Policy outcomes of single and double-ballot elections

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Motivation

- Electoral systems play a crucial role in shaping incentives within which public policies are established.
- Political economy literature includes a substantial body of work devoted to the task of exploring the impact on public expenditure of plurality versus proportional electoral rules, and of the size of electoral districts.
- Only few works have been done on the possibility that elections do no not take place in one-shot game, but in a two-stage process.
- The electoral system is very relevant in these months for Italy since in the Italian Parliament is actually on track the reform of the electoral law.

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Related literature

- Fujiwara (2011) uses figures for mayoral elections in Brazil in 1996-2004, to provide evidence that a transition from the single to the double-ballot system leads to an increase in the number of votes cast for the third-placed candidates;
- Bracco and Brugonoli (2012) find that in a double-ballot system taxes are lower than in a single-ballot and, moreover, runoff municipalities politically aligned with the central government receive more transfers than those not aligned;

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- The single ballot regime favours coalitions for any given level of polarization (Proposition 2):
  - moderate-extremist parties merge if the level of polarization is high;
  - a centrist party is formed if, instead, the level of polarization is low.

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- In the presence of a not very polarized electorate, the double-ballot system reduces the influence of extremist groups on political policies allowing moderate parties to run on their own platforms (Proposition 7), in fact:
  - If h is large, the unique equilibrium is a two-party system, as in the single-ballot case, since moderates always prefer to merge with extremists.
  - If h is low, on the other hand, the unique equilibrium is a four party system where all candidates run alone.

h measures the "handicap" of running alone and it depends on the polarization of the electorate: if the electorate is highly polarized, the handicap of running alone is large; if instead the level of polarization is low, the handicap of running alone is low.

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Theoretical background

- The single-ballot regime always induce parties to merge in coalitions and the double-ballot regime induces coalitions only if polarization is very high (Bordignon et al. 2013).
- As a consequence, equilibrium policies are more dispersed under plurality than under runoff.
- Under the double-ballot regime what matters is not to win the first round but to pass it and win the final election.

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The difference in the outcome policies between the single and double-ballot in the low polarization case might be related to the possibility that in the double-ballot case there is no need of coalitions to win the election:

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- As Roubini and Sachs (1989) and Kontopoulos and Perotti (1999) show, coalition members might have divergent interests and so each member has an incentive to protect a particular part of the budget.
- It is reasonable to expect lower taxes and expenditure in the double-ballot (with low polarization) than in the single ballot: the single ballot regime always induces parties to merge in coalitions and the double-ballot system induces coalitions only if polarization is very high (Bordignon et al., 2013).

Electoral rules for Italian municipalities

- In Italy, there are two different systems for the election of the mayor and of the municipal council, depending on the number of inhabitants in the municipality.
  - Municipalities with fewer than 15,000 inhabitants (small) elect their mayors in accordance with a single-ballot plurality rule where only one list can support the mayor.
  - Municipalities with more than 15,000 inhabitants (large) elect their mayors in accordance with a double-ballot plurality rule where multiple lists can support the mayor.
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Small municipalities system

- Each mayoral candidate is associated with a list of candidates for member of the city council.
- Voters are entitled to vote for a mayoral candidate and may cast, if the wish, a preference vote for a specific candidate to be a member of the city council.
- The mayoral candidate who gains the largest number of votes is elected mayor.

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Large municipalities system

- Each mayoral candidate is associated with one list or coalitions of lists of candidates for member of the city council.
- In the first ballot, voters are entitled to vote for a mayoral candidate and may cast, if the wish, a preference vote for a specific candidate for a member of the city council. The mayoral candidate who receives the absolute majority of votes is elected mayor in the first ballot.
- If the candidate does not receive the absolute majority of votes in the first ballot, then a second ballot is held between the two candidates collecting the largest number of votes in the first round.

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Dataset

The dataset contains a full range of information of Italian municipalities for the period 2001-2007 organized into four sections:

1. fiscal data on spending and revenue items;
2. institutional data on the main political and personal features of municipal bodies (mayor, municipal executive, municipal council);
3. electoral data covering the results of elections in which the mayors in office during the period covered by the dataset were elected;
4. municipal demographic and socio-economic data such as population size, age structure, average income of inhabitants.

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Dependent Variables

Since we are interested in checking if, and how, the electoral system affects budgetary decisions taken at municipal level, as our dependent variables we have adopted information on:

- total own revenue
  - taxes
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Explanatory variable

- **large**: is a dummy variable equal to one when the mayor of a municipality who held office in a certain year during the period 2001-2007, was elected according to the large-municipality rule, or to zero when he was elected according to the small-municipality rule. Note that small-large municipality rule is defined according to census population so:
  - from 2003 onwards (the year starting from which the 2001 census population was used to redefine municipalities' election rules) large municipalities (from the year when election held) are those for which the population of the 2001 census is greater than 15,000 inhabitants;
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Political variables

- **list:** it is a categorical variable ranging from 1 to 7 and it accounts for the number of lists associated, in the first round, with the mayoral candidate running under the double-ballot rule. This variable proxies the level of polarization;
- **voteshare**: percentage of votes obtained by the mayor when elected;
- **termlim**: dummy variable equal to one when the mayor in office in a given year is in his second consecutive term of office

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Control variables

- **population**: population of the municipality;
- **child**: proportion of citizens aged between 0 and 14;
- **aged**: proportion of aged over 65;
- **foreign residents**: proportion of foreign residents;
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Econometric specification

$$Y_{i,t} = \gamma_1 large_{i,t} + \gamma_2 large_{i,t} * list_{i,t} + f\left(pop_{i,t}\right) + \beta' X_{i,t} + \tau_t + \mu_i + \varepsilon_{i,t}$$

- γ_1 accounts for the impact of the large electoral system on the public policy outcome;
- γ_2 let us understand how this impact varies according the number of lists supporting the elected mayor;

Regression Discontinuity Approach

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Regression Discontinuity Approach

Key identification assumptions

1. It is completely random if a municipality lies to the left or to the right of the threshold: municipalities have the same characteristics and they should differ only because of the treatment status.
2. The threshold can not be modified by municipalities.
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Discontinuity policies

Population	Wage Mayor	Wage Ex. Com.	Fee Council	Ex. Com. Size	Council Size	Electoral Rule	Neighbor. Councils	Hospital/ Health
Below 1,000	1,291	15%	18	4	12	single	no	no/no
1,000–3,000	1,446	20%	18	4	12	single	no	no/no
3,000–5,000	2,169	20%	18	4	16	single	no	no/no
5,000–10,000	2,789	50%	18	4	16	single	no	no/no
10,000–15,000	3,099	55%	22	6	20	single	no	no/no
15,000–20,000	3,099	55%	22	6	20	runoff	no	no/no
20,000–30,000	3,099	55%	22	6	20	runoff	no	yes/no
30,000–50,000	3,460	55%	36	6	30	runoff	allowed	yes/no
50,000–60,000	4,132	75%	36	6	30	runoff	allowed	yes/no
60,000–100,000	4,132	75%	36	6	30	runoff	allowed	yes/yes
100,000–250,000	5,010	75%	36	10	40	runoff	yes	yes/yes
250,000–500,000	5,784	75%	36	12	46	runoff	yes	yes/yes
Above 500,000	7,798	75%	36	14-16	50-60	runoff	yes	yes/yes

Discontinuity policies

- We restrict the sample to municipalities between 10,000 and 20,000 inhabitants in order to avoid overlapping institutional breaks.
- Such restriction reduces the data set to a sample of 3,531 observations.
- Overall we have information on 546 municipalities observed at least two times.
- On average, over 2001-2007, the sample includes 504 municipalities: 378 are small municipalities (2,644 observations) and 127 are large municipalities (887 observations).

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Timing and frequency of elections

Number of elections	Obs.	%
2	448	82.05
3	96	17.58
4	2	0.37
Total	546	100

Switching municipalities

	Electoral regime		
Year	from small to large	from large to small	Total
2001	0	0	0
2002	0	0	0
2003	6	1	7
2004	12	2	14
2005	1	1	2
2006	5	1	6
2007	8	1	9
Total	32	6	38

Switching municipalities

	small electoral regime				large electoral regime				Difference in Means
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	
total own revenue	543.23	214.32	194.21	990.28	520.57	193.58	188.93	897.54	**-22.66**
									(-0.47)
taxes	364.40	163.23	83.81	801.99	354.82	145.66	133.58	706.23	**-9.58**
									(-35.49)
charges	178.83	102.77	31.24	543.55	165.75	88.41	29.12	341.57	**-13.08**
									(-22.00)
current expenditure	696.49	190.03	399.47	1099.75	664.65	170.14	407.81	1031.93	**-31.84**
									(-41.38)

Number of lists

Small				Large			
N°lists	Obs	N° of municipalities (average across 2001-2007)	%	N°lists	Obs	N° of municipalities (average across 2001-2007)	%
1	2,644	378	100	1	164	23	18
				2	65	9	7
				3	192	27	22
				4	166	24	19
				5	136	19	15
				6	108	15	12
				>7	56	8	6
Total	2,644	378	100		887	127	100

Results

Polynomial order	**A**. Estimations without covariates				**B**. Estimation with covariates			
	total own revenue	taxes	charges	current expenditure	total own revenue	taxes	charges	current expenditure
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
4th								
large	-61.97**	-27.56	-34.41*	-38.79	-77.40***	-33.93**	-43.47**	-48.92*
	(25.36)	(17.02)	(19.80)	(25.10)	(25.01)	(16.65)	(19.80)	(25.05)
large*list	6.21*	1.32	4.89*	4.10	7.79**	1.53	6.26**	5.82
	(3.54)	(2.32)	(2.73)	(3.88)	(3.30)	(2.19)	(2.74)	(3.85)
5th								
large	-66.74***	-31.13*	-35.62**	-43.68*	-84.08***	-37.91**	-46.17**	-55.51**
	(24.64)	(17.18)	(17.85)	(24.00)	(24.90)	(16.82)	(18.57)	(24.07)
large*list	6.13*	1.23	4.90*	4.02	7.72**	1.45	6.27**	5.76
	(3.56)	(2.31)	(2.75)	(3.91)	(3.32)	(2.19)	(2.76)	(3.87)
6th								
large	-68.67***	-31.87*	-36.80*	-44.41*	-85.13***	-38.32**	-46.81**	-55.30**
	(25.47)	(17.37)	(19.13)	(24.63)	(25.65)	(16.98)	(19.71)	(24.68)
large*list	6.18*	1.26	4.91*	4.05	7.74**	1.46	6.28**	5.76
	(3.56)	(2.32)	(2.76)	(3.93)	(3.32)	(2.19)	(2.77)	(3.89)
Overall Observations	3,531	3,531	3,531	3,531	3,531	3,531	3,531	3,531
Observations small municipalities	2,644	2,644	2,644	2,644	2,644	2,644	2,644	2,644
Observations large municipalities	887	887	887	887	887	887	887	887
R-squared	0.88	0.88	0.76	0.87	0.88	0.88	0.76	0.88

Results

Polynomial order	A. Estimations without covariates				B. Estimation with covariates			
	total own revenue	taxes	charges	current expenditure	total own revenue	taxes	charges	current expenditure
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
1st								
large	-39.18*	-23.83	-15.36	-23.08	-54.32***	-29.58*	-24.74	-33.57*
	(20.55)	(15.54)	(15.08)	(19.65)	(19.96)	(15.13)	(15.39)	(19.68)
large*list	6.26*	1.38	4.88*	4.04	7.96**	1.64	6.32**	5.85
	(3.66)	(2.30)	(2.88)	(3.97)	(3.43)	(2.18)	(2.89)	(3.94)
2nd								
large	-45.30**	-23.26	-22.04	-27.36	-61.55***	-29.01*	-32.54**	-38.90*
	(22.67)	(16.85)	(14.48)	(21.68)	(22.27)	(16.44)	(14.95)	(21.60)
large*list	6.30*	1.38	4.92*	4.11	7.90**	1.63	6.27**	5.82
	(3.64)	(2.30)	(2.85)	(3.95)	(3.40)	(2.17)	(2.86)	(3.92)
3rd								
large	-43.09*	-24.47	-18.62	-26.38	-58.73**	-30.09*	-28.64*	-37.08*
	(23.08)	(16.52)	(15.90)	(21.79)	(22.73)	(16.11)	(16.21)	(21.74)
large*list	6.43*	1.37	5.06*	4.23	8.03**	1.61	6.43**	5.95
	(3.65)	(2.31)	(2.84)	(3.96)	(3.41)	(2.18)	(2.86)	(3.93)
4th								
large	-61.97**	-27.56	-34.41*	-38.79	-77.40***	-33.93**	-43.47**	-48.92*
	(25.36)	(17.02)	(19.80)	(25.10)	(25.01)	(16.65)	(19.80)	(25.05)
large*list	6.21*	1.32	4.89*	4.10	7.79**	1.53	6.26**	5.82
	(3.54)	(2.32)	(2.73)	(3.88)	(3.30)	(2.19)	(2.74)	(3.85)
5th								
large	-66.74***	-31.13*	-35.62**	-43.68*	-84.08***	-37.91**	-46.17**	-55.51**
	(24.64)	(17.18)	(17.85)	(24.00)	(24.90)	(16.82)	(18.57)	(24.07)
large*list	6.13*	1.23	4.90*	4.02	7.72**	1.45	6.27**	5.76
	(3.56)	(2.31)	(2.75)	(3.91)	(3.32)	(2.19)	(2.76)	(3.87)
6th								
large	-68.67***	-31.87*	-36.80*	-44.41*	-85.13***	-38.32**	-46.81**	-55.30**
	(25.47)	(17.37)	(19.13)	(24.63)	(25.65)	(16.98)	(19.71)	(24.68)
large*list	6.18*	1.26	4.91*	4.05	7.74**	1.46	6.28**	5.76
	(3.56)	(2.32)	(2.76)	(3.93)	(3.32)	(2.19)	(2.77)	(3.89)
Overall Observations	3,531	3,531	3,531	3,531	3,531	3,531	3,531	3,531
Observations small municipalities	2,644	2,644	2,644	2,644	2,644	2,644	2,644	2,644
Observations large municipalities	887	887	887	887	887	887	887	887
R-squared	0.88	0.88	0.76	0.87	0.88	0.88	0.76	0.88

Notes: Period 2001-2007; municipalities with a resident population of between 10,000 and 20,000 inhabitants. Estimation methods: polynomial approximation to the 1st, 2nd, 3rd, 4th, 5th and 6th degrees. All estimates include municipality and year fixed effects. The estimations in panel B also includes the following covariates: mayor's lame-duck dummy, percentage of votes obtained by the mayor when elected (for the double ballot we consider the votes obtained at the first round), share of population aged between 0 and 14, share of population over 65 years, share of foreign residents, population density computed as the ratio between population and area, per capita personal income tax base. Robust standard errors, clustered at municipal level, are reported in brackets. The R-squared is obtained by taking the average R-squared of each polynomial order across regressions. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Results

- For *total own revenue* the coefficient of the linear combination $large_{it} + large_{it} * list_{it}$ it is always significant until the number of lists is equal to five and decreases as the number of lists increases.
- For *current expenditure* the coefficient of the linear combination $large_{it} + large_{it} * list_{it}$ it is always significant until the number of lists is equal to three and decreases as the number of lists increases.

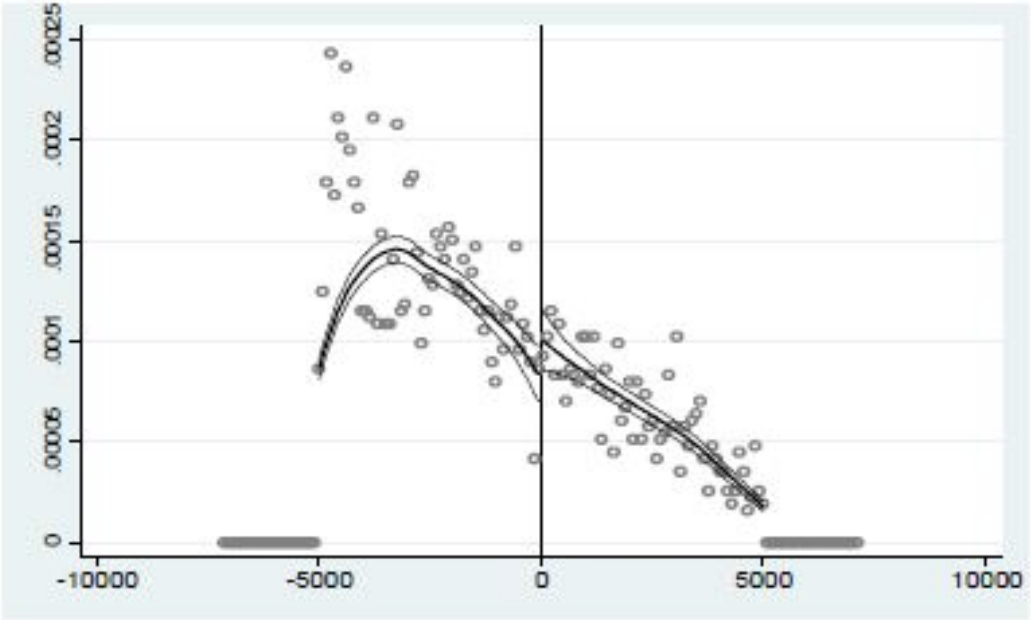
Results

- For *total own revenue* the coefficient of the linear combination $large_{it} + large_{it} * list_{it}$ it is always significant until the number of lists is equal to five and decreases as the number of lists increases.
- For *current expenditure* the coefficient of the linear combination $large_{it} + large_{it} * list_{it}$ it is always significant until the number of lists is equal to three and decreases as the number of lists increases.

AIC

Polynomial order	Controls	total own revenue	taxes	charges	current expenditure
1	yes	40977.21	38210.16	39067.37	40396.44
2	yes	40979.50	38210.07	39068.14	40399.40
3	yes	40975.64	38211.58	39057.27	40393.52
4	yes	40972.89	38210.17	39047.12	40389.09
5	yes	40972.74	38208.94	39047.34	40389.21
6	yes	**40972.13**	**38206.41**	**39046.51**	**40388.61**
1	no	41071.40	38235.36	39141.30	40489.62
2	no	41073.33	38236.58	39141.18	40490.89
3	no	41068.89	38237.99	39129.95	40484.30
4	no	41067.34	38236.43	39122.09	40481.73
5	no	41066.56	38234.81	39122.56	40482.90
6	no	**41065.87**	**38232.61**	**39121.20**	**40481.54**

McCrary Test



Test of whether covariates have an effect at the discontinuity cutoff point

Polynomial order	Estimations without covariates						
	child	old	dens	income	votshare	termlim	foreign residents
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st							
large	-0.18	-0.27**	-7.10	167.41	-0.83	-0.18	-0.55*
	(0.17)	(0.13)	(8.46)	(118.64)	(2.99)	(0.18)	(0.31)
large*list	0.01	0.01	0.88	6.73	-0.94*	0.05*	0.11**
	(0.02)	(0.02)	(1.08)	(19.65)	(0.50)	(0.03)	(0.05)
2nd							
large	-0.27	-0.22*	-3.28	189.30**	-1.43	-0.22	-0.57*
	(0.17)	(0.13)	(5.57)	(93.97)	(2.97)	(0.18)	(0.29)
large*list	0.01	0.02	0.93	7.26	-0.95*	0.05*	0.10**
	(0.02)	(0.02)	(1.09)	(19.83)	(0.50)	(0.03)	(0.05)
3rd							
large	-0.25	-0.23*	-1.56	194.80**	-1.83	-0.22	-0.56*
	(0.18)	(0.13)	(5.46)	(96.80)	(3.03)	(0.19)	(0.31)
large*list	0.01	0.02	0.99	7.05	-0.96*	0.05*	0.10**
	(0.02)	(0.02)	(1.09)	(19.90)	(0.50)	(0.03)	(0.05)
4th							
large	-0.34	-0.23	0.64	202.10*	-3.88	-0.13	-0.44
	(0.22)	(0.15)	(7.52)	(114.90)	(3.47)	(0.20)	(0.34)
large*list	0.01	0.02	1.00	7.23	-0.99**	0.05*	0.10**
	(0.02)	(0.02)	(1.11)	(20.06)	(0.50)	(0.03)	(0.05)
5th							
large	-0.38*	-0.23	-6.41	201.23*	-3.37	-0.18	-0.51
	(0.22)	(0.14)	(6.44)	(119.09)	(3.37)	(0.20)	(0.32)
large*list	0.01	0.02	0.84	6.89	-0.97**	0.05*	0.10**
	(0.02)	(0.02)	(1.09)	(19.76)	(0.49)	(0.03)	(0.05)
6th							
large	-0.38	-0.21	-8.42	177.27	-3.89	-0.20	-0.47
	(0.23)	(0.15)	(6.84)	(137.59)	(3.42)	(0.21)	(0.33)
large*list	0.01	0.02	0.87	7.49	-0.96*	0.05*	0.10**
	(0.02)	(0.02)	(1.09)	(19.86)	(0.49)	(0.03)	(0.05)
Overall Observations	3,531	3,531	3,531	3,531	3,531	3,531	3,531
Observations small municipalities	2,644	2,644	2,644	2,644	2,644	2,644	2,644
Observations large municipalities	887	887	887	887	887	887	887
R-squared	0.97	0.99	0.99	0.98	0.70	0.42	0.94

Specification test of whether large is as good as randomly assigned

Dependent variable: large						
	1st	2nd	3rd	4th	5th	6th
polynomial order	(1)	(2)	(3)	(4)	(5)	(6)
termlim	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
child	-0.09	-0.55	-0.43	-0.83	-0.81	-0.82
	(0.92)	(0.84)	(0.82)	(0.83)	(0.79)	(0.80)
old	-1.98**	-1.47*	-1.48*	-1.12*	-0.97	-0.87
	(0.83)	(0.80)	(0.79)	(0.67)	(0.61)	(0.60)
dens	-0.87	-0.48	-0.30	-0.06	-0.52	-0.63*
	(0.74)	(0.47)	(0.42)	(0.51)	(0.35)	(0.37)
income	0.07	0.07	0.07	0.06	0.05	0.05
	(0.06)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
votshare	-3.08	-3.86	-4.50	-5.47	-4.54	-5.12
	(5.53)	(4.78)	(4.93)	(4.47)	(3.84)	(3.91)
foreign resident	-0.80*	-0.56	-0.57	-0.20	-0.23	-0.19
	(0.48)	(0.43)	(0.43)	(0.39)	(0.37)	(0.37)
F-test	1.64	1.17	1.27	1.1	1.56	1.41
p-value	0.1227	0.3193	0.2652	0.3647	0.1462	0.1979
Overall Observations	3,531	3,531	3,531	3,531	3,531	3,531
Observations small municipalities	2,644	2,644	2,644	2,644	2,644	2,644
Observations large municipalities	887	887	887	887	887	887
R-squared	0.96	0.96	0.97	0.97	0.98	0.98

Notes: Period 2001-2007; municipalities with a resident population of between 10,000 and 20,000 inhabitants. Estimation methods: polynomial approximation to the 1st,2nd,3rd,4th,5th and 6th degrees. The variables *votshare*, dens and *income* have been rescaled by dividing by 10,000. All estimates include municipality, year fixed effects and the interaction term (large*list). Robust standard errors, clustered at municipal level, are reported in brackets. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Placebo test at the "fake" threshold of 12,057 inhabitants

Polynomial order	Median below (12,057)							
	A. Estimations without covariates				B. Estimation with covariates			
	total own revenue	taxes	charges	current expenditure	total own revenue	taxes	charges	current expenditure
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
1st								
large	-0.97	13.23	-14.21	-17.15	-0.34	14.44	-14.77	-18.35
	(24.13)	(11.99)	(20.99)	(21.43)	(23.20)	(11.91)	(20.50)	(20.82)
large*list	-8.59	-9.34*	0.75	1.84	-8.63	-9.51*	0.88	3.30
	(6.56)	(4.87)	(5.02)	(6.55)	(6.51)	(4.91)	(4.95)	(6.28)
2nd								
large	-0.28	11.20	-11.48	-11.32	-1.69	11.78	-13.47	-12.53
	(26.62)	(14.14)	(22.05)	(22.55)	(25.77)	(14.04)	(21.73)	(21.95)
large*list	-8.04	-8.87*	0.83	2.02	-8.14	-9.07*	0.94	3.38
	(6.58)	(4.88)	(5.04)	(6.53)	(6.57)	(4.93)	(4.99)	(6.28)
3rd								
large	-0.27	15.61	-15.88	-21.29	-0.65	16.25	-16.89	-23.94
	(28.04)	(16.99)	(21.89)	(23.12)	(27.31)	(16.91)	(21.68)	(22.55)
large*list	-7.99	-8.82*	0.83	1.96	-8.14	-9.05*	0.91	3.26
	(6.57)	(4.86)	(5.06)	(6.55)	(6.57)	(4.91)	(5.01)	(6.31)
4th								
large	16.00	32.68	-16.69	-14.29	11.91	32.04	-20.13	-19.71
	(30.44)	(20.31)	(22.03)	(24.00)	(29.69)	(20.30)	(21.71)	(23.25)
large*list	-8.02	-8.83*	0.81	1.94	-8.17	-9.08*	0.91	3.25
	(6.56)	(4.87)	(5.04)	(6.62)	(6.57)	(4.93)	(4.98)	(6.37)
5th								
large	10.20	22.11	-11.92	-5.97	4.80	21.09	-16.29	-12.90
	(32.62)	(23.13)	(22.28)	(24.65)	(31.68)	(23.20)	(21.77)	(23.63)
large*list	-8.97	-9.09*	0.12	1.22	-8.99	-9.30*	0.30	2.64
	(6.45)	(4.85)	(5.01)	(6.61)	(6.49)	(4.91)	(5.00)	(6.40)
6th								
large	4.57	25.02	-20.45	0.17	-0.83	25.04	-25.88	-8.36
	(36.02)	(26.77)	(22.95)	(25.86)	(34.89)	(26.99)	(22.27)	(25.01)
large*list	-9.25	-9.05*	-0.19	1.16	-9.28	-9.26*	-0.02	2.57
	(6.54)	(4.84)	(4.96)	(6.61)	(6.60)	(4.89)	(4.96)	(6.40)
Overall Observations	2,423	2,423	2,423	2,423	2,423	2,423	2,423	2,423
R-squared	0.88	0.89	0.76	0.87	0.88	0.89	0.76	0.88

Notes: Period 2001-2007; municipalities with a resident population of between 10,000 and 15,000 inhabitants. Estimated discontinuities in fiscal policy outcome at fake threshold (median below the true 15,000 threshold). Estimation methods: polynomial approximation to the 1st, 2nd, 3rd, 4th, 5th and 6th degrees. All estimates include municipality and year fixed effects. The

Placebo test at the "fake" threshold of 16,957 inhabitants

Polynomial order	Median above (16,957)							
	A. Estimations without covariates				B. Estimation with covariates			
	total own revenue	taxes	charges	current expenditure	total own revenue	taxes	charges	current expenditure
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
1st								
large	-8.09	17.33	-25.42	-0.48	-18.02	13.66	-31.68*	-8.64
	(20.05)	(14.98)	(15.55)	(22.59)	(19.39)	(13.88)	(17.20)	(25.40)
large*list	6.92	-0.87	7.79*	5.27	8.70*	-0.20	8.90**	6.13
	(5.00)	(2.46)	(3.99)	(5.34)	(4.75)	(2.12)	(4.17)	(5.66)
2nd								
large	2.55	21.11	-18.56	3.44	-7.81	16.91	-24.72	-2.10
	(22.86)	(16.81)	(18.55)	(26.40)	(21.51)	(14.83)	(19.27)	(28.83)
large*list	6.91	-0.91	7.81**	5.30	8.66*	-0.22	8.88**	6.11
	(4.93)	(2.47)	(3.92)	(5.31)	(4.66)	(2.13)	(4.09)	(5.61)
3rd								
large	2.21	23.79	-21.58	13.47	-2.15	22.74	-24.89	12.52
	(29.49)	(18.39)	(25.38)	(33.34)	(28.19)	(17.42)	(25.93)	(35.69)
large*list	6.95	-0.92	7.87**	5.22	8.69*	-0.23	8.92**	6.07
	(4.97)	(2.47)	(3.95)	(5.37)	(4.67)	(2.13)	(4.09)	(5.65)
4th								
large	-21.37	6.93	-28.29	29.85	-20.46	8.70	-29.16	32.57
	(34.50)	(21.17)	(29.18)	(39.98)	(32.68)	(20.02)	(29.44)	(41.30)
large*list	6.96	-0.90	7.86*	5.06	8.71*	-0.21	8.92**	5.87
	(5.01)	(2.46)	(3.99)	(5.51)	(4.72)	(2.13)	(4.12)	(5.77)
5th								
large	-38.47	9.03	-47.50	23.03	-41.16	6.50	-47.66	22.01
	(39.36)	(24.93)	(32.25)	(44.54)	(37.30)	(23.86)	(31.50)	(46.63)
large*list	7.06	-0.91	7.97**	5.08	8.85*	-0.19	9.04**	5.90
	(4.99)	(2.47)	(3.98)	(5.51)	(4.69)	(2.13)	(4.10)	(5.78)
6th								
large	-27.84	16.80	-44.63	41.93	-30.46	16.59	-47.05	41.08
	(47.75)	(28.72)	(41.83)	(53.88)	(45.60)	(27.44)	(40.73)	(55.75)
large*list	6.90	-0.85	7.75*	4.62	8.69*	-0.22	8.91**	5.50
	(5.02)	(2.47)	(4.04)	(5.53)	(4.74)	(2.12)	(4.17)	(5.83)
Overall Observations	1,108	1,108	1,108	1,108	1,108	1,108	1,108	1,108
R-squared	0.89	0.86	0.81	0.88	0.90	0.87	0.81	0.89

Notes: Period 2001-2007; municipalities with a resident population of between 15,000 and 20,000 inhabitants. Estimated discontinuities in fiscal policy outcome at fake threshold (median above the true 15,000 threshold). Estimation methods: polynomial approximation to the 1st, 2nd, 3rd, 4th, 5th and 6th degrees. All estimates include municipality and year fixed effects. The

Local Linear Regression at 1,500

LLR	A. Estimations without covariates				B. Estimations with covariates			
	total own revenue	taxes	charges	current expenditure	total own revenue	taxes	charges	current expenditure
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
large	-59.72**	-30.82	-28.90	-44.39*	-73.73**	-38.75*	-34.98*	-51.39**
	(29.68)	(22.21)	(17.98)	(26.33)	(30.90)	(23.12)	(18.89)	(25.15)
large*list	6.80	4.72	2.07	6.53	9.43**	5.77	3.66	9.92**
	(4.13)	(3.97)	(2.50)	(4.94)	(3.88)	(4.00)	(3.61)	(3.84)
Overall Observations	1,018	1,018	1,018	1,018	1,018	1,018	1,018	1,018
R-squared	0.91	0.89	0.84	0.90	0.91	0.89	0.84	0.91

Notes: Period 2001-2007; municipalities with a resident population of between 13,500 and 16,500 inhabitants. Estimation methods: local linear regression with bandwidth h=1,500. All estimates include municipality and year fixed effects. The estimations in panel B also includes the following covariates: mayor's lame-duck dummy, percentage of votes obtained by the mayor when elected (for the double ballot we consider the votes obtained at the first round), share of population aged between 0 and 14, share of population over 65 years, share of foreign residents, population density computed as the ratio between population and area, per capita personal income tax base. Robust standard errors, clustered at municipal level, are reported in brackets. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Local Linear Regression at 750

	A. Estimations without covariates				B. Estimations with covariates			
LLR	total own revenue	taxes	charges	current expenditure	total own revenue	taxes	charges	current expenditure
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
large	-80.58***	-48.63**	-31.96*	-73.87***	-94.01***	-60.17***	-33.84	-74.77***
	(27.29)	(19.61)	(19.10)	(27.00)	(29.13)	(17.54)	(22.24)	(25.52)
large*list	11.56***	9.32**	2.23	11.94**	14.46***	10.56***	3.90	15.69***
	(4.08)	(4.40)	(2.30)	(5.38)	(4.07)	(3.34)	(3.94)	(4.21)
Overall Observations	515	515	515	515	515	515	515	515
R-squared	0.91	0.89	0.87	0.91	0.92	0.90	0.87	0.91

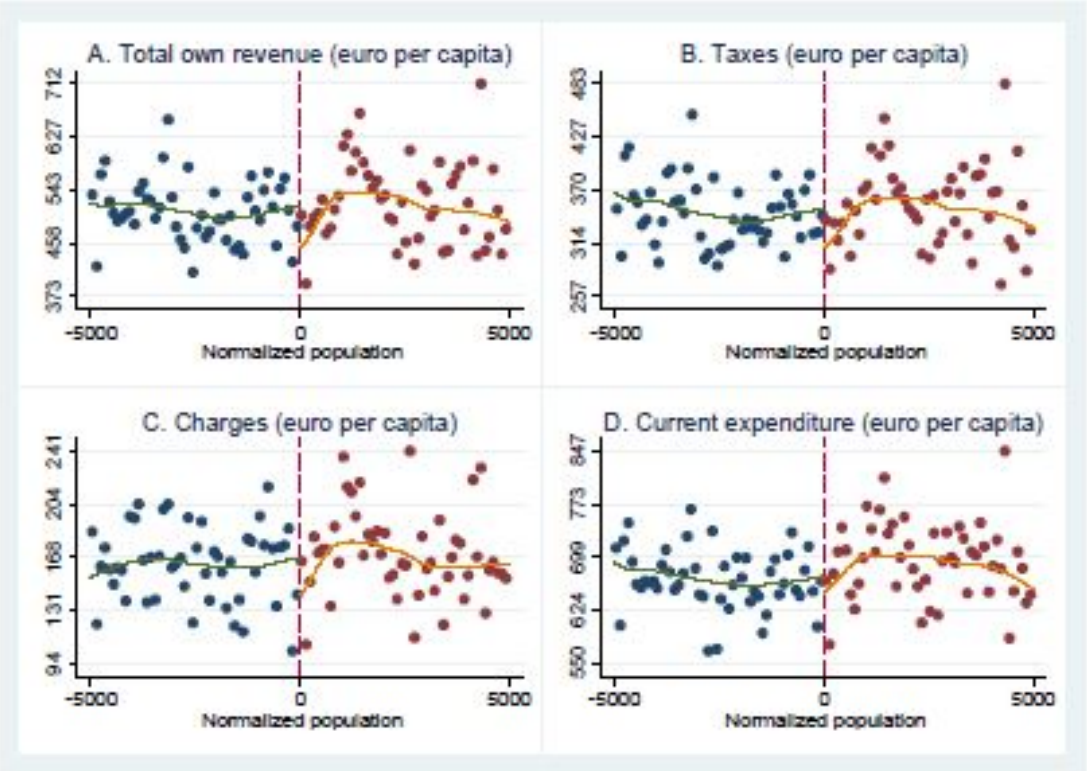
Notes: Period 2001-2007; municipalities with a resident population of between 14,250 and 15,750 inhabitants. Estimation methods: local linear regression with bandwidth h/2=750. All estimates include municipality and year fixed effects. The estimations in panel B also includes the following covariates: mayor's lame-duck dummy, percentage of votes obtained by the mayor when elected (for the double ballot we consider the votes obtained at the first round), share of population aged between 0 and 14, share of population over 65 years, share of foreign residents, population density computed as the ratio between population and area, per capita personal income tax base. Robust standard errors, clustered at municipal level, are reported in brackets. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Local Linear Regression at 3000

LLR	A. Estimations without covariates				B. Estimations with covariates			
	total own revenue	taxes	charges	current expenditure	total own revenue	taxes	charges	current expenditure
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
large	-41.48*	-23.72	-17.76	-30.03	-54.28**	-28.21	-26.06	-40.94*
	(23.92)	(17.91)	(16.77)	(23.01)	(23.45)	(17.77)	(17.29)	(21.97)
large*list	4.91	1.98	2.93	4.25	6.66*	2.25	4.41	6.16
	(3.86)	(3.11)	(3.07)	(4.18)	(3.71)	(3.05)	(3.20)	(3.95)
Overall Observations	2,098	2,098	2,098	2,098	2,098	2,098	2,098	2,098
R-squared	0.86	0.86	0.77	0.86	0.87	0.86	0.77	0.87

Notes: Period 2001-2007; municipalities with a resident population of between 12,000 and 18,000 inhabitants. Estimation methods: local linear regression with bandwidth 2h=3,000. All estimates include municipality and year fixed effects. The estimations in panel B also includes the following covariates: mayor's lame-duck dummy, percentage of votes obtained by the mayor when elected (for the double ballot we consider the votes obtained at the first round), share of population aged between 0 and 14, share of population over 65 years, share of foreign residents, population density computed as the ratio between population and area, per capita personal income tax base. Robust standard errors, clustered at municipal level, are reported in brackets. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Graphical Analysis



Notes: Period 2001-2007; municipalities with population between 10,000 and 20,000 inhabitants. The solid line is the fitted value from a regression model estimated separately on each side of the cut-off point using the polynomial that best fits the data. Scatter points are averaged over a bandwidth of 50 bins at either side of the normalized population size (i.e, population minus 15,000). Each bins on the left of the cut-off contains, on average, 48 observations, while each bins on the right of the cut-off includes, on average, 22 observations.

Conclusion

- Municipalities under the double-ballot system have lower per capita total revenue and current expenditure than those municipalities where a single-ballot system holds.
- These differences become increasingly less robust the greater the number of lists supporting the successful mayoral candidate in the first round of voting in double-ballot municipalities.
- Our results confirms previous findings (Roubini and Sachs, 1989; Kontopoulos and Perotti, 1999) where coalitions can generate free-riding which, in the Italian case, leads to high level of expenditure and high level of taxes.

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- We associate the use of the electoral system (single and double-ballot) for given polarization of the electorate.
- In single-ballot municipalities - for the ex-ante strong incentive to of candidates to merge in coalitions - or in double-ballot municipalities with explicit numerous coalitions, the incentive to free-ride is stronger than in double ballot municipalities with no coalition.
- In fact, for double ballot municipalities with no coalition (or low number of coalitions) the electorate polarization is low and therefore there is no incentive for the candidates to merge (Bordigonon et al. 2013).

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