Online Supporting Information for Direct Democracy and Women's Political Engagement

1. Balance Tests on Predetermined Covariates

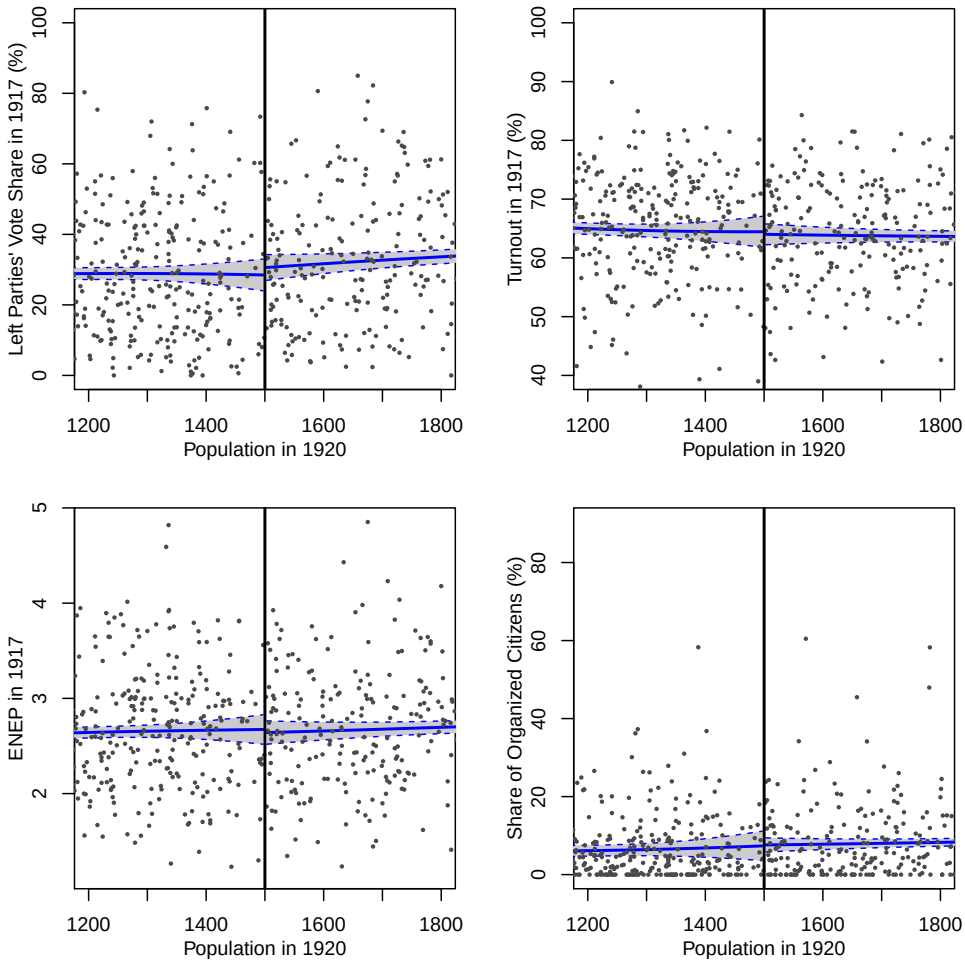
A potential threat to any identification with RD designs is the possibility of imbalance at the threshold in pretreatment covariates (Caughey and Sekhon 2011; Eggers et al. 2018; Lee and Lemieuxa 2010). To investigate this possibility, I examine whether Swedish municipalities on each side of the population threshold were comparable in political, economic, and demographic characteristics prior to the institutional reform in 1918.

SI Figure 1 plots distributions of political covariates that might have affected Swedish women's political inclusion in the period of investigation. First, I examine the distribution of partisan support, measured as vote shares that leftist parties (the Social Democratic Party and the Swedish Social Democratic Left Party) received, and turnout of eligible voters—male citizens above the age of 23, who had taxpaying abilities— in the 1917 general election. I also investigate the number of competing parties in the 1921 election, since patterns of political competition might have affected women's participation in elections (Corder and Wolbrecht 2016; Skorge 2018). Finally, since preexisting levels of political mobilization might have also affected women's political participation, I compare the share of organized citizens across municipalities.[1] As shown in the plots, municipalities on each side of the population threshold were comparable in terms of the political culture and electoral context prior to the reform.

It is also important to examine patterns of women's political participation prior to 1918 across municipalities near the population threshold. Although Swedish women could not vote in parliamentary elections until 1921, Swedish women who had taxpaying ability were allowed participate in municipal decision-making processes (Sjögren 2006; Sjögren and Lind-

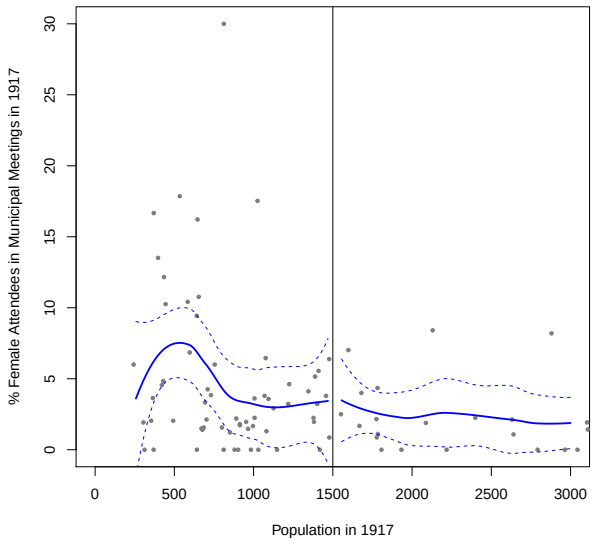
1 This measure is operationalized as the share of citizens, who joined at least one of the following organizations— labor union, political parties, free church movement organizations, or temperance movement organizations. The data come from 'Popular movement archive, 1881-1950' available upon request at The Swedish National Data Service website.

SI Figure 1: Balance Test (1) Political Characteristics



Note: Solid lines in each panel represent predicted values of a local linear smoother estimated on each side of the threshold. Dotted lines show 95% prediction intervals.

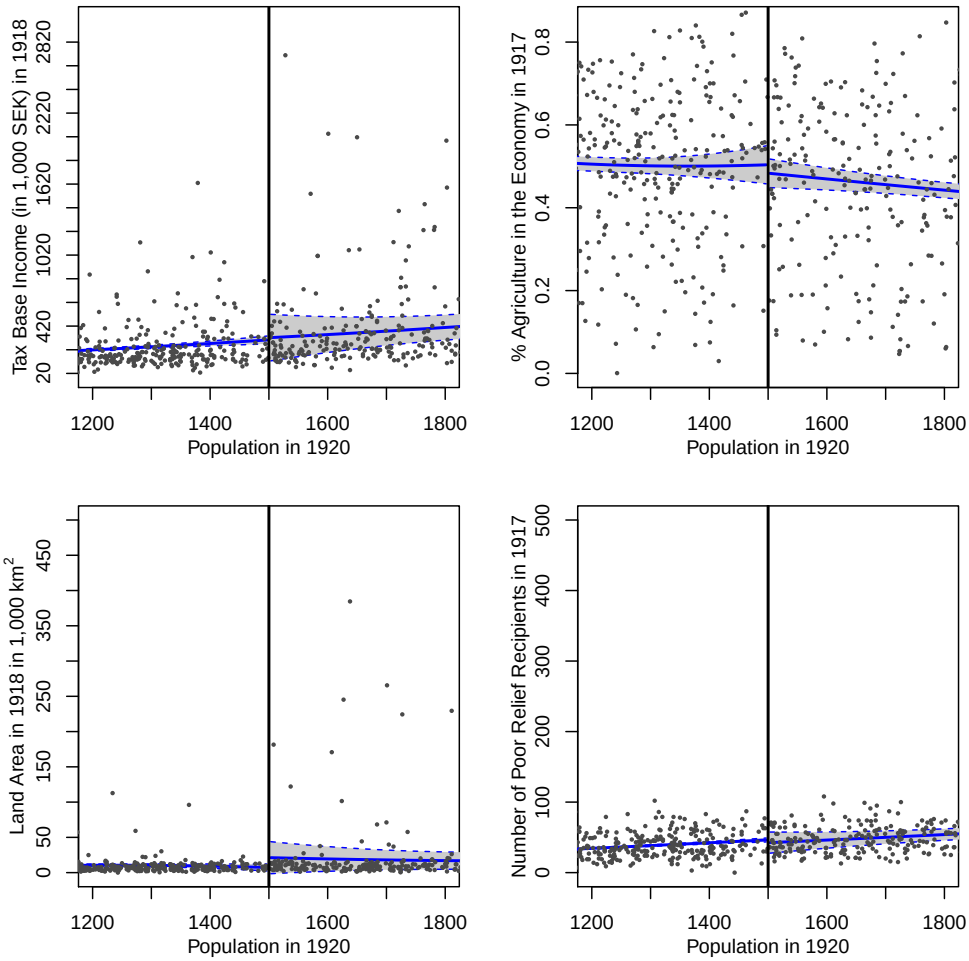
SI Figure 2: Balance Test (2) Women's Prior Participation in Municipal Politics



ström 2011). Given that women's prior exposure to political processes may stimulate their subsequent political activism (Carpenter and Moore 2014), I need to evaluate whether women from each side of the threshold had similar levels of political interactions prior to the institutional reform. To do this, I created a measure of women's participation in municipal politics based on the minutes data described in the main text. More specifically, women's participation in municipal politics prior to the reform is operationalized as the share of female attendees in municipal meetings in 1917. SI Figure 2 compares this measure around the threshold with predicted values of local smoothers and 95% prediction intervals. There is no visible discontinuity around the cutoff, confirming that women on each side of the cutoff had a similar rate of political interactions prior to the reform.

Finally, SI Figure 3 compares municipalities on each side of population threshold on four socioeconomic pretreatment covariates— tax base income, share of agriculture in the economy, the size of land area, the number of poor relief recipients in 1917. The number of poor relief recipients is a particularly relevant covariate, because of the political context in Sweden during this period. Prior to 1921, the right to vote in parliamentary elections was restricted to male citizens over the age of 23 with certain levels of income or property. In

SI Figure 3: Balance Test (3) Socioeconomic Characteristics



Note: Solid lines in each panel represent predicted values of a local linear smoother estimated on each side of the threshold. Dotted lines show 95% prediction intervals.

particular, recipients of poverty relief or those who owed taxes were not allowed to vote. In 1921, this financial requirement was relaxed, enhancing the number of eligible male voters, not just female voters who gained the voting rights in that election (Särlvik 2002). To investigate whether the increase in male voters was disproportionate across municipality around the population threshold, I use the number of poor relief recipients as a proxy of the increase in the number of eligible male voters in 1921. While the precise number of male voters, who did not have the right to vote until 1921 election is unavailable, it is highly likely that men in the group received poor relief assistance in 1917. The bottom-right panel of SI Figure 3 shows no discontinuity around the population threshold in the number of poor relief recipients in 1917.

Plots in SI Figure 3 do not show any clear evidence of discontinuity around the population cutoff across pretreatment covariates. Together, the results of balance tests suggest that observations on each side of the threshold are comparable in terms of key political or socioeconomic characteristics, validating the use of RD design.

2. Robustness Check: Placebo Test

As a robustness check, I report results of placebo tests, where I estimate the main RD effect at a "fake" cutoff. In SI Table 1, I show that the coefficient estimate for *Direct Democracy* is not statistically reliable in models estimated at a placebo cutoff. This confirms that we can observe a significant effect of *Direct Democracy* only at the true population threshold, and not at other values, where the treatment status does not change.

SI Table 1: Placebo Test of Direct Democracy on Women's Political Participation

	Placebo Cutoff: 1,000	
	(1) Women's Turnout (%)	(2) % Votes Women Cast
Bandwidth [1500 ± ...]	218	207
Direct Democracy	88.157	70.713
	(72.178)	(54.254)
Year FE	✓	✓
Covariates	✓	✓
Number of Municipalities	625	607
Number of Observations	3237	3105

Note: The bandwidths chosen are MSE-optimal. Table entries are coefficient estimates with standard error in parentheses.

3. Descriptive Statistics

SI Table 2: Descriptive Statistics of Main Variables

	Min	Mean	Median	Max	Std. Dev	N
Women's Turnout (%)	5.31	59.44	61.54	100.00	14.74	16579
Men's Turnout (%)	5.17	71.23	73.09	100.00	11.50	16582
% Votes Women Cast	1.23	44.71	45.00	72.65	3.86	16584
Left Party Vote Share	0.00	0.37	0.37	0.94	0.21	16584
Women Voters	10.00	491.93	316.00	10473.00	588.90	16584
Population	90.00	1689.78	1084.00	26310.00	1999.54	16584
ENEP	1.00	2.89	2.90	5.56	0.67	16584
% Organized Citizens	0.00	0.10	0.06	9.48	0.17	16584
Poor Relief Recipients (1917)	0.00	56.82	29.00	1714.00	99.32	16466
Tax base Income in 1,000 SEK (1918)	1.894	450.408	160.194	14694.392	1014.241	16461
Area (1918)	0.00	18169.19	5099.00	1947404.00	81222.16	16276
% Agriculture in the economy (1917)	0.00	49.86	53.29	98.52	21.96	16269

4. Discussion of an Alternative Mechanism

The finding in the main text shows that women's political participation was greater in municipalities with direct democracy than municipalities with slightly greater population size that switched to representative democracy. This finding seems to suggest a strong association between direct democracy and women's political participation.

A plausible alternative mechanism of this finding, however, would be citizens' response to the institutional reform in larger municipalities. The higher level of women's participation in direct democracy could be explained by some attitudinal and behavioral shifts among citizens in representative democracy after a sudden change in the municipal political system. For example, the institutional change from direct democracy to representative democracy might have dampened citizens' trust towards the political system, thereby discouraging their participation in parliamentary elections. And this effect might have been stronger among female voters who were disengaged and less experienced with politics.

To investigate this possibility, I conducted the analysis using subsets of the dataset. Even if the reform in 1918 indeed changed citizens' political attitudes in larger municipalities, it seems reasonable to expect that this effect will be strongest in the immediate aftermath of the reform, and then gradually decrease over time. Thus, if this alternative mechanism entirely drove the result in Table 2 and Figure 2, the effect of direct democracy should be much smaller or disappear when only the data in later elections are used for the analysis.

Based on this belief, I estimated the same models, this time using the data excluding the first one or two elections after the municipal reform in 1918. In these models, I included the outcome variable from 1921 or 1924 election to control for the strength of electoral perturbations caused by the reform. SI Table 3 reports the results of this subsample analysis. From this table, we see that the effect of *Direct Democracy* remains positive and substantively large even when the first one or two elections after the reform were not considered. This shows that the alternative mechanism cannot explain the main effect of *Direct Democracy* found in Table 2 in the main text.

SI Table 3: The RD Effects of Direct Democracy (Subsample Analysis)

(1) 1924 - 1944 Elections

	Women's Turnout (%)	Men's Turnout (%)	% Votes Women Cast
Bandwidth $[1500 \pm ...]$	339	414	305
Direct Democracy	7.088	4.699	3.104
	(2.119)	(1.372)	(0.765)
Number of Municipalities	597	700	558
Number of Observations	2684	3273	2428

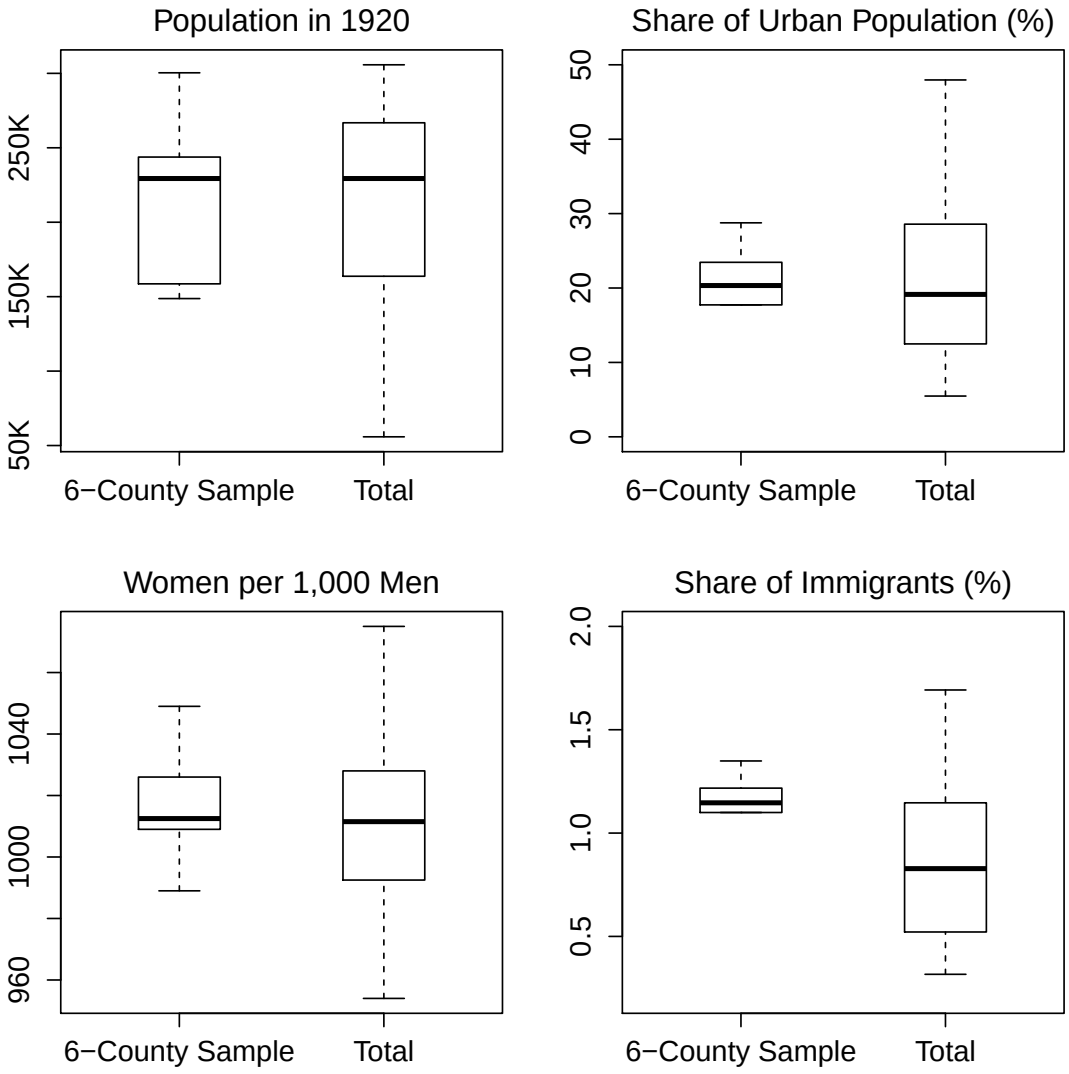
(2) 1928 - 1944 Elections

	Women's Turnout (%)	Men's Turnout (%)	% Votes Women Cast
Bandwidth $[1500 \pm ...]$	399	435	370
Direct Democracy	3.139	2.981	2.110
	(1.367)	(1.120)	(0.977)
Number of Municipalities	620	680	586
Number of Observations	2568	2847	2399

Note: Table entries are coefficient estimates with standard errors that are clustered at municipality in parentheses.

5. Comparison of 6-County Sample and Population

SI Figure 4: Comparison of 6-County Sample and Population (24 counties)



Note: T-tests of the sample and population indicate that these two groups are not statistically different in all four demographic variables.

In SI Figure 4, I show that the 6-county sample that is used in the Analysis II and the population are comparable in several demographic covariates (population size, urbanization rate, the share of women, immigration).[2]

2 Data Source: Historical Statistics Archive, Statistics Sweden

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