

# 1 The Secret Ballot: Baland/Robinson

- Are the rich able to capture the public sector? How does this depend upon political institutions?
- Focus on the secret ballot in Chile
- Political Parties in Chile:
  - Left: Socialist and Communist
  - Right: Conservatives and Liberals
  - Center: Radicals and Christian Democrats
- History of Suffrage
  - 1874 - Universal literate male suffrage
  - 1924 - Military rule

- 1932 - Reintroduction of elections
  - 1935 - Female suffrage
  - 1948-1958 - Ban on Communist Party
  - 1958- Secret Ballot Introduced
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- Use municipal level electoral data from 1949, 1953, 1957, 1961, and 1965 elections; also, used data from agricultural censuses: 1930, 1940, 1952, 1960, 1970
  - Most analysis done with 1957 and 1965 elections (which were both entire Congress and half of the Senate elections)
  - Inquilinos were large farms with hired labor
  - Theory: ...?

TABLE 1—AGRARIAN RELATIONS, LAND CONCENTRATION, AND ELECTORAL RESULTS IN CHILE

Region	Proportion of <i>inquilinos</i> in the population in 1935 (percent)	Proportion of <i>inquilinos</i> in the agricultural labor force in 1955 (percent)	Proportion of <i>inquilinos</i> in the number of registered voters (1955–57) (percent)	Proportion of right-wing votes in 1957 elections (percent)	Proportion of right-wing votes in 1965 elections (percent)	Proportion of Christian-Democratic votes in the 1957 elections (percent)	Proportion of Christian-Democratic votes in the 1965 elections (percent)	Share of total area operated by farms over 200 hectares in 1955 (percent)
North Central Valley (O'Higgins, Colchagua, Curico, Talca)	4.8	19.6	18.9	50.0	17.3	4.8	40.8	75.7
Urban Central Valley (Valparaiso, Santiago, Aconcagua)	3.8	19.1	17.2	40.8	16.0	8.6	47.1	88.5
South Central Valley (Maule, Linares, Nuble)	4.5	12.7	14.6	40.5	17.2	4.9	39.0	60.1
All Central Valley Provinces	4.3	17.4	17.1	44.4	16.9	6.0	42.1	74.9
Frontier and Little North Provinces (Concepcion, Bio-bio, Arauco, Malleco, Cautin, Atacama, Coquimbo)	3.2	10.8	11.2	31.2	11.8	7.4	33.7	68.9
All other provinces (Valdivia, Osorno, Llanquihue, Chiloe, Aysen, Magallanes, Tarapaca, Antofagasta)	3.0	5.7	8.2	26.6	15.1	14.7	29.6	69.4
Chile (average across all provinces)	3.8	11.8	12.6	35.0	14.8	8.7	35.8	71.4

*Note:* For the Santiago province, we excluded the four exclusively urban districts of the city of Santiago.

equal to  $-0.67$ ). The fall in right-wing votes is dramatic in the Central Valley provinces. Even the absolute number of right-wing votes fell in those areas, in spite of an increase in registered voters. The fall is very pronounced in some provinces, such as Colchagua ( $-48.1$  percent), from an absolute majority of 70.2 percent of the votes in 1957 to barely 22.5 percent in 1965.

## V. The Political Impact of the 1958 Electoral Reform: A Test

### A. The Empirical Strategy

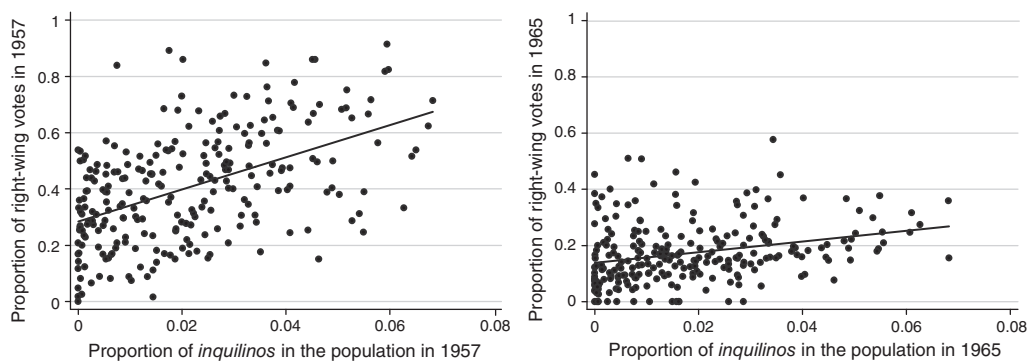
The empirical strategy pursued in this paper can be described as follows. Before the 1958 reform, the share of right-wing votes should be higher in *communas* with more *inquilinos* since their votes are then controlled. However, after the reform, the influence of *inquilinos* on electoral results should disappear, so that the difference in voting patterns across the two types of *communas* should disappear. In Table 2, we report the electoral results in 1957 and 1965 for *communas* with fewer and more *inquilinos* than the median.

Over the period, right-wing votes in *communas* with fewer *inquilinos* fell by  $-16.2$  percent, while it fell by  $-30.3$  percent in *communas* with more *inquilinos*. The impact of the loss of control over *inquilinos* votes on the fall in right-wing votes corresponds to the difference between these two figures,  $-14.1$  percent. The model below aims at estimating this impact more precisely.

In Figure 1, we present a simple OLS scatter plot of the relationship between right-wing votes and the proportion of *inquilinos* in each *communa*. The pattern is striking, as the impact of *inquilinos* on right-wing votes is significantly diminished after 1958.

TABLE 2—IMPACT OF AGRARIAN RELATIONS ON RIGHT-WING VOTES BEFORE AND AFTER THE 1958 ELECTORAL REFORM

	1957	1965	Difference 65–57
Ratio of <i>inquilinos</i> to the number of registered voters in 1955 below median (< 0.134)	0.321	0.159	–0.162
Ratio of <i>inquilinos</i> to the number of registered voters in 1955 above median	0.491	0.188	–0.303
Difference	0.170	0.029	–0.141

FIGURE 1. RIGHT-WING VOTES AND THE RATIO OF *INQUILINOS* TO REGISTERED VOTERS IN 1957 AND 1965 (Scatter plot and simple regression line)

### B. The Empirical Models

Two major limitations constrain our empirical strategy: first, we do not have information on voters by occupation category in a municipality. In other words, we do not know the number of *inquilinos* or other agricultural workers who actually voted in a particular municipality in a particular election. For each municipality, we know the total number of *inquilinos* (and of other agricultural workers), and we know the total number of valid votes in a particular election. We therefore have to assume a specific relationship between the distribution of the population across occupations and the distribution of voters across occupations in a particular municipality. Moreover, as we already noted above, the occupational division of a municipality's population is available only through the agricultural censuses, which were administered in 1935, 1955, and 1965. This explains our emphasis on the 1957 and 1965 elections, even though we will also provide results for all congressional elections between 1949 and 1965.<sup>21</sup>

We first present the models underlying our empirical analysis. We let  $RV_{i,t}$  represent the number of votes cast in favor of the right-wing party,  $V_{i,t}$ , the total number of voters, and  $V_{i,t}^h$ , the total number of voters of type  $h$  at time  $t$  in *communa*  $i$ . Voters can be of three different types:  $h = inq$  if the voter is an *inquilino*,  $h = agr$  if the voter is not an *inquilino* but works in agriculture, and  $h = na$  if he is not an agricultural worker. We can then write

<sup>21</sup> We decided not to investigate elections before 1949, as women were enfranchised only in 1948.

TABLE 3—IMPACT OF *INQUILINOS* ON RIGHT-WING VOTES IN 1957 AND 1965  
(Dependent variable is the proportion of right-wing votes in the 1957 and 1965 parliamentary elections)

	Model 1			Model 2		Model 3	
	<i>Inquilino</i> /voter = <i>inquilinos</i> at time <i>t</i> /voters in 1957			<i>Inquilino</i> /voter = <i>inquilinos</i> at time <i>t</i> /voters at time <i>t</i>		<i>Inquilino</i> /voter = <i>inquilinos</i> at time <i>t</i> /population at time <i>t</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Inquilino</i> /voter	0.438** (0.173)	0.259* (0.153)	0.451*** (0.072)	0.424*** (0.144)	0.353** (0.124)	3.533*** (1.306)	2.095* (1.188)
1965 × <i>inquilino</i> /voter	-0.435*** (0.082)	-0.294*** (0.090)	-0.278*** (0.986)	-0.369** (0.144)	-0.203 (0.136)	-4.705*** (0.688)	-3.034*** (0.801)
Other agricultural workers/voter	-0.102*** (0.031)	-0.016 (0.030)	-0.006 (0.010)	—	—	-0.644*** (0.232)	0.032 (0.240)
1965 × other agric. workers/voter	0.047*** (0.012)	0.005 (0.013)	0.001 (0.013)	—	—	0.364** (0.112)	-0.076 (0.141)
Time dummy: 1965	-0.197*** (0.019)	-0.156*** (0.047)	-0.157*** (0.056)	-0.168*** (0.016)	-0.141*** (0.048)	-0.182*** (0.021)	-0.121** (0.050)
1965 × province	—	Yes	Yes	—	Yes	—	Yes
Other controls	—	Yes	Yes	—	Yes	—	Yes
Communa fixed effect	Yes	Yes	No <sup>a</sup>	Yes	Yes	Yes	Yes
Provincial dummies	—	—	Yes	—	—	—	—
Observations	492	492	492	492	492	492	492
	Model 4			Model 5		Model 6	
	<i>Inquilino</i> /voter = <i>inquilinos</i> in 1935/population in 1935			<i>Inquilino</i> /voter = <i>inquilinos</i> in 1957/voters in 1957		<i>Inquilino</i> /voter = <i>inquilinos</i> at 1957/voters at time <i>t</i>	
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
<i>Inquilino</i> /voter	1.970*** (0.385)	—	—	—	0.448*** (0.072)	0.734*** (0.200)	0.592*** (0.185)
1965 × <i>Inquilino</i> /voter	-1.561*** (0.515)	-1.793*** (0.459)	-1.357*** (0.440)	-0.303*** (0.082)	-0.304*** (0.098)	-0.065 (0.172)	-0.022 (0.172)
Other agricultural workers/voter	—	—	—	—	-0.006 (0.010)	—	—
1965 × other agric. workers/voter	—	—	—	0.003 (0.012)	0.000 (0.014)	—	—
Time dummy: 1965	-0.174*** (0.059)	-0.167*** (0.021)	-0.145*** (0.051)	-0.158*** (0.046)	-0.155*** (0.056)	-0.168*** (0.016)	-0.167*** (0.045)
1965 × province	Yes	—	Yes	Yes	Yes	—	Yes
Other controls	Yes	—	Yes	Yes	Yes	—	Yes
Communa fixed effect	No <sup>a</sup>	Yes	Yes	Yes	No <sup>a</sup>	Yes	Yes
Provincial dummies	Yes	—	—	—	Yes	—	—
Observations	422	422	422	492	492	492	492

Notes: Standard errors in parentheses. The additional controls for equations (2), (3), (7), (11), and (12) are the proportion of land under large farms and the population in the municipality; for equations (5), (8), (10), and (14), they also include the agricultural labor force. For the fixed effect estimates, the within  $R^2$  ranged between 0.69 and 0.84, while the between  $R^2$  ranged between 0.02 and 0.26. For equations (1), (8), and (12), the adjusted  $R^2$  were between 0.67 and 0.69.

<sup>a</sup>Pooled OLS.

\*\*\*Significant at the 1 percent level. \*\*Significant at the 5 percent level. \*Significant at the 10 percent level.

all significant at the 1 percent level). (While we cannot estimate the provincial fixed effect for 1957 with the panel regressions, the corresponding estimates obtained with the pooled OLS for 1957 are 0.15, 0.27, and 0.33, all significant at the 1 percent level).

TABLE 4—IMPACT OF INQUILINOS ON RIGHT-WING VOTES IN 1957 AND 1965: ALTERNATIVE MEASURES  
(Dependent variable is the proportion of right-wing votes in the 1957 and 1965 parliamentary elections)

	(15)	(16)	(17)	(18)	(19)
<i>Inquilinos</i> /total agricultural workers	1.063*** (0.260)	0.425* (0.250)	— —	— —	0.447* (0.251)
1965 × <i>inquilinos</i> /total agricultural workers	-1.023*** (0.210)	-0.292 (0.226)	— —	— —	-0.421* (0.260)
Proportion of land under large farms	—	—	0.228* (0.120)	0.046 (0.105)	0.034 (0.104)
1965 × proportion of land under large farms	—	—	-0.181*** (0.051)	0.010 (0.051)	0.059 (0.059)
Time dummy: 1965	-0.112*** (0.021)	-0.157*** (0.051)	-0.097** (0.039)	-0.203*** (0.061)	-0.190*** (0.061)
1965 × province	—	Yes	—	Yes	Yes
Other controls	—	Yes	—	Yes	Yes
Communa fixed effect	Yes	Yes	Yes	Yes	Yes
Observations	492	492	492	492	492

Notes: Standard errors in parentheses. The additional controls for equation (16) were the agricultural labor force, the proportion of land under large farms, and the population; for equations (18) and (19), the agricultural labor force and the population. For the fixed effect estimates, the within  $R^2$  ranged between 0.65 and 0.84, while the between  $R^2$  ranged between 0.02 and 0.24.

\*\*\*Significant at the 1 percent level.

\*\*Significant at the 5 percent level.

\*Significant at the 10 percent level.

The results are consistent and remarkably stable across the alternative specifications, even in Model 4 where we used the proportion of *inquilinos* in the population of a municipality in 1935.<sup>27</sup> The main coefficients of interest always have the anticipated sign and comparable significance across all regressions. They are slightly weaker in Model 6, which is, however, based on the least plausible identification assumptions.

To further test the robustness of the results above, we ran similar regressions using other indicators of the strength of patron-client relationships and of political control by a traditional landed oligarchy. Instead of using the proportion of voters of different types in the voting population, we used the proportion of *inquilinos* in the agricultural labor force in 1957 and 1965 as a measure of the intensity of the patron-client relationships in the *communa*, and as a measure of land concentration, the share of area owned by farms larger than 200 hectares in the total agricultural area of the *communa*.<sup>28</sup> We report the results of these estimations in Table 4. The estimates are again consistent with our main hypotheses, though they are less precise than in the basic model. This can be partly attributed to the multicollinearity between the provincial dummies interacted with time and changes in the proportion of *inquilinos* or in land concentration, but also to the less precise nature of the indicators used. Interestingly, when we run a regression using both the proportion of *inquilinos* and the measure of land concentration as in column 17, the latter loses all significance, contrary to the former. This suggests that land concentration had fewer implica-

<sup>27</sup> With a municipality fixed effect, we cannot estimate the coefficients attached to variables that remain constant over time, in particular the ones related to the 1957 elections. They are estimated using pooled OLS in column 8.

<sup>28</sup> Again, the 1957 figures were obtained by linear interpolation between 1955 and 1965. These land concentration measures are imprecise, however, as the censuses report at the *communa* level only the number of farms per size category. By taking the median of each size class, we computed an estimate of the total areas in each class, which we used to compute the shares of each class in the total area.

TABLE 5—IMPACT OF *INQUILINOS* ON RIGHT-WING VOTES IN 1949, 1953, 1957, 1961, AND 1965  
(Dependent variable is the proportion of right-wing votes in the 1949, 1953, 1957, 1961, and 1965 parliamentary elections)

	Model 4			Alternative measure:		Model 5		Model 6	
	<i>Inquilino</i> /voter = <i>inquilinos</i> in 1935/ population in 1935			<i>Inquilino</i> /voter = <i>inquilinos</i> in 1955/population in 1955		<i>Inquilino</i> /voter = <i>inquilinos</i> in 1957/voters in 1959		<i>Inquilino</i> /voter = <i>inquilinos</i> in 1957/voters at time <i>t</i>	
	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
<i>Inquilino</i> /voter	1.904*** (0.446)	—	—	4.105*** (0.723)	—	0.488*** (0.081)	—	0.270*** (0.034)	0.129*** (0.046)
1953 × <i>Inquilino</i> /voter	-0.227 (0.616)	0.058 (0.435)	-0.059 (0.449)	0.725 (1.000)	0.215 (0.733)	0.118 (0.113)	0.090 (0.082)	0.085 (0.063)	0.037 (0.050)
1957 × <i>Inquilino</i> /voter	-0.003 (0.614)	0.031 (0.435)	0.323 (0.453)	0.099 (1.001)	0.619 (0.733)	-0.028 (0.113)	-0.004 (0.082)	0.165** (0.076)	0.073 (0.068)
1961 × <i>Inquilino</i> /voter	-1.180* (0.615)	-1.111** (0.435)	-0.708 (0.463)	-1.579 (1.001)	-1.413* (0.734)	-0.201* (0.114)	-0.164* (0.083)	0.149 (0.098)	0.011 (0.098)
1965 × <i>Inquilino</i> /voter	-1.589*** (0.617)	-1.762*** (0.435)	-1.007** (0.473)	-2.614*** (1.002)	-2.396*** (0.748)	-0.330*** (0.114)	-0.280*** (0.084)	-0.007 (0.129)	-0.189 (0.138)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year × province dummies	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Communa fixed effect	No <sup>a</sup>	Yes	Yes	No <sup>a</sup>	Yes	No <sup>a</sup>	Yes	No <sup>a</sup>	Yes
Year dummy × other agricultural workers/voter	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,034	1,034	1,034	1,224	1,224	1,224	1,224	1,165	1,165

Notes: Standard errors in parentheses. The within  $R^2$  ranged between 0.54 and 0.71, while the between  $R^2$  ranged between 0.13 and 0.27. For equations (20), (23), and (25), the adjusted  $R^2$  were between 0.59 and 0.61. The additional controls for equations (23)–(26) are the proportion of land under large farms, and the population; for equations (20), (22), (27), and (28), they also include the agricultural labor force.

<sup>a</sup> Pooled OLS.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

tions for the political outcome of a municipality than the intensity of the patron-client relationship, which is perfectly consistent with our model.<sup>29</sup>

The estimates above excluded the 1949, 1953, and 1961 elections. The major problem comes from the fact that the number of *inquilinos* per municipality was observed only in the three census years, 1935, 1955, and 1965. We cannot, therefore, estimate models 1, 2, and 3, as they need a time-varying measure of population per occupation. We focus, instead, on models 4, 5, and 6. Model 4 uses the number of *inquilinos* in the population in 1935, and we also propose a variant using the number of *inquilinos* in the population in 1957. Model 5 uses the number of *inquilinos* in 1957 (obtained by linear interpolation between 1955 and 1965) and the number of voters in 1957, while model 6 divides the number of *inquilinos* in 1957 by the number of voters at time *t*. Using data on two additional pre-1958 election years allows us to test whether the 1957 elections followed a pattern that was not exceptional, as it was also present in the two preceding elections. Similarly, after 1958, the change in electoral pattern highlighted for the 1965 elections should

<sup>29</sup> Note that large farms were also found in cattle-raising areas in the north and in the south of Chile, where few *inquilinos* were found. The correlation between land concentration and the proportion of *inquilinos* in the agricultural labor force is only 0.22.

TABLE 6—IMPACT OF AGRARIAN RELATIONS ON VOTES FOR THE CHRISTIAN DEMOCRATIC PARTY  
(Dependent variable is the proportion of votes for the Christian Democratic Party  
in the 1957 and 1965 parliamentary elections)

	Model 1		Model 2		Model 3	Model 4	Model 5	Model 6
	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
<i>Inquilino</i> /voter	-0.268** (0.125)	-0.123 (0.101)	-0.238** (0.104)	-0.189** (0.083)	-0.881 (0.795)	—	—	-0.286** (0.125)
1965 × <i>inquilino</i> /voter	0.403*** (0.059)	0.224*** (0.060)	0.356*** (0.104)	0.089 (0.091)	1.927*** (0.536)	0.514* (0.297)	0.190*** (0.055)	0.004 (0.114)
Other agricultural workers/voter	0.016 (0.023)	-0.010 (0.020)	—	—	-0.109 (0.161)	—	—	—
1965 × other agricultural workers/voter	-0.030*** (0.008)	-0.011 (0.009)	—	—	-0.090 (0.094)	—	-0.142* (0.008)	—
Time dummy: 1965	0.286*** (0.015)	0.284*** (0.031)	0.253*** (0.011)	0.264*** (0.032)	0.280*** (0.033)	0.281*** (0.034)	0.280*** (0.031)	0.273*** (0.030)
1965 × province	—	Yes	—	Yes	Yes	Yes	Yes	Yes
Other controls	—	Yes	—	Yes	Yes	Yes	Yes	Yes
Communa fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	492	492	492	492	492	492	492	492

Notes: Standard errors in parentheses. The within  $R^2$  ranged between 0.88 and 0.95, while the between  $R^2$  ranged between 0.01 and 0.11. The additional controls are as in Table 3.

\*\*\*Significant at the 1 percent level.

\*\*Significant at the 5 percent level.

\*Significant at the 10 percent level.

ruption, namely that employers supply votes to parties rather than the parties buying most votes separately from individuals. The ability to sell votes increases the demand for labor and generates an added incentive to own land, driving up its price.

We test some of the predictions of the model by examining in detail the effects of the introduction of the secret ballot in Chile in 1958. We show that, consistent with our theory, the political reforms led to large changes in voting behavior. Before the reforms, localities with more pervasive patron-client relationships tended to exhibit a much stronger support for the right-wing parties, traditionally associated with the landed oligarchy. After the reform, however, this difference across localities completely disappeared. In Baland and Robinson (2007), we show that land prices in the same areas were significantly higher prior to 1958 and then fell afterwards.

These findings suggest to us that electoral corruption, and the economic and political incentives that it created, are important parts of the explanation of why inequality has been so high historically in Latin America and possibly also an important part of the story about why long-run economic performance in Latin American has been so disappointing. (See Engerman and Sokoloff (2005) and Eduardo Posada-Carbó (2000), who argue for the central importance of electoral corruption in Latin American political history.) Though our analysis focused on vote buying, this can be thought of as a metaphor for a wide variety of political favors or policies that transfer rents to landlords. Moreover, the political control that rents allow employers to exercise applies much more generally, even in situations where there is an effective secret ballot. Any type of observable political activity—collective actions, demonstrations, trade unionism, political activism—can be controlled by the threat of losing one's employment and the rents that it provides.



# 1 Direct Democracy: Petersson-Lidbom

- What is the impact of indirect voting via representation versus direct democracy?
- Impact on budget size in Sweden
- Discontinuity: must have representative democracy if size is greater than 1501; after 1938, lowered to 701.
- Methods: Closeness RD; RD using splines; RD in polynomials; IV/RD

Table 1. Number of local governments with representative and direct democracy

Election year	Representative democracy		Direct democracy
	Mandatory	Voluntary	
1919	870	67	1469
1922	889	117	1398
1926	887	147	1377
1930	873	192	1354
1934	867	274	1273

Source: Statistics Sweden official publication on local elections.

Table 2. The council size law

Population size in the range	Mandatory council sizes
0-1,999	15-20
2,000-4,999	15-25
5,000-9,999	20-30
10,000-	25-40

Table 3. Voter turnout in the rural local government elections

Election year	Total (%)
1919	52
1922	28
1926	42
1930	51
1934	58

Source: Statistics Sweden official publication on local elections.

Table 4. Descriptive Statistics

Variables	Mean	St.Dev.	min	max
<u>Panel A. Outcome variables 1919-1938</u>				
Sum of aggregate social welfare spending	12314	22196	0	884134
Social welfare spending on indoor relief	4255	8001	0	340069
Social welfare spending on outdoor relief	8073	16541	0	544065
Number of union members	68	200	0	3961
Indicator for having at least one labor union	0.34	0.48	0	1
<u>Panel B: Treatment determining or forcing variable 1919-1938</u>				
Population size	1706	2008	90	26491
<u>Panel C: Baseline or pre-treatment characteristics as measured in 1917 or 1918</u>				
Sum of aggregate social welfare spending	4763	7891	0	119291
Number of total recipients including children	59	104	0	1714
Number of adult recipients	38	59	0	1090
Number of children directly supported	7	15	0	289
Number of children indirectly supported	14	38	0	581
Number of people receiving full support	21	28	0	295
Number of people boarded out	7	14	0	139
Number of people in public institutions	13	20	0	196
Number of public institutions	0.77	0.58	0	8
Number of slots available in public institutions	19	24	0	200
Total area (km <sup>2</sup> )	18163	81553	0	1.947e+06
Land area (km <sup>2</sup> )	17033	75877	15	1.814e+06
Arable land (km <sup>2</sup> )	1573	1195	0	13524
Income tax base	204645	446346	3713	6.691e+06
Economic structure (% agriculture)	49.6	22.1	0	98.5
Population size	1706	1997	110	21648
Number of eligible male voters at the parliamentary elections in 1917	359	373	0	4373
Number of voters at the parliamentary elections in 1917	228	234	0	3003
Proportion of left-wing voters at the parliamentary elections in 1917	0.29	0.20	0	1.00
Number of union members	22	87	0	1047
Indicator for having at least one labor union	0.16	0.37	0	1

Note: All nominal values are deflated with CPI with 1914 as the base year.

Table 5. Estimates from the regression-discontinuity design

	The local linear regression approach			The global polynomial regression approach					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>Panel A: Reduced form relationship between welfare spending and the instrument <math>G_{it} = 1[W_{it} \leq 1500]</math></u>									
Reduced form effect	-1,930*** (728)	-1,769* (1,025)	-1,484** (655)	-1,678** (748)	-1,618** (665)	-1,741*** (724)	-1,435** (630)	-1,594** (709)	-1,566*** (599)
<u>Panel B: Reduced form relationship between direct democracy and the instrument <math>G_{it} = 1[W_{it} \leq 1500]</math></u>									
First-stage effect	0.433*** (0.098)	0.391*** (0.124)	0.414*** (0.076)	0.380*** (0.086)	0.423*** (0.073)	0.390*** (0.084)	0.442*** (0.068)	0.409*** (0.084)	0.453*** (0.063)
<u>Panel C: The causal effect of direct democracy versus representative democracy on welfare spending</u>									
Direct democracy =1	-4,459** (1,913)	-4,522 (2,917)	-3,583** (1,589)	-4,414** (2,082)	-3,827** (1,610)	-4,459** (1,964)	-3,250** (1,436)	-3,894** (1,801)	-3,458*** (1,332)
Bandwidth	Optimal	Half optimal	Twice optimal	±1000	±1000	±750	±750	±500	±500
Degree of polynomial in the forcing variable $W_{it}$	Linear	Linear	Linear	5th	4th	4th	3rd	3rd	2nd
Number of observations	2,134	982	4,126	30,335	30,335	21,702	21,702	14,243	14,243

Notes: Standard errors clustered at both the municipality level and the running variable  $W_{it}$  are within parentheses (Cameron et al. 2011). The forcing variable  $W_{it}$  is defined as  $\max\{X_{it-1}, X_{i1918}\}$  where  $X$  is population size. Mean welfare spending is about 10,000 for local governments with representative democracy near the threshold. The optimal bandwidth for the LLR is 79 according to the Imbens and Kalyanaraman (forthcoming) method. Coefficients significantly different from zero are denoted by the following system: \*10%, \*\*5%, and \*\*\*1%.

Table 6. Test of balance of baseline characteristics in the RD approach

	The local linear regression approach			The global polynomial regression approach					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>Panel A: Characteristics of the social welfare spending program and its recipients</u>									
Social welfare spending	-362 (734)	-621 (528)	-781 (1,116)	-772 (659)	-702 (527)	-597 (633)	-698 (498)	-517 (600)	-655 (440)
Number of total recipients including children	-2.4 (5.3)	-4.2 (4.2)	-10.4 (7.5)	-5.8 (5.1)	-4.5 (4.3)	-7.5 (4.9)	-0.1 (4.1)	-6.5 (4.8)	-0.5 (3.7)
Number of adults	0.8 (4.3)	-2.8 (3.4)	-6.6 (5.8)	-3.4 (4.0)	-2.8 (3.4)	-4.6 (3.9)	0.2 (3.3)	-4.6 (3.8)	-0.0 (2.9)
Number of children directly supported	-1.3 (0.7)	-0.2 (0.8)	-1.5 (1.0)	-0.4 (0.9)	0.1 (0.8)	-0.5 (0.9)	0.2 (0.8)	-0.3 (0.9)	0.0 (0.8)
Number of children indirectly supported	-1.8 (2.4)	-1.3 (1.7)	-2.1 (4.0)	-2.2 (2.2)	-2.0 (1.8)	-2.7 (2.1)	-0.7 (1.7)	-1.8 (2.0)	-0.8 (1.5)
Number of people receiving full support	-1.4 (2.7)	-1.6 (2.0)	-2.2 (4.4)	-0.6 (2.6)	-0.8 (2.2)	-1.1 (2.5)	0.4 (2.0)	-0.8 (2.4)	-0.2 (1.8)
Number of people boarded out	-1.0 (2.0)	-1.5 (1.5)	-1.5 (3.0)	-0.6 (1.9)	-0.1 (1.6)	-2.0 (1.9)	1.1 (1.6)	-1.4 (1.8)	0.5 (1.4)
Number of people in public institutions	1.9 (3.0)	1.0 (2.1)	-0.6 (4.5)	1.1 (2.6)	0.1 (2.2)	1.4 (2.5)	0.1 (2.0)	1.7 (2.4)	0.0 (1.8)
Number of public institutions	0.1 (0.1)	0.2 (0.1)	0.3 (0.2)	0.2 (0.1)	0.1 (0.1)	0.2 (0.1)	0.1 (0.1)	0.2 (0.1)	0.1 (0.1)
Number of slots available in public institutions	-2.0 (5.2)	-1.6 (7.9)	-0.8 (3.8)	-2.9 (4.6)	-2.2 (4.0)	-2.6 (4.5)	-1.7 (3.7)	-1.1 (4.4)	-2.7 (3.4)
<u>Panel B: Characteristics of local governments</u>									
Total area (km <sup>2</sup> )	-20.7 (22.4)	-25.9 (15.6)	-20.0 (29.9)	-11.8 (27.1)	-57.2 (37.5)	-21.8 (28.2)	-40.1 (37.9)	-6.4 (29.6)	-30.4 (38.7)
Land area (km <sup>2</sup> )	-17.4 (21.0)	-22.5 (14.4)	-14.8 (28.2)	-11.1 (24.4)	-55.2 (34.9)	-21.8 (25.3)	-38.4 (35.5)	-6.9 (26.7)	-29.6 (36.5)

Arable land (km <sup>2</sup> )	2.5 (2.5)	3.1* (1.8)	4.2 (3.7)	3.2 (2.2)	2.8 (1.9)	4.1* (2.1)	2.0 (1.8)	3.5* (2.1)	2.1 (1.6)
Income tax base	-7612 (13557)	21082 (12881)	11808 (22179)	33250** (16689)	19116 (15115)	36604** (16133)	8273 (13756)	34034** (15555)	3525 (12417)
Economic structure (% agriculture)	3.5 (5.0)	0.7 (3.9)	2.4 (7.8)	1.6 (4.9)	0.1 (4.2)	1.1 (4.7)	2.3 (3.9)	-0.2 (4.6)	3.8 (3.6)
Population size	-12.0 (12.9)	-21.4** (9.8)	-4.5 (18.3)	-18.0 (12.1)	-10.8 (10.6)	-17.5 (11.5)	-9.7 (9.7)	-20.1* (11.2)	-8.2 (8.6)
Number of eligible male voters at the parliamentary elections in 1917	13.5 (14.9)	7.8 (9.6)	29.8 (26.3)	13.8 (14.6)	10.8 (11.7)	15.5 (14.1)	8.3 (10.2)	17.0 (13.8)	9.8 (8.9)
Number of voters at the parliamentary elections in 1917	16.1 (13.7)	9.4 (9.2)	26.9 (21.6)	23.3* (12.7)	12.5 (10.6)	21.7* (12.4)	9.8 (9.6)	20.1* (11.9)	9.4 (8.5)
Proportion left-wing voters at the parliamentary elections in 1917	-0.0 (0.0)	0.0 (0.0)	-0.0 (0.1)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	-0.0 (0.0)	0.0 (0.0)
Number of union members	-0.2 (1.7)	-1.0 (4.1)	-1.0 (2.3)	3.0 (4.4)	1.1 (4.1)	-3.3 (4.4)	3.1 (4.1)	2.3 (3.6)	-2.6 (3.3)
Indicator for having at least one labor union	-0.01 (0.0)	0.0 (0.0)	-0.0 (0.1)	0.0 (0.1)	0.0 (0.1)	-0.0 (0.1)	0.0 (0.1)	0.0 (0.1)	-0.0 (0.1)
Bandwidth	Optimal	Twice optimal	Half optimal	±1000	±1000	±750	±750	±500	±500
Degree of polynomial in the forcing variable	Linear	Linear	Linear	5th	4th	4 <sup>th</sup>	3rd	3rd	2nd

Notes: Standard errors clustered at both the municipality level and the running variable  $W_{it}$  are within parentheses (Cameron et al. 2011). The forcing variable  $W_{it}$  is defined as  $\max\{X_{it-1}, X_{i1918}\}$  where  $X$  is population size. In the LLR approach, we use the same bandwidth as in Table 5. Coefficients significantly different from zero are denoted by the following system: \*10%, \*\*5%, and \*\*\*1%.

Table 7. Estimates from the regression-discontinuity design with baseline characteristics

	The local linear regression approach			The global polynomial regression approach					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>Panel A: Reduced form relationship between welfare spending and the instrument <math>G_{it} = 1[W_{it} \leq 1500]</math></u>									
Reduced form effect	-1,367*** (476)	-1,159** (542)	-1,241*** (410)	-1,582** (554)	-1,251*** (473)	-1,671*** (529)	-1,115** (442)	-1,417*** (513)	-1,221*** (403)
<u>Panel B: Reduced form relationship between direct democracy and the instrument <math>G_{it} = 1[W_{it} \leq 1500]</math></u>									
First-stage effect	0.443*** (0.101)	0.388*** (0.120)	0.407*** (0.074)	0.368*** (0.086)	0.411*** (0.072)	0.378*** (0.084)	0.428*** (0.067)	0.379*** (0.083)	0.445*** (0.062)
<u>Panel C: The causal effect of direct democracy versus representative democracy on welfare spending</u>									
Direct democracy =1	-3,082*** (1,194)	-3,045** (1,104)	-2,990** (1,357)	-4,301** (1,808)	-3,045** (1,252)	-4,425*** (1,705)	-2,602** (1,102)	-3,736** (1,579)	-2,745*** (977)
Bandwidth	Optimal	Half optimal	Twice optimal	±1000	±1000	±750	±750	±500	±500
Degree of polynomial in the forcing variable $W_{it}$	Linear	Linear	Linear	5th	4th	4th	3rd	3rd	2nd
Number of observations	2,110	967	4,099	30,115	30,115	21,542	21,542	14,123	14,123

Notes: Standard errors clustered at both the municipality level and the running variable  $W_{it}$  are within parentheses (Cameron et al. 2011). The variable  $W_{it}$  is defined as  $\max\{X_{it-1}, X_{i1918}\}$  where  $X$  is population size. Mean welfare spending is about 10,000 for local governments with representative democracy near the threshold. The optimal bandwidth for the LLR is 79 according to the Imbens and Kalyanaraman (forthcoming) method. We have included all 21 baseline characteristics as used in Table 6. Coefficients significantly different from zero are denoted by the following system: \*10%, \*\*5%, and \*\*\*1%.

Table 8. Estimates from the nonparametric instrumental variable approach

	(1)	(2)
Panel A: Reduced form relationship between welfare spending and the instrument $V_{it} = 1[X_{i1918} \leq 1500]$		
Reduced form effect	-2,358** (1,011)	-2,213*** (797)
Panel B: Reduced form relationship between direct democracy and the instrument $V_{it} = 1[X_{i1918} \leq 1500]$		
First-stage effect	0.285*** (0.065)	0.301*** (0.071)
Panel C: The causal effect of direct democracy versus representative democracy on welfare spending		
Direct democracy =1	-8,276** (3,700)	-7,362** (2,922)
Sample restriction on the initial population size in 1918	1475-1525	1450-1550
Number of local governments in the sample	38	63
Number of observations	659	1,117

Notes: Standard errors clustered on municipality level are within parentheses. The variable  $X_{i1918}$  is the population size in 1918- Coefficients significantly different from zero are denoted by the following system: \*10%, \*\*5%, and \*\*\*1%.



Table 9. Test of balance of baseline characteristics around the threshold: P-values from test of difference of means (two-sided)

	(1)	(2)	(3)	(4)
Panel A: Characteristics of the social welfare spending program and its recipients				
Social welfare spending	0.874	0.530	0.863	0.806
Number of total recipients including children	0.999	0.789	0.856	0.971
Number of adults	0.847	0.694	0.537	0.574
Number of children directly supported	0.138	0.429	0.440	0.913
Number of children indirectly supported	0.780	0.507	0.571	0.942
Number of people receiving full support	0.663	0.863	0.683	0.897
Number of people boarded out	0.927	0.862	0.907	0.891
Number of people in public institutions	0.776	0.801	0.592	0.549
Number of poorhouses (sum)	0.219	0.179	0.445	0.512
Number of slots available in poorhouses (sum)	0.860	0.937	0.898	0.942
Panel B: Characteristics of local governments				
Total area (km <sup>2</sup> )	0.235	0.258	0.138	0.306
Land area (km <sup>2</sup> )	0.249	0.300	0.139	0.261
Arable land (km <sup>2</sup> )	0.307	0.346	0.085	0.097
Population size	0.000	0.000	0.000	0.000
Income tax base	0.924	0.925	0.697	0.885
Economic structure (% agriculture)	0.551	0.414	0.278	0.261
Number of eligible male voters at parliamentary elections 1917	0.979	0.937	0.959	0.931
Turnout at parliamentary elections 1917	0.726	0.925	0.898	0.692
Proportion left-wing voters at parliamentary elections 1917	0.818	0.925	0.993	0.604
Number of union members	0.824	0.631	0.914	0.508
Indicator for having at least one labor union	0.528	0.555	0.428	0.469
Type of test	t-test	nonparametric	t-test	nonparametric
Sample	1475-1525	1475-1525	1450-1550	1450-1550
Number of local governments	38	38	63	63
Number of observations	636	636	1,092	1,092

Notes: The number in the table refers to p-values from two types of difference in means tests.

Table 10. The effect on union coverage and union memberships of having direct rather than representative democracy

	The local linear regression approach		The nonparametric IV approach	
	Optimal bandwidth (1)	Half optimal bandwidth (2)	Interval: 1475-1525 (3)	Interval: 1450-1550 (4)
<u>Panel A: Indicator of having a union in the municipality</u>				
Reduced form effect	-0.25** (0.10)	-0.22 (0.15)	-0.15 (0.10)	-0.20** (0.08)
Direct democracy =1	-0.58** (0.25)	-0.56 (0.42)	-0.53 (0.34)	-0.66** (0.30)
<u>Panel B: Number of union members</u>				
Reduced form effect	-33 (22)	-50 (40)	-25* (13)	-25** (12)
Direct democracy =1	-77 (53)	-128 (110)	-88** (44)	-83** (41)

See the information in Table 5 on the local linear regression approach. For the nonparametric instrumental variable approach, see the information in Table 7. Coefficients significantly different from zero are denoted by the following system: \*10%, \*\*5%, and \*\*\*1%.

Table 11. Disaggregated welfare spending: outdoor versus indoor relief

	The local linear regression approach		The nonparametric IV approach	
	Optimal bandwidth (1)	Half optimal bandwidth (2)	Interval: 1475-1525 (3)	Interval: 1450-1550 (4)
<u>Panel A: Outdoor relief</u>				
Reduced form effect	-1,417** (555)	-1,581** (730)	-1,264* (750)	-1,319** (623)
Direct democracy =1	-3,241** (1,461)	-3,995* (2,421)	-4,369* (2,472)	-4,379** (2,079)
<u>Panel B: Indoor relief</u>				
Reduced form effect	-442 (741)	-137 (1,106)	-1,045* (622)	-769 (528)
Direct democracy =1	-1,012 (1,699)	-346 (2,777)	-3,611 (2,365)	-2,551 (1,867)

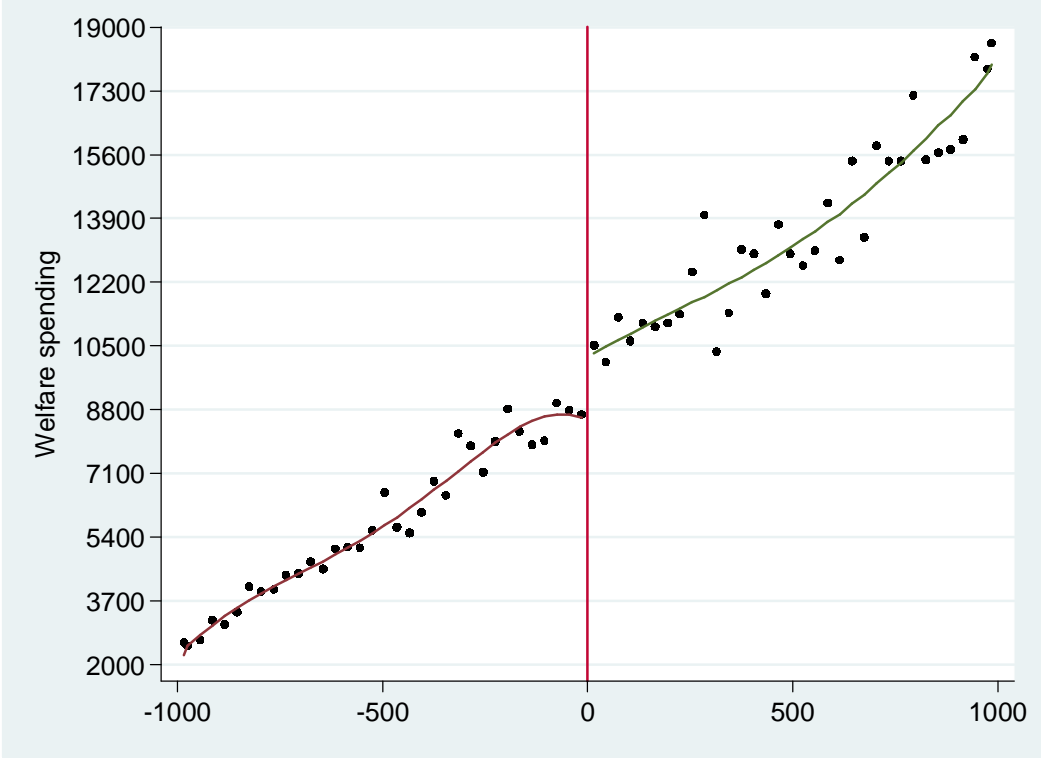
See the information in Table 5 on the local linear regression approach. For the nonparametric instrumental variable approach see the information in Table 7. Coefficients significantly different from zero are denoted by the following system: \*10%, \*\*5%, and \*\*\*1%.

Table 12. Local elections

Election year	Percent of men that had no voting rights due to permanent welfare dependency	Percent of women that had no voting rights due to permanent welfare dependency	Number of local governments with a single party list system	Turnout (%) in single party list systems	Turnout (%) in multiple party list systems
1919	1.4	2.3	278	24	60
1922	1.0	1.6	255	7	33
1926	1.1	1.5	181	13	46
1930	1.1	1.5	153	18	54
1934	1.1	1.3	93	23	60
Average	1.1	1.7	192	17	51

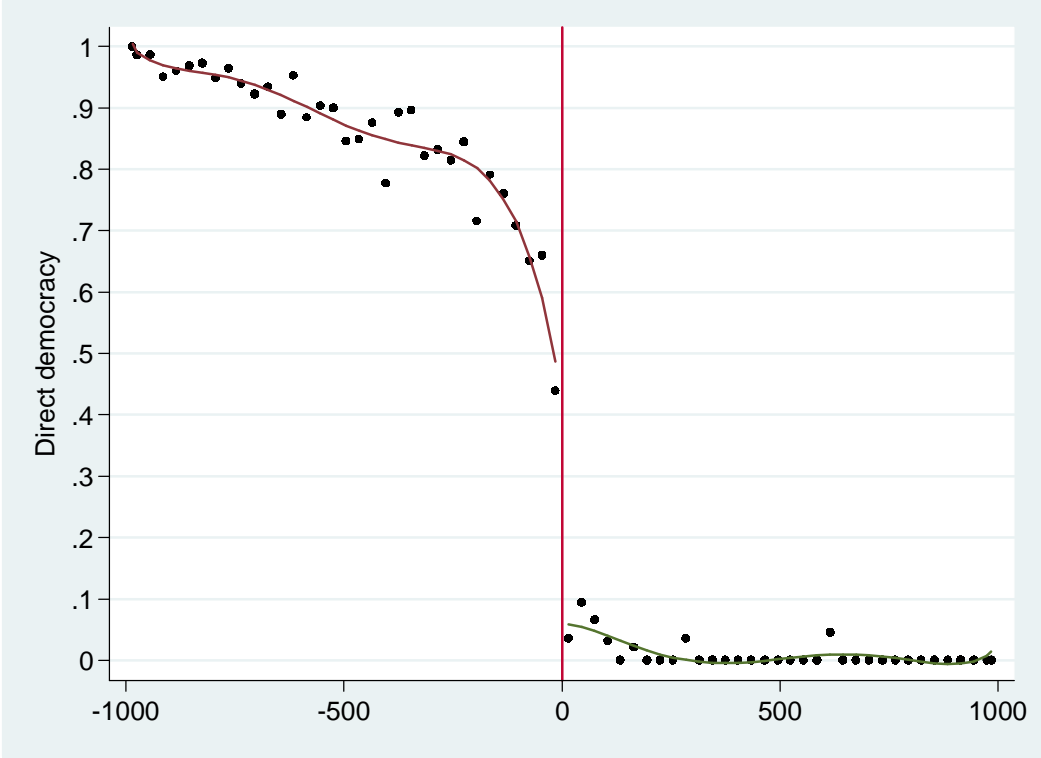
Source: Statistics Sweden official publication on local elections.

Figure 1. The reduced form relationship between welfare spending and the forcing variable



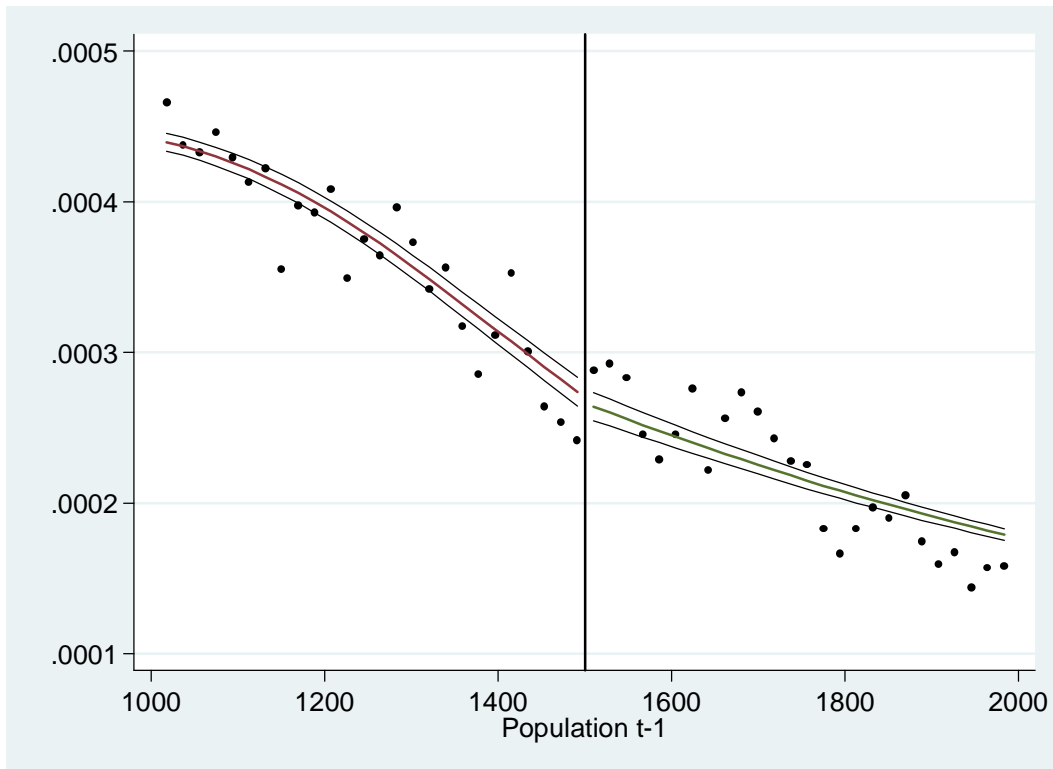
Notes: The forcing variable is defined as  $W_{it} = \max\{X_{it-1}, X_{i1918}\}$  where  $X$  is population size. Plotted points are conditional means of welfare spending. The bin width for the conditional means is 30. The smoothed regression line is based on a fifth-order polynomial.

Figure 2. The “first-stage” relationship between direct democracy and the forcing variable



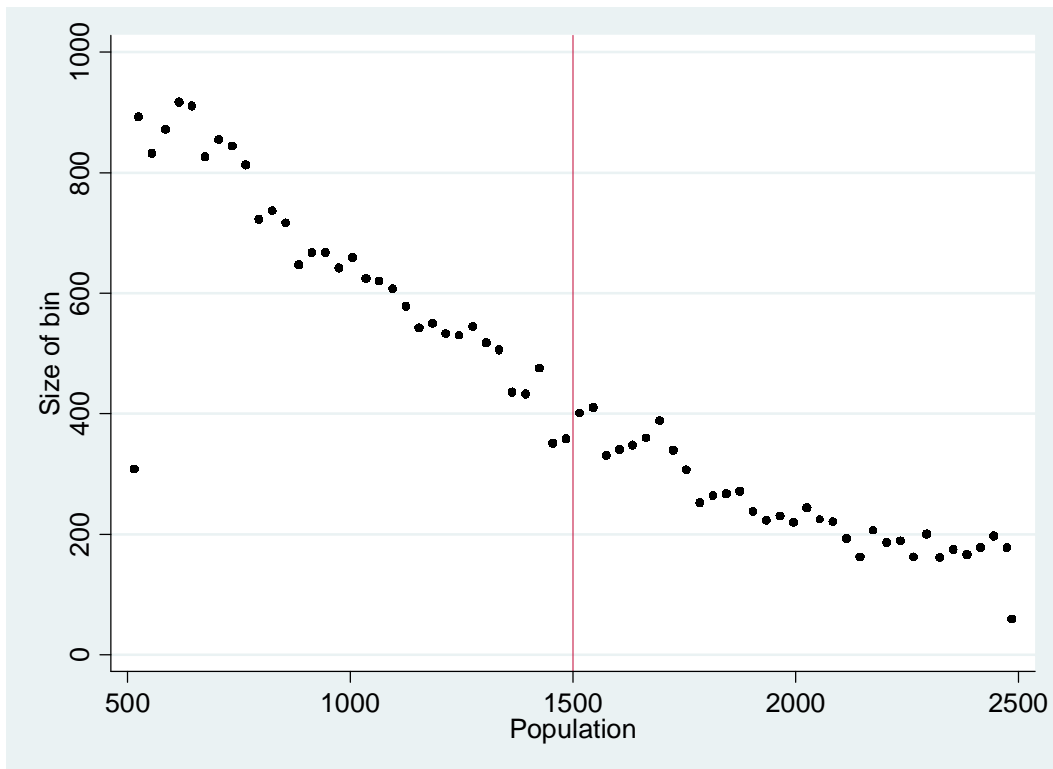
Notes: The forcing variable is defined as  $W_{it} = \max\{X_{it-1}, X_{i1918}\}$  where  $X$  is population size. Plotted points are conditional means of the indicator variable—direct democracy. The bin width for the conditional means is 30. The smoothed regression line is based on a fifth-order polynomial.

Figure 3. The McCrary density test



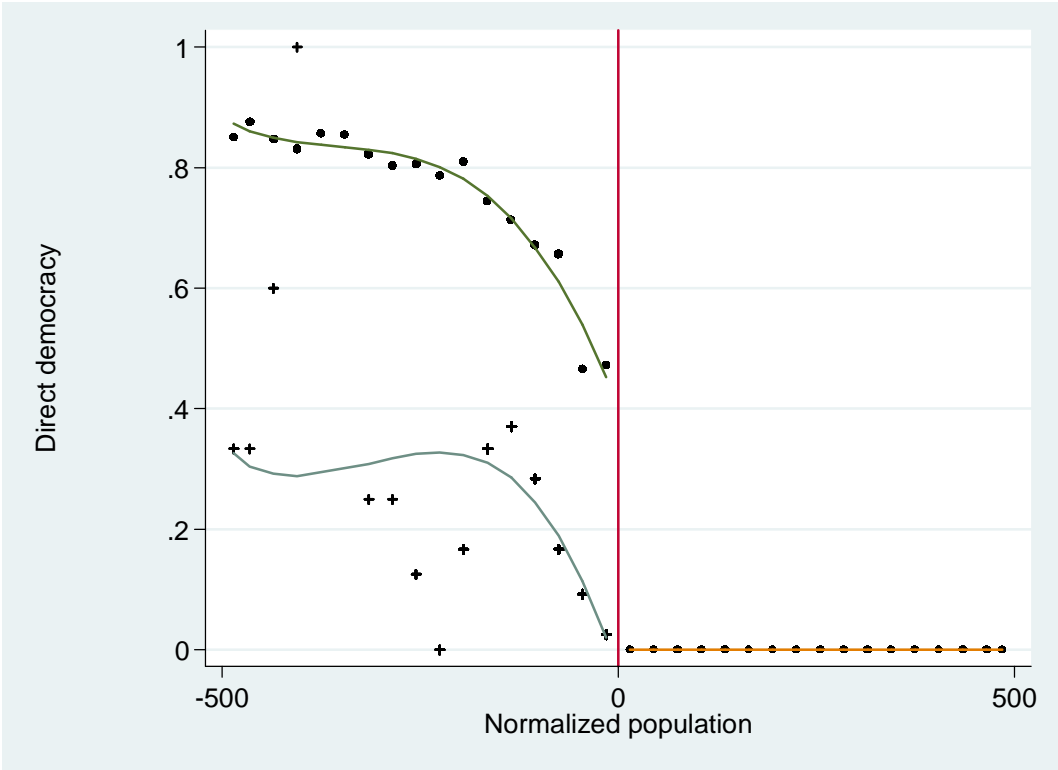
Notes: Estimation based on full data using a McCrary (2008) test.

Figure 4. Density plot of treatment determining variable-population size: 1919-1938



Note: Local averages based on a bin width of 30.

Figure 5. First-stage relationship when the forcing variable is population size at  $t-1$



Note: The forcing variable is defined as  $X_{it-1}$  where  $X$  is population size.

**APPENDIX** (Not for publication)

