Gender inequality and politics

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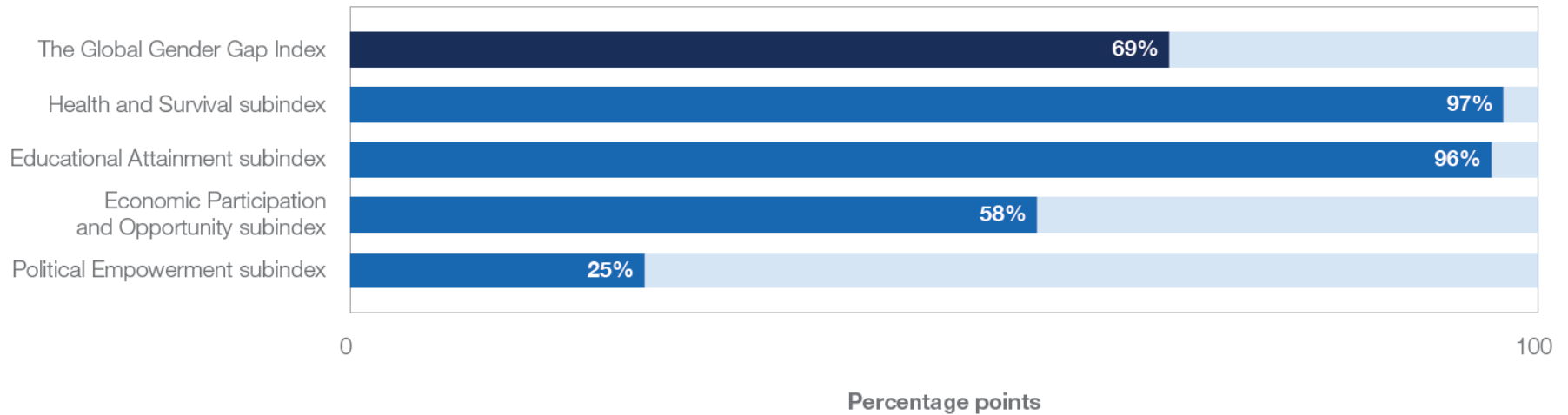
Introduction

Different dimensions according to which we can measure the presence or absence of gender equality in rights, responsibilities and opportunities between men and women

- Economic participation and opportunities
- Educational attainment
- Health and survival probabilities
- *Political empowerment*

Introduction

Figure 2 The state of the gender gaps

Percentage of the gender gap closed to date, 2020

The Global Gender Gap Index	69%
Health and Survival subindex	97%
Educational Attainment subindex	96%
Economic Participation and Opportunity subindex	58%
Political Empowerment subindex	25%

0 — 100

Percentage points

Gender gap

Sources

World Economic Forum, Global Gender Gap Index, 2020.

Notes

Population-weighted averages, including the 153 economies featured in the Global Gender Gap Index 2020.

Outline

- Why are women under-represented in the political arena?

- Why do we care about gender inequality in politics?

- Are there effective policies to promote female political empowerment?

Joint research with Audinga Baltrunaite (Bank of Italy), Piera Bello (University College London), Salvatore Lattanzio, (University of Cambridge), Paola Profeta (Bocconi, Milan) and Giulia Savio (University of Lugano)

Why is there gender inequality in political representation?

Result from multiple obstacles in the political selection process

- Female willingness to run as candidates (e.g., Schlozman et, 1994; Fox and Lawless, 2004; Julio and Tavares, 2017)

- Party selection of candidates (e.g. Kunovich and Paxton, 2005)

- Voters' electoral preferences (e.g., Schwindt-Bayer et al., 2010; Black and Erickson, 2004)

- Electoral rules (Iversen and Rosenbluth, 2010)

Why to reduce gender inequality in politics?

Arguments to favour gender balance in politics

- Equity considerations (Stevens, 2007)

- Less corrupted (e.g., Brollo and Troiano, 2016)

- Role models for other women (Gilardi, 2015; Foos and Gilardi, 2018; Beaman et al., 2010)

- Impact on policy: mixed evidence (e.g Chattopadhyay and Duflo, 2004; Duflo and Topalova, 2004; Clots-Figueras, 2011; Funk and Gathmann, 2015; Gagliarducci and Paserman, 2012; Ferreira and Gyourko, 2014; Bagues and Campa, 2017; Rehavi, 2007)

What policies are effective in empowering women?

Gender quotas are a widespread policy tool to strengthen female political representation

The way they are implemented differs across countries

Gender quotas

- Gender quotas are a much debated policy tool
  - They do not obey to meritocracy, thus:
    - Less qualified individuals who will perform poorly are elected
    - Loss of efficiency (Holzer and Neumark, 2000)
- What do we know about the effects of gender quotas?
  - Effects of gender quotas on female empowerment are mixed: De Paola et al., 2010, 2014; Bagues and Esteve-Volart, 2012; Bagues and Campa, 2017; Casas-Arce and Saiz, 2015
  - Effects of gender quotas on the quality of politicians are positive: *Baltrunaite et al., 2014*; Besley et al., 2017

Gender quotas and the quality of politicians
Baltrunaite, Bello, Casarico and Profeta
Journal of Public Economics 2014

- We analyse the temporary adoption of gender quotas in municipal elections in Italy in 1993-1995
  - Neither sex could represent more than 2/3 of the total in candidate lists

- Quasi-experimental set-up: some municipalities voted in that period and some did not

- Methodology: Difference-in-Differences estimate

- Result: gender quotas --besides strengthening female political empowerment-- have positive effects on the *quality* of the elected politicians, measured by years of schooling or previous occupation
  - More women elected: women are on average more educated
  - Fewer low-educated men elected

Let the voters choose women

Baltrunaite, Casarico, Profeta and Savio
Journal of Public Economics, 2019

Analysis of a policy bundle: gender quotas on candidate lists *and* double preference voting conditioned on gender

- Is this policy effective in empowering women?

- Can this soft policy measure, imposing no obligation on voter choices, spill-over beyond its direct target?

The paper in a nutshell

Exploit a recent Italian law for municipal elections:
- Double preference voting conditioned on gender
- Gender quotas: neither sex can represent more than 2/3 of the total number of candidates in candidate lists

Regression discontinuity design (RDD):
- Law applies to municipalities with more than 5,000 residents
- Local average treatment effects (LATE) around this cut-off

Unique dataset:
- Elected politicians in municipal elections in 2013, 2014 and 2015
- Hand-collect info on candidate lists and preference votes for 2013
- Information on preferences votes cast for candidates in regional elections

Study effects on:
- Female political empowerment in targeted elections
- Spillover effect of the policy in higher level elections

Main findings

The new policy increases the share of female politicians in municipal councils by 18pp

The result is mainly driven by the increase in preference votes cast for female candidates, suggesting a salient role of double preference voting in promoting female empowerment in politics

The estimates suggest the presence of positive spill-over effects on female candidates' performance in regional elections, who receive on average three more votes

Related literature

Gender quotas

- Effects of gender quotas (De Paola et al., 2010, 2014; Bagues and Esteve-Volart, 2012; Bagues and Campa, 2017; Casas-Arce and Saiz, 2015; Baltrunaite et al., 2014; Besley et al. 2017)

Preference votes

- Little use of preference votes (Farrell, 2001; Gallagher and Mitchell, 2005)

- Gender bias in voters' preferences for politicians
  - Voter predisposition to vote for male over female candidates or viceversa (Sanbonmatsu, 2002; Black and Erickson, 2003; Schwindt-Bayer et al., 2010; Baskaran and Hessami, 2018).

The institutional framework

Italy: 8,100 municipalities with a mayor, municipal council (*Consiglio Comunale*), executive committee (*Giunta Comunale*)

Focus on the municipalities with less than 15,000 residents:

- Mayor elected according to the single-ballot system
- Semi-open candidate lists: voters select a party and can cast a preference vote for an individual candidate by writing the name on the ballot

Law 215/2012:

- Double preference voting conditioned on gender
- Gender quotas
- Applies to municipalities with more than 5,000 residents

Regression Discontinuity Design:

- Compare municipalities above/below the 5,000 residents' cut-off
- Estimate local average treatment effect (LATE)

Data

Publicly available data on electoral results of the elections for 4599 Italian municipalities voting in 2013, 2014, and 2015 (3628 control and 971 treated) and of the previous election

- Total number of elected councilors and the number of female elected councilors
- Number of registered and effective voters, overall and by gender, and number of invalid votes

Data on candidates for 2013 elections (by contacting each voting municipality)

- Gender composition of candidate lists
- Ranking of candidates on lists
- Preference votes cast by voters

Data on regional elections held after the introduction of Law 2015/2012

- Regional elections ruled by regional electoral laws which vary across regions
- Regions voting with double preference voting were dropped

Control variables from the 2011 Italian Census

Table 1: Descriptive statistics: municipalities and elected councilors

Panel A: Geographical coverage			
No. of municipalities voting in 2013:	Control	Treated	Total
North	132	65	197
South and islands	153	63	216
Center	34	21	55
Total	319	149	468
No. of municipalities voting in 2014:	Control	Treated	Total
North	2023	493	2,516
South and islands	473	99	572
Center	392	117	509
Total	2,888	709	3,597
No. of municipalities voting in 2015:	Control	Treated	Total
North	94	32	126
South and islands	295	74	369
Center	32	7	39
Total	421	113	534
Panel B: Share of female councilors			
Municipalities voting in 2013:	Control	Treated	Total
	0.22	0.39	0.28
	(0.19)	(0.11)	(0.19)
Municipalities voting in 2014:	Control	Treated	Total
	0.29	0.40	0.31
	(0.14)	(0.10)	(0.14)
Municipalities voting in 2015:	Control	Treated	Total
	0.27	0.42	0.30
	(0.14)	(0.09)	(0.14)

Table 2: Descriptive statistics: candidate lists

Panel A: 2013 election			
No. of municipalities:	Control	Treated	Total
voted	319	149	468
with all lists available	276	134	378
with preference votes available	255	126	381
with pre-election ranking available	213	116	329
No. of party lists:	659	475	1,134
with pre-election ranking available	560	444	1,004
with non-alphabetical ranking	302	277	579
Panel B: Previous election			
No. of municipalities:	Control	Treated	Total
voted	319	149	468
with all lists available	178	93	271
with preference votes available	178	93	271
with pre-election ranking available	178	93	271
No. of party lists	437	300	737
with pre-election ranking available	437	300	737
with non-alphabetical ranking	311	230	541

Identification strategy

Law 215/2012 $\Rightarrow$ discontinuous variation in the institutional framework for municipalities of different size

Sharp RDD at the 5,000 resident threshold

Main regression equation is:

$$y_i = \alpha + \gamma_{01}\widetilde{x}_i + \gamma_{02}\widetilde{x}_i^2 + \cdots + \gamma_{0p}\widetilde{x}_i^p + \psi T_i +$$
$$+ \gamma_{11}\widetilde{x}_i * T_i + \gamma_{12}\widetilde{x}_i^2 * T_i + \cdots + \gamma_{1p}\widetilde{x}_i^p * T_i + \varepsilon_i \quad (1)$$

y_i is the outcome variable of interest

$\widetilde{x}_i$ is the resident population in municipality i, centered at the 5,000 resident threshold

p is the order of the control polynomial function, with p=1,2,3,4

T_i is a dummy for municipalities with more than 5,000 residents ("treated municipalities")

ψ is the coefficient of interest which estimates the local average treatment effect of the reform

Validity of the 5,000 cut-off

Covariates continuous

Validity of McCrary Test
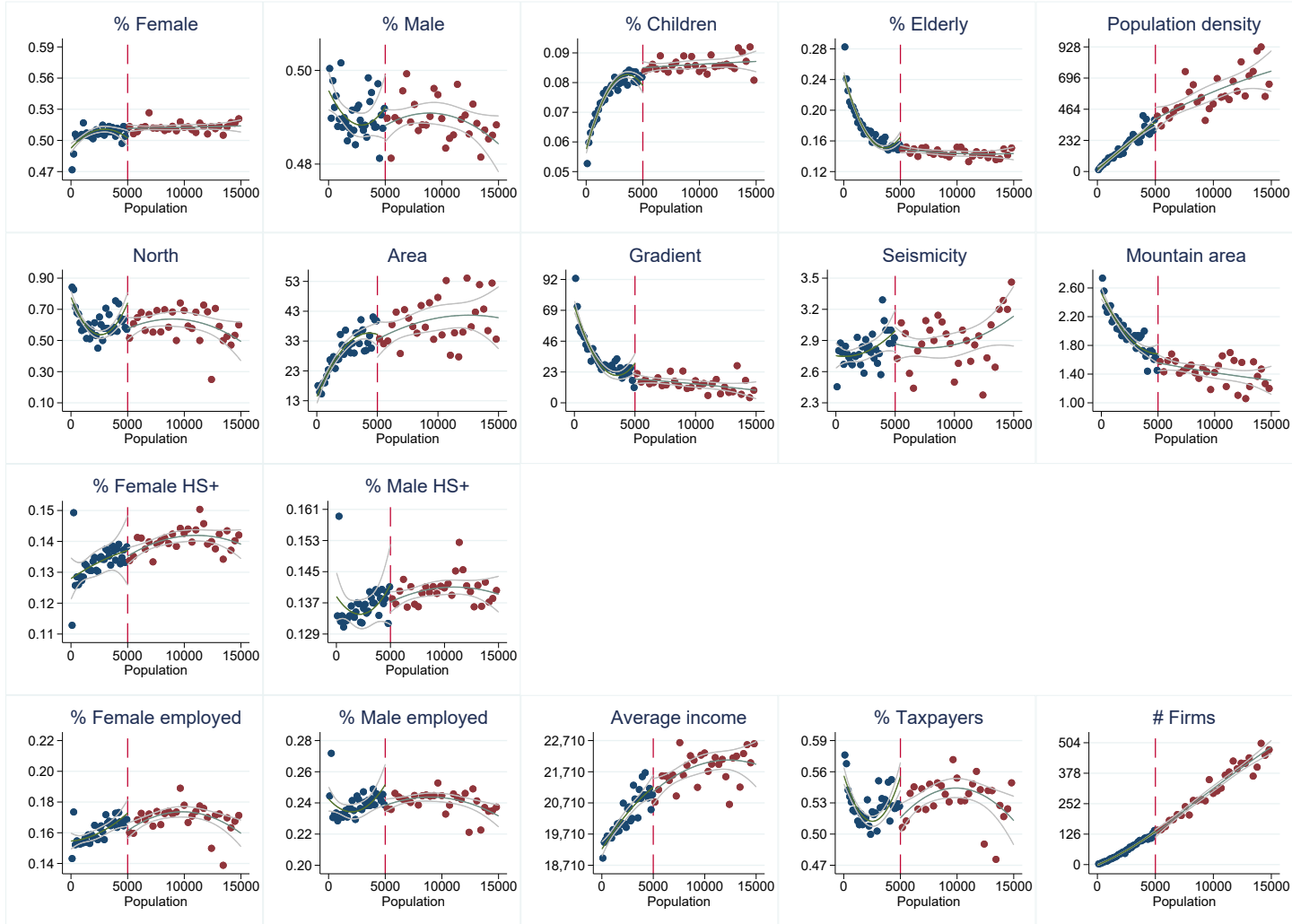
Balance Checks of the covariates

Let the Voters Choose Women
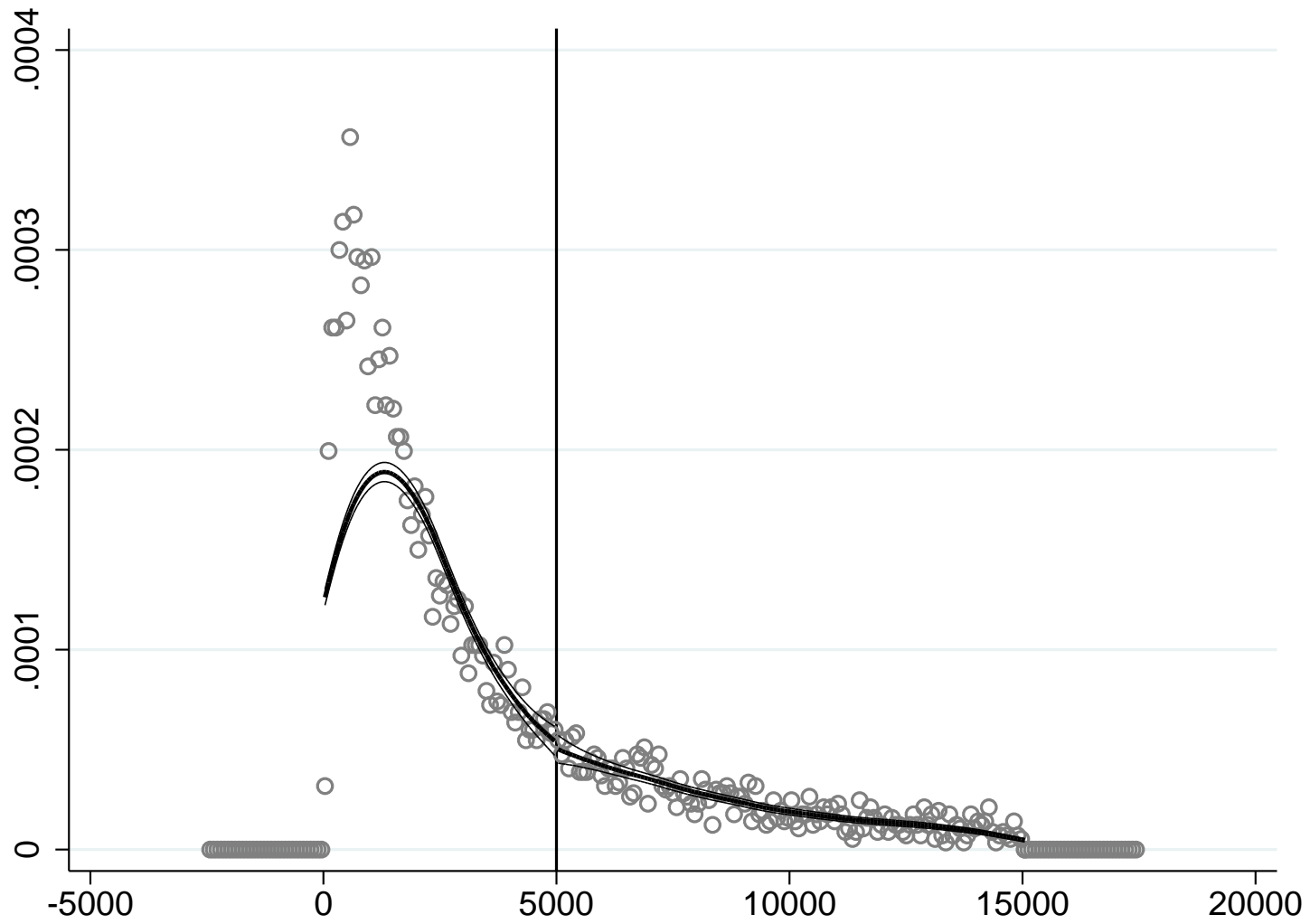
McCrary Test

Let the Voters Choose Women

Outcomes

- Impact of the policy on female political empowerment

- The working of the policy: parties or voters?

- Spillover effects in regional elections

Effects on female councilors
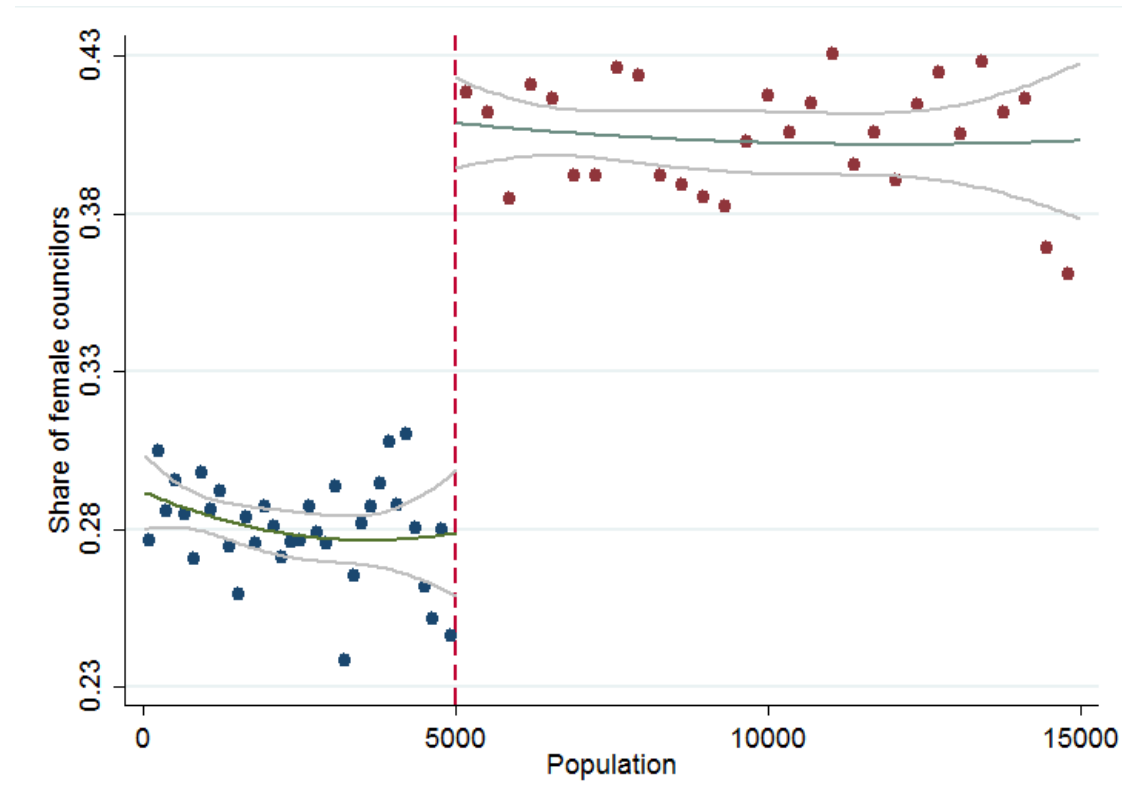
Share of female councilors

The policy leads to a 18pp increase in the share of female councilors at the cut-off

Robustness checks

Alternative placebo cut-offs

Sensitivity of estimated parameters to alternative bandwidths

Pre-existing differences

Confounding factors

- Variation in the salary of the mayor (Gagliarducci and Nannicini, 2013)

Table 3: Female presence on municipal councils: robustness checks

	Panel A: Alternative cut-offs						
Dependent variable:	Share of female councilors						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.009	−0.009	−0.001	0.174***	−0.005	−0.016	−0.014
	(0.018)	(0.018)	(0.024)	(0.021)	(0.018)	(0.022)	(0.025)
Bias-corrected	0.009	−0.011	0.010	0.183***	−0.012	−0.013	−0.003
	(0.018)	(0.018)	(0.024)	(0.021)	(0.018)	(0.022)	(0.025)
Treatment (bias-corrected, robust SE)	0.009	−0.011	0.010	0.183***	−0.012	−0.013	−0.003
	(0.022)	(0.021)	(0.027)	(0.024)	(0.021)	(0.027)	(0.027)
Cut-off	2,000	3,000	4,000	5,000	6,000	7,000	8,000
Bandwidth	727	1,212	727	1,132	1,767	1,471	1,883
Observations on the left	709	801	299	353	436	251	276
Observations on the right	494	476	211	219	265	190	194
	Panel B: Alternative bandwidths						
Dependent variable:	Share of female councilors						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.173***	0.165***	0.150***	0.145***	0.140***	0.137***	0.136***
	(0.022)	(0.019)	(0.016)	(0.014)	(0.013)	(0.012)	(0.011)
Bias-corrected	0.163***	0.179***	0.181***	0.167***	0.160***	0.154***	0.148***
	(0.022)	(0.019)	(0.016)	(0.014)	(0.013)	(0.012)	(0.011)
Treatment (bias-corrected, robust SE)	0.163***	0.179***	0.181***	0.167***	0.160***	0.154***	0.148***
	(0.030)	(0.026)	(0.023)	(0.021)	(0.019)	(0.018)	(0.017)
Cut-off	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Bandwidth	1,000	1,500	2,000	2,500	3,000	3,500	4,000
Observations on the left	300	495	718	983	1,338	1,798	2,392
Observations on the right	203	278	360	437	494	555	609

*p<0.1, ** p<0.05, *** p<0.01.
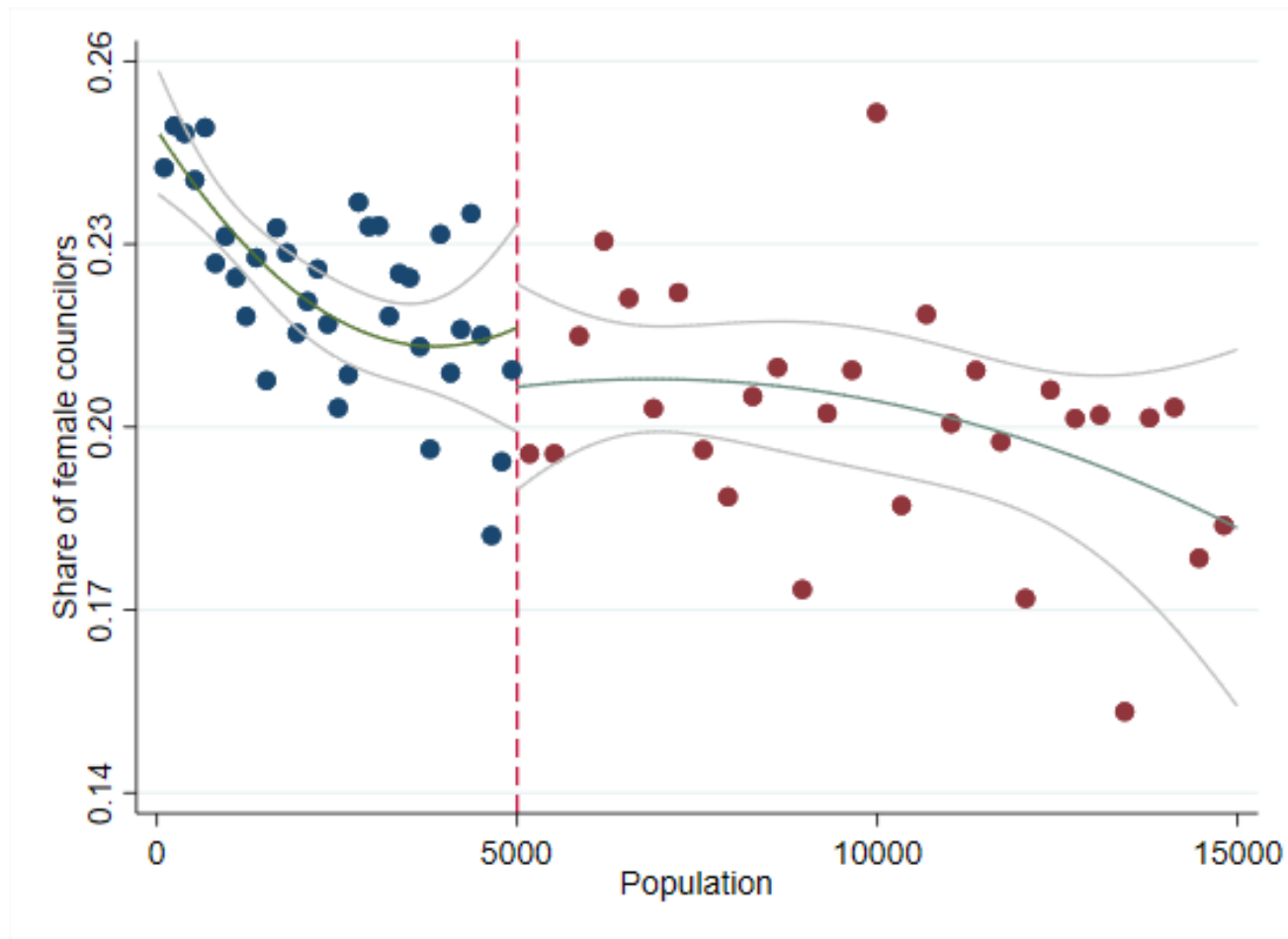
Female councilors before the reforms

Let the Voters Choose Women

Table 4: Female presence on municipal councils: diff-in-disc

Dependent variable:	Share of female councilors	
	(1)	(2)
Treatment × After	0.127***	0.186***
	(0.010)	(0.028)
Local		X
Observations	9,198	890
R-Squared	0.327	0.504

Notes. The table shows the results of difference-in-discontinuities estimation. The dependent variable is the share of female councilors over the total number of councilors. *Treatment* is an indicator variable for municipalities with more than 5,000 residents. *After* is an indicator variable for elections in 2013-2015. Only the coefficient of interest *Treatment*After* is reported. The sample includes municipalities with less than 15,000 residents that held elections in 2013-2015 and, correspondingly, in 2008-2010. In Column 1 the sample includes all municipalities; in column 2 the sample includes municipalities within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 5,000 residents. Standard errors clustered at municipal level in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Mechanisms: The working of the policy

Effects on female candidates:

- Gender composition of party lists: share of female candidates on party lists
- Candidates' ranking: Borda score of female candidates on party lists

Effects on preference votes for female candidates:

- Share of preference votes cast for female candidates on party lists
- Post-election Borda score of female candidates on party lists
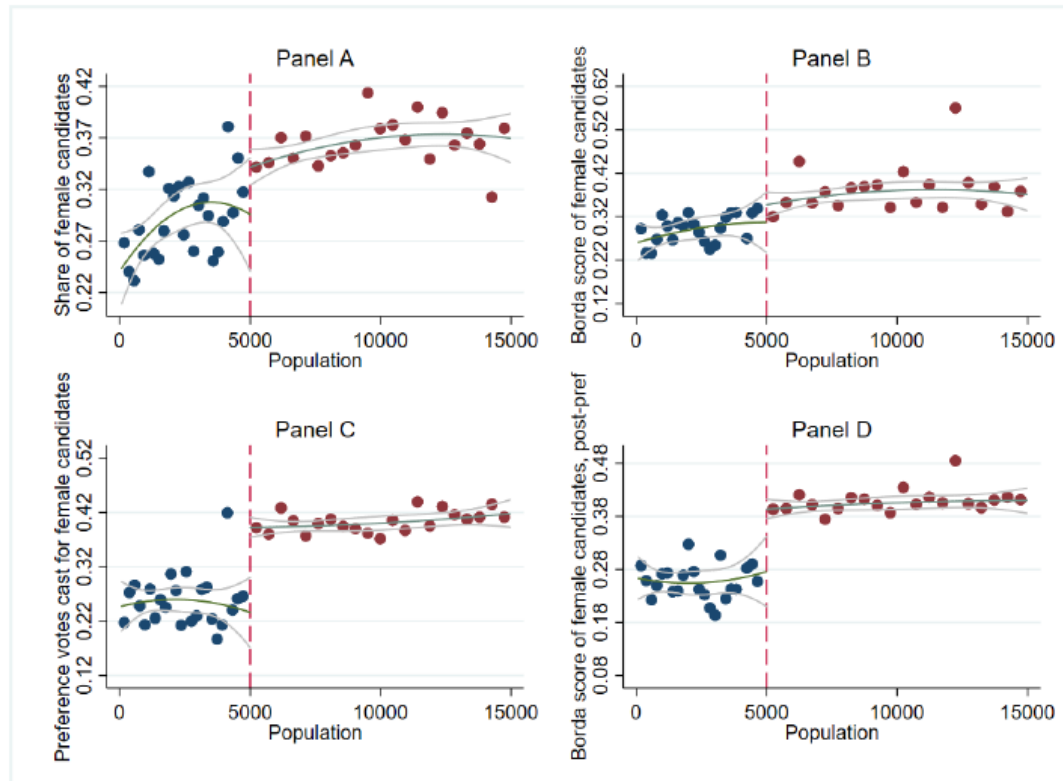
Figure 6: Working of the policy

Notes. The figure plots the binned averages of four outcomes against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals. Panel A reports the share of female candidates over the total number of candidates on list s in municipality i; Panel B reports the Borda score of female candidates on list s in municipality i; Panel C reports the share of preference votes cast for female candidates on list s in municipality i; Panel D reports the post-election Borda score of female candidates on list s in municipality i. See the main text for details on the definition of the variables. The sample includes all lists presented in municipalities with less than 15,000 residents that held elections in 2013.

Mechanisms: Other voting outcomes

Voting behavior:

- Turnout, overall and by gender

- Use of preference votes: number of preference votes over the total number of votes in the municipality

- Quality of politicians
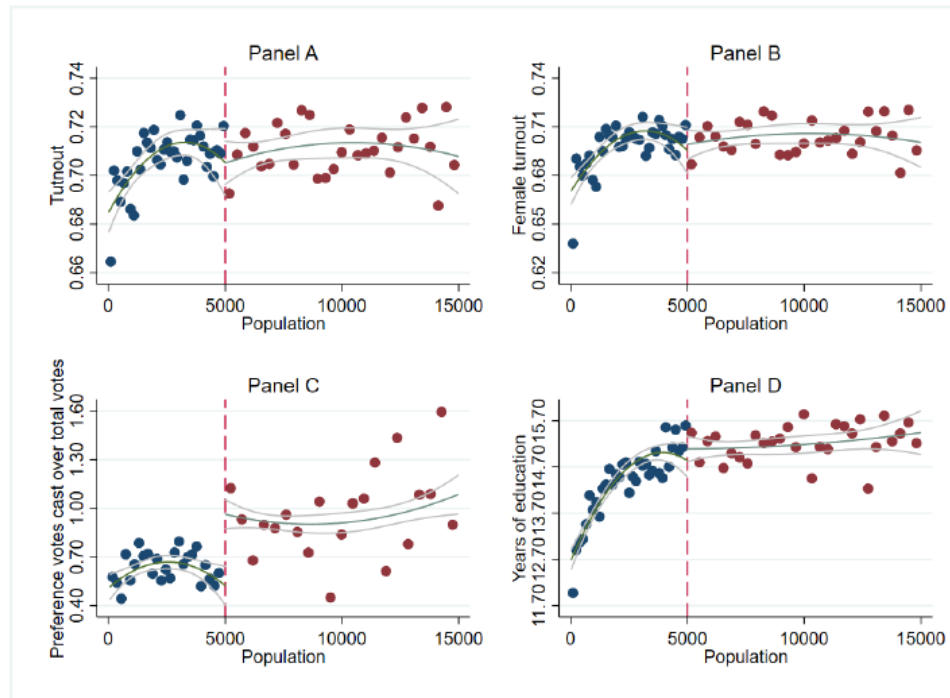
Figure 8: Other voting outcomes

Notes. The figure plots the binned averages of four outcomes against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals. Panel A reports turnout, measured as the share of actual voters over eligible voters in municipality i; Panel B reports female turnout, measured as the share of actual female voters over eligible female voters in municipality i; Panel C reports the number of preference votes over the total number of actual voters for list s in municipality i; Panel D reports the average number of years of education of elected female councilors in municipality i. The sample includes all municipalities that held election in 2013-2015 in Panel A, B and D, and includes all municipalities that held election in 2013 for which preference votes were available in 2013 in Panel C.

Spillover in regional elections ▷
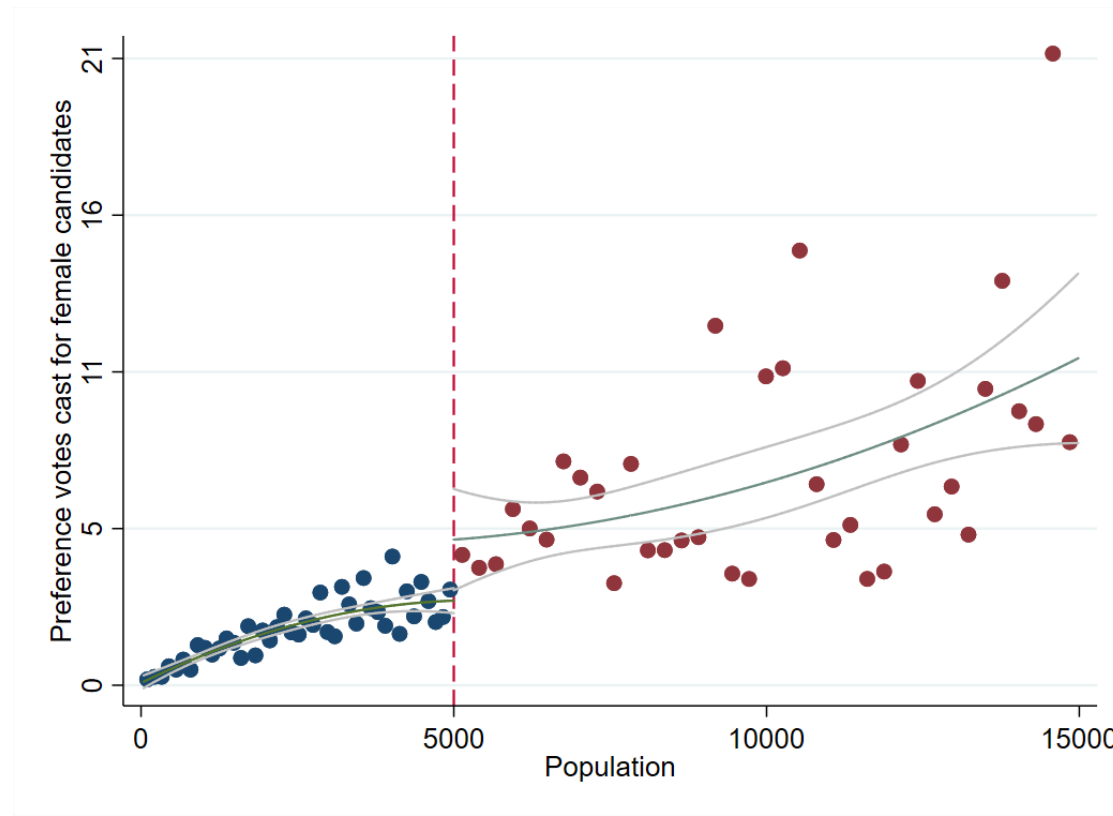
Average number of preference votes cast for female candidates.

Female candidates in regional elections gain on average three more votes
in municipalities in which Law 215/2012 applies.

Spillover effects in regional elections (t-1)
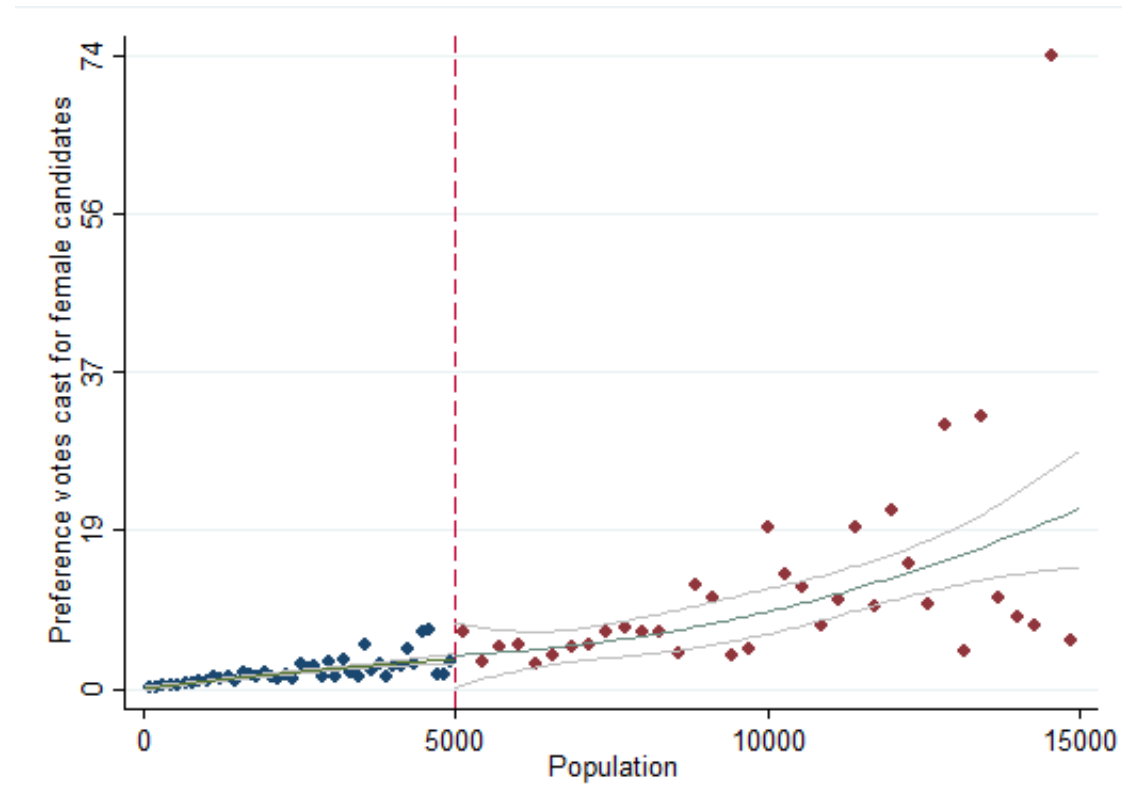
Average number of preference votes cast for female candidates.

Conclusions

The policy had a large and robust impact on the presence of women in municipal councils, promoting their political empowerment

Driving force: preference votes in favor of female candidates cast by electorate

Even soft policy measures, like double preference voting, may spill-over beyond their direct target

Female empowerment and policy outcomes

Does gender matter in policy-making?

Women, Local Public Finance and Fiscal Adjustment

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[2]University of Cambridge

January 13, 2020

Introduction

Does gender matter in policy-making?

We investigate whether male and female local politicians make different decisions

- on the size and allocation of public spending and revenues

- on how to undertake fiscal adjustments in response to a reduction of transfers from the national government

The paper in a nutshell

We consider the election of mayors in Italian municipalities with more than 15,000 residents in the period 2000-2015

- Mayors are elected according to a run-off system

We use a positive margin of victory in the first round as an instrument for the mayor being female in close mixed gender races to estimate the causal impact of gender on

- the level and allocation of public spending and revenues of Italian municipalities (fuzzy RDD)

- the mode of fiscal adjustment (fuzzy diff-in-disc)

Preview of results

We find that

- Total public expenditure per capita and revenues per capita by female mayors are higher than those by male mayors.

  - Women spend more both in current and capital account

  - Especially in administration, roads and transports, social services

- When forced to undertake a fiscal adjustment, female mayors reduce expenditures more than men, but not revenues from taxes and fees

The literature

- Female political leadership and policy decisions

  - Test of the relationship requires a setting in which gender of policy maker is exogenously determined

  - Evidence is not conclusive
    - Chattopadhyay and Duflo (2004); Clots-Figueras (2011); Brollo and Troiano (2016); Baskaran and Hessami (2018); Baskaran et al. (2018); Funk and Gathmann (2015)
    - Ferreira and Gyourko (2014); Carozzi and Gago (2017); Bagues and Campa (2017); Gagliarducci and Paserman (2012)

- Gender preferences for size of government

  - Aidt and Dallal (2008), Lott and Kenny (2009)

- Fiscal adjustments

  - at sub-national levels: Marattin et al. (2019)

  - macroeconomic effects: Alesina et al. (2015, 2017), Guajardo et al. (2014)

Data

We combine three sets of data, over the period 2000-2015

- On elected mayors (Ministry of Interior)

  - gender, age, education, party, previous job

- On candidates to mayor position (Ministry of Interior)

  - names, party lists and number of votes

  - assign gender

- Balance sheet data from Bureau Van Dijk-AIDA PA

  - Spending commitments in total, current and capital account, and by function

  - Revenue accruals, in total and by title

We focus on municipalities with more than 15,000 inhabitants

Descriptive evidence

Share of female mayors
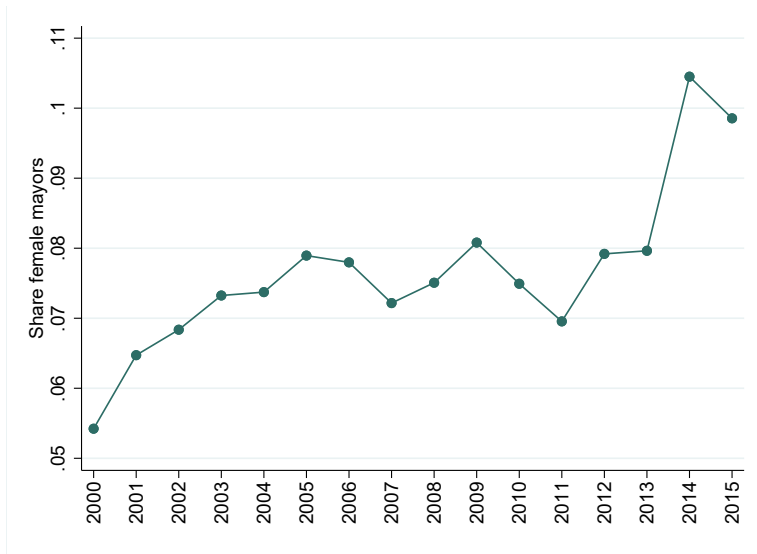
Descriptive evidence

Average per capita expenditures and revenues

Panel A: Per capita expenditures		
Total	1091.59	(422.84)
Administration	292.94	(140.08)
Justice	49.83	(24.51)
Culture & Education	183.62	(91.72)
Roads	121.92	(87.45)
Environment	214.77	(108.52)
Social services	141.95	(64.54)
Productive services	37.58	(70.65)

Panel B: Per capita revenues		
Total	1221.85	(558.77)
Taxes and fees	706.53	(251.61)
Transfers	165.18	(123.45)
Other revenues	350.14	(408.45)

Descriptive evidence

Before and after fiscal adjustment

A. Per capita expenditures

B. Per capita revenues

■ Admin.	■ Justice ■ Cult. & Edu.
■ Roads	■ Environ. ■ Social
■ Prod. & Dev't	

■ Taxes and fees
■ Transfers
■ Other revenues
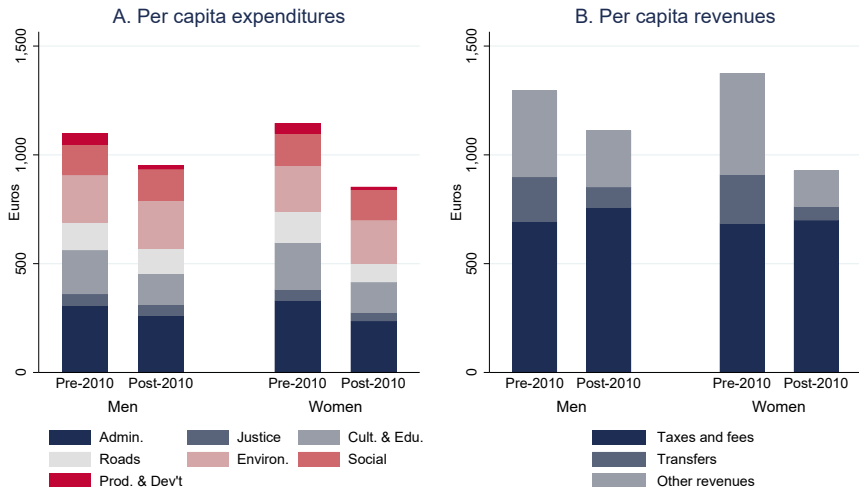
Empirical strategy: Fuzzy RDD

- Focus on mixed-gender elections (◂ Mixed gender elections)

- Identification strategy: fuzzy RDD, exploiting run-off electoral system

- Use positive 1st round margin of victory as instrument for the mayor being female in close mixed gender races

    - Elections happening on the same date within election year

- Validity: no other discontinuities at the cut-off, no sorting (◂ Balance test)
  (◂ McCrary)

Empirical strategy: Fuzzy diff-in-disc

- Estimate relative responses of female mayors to fiscal adjustment in a close interval around the 0 first round margin of victory before and after 2010
- Validity ◄ Balance test ◄ McCrary ◄ First stage ◄ Local PTA

Gender of mayors and local public finance

The fuzzy design

Graphical analysis
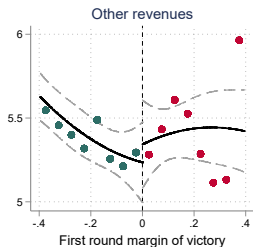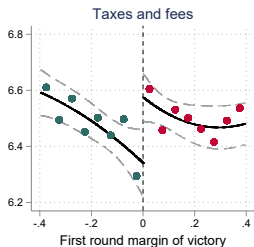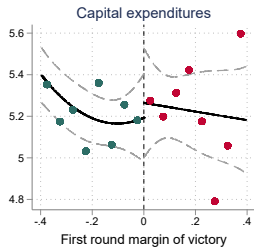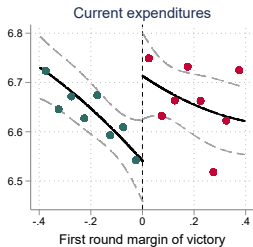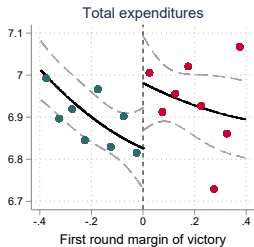
Fuzzy RD estimates
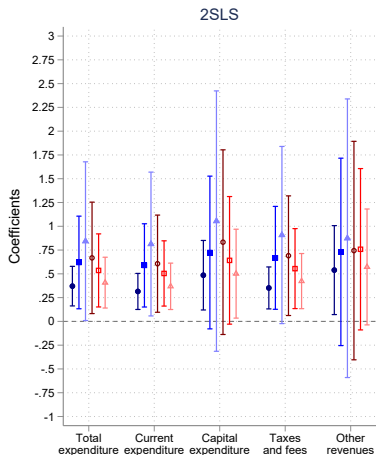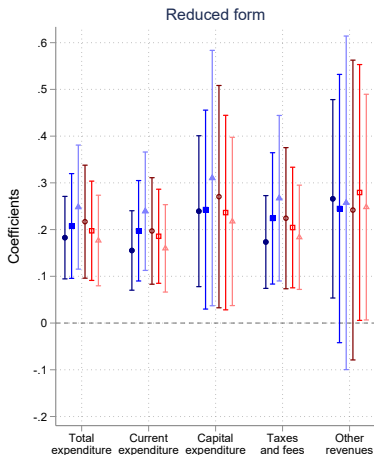
Local estimates at different bandwidths
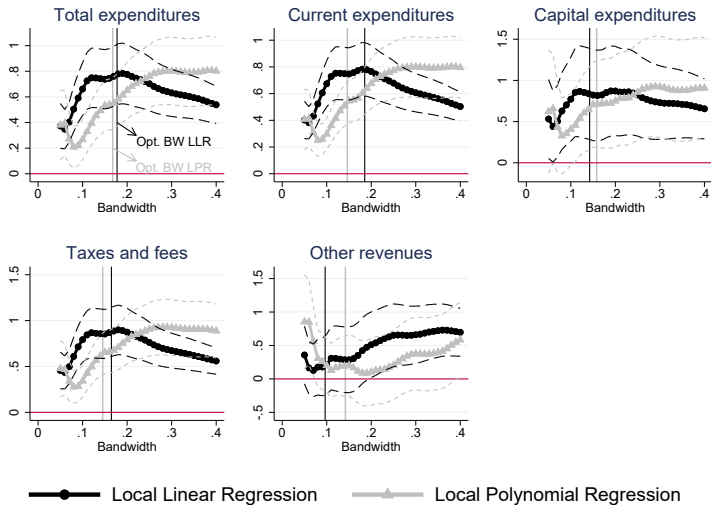
Further robustness and heterogeneity

- Placebo ◂ Placebo

- Covariates ◂ Covariates

- Restricted sample ◂ Restricted sample

- Components of expenditures and revenues ◂ Components

Gender of mayors and fiscal adjustment

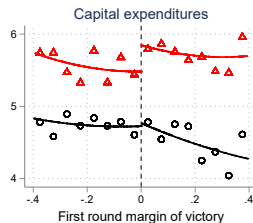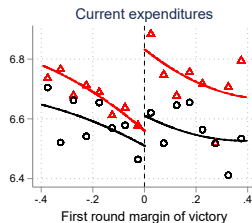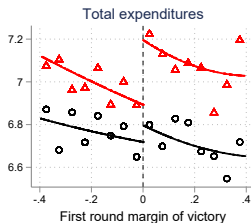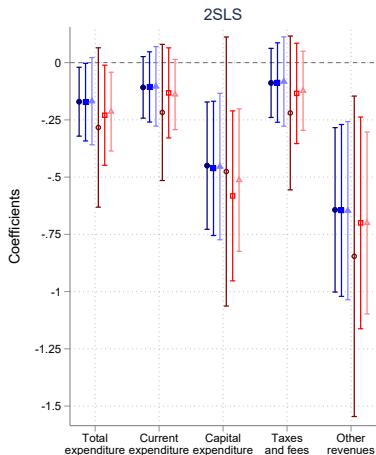# Intergovernmental transfer reductions

Graphical analysis
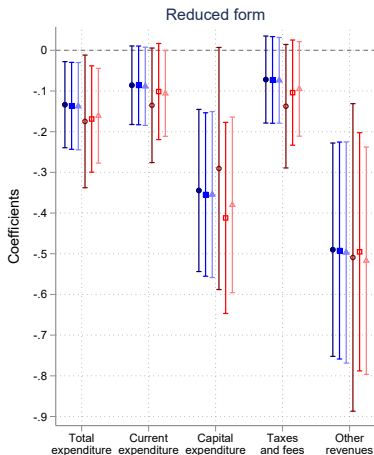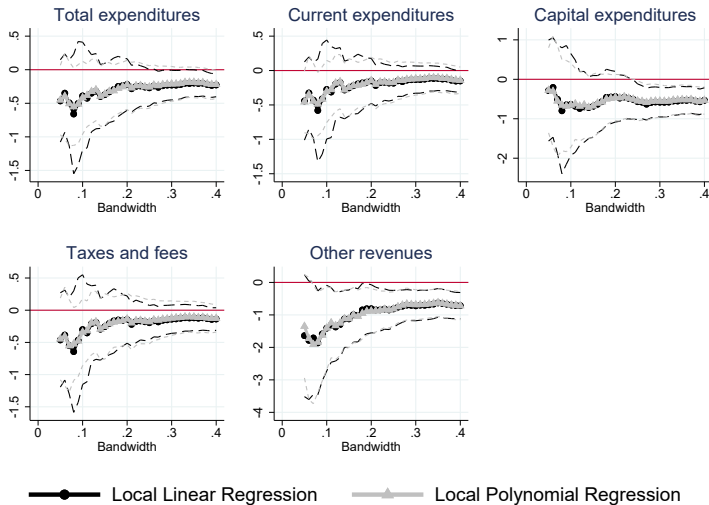

Transfers
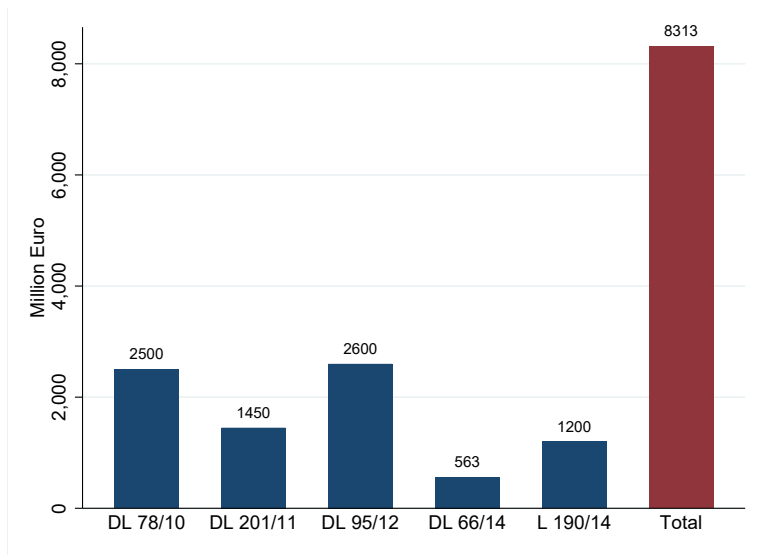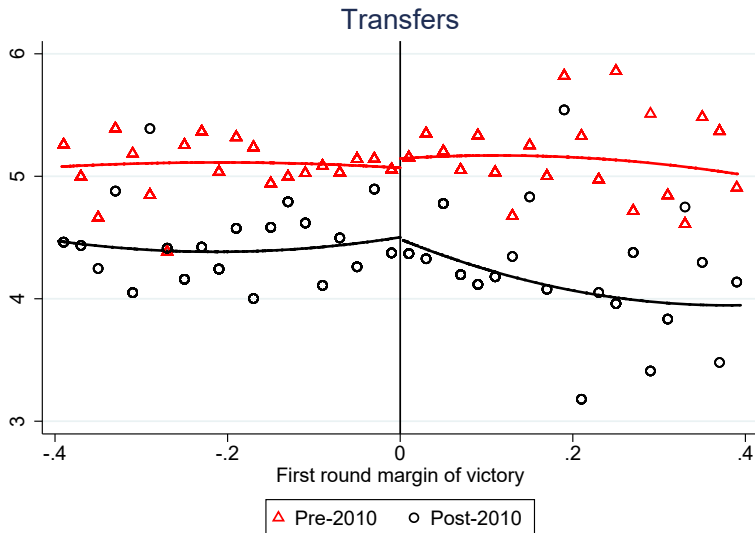
Pre-2010   Post-2010

Graphical analysis
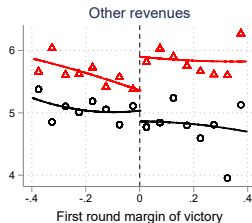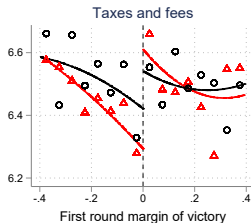
Fuzzy diff-in-disc estimates

Local estimates at different bandwidths

Local Linear Regression   Local Polynomial Regression

Further robustness and heterogeneity

- Placebo `◂ Placebo`

- Placebo year `◂ Placebo year`

- Covariates `◂ Covariates`

- Restricted sample `◂ Restricted sample`

- Components of expenditures and revenues `◂ Components`

Discussion and conclusion

- This paper contributes to the debate on the salience of gender in policy-making

- (Causal evidence that) Municipalities headed by female mayors display higher levels of expenditures and revenues

- This finding complements literature showing that women prefer larger size of government as voters: female politicians are capable of representing this interest (at local level)
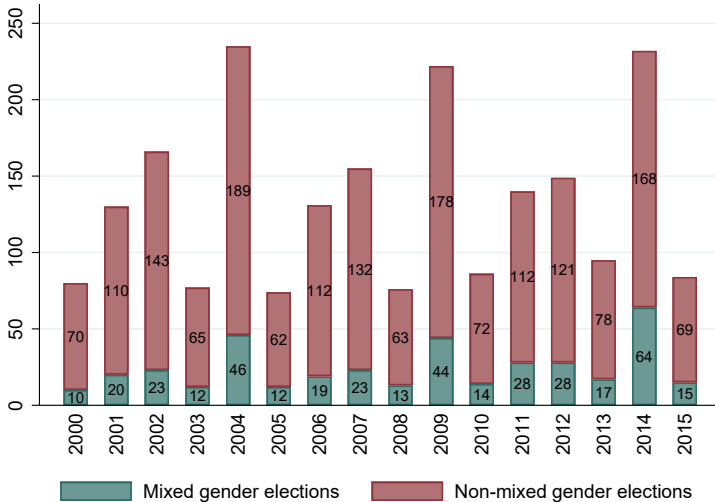
Discussion and conclusion

- *But*, in response to the need for fiscal adjustments, women mayors cut expenditures more than men

- Macroeconomic implication: fiscal adjustments relying on reduction of spending are less detrimental for growth
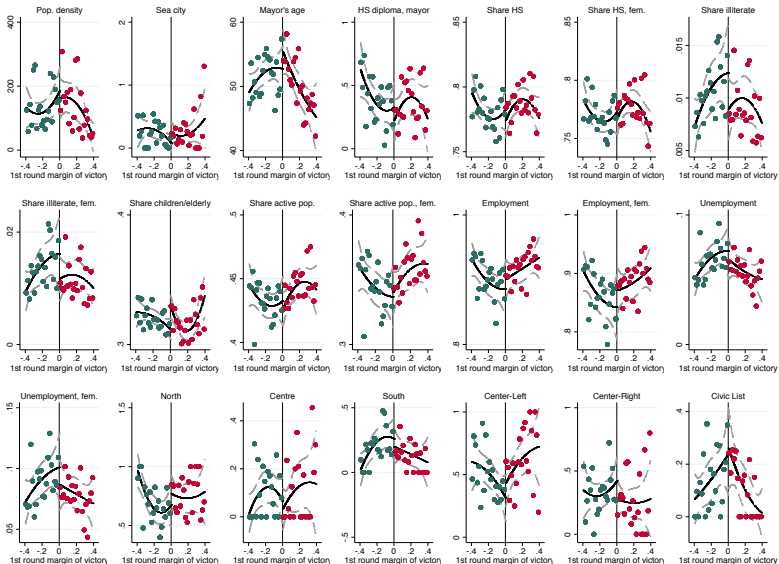
Overall conclusions

- There is still ample room to reduce gender inequality in political participation
- Reducing or closing the gap would deliver important economic and societal benefits and should be high in the policy agenda of all countries, especially those which are further away from gender equality
- There are effective policies to favour female political empowerment and they do not come to the detriment of quality of representatives
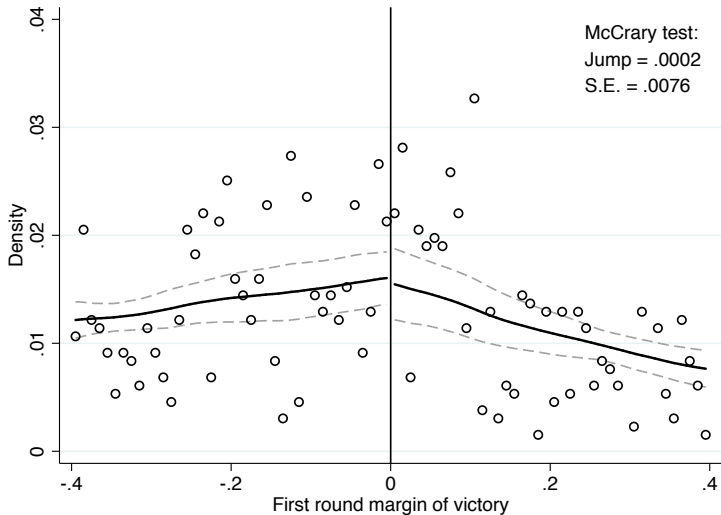- Involving voters in "delivering the change" can be a successful strategy

Mixed gender elections

Bar chart showing mixed gender elections and non-mixed gender elections by year from 2000 to 2015.

Year	Mixed gender elections	Non-mixed gender elections
2000	10	70
2001	20	110
2002	23	143
2003	12	65
2004	46	189
2005	12	62
2006	19	112
2007	23	132
2008	13	63
2009	44	178
2010	14	72
2011	28	112
2012	28	121
2013	17	78
2014	64	168
2015	15	69

◄ Back

Balance test, RDD

McCrary test, RDD

McCrary test:
Jump = .0002
S.E. = .0076

Density

First round margin of victory

‹ Back

Placebo, RDD

Components of expenditures and revenues, RDD

	(1) Spline 1st order	(2) Spline 2nd order	(3) Spline 3rd order	(4) LLR $h = 0.2$	(5) LLR $h = 0.3$	(6) LLR $h = 0.4$
Panel A: Per capita expenditures						
Administration	0.439***	1.002***	1.357**	1.122**	0.796***	0.561***
	(0.139)	(0.365)	(0.669)	(0.458)	(0.271)	(0.181)
Justice & Police	0.179	0.612*	0.830	0.651*	0.396*	0.263
	(0.138)	(0.318)	(0.516)	(0.377)	(0.235)	(0.173)
Culture & Education	0.201	0.456	0.514	0.534	0.339	0.295
	(0.159)	(0.317)	(0.433)	(0.350)	(0.265)	(0.202)
Roads	0.614***	0.878**	1.140*	1.128**	0.651*	0.630**
	(0.208)	(0.409)	(0.621)	(0.522)	(0.341)	(0.261)
Environment	0.301*	0.123	0.255	-0.050	0.210	0.232
	(0.168)	(0.320)	(0.486)	(0.355)	(0.268)	(0.211)
Social services	0.450***	0.690*	0.991	0.786*	0.646**	0.507**
	(0.169)	(0.382)	(0.630)	(0.467)	(0.322)	(0.222)
Production & Dev't	0.766*	1.085	2.402	1.282	1.343*	0.542
	(0.429)	(0.950)	(1.849)	(1.204)	(0.804)	(0.530)
Panel B: Per capita revenues						
Taxes	0.270***	0.529**	0.833*	0.594**	0.470**	0.331**
	(0.101)	(0.245)	(0.432)	(0.299)	(0.200)	(0.135)
Fees	0.572**	1.191**	1.278	1.133*	0.912**	0.722**
	(0.237)	(0.566)	(0.840)	(0.633)	(0.429)	(0.303)
Alienations	0.706***	1.240**	1.802*	1.407**	1.084**	0.833***
	(0.222)	(0.545)	(0.989)	(0.669)	(0.439)	(0.297)
Loans	0.902*	0.263	-0.221	0.096	0.805	0.743
	(0.472)	(0.910)	(1.213)	(1.012)	(0.863)	(0.602)

Estimates with covariates, RDD

	(1) Spline 1st order	(2) Spline 2nd order	(3) Spline 3rd order	(4) LLR $h = 0.2$	(5) LLR $h = 0.3$	(6) LLR $h = 0.4$
Panel A: Reduced form						
Per capita expenditures						
Total	0.131***	0.135**	0.164**	0.126*	0.126**	0.115**
	(0.045)	(0.057)	(0.068)	(0.066)	(0.054)	(0.050)
Current account	0.106**	0.122**	0.157**	0.099*	0.116**	0.100**
	(0.041)	(0.052)	(0.061)	(0.056)	(0.048)	(0.046)
Capital account	0.174**	0.165	0.213	0.175	0.150	0.142
	(0.084)	(0.112)	(0.144)	(0.134)	(0.109)	(0.095)
Per capita revenues						
Taxes and fees	0.120**	0.139**	0.198**	0.119	0.137**	0.113**
	(0.047)	(0.064)	(0.081)	(0.073)	(0.059)	(0.053)
Other revenues	0.216**	0.188	0.142	0.185	0.215	0.208*
	(0.107)	(0.143)	(0.181)	(0.162)	(0.137)	(0.121)
Observations	1482	1482	1482	804	1096	1316
Panel B: 2SLS						
Per capita expenditures						
Total	0.274***	0.441*	0.599	0.458	0.362*	0.280**
	(0.106)	(0.248)	(0.389)	(0.323)	(0.190)	(0.137)
Current account	0.221**	0.397**	0.571*	0.360	0.333**	0.242**
	(0.094)	(0.214)	(0.344)	(0.260)	(0.164)	(0.121)
Capital account	0.363*	0.539	0.777	0.634	0.431	0.345
	(0.190)	(0.432)	(0.682)	(0.587)	(0.347)	(0.250)
Per capita revenues						
Taxes and fees	0.250**	0.455*	0.722	0.432	0.393*	0.274*
	(0.109)	(0.261)	(0.453)	(0.330)	(0.201)	(0.142)
Other revenues	0.452*	0.614	0.518	0.671	0.616	0.505
	(0.239)	(0.527)	(0.722)	(0.676)	(0.435)	(0.318)
First-stage F	351.26	79.09	38.77	30.10	90.73	191.68
Observations	1482	1482	1482	804	1096	1316

Restricted sample, RDD

	(1) Spline 1st order	(2) Spline 2nd order	(3) Spline 3rd order	(4) LLR $h=0.2$	(5) LLR $h=0.3$	(6) LLR $h=0.4$
	Panel A: Reduced form					
	Per capita expenditures					
Total	0.179***	0.202***	0.235***	0.214***	0.195***	0.174***
	(0.047)	(0.059)	(0.068)	(0.062)	(0.055)	(0.051)
Current account	0.155***	0.197***	0.233***	0.203***	0.188***	0.161***
	(0.046)	(0.056)	(0.064)	(0.064)	(0.058)	(0.052)	(0.050)
Capital account	0.232***	0.231**	0.287**	0.253**	0.229**	0.211**
	(0.085)	(0.111)	(0.140)	(0.124)	(0.108)	(0.094)
	Per capita revenues					
Taxes and fees	0.173***	0.224***	0.264***	0.233***	0.207***	0.184***
	(0.052)	(0.072)	(0.090)	(0.077)	(0.066)	(0.058)
Other revenues	0.208*	0.181	0.203	0.179	0.223	0.188
	(0.110)	(0.148)	(0.182)	(0.165)	(0.142)	(0.126)
Observations	1398	1398	1398	723	1012	1232
	Panel B: 2SLS					
	Per capita expenditures					
Total	0.261***	0.391***	0.646**	0.471***	0.349***	0.273***
	(0.073)	(0.133)	(0.278)	(0.171)	(0.111)	(0.086)
Current account	0.226***	0.381***	0.640**	0.447***	0.336***	0.253***
	(0.069)	(0.122)	(0.253)	(0.152)	(0.101)	(0.081)
Capital account	0.339***	0.446*	0.788	0.559*	0.410**	0.331**
	(0.129)	(0.236)	(0.491)	(0.309)	(0.206)	(0.155)
	Per capita revenues					
Taxes and fees	0.251***	0.434***	0.725**	0.513***	0.370***	0.289***
	(0.079)	(0.154)	(0.329)	(0.197)	(0.126)	(0.095)
Other revenues	0.303*	0.351	0.556	0.395	0.398	0.296
	(0.162)	(0.293)	(0.536)	(0.373)	(0.259)	(0.200)
First-stage F	1163.42	390.24	127.13	135.09	381.83	739.05
Observations	1398	1398	1398	723	1012	1232

Balance test, Diff-in-disc
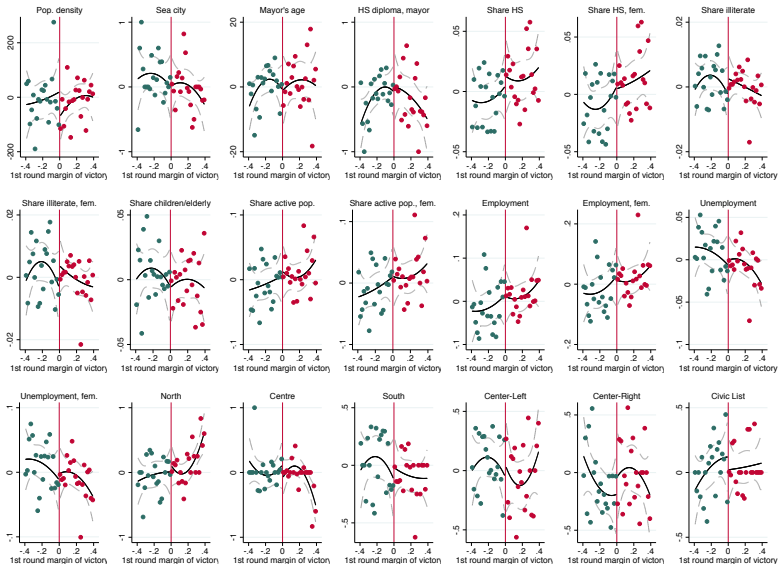
Validity check

McCrary test, Diff-in-disc

Density before 2010
McCrary test: -.01 (.01)

Density after 2010
McCrary test: .014 (.012)

Density difference
McCrary test: .021 (.016)
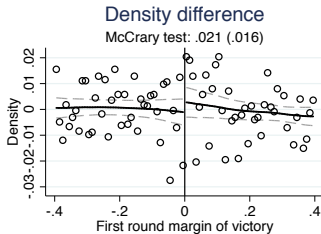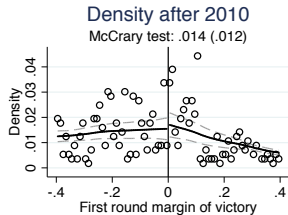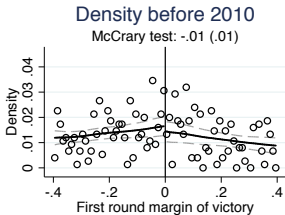
First stage, before and after 2010

RD, pre-2010: .34 (.13) ***
RD, post-2010: .32 (.14) **
Diff-in-disc: -.03 (.19)

First round margin of victory

△ Pre-2010   ○ Post-2010

‹ Back
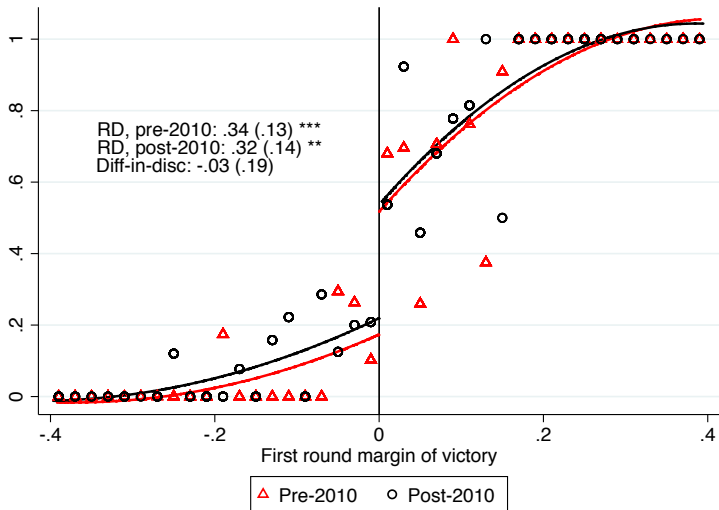
Local parallel trend assumption
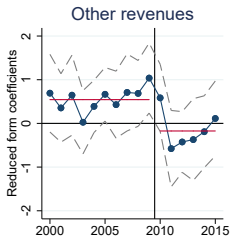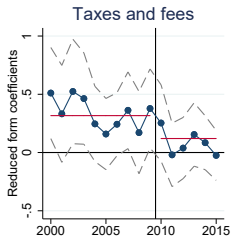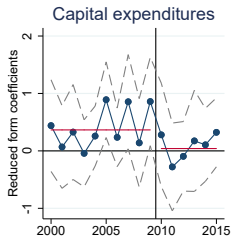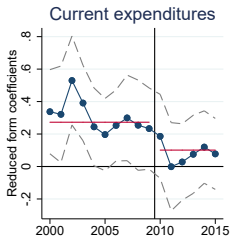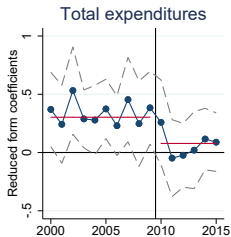
Components of expenditures and revenues, diff-in-disc

	(1) Spline 1st order	(2) Spline 2nd order	(3) Spline 3rd order	(4) LLR $h = 0.2$	(5) LLR $h = 0.3$	(6) LLR $h = 0.4$
			Panel A: Per capita expenditures			
Administration	-0.208**	-0.204	-0.201	-0.342	-0.269*	-0.273**
	(0.105)	(0.127)	(0.145)	(0.262)	(0.154)	(0.120)
Justice & Police	-0.177	-0.169	-0.150	-0.144	-0.089	-0.201
	(0.115)	(0.128)	(0.136)	(0.214)	(0.144)	(0.129)
Culture & Education	0.010	0.013	0.004	0.014	-0.033	-0.020
	(0.107)	(0.108)	(0.110)	(0.205)	(0.138)	(0.117)
Roads	-0.173	-0.185	-0.198	-0.304	-0.304	-0.264
	(0.154)	(0.161)	(0.170)	(0.336)	(0.206)	(0.172)
Environment	-0.231*	-0.243*	-0.231*	-0.345*	-0.275*	-0.249*
	(0.128)	(0.127)	(0.129)	(0.200)	(0.155)	(0.140)
Social services	-0.030	-0.026	-0.018	-0.173	-0.079	-0.064
	(0.114)	(0.121)	(0.134)	(0.242)	(0.161)	(0.129)
Production & Dev't	-0.277	-0.309	-0.258	-0.773	-0.436	-0.408
	(0.337)	(0.345)	(0.394)	(0.620)	(0.455)	(0.364)
			Panel B: Per capita revenues			
Taxes	-0.085	-0.078	-0.070	-0.189	-0.104	-0.102
	(0.071)	(0.079)	(0.093)	(0.155)	(0.104)	(0.082)
Fees	-0.041	-0.045	-0.054	-0.279	-0.139	-0.112
	(0.162)	(0.180)	(0.180)	(0.332)	(0.222)	(0.181)
Alienations	-0.396**	-0.402**	-0.388*	-0.491	-0.545**	-0.503***
	(0.170)	(0.190)	(0.221)	(0.399)	(0.235)	(0.190)
Loans	-0.841**	-0.836**	-0.843**	-0.999	-0.835	-0.681
	(0.424)	(0.416)	(0.418)	(0.672)	(0.533)	(0.459)

◂ Back

Estimates with covariates, diff-in-disc

	(1) Spline 1st order	(2) Spline 2nd order	(3) Spline 3rd order	(4) LLR $h = 0.2$	(5) LLR $h = 0.3$	(6) LLR $h = 0.4$
			Panel A: Reduced form			
			Per capita expenditures			
Total	-0.138	-0.094	-0.133	-0.086	-0.120	-0.088
	(0.085)	(0.116)	(0.139)	(0.119)	(0.107)	(0.095)
Current account	-0.088	-0.067	-0.148	-0.048	-0.108	-0.045
	(0.074)	(0.097)	(0.117)	(0.102)	(0.088)	(0.082)
Capital account	-0.239	-0.105	0.090	-0.103	-0.063	-0.171
	(0.170)	(0.237)	(0.288)	(0.250)	(0.220)	(0.191)
			Per capita revenues			
Taxes and fees	-0.134	-0.151	-0.212	-0.117	-0.180	-0.109
	(0.086)	(0.121)	(0.148)	(0.129)	(0.111)	(0.097)
Other revenues	-0.425*	-0.451	-0.591	-0.518	-0.486*	-0.374
	(0.218)	(0.310)	(0.402)	(0.342)	(0.283)	(0.254)
Observations	1482	1482	1482	804	1096	1316
			Panel B: 2SLS			
			Per capita expenditures			
Total	-0.097	-0.100	-0.101	-0.204	-0.145	-0.140*
	(0.065)	(0.070)	(0.077)	(0.143)	(0.089)	(0.072)
Current account	-0.042	-0.042	-0.044	-0.135	-0.053	-0.075
	(0.060)	(0.065)	(0.071)	(0.120)	(0.082)	(0.066)
Capital account	-0.361***	-0.372***	-0.374***	-0.382	-0.477***	-0.417***
	(0.131)	(0.135)	(0.144)	(0.261)	(0.168)	(0.145)
			Per capita revenues			
Taxes and fees	-0.088	-0.089	-0.085	-0.196	-0.107	-0.121
	(0.070)	(0.076)	(0.087)	(0.143)	(0.096)	(0.077)
Other revenues	-0.461***	-0.464***	-0.478***	-0.710**	-0.563***	-0.524***
	(0.167)	(0.172)	(0.173)	(0.337)	(0.215)	(0.185)
First-stage F	175.65	39.58	19.42	14.91	45.32	95.82
Observations	1482	1482	1482	804	1096	1316

Restricted sample, diff-in-disc

	(1) Spline 1st order	(2) Spline 2nd order	(3) Spline 3rd order	(4) LLR $h = 0.2$	(5) LLR $h = 0.3$	(6) LLR $h = 0.4$
	Panel A: Reduced form					
	Per capita expenditures					
Total	-0.214**	-0.200*	-0.200	-0.260	-0.199	-0.179
	(0.106)	(0.106)	(0.135)	(0.157)	(0.134)	(0.121)
Current account	-0.167*	-0.164*	-0.171	-0.220*	-0.202*	-0.143
	(0.090)	(0.090)	(0.110)	(0.129)	(0.108)	(0.101)
Capital account	-0.306	-0.251	-0.233	-0.293	-0.089	-0.236
	(0.197)	(0.199)	(0.254)	(0.302)	(0.260)	(0.226)
	Per capita revenues					
Taxes and fees	-0.180*	-0.160	-0.184	-0.224	-0.201	-0.158
	(0.103)	(0.099)	(0.127)	(0.157)	(0.129)	(0.114)
Other revenues	-0.603**	-0.571**	-0.645**	-0.838**	-0.688***	-0.568**
	(0.246)	(0.243)	(0.312)	(0.376)	(0.308)	(0.284)
Observations	1398	1398	1398	723	1012	1232
	Panel B: 2SLS					
	Per capita expenditures					
Total	-0.149**	-0.155**	-0.164**	-0.234*	-0.198**	-0.184***
	(0.065)	(0.067)	(0.072)	(0.120)	(0.084)	(0.072)
Current account	-0.101*	-0.105*	-0.115*	-0.198**	-0.126*	-0.128**
	(0.058)	(0.059)	(0.064)	(0.100)	(0.075)	(0.063)
Capital account	-0.370***	-0.384***	-0.397***	-0.327	-0.459***	-0.416***
	(0.123)	(0.125)	(0.132)	(0.220)	(0.153)	(0.135)
	Per capita revenues					
Taxes and fees	-0.068	-0.073	-0.084	-0.179	-0.107	-0.097
	(0.063)	(0.066)	(0.071)	(0.111)	(0.081)	(0.070)
Other revenues	-0.580***	-0.582***	-0.597***	-0.670**	-0.606***	-0.621***
	(0.160)	(0.162)	(0.167)	(0.266)	(0.189)	(0.173)
First-stage F	578.10	194.21	63.24	66.15	190.35	367.05
Observations	1398	1398	1398	723	1012	1232

Placebo, diff-in-disc
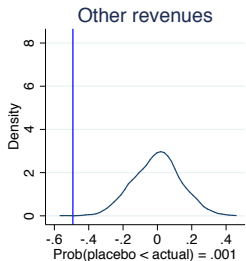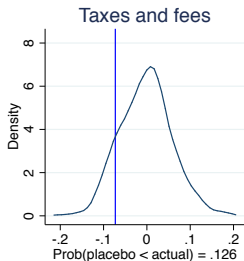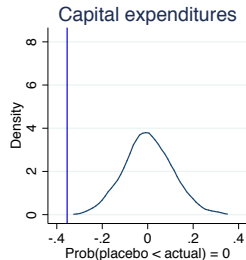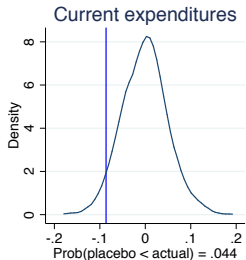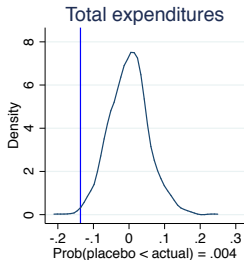
Placebo year, diff-in-disc