experiment through which fiscal rules are randomly assigned to different districts. However, running this kind of experiment would be unfeasible for financial and institutional reasons.

A close approximation to this experiment exploits an institutional framework that establishes population thresholds through which the assignment of fiscal rules changes. In particular, the presence of a certain population threshold, such that fiscal rules apply for local governments above the threshold but not for those below, enables a Regression Discontinuity Design (RDD) which compares local districts just above the threshold with those just below. Under this design, in the absence of sorting and if other variables and treatments do not change sharply at the specific threshold, the assignment of fiscal rules can be considered *as good as randomly assigned*.

In this paper I study the effect of fiscal rules on the selection of politicians using data from Italian municipalities. As described in Section 2, in 1999 the Italian government introduced fiscal rules aimed at reducing incentives to accumulate debt and run deficits. These rules ini-

tially applied to all Italian municipalities. In 2001, the rules were removed for municipalities with less than 5000 inhabitants, and this difference across the 5000 threshold remained valid until 2013.

This institutional setup, in the absence of other policies changing across the 5000 threshold, would be appropriate for an RDD approach applied to the electoral terms between 2001 and 2012. However, as described in section 2, fiscal rules are not the only policy that changes at the 5000 threshold. At the same threshold there is a rise in the wage of the mayor and executive officers, which dates to the 1960s.

This wage increase is a counfounding policy which would invalidate the RDD approach, as it would be not possible to disentangle the effect of fiscal rules from that of the wage increase. In fact, 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 into politics. For these reasons 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 context of the Italian municipalities, the idea is to combine the change generated by the 2001 reform with the just below/just above 5000 threshold variation. 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. Hence, in this framework, the *Diff-in-Disc* approach represents the closest approximation to an experiment through which the assignment of fiscal rules can be considered *as good as randomly assigned.*

In particular, following Grembi et al. (2016), I estimate the following empirical model:

$$Y_{it} = \rho_0 + \rho_1 R_{it} + B_i(\beta_0 + \beta_1 R_{it}) + F_t[\pi_0 + \pi_1 R_{it} + B_i(\phi_0 + \phi_1 R_{it})] + \eta_{it} \qquad (1)$$

where $R_{it} = P_{it} - P_{5000}$ is the normalized population which measures the distance of munic-ipality i from the 5000 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 B_i is 1 if municipality i is below the 5000 threshold, while F_t is a temporal dummy variable which is equal to 1 starting from the first election a municipality votes after 2001 [4]. The temporal dummy variable F_t has been built in this way because the selection of (new) politicians can happen only during electoral years, as it is quite rare that new politicians are selected during the electoral mandate (i.e. far away from elections). The treatment variable is the interaction term between B_i and F_t. Thus, the coefficient of interest is ϕ_0, which represents the *Diff-in-Disc* estimator and it captures the effect of the removal of fiscal rules on the selection of politicians in municipalities below 5000. The dependent variable Y_{it} measures different characteristics of politicians, including education, age, gender, professional background and past political experience.

Following the recent developments of Gelman and Imbens (2014), the coefficient of interest ϕ_0 is estimated by local linear regression (LLR). This means that equation 1 is estimated 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 Calonico, Cattaneo, and Titiunik (2014a, 2014b). As an alternative to the CCT optimal bandwidth, I also estimate the model using the smaller bandwidth $h \in [-250, +250]$.

Finally, this identification strategy requires three main assumptions: 1) there must not be manipulative sorting of the running variable R_{it} around the 5000 threshold before and after 2001, such that municipalities must not be able to self-select themselves and decide on which side of the cut-off to stay. This is tested below with a density test (McCrary, 2008) of the population around the 5000 threshold, using both the 1991 and 2001 population censuses. Besides that, following Grembi et al. (2016), I also run the same continuity test on the difference in the densities of the 2001 and 1991 census populations; 2) other potential outcomes and municipal characteristics must be balanced around the 5000 threshold before and after 2001. This is tested below by running model 1 using municipal characteristics as dependent variables; 3) municipalities just below and just above the 5000 threshold must be

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[4]For a municipality that voted in 1995, 1999, 2004 and 2009 during the years of interest, F_t is equal to 0 for the electoral terms 1995 and 1999 and equal to 1 for the electoral years 2004 and 2009.

on parallel trends in the periods before the removal of the fiscal rules in 2001. In particular, as indicated by Grembi et al. (2016), there must be no interaction between fiscal rules and the confounding policy, which is the differential wage paid across the 5000 threshold. This assumption is required in order to demonstrate that high-wage and low-wage municipalities did not react differently to the introduction of fiscal rules. This is tested below with a falsification test using the introduction of fiscal rules in 1999 and running the *Diff-in-Disc* model using pre-2001 data. If this last assumption was valid, this falsification test should deliver a zero effect.

5   Results

5.1   Sample, descriptive statistics and balance tests

In Italy there are 8,047 municipalities, of which 70.5% have less than 5000 inhabitants. This study uses data on politicians in municipalities with a population between 3000 and 7000 inhabitants elected in the years from 1993 to 2012. The reasons for chosing this sample are: 1) as described in section 2 and Table 2, different legislative population thresholds apply to Italian municipalities. This paper focuses on the 5000 threshold, at which both the wage paid to the mayor and the application of fiscal rules change. At the 3000 threshold there is another change to the wage paid of the mayor, so I have excluded municipalities below this cut-off. Hence, for reasons of symmetry and in order to work with groups of municipalities that share similar characteristics, I have kept all municipalities that, during the years of interest, have a population between 3000 and 7000 inhabitants; 2) in 2013 the Italian government decided to apply the fiscal rules also to municipalities between 1000 and 5000 inhabitants. For this reason I exclude the electoral terms after 2012; 3) 1993 represents a crucial year for the Italian political system. Following a huge corruption scandal called *Mani Pulite* (*Clean Hands*, substantial reforms were made. Among the main changes are an electoral law at the municipal level and the introduction of an important property tax, managed by the mayors (for details see Bordignon, Gamalerio and Turati, 2015). For these reasons I exclude years before 1993. Finally, I retain in the sample all municipalities for which I observe values of the dependent variables both before and after the removal of fiscal rules in 2001.

This leaves me with a sample of 5,927 electoral terms. Among these electoral terms, 1484

terms can be found within the window (-500,+500) inhabitants around the 5000 threshold (793 below and 691 above), 907 (475 below and 432 above) within the range (-300,+300) and 273 (135 below and 138 above) within the range (-100,+100). Table 1.1 reports the summary statistics of these 5,927 electoral terms, distinguishing between municipalities below and municipalities above the 5000 threshold. The first panel of Table 1.1 reports the summary statistics relative to the dependent variables studied in this paper, i.e. the individual characteristics of municipal politicians. In the second panel of Table 1.1 it is possible to find different characteristics of the municipalities used in the empirical analysis, while the third panel reports the level of education of the municipal population.

As reported in section 4, one of the main assumptions required for the *Diff-in-Disc* estimator to work in the context studied 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 1 using municipal characteristics as dependent variables.

The results of this test are reported in the Appendix Table A.2, which is divided into 3 different panels: 1) Panel A reports the balance tests on different measures capturing the level of education of the municipal population. As the main variables of interest of this paper measure the level of education of politicians, the tests in Panel A have been run to exclude the possibility that municipalities below and above the 5000 threshold have different levels of education in their population. As we can see from Panel A this does not seem to be the case. 2) Panel B of Table A.2 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, except the variable *past deficit*. This variable represents the deficit per capita that a specific mayor inherits from her predecessor [5], and, as we can see, the removal of fiscal rules has a positive effect on it. This result is not surprising, given that Grembi et al. (2016), using yearly data on Italian municipalities and the same reform exploited in this paper, have already shown that fiscal rules have been effective in

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[5]i.e. this is the average level of deficit per capita at the moment in which new election are held, which is when new politicians and new mayors may be chosen. For example, for a municipality that voted in 1999 before the relaxation of fiscal rules and then in 2004 after the reform, *past deficit* in 2004 is measured as the average deficit over the years 1999-2003.

reducing the deficit per capita in Italian municipalities. The imbalance in the variable *past deficit* represents a threat to the identification strategy, because different levels of deficit starting from 2001 below and above the threshold may have a direct effect on the selection of politicians. Thus, *past deficit* represents a potential confounding factor of the effect of fiscal rules on the selection of politicians. As we will see in Subsection 5.4, in which I deal directly with this potential threat, this does not seem to be an issue for the identification strategy. 3) Panel C of Table A.2 describes the balance tests for geographical characteristics of the municipalities in the sample of interest. As we can see, all these variables are balanced around the 5000 threshold before and after 2001.

5.2 The effect of fiscal rules on the selection of politicians: graphical evidence

The main goal of this paper is to study how the imposition of fiscal rules aimed at reducing the accumulation of debt affects the characteristics of individuals who decide to enter in politics. In particular, the main focus is on the level of education of politicians [6] , which is an indicator that has been extensively used in the literature on political selection (Besley, 2005; Besley and Reynal-Querol, 2011; Brollo et al., 2013; Gagliarducci and Nannicini, 2013).

The first simple way to provide empirical evidence of the effect of fiscal rules on political selection is to look at the evolution of the level of education of politicians over time. This is presented in graphs in Figures 1 - 4.

Figure 1 shows the general trends in the level of education of the entire Italian population. In particular, it shows the evolution over time of the percentage of the entire adult Italian population with a college degree. As we can see, this percentage, while low relative to European standards [7], was increasing during the period 1993-2009. As we can observe in Figure 2, the same increasing trend can be found among the Italian politicians elected at municipal level. Figure 2 contains four graphs: 1) the two top graphs describe the evolution over time of the level of education of mayors elected between 1995 and 2012. During these years both the average years of education and the proportion of mayors with a college degree were increasing; 2) the two bottom graphs report the same behaviour for the average level of

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[6]In Subsection 5.5 I study the impact of fiscal rules also on other characteristics of politicians.

[7]Eurostat in 2015 reported that the percentage of individuals aged 30-34 years old with a college degree in Italy was 23.9 %, against a European average of 37.9 %.

education (as measured as average years of education and proportion of graduate politicians) of all Italian politicians elected at municipal level.

Two main features of Figure 2 are worth noticing: 1) the average level of education of municipal politicians in Italy seems to be higher than that of the entire Italian population. In fact, between 1993 and 2009, the percentage of the adult Italian population with a college degree increased from about 5 % to about 13 %. The same measure over the same period increased from about 40 % to almost 45 % for mayors, and from about 23 % to about 30 % for all municipal politicians. Hence, Italian politicians seem to have a higher level of education compared to the general population; 2) following the increasing trend over time of the level of education of politicians, it is noteworthy that the biggest jumps happened in electoral years during which most of the municipalities held municipal elections[8]. This is the case for the electoral years 2004 and 2009, during which more than half of Italian municipalities voted. This is not surprising, as the average level of education of politicians usually only changes when new politicians are elected.

The first graphical evidence of the effect of fiscal rules on the level of education of politicians is reported in Figure 3. This figure shows the evolution over time of the dependent variables for the sample of municipalities between 3000 and 7000 inhabitants, which is the sample used in the rest of the paper for the regression analysis. Besides that, in Figure 3, I am splitting the municipalities between those below 5000 inhabitants (the treatment group in the *Diff-in-Disc* analysis) and those above 5000 (the control group). The red vertical line represents the introduction of fiscal rules in 1999, which applied to all municipalities. The green vertical line represents the relaxation of fiscal rules in 2001 for municipalities below the 5000 threshold. As we can see from Figure 3, after the 2001 removal of fiscal rules the level of education of the two groups, which was different in the previous years, started to converge. In particular, in the period after 2001 the politicians' level of education increased more in the municipalities not affected by fiscal rules.

It is worth highlighting three important features of Figure 3: 1) in the years before the 2001 relaxation, the level of education of both mayors and the entire pool of elected politicians

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[8]As described by Repetto (2016), for historical reasons and because a municipal legislature can experience early interruptions, municipal elections in Italy are staggered. In particular, in Italy is more or less possible to recover 5 groups of municipalities that almost always vote at the same time (unless early interruptions happen). Among these groups, the biggest one, which is composed of more than half of all municipalities, is represented by those towns that in the past voted in the electoral years 1995, 1999, 2004, 2009 and 2014.

was much lower in municipalities below the 5000 threshold. This is consistent with the results of Gagliarducci and Nannicini (2013) who, using data on Italian municipalities between 1993 and 2001, have already shown how the wage increase at 5000 affected the selection of politicians, attracting more educated individuals into politics; 2) it is not possible to recover from Figure 3 a clear effect on the selection of politicians determined by the introduction of fiscal rules in 1999, which applied to all Italian municipalities [9]. In particular, the introduction of fiscal rules in 1999 did not seem to change the pattern determined in the previous years by the different wage paid across the 5000 threshold [10], as municipalities below 5000 continued to attract less competent individuals until 2001, which represents the real breaking point. This can be explained by the fact that the introduction of fiscal rules was decided only in December 1998 [11], just before the big municipal elections in June 1999 (during which more than half of the municipalities voted): this represents too short a period of time for fiscal rules to affect candidatures, which were probably already decided in December 1998; 3) while for the entire pool of politicians there is not a complete convergence in the level of education, we can observe one for mayors. In fact, in the top two graphs of Figure 3 both the average years of education and the proportion of graduate mayors of municipalities below 5000 reached the level of those above after 2001. In particular, while in municipalities below 5000 the level of education of politicians after 2001 continued to follow the same increasing trend observed for the entire sample of Italian municipalities, in towns above 5000 both the average years of education and the proportion of graduate mayors remained more or less at the same level [12]. This seems to indicate that the imposition of fiscal rules, which reduced the power and

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[9]There is an apparent decline in the level of education of mayors around 1999 for municipalities below the 5000 threshold. As we will see both in Figure 4 and in the regression analysis, this does not seem to be driven by municipalities close the 5000 thresholds, which are those driving the estimated results in the *Diff-in-Disc* analysis. In fact, in the regression analysis, using the *Diff-in-Disc* estimator, I show that municipalities just below and just above the threshold did not react differently to the introduction of fiscal rules in 1999.

[10]In fact, Gagliarducci and Nannicini (2013) in their analysis of the effect of wage on the selection of politicians include also the electoral years 1999-2001, during which the only difference between municipalities below and above the 5000 threshold was represented by the wage paid to the mayors and the executive officers.

[11]See Law 23 December 1998, no. 448, article 28.

[12]The fact that, as shown in Figure 2, the level of education of politicians was increasing in the entire sample of municipalities may indicate that the same thing was happening in the bigger municipalities excluded from the analysis of this paper (i.e. those above 7000 inhabitants). In fact, this was the case, even though these municipalities were affected by fiscal rules as well (results are available upon request). This can be explained by the fact that bigger municipalities, if compared to those used in this paper, may offer to politicians bigger opportunities in terms of visibility and career perspectives. In fact, the spirit of the *Diff-in-Disc* analysis

the discretion of mayors at the municipal level, apparently cancelled the positive effect of the wage increase on the level of education of politicians. This is an indication that, while paying politicians high wages may be a good idea as more skilled individuals are attracted by higher remuneration, competent persons may decide to enter in politics for many different reasons: Figure 3 offers some preliminary evidence that reducing the power and discretion of politicians may have a negative effect on the selection of skilled individuals.

The same intuitions from Figure 3 are reinforced in Figure 4, in which I report the evolution over time of the dependent variables for the sample of municipalities between 4,400 and 5,600 inhabitants. The range closely resembles the optimal bandwidth used in the *Diff-in-Disc* analysis below. As we can see, restricting the sample to treatment and control groups composed by more similar municipalities in terms of population size [13] further strengthens the results found in Figure 3. This is true for both the mayors and the entire pool of municipal politicians. In particular, we can see how for the mayors, while in municipalities below 5000 the level of education continued to follow the same increasing trend observed for the entire sample of municipalities, in towns above the 5000 threshold the level of education decreased after 2001. The big changes in 2004 occur because 2004 sees the biggest municipal election following the 2001 relaxation. This evidence seems to further indicate that reducing the power and the discretion of politicians through the imposition of fiscal rules may have a negative effect on the selection of skilled individuals. Finally, as already said for Figure 3, the introduction of fiscal rules in 1999 did not affect differentially the selection of politicians across the 5000 threshold, as municipalities below 5000 continued to attract less competent individuals until 2001, which represents the real breaking point.

5.3 The effect of fiscal rules on the selection of politicians: main results

In this subsection, I describe the results of the *Diff-in-Disc* analysis studying the effect of fiscal rules on the selection of politicians. As in the previous subsection, the main focus is on the level of education. The analysis uses two different samples: 1) the entire sample of

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used in this paper is to compare municipalities just below the 5000 threshold with those just above, which represent a much better and more similar comparison group.

[13]As previously described, all the municipal characteristics around the 5000 threshold are balanced. This indicates that municipalities with a similar population size share many other common characteristics.

municipalities between 3000 and 7000 inhabitants for the electoral terms from 1993 to 2012; 2) the sample of municipalities between 3000 and 7000 inhabitants for the electoral terms from 1999 to 2005.

The first sample is composed of all the municipalities between 3000 and 7000 inhabitants for which I observe values of the dependent variables both before and after the removal of fiscal rules in 2001. I use this sample throughout this paper.

The second sample is composed of two electoral years for each municipality: one before the relaxation and one after. This second sample has been chosen for the following reasons: 1) to implement an empirical analysis that excludes all the electoral years during which fiscal rules were not in place (i.e. before 1999). In this sample, for all municipalities I can observe at most one electoral year in the period before the reform (i.e. electoral years 1999-2000). Thus, for reasons of symmetry, I limit this sample to just one electoral year immediately after the relaxation of fiscal rules; 2) to run a series of heterogeneity mechanisms analysis and robustness checks which involve the role of the variable *past deficit*, as described in the Subsections 5.1 and 5.4 and 3) to implement a falsification test for the introduction of fiscal rules in 1999, in order to show that municipalities around the 5000 threshold did not react differently to the introduction of fiscal rules. As described in Subsections 5.6, this is done using two electoral years for each municipality: one electoral year before 1999 and one electoral year starting from 1999 (i.e. 1999 or 2000).

Tables 4 and 5 report the results of the empirical exercise developed using the entire sample of municipalities between 3000 and 7000 inhabitants for the electoral terms between 1993 and 2012. The dependent variables in these tables capture the level of education of mayors (Table 4) and of all municipal politicians (Table 5): in Panel A of Table 4 the dependent variable is a dummy variable equal to one for mayors with a college degree , while in Panel A of Table 5 it is equal to the proportion of politicians with a college degree; in Panel B of Table 4 the outcome is years of education of mayors, while in Panel B of Table 5 it is the average years of education of all politicians.

In these two tables I apply two different treatment variables: 1) (*Relaxation FR*) is a dummy variable equal to 1 for all the electoral terms starting from 2001, the year in which fiscal rules were removed for municipalities below the 5000 threshold. The interaction between (*Relaxation FR*) and the dummy variable (< 5000) for municipalities with less than 5000

inhabitants represents the variable of interest of my analysis, which is meant to capture the main effect of fiscal rules on the selection of politicians. This is reported in all columns of Tables 4 and 5; 2) ($Introduction\ FR$) is a dummy variable equal to one for the electoral years 1999-2000, during which fiscal rules were introduced and were applied to all municipalities. I interact ($Introduction\ FR$) with the dummy variable (< 5000) in order to study whether municipalities just below and just above the 5000 threshold reacted differently to the initial introduction of fiscal rules.

Besides that, introducing the interaction term ($Introduction\ FR$)*(< 5000) in the analysis makes it possible to change the baseline years (i.e. years before 2001, or years before the treatment is introduced) against which the effect of the main treatment ($Relaxation\ FR$)*(< 5000) must be interpreted: 1) in the specifications without ($Introduction\ FR$)*(< 5000), the baseline electoral years are composed by a mix of years during which fiscal rules did not apply (i.e. electoral years from 1993 to 1998) and years during which fiscal rules applied to all municipalities (i.e. years 1999-2000); 2) in the specifications with ($Introduction\ FR$)*(< 5000), the baseline years are all the years 1993-1998, during which fiscal rules were not in place. In practice, introducing the interaction term ($Introduction\ FR$)*(< 5000) makse it possible to remove the transitory periods 1999-2000, during which fiscal rules applied to all municipalities, from the interpretation of the main variable of interest ($Relaxation\ FR$)*(< 5000). This gives an estimated coefficient that describes how much the politicians' level of education changed in municipalities just below the 5000 threshold, compared to those just above, in the transition from a situation with no fiscal rules (years 1993-1998) to a world in which fiscal rules apply only above 5000 (years starting from 2001).

In columns (1)-(2) of Tables 4 and 5, I report the results obtained using the optimal range calculated following Calonico, Cattaneo, and Titiunik (2014a, 2014b). In columns (3)-(4), I report the results obtained using the smaller bandwidth $h \in [-250, +250]$. As we can see, both Tables 4 and 5 confirm the results of the graphical analysis described in Subsection 5.2: all the estimated coefficients confirm that, following the removal of fiscal rules below the 5000 threshold, the level of education of municipal politicians increased more in the municipalities just below the threshold, compared to those just above. In particular, the specification with the optimal bandwidth in column (1) of Table 4 indicates that, following the removal of fiscal rules, the percentage of mayors with a college degree increased by around 27.2 % in

the municipalities just below the threshold, compared to those affected by fiscal rules. This implies an increase in the average years of education of mayors of around one year and a half. The same specification in column (1) of Table 5 shows that the percentage of all municipal politicians with a college degree increased by approximately 12 %, with a rise in the average years of education equal to 0.64 years (i.e. approximately 7.68 months of education). As we can notice, the introduction of the interaction term $(Introduction\ FR)*(< 5000)$ leaves the estimated coefficients of interest almost unchanged. This is due to the fact that municipalities just below and just above the 5000 threshold did not react differently to the introduction of fiscal rules in 1999, given that all the coefficients of $(Introduction\ FR)*(< 5000)$ are not statistically different from zero. This indicates that, moving from a situation with no fiscal rules to one in which fiscal rules apply only above 5000, made municipalities just above the threshold less attractive for skilled people, compared to those just below the threshold. Finally, columns (3)-(4) of Tables 4 and 5 further reinforce the previous results, as the estimated coefficients obtained within the smaller bandwidth $h \in [-250, +250]$ are bigger, compared to those obtained with the optimal bandwidth [14].

The results of Tables 4 and 5 are confirmed by the graphical evidence described by Figure 5. In the two top graphs of Figure 5, we find the *Diff-in-Disc* estimates for the sample of mayors, while in the bottom graphs we find the *Diff-in-Disc* estimates for the entire pool of politicians. In particular, Figure 5 reports the scatters and second order polynomial fits for the difference in the values of the dependent variables between all the post-2001 electoral terms and all the pre-2001 electoral terms. As we can see, moving from the left (municipalities below 5000) to the right (municipalities above) of the 5000 threshold there is a clear discontinuity in the change in the politicians' level of education due to the fact that fiscal rules, starting from 2001, applied only above 5000.

Table 6 reports the results obtained estimating equation 1 using the reduced sample of electoral terms between 1999 and 2005. As noted above, this allows implementation of a clean empirical exercise in which, for the electoral years before 2001, fiscal rules applied to all municipalities, while after 2001 fiscal rules were removed for those below 5000. In this

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[14]This is a typical feature of Regression Discontinuity Design, which is characterized by a trade-off between bias and efficiency in the estimation of the coefficients. Restricting the bandwidth around the threshold decreases the bias in the estimated coefficients. This has an efficiency cost due to the reduction in the number of observations.

way, it is possible to interpret the coefficient of the main variable of interest (*Relaxation FR*)*(< 5000) as the change in the politicians' level of education in municipalities just below 5000, if compared to those just above, following the transition from a world in which fiscal rules apply to all municipalities (years 1999-2000) to a world in which fiscal rules are removed for those below the 5000 threshold. Panel A of Table 6 reports the results relative to the level of education of mayors, while Panel B makes reference to the level of education of all municipal politicians. The results obtained using the optimal bandwidth are reported in columns (1) and (3), while in columns (2) and (4) we can find the smaller bandwidth $h \in [-250, +250]$. As we can see, the results in Table 6 go in the same identical direction as those in Tables 4 and 5.

5.4 The role of past deficits

As reported in Subsection 5.1, in the main sample of interest all the municipal characteristics are balanced around the 5000 threshold before and after 2001, except the variable *past deficit* (see Panel B of Table A.2). This variable represents the deficit per capita that a specific mayor inherits from her predecessor [15], and, as we can see, the removal of fiscal rules has a positive effect on it. This is not a surprising result. In fact, Grembi et al. (2016), using yearly data on Italian municipalities and the same reform exploited in this paper, have already shown that fiscal rules have been effective in reducing the deficit per capita in Italian municipalities.

The imbalance in the variable *past deficit* represents a potential threat to the identification strategy used in this paper, because starting from 2001 different levels of deficit below and above the threshold may have a direct effect on the selection of politicians. Thus, *past deficit* represents a potential confounding factor of the effect of fiscal rules on political selection. The first goal of this section is to deal directly with this potential threat, trying to demonstrate that in reality the differential levels of deficit below and above the 5000 threshold after 2001 are not an issue. The second goal of this section is to develop a heterogenity mechanisms analysis, to determine which municipalities are driving the main results.

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[15] As already said in Subsection 5.1, this is the average level of deficit per capita at the moment in which new elections are held, which is when new politicians and new mayors may be selected. For example, for a municipality that voted in 1999 before the relaxation of fiscal rules and then in 2004 after the reform, *past deficit* in 2004 is measured as the average deficit over the years 1999-2003.

To develop the empirical exercises reported in this subsection, I imported information about the balance sheets of all Italian municipalities. In particular, as described in section 3, I collected data on the balance sheets of all Italian municipalities for the years from 2000 to 2012. Because I do not have data on the balance sheets of Italian municipalities for the years before 2000, I have limited the exercises in this subsection to just one electoral year before the removal of fiscal rules. For reasons of symmetry, I am also keeping just one electoral year after the relaxation of fiscal rules. Finally, in order to implement a clean empirical exericise in which all the municipalities are constrained by fiscal rules in the electoral years immediately before the 2001 relaxation, I have developed the analysis in this subsection using the sample of electoral terms from 1999 to 2005 (i.e. the one already used in Table 6) [16].

As already said, the first goal of this section is to show that the unbalance in the variable *past deficit* is not an issue for the empirical analysis developed in the paper. This is pursued in two ways: 1) first of all, I exploit one result of Grembi et al. (2016), who have shown that, among the mayors not constrained by fiscal rules, those who are term limited (i.e. second term mayor who cannot re-run for re-election) do not run higher deficits compared to mayors constrained by fiscal rules. Following this result, I implement an empirical exercise in which I keep only the municipalities that have a term-limited mayor in the electoral term immediately before the 2001 relaxation; 2) I directly control for the variable *past deficit* in the regression analysis, interacting it with all the *Diff-in-Disc* model. The results of the first exericse are reported in Table 7, while those of the second are shown in Table 8.

Starting with the first exercise, the idea is to exploit a result reported by Grembi et al. (2016), who have found that term limited mayors not constrained by fiscal rules do not generally run higher deficit compared to mayors constrained by fiscal rules. Thus, keeping only municipalities that have a term-limited mayor in the electoral term immediately before the 2001 relaxation, I should find that, at the time of the first election immediately after the 2001 removal of fiscal rules, municipalities just below and just above the 5000 threshold should not be characterized by different levels of *past deficit*. In fact, as described by the Appendix Table A.3, this does not seem to be the case. In practice, in Table A.3, I am repeating the balance tests described in Subsection 5.1 using only the sample of municipalities that have a

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[16]I get very similar results if I use the entire sample of electoral terms from 1993 to 2012 (i.e. the sample used in Tables 4 and 5).

term-limited mayor in the electoral term immediately before the 2001 relaxation. As we can see from the table in the Appendix, all the municipal characteristics are balanced around the 5000 threshold before and after 2001, including *past deficit*. This is consistent with the result reported by Grembi et al. (2016).

Thus, exploiting the fact that, in this subsample, municipalities around the 5000 threshold are not characterized by differential levels of *past deficit* after the removal of fiscal rules, I apply the *Diff-in-Disc* model to this subsample. The results of this exercise are reported in Table 7. As we can see, all the estimated coefficients go in the same direction and largely confirm the results already observed in Tables 4, 5 and 6. In particular, the results in Panel B of Table 7 confirm the corresponding results in Panel B of Table 6, both in terms of direction and magnitude [17]. The estimated coefficients in Panel A confirm the corresponding coefficients in Table 6 in terms of direction, while they are bigger in terms of magnitude. This is probably due to the fact that the municipalities used in this exercise, which have a term-limited mayor in the electoral term immediately before the 2001 relaxation, are those forced by the term limit rule to elect a new mayor in the first election immediately after the 2001 relaxation. Thus, these municipalities are characterized by a much higher turnover of mayors if compared to the entire sample of towns used in Subsection 5.3. In conclusion, the results of Table 7 seem to indicate that the differential levels of *past deficit* after the removal of fiscal rules are not driving the main results found in Subsection 5.3. Thus, the imbalance in the variable *past deficit* does not appear to undermine the empirical strategy used in this paper.

To further reinforce the robustness check described in Table 7, in Table 8 I report the results of the empirical exercise implemented interacting the *Diff-in-Disc* model with the variable *past deficit*. Notice that this variable, which is measured before the first election held immediately after the 2001 relaxation, can be considered as a pre-treatment covariate with respect to my main variable of interest (*Relaxation FR*)*(< 5000) [18]. For this reason,

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[17]The fact that the coefficient in Panel B, column (3) is not statistically significant seems to be for reasons of efficiency. In fact, in implementing this exercise I am left with a very small number of observations. It is reassuring that the magnitude of this coefficient is very similar to the magnitude of the corresponding coefficient in Panel B, column (3) of Table 6.

[18]For example, for a municipality that voted in 1999 before the relaxation of fiscal rules and then in 2004 after the reform, *past deficit* in 2004 is measured as the average deficit over the years 1999-2003. Unfortunately, given the temporal limitation in the balance sheets data at my disposal, in building *past deficit*, I had to use contemporaneous values for the electoral terms immediately before the 2001 removal of

past deficit should not represent a bad control, as in theory, being measured before the switch from zero to one for the main variable (*RelaxationFR*)*(< 5000), it cannot be considered a proper outcome for the main variable of interest (*Relaxation FR*)*(< 5000).

In Table 8, I report the coefficients of both (*Relaxation FR*)*(< 5000) and (*Relaxation FR*)*(< 5000) interacted with *past deficit*. Panel A reports the results relative to the level of education of mayors, while Panel B refers to the level of education of all municipal politicians. The results obtained using the optimal bandwidth are reported in columns (1) and (3), while in columns (2) and (4) we can find the smaller bandwidth $h \in [-250, +250]$. As we can see, all the estimated coefficients of the variable of interest (*Relaxation FR*)*(< 5000) are robust to the introduction of the interaction term between (*Relaxation FR*)*(< 5000) and *past deficit*. Thus, even controlling for the imbalance in *past deficit*, the results of the *Diff-in-Disc* model continue to indicate that the imposition of fiscal rules made towns just below the 5000 threshold more attractive for skilled people, compared to municipalities just above the threshold.

An interesting pattern emerges from Table 8: all the estimated coefficients of the interaction term between (*Relaxation FR*)*(< 5000) and *past deficit* are negative, and most of them are statistically different from zero. This brings us to the second goal of this subsection, which is try to implement a heterogeneity mechanisms analysis, to reveal which municipalities are driving the main results of the paper. This is done in both Table 8 and 9. These heterogeneity mechanism exercises refer to the subsample of mayors only. This is because mayors, who represent the main central figure in the municipal administration in Italy, are probably those who are more attracted by the flexibility and discretion allowed by the absence of fiscal rules. Thus, it is possible to think that, among the towns not constrained by fiscal rules, these flexibility and discretion may be reduced in municipalities already characterized by high levels of *past deficit*. This should primarily affect the selection of mayors, who probably benefit more from the absence of fiscal rules.

Starting from Table 8, the negative coefficients of the interaction term between (*Relaxation FR*)*(< 5000) and *past deficit* seem to indicate that the main results are driven by municipalities recording low deficits in the term immediately before the 2001 removal of fiscal rules. This is because every unit increase in *past deficit* reduces the magnitude of the estimated

fiscal rules (i.e. electoral terms 1999-2000).

coefficient of the variable of interest ($Relaxation\ FR$)*(< 5000). To reinforce this result, in Table 9 I implement two exercises: 1) I interact the *Diff-in-Disc* model with a dummy variable equal to one for municipalities with a value of *past deficit* above the median. The results are in Panel A, where I report the estimated coefficients of ($Relaxation\ FR$)*(< 5000) for the subsamples of municipalities with *past deficit* below the median and of towns with *past deficit* above the median. I also report the coefficient of the difference between the two subsamples; 2) in Panel B I repeat the same exercise using a dummy variable equal to one for municipalities that were running a deficit in the term immediately before the 2001 relaxation, to compare them to towns that were running a surplus.

The results in Table 9 go in the same direction as those reported in Table 8: the main results of the paper seem to be driven by municipalities with a low level of deficit (if not a surplus) in the term immediately before the first election after the removal of fiscal rules. In fact, the coefficients of ($Relaxation\ FR$)*(< 5000) reported in Table 9 are significant in magnitude and statistically different from zero only for municipalities with a low past deficit or towns with a past surplus. Besides that, the coefficients of the difference between the two subsamples are big in magnitude and almost always statistically different from zero in both Panel A and B.

Hence, the results of this heterogeneity analysis suggest that the imposition of fiscal rules above the 5000 threshold only made those towns just below 5000 with low levels of *past deficit* more attractive for skilled people. This is consistent with the idea that competent individuals want to enter politics if they are given enough power, discretion and flexibility. This is probably not the case for municipalities that are not constrained by fiscal rules, but do have high levels of *past deficit*. In fact, skilled individuals, who are probably only attracted to politics if they are free to manage budget outcomes, may not be interested in a mayoral position whose power and discretion are burdened by high deficits and accumulated debt. This is consistent with the idea that skilled individuals enter politics in the pursuit of a political career, which is more difficult if the role is constrained by fiscal rules or high levels of *past deficit*. Below I study how individuals characterized by different levels of skill and education (i.e. graduate mayors vs. non-graduate mayors) affect budget outcomes and pursue political careers in a different way.

5.5 The effect of fiscal rules on the selection of politicians: other characteristics

In this subsection, I briefly describe results from running the *Diff-in-Disc* model using other individual characteristics of the mayors as dependent variables. I report the estimated coefficients of the variable of interest (*Relaxation FR*)*(< 5000) in Table 10. I used the entire sample of electoral terms from 1993 to 2012. Panel A of Table 10 contains the estimated coefficients for the age and the gender of mayors. Panel B shows the estimated coefficients for a dummy variable equal to one for unemployed mayors and for the total years of past political experience of the mayors [19]. The results obtained using the optimal bandwidth are reported in columns (1) and (3), while in columns (2) and (4) we can find the smaller bandwidth $h \in [-250, +250]$.

As we can see from Table 10, other characteristics of the mayors are not affected by the imposition of fiscal rules in municipalities just above the 5000 threshold, compared to those just below. The only exception is represented by the age of mayors, which yields a negative and large coefficient which is statistically different from zero in the smaller range specification $h \in [-250, +250]$. This suggests that the more competent and skilled individuals who are attracted by the absence of fiscal rules in municipalities just below 5000, may be also relatively younger. This is consistent with the idea that skilled individuals are probably attracted by the discretion and power offered by the absence of fiscal rules because they want to pursue a political career. In fact, as shown by Alesina, Cassidy and Troiano (2016), young politicians are more likely to be elected at higher levels of government after their first experience as mayors. Alesina, Cassidy and Troiano (2016) also show that young politicians tend to manipulate budget outcomes in order to pursue their political career goals. Below I discuss how individuals characterized by different levels of skills and education (i.e. graduate mayors vs. non-graduate mayors) affect budget outcomes and pursue political career goals in a different way.

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[19]The past political experience of the mayors has been built looking at all past political positions occupied by the mayors at any level of politics. In Italy there are five levels of government: municipalities, provinces, regions, the national parliament and the European parliament.

5.6 Validity tests

As previously mentioned, to be valid the identification strategy requires three main assumptions: 1) there must not be manipulative sorting of the running variable R_{it} around the 5000 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; 2) other potential outcomes and municipal characteristics must be balanced around the 5000 threshold before and after 2001 and 3) municipalities just below and just above the 5000 threshold must be on parallel trends prior to the removal of the fiscal rules in 2001. In particular, as indicated by Grembi et al. (2016), there must be no interaction between fiscal rules and the confounding policy, which is the differential wage paid across the 5000 threshold. As I have already dealt with assumption 2 in Subsection 5.1, in this subsection I address assumptions 1 and 3, with the goal to show that they hold in the data used in this paper.

In Figure 7, I present scatters and 3rd-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 population used in the empirical analysis. In the top two graphs of Figure 7, 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 the 2001 one, in Figure 7 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).

Results of testing Assumption 3 are in the Appendix Table A.1, in which I apply the *Diff-in-Disc* model to pre-treatment data (i.e. pre-2001 data) that go from 1993 to 2000. This exercise uses two electoral terms for each municipality: one electoral term before 1999 and one electoral year starting from 1999 or 2000. The main variable of interest is the interaction term $(Introduction\ FR)^*(< 5,000)$, which is equal to one for municipalities below 5000 for the electoral terms starting from 1999. This exercise: 1) shows that municipalities just below and just above the 5000 threshold were on parallel trends in the periods before the removal of the fiscal rules in 2001; 2) demonstrates that municipalities just below and just above the 5000 threshold did not react differently to the introduction of fiscal rules in 1999. This last

assumption is required in order to show that over time there has not been any interaction between fiscal rules and the wage increase at the 5000 threshold (i.e. the two policies that change at the 5000 threshold).

As already discussed, if assumption 3 was valid, this falsification test should deliver a zero effect. In fact, as we can see from Table A.1, this is the case. The coefficients reported in Table A.1 are not statistically different from zero. These results provide evidence that municipalities just below and just above the 5000 threshold were on parallel trends in the periods before the removal of the fiscal rules in 2001 and that low-wage and high-wage towns did not react differently to the introduction of fiscal rules in 1999.

The results of Table A.1 are confirmed by the graphs Figure 6, in which I am reporting yearly Regression Discontinuity Design estimates of the effect of being below the 5000 threshold on the selection of politicians. The estimates reported are obtained using the bandwidth $h \in [-250, +250]$ for all the years of the sample. The red vertical line represents the introduction of fiscal rules in 1999, which applied to all municipalities. The green vertical line represents the relaxation of fiscal rules in 2001 for municipalities below the 5000 threshold. As in the previous subsection, the main focus is on the level of education of politicians.

As we can see from Figure 6, in the years before 2001, municipalities just below and just above the 5000 threshold showed parallel trends. In particular, for the period before the 2001 relaxation, it is not possible to observe in the data any significant change in the types of politicians selected by municipalities below 5000, compared to those above the threshold. Besides that, consistent with the results of Gagliarducci and Nannicini (2013), municipalities below 5000, in the year before 2001, were selecting less competent individuals. As explained by Gagliarducci and Nannicini (2013), this was due to the lower wage paid to the mayor and the executive officers. As described by Figure 6, this pattern in the selection of politicians changes starting from 2001, when fiscal rules were applied only to municipalities above the 5000 threshold. In fact, the evidence provided by the yearly RDD estimates seem to indicate that the imposition of fiscal rules, which reduced the power and the discretion of municipal governments, apparently cancelled the positive effect of the wage increase on the level of education of politicians. As mentioned previously, the big changes in 2004 can be explained by the fact that this year represents the first biggest municipal election after the 2001 relaxation, in which more than half of the municipalities voted. In conclusion, the

evidence provided by Figure 6 is an indication that, while paying politicians high wages may be a good idea, as more skilled individuals are attracted by high remuneration, competent persons may decide to enter politics for other reasons: Figure 6 suggests that reducing the power and the discretion of politicians may have a negative effect on the selection of skilled individuals.

6   Conclusion

This paper investigates the effect of fiscal rules on the selection of politicians. Using data on Italian municipalities, it shows: 1) the imposition of fiscal rules negatively affects the quality of the political class; 2) the effect is driven by municipalities with low levels of deficit; 3) fiscal rules offset the positive selection effect determined by the wage increase that operates at the 5000 threshold.

This paper uses a dataset that contains information on Italian municipalities for the period 1993-2012. Italian municipalities provide an interesting framework for the study of fiscal rules: in 1999 the Italian central government introduced fiscal rules for all Italian municipalities. The rules were then removed in 2001 for municipalities with less than 5000 inhabitants.

Exploiting this institutional setting and implementing a *Diff-in-Disc* model, I show that fiscal rules have a negative effect on the level of education of politicians. In particular, following the 2001 removal of fiscal rules, the percentage of graduate municipal politicians rose by around 12 % points in municipalities just below the threshold, compared to those still constrained by fiscal rules after 2001. At the same time, politicians' average years of education increased by 0.64 years (i.e. approximately 7.68 months). Besides that, following the 2001 reform, the percentage of graduate mayors rose by approximately 27.2 % points in municipalities exempt by fiscal rules. This implies an increase in mayors' average years of education of about 1.5 years.

Two important features of these results are: 1) the increase in politicians' education level in municipalities just below 5000 is consistent with a general rising trend in the level of education in both the Italian population and the entire sample of municipal politicians. Fiscal rules offset this increasing trend only in municipalities just above 5000 inhabitants,

while in those just below the level of education could continue to grow; 2) while before 2001 municipalities just above the threshold were selecting more educated politicians, this difference disappeared after the 2001 reform. This suggests that fiscal rules offset the positive effect of the wage increase on the level of education of politicians.

I also show that the results are robust to the following tests: first, I show that the results are not driven by the imbalance in the levels of deficit around the 5000 threshold before and after 2001. On the contrary, the main results are driven by municipalities with low levels of deficit. This is consistent with the idea that competent individuals enter politics if they are given sufficient discretion and power. This may not be the case in those municipalities not constrained by fiscal rules, but burdened by high deficits.

Second, a falsification test, which uses pre-2001 data, shows that municipalities just below and just above the threshold did not react differently to the introduction of fiscal rules. I then provide evidence that municipal observable characteristics are balanced around the 5000 cutoff before and after 2001. Finally, I show that there is no evidence of manipulative sorting of population numbers around the 5000 threshold before and after 2001.

In conclusion, the empirical evidence in this paper suggests that, while high wages for politicians may be a good idea as better remuneration attracts more educated persons, competent individuals enter politics for different reasons: the results in this paper indicates that fiscal rules, reducing the power and discretion of a government, may have a negative effect on the selection of politicians.

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

Year	Target	Limits on target	Reference Year	Covered municipalities
1999	Budget Balance	growth: 0 %	1997	All
2000	Budget Balance	growth: 0 %	1998	All
2001	Budget Balance	growth: max 3 %	1999	> 5000
2002	Budget Balance	growth: max 2.5 %	2000	> 5000
	Current Expenditures	growth: max 6 %	2000	
2003	Budget Balance	growth: 0 %	2001	> 5000
2004	Budget Balance	growth: max 1.7 %	2003	> 5000
2005	Total Expenditures	growth: 10 %/11.5 %	2002-2004	> 5000
2006	Current Expenditures	cut: -6.5 %/-8 %	2004	> 5000
	Capital Expenditures	growth: max 8.1 %	2004	
2007	Budget Balance	cut: 0 %/-8 %	2003-2005	> 5000
2008	Budget Balance	cut: 0 %/-8 %	2003-2005	> 5000
2009	Budget Balance	cut: 0 %/-70 %	2007	> 5000
2010	Budget Balance	cut: 0 %/-110 %	2007	> 5000

Notes. Domestic Stability Pact: fiscal rules decided by the Italian central government which apply year by year to the covered municipalities. Columns definition: Target = target decided by the central government for a specific year; Limits on target = these are the limits on the target that the municipal government must apply. *Growth* sets a cap for the increase of the target in a specific year with respect to the the reference year. *Cut* indicates that the municipal government must cut the target by that amount in that specific year with respect to the the reference year. When, in a specific year, there are two limits on target it means that these apply differentially depending on the past fiscal performance of a municipality (i.e. one limit applies to virtuous municipalities, while the other applies to undisciplined towns); Covered municipalities = this indicates the municipalities that must apply the fiscal rules. Legislative sources: annual national budget law (Legge Finanziaria) from 1999 to 2010. Other sources: Grembi et al. (2016); Chiades and Mengotto (2013); Revelli (2013).

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					
Graduate Mayor	0.479	3896	0.502	2031	0.096
Years education Mayor	14.998	3896	15.1118	2031	0.204
Proportion graduate all politicians	0.278	3896	0.326	2031	0.000
Average Years education all politicians	13.091	3896	13.544	2031	0.000
Age Mayor	47.974	3869	48.047	2019	0.777
Female Mayor	0.076	3896	0.098	2031	0.002
Unemployed Mayor	0.152	3880	0.136	2020	0.112
Political experience Mayor	6.511	3896	6.498	2031	0.929
Municipal characteristics					
longitude	11.974	3896	12.239	2031	0.000
latitude	43.507	3896	43.421	2031	0.176
altitude	289.990	3896	220.068	2031	0.000
area	35.533	3896	37.288	2031	0.082
South	0.293	3896	0.322	2031	0.024
Centre	0.158	3896	0.138	2031	0.041
North-West	0.351	3896	0.309	2031	0.001
North East	0.195	3896	0.229	2031	0.002
Past Deficit	20.311	3896	13.974	2031	0.000
Income per capita	13523	3896	13501	2031	0.778
% foreign	0.072	3896	0.076	2031	0.003
Population density	295.435	3896	459.197	2031	0.000
% 65	0.192	3896	0.1798	2031	0.000
% 15-64	0.665	3896	0.673	2031	0.000
% 0-18	0.184	3896	0.189	2031	0.000
Education municipal population					
% college	0.075	3896	0.078	2031	0.000
% high secondary	0.287	3896	0.290	2031	0.000
% low secondary	0.314	3896	0.314	2031	0.819
% primary	0.223	3896	0.217	2031	0.000
% illiterate	0.013	3896	0.012	2031	0.000

Notes. Municipalities between 3000 and 7000. Electoral terms between 1993 and 2012. *Below 5000* = 1 for municipalities between 3000 and 5000 inhabitants. *Above 5000* = 1 for municipalities between 5000 and 7000 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 Mayors:
Electoral years 1993-2012

	(1)	(2)	(3)	(4)
Panel A: Mayors with university degree				
Optimal bandwidth	CCT	CCT	No	No
$(Relaxation\ FR)*(< 5000)$	0.272**	0.247**	0.495***	0.452**
	(0.114)	(0.119)	(0.174)	(0.181)
$(Introduction\ FR)*(< 5000)$		-0.068		-0.130
		(0.113)		(0.160)
Bandwidth	609.3	609.3	250	250
Observations	1,758	1,758	747	747
Panel B: Years of education Mayors				
Optimal bandwidth	CCT	CCT	No	No
$(Relaxation\ FR)*(< 5000)$	1.485*	1.404*	2.957**	2.783**
	(0.765)	(0.791)	(1.181)	(1.209)
$(Introduction\ FR)*(< 5000)$		-0.190		-0.450
		(0.804)		(1.128)
Bandwidth	606.0	606.0	250	250
Observations	1,744	1,744	747	747

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Municipalities between 3000 and 7000. Electoral terms between 1993 and 2012. Treatment variables: $(Introduction\ FR)$ is a dummy variable =1 for the electoral years 1999-2000, during which fiscal rules applied to all municipalities. $(Relaxation\ FR)$ is a dummy variable =1 for all electoral years starting from 2001, after which fiscal rules were removed for municipalities <5000. (< 5000) is a dummy variable =1 for municipalities < 5000 inhabitants. The outcome variable in Panel A is a dummy variable =1 for mayors with a university degree. The outcome variable in Panel B is years of education of mayors. The bandwidth in columns (1)-(2) is calculated using the Calonico, Cattaneo and Titiunik (2014a, 2014b) optimal bandwidth h selector. The bandwidth in column (3)-(4) is $h = 250$. 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 all politicians: Electoral years 1993-2012

	(1)	(2)	(3)	(4)
Panel A: Proportion all politicians with a university degree				
Optimal bandwidth	CCT	CCT	No	No
$(Relaxation\ FR)*(< 5000)$	0.119***	0.117**	0.141***	0.123**
	(0.045)	(0.050)	(0.052)	(0.058)
$(Introduction\ FR)*(< 5000)$		-0.007		-0.061
		(0.049)		(0.054)
Bandwidth	326.8	326.8	250	250
Observations	1000	1000	747	747
Panel B: Average years of education all politicians				
Optimal bandwidth	CCT	CCT	No	No
$(Relaxation\ FR)*(< 5000)$	0.640*	0.648*	0.987**	0.908**
	(0.335)	(0.363)	(0.457)	(0.496)
$(Introduction\ FR)*(< 5000)$		0.040		-0.250
		(0.321)		(0.410)
Bandwidth	476.2	476.2	250	250
Observations	1,405	1,405	747	747

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Municipalities between 3000 and 7000. Electoral years between 1993 and 2012. Treatment variables: $(Introduction\ FR)$ is a dummy variable =1 for the electoral years 1999-2000, during which fiscal rules applied to all municipalities. $(Relaxation\ FR)$ is a dummy variable =1 for all electoral years starting from 2001, after which fiscal rules were removed for municipalities <5000. (< 5000) is a dummy variable =1 for municipalities < 5000 inhabitants. The outcome variable in Panel A is the proportion of all municipal politicians with a university degree. The outcome variable in Panel B is average years of education of all municipal politicians. The bandwidth in columns (1)-(2) is calculated using the Calonico, Cattaneo and Titiunik (2014a, 2014b) optimal bandwidth h selector. The bandwidth in column (3)-(4) is $h = 250$. 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: Effect of fiscal rules on the education of politicians:
Electoral years starting from 1999

	(1)	(2)	(3)	(4)
Panel A: Level of Education of mayors				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Mayor with university degree*		*Years of education*	
(*Relaxation FR*)*(< 5000)	0.434**	0.648**	1.918*	3.529**
	(0.174)	(0.257)	(1.110)	(1.741)
Bandwidth	592.1	250	629.1	250
Observations	540	235	578	235
Panel B: Average level of education of all politicians				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Proportion university degree*		*Average years of education*	
(*Relaxation FR*)*(< 5000)	0.081*	0.189***	0.751**	1.342**
	(0.046)	(0.066)	(0.381)	(0.593)
Bandwidth	583.2	250	632	250
Observations	531	235	694.7	235

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Municipalities between 3000 and 7000. Electoral years between 1999 and 2005. Estimates obtained working with 2 electoral years for each municipality: 1 electoral year before 2001 and 1 electoral year starting from 2001. Treatment variables: (*Relaxation FR*) is a dummy variable =1 for all electoral years starting from 2001, after which fiscal rules were removed for municipalities <5000. (< 5000) is a dummy variable =1 for municipalities < 5000 inhabitants. The outcome variables in Panel A measure the level of education of mayors. The outcome variables in Panel B measure the level of education of all municipal politicians. The bandwidth in columns (1) and (3) is calculated using the Calonico, Cattaneo and Titiunik (2014a, 2014b) optimal bandwidth h selector. The bandwidth in column (2) and (4) is $h = 250$. 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: Effect of fiscal rules on the education of politicians:
Electoral years starting from 1999;
Term limited mayors before the reform

	(1)	(2)	(3)	(4)
Panel A: Level of Education of mayors				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Mayor with university degree*		*Years of education*	
(*Relaxation FR*)*(< 5000)	0.749***	0.753**	4.689***	4.844**
	(0.250)	(0.352)	(1.545)	(2.435)
Bandwidth	549.6	250	632.4	250
Observations	285	138	325	138
Panel B: Average level of education of all politicians				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Proportion university degree*		*Average years of education*	
(*Relaxation FR*)*(< 5000)	0.125*	0.145*	0.687	1.711**
	(0.071)	(0.084)	(0.589)	(0.802)
Bandwidth	339.3	250	490.4	250
Observations	190	138	260	138

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Municipalities between 3000 and 7000. Electoral years between 1999 and 2005. Estimates obtained working with 2 electoral years for each municipality: 1 electoral year before 2001 and 1 electoral year starting from 2001. Regressions run using the sub-sample in which all the mayors cannot be re-elected after the electoral mandate just before the 2001 relaxation of fiscal rules (i.e. all mayors before the reform are term limited). Treatment variables: (*Relaxation FR*) is a dummy variable =1 for all electoral years starting from 2001, after which fiscal rules were removed for municipalities <5000. (< 5000) is a dummy variable =1 for municipalities < 5000 inhabitants. The outcome variables in Panel A measure the level of education of mayors. The outcome variables in Panel B measure the level of education of all municipal politicians. The bandwidth in columns (1) and (3) is calculated using the Calonico, Cattaneo and Titiunik (2014a, 2014b) optimal bandwidth h selector. The bandwidth in column (2) and (4) is $h = 250$. 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: Effect of fiscal rules on the education of politicians: Electoral years starting from 1999; Interaction with Past Deficit

	(1)	(2)	(3)	(4)
Panel A: Level of Education of mayors				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Mayor with university degree*		*Years of education*	
(*Relaxation FR*)*(< 5000)	0.628***	1.155***	3.326***	6.708***
	(0.193)	(0.262)	(1.190)	(1.790)
(*Relaxation FR*)*(< 5000)*(*Past Deficit*)	-0.009*	-0.023***	-0.067**	-0.141***
	(0.005)	(0.006)	(0.028)	(0.038)
Bandwidth	592.1	250	629.1	250
Observations	540	235	578	235
Panel B: Average level of education of all politicians				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Proportion university degree*		*Average years of education*	
(*Relaxation FR*)*(< 5000)	0.101*	0.311***	0.818*	2.382***
	(0.053)	(0.075)	(0.416)	(0.652)
(*Relaxation FR*)*(< 5000)*(*Past Deficit*)	-0.001	-0.006***	-0.004	-0.044***
	(0.002)	(0.002)	(0.010)	(0.015)
Bandwidth	583.2	250	694.7	250
Observations	531	235	632	235

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Municipalities between 3000 and 7000. Electoral years between 1999 and 2005. Estimates obtained working with 2 electoral years for each municipality: 1 electoral year before 2001 and 1 electoral year starting from 2001. Treatment variables: (*Past Deficit*) is the municipal average deficit measured in the electoral mandate before the removal of fiscal rules in 2001 for municipalities<5000. (*Relaxation FR*) is a dummy variable =1 for all electoral years starting from 2001, after which fiscal rules were removed for municipalities <5000. (< 5000) is a dummy variable =1 for municipalities < 5000 inhabitants. The outcome variables in Panel A measure the level of education of mayors. The outcome variables in Panel B measure the level of education of all municipal politicians. The bandwidth in columns (1) and (3) is calculated using the Calonico, Cattaneo and Titiunik (2014a, 2014b) optimal bandwidth h selector. The bandwidth in column (2) and (4) is $h = 250$. 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: Effect of fiscal rules on the education of politicians:
Electoral years starting from 1999;
Low vs high past deficit municipalities

|	(1)	(2)	(3)	(4)
Panel A: Low vs. High past deficit				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Mayor with university degree*		*Years of education mayor*	
$(Relaxation\ FR)$*(< 5000)	0.787***	1.325***	4.172***	8.119***
$(Past\ Deficit$ <median)	(0.234)	(0.334)	(1.410)	(2.092)
$(Relaxation\ FR)$*(< 5000)	0.214	0.242	0.287	0.549
$(Past\ Deficit$ >=median)	(0.256)	(0.359)	(1.677)	(2.473)
Difference	-0.573*	-1.082**	-3.884*	-7.570**
	(0.346)	(0.490)	(2.191)	(3.239)
Bandwidth	592.1	250	629.1	250
Observations	540	235	578	235
Panel B: Past surplus vs. Past deficit				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Mayor with university degree*		*Years of education mayor*	
$(Relaxation\ FR)$*(< 5000)	0.943***	2.009***	5.021***	10.915***
(Municipalities with past surplus)	(0.343)	(0.360)	(1.770)	(2.106)
$(Relaxation\ FR)$*(< 5000)	0.334*	0.420	1.433	2.252
(Municipalities with past deficit)	(0.198)	(0.296)	(1.305)	(2.059)
Difference	-0.609	-1.589***	-3.587	-8.663***
	(0.397)	(0.466)	(2.199)	(2.946)
Bandwidth	540	250	629.1	250
Observations	592.1	235	578	235

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Municipalities between 3000 and 7000. Electoral years between 1999 and 2005. Estimates obtained working with 2 electoral years for each municipality: 1 electoral year before 2001 and 1 electoral year starting from 2001. Treatment variables: $(Past\ Deficit)$ is the municipal average deficit measured in the electoral mandate before the removal of fiscal rules in 2001 for municipalities< 5000. $(Relaxation\ FR)$ is a dummy variable =1 for all electoral years starting from 2001, after which fiscal rules were removed for municipalities <5000. (< 5000) is a dummy variable =1 for municipalities < 5000 inhabitants. Panel A compares municipalities with a value of $(Past\ Deficit)$<median with those with a value of $(Past\ Deficit)$>=median. Panel B compares municipalities with a value of $(Past\ Deficit)$<=0 with those with a value of $(Past\ Deficit)$>0. The outcome variables in both Panel A and B are: (a) a dummy variable =1 for mayors with a university degree in columns (1)-(2); (b) years of education of mayors in columns(3)-(4). The bandwidth in columns (1) and (3) is calculated using the Calonico, Cattaneo and Titiunik (2014a, 2014b) optimal bandwidth h selector. The bandwidth in column (2) and (4) is $h = 250$. 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 10: Effect of fiscal rules on other characteristics of mayors: Electoral years 1993-2012

|	(1)	(2)	(3)	(4)
Panel A: Age and gender of mayor				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Age of mayor*		*Female mayor*	
$(Relaxation\ FR)*(< 5000)$	-1.597	-5.764*	0.047	0.067
	(2.302)	(3.435)	(0.075)	(0.087)
Bandwidth	520.7	250	395.9	250
Observations	1,532	743	1,178	747
Panel B: Employment status and past political experience				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Unemployed mayor*		*Political experience mayor*	
$(Relaxation\ FR)*(< 5000)$	-0.015	-0.148	1.674	1.667
	(0.093)	(0.121)	(1.238)	(1.753)
Bandwidth	408.6	250	492.3	250
Observations	1,213	741	1,466	747

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Municipalities between 3000 and 7000. Electoral years between 1993 and 2012. Treatment variables: $(Relaxation\ FR)$ is a dummy variable =1 for all electoral years starting from 2001, after which fiscal rules were removed for municipalities <5000. (< 5000) is a dummy variable =1 for municipalities < 5000 inhabitants. Outcome variables in Panel A: (a) age of the mayor in columns (1)-(2); (b) dummy variable =1 for female mayor in columns (3)-(4). Outcome variables in Panel B: (a) dummy variable =1 for unemployed mayor in columns (1)-(2); (b) years of past political experience of the mayor at all levels of politics in columns (3)-(4). The bandwidth in columns (1) and (3) is calculated using the Calonico, Cattaneo and Titiunik (2014a, 2014b) optimal bandwidth h selector. The bandwidth in column (2) and (4) is $h = 250$. 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: Percentage Italian population with a college degree
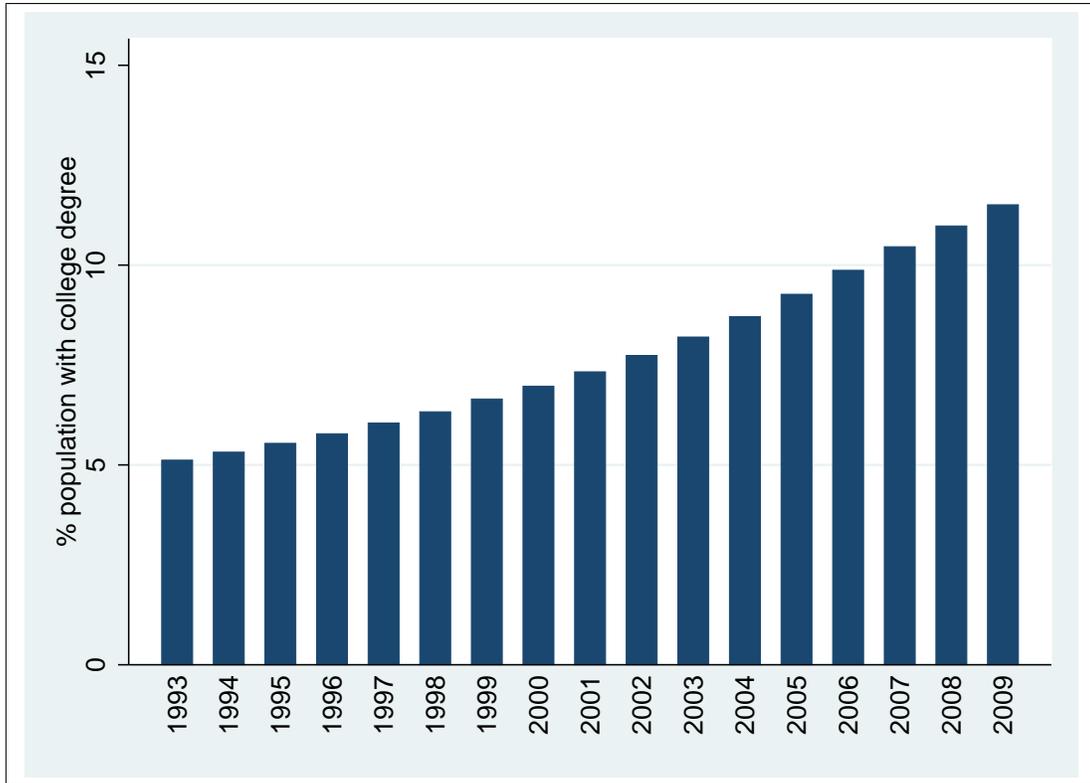
Notes. Percentage of adult Italian population aged >=18 years old with a college degree. Years from 1993 to 2009. Source: Italian Statistical Office (Istat).

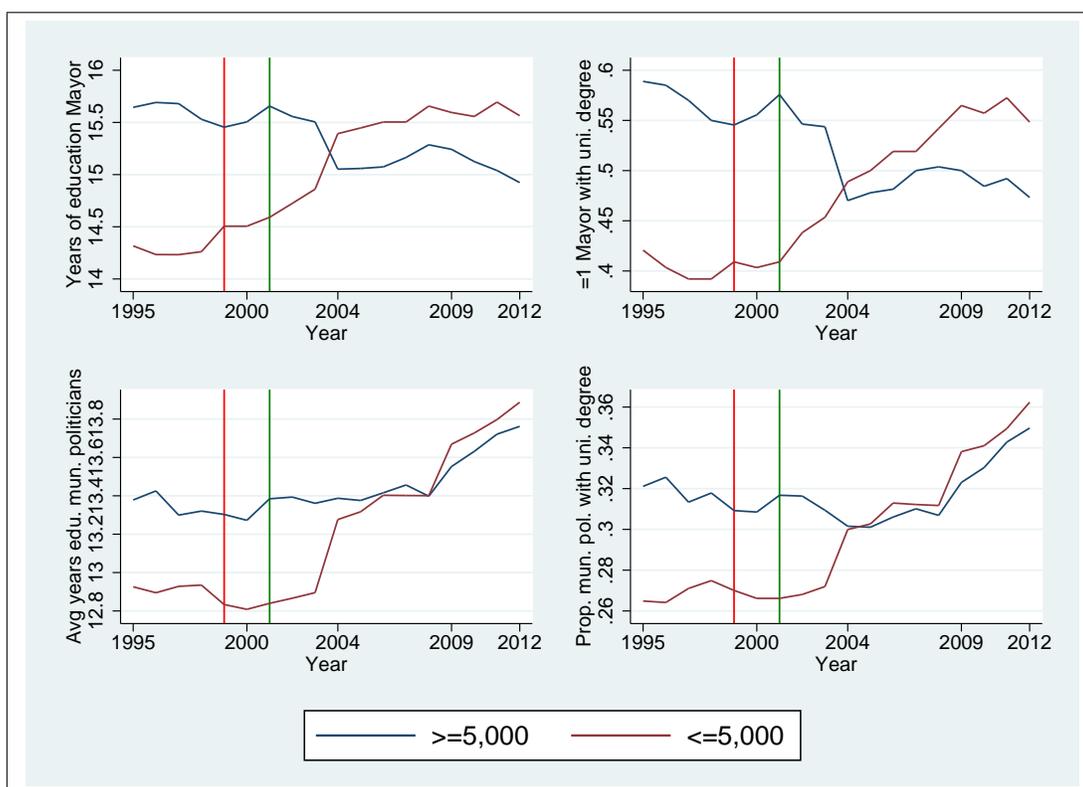Figure 2: Level of education of municipal politicians, all municipalities
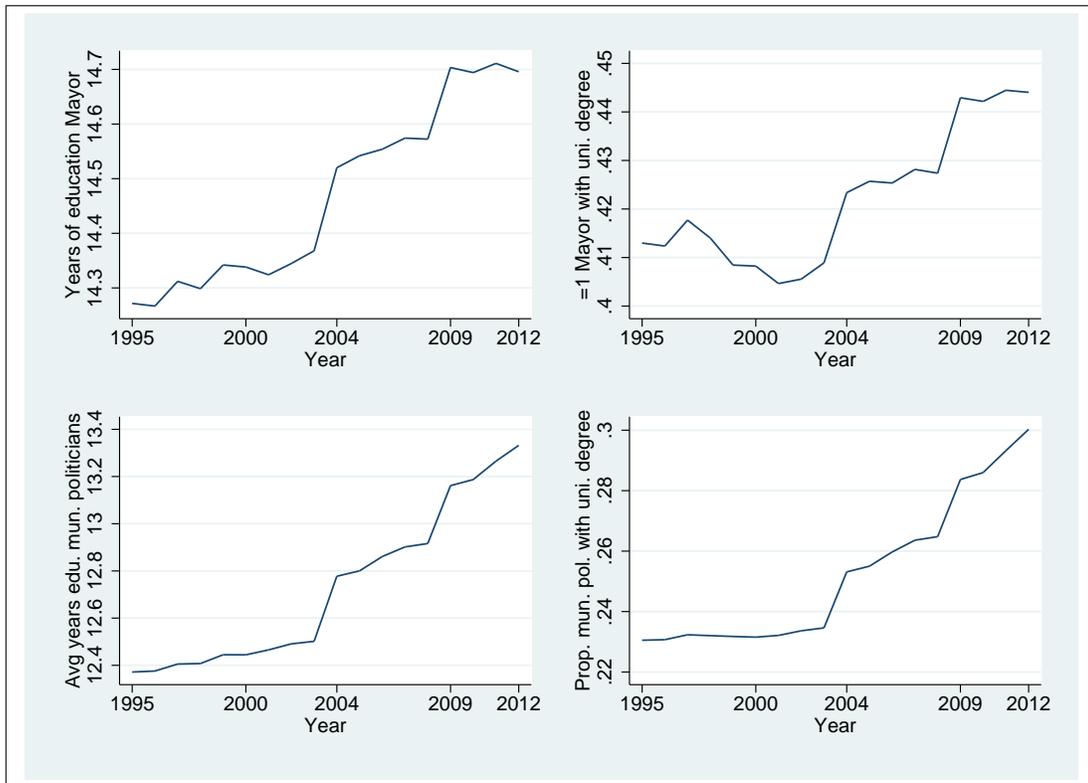
Notes. All Italian municipalities. Years between 1995 and 2012. Top graphs: (1) Evolution over time of the average years of education of the mayors of all Italian municipalities; (2) evolution over time of the proportion of mayors with a university degree. Bottom graphs: (1) Evolution over time of the average years of education of all municipal politicians elected in all Italian municipalities; (2) evolution over time of the proportion of all municipal politicians with a university degree.

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Figure 3: Level of education of municipal politicians, municipalities between 3000-7000
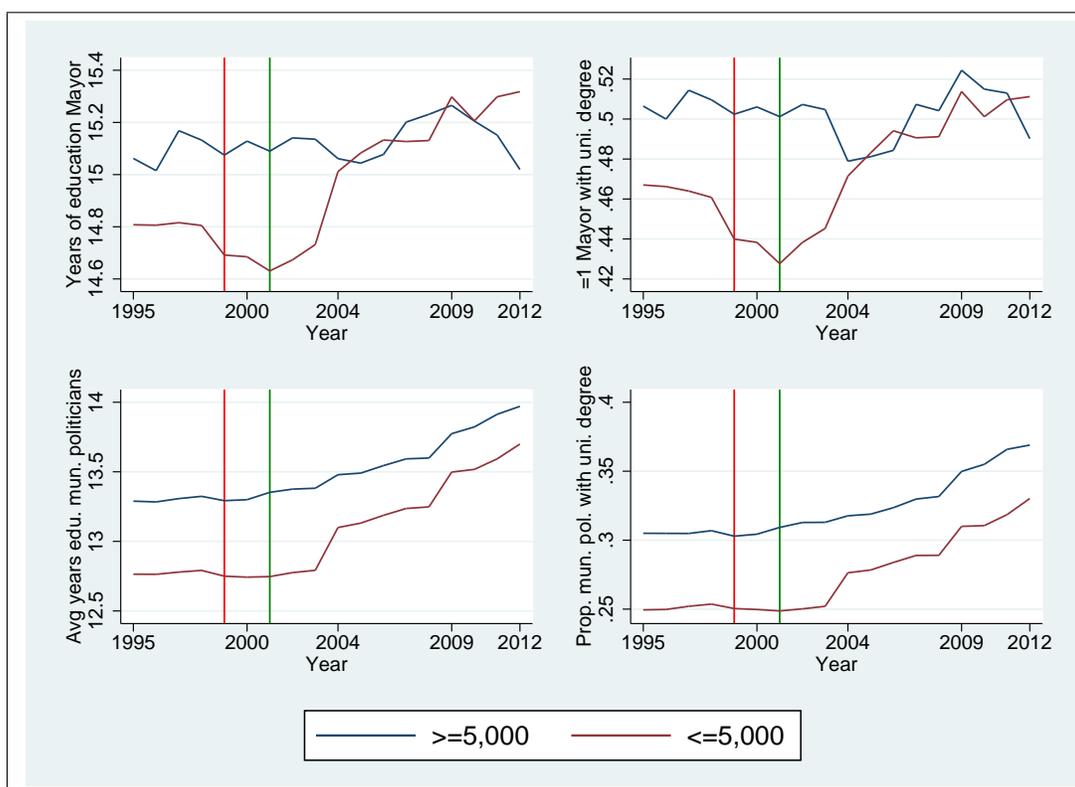

Notes. Italian municipalities between 3000 and 7000 inhabitants. Years between 1995 and 2012. The blue lines capture the behaviour of municipalities between 5000-7000 inhabitants. The red lines capture the behaviour of municipalities between 3000-5000 inhabitants. The red vertical lines represents the introduction of fiscal rules in 1999, which applied to all municipalities. The green vertical lines represents the relaxation of fiscal rules in 2001 for municipalities below the 5000 threshold. Top graphs: (1) Evolution over time of the average years of education of the mayors of Italian municipalities between 3000-7000 inhabitants; (2) evolution over time of the proportion of mayors with a university degree. Bottom graphs: (1) Evolution over time of the average years of education of all municipal politicians elected in Italian municipalities between 3000-7000 inhabitants; (2) evolution over time of the proportion of all municipal politicians with a university degree.

Figure 4: Level of education of municipal politicians, municipalities between 4,400-5,600


Notes. Italian municipalities between 4,400 and 5,600 inhabitants. Years between 1995 and 2012. The blue lines capture the behaviour of municipalities between 5000-5,600 inhabitants. The red lines capture the behaviour of municipalities between 4,400-5000 inhabitants. The red vertical lines represents the introduction of fiscal rules in 1999, which applied to all municipalities. The green vertical lines represents the relaxation of fiscal rules in 2001 for municipalities below the 5000 threshold. Top graphs: (1) Evolution over time of the average years of education of the mayors of Italian municipalities between 4,400-5,600 inhabitants; (2) evolution over time of the proportion of mayors with a university degree. Bottom graphs: (1) Evolution over time of the average years of education of all municipal politicians elected in Italian municipalities between 4,400-5,600 inhabitants; (2) evolution over time of the proportion of all municipal politicians with a university degree.

Figure 5: The Effect of Fiscal Rules on the selection of politicians, difference-in-discontinuity
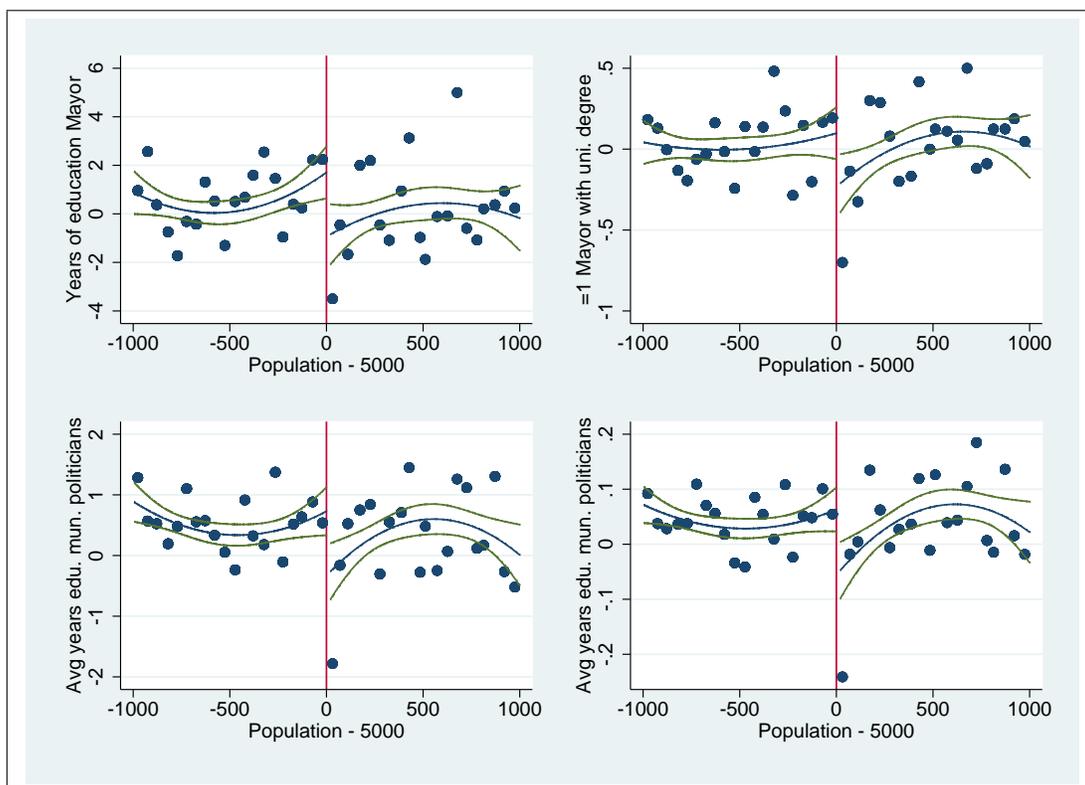

Notes. Difference-in-discontinuity estimates. Horizontal axis: normalized population around the 5000 threshold. Vertical axis: difference in the dependent variable of all post-reform elections (i.e. elections starting from 2001) with all the pre-reform elections (i.e. election before 2001). Scatter points are averaged over bins of 50 inhabitants. The central blue line represents a split second-order polynomial of the outcome variable in the normalized population, fitted separately on each side of the threshold.The green lines represent the 95 percent confidence interval. Top graphs: (1) Difference-in-discontinuity estimates for the average years of education of the mayors; (2) Difference-in-discontinuity estimates for the proportion of mayors with a university degree. Bottom graphs: (1) Difference-in-discontinuity estimates for the average years of education of all municipal politicians; (2) Difference-in-discontinuity estimates for the proportion of all municipal politicians with a university degree.

Figure 6: The Effect of Fiscal Rules on the selection of politicians, yearly RDD
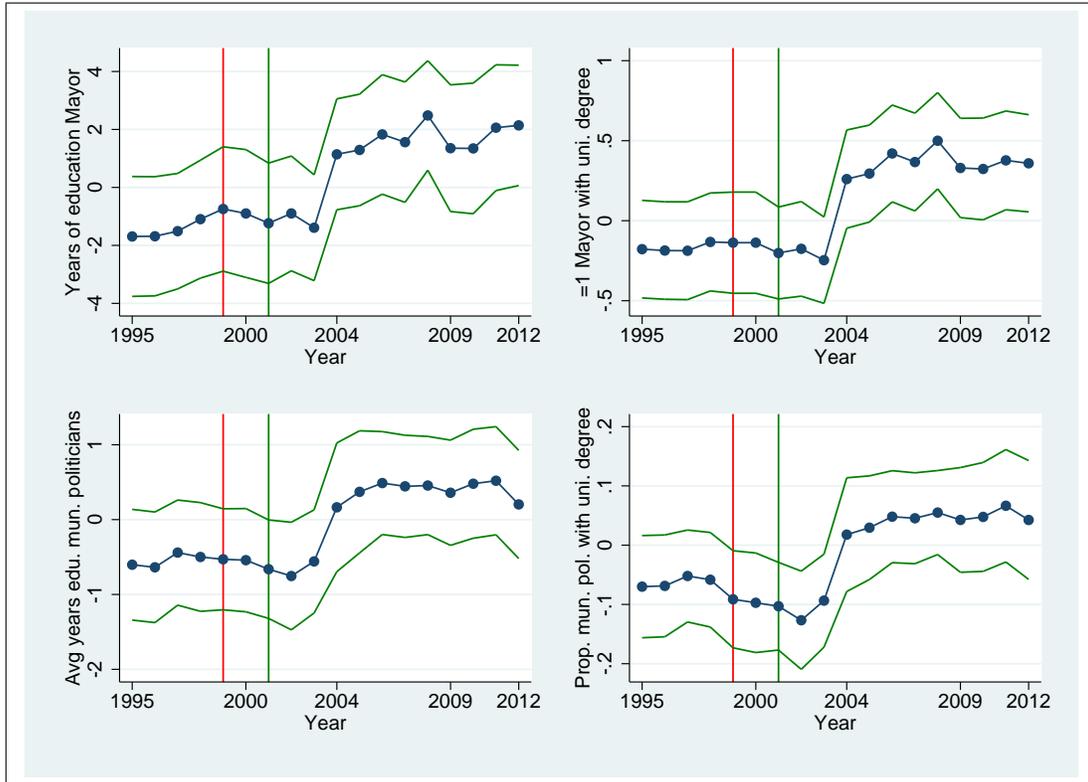
Notes. Yearly evolution of local linear regression RDD estimates. Horizontal axis: years between 1995 and 2012. The red vertical lines represents the introduction of fiscal rules in 1999, which applied to all municipalities. The green vertical lines represents the relaxation of fiscal rules in 2001 for municipalities below the 5000 threshold. Vertical axis: RDD estimates of local linear regressions run with bandwidth $h = 250$ around the threshold. The central blue lines represent the local linear regression estimates. Each blue dot represents a local linear regression estimate for a specific year of the sample. The green lines represent the 95 percent confidence interval. Top graphs: (1) Evolution of RDD estimates over time for the average years of education of the mayors; (2) Evolution of RDD estimates over time for the proportion of mayors with a university degree. Bottom graphs: (1) Evolution of RDD estimates over time for the average years of education of all municipal politicians; (2) Evolution of RDD estimates over time for the proportion of all municipal politicians with a university degree.

Figure 7: Density test on the running variable
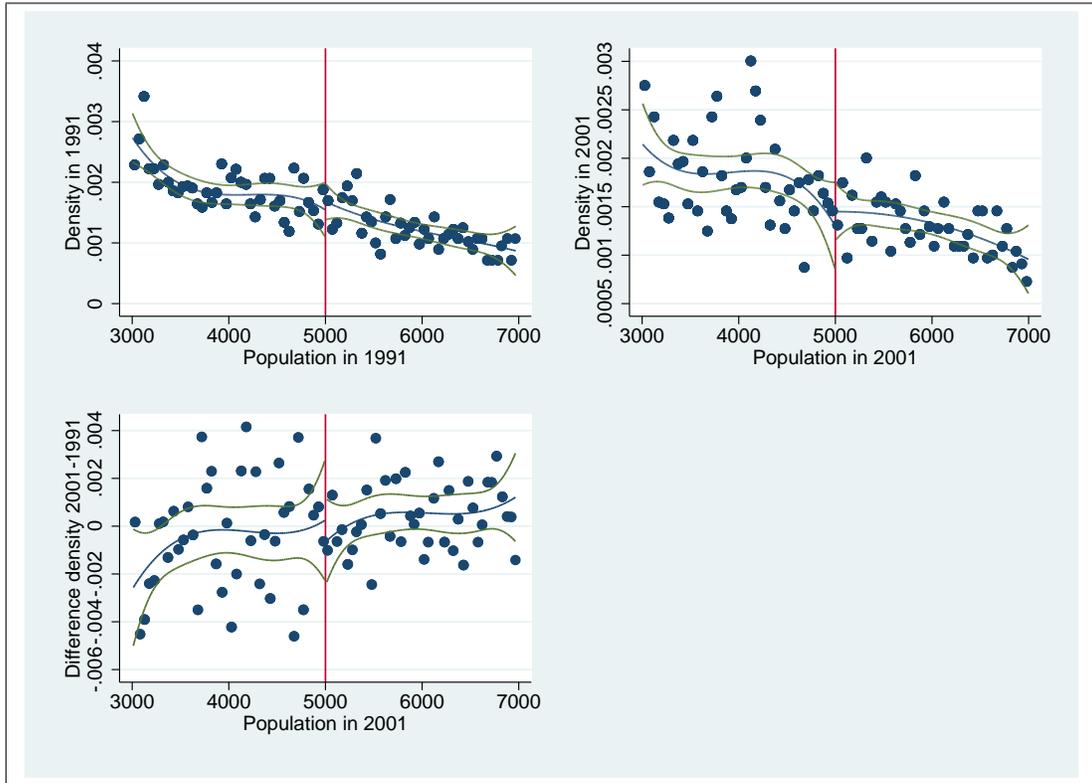
Notes. Discontinuity test for the density of the population at the 5000 thresold. Top graphs: (1) density
test for the population as measured by the 1991 Census; (2) density test for the population as measured by
the 2001 Census. Bottom graph: (1) discontinuity test for the difference between the density of the 2001
Census population and the density of the 1991 Census population.

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Appendix

This Appendix provides additional results and robustness checks, which are also discussed in the paper. In particular:

- Table A.1: Effect of fiscal rules on the education of politicians. Falsification test in 1999.

- Table A.2: Balance test on municipal covariates. Electoral years 1993-2012.

- Table A.3: Balance test on municipal covariates. Electoral years starting from 1999 (Term limited mayors before the reform).

Table A.1: Effect of fiscal rules on the education of politicians:
Falsification test in 1999

	(1)	(2)	(3)	(4)
Panel A: Level of Education of mayors				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Mayor with university degree*		*Years of education*	
$(Introduction\ FR)^*(<5000)$	0.061	0.009	0.743	0.486
	(0.090)	(0.085)	(0.661)	(0.705)
Bandwidth	382.9	250	452.6	250
Observations	378	244	422	244
Panel B: Average level of education of all politicians				
Optimal bandwidth	CCT	No	CCT	No
Dependent variable	*Proportion university degree*		*Average years of education*	
$(Introduction\ FR)^*(<5000)$	-0.027	-0.071	0.378	-0.219
	(0.047)	(0.044)	(0.310)	(0.341)
Bandwidth	292.2	250	420	250
Observations	292	244	408	244

Notes. Falsification test in 1999, testing for the presence of a differential reaction to the introduction of fiscal rules for municipalities <5000 if compared to municipalities >= 5000. Municipalities between 3000 and 7000. Electoral years between 1993 and 2000. Estimates obtained working with 2 electoral years for each municipality: 1 electoral year before 1999 and 1 electoral year in 1999 or 2000. Treatment variables: $(Introduction\ FR)$ is a dummy variable =1 for the electoral years 1999-2000, during which fiscal rules applied for all municipalities. (<5000) is a dummy variable =1 for municipalities < 5000 inhabitants. The outcome variables in Panel A measure the level of education of mayors. The outcome variables in Panel B measure the level of education of all municipal politicians. The bandwidth in columns (1) and (3) is calculated using the Calonico, Cattaneo and Titiunik (2014a, 2014b) optimal bandwidth h selector. The bandwidth in column (2) and (4) is $h = 250$. Robust standard errors clustered at the municipality level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.2: Balance test on municipal covariates:
Electoral years 1993-2012

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: Education municipal population							
	% illiterate	% primary	% low secondary	% high secondary	% university degree			
(Relaxation FR)*(< 5000)	0.001	0.012	0.001	-0.015	-0.003			
	(0.005)	(0.008)	(0.013)	(0.013)	(0.009)			
Bandwidth	355.7	577.0	397.5	365.1	312.7			
Observations	1,074	1,657	1,186	1,099	955			
	Panel B: Characteristics municipal population							
	% 0-18	% 15-64	% 65+	population density	% foreign	(log) income per capita	past deficit	
(Relaxation FR)*(< 5000)	-0.003	0.003	-0.004	85.441	-0.007	-0.055	22.674**	
	(0.012)	(0.010)	(0.012)	(133.027)	(0.014)	(0.073)	(11.045)	
Bandwidth	409.4	380.4	474.1	390.8	368.1	359.8	419.6	
Observations	1,220	1,137	1,393	1,164	1,115	1,088	1,240	
	Panel C: Geographical characteristics municipalities							
	NE	NW	CEN	SOU	area	altitude	latitude	longitude
(Relaxation FR)*(< 5000)	-0.080	0.098	-0.133	0.053	-5.454	27.854	0.140	0.350
	(0.138)	(0.167)	(0.103)	(0.159)	(11.176)	(81.782)	(0.751)	(0.865)
Bandwidth	405.0	365.8	499.7	372.0	370.1	371.8	403.3	366.2
Observations	1,212	1,099	1,481	1,121	1,119	1,121	1,212	1,101

Notes. Diff-in-disc estimates of the impact of fiscal rules on municipal covariates. Municipalities between 3000 and 7000. Electoral years between 1993 and 2012. Treatment variables: (Relaxation FR) is a dummy variable =1 for all electoral years starting from 2001, after which fiscal rules were removed for municipalities <5000. (< 5000) is a dummy variable =1 for municipalities < 5000 inhabitants. Bandiwith calculated using the Calonico, Cattaneo and Titiunik (2014a, 2014b) optimal bandwidth h selector. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.3: Balance test on municipal covariates:
Electoral years starting from 1999;
Term limited mayors before the reform

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Education municipal population								
	% illiterate	% primary	% low secondary	% high secondary	% university degree			
(Relaxation FR)*(< 5000)	0.003	0.009	-0.026	0.002	0.001			
	(0.006)	(0.018)	(0.018)	(0.019)	(0.014)			
Bandwidth	415.1	322.3	396.8	337.1	378.5			
Observations	220	178	212	189	205			
Panel B: Characteristics municipal population								
	% 0-18	% 15-64	% 65+	population density	% foreign	(log) income per capita	past deficit	
(Relaxation FR)*(< 5000)	-0.012	-0.024	0.033	-280.066	-0.024	-0.088	-0.568	
	(0.012)	(0.016)	(0.020)	(320.193)	(0.022)	(0.097)	(15.913)	
Bandwidth	536.3	378.6	441.9	423.9	416.3	401.4	519.7	
Observations	283	205	234	224	221	215	275	
Panel C: Geographical characteristics municipalities								
	NE	NW	CEN	SOU	area	altitude	latitude	longitude
(Relaxation FR)*(< 5000)	0.194	-0.050	0.066	0.117	-12.466	-21.645	-0.934	1.291
	(0.259)	(0.232)	(0.210)	(0.192)	(14.259)	(112.392)	(1.103)	(1.256)
Bandwidth	397.9	604.2	514.1	410.1	322.3	375.2	386.7	381.6
Observations	212	311	270	219	178	203	208	206

Notes. Diff-in-disc estimates of the impact of fiscal rules on the education of politicians. Municipalities between 3000 and 7000. Electoral years between 1999 and 2005. Estimates obtained working with 2 electoral years for each municipality: 1 electoral year before 2001 and 1 electoral year starting from 2001. Regressions run using the sub-sample in which all the mayors cannot be re-elected after the electoral mandate just before the 2001 relaxation of fiscal rules (i.e. all mayors before the reform are term limited). Treatment variables: $(Relaxation\ FR)$ is a dummy variable =1 for all electoral years starting from 2001, after which fiscal rules were removed for municipalities <5000. (< 5000) is a dummy variable =1 for municipalities < 5000 inhabitants. Bandwidth calculated using the Calonico, Cattaneo and Titiunik (2014a, 2014b) optimal bandwidth h selector. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.