Online Appendix

Moderating Political Extremism:

Single Round vs Runoff Elections under Plurality Rule*

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Abstract

This Appendix contains additional empirical evidence and robustness checks, which are discussed throughout the paper.

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Online Appendix

Additional evidence and validity tests

Table A1: Impact of runoff on parties' vote shares in national elections, RDD estimates

	Spline 3^{rd}	Spline 2^{nd}	Spline 4^{th}	LLR (h)	LLR ($h/2$)	LLR ($2h$)
			A. Estimations without covariates			
Center-right	0.004	-0.026	-0.003	0.005	-0.013	-0.005
[Avg. 0.417]	(0.027)	(0.035)	(0.019)	(0.032)	(0.043)	(0.020)
Right	-0.023	-0.008	-0.003	-0.008	-0.011	-0.008
[Avg. 0.041]	(0.014)	(0.017)	(0.012)	(0.016)	(0.020)	(0.012)
Center-left	0.027	0.043	0.030	0.030	0.031	0.030
[Avg. 0.324]	(0.026)	(0.036)	(0.019)	(0.031)	(0.047)	(0.020)
Left	0.000	0.003	-0.005	0.001	-0.001	-0.001
[Avg. 0.088]	(0.008)	(0.010)	(0.006)	(0.010)	(0.011)	(0.007)
Centrist	-0.021	-0.034	-0.019	-0.035	-0.020	-0.021
[Avg. 0.061]	(0.019)	(0.025)	(0.013)	(0.023)	(0.023)	(0.014)
Obs.	2,027	2,027	2,027	364	175	761
			B. Estimations with covariates			
Center-right	0.005	-0.014	-0.002	0.007	0.001	-0.002
[Avg. 0.417]	(0.025)	(0.032)	(0.017)	(0.029)	(0.038)	(0.018)
Right	-0.006	-0.006	0.002	-0.004	0.001	0.001
[Avg. 0.041]	(0.009)	(0.011)	(0.007)	(0.010)	(0.012)	(0.007)
Center-left	0.014	0.027	0.021	0.020	0.016	0.016
[Avg. 0.324]	(0.022)	(0.030)	(0.016)	(0.025)	(0.033)	(0.017)
Left	-0.001	0.002	-0.005	0.001	-0.003	-0.002
[Avg. 0.088]	(0.008)	(0.010)	(0.006)	(0.009)	(0.011)	(0.006)
Centrist	-0.023	-0.031	-0.017	-0.034*	-0.027	-0.017
[Avg. 0.061]	(0.016)	(0.020)	(0.011)	(0.019)	(0.016)	(0.012)
Obs.	2,027	2,027	2,027	364	175	761

Notes. 2001 national election (results from the proportional tier of the mixed-member system for the House of Representatives); municipalities between 10,000 and 20,000. Dependent variables: vote shares of the main political parties/blocks. Specifically, the variable *Center-right* includes all parties that will merge into *Popolo della Libertà*; the variable *Center-left* includes all parties that will merge into *Partito Democratico*; the variable *Right* includes the (extremist) party *Lega Nord*; the variable *Left* includes the (extremist) party *Rifondazione Comunista*, *Lista Di Pietro*, and other minor communist lists; and the variable *Centrist* includes *CCD* and *Democrazia Europea*. Estimation methods: spline polynomial approximation as in equation (1), with 3^{rd}, 2^{nd}, and 4^{th} polynomial, respectively; local linear regression as in equation (2), with bandwidth $h = 1,000$, $h/2$, and $2h$, respectively. Estimations in Panel B also include the following covariates: macro-region dummies, area size, altitude, transfers, income, participation rate, elderly index, family size. Robust standard errors clustered at the city level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A2: Impact of runoff on strategic voting, RDD estimates

	Spline 3^{rd}	Spline 2^{nd}	Spline 4^{th}	LLR (h)	LLR ($h/2$)	LLR ($2h$)
			A. Electoral races with three candidates			
Top two candidates	0.013	0.038	0.012	0.026	0.074	0.015
	(0.036)	(0.047)	(0.026)	(0.044)	(0.068)	(0.029)
First candidate	-0.013	0.038	0.006	0.001	0.026	-0.006
	(0.046)	(0.060)	(0.033)	(0.057)	(0.083)	(0.036)
Second candidate	0.027	-0.000	0.006	0.025	0.048	0.021
	(0.029)	(0.035)	(0.024)	(0.032)	(0.040)	(0.024)
Third candidate	-0.024	-0.047	-0.020	-0.039	-0.090	-0.022
	(0.037)	(0.047)	(0.027)	(0.044)	(0.068)	(0.029)
Obs.	488	488	488	67	37	158
			B. Electoral races with more than three candidates			
Top two candidates	0.033	0.023	0.019	0.034	0.043	0.017
	(0.029)	(0.036)	(0.023)	(0.032)	(0.045)	(0.024)
First candidate	0.033	0.060	0.022	0.047	0.083	0.026
	(0.035)	(0.045)	(0.026)	(0.040)	(0.058)	(0.027)
Second candidate	0.000	-0.038*	-0.004	-0.013	-0.040	-0.008
	(0.018)	(0.022)	(0.013)	(0.019)	(0.026)	(0.014)
Third candidate	-0.035*	-0.045*	-0.013	-0.057**	-0.047	-0.021
	(0.020)	(0.025)	(0.015)	(0.023)	(0.029)	(0.015)
Obs.	879	879	879	184	82	363

Notes. Election years between 1993 and 2007; municipalities between 10,000 and 20,000 (with non-missing values of the mayoral candidates' vote shares). Dependent variables: mayoral candidates' vote shares. Estimation methods: spline polynomial approximation as in equation (1), with 3^{rd}, 2^{nd}, and 4^{th} polynomial, respectively; local linear regression as in equation (2), with bandwidth $h = 1,000$, $h/2$, and $2h$, respectively. Robust standard errors clustered at the city level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A3: Balance tests of time-invariant city characteristics

	Spline 3^{rd}	Spline 2^{nd}	Spline 4^{th}	LLR (h)	LLR $(h/2)$	LLR $(2h)$
South	0.024	-0.087	-0.039	-0.076	0.021	-0.016
	(0.145)	(0.183)	(0.108)	(0.167)	(0.215)	(0.114)
Area size	-1.511	16.541	-0.725	1.866	25.816	-0.048
	(17.800)	(23.509)	(12.562)	(20.913)	(25.982)	(13.746)
Altitude	115.904	99.701	26.494	-45.288	110.872	56.231
	(136.538)	(173.056)	(103.918)	(152.221)	(207.771)	(103.291)
Obs.	2,027	2,027	2,027	364	175	761

Notes. Election years between 1993 and 2007; municipalities between 10,000 and 20,000. Dependent variables: *South* is a dummy equal to 1 for Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, and Sardegna, and 0 otherwise; the *Area size* of the city is measured in km^2; the *Altitude* of the city is measured in meters. Estimation methods: spline polynomial approximation as in equation (1), with 3^{rd}, 2^{nd}, and 4^{th} polynomial, respectively; local linear regression as in equation (2), with bandwidth $h = 1,000$, $h/2$, and $2h$, respectively. Robust standard errors clustered at the city level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A4: Balance tests of pre-treatment city characteristics (Census 1991)

	Spline 3^{rd}	Spline 2^{nd}	Spline 4^{th}	LLR (h)	LLR ($h/2$)	LLR ($2h$)
Aged less than 25	0.002	-0.011	-0.003	-0.007	0.003	-0.001
	(0.017)	(0.023)	(0.012)	(0.021)	(0.029)	(0.013)
Aged 25-44	-0.006	-0.008	-0.004	-0.009	-0.005	-0.004
	(0.006)	(0.007)	(0.005)	(0.006)	(0.007)	(0.005)
Aged 45-64	-0.002	0.004	0.000	0.003	-0.005	-0.001
	(0.009)	(0.012)	(0.007)	(0.011)	(0.015)	(0.007)
Aged 65 or more	0.006	0.015	0.007	0.012	0.007	0.006
	(0.010)	(0.012)	(0.008)	(0.011)	(0.016)	(0.008)
Elementary	-0.014	0.000	-0.003	-0.001	-0.016	-0.008
	(0.011)	(0.013)	(0.008)	(0.012)	(0.015)	(0.008)
High school	0.010	0.008	0.007	0.016	0.021	0.006
	(0.012)	(0.015)	(0.009)	(0.013)	(0.018)	(0.009)
College	0.005	0.004	0.002	0.006	0.007	0.003
	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)	(0.003)
Employed	-0.012	0.005	0.009	-0.007	-0.002	0.004
	(0.025)	(0.032)	(0.018)	(0.029)	(0.039)	(0.019)
Unemployed	0.002	0.003	-0.001	0.002	0.007	0.001
	(0.006)	(0.008)	(0.004)	(0.006)	(0.009)	(0.005)
Agriculture	-0.011	-0.008	-0.006	-0.013	-0.002	-0.006
	(0.012)	(0.016)	(0.009)	(0.015)	(0.018)	(0.010)
Manufacturing	0.004	0.007	0.018	0.006	0.003	0.013
	(0.022)	(0.028)	(0.017)	(0.025)	(0.031)	(0.017)
Public sector	0.001	0.001	0.001	0.002	-0.002	0.002
	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)
Services	-0.002	0.003	0.004	-0.000	0.002	-0.002
	(0.012)	(0.015)	(0.009)	(0.014)	(0.019)	(0.009)
Water	-0.022	-0.000	-0.017	0.000	0.015	-0.020
	(0.023)	(0.027)	(0.017)	(0.024)	(0.032)	(0.017)
Heating	0.027	0.047	0.022	0.032	0.011	0.036
	(0.058)	(0.074)	(0.042)	(0.068)	(0.096)	(0.043)
Sewer	-0.003	-0.008	0.001	-0.008	-0.006	-0.002
	(0.006)	(0.009)	(0.006)	(0.006)	(0.007)	(0.005)
Obs.	2,027	2,027	2,027	364	175	761

Notes. Election years between 1993 and 2007; municipalities between 10,000 and 20,000. Dependent variables: the age variables capture the share of individuals in the respective age bracket; *Elementary*, *High school*, and *College* capture the share of individuals with the respective educational attainment; *Employed* and *Unemployed* are the share of employed and unemployed individuals; *Agriculture*, *Manufacturing*, *Public sectors*, and *Services* capture the share of workers employed in the respective sector; *Water*, *Heating*, and *Sewer* capture the share of houses with access to the respective facility. All variables come from the 1991 Census. Estimation methods: spline polynomial approximation as in equation (1), with 3^{rd}, 2^{nd}, and 4^{th} polynomial, respectively; local linear regression as in equation (2), with bandwidth $h = 1,000$, $h/2$, and $2h$, respectively. Robust standard errors clustered at the city level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A5: Impact of runoff on political outcomes, decomposing diff-in-diff

	Municipalities moving above the threshold (UP_i)	Municipalities moving below the threshold ($DOWN_i$)
	A. Estimations without covariates	
No. of candidates	1.121**	-1.763**
	(0.448)	(0.887)
No. of lists	2.264***	-3.058***
	(0.516)	(1.021)
Lists/candidates	0.300	-0.438
	(0.214)	(0.423)
Opposition lists	1.383***	-2.968***
	(0.423)	(0.837)
Mayor's lists	0.363*	0.057
	(0.219)	(0.434)
Pre-treatment lists	-0.153	-0.186
	(0.239)	(0.473)
Obs.	518	518
	B. Estimations with covariates	
No. of candidates	1.063**	-1.833**
	(0.452)	(0.889)
No. of lists	2.411***	-3.387***
	(0.516)	(1.016)
Lists/candidates	0.408*	-0.568
	(0.214)	(0.421)
Opposition lists	1.374***	-3.105***
	(0.428)	(0.842)
Mayor's lists	0.426*	-0.000
	(0.223)	(0.438)
Pre-treatment lists	0.182	-0.410
	(0.225)	(0.444)
Obs.	518	518

Notes. Municipalities between 10,000 and 20,000; 518 municipalities for which political outcomes are available both in the 1990s and in the 2000s. Dependent variables: *No. of candidates* running for mayor in the first round; *No. of lists* supporting mayoral candidates in the first round; *Lists/candidates* ratio; *Opposition lists* supporting the losing candidates; *Mayor's lists* supporting the winning candidate; *Pre-treatment lists* competing under proportional representation in the pre-treatment period (1985–1992). All dependent variables (excluding *Pre-treatment lists*) are expressed as the difference between the average value in the 2000s and the average value in the 1990s. Estimated equation: $\Delta Y_i = \alpha UP_i + \beta DOWN_i + x_i'\gamma + \epsilon_i$, where ΔY_i is the difference between the average outcome in the 2000s and in the 1990s, UP_i is a dummy equal to one if the municipality moved from below to above the threshold, $DOWN_i$ is a dummy equal to one if the municipality moved from above to below, and x_i is a vector of town-specific covariates. The reference group for the dummies UP_i and $DOWN_i$ is represented by municipalities that did not cross the threshold from 1991 to 2001 Census. Estimations in Panel B also include the following covariates: macro-region dummies, area size, altitude, transfers, income, participation rate, elderly index, family size. Robust standard errors are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A6: Impact of runoff on political turnover, RDD estimates

	Spline 3^{rd}	Spline 2^{nd}	Spline 4^{th}	LLR (h)	LLR ($h/2$)	LLR ($2h$)
			A. Estimations without covariates			
Office duration	46.205	53.998	-9.315	26.305	37.703	13.074
	(84.679)	(109.911)	(61.303)	(99.559)	(154.764)	(65.940)
Second term	-0.052	0.033	0.016	0.015	-0.011	-0.018
	(0.070)	(0.088)	(0.050)	(0.080)	(0.122)	(0.055)
Obs.	2,027	2,027	2,027	364	175	761
			B. Estimations with covariates			
Office duration	67.896	44.074	-14.651	21.255	62.105	5.052
	(73.369)	(92.901)	(54.787)	(79.217)	(124.915)	(58.560)
Second term	-0.050	0.031	0.012	0.007	-0.014	-0.019
	(0.069)	(0.088)	(0.049)	(0.080)	(0.126)	(0.054)
Obs.	2,027	2,027	2,027	364	175	761

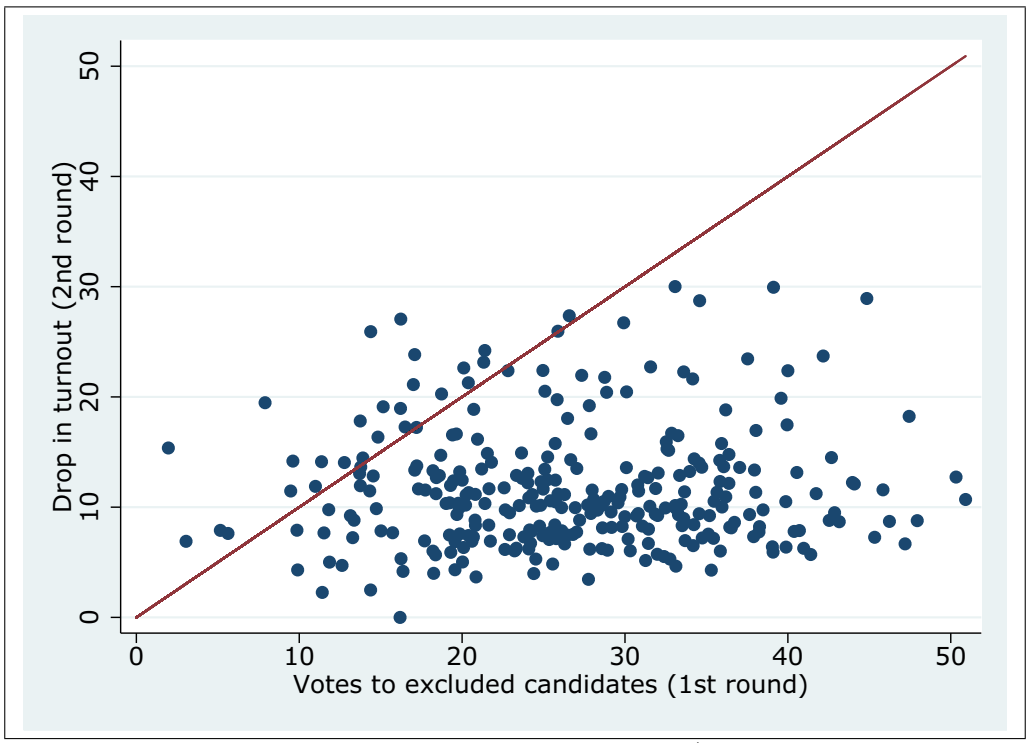
Notes. Election years between 1993 and 2007; municipalities between 10,000 and 20,000. Dependent variables: *Office duration* of mayors, measured in days; fraction of mayors in their *Second term*. Estimation methods: spline polynomial approximation as in equation (1), with 3^{rd}, 2^{nd}, and 4^{th} polynomial, respectively; local linear regression as in equation (2), with bandwidth $h = 1,000$, $h/2$, and $2h$, respectively. Estimations in Panel B also include the following covariates: macro-region dummies, area size, altitude, transfers, income, participation rate, elderly index, family size. Robust standard errors clustered at the city level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A7: Impact of runoff on Communist Party's alliances, RDD estimates

	Spline 3^{rd}	Spline 2^{nd}	Spline 4^{th}	LLR (h)	LLR ($h/2$)	LLR ($2h$)
			A. Estimations without covariates			
Communist Party alone	0.172**	0.258**	0.069	0.221**	0.230*	0.131*
	(0.086)	(0.101)	(0.068)	(0.091)	(0.136)	(0.072)
Obs.	1,045	1,045	1,045	198	96	404
			B. Estimations with covariates			
Communist Party alone	0.167**	0.244***	0.081	0.216**	0.200*	0.126*
	(0.081)	(0.094)	(0.063)	(0.083)	(0.118)	(0.066)
Obs.	1,045	1,045	1,045	198	96	404

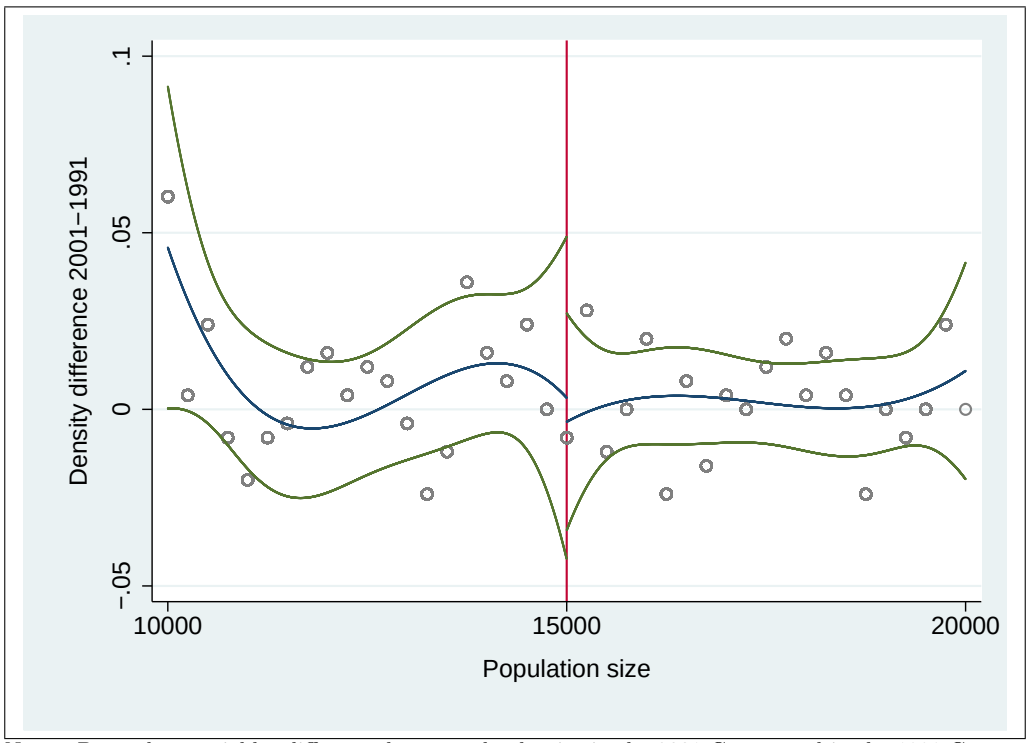
Notes. Election years between 1993 and 2007; municipalities between 10,000 and 20,000. Dependent variable: the dummy *Communist Party alone* is equal to one if the Communist Party presented its own list (or some electoral alliance with smaller leftist parties) in the first round of the municipal election, and zero otherwise. Estimation methods: spline polynomial approximation as in equation (1), with 3^{rd}, 2^{nd}, and 4^{th} polynomial, respectively; local linear regression as in equation (2), with bandwidth $h = 1,000$, $h/2$, and $2h$, respectively. Estimations in Panel B also include the following covariates: macro-region dummies, area size, altitude, transfers, income, participation rate, elderly index, family size, mayor's duration in office (in days), mayor's second-term dummy. Robust standard errors clustered at the city level are in parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Figure A1: Drop in turnout between first and second round



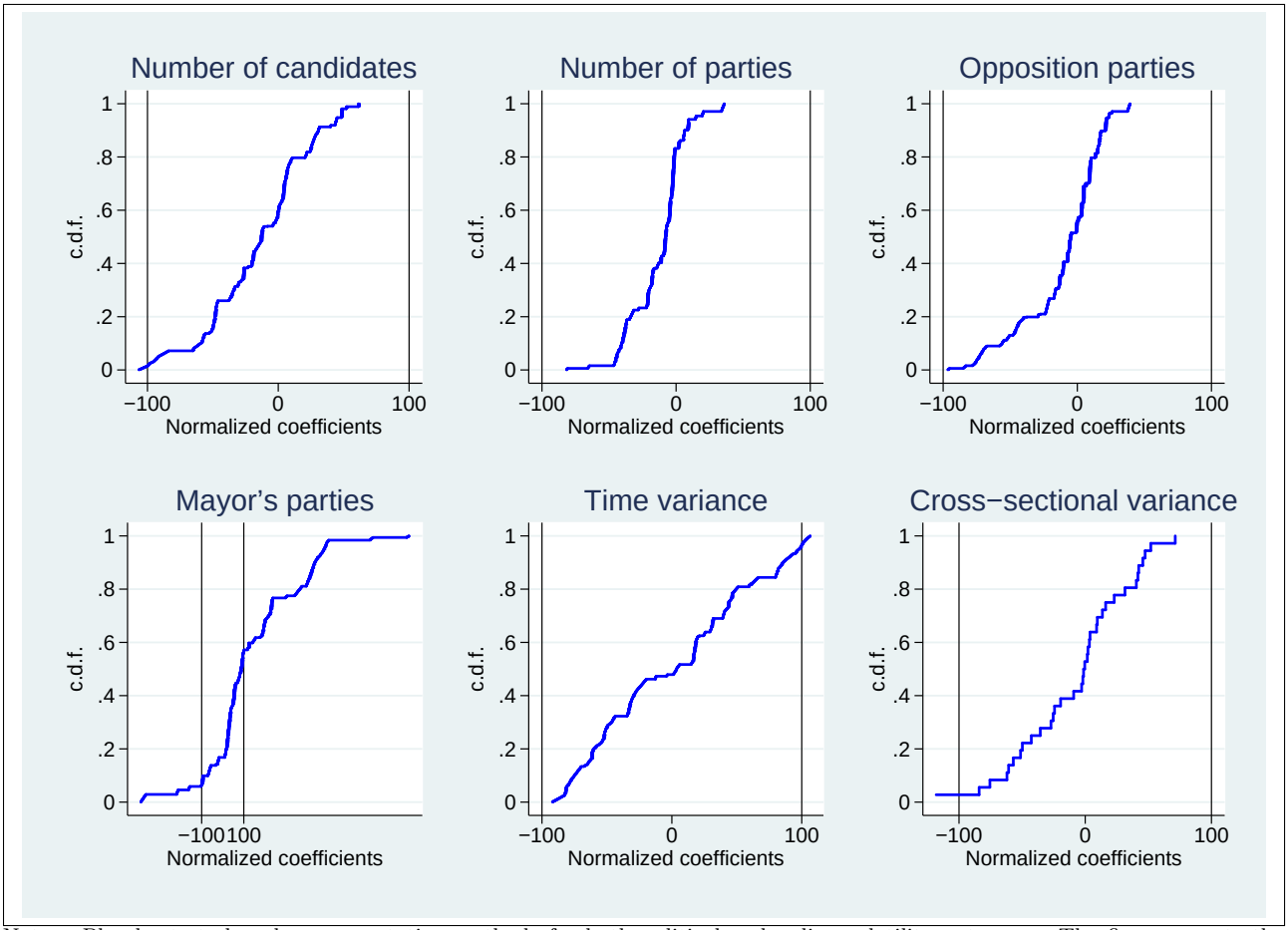
Notes. Vertical axis: drop in turnout between first and second round (expressed as a fraction of eligible voters). Horizontal axis: total votes for the excluded candidates in the first round (expressed as a fraction of eligible voters). Municipalities between 15,000 and 20,000 only.

Figure A2: Testing for sorting between 1991 and 2001 Census



Notes. Dependent variable: difference between the density in the 2001 Census and in the 1991 Census. The central line is a spline 3^{rd}-order polynomial in the normalized population size (i.e., population minus 15,000); the lateral lines are the 95% confidence interval of the polynomial. Scatter points are averaged over 250-inhabitant intervals. Municipalities between 10,000 and 20,000 only.

Figure A3: Placebo tests for political outcomes and policy volatility



Notes. Placebo tests based on permutation methods for both political and policy volatility outcomes. The figure reports the empirical c.d.f. of the normalized point estimates from a set of RDD estimations at 1,000 false thresholds: 500 below and 500 above the true 15,000 threshold (namely, any point from 13,501 to 14,000 and any point from 15,501 to 16,000). Only for the cross-sectional variance of the business property tax (where units of observations are 100-inhabitant bins), we consider 80 false thresholds: 40 below and 40 above the true 15,000 threshold (namely, any bin from 10,000 to 14,000 and any bin from 16,000 to 20,000). Each (false) estimate is normalized over the (true) baseline estimate from the paper; that is, a normalized coefficient equal to 100 indicates that the (false) estimate is exactly equal to the (true) baseline estimate. Dependent variables: *No. of candidates* running for mayor in the first round; *No. of lists* supporting mayoral candidates in the first round; *Opposition lists* supporting losing candidates; *Mayor's lists* supporting the winning candidate; *Time variance* (i.e., variance across terms averaged over the entire sample period) and *Cross-sectional variance* (i.e., variance across municipalities averaged over bins of 100 inhabitants) of the business property tax rate. Estimation method: spline polynomial approximation with 3^{rd}-order polynomial.