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DO FISCAL RULES REDUCE THE POLITICAL CYCLE?
EVIDENCE FROM ITALIAN MUNICIPALITIES

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Do fiscal rules reduce the political cycle? Evidence from Italian municipalities[*]

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Abstract

The paper provides evidence that fiscal rules can limit the political budget cycle. It uses data on Italian municipalities during the early 2000 and shows that: 1) municipalities are subject to political budget cycles in capital and total spending; 2) the Italian sub-national fiscal rule introduced in 1999 has been enforced by the central government; 3) municipalities subject to the fiscal rule show more limited political budget cycles than municipalities not subject to the rule. In order to identify the effect, we rely on the fact that the domestic fiscal rule does not apply to municipalities below 5,000 inhabitants. We find that the political budget cycle increases real capital spending by about 15 percent on average, and total spending by 5 percent, in the years prior to municipal elections and that the sub-national fiscal rule reduces these figures by about one third. A regression discontinuity analysis around the 5,000 threshold reinforces these results, as the reduction in capital spending in pre-electoral years for municipalities subject to the fiscal rule is about two-thirds as compared to the municipalities not subject to the rule.

Keywords: fiscal rules, local government finance, difference-in-difference.
JEL Classification: C21, C23, H62, H72, H77.

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1   Introduction

This paper presents evidence suggesting that fiscal rules can help moderate the political budget cycle. The term "political budget cycle" generally refers to increases in government spending or in the deficit, or decreases in taxes, in an election year or pre-election year, which are perceived as motivated by the incumbent's desire for re-election. Fiscal rules can limit the political budget cycle because they reduce the politician incentives to be profligate in order to be re-elected, by increasing the cost of pre-electoral profligacy if elected. The focus of the paper is on Italian municipalities during the early 2000 when they have been subject to the sub-national fiscal rule (Domestic Stability Pact, DSP) introduced in 1999.

It is well recognized that the political budget cycle has potentially a number of negative effects. The political budget cycle implies that public spending or taxation policies are tweaked to achieve goals that are different from the social welfare (Alesina, 1987, 1988). It also usually leads to excessive spending and deficits. In the context of sub-national entities, it is important to remind that budget deficits at the national levels can originate at sub-national level of governments.

Recently, the growth of deficit and debt to unprecedented levels has forced many countries to adopt fiscal rules to contain their further growth. While fiscal rules are usually designed to limit deficits and debts directly, this paper argues that they can also have an effect by reducing politicians incentives to overspend prior to elections. However, assessing the effects of fiscal rules is not always an easy task. For example, identifying the causal effect of fiscal rules on fiscal aggregates is not simple. The obvious endogeneity problem is that countries adopting a fiscal rule might be those more fiscally responsible; therefore, the better fiscal outcomes might be due to the preference of the country and of the voters, more than to the introduction of a fiscal rule.

This paper identifies the effect of the rule on the political budget cycle leveraging on the fact that municipalities below 5,000 inhabitants are exempt from the rule. Our difference-in-differences estimates suggest that the political budget cycle increases real capital spending by about 15 percent on average, and total spending by 5 percent (in real terms) on average in the three years prior to municipal elections and that the sub-national fiscal rule reduces these figures by about one third. These results are confirmed by a regression discontinuity analysis: the electoral cycle effect estimated at the 5,000 threshold using polynomial regression is about 36 percent, while municipalities subject to the DSP show an increase in capital spending in

pre-electoral years of about two-third lower. We also provide evidence that the fiscal rule has been enforced by the central government, at least over the period 2004-06 for which we have data on the municipalities that have breached the DSP.

A number of recent papers have used Italian administrative municipal data to address an array of political economy issues. Cioffi, Messina and Tommasino (2012) provide evidence of political budget cycle in capital and overall spending, while Alesina and Paradisi (2014) on the revenue side exploit the introduction of a new real estate tax in 2011. Gagliarducci and Nannicini (2013) study the effect of the wage on the performance of mayors. Alesina, Troiano and Cassidy (2015) show that younger politicians behave more strategically than older ones. Particularly relevant for our purposes is the paper by Grembi, Nannicini and Troiano (2016), which shows that the relaxation of the DSP for smaller municipalities in 2001 triggered a significant deficit bias.[1]

This paper is related also to three other branches of literature. By assessing how fiscal rules can limit the political budget cycle, our contribution naturally fits in the broad political business cycles literature. See, among many, Rogoff and Sibert (1988), Rogoff (1990), Alesina, Cohen and Roubini (1997), Persson and Tabellini (2000), Brender and Drazen (2005, 2008), Shi and Svensson (2006). A number of contributions have assessed empirically the political budget cycle. For a recent one on the political cycle in capital expenditures see Gupta, Mulas-Granados and Liu (2015).

Related to our work is also the literature assessing the political budget cycle at the sub-national level. For example, Coelho, Veiga and Veiga (2006) and Veiga and Veiga (2007) provide evidence of political cycle at the municipal level in Portugal; Foremny and Riedel (2014) in Germany; Drazen and Eslava (2010) provide evidence on Colombia; Brollo and Nannicini (2012) on Brazil.

Finally, our paper is also connected to the growing literature on national and sub-national fiscal rules (for example, Beetsma and Debrun, 2004, 2007; Debrun, Moulin, Turrini, Ayuso-i-Casals and Kumar, 2008). In this strand of literature, the recent contribution by Grembi, Nannicini and Troiano (2016) is the first to propose "a quasi-experimental design" to control for omitted and unobservable factors that may affect previous results and to better establish the causal effect of the introduction of the rule.

Our paper contributes to these different literatures in several ways. First,

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[1]Acconcia, Corsetti and Simonelli (2014) use data on investment expenditure of Italian municipalities to estimate the fiscal multiplier at the local level.

it provides further evidence on the existence of a political budget cycle at the local level in Italy and quantifies its effects. Second, it provides new evidence that the central government has enforced the DSP. The fact that the DSP has been enforced by the central government reduces concerns regarding the endogeneity of the rule, although it still leaves open the possibility that omitted and unobservable factors might affect how municipalities have reacted to the imposition of the rule. The regression discontinuity analysis addresses this issue focusing on the behaviour of municipalities around the threshold. Finally, and most importantly, it provides novel evidence that the imposition of the rule has reduced the political budget cycle. We believe this is the first paper showing evidence that sub-national fiscal rules can contain the political budget cycle. Importantly, even when the introduction of a fiscal rule proves effective, in the sense that helps contain the deficit, it is very difficult to assess whether it is welfare improving. On the contrary, a rule that mitigates the political budget cycle, at least in this respect, is welfare improving.

2 Institutional setup and the domestic fiscal rule

In Italy there are three levels of sub-national governments: regions, provinces, and municipalities. The regions are involved primarily in the provision of health services. The provinces perform functions relative to road maintenance and the natural environment, while the municipalities are responsible for a wide range of local services (public lighting, waste disposal, urban road maintenance, local transport, social aid, childcare, and primary schooling).

The Domestic Stability Pact (DSP) was introduced in 1999 in order to include sub-national authorities in the efforts to achieve the fiscal targets set at the European level. The operational target of the rule has changed over the years, moving from being defined as a balance to limits in the growth in total spending.[2] The penalties established for not complying with the DSP included limits on hiring, on spending, and on borrowing for investments (Chiades and Mengotto, 2013). Importantly for our analysis, since 2001 smaller municipalities (those with less than 5,000 residents) have

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[2]Our analysis focuses on the years 2004-06. In 2004, the rule stated that the difference between current spending and current revenues could not be higher in real terms than in 2003. In 2005, current and capital spending should have been lower than the average over 2001-03 increased by 10 percent. In 2006, current spending should have been lower by 6.5 percent with respect to 2004 (by 8.1 percent for municipalities with per capita spending over the period 2002-04 greater than their population class average), while capital spending should not have exceeded the 2004 value increased by 8.1 percent.

been exempted from the DSP. The exemption aimed at providing some relief to small municipalities in the presence of economies of scale in managing the municipal government.

As for the governance and elections, the decision making bodies at the municipal level are the mayor (Sindaco), the Executive committee (Giunta comunale), which is appointed and headed by the mayor himself, and the municipal council (Consiglio comunale), endowed with legislative powers. For municipalities with less than 15,000 inhabitants, a simple plurality electoral system applies where each candidate is supported by a single list. Over the 15,000 threshold, mayoral candidates may be supported by more than one list, and a run-off takes place if none of the candidates win an absolute majority of votes at the first round.

The size of municipal bodies also varies according to population, ranging from 12 to 60 members for the Consiglio and from 4 to 16 members for the Giunta. Since 1993, elections have been held every four years. Since 2000, the duration of the mayor mandate has been extended to 5 years unless particular circumstances (such as the death of the mayor, ex-post incompatibilities, or criminal charges) trigger an earlier resignation. Elections usually occur during the months of May and June (see Table 1).

Table 1: Distribution of municipal elections by month (2004-06)

Month	Freq.	Percent	Cum.
April	365	6.25	6.25
May	1,153	19.75	26.00
June	4,318	73.95	99.95
July	2	0.03	99.98
October	1	0.02	100.00
Total	5,839	100.00	

3   The data

We have collected annual data on all Italian municipalities' budget information from 2004 to 2012, including information on employment levels and hiring. We have combined this information with data on elections at the municipal level, and with information on the mayor (age, education, gen-

der, political party).[3] We had to incorporate also information on the DSP. Specifically, we were able to get from the Ministry of the Interior the list of municipalities that did not comply with the rule in the years 2004-06. Table A.1 at the end of the paper reports a description of the variables and sources. A summary of the dataset is reported in Table 2 for the period 2004-2006. Table A.2 provides descriptive statistics by municipality population. It shows that total spending, in real per-capita terms, is on average 30-40 percent lower in municipalities above 5,000 inhabitants with respect to smaller ones, and that capital expenditure is about 45 percent lower, partly because of economies of scale in investment. Larger municipalities are less dependent on transfers from other levels of government, slightly richer in terms of per-capita taxable income, while the debt position is very similar. As to the age structure of the population, in larger municipalities the proportion of people economically active (aged 15-64) is 3 percentage points higher. Turning to the political characteristics, municipalities are roughly balanced in the gender and age of mayors, while larger cities tend to have more educated and (national) party affiliated mayors. Municipalities of different size are on average quite homogenous as to the phase of the electoral cycle: for all classes about 80 percent of mayors are in their first term, and a fraction ranging from 50 to 60 percent of observations refers to the pre-electoral period.

Based on our data, total spending of municipalities in ordinary-statute regions[4] represented almost 5 percent of GDP in 2004 (the starting year of our analysis), and declined to about 4 percent by 2012 (Figure 1). Capital spending represented about 38 percent of total spending in 2004 although reduced to 21 percent in 2012 (Figure 2). In real per capita terms, municipalities spent about 600 euros annually in investment in 2004 and reduced this amount to 400 in 2012 (Figure 3).

Regarding the financing, transfers from the regions and the central government over the period represented about 40 percent of overall revenues, own revenues covered the rest. The main taxes financing municipalities were a real estate tax on home property (Imposta Comunale sugli Immobili, ICI), which provided about 43 percent of municipal tax revenues, and a surcharge on the personal income tax (Imposta sul Reddito delle Persone Fisiche, IR-

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[3]When a special commissioner is appointed to run the municipality, the information on the mayor's characteristics is missing. In these cases, and also when information on expenditures or revenues from financial reports is not available, we keep the municipality in the sample, using the unbalanced panel.

[4]We exclude regions with special autonomy (Regioni a Statuto Speciale) as these were allowed to set their own fiscal rules for municipal governments.

PEF), which amounted to about 6 percent of municipal tax revenues.[5]

Figure 1: Total and capital spending of municipalities (share of GDP; ordinary-statute regions).

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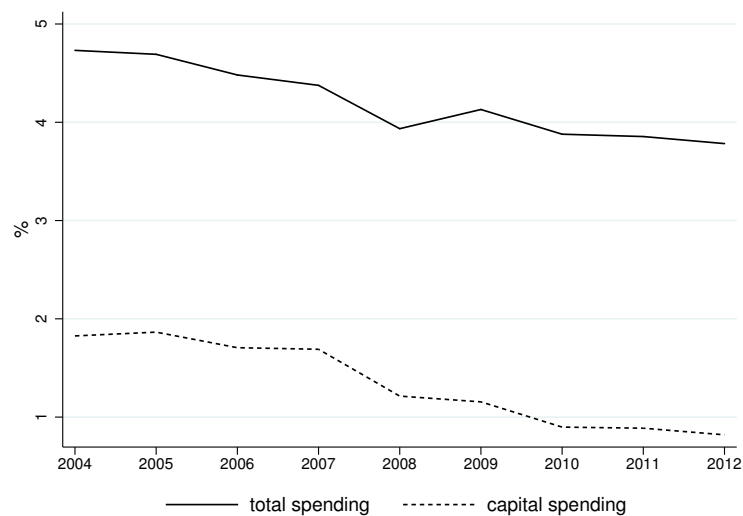
[5]Municipalities can borrow for investment purposes.

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Figure 2: Per-capita capital spending, total spending and total revenues of municipalities (2010 euro; ordinary-statute regions).
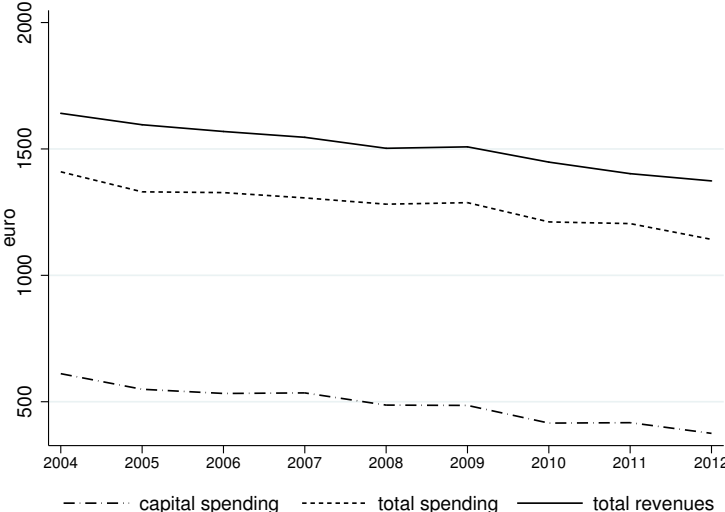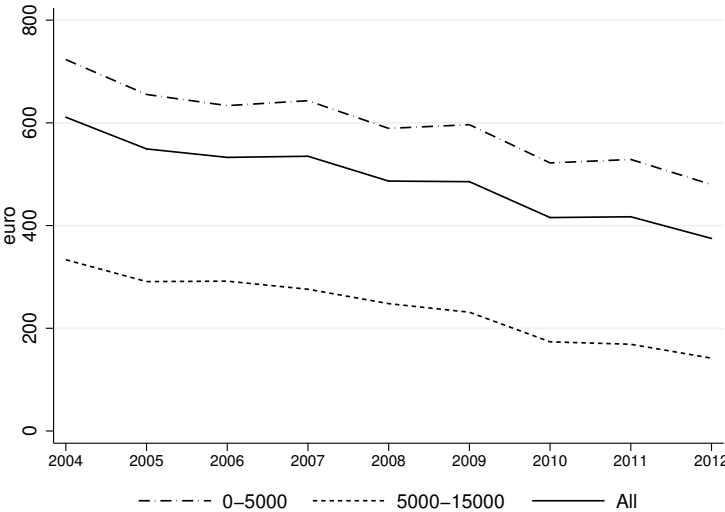

Figure 3: Per-capita capital spending by municipality size (2010 euro; ordinary-statute regions).

In order to have a homogenous sample, our main analysis will focus on the years 2004-06 and on the municipalities with less than 15,000 inhabitants. The cutoff at 15,000 is due to the different electoral system for the larger municipalities.[6] An ample literature has shown how different electoral systems can affect fiscal outcomes (for example, Persson and Tabellini, 2000, and Milesi-Ferretti, Perotti and Rostagno, 2002; with specific reference to the Italian context, see Ferraresi, Rizzo and Zanardi, 2015) and therefore one needs to be careful in pooling municipalities with different electoral systems as it can lead to bias in the estimates. By limiting the analysis to municipalities below 15,000 inhabitants we lose about 600 municipalities over a sample of about 8,000. We also limit our analysis to 2006 as starting in 2007 a number of characteristics of the fiscal rule and of the fiscal system at the local level have significantly changed (Chiades and Mengotto, 2013). We will occasionally extend the sample used in the analysis both in terms of years and size of the municipalities to test the robustness of our results.

4 Identification strategy and results

The models originally proposed to explain the political budget cycle could help understand the mechanism through which a fiscal rule can limit it. The first models in this literature (Nordhaus, 1975; Lindbeck, 1976) were based on the premise that voters are myopic and that politicians are able to repeatedly fool them by tweaking policies prior to elections. Later models (for example, Rogoff and Sibert, 1988, and Rogoff, 1990) assumed that voters are rational but do not have full information about incumbents' competence. Voters want to elect the most competent politicians and form rational expectations regarding the incumbent's abilities based on observable current fiscal policy outcomes. A competent administrator is able to provide a given level of public goods at a lower level of taxes than an incompetent one can. The incumbent can signal his/her competence by increasing spending or showcasing new infrastructure projects without at the same time increasing taxes. Before the election, therefore, incumbents will attempt to signal their competence (and thereby increase their chances of re-election) by en-

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[6]A relevant issue in analyzing capital spending at the municipal level is that in recent years municipalities have outsourced some capital spending to private companies, usually partially or totally owned by the municipalities itself. This practice sometimes has been instrumental in circumventing the fiscal rule. Unfortunately, information on these companies is extremely scant. One advantage in focusing on small municipalities (with less than 15,000) is that they have outsourced capital spending much less than larger municipalities Chiades and Mengotto (2013).

Table 2: Summary statistics (2004-06)

Variable	Obs.	Mean	Std. Dev.	Median	Min	Max
		Municipalities				
Capital spending	20,057	564	879	336	0	27,965
Current spending	20,057	791	471	688	28	21,725
Total spending	20,057	1,356	1,209	1,050	178	40,984
Total transfers	20,057	705	915	461	20	33,049
Total revenues	20,057	1,602	1,789	1,231	398	109,039
Long-term borrowing	20,057	128	256	62	0	11,466
Total outstanding debt	20,041	1,124	5,705	821	-1,317	652,402
Taxable income	20,084	11,813	3,128	12,065	3,066	31,525
Hiring (per 1000-capita)	17,719	0.39	1.05	0.08	0.00	64.43
Population (units)	20,084	7,405	42,655	2,458	32	2,705,603
Population aged 15-64 (%)	20,084	64.53	4.45	65.28	32.17	81.58
Pre-election years (1/0)	20,084	0.51	0.50	1	0	1
		Mayors				
Female (1/0)	19,674	0.10	0.29	0	0	1
Age	19,670	51	9.64	51	22	86
Education (years)	19,161	14	3.07	13	5	20
Party affiliated (1/0)	19,674	0.36	0.48	0	0	1
Mandate (first = 1)	20,084	0.81	0.39	1	0	1

Notes: Monetary variables in real per-capita terms (2010 euro).

gaging in expansionary fiscal policy. This leads to a pre-election increase in the government deficit even though competent politicians may be in office. However, even competent politicians that want to signal their higher competence might be reluctant to use all the available fiscal space because they are likely to remain in office and have to live with the consequences of this choice. Fiscal rules, as the DSP, might increase the ex-post cost of a pre-election fiscal expansion.

In order to identify this effect in our context, in the spirit of Grembi and others (2016), we rely on the fact that the DSP does not apply to the municipalities below 5,000 inhabitants. Therefore, our main specification is a difference-in-difference regression around elections dates where the treatment group is comprised by the municipalities above 5,000 inhabitants (subject to the DSP) and the control group is composed of municipalities with less than 5,000 inhabitants (not subject to the DSP). We will show that indeed municipalities below the threshold, controlling for other characteristics, are subject to a stronger political budget cycle.[7] However, there are a number of steps that we have to undertake to substantiate our claim. The next section will discuss possible alternative explanations of our results.

First, we revisit the evidence of a political cycle in capital (and total) spending at the municipal level (see Cioffi, Messina and Tommasino, 2012, and Alesina and Paradisi, 2014, for earlier contributions). In order to do so, in Table 3 we regress the level of per-capita capital spending (cash definition) on a dummy equal to one in the electoral year and in the two preceding years (our political budget cycle variable), a measure of revenues (either total per-capita real transfers or total per-capita real revenues), a number of mayors' characteristics (gender, age, education measured in years of schooling, affiliation to a national political party and its ideological stance), other time-varying municipalities' characteristics (proportion of people aged 15-64, taxable per-capita income), municipalities fixed effects and time effects meant to capture common shocks. The inclusion of taxable per-capita in-

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[7]We have also tried to restrict the sample to those municipalities that crossed the 5,000 threshold over the period 2004-06. In this way, the sample of municipalities above and below the 5,000 inhabitants is comprised of the same municipalities, falling in one or the other category depending on the year. Unfortunately, the number of municipalities that have crossed the threshold is just 50 and only two of those have had elections both before and after crossing the threshold, therefore impeding to get any identification from the time series dimension of the data. A possible alternative would be to look at whether municipalities with a budget position closer to the limit imposed by the DSP had a more muted political budget cycle than those municipalities far from the limit. This approach however runs into problems of endogeneity, as municipalities more prone to the political budget cycle are likely to be closer to the limit of the DSP.

come and of the proportion of working age population are meant to capture the demand side of municipal capital spending, as municipalities characterized by a different age structure or economic dynamics may respond differently to the investment stimulus by local policy makers. The regression equation is:

$$y_{i,t} = \alpha E_{i,t} + \beta' X_{i,t} + \mu_i + \lambda_t + \epsilon_{i,t}, \tag{1}$$

where $y_{i,t}$ is either capital[8] or total per-capita spending of municipality i in year t, E_{it} is the electoral cycle variable, X_{it} is a vector of the time-varying municipality level covariates listed above, including mayor's characteristics, μ_i is a municipality fixed effect, λ_t a year effect and $\epsilon_{i,t}$ is the idiosyncratic error term. Standard errors are clustered at municipality level.

Table 3 shows that in pre-electoral years capital spending, in real per-capita terms, is on average 15 percent larger than in the years following election for the municipalities below 5,000 (column 1), while it is about 11 percent higher for municipalities between 5,000-15,000 (column 3). A similar result holds, to a lesser extent, for total spending, which is higher in pre-electoral years by about 5 and 3 percent for small and larger municipalities, respectively (Table 4). Looking at other covariates, female mayors tend to spend less on average than their male colleagues, for investments and overall, while other mayor's characteristics do not significantly affect the average level of spending, except for party affiliation which reduces capital spending in larger municipalities. Capital spending is slightly higher in small municipalities with a larger proportion of population potentially economically active (aged 15-64), but the reverse is true for larger municipalities. Small municipalities are more dependent on transfers for financing their investment and total expenditures than larger municipalities, which have easier access to other revenue sources.

Next we show evidence that the DSP has been enforced. In fact, in order for the DSP to have an effect on the political budget cycle, it is essential that there is a cost from overspending and/or breaching the fiscal rule. There is no clear evidence in the literature on whether the DSP has been generally enforced or not. Grembi and others (2016), for example, estimate whether

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[8]We focus on capital spending on a cash basis. In the context of Italian municipalities, there are large discrepancies between cash and accrual data. Based on accrual accounting, the cost for the whole investment project is allocated in the year when the financing sources are identified. Given delays in implementation of the investment projects and the fact that projects might span several years, there are large differences between cash and accrual data (Chiades and Mengotto, 2013). We think that actual payments (cash data) better reflect politician incentives.

Table 3: Log-capital per-capita spending of municipalities on political cycle variables by population size. Fixed effects estimates (2004-06).

	≤5000		5000-15000	
	(1)	(2)	(3)	(4)
Pre-election years	0.150***	0.129***	0.112***	0.098***
	(0.013)	(0.012)	(0.017)	(0.015)
Female	-0.027	-0.033	-0.083*	-0.046
	(0.030)	(0.028)	(0.043)	(0.038)
Age	0.000	-0.000	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.001)
Education (years)	-0.000	-0.002	-0.001	-0.002
	(0.003)	(0.003)	(0.005)	(0.004)
Party affiliation	-0.013	0.054	-0.191*	-0.141*
	(0.063)	(0.057)	(0.098)	(0.080)
Right wing	-0.071	-0.111	0.152	0.127
	(0.077)	(0.070)	(0.106)	(0.089)
Left wing	0.024	-0.041	0.178*	0.132
	(0.068)	(0.062)	(0.100)	(0.083)
Population aged 15-64 (%)	0.020**	0.028***	-0.043*	-0.044*
	(0.009)	(0.009)	(0.025)	(0.023)
Taxable income (logs)	-0.247	-0.271*	0.365	0.175
	(0.175)	(0.163)	(0.502)	(0.466)
Total transfers (logs)	0.607***		0.396***	
	(0.024)		(0.039)	
Total revenues (logs)		1.239***		1.034***
		(0.036)		(0.063)
R-squared	0.183	0.303	0.125	0.253
Municipalities	3850	3850	1202	1202
Obs.	10858	10858	3291	3291

Notes: Variables in real per-capita terms (2010 euro). Total transfers (current and capital) include municipalities' share of the personal income tax. All specifications include year and municipalities' fixed effects. Clustered standard errors at municipality level in parenthesis. Significance: *** = 1%; ** = 5%; * = 10%.

Table 4: Log-total per-capita spending of municipalities on political cycle variables by population size. Fixed effects estimates (2004-06).

	≤5000		5000-15000	
	(1)	(2)	(3)	(4)
Pre-election years	0.051***	0.041***	0.029***	0.023***
	(0.005)	(0.004)	(0.006)	(0.005)
Female	-0.021*	-0.023**	-0.037**	-0.021
	(0.011)	(0.010)	(0.016)	(0.014)
Age	0.000	-0.000	0.001	0.000
	(0.000)	(0.000)	(0.001)	(0.001)
Education (years)	0.001	-0.000	0.000	-0.000
	(0.001)	(0.001)	(0.002)	(0.002)
Party affiliation	-0.013	0.018	-0.053	-0.034
	(0.024)	(0.020)	(0.041)	(0.038)
Right wing	-0.017	-0.035	0.035	0.026
	(0.028)	(0.024)	(0.044)	(0.041)
Left wing	0.015	-0.015	0.045	0.028
	(0.026)	(0.022)	(0.042)	(0.039)
Population aged 15-64 (%)	0.004	0.007**	-0.003	-0.004
	(0.004)	(0.003)	(0.009)	(0.008)
Taxable income (logs)	-0.011	-0.023	0.268	0.182
	(0.069)	(0.060)	(0.165)	(0.153)
Total transfers (logs)	0.267***		0.143***	
	(0.010)		(0.015)	
Total revenues (logs)		0.556***		0.416***
		(0.016)		(0.025)
R-squared	0.220	0.398	0.146	0.308
Municipalities	3850	3850	1202	1202
Obs.	10859	10859	3291	3291

Notes: Variables in real per-capita terms (2010 euro). Total transfers (current and capital) include municipalities' share of the personal income tax. All specifications include year and municipalities' fixed effects. Clustered standard errors at municipality level in parenthesis. Significance: *** = 1%; ** = 5%; * = 10%.

municipalities have respected the rule using budget data to check whether penalties were subsequently enforced over the period 1999-2004. They find "suggestive evidence that the DSP penalties were enforced", as there is a correlation between non-compliance (as estimated by the authors) and subsequent punishment.

For the years 2004-06 we have collected the list of municipalities that did not comply with the DSP from the Interior Ministry, therefore we can test directly whether the DSP has been enforced or not.[9] As discussed, the DSP entails that the municipalities breaching the DSP would face limits on hiring, on spending and on borrowing for investments in the following year. Figures 4 and 5 indeed show that hiring and long-term borrowing (accrual definition) have been remarkably lower for the non-complying municipalities in the year following the breach of the DSP as compared to the complying municipalities.[10] For current spending (Figure 6) the evidence is consistent, although less striking. The DSP entailed bringing purchases of goods and services to a level not greater than in the last year in which the pact was respected. This evidence suggests that indeed breaching the rule carried penalties in terms of fiscal aggregates.[11]

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[9]Interestingly, municipalities that have breached the DSP are rather uniformly distributed across the country. There is not a higher frequency in the center-south of the country.

[10]In the context of Italian municipalities, borrowing is allowed only to finance investment projects. Larger municipalities have generally more access to borrowing than smaller ones. Therefore, differences in credit availability between smaller and larger municipalities cannot explain why larger municipalities show a more muted political cycle.

[11]The annual national budget law for 2007 (*Legge 296/2006*), approved at the end of 2016, abolished the sanctions for the municipalities breaching the pact in 2006, with the exception of the ban on hiring.

Figure 4: Average hiring of municipalities (per 1,000 inhabitants) by DSP compliance in previous year (2005-07).
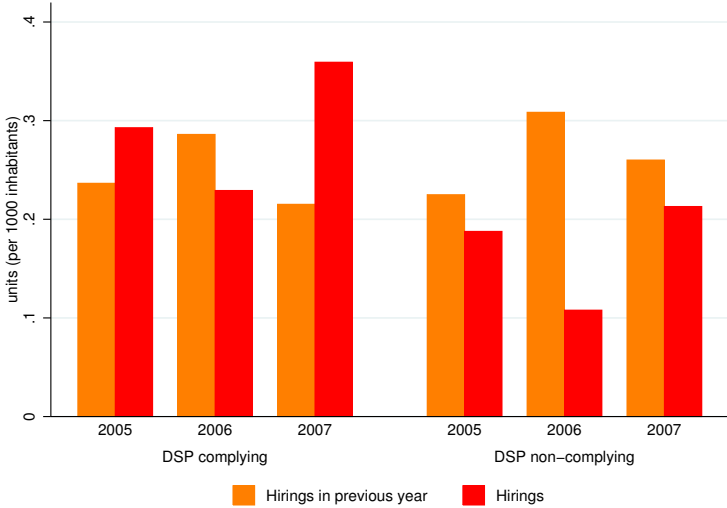

Figure 5: Mean per-capita long-term borrowing (accrual) of municipalities by DSP compliance in previous year (2005-07).
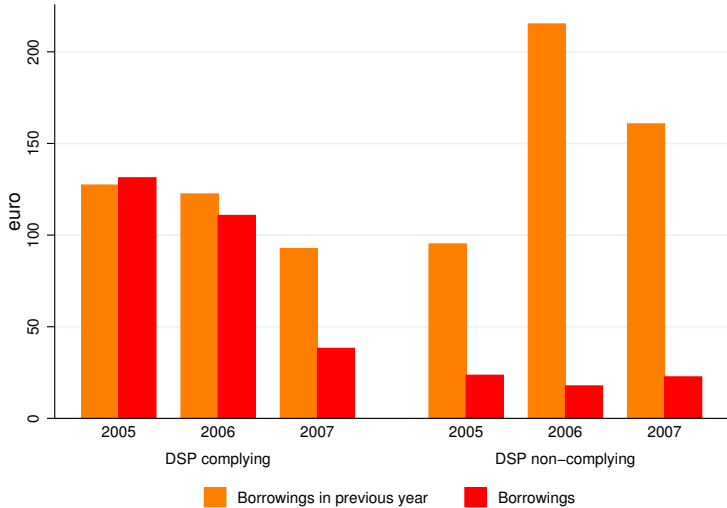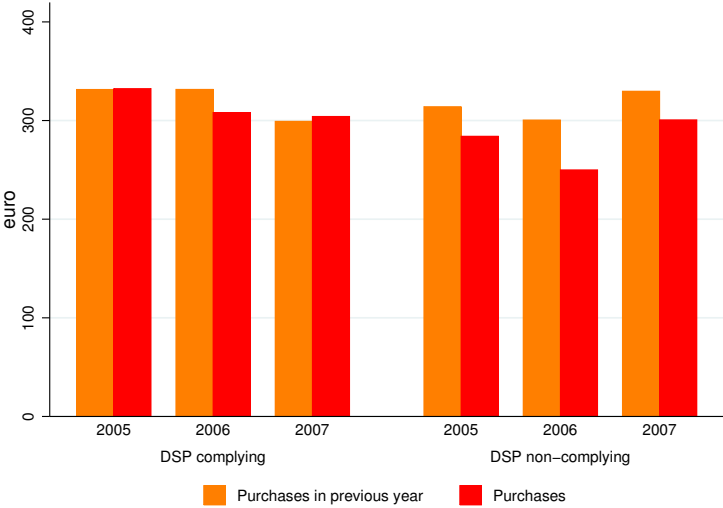
Figure 6: Mean per-capita purchase of goods and services (cash) of municipalities by DSP compliance in previous year (2005-07).

Finally, we show that municipalities subject to the DSP have recorded a more subdued political cycle than municipalities not subject to the rule. We test whether the political budget cycle is stronger for municipalities not subject to the DSP (those with less than 5,000 inhabitants) as opposed to those subject to (more than 5,000 inhabitants). To do so we enrich specification (1) to include a dummy for the municipalities larger than 5,000 inhabitants and its interaction with the "pre-electoral years" dummy. The latter is the variable of interest, as it measures whether the political budget cycle is milder for the municipalities subject to the DSP. Our baseline difference-in-difference specification is:

$$y_{i,t} = \alpha E_{i,t} + \gamma D_{i,t} + \delta D_{i,t} E_{i,t} + \beta' X_{i,t} + \mu_i + \lambda_t + \epsilon_{i,t}, \tag{2}$$

where $D_{i,t}$ is a time-varying dummy equal to one for municipalities above 5,000 inhabitants and δ is the difference-in-differences parameter capturing the political budget cycle of municipalities subject to the DSP.

We show in Table 5 results both restricting the sample to municipalities below 15,000 inhabitants (about 90 percent of total municipalities) - as discussed in Section 3, at 15,000 there is a change in the electoral rule for mayors - and for the entire sample. Results show that the cross term coefficient is negative and significant, making the electoral effect for larger municipalities about 30 percent smaller. We interpret these results as suggestive of the fact that the DSP has indeed made it costlier for the mayors to increase capital spending before elections.

5   Interpreting the results

So far, our identification strategy has relied on the fact that the political budget cycle appears to be more muted for the municipalities above 5,000 inhabitants. However, we have to acknowledge that there are other characteristics (in particular of the mayors) that change as the dimension of the municipality grows and that could affect the result. In particular, mayors tend to be slightly older (Table 6), more educated,[12] and more affiliated with national parties[13] as the dimension of the municipality grows, while there is no substantial difference in terms of gender (Table 7). Therefore,

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[12]We define education categories by aggregating ISCED levels as follows: low (0-2), middle (3-4), and high (5-8).

[13]We consider a mayor as not affiliated with a national party if the political list supporting the mayor in election is a "lista civica", that is a list that does not have a regional or national counterpart.

Table 5: Log-capital per-capita spending of municipalities on political cycle variables by population size. DD-FE estimates (2004-06).

	<15000		All	
	(1)	(2)	(3)	(4)
>5000	-0.012	-0.017	-0.012	-0.019
	(0.088)	(0.078)	(0.088)	(0.077)
Pre-election years	0.154***	0.138***	0.155***	0.141***
	(0.012)	(0.011)	(0.012)	(0.011)
>5000 × Pre-election years	-0.045**	-0.050***	-0.053***	-0.055***
	(0.019)	(0.017)	(0.017)	(0.015)
Female	-0.037	-0.034	-0.043*	-0.041*
	(0.026)	(0.024)	(0.025)	(0.023)
Age	0.000	-0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Education (years)	-0.000	-0.002	-0.000	-0.002
	(0.003)	(0.002)	(0.002)	(0.002)
Party affiliation	-0.039	0.027	-0.040	0.019
	(0.056)	(0.051)	(0.056)	(0.050)
Right wing	-0.035	-0.074	-0.041	-0.074
	(0.065)	(0.058)	(0.063)	(0.057)
Left wing	0.045	-0.018	0.048	-0.006
	(0.059)	(0.054)	(0.059)	(0.053)
Population aged 15-64 (%)	0.014	0.021***	0.013	0.020**
	(0.009)	(0.008)	(0.009)	(0.008)
Taxable income (logs)	-0.202	-0.251	-0.158	-0.239
	(0.166)	(0.153)	(0.162)	(0.148)
Total transfers (logs)	0.576***		0.568***	
	(0.021)		(0.020)	
Total revenues (logs)		1.204***		1.183***
		(0.031)		(0.030)
R-squared	0.173	0.294	0.169	0.289
Municipalities	5010	5010	5509	5509
Obs.	14149	14149	15498	15498

Notes: Variables in real per-capita terms (2010 euro). Total transfers (current and capital) include municipalities' share of the personal income tax. All specifications include year and municipalities' fixed effects. Clustered standard errors at municipality level in parenthesis. Significance: *** = 1%; ** = 5%; * = 10%.

we have to rule out the possibility that mayors in larger municipalities are more fiscally responsible not because of the fiscal rule but because they are more educated, older and/or because they are more affiliated with national parties and therefore abide more to the national party discipline.[14]

Table 6: Mean age of mayors by population size and education level (2004-06).

Population	Low	Middle	High
≤5000	56.56	50.58	49.06
5000-15000	54.98	51.23	50.12
≥15000	56.07	51.11	51.16

As a first pass to test whether these different characteristics of the mayors are able to explain our results, we first repeat our baseline difference-in-difference specification (equation 2) splitting the treatment and control groups not on the basis of the size of the municipality (below or above 5,000 inhabitants), but based on whether the mayor has an education above or below the median (Table A.3), an age above or below the median (Table A.4) and whether or not the mayor is affiliated with a national party (Table A.5). The results show that these alternatives are not able to explain our results. To approach the continuity of the controls in a more formal way, we next present results based on a regression discontinuity analysis.

Table 7: Distribution of mayors in municipality size classes (percent) by gender, education and affiliation to a national party (2004-06)

Population	Gender		Education			Party affiliation	
	Male	Female	Low	Middle	High	Yes	No
≤ 5000	90.57	9.43	15.85	47.57	36.58	23.73	76.27
5000-15000	89.41	10.59	7.71	41.90	50.39	52.41	47.59
≥15000	92.18	7.82	3.70	31.20	65.10	94.62	5.38

Notes: Education by ISCED levels: low (0- 2), middle (3-4), high (5-8).

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[14]By law, also, mayors earn more as the dimension of the municipality grows. We will address this issue in Section 6.

6   Regression-Discontinuity analysis

So far our analysis has focused on municipalities below 15,000 inhabitants as these have the same electoral rule for majors. However, one might be concerned that municipalities located away from the DSP threshold (the 5,000 inhabitants) have different characteristics that are relevant for capital spending, preventing a correct identification of the effect of fiscal rules on the political budget cycle.

We address this issue by combining the diff-in-diff approach with a regression discontinuity (RD) design, in order to get estimates of the difference in capital spending between pre- and post-electoral years just below and above the 5,000 population threshold. Around the 5,000 threshold the treatment of being subject to the fiscal constraints of the DSP should be as good as randomly assigned. The treatment changes deterministically at the threshold, while other characteristics should not, setting up a sharp identification scheme. In order to assess the validity of the exogeneity of the threshold, we run a McCrary (2008) density test around the 5,000 population threshold in 2006. Figure 7 shows no evidence of any statistically significant jump in the population distribution at the threshold, as it would be the case if mayors managed to keep the population below the 5,000 inhabitants in order to avoid the DSP rules, suggesting that the non-manipulation assumption is not violated.

A choice to be made in a regression discontinuity analysis concerns the use of non-parametric methods, such as local linear regression, in a sufficiently small neighborhood of the threshold, versus polynomial regressions run on the entire working sample (Lee and Lemieux, 2010). We opted for polynomial regression for a number of reasons: 1) it directly provides estimates of the diff-in-diff parameter at the cut-off point; 2) it allows to easily add municipality fixed effects and year effects, which turn out to be important in estimating the effect of the fiscal rules on the political budget cycle; 3) while preserving global validity of the estimates, it allows to handle non-linearities near the threshold through a sufficiently high-order polynomial.[15]

Our baseline RD specification for per-capita capital spending y_{it} is the following:

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[15]We have performed robustness checks using polynomials of different order and windows of varying widths around the 5,000 threshold. Results are generally robust but loose significance when the order of the polynomial is below three or the population window is above 3,000 inhabitants.

Figure 7: Checking continuity of the population distribution around the 5,000 inhabitant threshold.
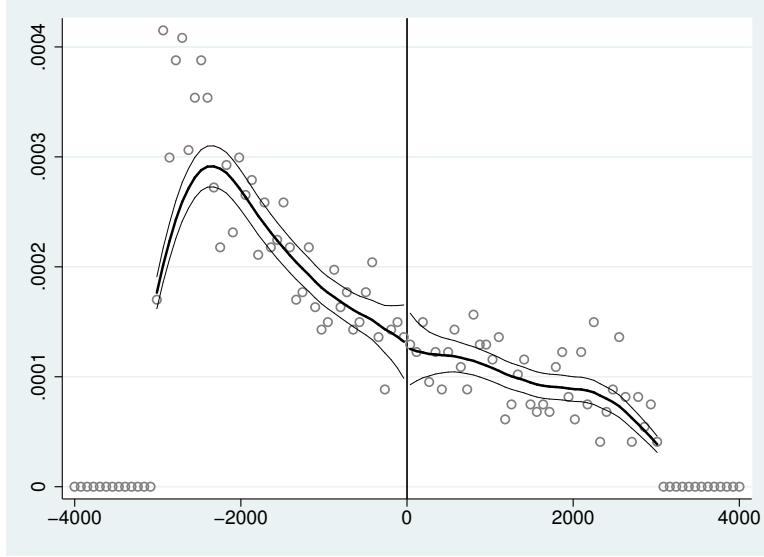
Notes: Distribution of binned normalized population around the 5,000 population threshold in 2006 (population window 2,000-8,000). The thick line is a kernel estimate and the thin lines are 95 percent confidence intervals (McCrary, 2008). The discontinuity estimate (log-difference in height) is -0.02 (standard error 0.20).

$$
\begin{aligned}
y_{i,t} = & \sum_{k=0}^{p}(\delta_k P_{i,t}^{*k}) + Z_{i,t}\sum_{k=0}^{p}(\gamma_k P_{i,t}^{*k}) \\
& + W_{i,t}\left[\sum_{k=0}^{p}(\alpha_k P_{i,t}^{*k}) + Z_{i,t}\sum_{k=0}^{p}(\phi_k P_{i,t}^{*k})\right] + \beta' X_{i,t} + \mu_i + \lambda_t + \epsilon_{i,t}
\end{aligned} \tag{3}
$$

which includes polynomials of order p in the normalized running variable $P_{i,t}^* = P_{i,t} - P_c$, where P_c is the 5,000 population threshold, its interactions with the treatment indicator $Z_{i,t}$, equal to one for municipalities subject to the DSP and zero otherwise

$$
Z_{i,t} = \begin{cases} 1 & \text{if } P_{i,t}^* > 0 \\ 0 & \text{if } P_{i,t}^* \leq 0, \end{cases}
$$

and the electoral dummy $W_{i,t}$, equal to one in pre-electoral years ($t = -2, -1, 0$), where $t = 0$ is the year of elections, and zero in post-electoral

22

years ($t = 1, 2$). Additional covariates $X_{i,t}$ include mayor's characteristics (gender, age, education, party affiliation, political color), total per-capita transfers received by municipalities, the proportion of people aged 15-64 and taxable per-capita income, while μ_i and λ_t are municipality fixed effects and year effects, respectively.[16]

Table 8 reports the estimates at the 5,000 threshold of the political budget cycle effect (the α_0 coefficient of the electoral dummy $W_{i,t}$) and the fiscal rule effect on the political budget cycle (the coefficient ϕ_0 of the interaction between the electoral dummy and the treatment indicator $Z_{i,t}$) from fifth-degree polynomial regressions over the 0-15,000 and 4,000-6,000 population windows. The local estimates confirm the existence of budget cycle, as capital spending is 36 percent higher in pre-electoral years, while the fiscal rule proves effective in mitigating the cycle, reducing electoral expenditure by more than 60 percent (column 1). If we restrict the sample to the 4,000-6,000 population window (column 3), the reduction in capital spending in pre-electoral years for larger municipalities more than offsets the average increase of the expenditure in pre-electoral periods. The inclusion of additional covariates (column 2 and 4), while confirming the baseline results, reduces the magnitude and significance of the estimated effects.

We then turn to check whether pre-determined characteristics of mayors and of municipalities are balanced on either side of the DSP threshold. Figures 8 and 9 show scatter plots of mayor's characteristics, namely gender, age, years of education and party affiliation, per-capita total transfers, per-capita taxable income and the proportion of population aged 15-64, averaged over evenly spaced population bins around the DSP cut-off for the 0-15,000 and 4,000-6,000 population windows. From visual inspection of the (fifth order) fitted polynomials around the threshold no evident discontinuities can be detected. There is some discontinuity in the age of the mayor in Figure 9, but it appears that the age drops at the threshold, instead of increasing.

In order to test for the continuity of covariates we run local linear regressions with symmetric optimal bandwidth around the DSP threshold.[17] Results reported in Table 9 do not show evidence of significant discontinuities at the cut-off, except for taxable income. As a further check and to account for possible non-linearities, in Table 10 we report RD estimates

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[16]For other works using municipality fixed effects in regression discontinuity analysis, see for example Petterson-Lidbom (2008) and Ferraresi et al. (2015).

[17]The symmetric optimal bandwidth is computed following Calonico, Cattaneo and Titiunik (2014). Bias-corrected coefficients and robust standard errors from first-degree local polynomial regressions with rectangular kernel are reported.
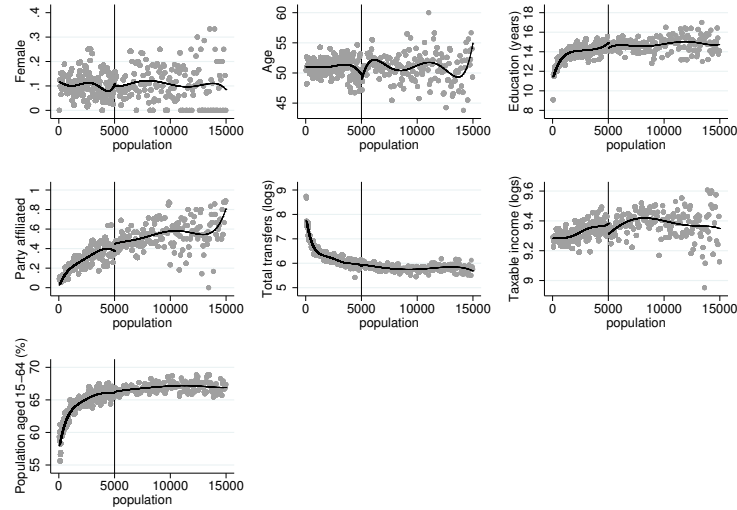
Table 8: Political budget cycle in log-capital spending of municipalities at the DSP threshold. RD-FE estimates (2004-06).

	0-15000		4000-6000	
	(1)	(2)	(3)	(4)
>5000	0.070	0.051	0.383*	0.272
	(0.112)	(0.105)	(0.203)	(0.205)
Pre-election years	0.365***	0.348***	0.525***	0.473***
	(0.090)	(0.085)	(0.186)	(0.182)
Pre-election years × >5000	-0.238**	-0.182*	-0.721***	-0.631**
	(0.114)	(0.109)	(0.276)	(0.289)
Other covariates	No	Yes	No	Yes
R-squared	0.062	0.176	0.107	0.188
Municipalities	5155	5010	620	604
Obs.	14848	14149	1700	1627

Notes: Variables in real per-capita terms (2010 euro). All specifications include a fifth-degree population polynomial, its interactions with the electoral and population dummies, time and municipality fixed effects. Other covariates include mayor's characteristics (gender, age, education, party affiliation, political color) and municipality level variables (total transfers per-capita received, proportion of population aged 15-64, taxable income per-capita). Clustered standard errors at municipality level in parenthesis. Significance: *** = 1%; ** = 5%; * = 10%.

Figure 8: Checking continuity of covariates around the 5,000 inhabitants threshold (population below 15,000).

for the covariates obtained from fifth-degree polynomial panel regressions within a 1,000 inhabitants distance from the threshold. Again, apart from the age (which actually drops), other controls do not display significant discontinuities at the threshold. In particular, we do not find evidence neither of a selection of more educated or competent individuals attracted by the higher wages, as found instead by Gagliarducci and Nannicini (2013) and discussed below, nor of more party affiliated mayors in larger municipalities.
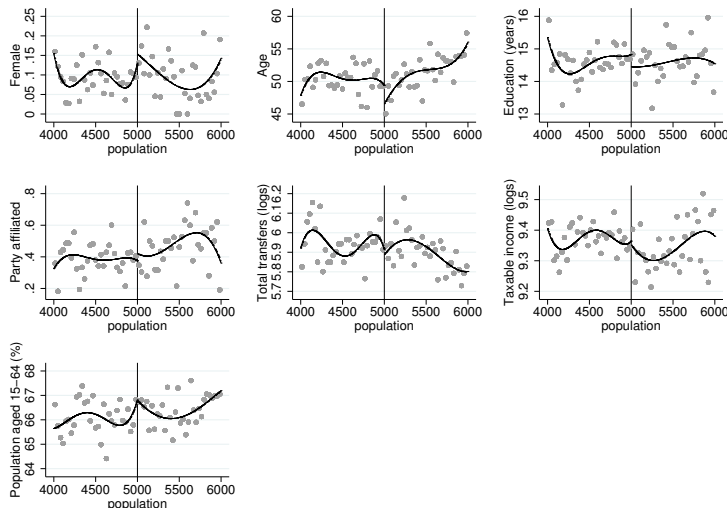
Figure 9: Checking continuity of covariates around the 5,000 inhabitants threshold (population 4,000-6,000).

Notes: Bins picked to match the variance of the variables (Calonico et al., 2014). Fifth-degree polynomial fit. Variables in real per-capita terms (2010 euro).

Table 9: Checking continuity of covariates around the 5,000 threshold. Local linear regression (2004-06).

	Coeff.	Std. Err.	Bandwidth	Obs.
Female	0.026	0.034	1211	2004
Age	-1.659	1.056	892	1474
Education (years)	-0.215	0.308	1127	1824
Party affiliated	0.030	0.055	1136	1891
Total transfers (logs)	-0.039	0.063	696	1130
Population aged 15-64 (%)	0.268	0.310	867	1460
Taxable income (logs)	-0.064**	0.027	1691	2915

Notes: Local linear regressions with symmetric optimal bandwidth. Bias-corrected coefficients and robust standard errors are reported. Significance: *** = 1%; ** = 5%; * = 10%.

Finally, we have to address the issue of the wage of the mayor. By law, mayors earn more as the dimension of the municipality grows (Table 11). Gagliarducci and Nannicini (2013) find that the change in wage for the Italian municipalities above the 5,000 threshold generates a selection of more educated and competent mayors into the job, although there is no evidence that these are less prone to the political budget cycle. The wage of the mayor, sharply increasing at the 5,000 threshold, introduces incentives that can potentially confound the estimated effect of the fiscal rule. In order to investigate whether the higher wage induces mayors seeking re-election to be more fiscally disciplined, we run polynomial regressions, with a 1,000 bandwidth, at other population thresholds where the mayor's wage increases, namely 1,000, 3,000 and 10,000 inhabitants. The rationale is that if the mayors wage really matters for the political budget cycle we should find some effect also at these thresholds. The results reported in Table 12 do not support this hypothesis, as we find no significant effects. We do not find it especially at the 3,000 threshold which entails a 50 percent wage increase. This latter result is consistent with those of Gagliarducci and Nannicini (2013).

Table 10: Checking continuity of covariates around the 5,000 threshold. RD-FE estimates (2004-06).

	Female	Age	Education	Party affili-ated	Total trans-fers	Population 15-64 (%)	Taxable income
>5000	0.002	-5.500**	1.028	-0.147	0.059	0.008	-0.003
	(0.062)	(2.373)	(0.682)	(0.098)	(0.074)	(0.133)	(0.007)
R-squared	0.013	0.029	0.025	0.035	0.050	0.238	0.598
Municipalities	618	618	604	618	620	620	620
Obs.	1670	1670	1628	1670	1700	1701	1701

Notes: Variables in real per-capita terms (2010 euro). A bandwidth of 1000 inhabitants on both sides of the threshold is used. Other controls include a fifth-degree population polynomial, its interactions with the DSP indicator, time effects and municipality fixed effects. Clustered standard errors at municipality level in parenthesis. Significance: *** = 1%; ** = 5%; * = 10%.

Table 11: Legislative thresholds of municipalities (2004-06).

Population	Wage of mayor	Wage of executive commit-tee	Size of executive commit-tee	Size of city council
≤1000	1,291	15%	4	12
1000-3000	1,446	20%	4	12
3000-5000	2,169	20%	4	16
5000-10000	2,789	50%	4	16
10000-15000	3,099	55%	6	20

Notes: Wage of mayor is the monthly gross amount in 2000 (current euro). Wage of members of the executive committee is expressed as a percentage of the mayor's wage. Size of executive committee is the maximum allowed number of executives appointed by the mayor. Size of city council is the number of seats in the city council.

Table 12: Political budget cycle in log-capital spending of municipalities at population thresholds relevant for mayor's wage. RD-FE estimates (2004-06).

	1000		3000		5000		10000	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
>5000	0.106	-0.134	0.018	-0.041	0.383*	0.272	-0.158	-0.152
	(0.190)	(0.175)	(0.171)	(0.182)	(0.203)	(0.205)	(0.247)	(0.225)
Pre-election years	0.095	0.063	0.208	0.147	0.525***	0.473***	-0.219	-0.061
	(0.133)	(0.117)	(0.152)	(0.159)	(0.186)	(0.182)	(0.278)	(0.251)
Pre-election years × >5000	0.054	0.071	-0.115	0.072	-0.721***	-0.631**	0.278	0.196
	(0.207)	(0.201)	(0.200)	(0.192)	(0.276)	(0.289)	(0.409)	(0.378)
Other covariates	No	Yes	No	Yes	No	Yes	No	Yes
R-squared	0.047	0.192	0.110	0.196	0.107	0.188	0.129	0.176
Municipalities	2485	2411	1183	1146	620	604	214	211
Obs.	7130	6797	3317	3145	1700	1627	559	539

Notes: Variables in real per-capita terms (2010 euro). All specifications include a fifth-degree population polynomial, its interactions with the electoral and population dummies, time and municipality fixed effects. Other covariates include mayor's characteristics (gender, age, education, party affiliation, political color) and municipality level variables (total transfers per-capita received, proportion of population aged 15-64, taxable income per-capita). Clustered standard errors at municipality level in parenthesis. Significance: *** = 1%; ** = 5%; * = 10%.

7 Conclusions

This paper has used data on Italian municipalities during the early 2000s to present evidence suggesting that fiscal rules can moderate the political budget cycle. We have used the discontinuity in the application of the rule at 5,000 inhabitants to identify the effect of the rule on the political budget cycle. We find that the political budget cycle increases real capital spending by about 15 percent on average, and total spending by 5 percent, in the years prior to municipal elections and that the sub-national fiscal rule reduces these figures by about one third. A regression discontinuity analysis around the 5,000 threshold reinforces these results, as the reduction in capital spending in pre-electoral years for municipalities subject to the DSP is about two-thirds as compared to the municipalities not subject to the rule. We have also provided evidence that the fiscal rule has been enforced by the central government, at least over the period 2004-06 for which we have data on the municipalities that have breached the DSP. As far as we know, this is the first paper that assesses the effect of fiscal rules not on budget deficit, but on the political budget cycle. To this extent, it adds to the small and growing literature trying to establish the impact of fiscal rules on budget outcomes. Differently from the papers showing that fiscal rules can have an effect on budget deficits, however, our result has more direct welfare implications. Results showing that fiscal rules can help contain the budget deficit suggest that those rules are enforced, but it does not imply that they are welfare improving. On the contrary, the political budget cycle is inherently inefficient as it distorts spending and revenues for electoral and political purposes. In this regard, our results point to a possible clear welfare-improving role of fiscal rules.

A Appendix

Table A.1: Dataset description

Variable	Description	Data source
Capital spending in real per-capita terms (cash definition)	It is the sum of all cash capital expenditures by municipalities, the largest outlays referring to the construction of buildings, roads, public transports, purchase of furnitures and other equipments. Nominal values are deflated by using the national Consumption Price Index (all items, base 2010).	Certificati di Conto Consuntivo - Ministero dell'Interno (http://finanzalocale.interno.it)
Current spending in real per-capita terms (cash definition)	It is the sum of all cash current expenditures by municipalities, the largest outlays referring to personnel and purchases of goods and services. Nominal values are deflated by using the national Consumption Price Index (all items, base 2010).	Certificati di Conto Consuntivo - Ministero dell'Interno (http://finanzalocale.interno.it)
Total spending in real per-capita terms (cash definition)	It is the sum of all cash current and capital expenditures by municipalities, as defined above. Nominal values are deflated by using the national Consumption Price Index (all items, base 2010).	Certificati di Conto Consuntivo - Ministero dell'Interno (http://finanzalocale.interno.it)
Long-term borrowing in real per-capita terms (accrual definition)	It is the sum of revenues from loans and bonds issued to fund investment projects. Nominal values are deflated by using the national Consumption Price Index (all items, base 2010).	Certificati di Conto Consuntivo - Ministero dell'Interno (http://finanzalocale.interno.it)
Pre-election years	Dummy equal to one in the three years prior to municipal elections, including the electoral year.	Archivio storico delle elezioni - Ministero dell'Interno (http://elezionistorico.interno.it)
Taxable income in real per-capita terms	It is the sum at municipality level of total incomes as available from the personal income tax returns (IRPEF).	Open Data Dichiarazioni Fiscali - Ministero dell'Economia e delle Finanze (http://www1.finanze.gov.it)
Share of population aged 15-64	It is computed as the ratio of population aged 15-64 over total population.	Demo -Istituto Nazionale di Statistica (http://demo.istat.it)
Age of mayor	The age dummy is equal to one if the mayor has an age above the median.	Anagrafe degli Amministratori Locali e Regionali - Ministero dell'Interno (http:///amministratori.interno.it)
Education of mayor	Education is measured in years of schooling by converting ISCED levels. Dummies for three education categories are obtained by aggregating ISCED levels as follows: low (0-2), middle (3-4) and high (5-8).	Anagrafe degli Amministratori Locali e Regionali - Ministero dell'Interno (http://amministratori.interno.it)
Party affiliation of mayor	Dummy equal to one if the list or coalition supporting the winning candidate mayor at municipal elections is not a *Lista civica*, that is a list not affiliated to a national or regional party.	Anagrafe degli Amministratori Locali e Regionali - Ministero dell'Interno (http:///amministratori.interno.it)
Hired personnel	It is the sum of personnel hired over the year under permanent contracts (measured in number of units at 31/12), plus the positive annual change of personnel hired with fixed term and other temporary or flexible contracts. Temporary personnel is in annual units, obtained by summing up the number of months worked per year by each category of temporary workers and dividing by 12.	Conto annuale della PA - Ministero dell'Economia e delle Finanze (http://www.contoannuale.tesoro.it)

Table A.2: Summary statistics by population size (2004-06)

	≤5000		5000-15000		≥15000	
	Mean	S. D.	Mean	S. D.	Mean	S. D.
Municipalities						
Capital spending	671	1,009	305	275	312	341
Current spending	838	532	649	231	749	226
Total spending	1,509	1,381	954	419	1061	472
Total transfers	840	1,048	371	256	403	203
Total revenues	1,777	2,075	1,133	494	1,290	587
Long-term borrowing	133	285	103	154	136	195
Total outstanding debt	1,102	3,893	1,164	10,264	1,210	1,039
Taxable income	11,451	2,913	12,566	3,307	12,975	3,727
Hiring (per 1000-capita)	0.72	1.38	2.24	3.09	12.06	47.71
Population (units)	1,845	1,310	8,630	2,760	49,900	137,584
Population aged 15-64 (%)	63.62	4.78	66.73	2.46	66.72	2.18
Pre-election years	0.49	0.50	0.55	0.50	0.60	0.49
Mayors						
Female (1/0)	0.10	0.31	0.11	0.31	0.08	0.27
Age	50.98	10.01	50.97	8.83	51.31	8.22
Education (years)	13.66	3.16	14.65	2.72	15.45	2.30
Party affiliated (1/0)	0.25	0.43	0.53	0.50	0.97	0.18
Mandate (first = 1)	0.80	0.40	0.81	0.39	0.83	0.38

Notes: Variables in real per-capita terms (2010 euro)

Table A.3: Effect of mayor's education on electoral log-capital per-capita spending of municipalities by population size. Fixed effects estimates (2004-06).

	≤5000		5000-15000	
	(1)	(2)	(3)	(4)
Mayor's education × Pre-election years	0.007	0.014	0.015	-0.004
	(0.027)	(0.024)	(0.036)	(0.032)
Pre-election years	0.147***	0.123***	0.105***	0.100***
	(0.018)	(0.016)	(0.027)	(0.023)
Mayor's education	-0.009	-0.020	-0.012	-0.016
	(0.023)	(0.022)	(0.033)	(0.029)
Female	-0.027	-0.033	-0.083*	-0.045
	(0.030)	(0.028)	(0.043)	(0.038)
Age	0.000	-0.000	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.001)
Party affiliation	-0.013	0.055	-0.192*	-0.140*
	(0.063)	(0.057)	(0.098)	(0.081)
Right wing	-0.072	-0.111	0.152	0.127
	(0.077)	(0.070)	(0.106)	(0.090)
Left wing	0.024	-0.041	0.179*	0.133
	(0.068)	(0.062)	(0.100)	(0.084)
Population aged 15-64 (%)	0.020**	0.029***	-0.044*	-0.044*
	(0.009)	(0.009)	(0.025)	(0.023)
Taxable income (logs)	-0.249	-0.275*	0.365	0.173
	(0.175)	(0.163)	(0.502)	(0.466)
Total transfers (logs)	0.607***		0.396***	
	(0.024)		(0.039)	
Total revenues (logs)		1.239***		1.035***
		(0.036)		(0.063)
R-squared	0.183	0.303	0.125	0.253
Municipalities	3850	3850	1202	1202
Obs.	10858	10858	3291	3291

Notes: Variables in real per-capita terms (2010 euro). Total transfers (current and capital) include municipalities' share of the personal income tax. All specifications include year and municipalities' fixed effects. Clustered standard errors at municipality level in parenthesis. Significance: *** = 1%; ** = 5%; * = 10%.

Table A.4: Effect of mayor's age on electoral log-capital per-capita spending of municipalities by population size. Fixed effects estimates (2004-06)

	≤5000		5000-15000	
	(1)	(2)	(3)	(4)
Mayor's age × Pre-election years	-0.012	0.005	0.050	0.039
	(0.027)	(0.024)	(0.035)	(0.032)
Pre-election years	0.156***	0.126***	0.091***	0.081***
	(0.018)	(0.017)	(0.023)	(0.020)
Mayor's age	0.014	-0.007	-0.022	-0.021
	(0.022)	(0.020)	(0.033)	(0.029)
Female	-0.027	-0.033	-0.086**	-0.048
	(0.030)	(0.028)	(0.042)	(0.037)
Education (years)	-0.001	-0.002	-0.001	-0.003
	(0.003)	(0.003)	(0.005)	(0.004)
Party affiliation	-0.014	0.055	-0.189*	-0.140*
	(0.063)	(0.057)	(0.100)	(0.080)
Right wing	-0.071	-0.111	0.153	0.128
	(0.077)	(0.070)	(0.108)	(0.089)
Left wing	0.024	-0.042	0.176*	0.132
	(0.068)	(0.062)	(0.102)	(0.083)
Population aged 15-64 (%)	0.020**	0.028***	-0.043*	-0.043*
	(0.009)	(0.009)	(0.025)	(0.023)
Taxable income (logs)	-0.246	-0.272*	0.352	0.167
	(0.175)	(0.163)	(0.502)	(0.465)
Total transfers (logs)	0.607***		0.397***	
	(0.024)		(0.040)	
Total revenues (logs)		1.239***		1.035***
		(0.036)		(0.063)
R-squared	0.183	0.303	0.126	0.253
Municipalities	3850	3850	1202	1202
Obs.	10858	10858	3291	3291

Notes: Variables in real per-capita terms (2010 euro). Total transfers (current and capital) include municipalities' share of the personal income tax. The dummy 'Mayor's age' is equal to one if age is above the median. All specifications include year and municipalities' fixed effects. Clustered standard errors at municipality level in parenthesis. Significance: *** = 1%; ** = 5%; * = 10%.

Table A.5: Effect of mayor's affiliation to a national political party on electoral log-capital per-capita spending of municipalities by population size. Fixed effects estimates (2004-06).

	≤5000		5000-15000	
	(1)	(2)	(3)	(4)
Party affiliated × Pre-election years	-0.008	0.003	-0.006	-0.008
	(0.028)	(0.025)	(0.033)	(0.030)
Pre-election years	0.152***	0.129***	0.115***	0.102***
	(0.016)	(0.015)	(0.025)	(0.023)
Female	-0.028	-0.033	-0.083*	-0.046
	(0.030)	(0.028)	(0.043)	(0.038)
Age	0.000	-0.000	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.001)
Education (years)	-0.000	-0.002	-0.001	-0.002
	(0.003)	(0.003)	(0.005)	(0.004)
Party affiliated	-0.011	0.053	-0.189*	-0.137*
	(0.064)	(0.059)	(0.099)	(0.081)
Right wing	-0.069	-0.112	0.153	0.128
	(0.077)	(0.069)	(0.106)	(0.090)
Left wing	0.027	-0.042	0.179*	0.133
	(0.068)	(0.062)	(0.101)	(0.083)
Population aged 15-64 (%)	0.019**	0.028***	-0.044*	-0.044*
	(0.009)	(0.009)	(0.025)	(0.023)
Taxable income (logs)	-0.245	-0.272*	0.362	0.171
	(0.175)	(0.163)	(0.501)	(0.466)
Total transfers (logs)	0.607***		0.396***	
	(0.024)		(0.039)	
Total revenues (logs)		1.239***		1.034***
		(0.036)		(0.063)
R-squared	0.183	0.303	0.125	0.253
Municipalities	3850	3850	1202	1202
Obs.	10858	10858	3291	3291

Notes: Variables in real per-capita terms (2010 euro). Transfers (current and capital) include municipalities' share of the personal income tax. All specifications include year and municipalities' fixed effects. Clustered standard errors at municipality level in parenthesis. Significance: *** = 1%; ** = 5%; * = 10%.

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