Local Representation and Voter Mobilization in Closed-list Proportional Representation Systems*

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Abstract

We investigate whether geographic representation affects local voting behavior in closed-list proportional representation (PR) systems, where conventional theoretical wisdom suggests a limited role of localism in voter preferences. Using detailed data on Norwegian parliamentary candidates' hometowns, we show that parties engage in geographic balancing when constructing candidate lists. However, because most districts contain more municipalities than seats, not all municipalities will ultimately see a local candidate elected. A regression discontinuity design applied to marginal candidates reveals that parties obtain higher within-district support in subsequent elections in incumbents' hometowns—novel evidence of "friends-and-neighbors" voting in an otherwise party-centered environment. Exploring the mechanisms, we find that represented municipalities often continue to have locally-connected candidates in top positions, in contrast to municipalities with losing candidates, and are more frequently referenced in legislative speeches. There is no evidence that unequal representation creates inequalities in distributive policies.

Keywords: geographic representation, friends-and-neighbors voting, closed-list proportional representation, regression discontinuity design, Norway
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Scholars of democratic representation have long considered there to be an important link between descriptive representation—the presence of politicians who come from various backgrounds and group identities—and political engagement and participation by citizens belonging to those groups (e.g., Mansbridge, 1999).[1] This logic also applies to the descriptive representation of geographical subconstituencies (such as cities and towns) within legislative districts: although legislators are mandated to represent the *entire* district, they naturally have closer ties and mobilizational strengths within their "hometown" municipalities or regions (e.g., Key, 1949; Fenno, 1978). When districts contain more municipalities than seats, not all municipalities will enjoy descriptive representation by a locally-connected legislator—and this may influence political engagement and voting behavior by local citizens across these geographical subconstituencies.

Indeed, numerous studies of voting behavior in various contexts have documented a positive correlation between a candidate or legislator's local ties (through birth or residence) and voter support in subregions within a district. Key (1949) famously attributes this pattern to "friends-and-neighbors" voting, which may result from both the *mobilization* of erstwhile non-voters and the *persuasion* of regular voters to switch allegiances in favor of the local candidate. The potential mechanisms behind effect include stronger local networks and mobilizational capacity (e.g., Hirano, 2006), greater attention to local issues in campaign rhetoric or coverage in local news media (e.g., Bowler, Donovan and Snipp, 1993; Druckman, Kifer and Parkin, 2020), and voters' expectations that locally-connected legislators will share their values and policy preferences, or provide more locally-targeted distributive benefits (e.g., Shugart, Valdini and Suominen, 2005; Campbell et al., 2019). Whether friends-and-neighbors voting is driven by candidates' efforts, voters' expectations, or both, the conventional wisdom is that candidates and legislators will enjoy more support in their hometowns relative to other parts of the district.

In this study, we use candidate-level and municipality-level data from Norwegian par-

[1] Evidence from various contexts suggests, for example, that the presence of women in politics activates political interest and turnout by women in the population (e.g., Karp and Banducci, 2008; Bhalotra, Clots-Figueras and Iyer, 2018), and related arguments have been made for racial and ethnic minorities (e.g., Banducci, Donovan and Karp, 2004; Washington, 2006).

liamentary elections to investigate whether descriptive representation of geographic subconstituencies (municipalities) has any effect on local voting behavior in closed-list proportional representation (PR) elections, a setting which is common around the world but has nevertheless been overlooked in the existing literature on friends-and-neighbors voting.[2] Comparative theories of electoral systems and representation suggest that closed-list PR elections should minimize localism in voting behavior, since voters cast their ballots for parties rather than candidates, and legislators have incentives to pursue nationally-oriented programmatic policies rather than locally-oriented particularistic policies (e.g., Carey and Shugart, 1995; Shugart, Valdini and Suominen, 2005)—but we so far lack credible empirical evidence relating to this question.[3]

We first provide clear and novel empirical evidence that Norwegian parties engage in geographic balancing in candidate nominations within districts, showing that the number of unique hometowns represented by candidates on party lists is larger than what would result from random selection. We then use a regression discontinuity (RD) design to investigate whether gaining local representation affects municipality-level voting behavior in the next election, finding that parties enjoy higher within-district support in the hometowns of narrowly elected candidates. This represents the first credible evidence of friends-and-neighbors voting in a closed-list PR system, and is noteworthy given the conventional wisdom that localism in voting behavior should be diminished in this party-centered context. Although it is not possible to entirely pin down the relative contributions of mobilization and persuasion to the overall effect, we find no evidence that

[2]For example, friends-and-neighbors voting (or support for local candidates more generally) has been documented in SMD settings (e.g., Rice and Macht, 1987; Arzheimer and Evans, 2012; Meredith, 2013; Fiva and Smith, 2017*a*); in open-list PR settings (e.g., Tavits, 2010; Nemoto and Shugart, 2013; Saarimaa and Tukiainen, 2016; Jankowski, 2016); in the single transferable vote (STV) setting of Ireland (Górecki and Marsh, 2012); and in the single nontransferable vote (SNTV) setting of Japan (Hirano, 2006; Nemoto and Shugart, 2013). Crisp and Desposato (2004) also document geographically-targeted behavior in the case of Colombia, which the authors note is technically closed-list PR but functions in practice like SNTV due to the prevalence of subparty lists.

[3]Legislators in closed-list PR systems often claim to care about local subconstituencies in surveys and interviews (André and Depauw, 2018; Heidar and Karlsen, 2018), and there is some experimental evidence that voters prefer legislators with local ties regardless of the electoral system context (Horiuchi, Smith and Yamamoto, 2020). However, this kind of evidence cannot speak to the causal effects of local representation on voting behavior.

relative turnout in the municipality increases, which suggests that the presence of a local incumbent might primarily serve to persuade the erstwhile supporters of other parties to switch allegiances, rather than to mobilize previous abstainers.

Further exploring the mechanisms, we find that the hometowns of narrowly elected candidates have a higher probability of continuing to have a local candidate at the top of the party list in the next election (keeping them focal in campaigns), whereas the list positions of locally-connected candidates tend to fall for the municipalities that narrowly miss out on representation. Legislators' hometowns receive more mentions in legislative speeches relative to other municipalities, but we find no clear evidence that these municipalities get any special benefits in terms of central-to-local redistribution. For three separate distributive policy outcomes—national roads construction, central government jobs, and investment funding—the effects are close to zero. Collectively, our analyses therefore indicate that geographic representation in closed-list PR systems, at least in the exemplary case of Norway, results in higher local support for parties without generating significant material inequalities in substantive representation across municipalities.

Empirical Case Setting: Norway

The data set for our main analysis covers the universe of candidates (N=46,257) participating in Norwegian national parliamentary (*Storting*) elections from 1953 to 2013 (Fiva and Smith, 2017*b*). Because the data set includes information on the municipality of residence for each candidate, it is well suited to analyzing the political consequences of local representation. Before moving to the main empirical analysis, we describe the institutional setting.

Electoral system and party system

Proportional representation for electing legislators to the *Storting* was introduced in 1921.[4] Originally, the seat allocation was determined through the D'Hondt method; however, from the 1953 election onwards, seats have been allocated with the Modified Sainte-Laguë method, which is more favorable to small parties. The 1953 electoral reform also abolished a previous distinction between urban and rural electoral districts, such that districts since 1953 correspond to the borders of Norway's 19 regions (*fylker*).[5] District magnitude ranges from 4 to 16 seats, with an average of about 9 seats.[6]

A two-tier system was introduced in 1989. In the first tier, seats are allocated proportionally to parties within each of the 19 districts based on party vote shares in the district. In the second tier, adjustment seats are given to parties that are under-represented at the national level once the first-tier seats have been allocated, provided that those parties reach an electoral threshold of 4 percent of the national vote.[7] From 1989 to 2001, there were eight second-tier seats, which could be allocated to any district. Since 2005, there is one second-tier seat per district (hence 19 adjustment seats in total). Party lists are closed—each party puts forward a rank-ordered list of candidates in each of the districts, and votes are cast for the party list as a whole.[8]

The party system has been relatively stable (Bergman and Strøm, 2011). The main party cleavage runs between the left-leaning social democratic camp, consisting of the Labor Party and Socialist Peoples' Party/Socialist Left Party (founded in 1961), and the right-leaning conservative camp, consisting of the Center Party (formerly the Farmer's Party), Christian Peoples' Party, Liberal Party, Conservative Party, and Progress Party

[4]See Cox, Fiva and Smith (2019) on the adoption of PR, and Aardal (2002) or Fiva and Smith (2017*b*) for historical overviews of Norway's electoral systems.

[5]Bergen was a separate district until 1973.

[6]We exclude candidates from Oslo from the analysis due to lack of intra-district variation in hometown municipality.

[7]The second-tier seat allocation follows mechanically from the electoral results. Hence, parties have no control over which candidates win.

[8]Voters may cross names off of the list when they cast their ballots, but the rank order will only be changed if at least half of all of the party's voters make exactly the same change. This has never happened, so the system is effectively closed-list.

(founded in 1973).[9] Partisan identification among voters is generally high in the period we study, despite some decline in recent decades (Bengtsson et al., 2013, p. 71).

Candidates' hometown municipalities

Our measure of geographic affiliation (local ties) is the home municipality of the candidate. In the vast majority of cases, this is reported on the election ballot. In a few cases, we have used home municipality reported in the previous or next election, or in elections at the regional level. Candidates who report a hometown outside the election district are not included. The exception is candidates who change their reported hometown when going into national politics: if a candidate changes their "hometown" to the capital (Oslo) or a municipality adjacent to the capital, but continues to run in another election district outside of Oslo, we use the candidate's original hometown.

On average, each district consists of 25 municipalities, but these vary dramatically in population size (the median municipality has about 4,000 inhabitants, while the average municipality has about 10,000 inhabitants). Municipalities have the responsibility for key welfare services, such as childcare, education, and elderly assistance, and are financed primarily from grants from the national government and regulated income taxes. In the 1950s, there were about 750 municipalities. A wave of mergers reduced this number to about 450 in the 1960s and it has been relatively stable since.[10] With only 150-169 seats in parliament (in our sample period), most municipalities are not represented.

Candidate nominations and rank positions are determined within each district by dues-paying party delegates at nominating conventions (Valen, Narud and Hardarson, 2000), meaning that the local party organization is responsible for the composition of each list with respect to geography, age, gender, and other background characteristics. Up until 1952, a residency requirement ensured that only candidates living in the district

[9] A few other small parties have also succeeded in winning seats in some elections. The left-right cleavage has shifted somewhat in recent elections, after the Center Party joined the center-left coalition in 2005.

[10] See left panel of Appendix Figure A.1. Another wave of mergers is currently being implemented, and from 2020 onwards, the number of municipalities will be 356.

could run for office. However, even after the abolishment of the residency requirement, candidates are almost always residents of the districts where they run.[11] Among elected candidates, about 80 percent have a prior background in local assemblies.

Geographic balancing on party lists

If candidates have a mobilizational advantage in their hometowns, then we might expect parties to take advantage of this by creating geographically balanced lists of candidates. Parties might also face internal pressure from local activists and party branches to nominate candidates from across the various subconstituencies of the electoral district.[12]

To explore whether parties engage in geographic balancing in candidate nominations, we plot the number of municipalities in each district represented by candidates in the top ten positions on the lists of the four largest parties against the expected number that would be represented if candidates were randomly drawn from the district population.[13] If parties did not geographically balance their tickets, but instead chose candidates at random from the district, we would expect the scatter points to cluster around the dashed 45-degree line in Figure 1 (i.e., where representation, on average, corresponds to the geographic composition of the population in the district). This is not the case. Instead, we see that the vast majority of scatter points lie above the dashed line, indicating a strong tendency for the four largest parties to balance their tickets geographically.[14]

We cannot say for certain how much of the motivation for this nomination behavior is electoral strategy—winning more votes—and how much is the result of pressure from local party activists or established norms within the party organization. The empirical

[11] See middle panel of Appendix Figure A.1. In a few cases, parties have allowed elite members to run in a district other than their home district in order to increase their chances of election.

[12] Latner and McGann (2005, p. 712) consider these to be two distinct factors in explaining party's geographic balancing, and refer to them as "vote maximization" and "internal political competition." We view a failure to satisfy internal political competition as coming at a potential cost of vote maximization, thus making vote maximization the general motivation behind the behavior.

[13] For each district-year we draw 100 random samples of ten candidates based on municipality population sizes. In each sample, we count the number of municipalities represented. Finally, we average across the 100 samples to get the expectation.

[14] The pattern is similar if we use the top five of each list (see Appendix Figure A.2).

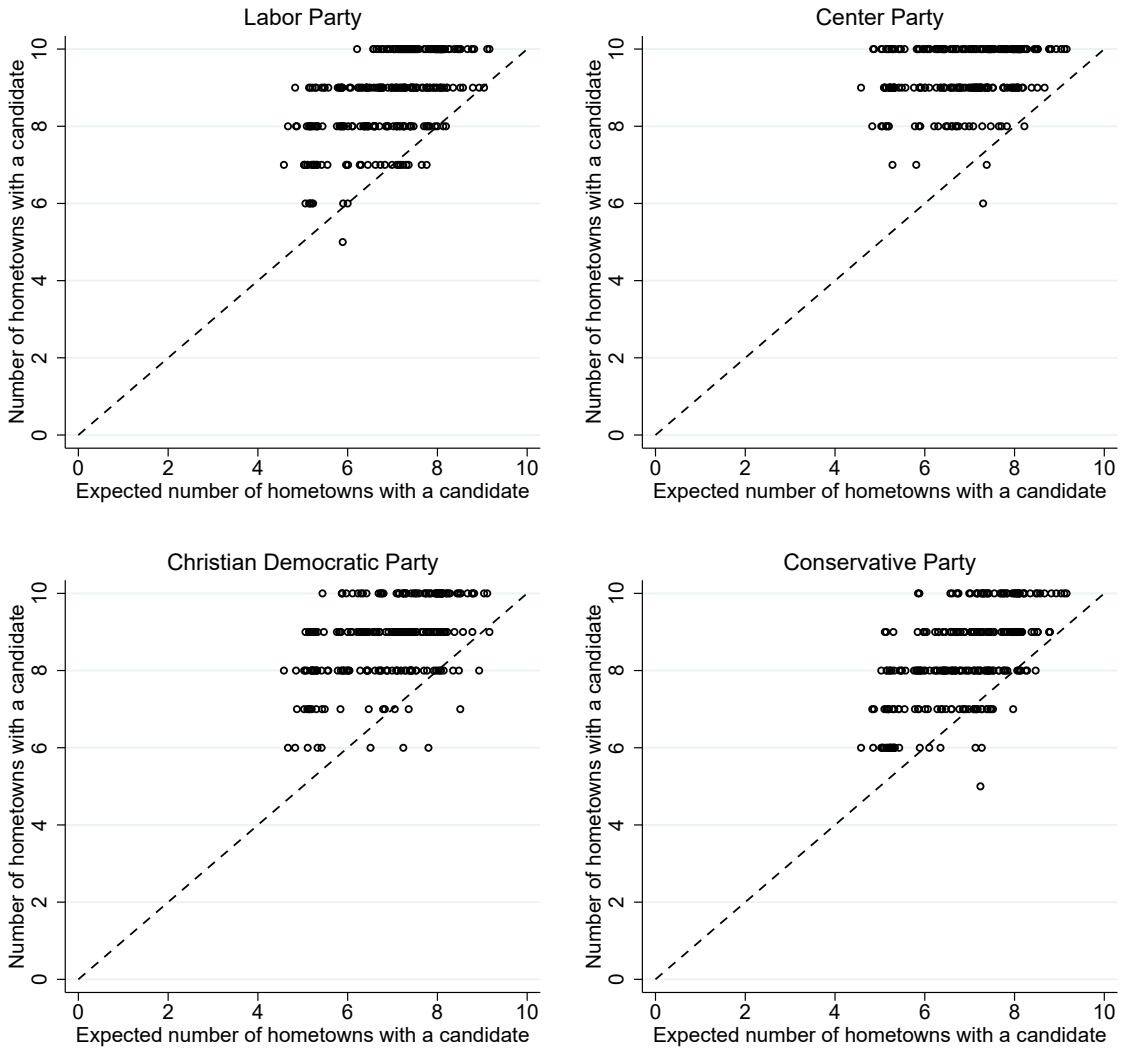

Figure 1: Geographic balancing of candidate nominations in the four largest parties

Note: The figure plots, for each of the four largest parties, the number of municipalities represented by candidates in the top ten positions on the lists against the expected number from a random draw based on populations. The unit of observation is the party-district-year level (N=1,085). At the dashed 45-degree line, municipalities are, on average, represented on the list in proportion to their share of the district population.

evidence in the next section, however, will shed light on whether parties have reason to behave strategically when choosing between candidates from different hometowns.

Research Design

A major challenge in evaluating the effects of representation on voting behavior is the nonrandom nature of candidate selection within parties. Indeed, we have just shown that municipalities are not randomly represented on party lists, and the rank positions of the candidates from those municipalities are also not randomly determined.

A party might nominate candidates with local ties to the communities where the largest number of supporters reside, where it hopes to make inroads with new supporters, or even where it lost supporters in the previous election (Gimpel, Lee and Thorpe, 2011; Put, Maddens and Verleden, 2017). Similarly, locally-oriented policies implemented by parties in power to win votes—such as social spending, jobs programs, and construction of infrastructure—may be intertwined with those same parties' recruitment strategies, obfuscating the direction of causality. With a few notable exceptions (Hirano, 2011; Fiva and Halse, 2016), this causal identification problem hampers the interpretation and conclusions that can be drawn from the existing literature about the effects of descriptive representation on local voting behavior or other political outcomes.[15]

The mechanics of the Norwegian electoral system provide the opportunity to plausibly identify the causal effects of local representation on voting behavior under weak assumptions. Our research design leverages two quasi-experimental events which result in a municipality gaining representation in parliament: (1) a local candidate narrowly wins a district ("first-tier") seat in a *close election*; (2) a local candidate wins a national ("second-tier") adjustment seat. The first event captures the part of seat allocation outcomes that can be considered as good as random when parties' vote shares are sufficiently

[15] A handful of studies use similar designs to study intergovernmental transfers (e.g., Brollo and Nannicini, 2012), but are more concerned with partisan alignment across levels of government than policy outcomes across geographic subconstituencies owing to descriptive representation.

close (Folke, 2014; Fiva and Smith, 2018), while the second event captures the fact that it is almost impossible to predict ex ante which candidates will be awarded national adjustment seats, which are allocated based on parties' "excess votes" after first-tier seats are allocated.

Our analysis builds on the RD framework of Fiva and Smith (2018). While their analysis is applied to the 1953-1981 period, before the introduction of adjustment seats, we use data for the entire 1953-2013 period.[16] Like Fiva and Smith (2018), we start by identifying candidates, for each of the seven main parties, who are either next in line to win a seat, or first in line to lose a first-tier seat.[17] We then use party vote counts at the district level to measure how far *individual candidates* are from losing or winning a seat using the distance measure proposed by Folke (2014). In short, we generate a win margin for each candidate, which is defined as the minimum total vote change across all parties, scaled by the total number of votes cast, that would be required for candidate i in party p in municipality m at time t to experience a seat change. Based on this individual-level variable, we measure how far the *municipality* is from losing or winning a first-tier seat in parliament (henceforth, $Margin_{mt}$).

Table 1 illustrates that municipalities can easily be left without representation under closed-list PR. In this hypothetical example, half of the municipalities are left without representation. In our actual empirical application, the number of municipalities exceeds the number of seats available in the district by a factor of 2.5, on average, and less than 25 percent of municipalities are represented in parliament in a given year.[18] As an illustration of how we construct our forcing variable for the RD design, consider municipalities c and f in Table 1. If party C had successfully mobilized 4,001 additional voters, the first-

[16]Fiva and Smith (2018), who study the incumbency advantage and dynasty formation, end their analysis in 1981 primarily because they need a sufficiently large period *after* candidates have run in order for family members to potentially appear in the data.

[17]We also include the Norwegian Communist Party in the 1953 and 1957 elections, and the New People's Party in the 1973 and 1977 elections.

[18]See right panel of Appendix Figure A.1. Other Western European parliaments elected with closed-list PR similarly have fewer seats than municipalities. For example, in Portugal, Italy and Spain the total number of municipalities exceeds the number of seats available in parliament by factors of about 1.3, 8.4, and 13.2, respectively.

ranked C-candidate from municipality f would have been elected at the expense of the third-ranked A-candidate from municipality c ($\frac{14{,}001}{1.4} > \frac{50{,}000}{5}$). Hence, $Margin_c = 0.04$ and $Margin_f = -0.04$.

Table 1: Hypothetical closed-list PR district with five seats allocated to three parties

Divisor	Party A (50,000 votes)	Party B (40,000 votes)	Party C (10,000 votes)
1.4	**35,714** (1)	**28,571** (2)	7,143
3	**16,667** (3)	**13,333** (4)	3,333
5	**10,000** (5)	8,000	2,000
7	7,143	5,714	1,429
9	5,556	4,444	1,111
	Party A candidates	Party B candidates	Party C candidates
	1. Municipality a ✓	1. Municipality b ✓	1. Municipality f
	2. Municipality b ✓	2. Municipality b ✓	2. Municipality a
	3. Municipality c ✓	3. Municipality d	3. Municipality b
	4. Municipality d	4. Municipality d	4. Municipality c
	5. Municipality e	5. Municipality f	5. Municipality d

Note: The table illustrates how five seats in a hypothetical closed-list PR district are allocated to three parties (A, B, and C) on the basis of the Modified Sainte-Laguë allocation method (as in our empirical case of Norway). This method distributes seats in consecutive rounds to the party with the most votes following consecutive divisions by a series of divisors ($1.4, 3, 5, 7, 9, ...$). In the example, the district consists of six municipalities (a-f). Three of these municipalities have a local candidate elected (a, b, and c). The other three remain without local representation (d, e, and f). In the top portion of the table, boldface indicates seats allocated (the number in parentheses indicates the order of allocation); in the bottom portion of the table, checkmarks indicate which candidates are elected from each party.

Even if it can be assumed that parties assemble their tickets strategically—anticipating the reactions of voters and aiming to maximize vote shares—the party selectorate cannot entirely control which candidates ultimately get elected. Unlike in many SMD systems, all districts in closed-list PR systems tend to feature close competition (Cox, Fiva and Smith, 2020), so it is difficult to predict seat allocation outcomes, especially for the final seat allocated in each district.

Using this quasi-experimental variation stemming from the electoral rules, we isolate the effect of local representation on our main outcome variables (Y_{mt} or Y_{pmt}) capturing

local party vote share and turnout. Our baseline empirical specification is a standard RD regression of the following form:

$$Y_{mt} = \alpha + \beta\, Win1_{mt} + \lambda_1 Margin_{mt} + \lambda_2 Margin_{mt} \cdot Win1_{mt} + \xi_{mt}, \tag{1}$$

where $Win1_{mt}$ is a dummy variable capturing whether a candidate from municipality m wins a first-tier seat in parliament in election year t ($Margin_{mt} > 0$). Equation (1) allows the slope of the regression line to differ on either side of the cutoff by including interaction terms between $Margin_{mt}$ and $Win1_{mt}$. ξ_{mt} is an error term.

We limit the sample to municipalities and parties with candidates who are within 5 percentage points from winning a first-tier seat.[19] There is no evidence of any sorting around the threshold for a seat change, lending support to the key identifying assumption of the RD design, and pre-treatment characteristics are also balanced around the threshold.[20] In contrast, if we naively compare all hometowns with and without representation, there are dramatic imbalances.[21] For example, municipalities represented in parliament by a hometown legislator have almost four times as many inhabitants as municipalities without such local representation.

We can expand our baseline model by taking into account second-tier seats ($Win2_{mt}$):

$$Y_{mt} = \alpha + \beta(Win1_{mt} + Win2_{mt}) + \lambda_1 Margin_{mt} + \lambda_2 Margin_{mt} \cdot Win1_{mt} + \xi_{mt}. \tag{2}$$

We also estimate versions of this equation including various fixed effects (party, time, district, and rank). In what follows, we provide standard RD plots based on estimations from Equation (1), and present the full results, based on Equation (2), in table format. Estimates of β are insensitive to the specification chosen, but we gain some precision

[19] We further exclude cases in which the municipality has *more* than one marginal candidate, or also has a "safe" candidate winning a first-tier seat by a larger margin (like municipalities a and b in Table 1. When looking at party-municipality (pm) level outcomes, the sample restriction is that there is only one marginal candidate and no safe candidates from the same municipality and party.

[20] Appendix Figure A.3 gives the frequency of observations for our baseline sample. See Appendix Figures A.4 and A.5 for municipality-level and candidate-level balance checks, respectively.

[21] See Appendix Table A.1.

when using Equation (2).

Main Results

To investigate the impact of local representation on voter behavior, we construct a variable of local electoral support, *Local Support*, for party p in municipality m in election district d at time t defined as $\textit{Local Support}_{pmdt} = \textit{Vote Share}_{pmdt} - \overline{\textit{Vote Share}}_{pdt,-m}$. A positive value for *Local Support* thus indicates that party p receives higher support in municipality m than it does in the rest of the district where m belongs—i.e., m can be considered a "party stronghold" within the district. We are interested in how the change in *Local Support* from one election to the next, $\Delta\textit{Local Support}_{pmd,t+4}$, is related to whether party p has a candidate from municipality m who is elected to parliament at time t.[22]

We also consider whether local representation affects local turnout in municipality m in district d at time t with a second variable defined as $\textit{Local Turnout}_{mdt} = \textit{Turnout}_{mdt} - \overline{\textit{Turnout}}_{dt,-m}$. When voter turnout in m is higher than in the rest of the district where m belongs, then $\textit{Local Turnout} > 0$. We investigate whether $\Delta\textit{Local Turnout}_{md,t+4}$ is affected by local representation (by any party's candidate).

Figure 2 shows how local party support changes when crossing the threshold for winning a first-tier seat. The upper-left panel shows that the effect on local support in the current election ($\textit{Local Support}_{pmd,t}$) is close to zero, indicating that there is no selection around the threshold with respect to local support. Local support is higher for marginal candidates at both sides of the cutoff for a first-tier seat. This may either indicate that parties nominate candidates from municipalities that are *ex ante* party strongholds, or that support increases when the party has a local candidate with a chance of winning a seat.

The upper-middle panel, however, shows that a party's local support tends to be

[22]Norwegian elections take place every four years. Because our later analyses of redistributive outcomes rely on yearly observations, here we use $t + 4$ to denote variables referring to the next election.

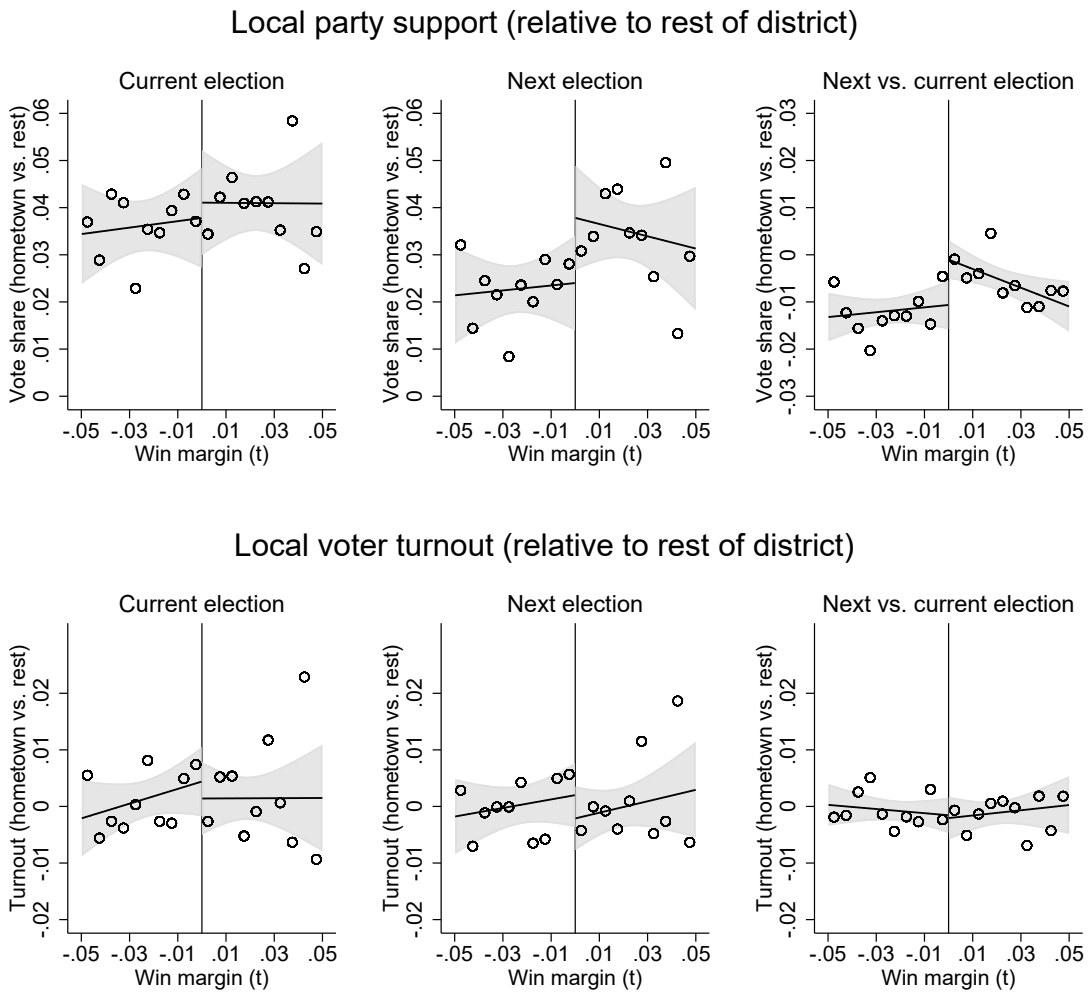

Figure 2: RD plots showing the effect of local representation on party support and turnout

Note: The vertical axis in the top (bottom) left panel shows the party's vote share (turnout) in the municipality minus its vote share (turnout) elsewhere in the district (i.e., excluding the focal municipality) in the current national election. The vertical axis in the right panels shows the changes in the corresponding variable from the current to the next election. The horizontal axis shows the margin by which the candidate wins a first-tier seat in the current national election. The dependent variable is party vote share (turnout) in the municipality minus party vote share (turnout) in the district. In the upper panels, the sample is limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. In the lower panels, the sample is limited to municipalities with exactly one candidate (from any party) who is within 5 percentage points from winning a first-tier seat and no candidate winning a first-tier seat by a larger margin. Each bin represents an interval of half a percentage point. Separate linear regression lines are estimated to the left and right of the discontinuity using the underlying data, not the binned scatterpoints.

higher in the *next* election ($Local\ Support_{pmd,t+4}$) in municipalities where a local candidate from the party narrowly wins election, compared to municipalities where the party narrowly misses out on electing a local candidate. We gain precision when taking the first-difference in local support ($\Delta Local\ Support_{pmd,t+4}$), as reflected by the smaller confidence intervals in the top-right panel of Figure 2. These estimates indicate that local party support increases by about 1 percentage point at the cutoff. This may signify that voters reward parties with local incumbents, or alternatively, that local incumbents are better able to mobilize voters than local newcomers. We find no evidence that relative turnout in the municipality increases (see the bottom panels of Figure 2), which suggests that the presence of a local incumbent might primarily serve to persuade the erstwhile supporters of other parties to switch their support to the local incumbent's party. An alternative possibility is that the mobilization of previous abstainers is offset by the demobilization of local supporters of other parties.[23]

About 8 percent of candidates barely missing out on a first-tier seat do ultimately get elected into parliament through the allocation of second-tier seats (see Appendix Figure A.6). The jumps at the cutoff in Figure 2 should therefore be interpreted as intention-to-treat estimates. Table 2 provides the corresponding regression results, where we also take second-tier seats into account. As in the graphical evidence, Panel A shows that winning a seat in parliament increases relative local party support by about a percentage point. This corresponds to about a third of a standard deviation increase in the dependent variable. There is no evidence that the effects of local representation on party support are different for first-tier and second-tier winners, and combining these into a single dummy variable moderately increases statistical precision. The key estimates are statistically significant and robust to the inclusion of various fixed effects and to using a triangular kernel.[24]

[23]This might be viewed as analogous to what Gay (2001) finds with regard to African American representation and the participation of white voters in the United States.

[24]In Appendix Table A.2, we show regression results corresponding to the middle panels of Figure 2, where outcome variables are specified in levels rather than differences. The results are similar, but somewhat less precise and less robust to alternative specifications. We further verify that our results hold when relaxing the sample restriction described in footnote 19 (Appendix Table A.3), and for other

Table 2: The effects of local representation on party support and turnout

Panel A: Change in local party support (relative to rest of district)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	0.011						
	(0.003)						
2nd tier seat	0.011						
	(0.003)						
1st or 2nd tier seat		0.011	0.011	0.012	0.012	0.012	0.009
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Mean of outcome var.	-0.009	-0.009	-0.009	-0.009	-0.009	-0.009	-0.008
R-squared	0.02	0.02	0.03	0.05	0.10	0.10	0.02
Observations	1250	1250	1250	1250	1250	1250	1250

Panel B: Change in local voter turnout (relative to rest of district)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	0.000						
	(0.003)						
2nd tier seat	0.007						
	(0.002)						
1st or 2nd tier seat		0.002	0.002	0.001	0.001	0.001	0.001
		(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Mean of outcome var.	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
R-squared	0.01	0.01	0.03	0.04	0.07	0.08	0.01
Observations	671	671	671	671	671	671	671
Time fixed effects	No	No	Yes	Yes	Yes	Yes	No
Party fixed effects	No	No	No	Yes	Yes	Yes	No
District fixed effects	No	No	No	No	Yes	Yes	No
Rank fixed effects	No	No	No	No	No	Yes	No
Kernel	Unif.	Unif.	Unif.	Unif.	Unif.	Unif.	Tria.

Note: In panel A, the dependent variable is the increase from the current to the next election in the party's vote share in the municipality minus its vote share at the district level (excluding the focal municipality). The sample is limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. In panel B, the dependent variable is the increase in turnout in the municipality minus turnout at the district level (excluding the focal municipality). The sample is limited to municipalities with exactly one marginal candidate (from any party) and no candidate winning a first-tier seat by a larger margin. All specifications include a linear control function on both sides of the electoral threshold and dummies for the periods 1989-2001 and 2005-2009, during which two different systems for allocating second-tier seats were in place. Standard errors are based on a cluster-robust covariance matrix, with clustering on the district level.

Panel B of Table 2 shows the corresponding results when using local turnout (relative to average turnout in the other parts of the district) as the outcome variable. There are no clear indications that turnout is affected positively or negatively. There is some indication that winners of second-tier seats boost local turnout, but the estimated effect becomes weaker with the inclusion of the various fixed effects.

Exploring the Mechanisms

In this section, we explore three possible mechanisms behind the increase in party support in municipalities that gain local representation: renomination of local incumbents to prominent list positions, symbolic representation of hometowns through legislative speech, and central-to-local redistribution.

Renomination at the top

In an earlier study using the same data set, Fiva and Smith (2018) document a strong incumbency advantage for Norwegian legislators. Once a candidate is elected, he or she often gets renominated to list positions that are high enough (lower numerically) to secure a seat again in the next election. While Fiva and Smith (2018) emphasize outcomes at *the candidate level*, we investigate below how winning a seat affects nomination outcomes *at the municipality level*. In particular, we look at the probability of having a local *top candidate*.

Figure 2 (top-right panel) in the main analysis shows that relative local party support tends to *fall* in municipalities with a homegrown candidate just barely missing out on a seat, in comparison to municipalities with a local candidate who just barely wins a seat.[25] The top-left panel of Figure 3 shows that in about half of all cases, having a local

choices of bandwidths around the seat threshold (Appendix Figure A.7). The results are also consistent if we exclude observations prior to the municipality mergers described in footnote 10 and Appendix Figure A.1 (Appendix Table A.4).

[25]Considering larger geographic units, we find no evidence that the party enjoys a local advantage beyond the hometown of the candidate. It appears as though voters in other municipalities close to the

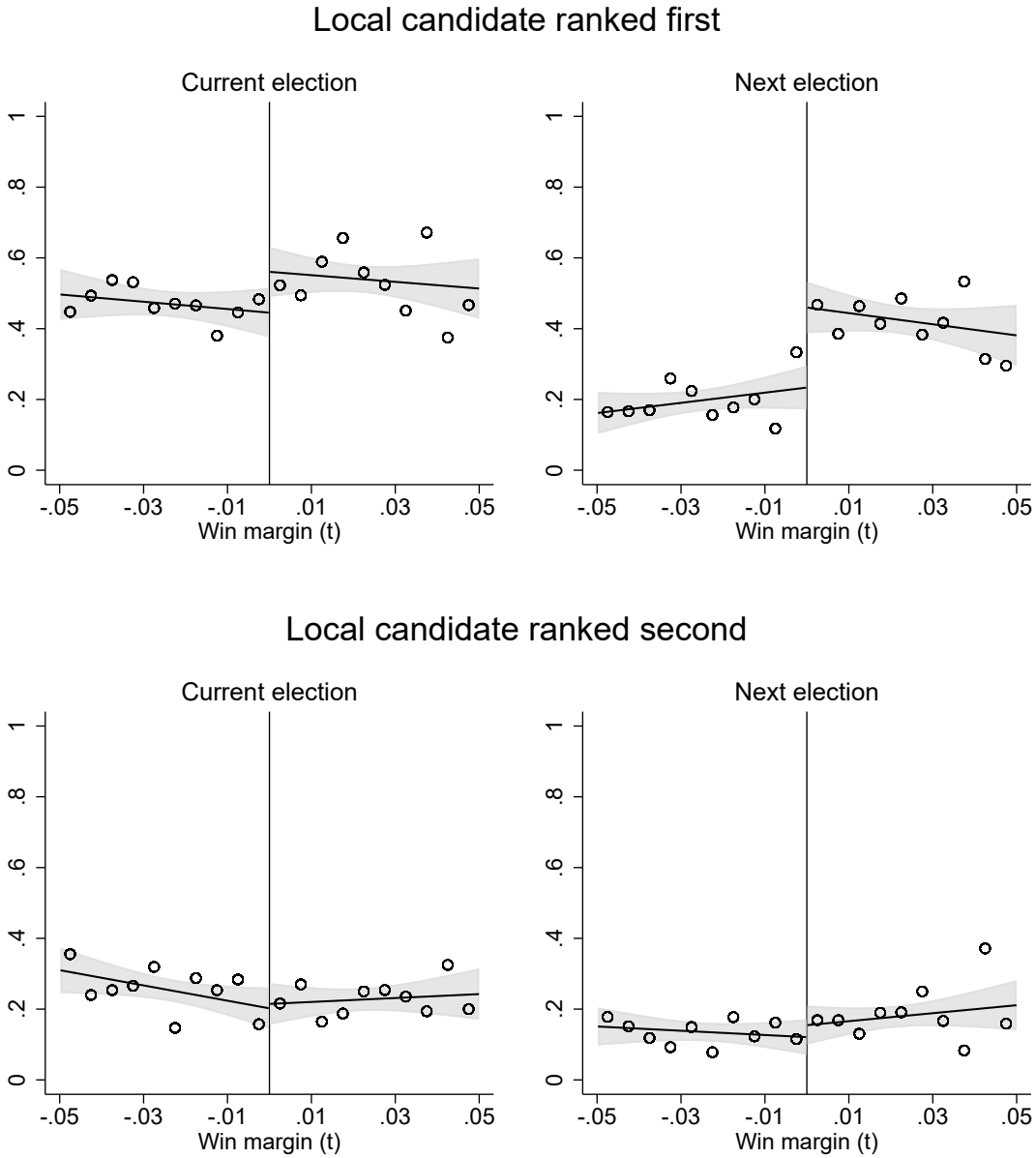

Figure 3: RD plots showing the effect of local representation on subsequent nominations

Note: The vertical axis indicates the probability that the candidate, or any other candidate from the same party and municipality, is ranked in the position indicated in the panel heading. The horizontal axis shows the margin by which the candidate wins a first-tier seat in the current national election. The sample is limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. Each bin represents an interval of half a percentage point. Separate linear regression lines are estimated to the left and right of the discontinuity using the underlying data, not the binned scatterpoints.

marginal candidate already implies having that candidate at the top of the list. The top-right panel shows that, even if the local candidate wins, the probability of having a top-ranked local candidate is slightly lower in the next election. However, if a local candidate loses, the probability falls much more. This suggests that renomination of local candidates at the top of the ballot is an important driver of local party support, and that this contributes to the pattern documented in Figure 2.[26] The lower panels of Figure 3 show no effects on the probabilities of a local candidate being ranked second.[27]

If the effect of representation on party support in the next election is driven solely by the (re)nomination of a local candidate to the top of the party list, our results imply that having a local top candidate increases a party's local vote share by about 3 percentage points relative to other parts of the district.[28] This is comparable to the home-county advantage documented by Rice and Macht (1987) and Meredith (2013) for gubernatorial races in the United States. It is also similar to the municipality-level vote advantage enjoyed by local Norwegian candidates in an earlier period from 1906 to 1918 when a two-round SMD system was in use (Fiva and Smith, 2017*a*). Given that closed-list PR systems are regarded as less candidate-centered, this finding of a local representation effect on friends-and-neighbors voting is remarkable. A feature which might explain this pattern is that each party often wins only one or a few seats per district, which gives the top candidate a prominent position for attracting media attention in campaigns.

hometown would prefer having their own local candidate at the top of the list, something that becomes less likely when a candidate from another municipality wins and runs again.

[26]The top-left panel of Figure 3 indicates that candidates who (marginally) win seats are somewhat more likely to be top candidates also in the *current* election. However, Appendix Table A.5, column (6), which includes rank-fixed effects, shows that this slight imbalance is not driving the effect in the next election.

[27]Nor do we find any substantial effects of local representation in parliament on the probability of having a local candidate ranked third, fourth, or fifth (see Appendix Figure A.8).

[28]According to the regression results (Table 2 and A.5, column (2)), the effect on having a local top candidate is 33.3 percentage points and the effect on support is 1.1 percentage points, hence $0.011/0.333 = 0.033$.

Legislative speeches

An additional potential mechanism is that local incumbents could be able to attract local voters' support by talking about their hometowns in parliamentary debates. Legislative debates are an important arena for providing symbolic representation for local constituencies (e.g., Proksch and Slapin, 2012; Alemán, Ramírez and Slapin, 2017; Zittel, Nyhuis and Baumann, 2019; Fernandes, Won and Martins, 2020), and politicians may use their own past experiences and local concerns as reference points in debating policy and advocating ideas. This kind of activity might get coverage in local newspapers, and facilitate local credit-claiming efforts.

Anecdotal evidence that legislators talk about their home municipalities is easy to find. Consider, as examples, the following legislators' speeches in *Storting* debates on May 2, 2011, concerning the InterCity railway project connecting the municipalities of Skien, Lillehammer, and Halden, through Oslo:

> Gorm Kjernli (from Ski): *"We need more comprehensive developments of lines, and we must ensure rational progress of the projects, as we now do with Oslo-Ski, a unified project with its own project management, a separate item on the budget to ensure good progress, and regulatory planning partly subject to state regulations."*
>
> Olemic Thommessen (from Lillehammer): *"I regularly take the train from Lillehammer, which is the end terminal of the intercity railway. From Lillehammer to, for example, Bjørli, Skjåk, Grotli or Lom—all of which are part of my district—it takes another two and a half hours...to drive by car. But for this area, the contact with Oslo is just as important... We need well-functioning communication lines."*

To further investigate whether legislators devote more attention to their hometowns in speeches, we make use of text data from *The Talk of Norway*, a data set of legislative speeches covering the 1998 to 2016 period (Lapponi et al., 2018). Using data for the three complete four-year parliamentary sessions covered by this data set (2001-2013), we analyze whether legislator i mentions municipality m in each four-year session s.

Figure 4 displays the average share of legislators who mention municipalities of three categorical types: municipalities outside the legislator's district, municipalities inside the

legislator's district but excluding the legislator's hometown, and the hometown of the legislator. The figure shows that the vast majority of legislators mention their hometown during a session (73 percent). Other municipalities receive much less attention. On average, legislators mention 22 percent (4 percent) of other municipalities inside (outside) their district during a legislative session.[29]

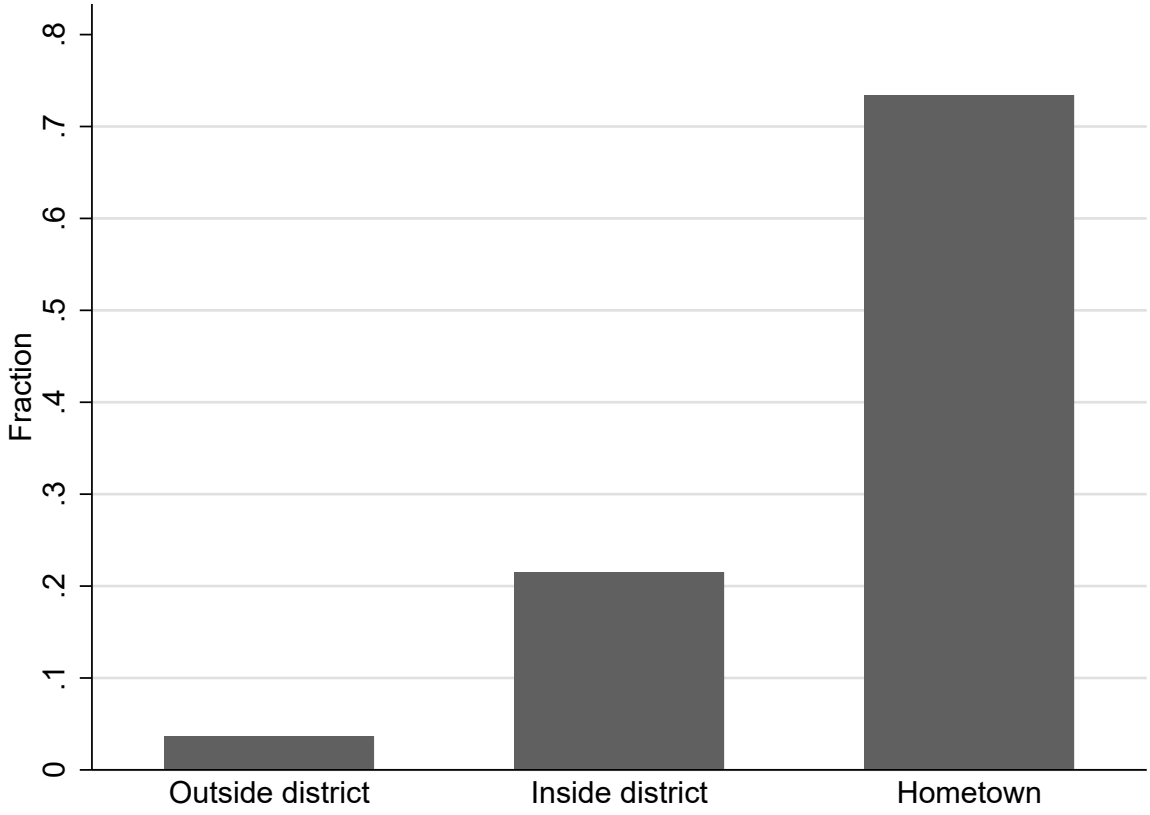

Figure 4: Share of legislators mentioning hometown vs. other municipalities

Note: Based on mentions in legislative speeches from The Talk of Norway *(Lapponi et al., 2018). Bars represent the average share of municipalities mentioned by a legislator by three categories: municipalities outside the legislator's districts, municipalities inside the legislator's district excluding his or her hometown, and the legislator's hometown. The sample includes speeches by legislators in the 2001-2013 period (N=101,143). In this period, 435 municipalities existed and 255 legislators served in parliament. To match municipalities to mentions, we exclude municipality names consisting of more than one word (20 municipalities), municipality names that do not uniquely identify municipalities (12 municipalities), and one municipality that changed its name during the period. We also exclude Oslo. There are some cases where a municipality name coincides with a legislator's name. We eliminate speeches referring to these legislators from our "hits."*

[29] Appendix Figure A.9 show RD plots using mentions in parliament as the outcome variable. The probability of being mentioned by party-district legislators increases by more than 20 percentage points for municipalities that gain representation. Appendix Table A.6 presents additional specifications.

Distributive policy outcomes

Finally, it is possible that some of this locally-oriented legislative speaking activity coincides with actual distributive policy benefits going to the represented municipalities, which may also motivate some local voters to switch party allegiances and support the party of the local incumbent.

In candidate-centered electoral systems, it is well documented that legislators reward favored subconstituencies with redistributive fiscal transfers and other forms of privileged representation and constituency service (e.g., Hirano, 2006). In closed-list PR systems, in contrast, the incentives to provide such benefits are theoretically diminished, since an individual legislator's reelection depends first and foremost on being reselected by the party, and then on being nominated to a rank position that is high enough to secure a seat given the party's vote share in the district (Carey and Shugart, 1995).[30] However, the Norwegian government routinely promotes redistribution to support settlement and economic activity across the country, and these distributive benefits may disproportionately go to regions that are overrepresented or strategically important to parties' reelection interests (Helland and Sørensen, 2009; Tavits, 2009; Fiva and Halse, 2016; Rickard, 2018). It is possible that municipalities with representation from a locally-connected legislator in parliament might gain an advantage in the within-district allocation of these distributive benefits.

To evaluate this potential mechanism, we use three different outcome variables that vary at the municipality-year level: (1) constructions on national roads, (2) central government jobs, and (3) investment funding from the central government.[31] The unit of analysis is municipality m at time t. As with our other outcome variables, we run RD analyses with these three distributive policy outcomes.

A challenge with these variables is that there is likely to be a time lag between

[30] André and Depauw (2018) report survey evidence that many legislators in closed-list PR systems profess to pay more attention to the interests of their hometowns than their districts at large. In the specific case of Norway, Heidar and Karlsen (2018) also provide qualitative evidence that legislators view local constituency representation as part of their jobs.

[31] Appendix B describes each of these policy outcome variables in detail.

the stage at which the incumbent might influence the decision-making process and the observed outcome. We therefore analyze the effect of representation in parliament on policy outcomes both during the current and the next election period. In the case of road constructions, we add another two-year lag to account for the fact that the data are based on the opening year of the construction, not the year when construction starts.

Figure 5 shows how winning a first-tier seat affects each of the three policy outcomes, based on a five-percentage-point bandwidth around the electoral threshold. There is no evidence of a positive effect on any of these policies during the current election period, nor is there an effect in the next period. As clearly shown in the left panels, there is also no evidence that the sample is unbalanced in terms of policy outcomes during the previous period. Appendix Table A.7 confirms the findings from the graphical analysis and documents that we have quite precisely estimated zeros.[32] These results suggest that marginally elected legislators do not influence redistributive policies in a direction that benefits their hometowns during the eight years following their election. However, we cannot rule out that there could be some legislators who are more influential (i.e., those in safer seats), or that it takes an even longer time in parliament before the effect of local representation materializes.[33]

For valid causal inferences, the RD design on which we rely is crucial. A naive comparison of hometowns with and without representation would lead to the erroneous conclusion that local representation results in *fewer* geographically-targeted benefits (see Appendix Table A.1). This is a consequence of the ambitious Norwegian redistribution scheme which tends to favor rural areas (typically without representation) over urban areas (typically with representation).

[32]We calculate 95% confidence intervals based on specification (5) in Appendix Table A.7. We find that the upper bounds on these confidence intervals are 0.04, 0.15, and 0.49, respectively, when standardizing the three policy outcome measures by their standard deviations. The null findings for policy outcomes are insensitive to the bandwidth chosen (Appendix Figure A.7).

[33]In the election period from 2001 to 2005, the parliament approved moving eight central government agencies out of Oslo. According to various sources, this process was completed within the next election period. We also do not find evidence of any substantial heterogeneous effects on local support or turnout by governing party status (Appendix Table A.8), suggesting that our main results are not driven by more influential legislators.

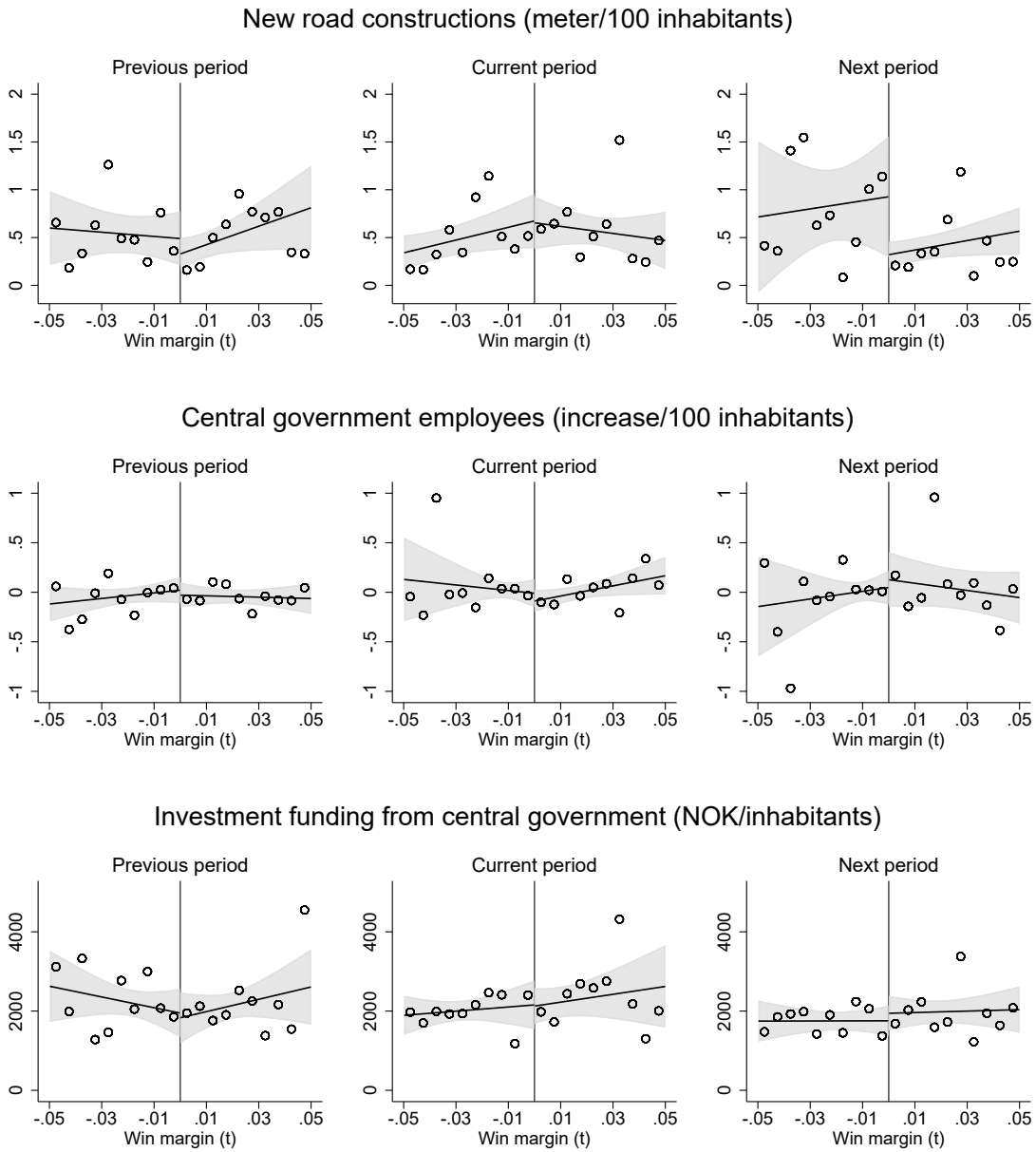

Figure 5: RD plots showing the effect of local representation on redistribution outcomes

Note: Policy outcomes are measured at the hometown (municipality) level. In the top panels, the hometowns of candidates are mapped into the municipality structure of 2014. The horizontal axis shows the margin by which the candidate wins a first-tier seat in the current national election. The sample in the top panel consists of all elections from 1953 to 2009. The sample in the two bottom panels consists of elections from 1973 to 2009. Road constructions are regarded as built in an election period if they are completed two years after the years included in the period (e.g., between 2008 and 2011 for the 2006-2009 period). The sample is limited to municipalities with exactly one candidate who is within 5 percentage points from winning a first-tier seat and no candidate winning a first-tier seat by a larger margin. Each bin represents an interval of half a percentage point. Separate linear regression lines are estimated to the left and right of the discontinuity using the underlying data, not the binned scatterpoints.

Together, the results of the preceding analyses suggest that the connection between local representation and party support may be more related to the mobilizational advantages of incumbents, or symbolic representation through their legislative speech, than to any material benefits they deliver to their hometown municipalities. However, the full extent of the impact of local representation on additional policy outcomes requires further investigation, and is an important research question for future inquiry.

Conclusion

Across democracies, there is a tendency for legislators to reside in the districts they represent, and many have deeper local roots from birth and upbringing (Gallagher and Marsh, 1988).[34] However, because districts frequently contain more municipalities than seats, not all municipalities will be represented in parliament by a legislator with strong local ties, and this can potentially affect patterns in voting behavior among local citizens.

In this study, we have taken advantage of detailed data on Norwegian candidates' hometowns, and vote returns measured at the municipality level, to examine whether the descriptive representation of geographical subregions (municipalities) within electoral districts affects voting behavior in a closed-list PR system—a commonly used electoral system around the world that has nevertheless been neglected by existing studies of friends-and-neighbors voting.

The conventional wisdom from comparative theories of electoral systems and representation is that local representation should have a minimal effect on voter behavior in closed-list PR systems, since voters cast their ballots for parties rather than candidates, policies tend to be nationally-oriented rather than locally-oriented, and parties typically maintain strong control over the legislative agenda, making it harder for individual legislators to engage in the kind of behavior in parliament that might win local votes back

[34] A normative argument can be made that districts ought to be represented by legislators with strong local ties (Childs and Cowley, 2011), and even candidates who "parachute" into a district from elsewhere face strong pressures to set up residency in their new districts. In some cases, such as the United States, residency is required by law.

in their districts (e.g., Carey and Shugart, 1995; Shugart, Valdini and Suominen, 2005; Proksch and Slapin, 2012).

Our findings suggest that this conventional wisdom is not entirely unequivocal. We document a clear pattern of geographic balancing across candidate nominations, and a clear mobilizational benefit to parties when a local candidate wins election. Our exploration of the mechanisms behind this apparent friends-and-neighbors effect suggests that the presence of a local incumbent at the top of the party list serves to persuade the erstwhile supporters of other parties to switch their support, rather than to mobilize abstainers. We also find that legislators' hometowns are more frequently mentioned in legislative speeches, but do not appear to gain any special benefits in terms of central-to-local redistribution.

It is, however, important to note some scope limitations to our findings and how they should be interpreted in light of our exploration of the mechanisms, particularly with regard to distributive policies. As we have noted, the candidate selection process in Norway is, by law, carried out by district nomination committees made up of local party representatives, with no direct influence of national party leaders. This means that a legislator may have incentives to pay attention to local interests in order to please his or her local selectorate. We find null effects for distributive policies even in this context, which suggests that in systems where the selectorate is composed of national party leaders, the effects of local representation are also unlikely to be significant—but this cannot be tested with our data. Future research with data from additional closed-list PR cases where the selection process is not fixed by law, such as Portugal or Israel, should investigate whether the connection between local representation and local political outcomes varies by the degree of centralization in the candidate selection process.[35]

In addition, our RD approach leverages as-if-random outcomes for marginal candidates within a narrow bandwidth of all candidates. This sample constraint is important for

[35]Fernandes, Won and Martins (2020) show descriptive evidence that mentions in legislative speech of districts *as a whole* tend to vary across legislators from parties employing different selection procedures, but the authors do not investigate within-district variation in mentions according to legislators' hometowns.

identifying the causal effect of local representation, but because we only estimate the local average treatment effect (LATE), our analysis might not capture important variation across the full range of candidates and legislators. For example, marginal candidates (who are in our sample) may have greater incentives to exert mobilizational effort than safe or hopeless candidates (who are not). At the same time, marginal incumbents might have less power to affect distributive outcomes due to lower seniority in the party (to the extent that more senior legislators are given safe list positions). As a legislator's election security improves, it is possible that he or she might have more power to influence "costly" distributive policies, and less need to focus on local representation through relatively "costless" behavior like legislative speech—in other words, the null effect we uncover for the former mechanism behind local party support, and the positive evidence we show for the latter mechanism, might not be uniform across legislators of different levels of seniority.

Finally, in examining the distributive policy outcomes for municipalities, we have focused on the overall effect of local representation, without considering potential variation that might exist across legislators who serve on different parliamentary committees. The existing literature suggests that some committees are more conducive to bringing home particularistic benefits than others (e.g., Stratmann and Baur, 2002). Moreover, committee strength in general varies across countries (Mattson and Strøm, 1995). Future research should therefore investigate whether the effects of local representation differ depending on the committee membership of elected legislators, as well as whether the effects vary by country-level factors such as the strength of committees or other differences in legislative organization.

In addition to these possible extensions, our findings also raise opportunities for further investigation into local representation and distributive politics in closed-list PR systems. According to our results, representation does not matter for the allocation of public resources *within* the electoral district in this setting. An open question is whether the distribution of representation for local municipalities within districts affects the allocation

between districts. For example, Helland and Sørensen (2009) find that Norwegian districts with more seats relative to the population receive more national road investments, and Halse (2016) finds that investments in regional public roads are lower when many regional council members come from the more heavily populated areas in the region. This latter finding accords with a model of distributive politics that predicts greater amounts of spending on local public goods when the geographical constituency of each legislator is small (Weingast, Shepsle and Johnson, 1981). Such a theory implies that more spending might be directed to a district when a greater number of municipalities within that district gain representation, particularly if each legislator in the district came from a different municipality of small-to-medium population size rather than several legislators coming from the same municipality of a larger population size. This implication cannot be addressed using the research design we employ in this study, but it is an important topic for future research.

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Appendix A: Supplementary figures and tables

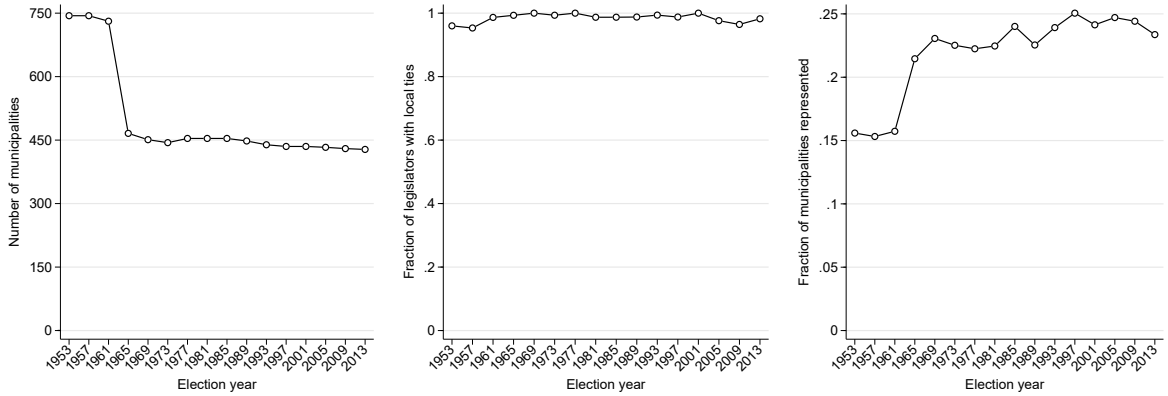

Figure A.1: Norwegian municipalities and local ties

Note: The left panel shows the number of municipalities by election year. The middle panel shows the fraction of legislators residing in the electoral district where they were elected. The right panel shows the fraction of municipalities where at least one inhabitant is elected to parliament by election year.

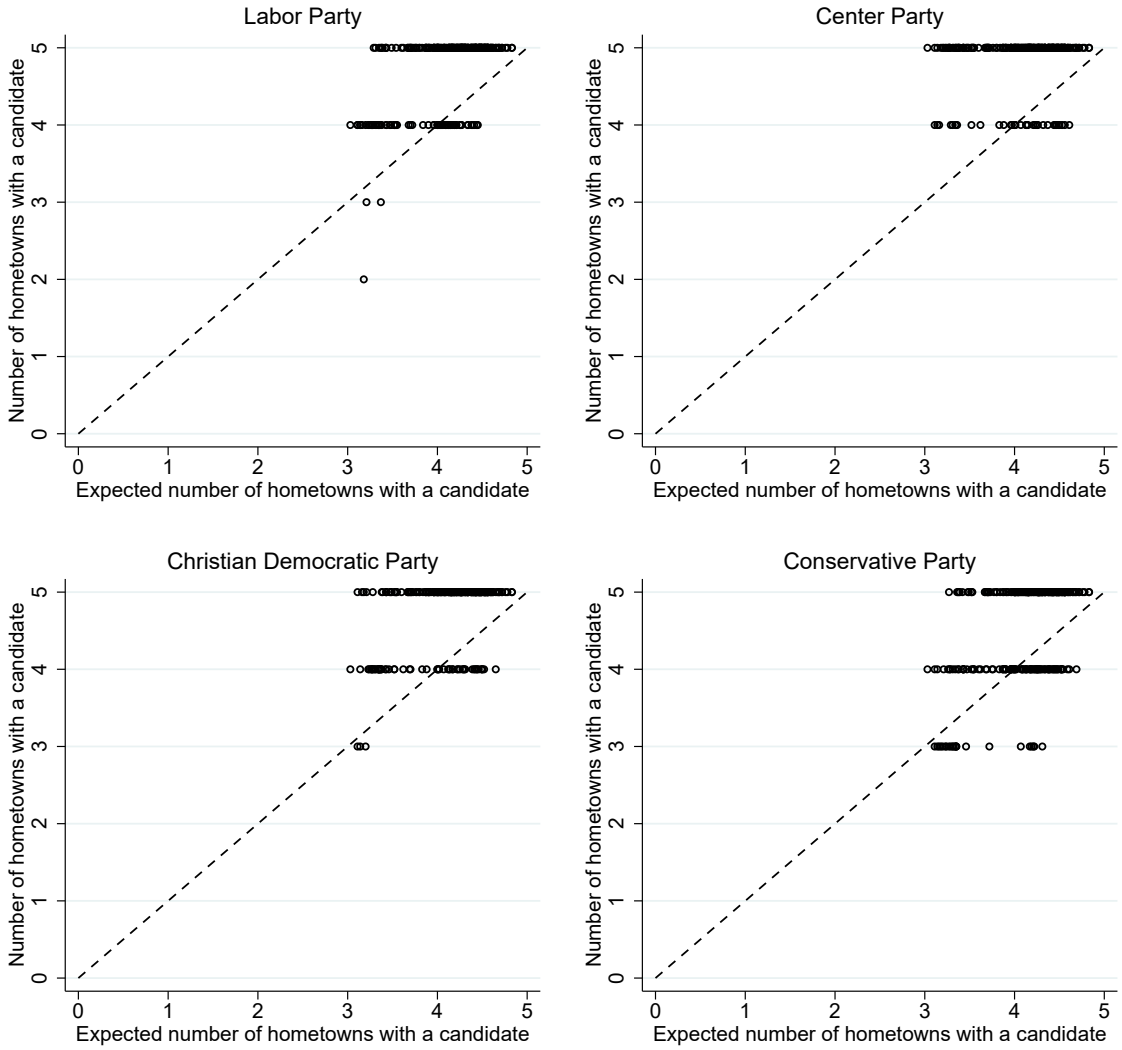

Figure A.2: Geographic balancing in candidate nominations for the top five list positions in the four largest parties

Note: The figure plots, for each of the four largest parties, the number of municipalities represented by candidates in the top five positions on the lists against the expected number from a random draw based on populations. The unit of observation is the party-district-year level (N=1,085). At the dashed 45-degree line, municipalities are, on average, represented on the list in proportion to their share of the district population.

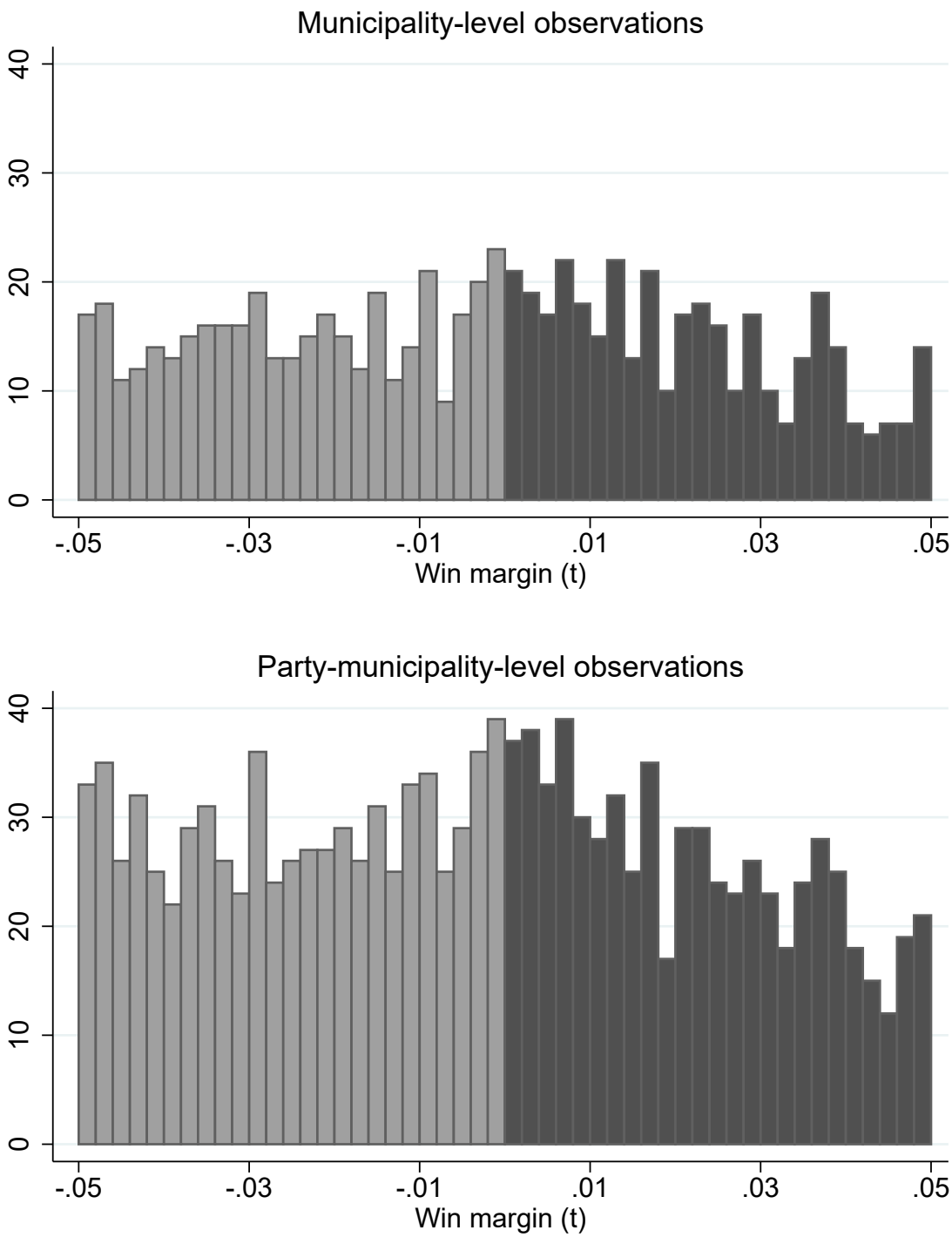

Figure A.3: Frequency of observations

Note: In the top panel, the sample is limited to municipalities with exactly one marginal candidate (from any party), defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. In the bottom panel, the sample is limited to combinations of party and municipality that satisfy the same restriction.

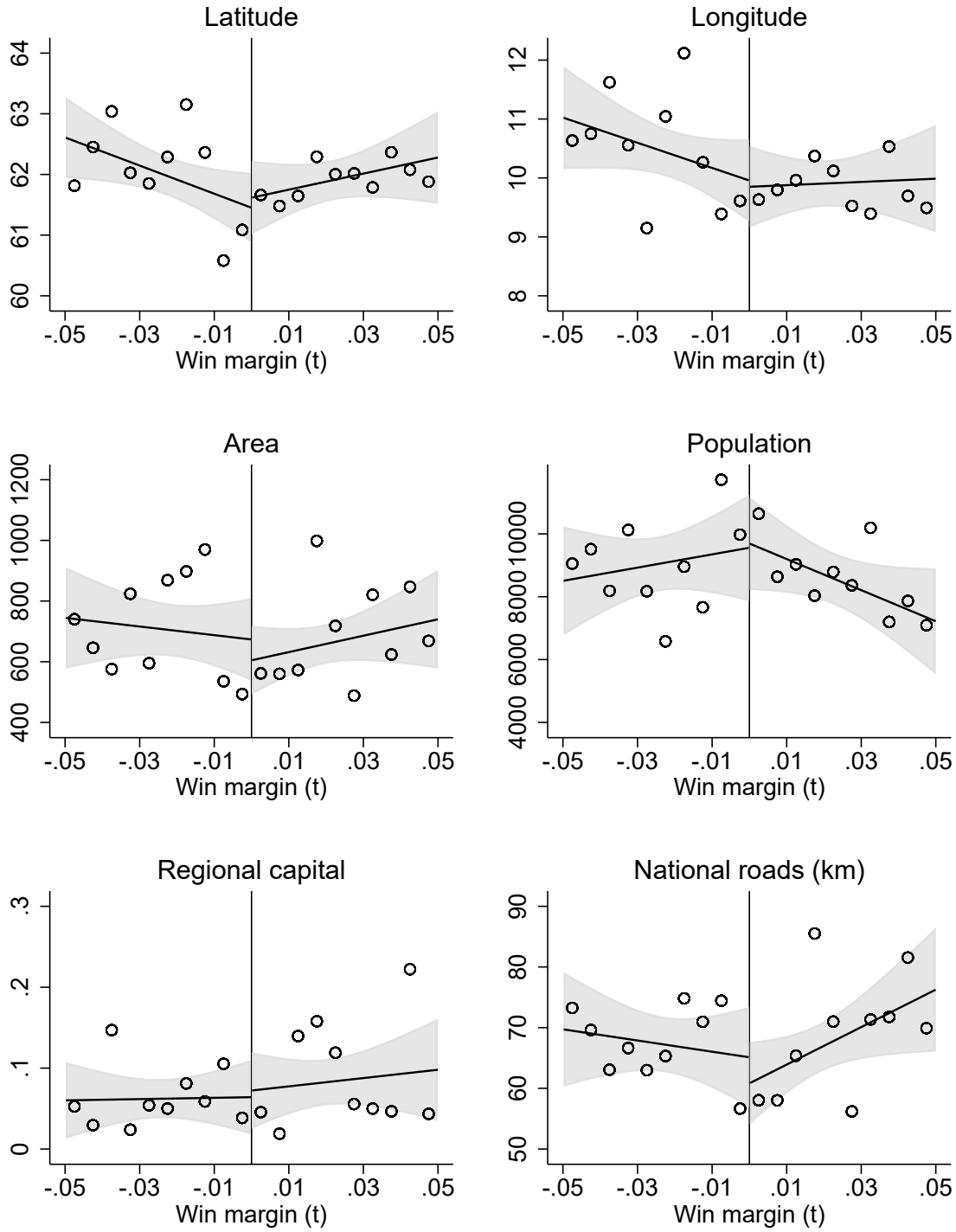

Figure A.4: Balance of hometown characteristics around the electoral threshold for winning a first-tier seat

Note: The horizontal axis shows the margin by which the candidate wins a first-tier seat in the current national election. The sample is limited to municipalities with exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. Each bin represents an interval of half a percentage point. Separate linear regression lines are estimated to the left and right of the discontinuity using the underlying data, not the binned scatterpoints.

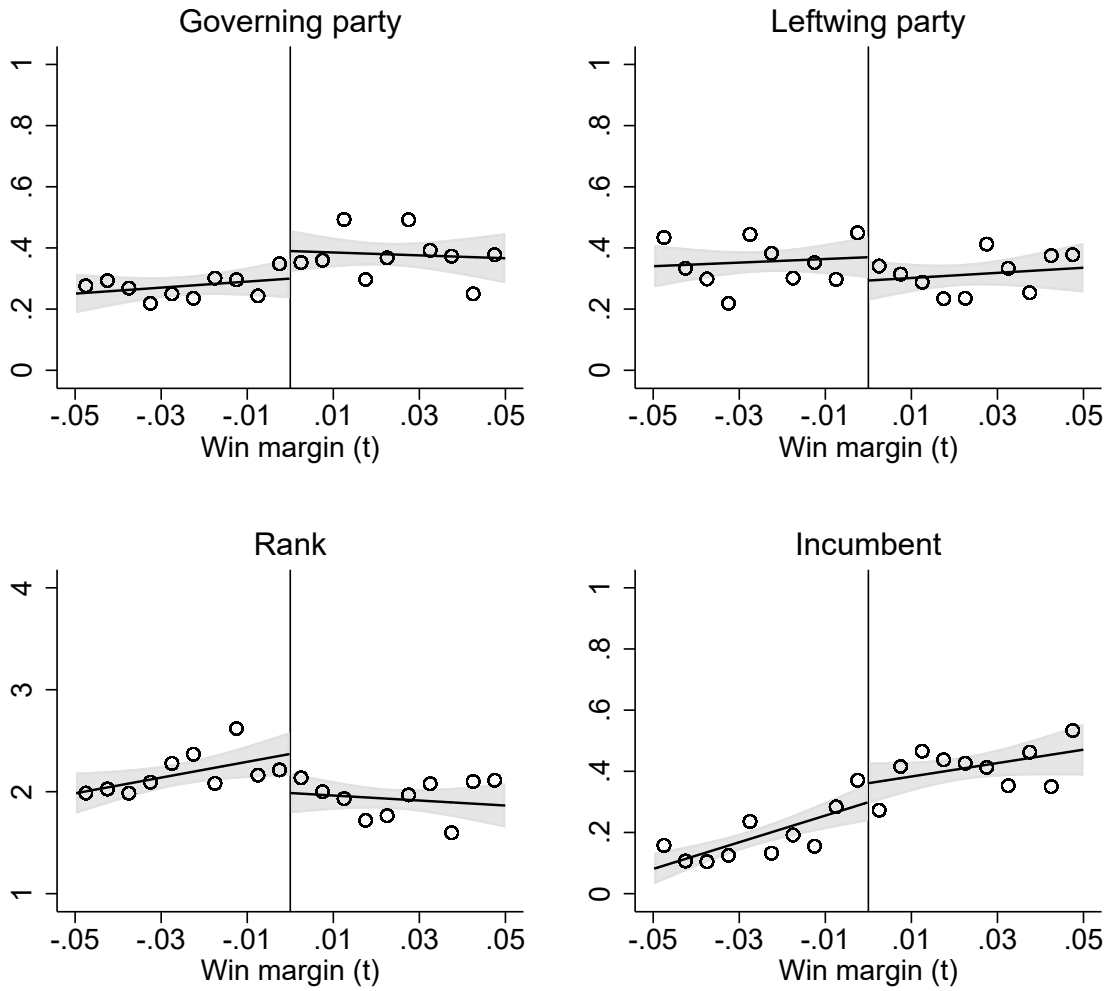

Figure A.5: Balance of candidate characteristics around the electoral threshold for winning a first-tier seat

Note: The horizontal axis shows the margin by which the candidate wins a first-tier seat in the current national election. The sample is limited to municipalities with exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. Each bin represents an interval of half a percentage point. Separate linear regression lines are estimated to the left and right of the discontinuity using the underlying data, not the binned scatterpoints.

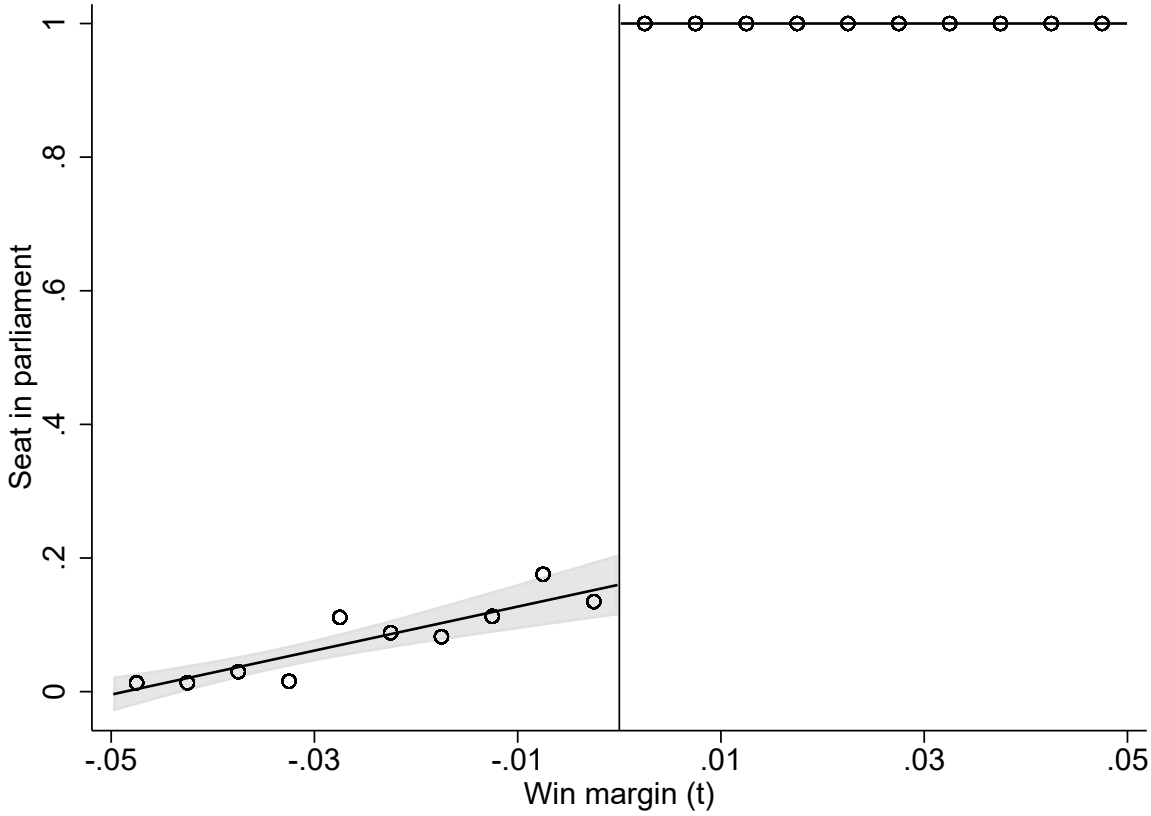

Figure A.6: RD plot showing how local representation changes at the cutoff for winning a first-tier seat

Note: The sample is limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. Each bin represents an interval of half a percentage point. Separate linear regression lines are estimated to the left and right of the discontinuity using the underlying data, not the binned scatterpoints.

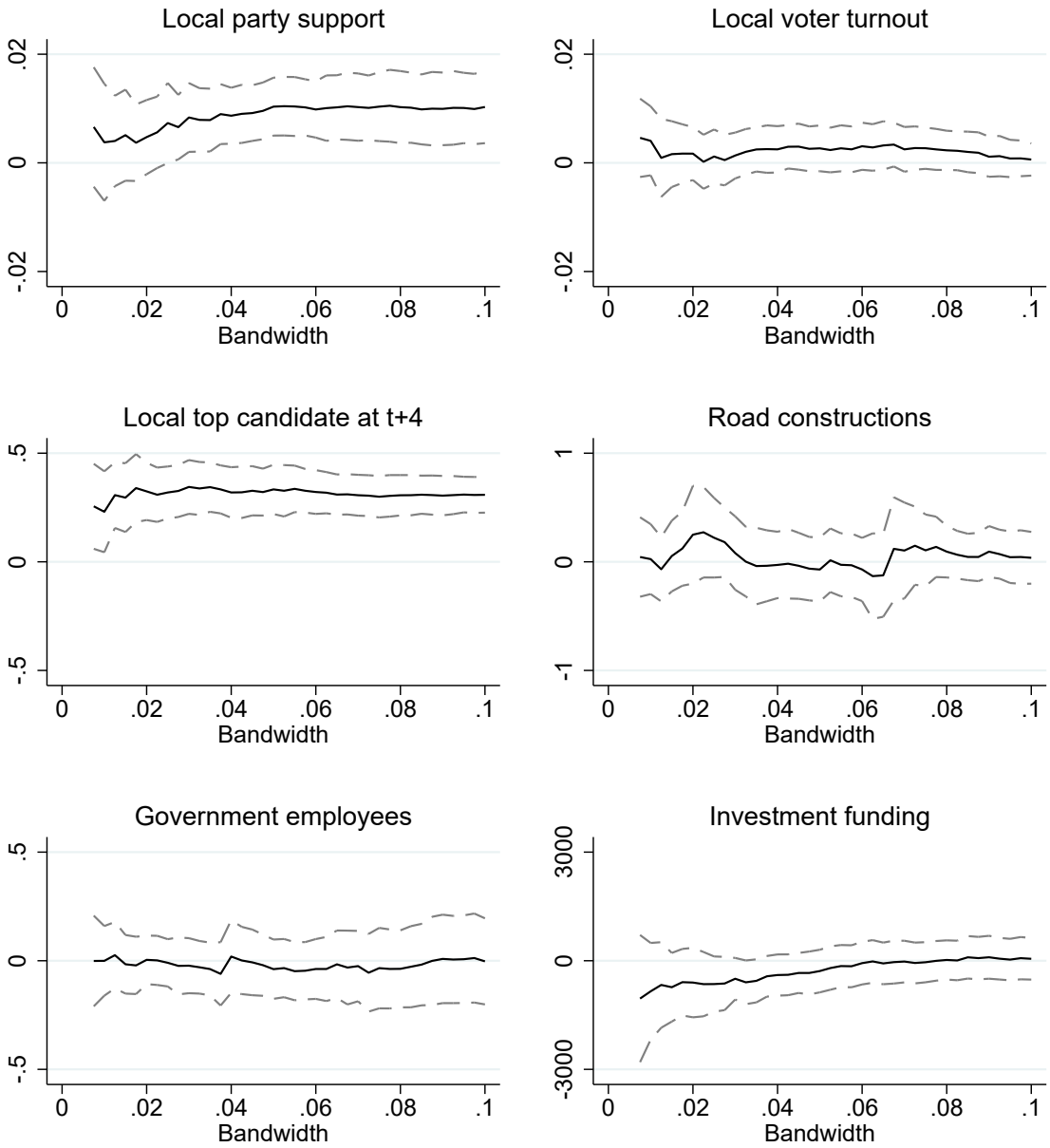

Figure A.7: Sensitivity to bandwidth choice of the effect of local representation on main outcome variables

Note: The graphs shows the results from the models reported in column column (2) of Table 2, column (2) of Table A.5 and column (3) of Table A.7 for different bandwidths on both sides of the electoral threshold. The bandwidth is indicated on the horizontal axis. The solid line represents the point estimates. The dashed lines represent 95 percent confidence intervals based on a t-distribution with 18–5 degrees of freedom in order to take into account within-district correlation.

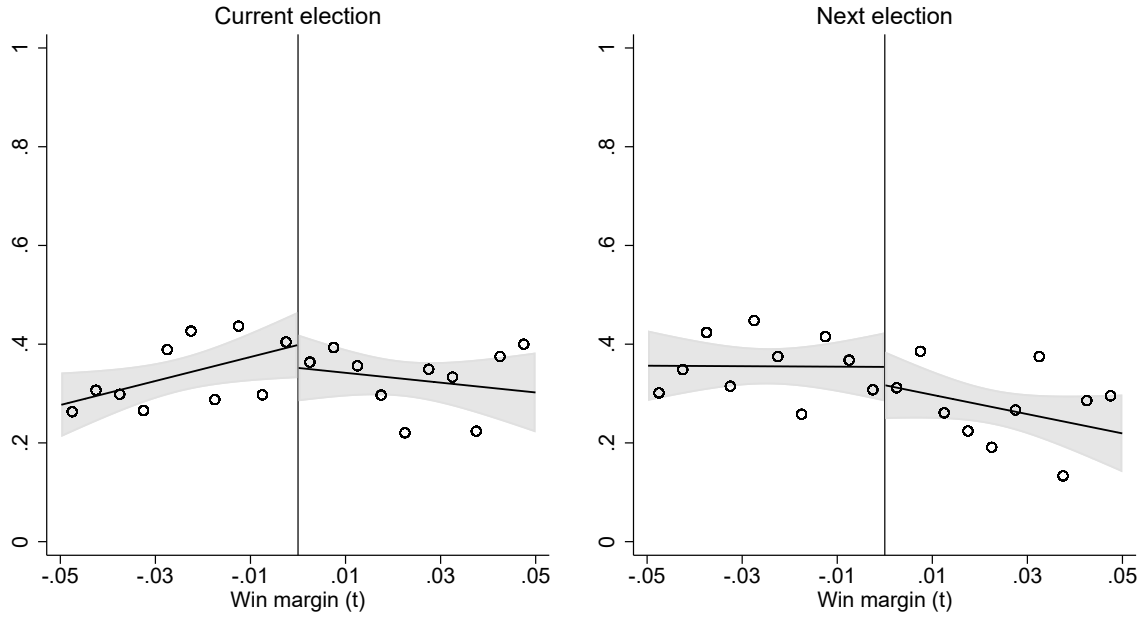

Figure A.8: RD plots showing the effect of local representation on the probability of having a local candidate ranked third, fourth, or fifth

Note: The vertical axis indicates the probability that the candidate, or any other candidate from the same party and municipality, is ranked in the position indicated in the panel heading. The horizontal axis shows the margin by which the candidate wins a first-tier seat in the current national election. The sample is limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. Each bin represents an interval of half a percentage point. Separate linear regression lines are estimated to the left and right of the discontinuity using the underlying data, not the binned scatterpoints.

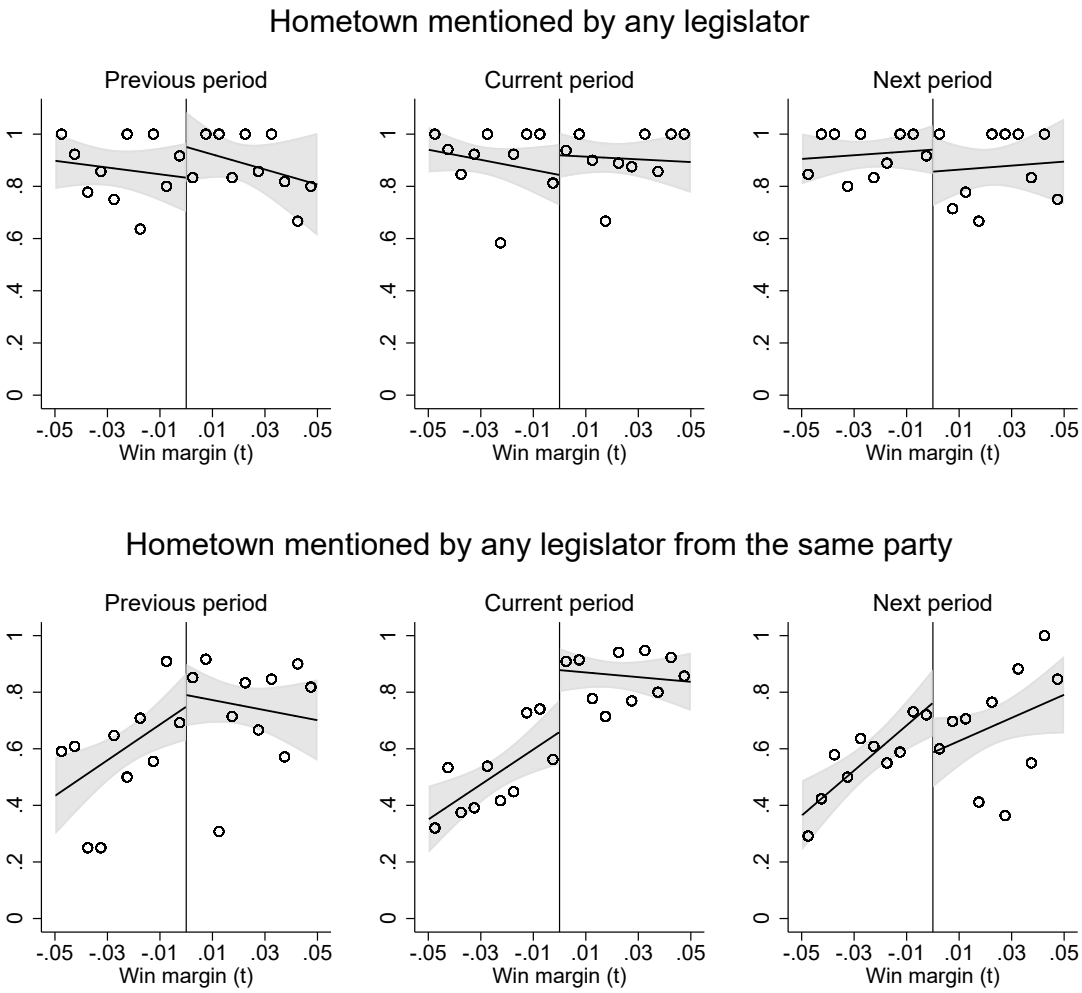

Figure A.9: RD plots showing the effect of local representation on parliamentary speech mentions

Note: The horizontal axis shows the margin by which the candidate wins a first-tier seat in the current national election. The sample consists of all elections from 1997 to 2013. Speech data is from the Talk of Norway project (Lapponi et al., 2018) which covers the 1998-2016 period and includes 250,000 unique speeches. We exclude speeches by the president and vice-president (73,000 observations), speeches by candidates of non-main parties (2,000 observations), and speeches lacking electoral district information (18,000 observations, typically speeches by cabinet members promoted from outside the Storting). In the top panel, the dependent variable is a dummy variable for if the hometown of a candidate is mentioned by any legislator in the relevant election period. The sample is limited to municipalities with exactly one marginal candidate (from any party), defined as those within 5 percentage points distance from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. In the bottom panel, the dependent variable is a dummy variable for if the hometown of a candidate is mentioned by any legislator from the party of the candidate in the relevant election period. The sample is limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points distance from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. Each bin represents an interval of half a percentage point. Separate linear regression lines are estimated to the left and right of the discontinuity using the underlying data, not the binned scatterpoints.

Table A.1: Descriptive statistics by parliamentary representation, all hometowns

Panel A: Municipality-level outcomes

	No seat	Seat	Difference	N
Local voter turnout (rel. to rest of district, current election)	-0.007	0.004	0.011***	7,889
	(0.044)	(0.034)	(0.001)	
Δ Local voter turnout (rel. to rest of district, next election)	0.001	-0.001	-0.003***	7,031
	(0.026)	(0.019)	(0.001)	
Hometown mentioned in parliament	0.808	0.949	0.141***	2,083
	(0.394)	(0.220)	(0.018)	
New road constructions (meter/100 inhabitants)	0.823	0.562	-0.261**	7,001
	(3.321)	(1.753)	(0.090)	
Central gov. employees (increase/100 inhab.)	-0.006	0.001	0.007	4,357
	(1.263)	(0.633)	(0.041)	
Inv. funding from central gov. (1000 NOK/inhab.)	2.540	1.893	-0.646***	4,217
	(3.249)	(2.161)	(0.110)	
Latitude	62.356	61.888	-0.467***	7,955
	(3.503)	(3.338)	(0.096)	
Longitude	10.521	10.412	-0.109	7,955
	(4.759)	(4.427)	(0.130)	
Area	762.607	721.375	-41.232	7,955
	(877.973)	(835.182)	(24.010)	
Population (1000)	4.599	17.176	12.577***	7,955
	(4.812)	(26.558)	(0.355)	
Regional capital	0.037	0.146	0.109***	7,955
	(0.188)	(0.353)	(0.006)	
National roads (km)	63.986	75.995	12.009***	7,955
	(41.835)	(47.432)	(1.189)	

Panel B: Party-municipality-level outcomes

	No seat	Seat	Difference	N
Local party support (rel. to rest of district, current election)	-0.001	0.031	0.033***	48,048
	(0.071)	(0.079)	(0.002)	
Δ Local party support (rel. to rest of district, next election)	0.000	-0.005	-0.005***	41,415
	(0.026)	(0.029)	(0.001)	
Local candidate ranked first (next election)	0.060	0.473	0.413***	12,332
	(0.238)	(0.499)	(0.008)	
Local candidate ranked second (next election)	0.091	0.230	0.139***	12,332
	(0.288)	(0.421)	(0.008)	
Hometown mentioned in parliament by legislator from same party	0.325	0.865	0.539***	14,581
	(0.469)	(0.342)	(0.018)	

Note: In panel A, the unit of observation is at the municipality-year level. In panel B, the unit of observation is at the party-municipality-year level.

Table A.2: The effects of local representation on party support and turnout, measured in levels instead of changes

Panel A: Change in local party support (relative to rest of district)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	0.016						
	(0.008)						
2nd tier seat	0.017						
	(0.007)						
1st or 2nd tier seat		0.016	0.016	0.011	0.010	0.010	0.012
		(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.007)
Mean of outcome var.	0.029	0.029	0.029	0.029	0.029	0.029	0.030
R-squared	0.03	0.03	0.06	0.12	0.15	0.16	0.03
Observations	1250	1250	1250	1250	1250	1250	1250

Panel B: Change in local voter turnout (relative to rest of district)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	-0.004						
	(0.005)						
2nd tier seat	0.003						
	(0.005)						
1st or 2nd tier seat		-0.002	-0.002	-0.001	-0.002	-0.001	-0.005
		(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Mean of outcome var.	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.00	0.00	0.01	0.03	0.06	0.09	0.00
Observations	671	671	671	671	671	671	671
Time fixed effects	No	No	Yes	Yes	Yes	Yes	No
Party fixed effects	No	No	No	Yes	Yes	Yes	No
District fixed effects	No	No	No	No	Yes	Yes	No
Rank fixed effects	No	No	No	No	No	Yes	No
Kernel	Unif.	Unif.	Unif.	Unif.	Unif.	Unif.	Tria.

Note: In panel A, the dependent variable is the party's vote share in the municipality minus its vote share at the district level (excluding the focal municipality) in the next election. The sample is limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. In panel B, the dependent variable is turnout in the municipality minus turnout at the district level (excluding the focal municipality) in the next election. The sample is limited to municipalities with exactly one marginal candidate (from any party) and no candidate winning a first-tier seat by a larger margin. All specifications include a linear control function on both sides of the electoral threshold and dummies for the periods 1989-2001 and 2005-2009, during which two different systems for allocating second-tier seats were in place. Standard errors are based on a cluster-robust covariance matrix, with clustering on the district level.

Table A.3: The effects of local representation on party support and turnout, including municipalities with multiple marginal and/or safe candidates

Panel A: Change in local party support (relative to rest of district)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	0.010						
	(0.003)						
2nd tier seat	0.010						
	(0.003)						
1st or 2nd tier seat		0.010	0.011	0.011	0.011	0.011	0.008
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Mean of outcome var.	-0.009	-0.009	-0.009	-0.009	-0.009	-0.009	-0.008
R-squared	0.02	0.02	0.03	0.05	0.09	0.10	0.02
Observations	1311	1311	1311	1311	1311	1311	1311

Panel B: Change in local voter turnout (relative to rest of district)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	-0.001						
	(0.001)						
2nd tier seat	0.002						
	(0.001)						
1st or 2nd tier seat		0.000	0.000	-0.000	-0.000	0.000	0.000
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Mean of outcome var.	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002
R-squared	0.00	0.00	0.01	0.01	0.03	0.04	0.00
Observations	1311	1311	1311	1311	1311	1311	1311
Time fixed effects	No	No	Yes	Yes	Yes	Yes	No
Party fixed effects	No	No	No	Yes	Yes	Yes	No
District fixed effects	No	No	No	No	Yes	Yes	No
Rank fixed effects	No	No	No	No	No	Yes	No
Kernel	Unif.	Unif.	Unif.	Unif.	Unif.	Unif.	Tria.

Note: In panel A, the dependent variable is the increase from the current to the next election in the party's vote share in the municipality minus its vote share at the district level (excluding the focal municipality). In panel B, the dependent variable is the increase in turnout in the municipality minus turnout at the district level (excluding the focal municipality). In both panels, the sample is restricted to hometowns of a marginal candidate, defined as those within 5 percentage points from winning a first-tier seat. All specifications include a linear control function on both sides of the electoral threshold and dummies for the periods 1989-2001 and 2005-2009, during which two different systems for allocating second-tier seats were in place. Standard errors are based on a cluster-robust covariance matrix, with clustering on the district level.

Table A.4: The effects of local representation on party support and turnout, excluding elections before municipality mergers (1953-1961)

Panel A: Change in local party support (relative to rest of district)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	0.011						
	(0.004)						
2nd tier seat	0.011						
	(0.003)						
1st or 2nd tier seat		0.011	0.011	0.012	0.012	0.012	0.009
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Mean of outcome var.	-0.009	-0.009	-0.009	-0.009	-0.009	-0.009	-0.008
R-squared	0.02	0.02	0.02	0.05	0.12	0.12	0.02
Observations	1045	1045	1045	1045	1045	1045	1045

Panel B: Change in local voter turnout (relative to rest of district)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	-0.001						
	(0.003)						
2nd tier seat	0.007						
	(0.002)						
1st or 2nd tier seat		0.002	0.001	0.001	0.001	0.001	0.001
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Mean of outcome var.	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
R-squared	0.02	0.01	0.04	0.05	0.09	0.10	0.01
Observations	522	522	522	522	522	522	522
Time fixed effects	No	No	Yes	Yes	Yes	Yes	No
Party fixed effects	No	No	No	Yes	Yes	Yes	No
District fixed effects	No	No	No	No	Yes	Yes	No
Rank fixed effects	No	No	No	No	No	Yes	No
Kernel	Unif.	Unif.	Unif.	Unif.	Unif.	Unif.	Tria.

Note: These specifications exclude observations prior to a number of municipality mergers that occurred during the time period of our main sample (see Figure A.1). In panel A, the dependent variable is the increase from the current to the next election in the party's vote share in the municipality minus its vote share at the district level (excluding the focal municipality). The sample is limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. In panel B, the dependent variable is the increase in turnout in the municipality minus turnout at the district level (excluding the focal municipality). The sample is limited to municipalities with exactly one marginal candidate (from any party) and no candidate winning a first-tier seat by a larger margin. All specifications include a linear control function on both sides of the electoral threshold and dummies for the periods 1989-2001 and 2005-2009, during which two different systems for allocating second-tier seats were in place. Standard errors are based on a cluster-robust covariance matrix, with clustering on the district level.

Table A.5: The effects of local representation on the probability of having a local top candidate in the next election

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	0.297						
	(0.055)						
2nd tier seat	0.467						
	(0.056)						
1st or 2nd tier seat		0.344	0.348	0.289	0.296	0.268	0.318
		(0.054)	(0.055)	(0.052)	(0.051)	(0.055)	(0.054)
Mean of outcome var.	0.307	0.307	0.307	0.307	0.307	0.307	0.324
R-squared	0.10	0.09	0.11	0.20	0.22	0.28	0.10
Observations	1258	1258	1258	1258	1258	1258	1258
Time fixed effects	No	No	Yes	Yes	Yes	Yes	No
Party fixed effects	No	No	No	Yes	Yes	Yes	No
District fixed effects	No	No	No	No	Yes	Yes	No
Rank fixed effects	No	No	No	No	No	Yes	No
Kernel	Unif.	Unif.	Unif.	Unif.	Unif.	Unif.	Tria.

Note: The sample is limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. All specifications include a linear control function on both sides of the electoral threshold and dummies for the periods 1989-2001 and 2005-2009, during which two different systems for allocating second-tier seats are in place. Standard errors are based on a cluster-robust covariance matrix, with clustering on the district level.

Table A.6: The effects of local representation on parliamentary speech mentions

Panel A: Hometown mentioned by any legislator

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	0.140						
	(0.096)						
2nd tier seat	0.132						
	(0.040)						
1st or 2nd tier seat		0.136	0.138	0.149	0.177	0.176	0.140
		(0.064)	(0.064)	(0.071)	(0.073)	(0.076)	(0.072)
Mean of outcome var.	0.900	0.900	0.900	0.900	0.900	0.900	0.894
R-squared	0.05	0.05	0.05	0.07	0.16	0.17	0.07
Observations	221	221	221	221	221	221	221

Panel B: Hometown mentioned by any legislator from the same party

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	0.388						
	(0.041)						
2nd tier seat	0.509						
	(0.040)						
1st or 2nd tier seat		0.453	0.451	0.527	0.522	0.557	0.420
		(0.032)	(0.032)	(0.030)	(0.030)	(0.037)	(0.040)
Mean of outcome var.	0.664	0.664	0.664	0.664	0.664	0.664	0.706
R-squared	0.25	0.24	0.25	0.35	0.40	0.45	0.23
Observations	470	470	470	470	470	470	470
Time fixed effects	No	No	Yes	Yes	Yes	Yes	No
Party fixed effects	No	No	No	Yes	Yes	Yes	No
District fixed effects	No	No	No	No	Yes	Yes	No
Rank fixed effects	No	No	No	No	No	Yes	No
Kernel	Unif.	Unif.	Unif.	Unif.	Unif.	Unif.	Tria.

Note: In the top panel, the dependent variable is a dummy variable for if the hometown of a candidate is mentioned by any legislator in the relevant election period. The sample is limited to municipalities with exactly one marginal candidate (from any party), defined as those within 5 percentage points distance from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. In the bottom panel, the dependent variable is a dummy variable for if the hometown of a candidate is mentioned by any legislator from the party of the candidate in the relevant election period. The sample is limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points distance from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. All specifications include a linear control function on both sides of the electoral threshold and dummies for the periods 1989-2001 and 2005-2009, during which two different systems for allocating second-tier seats were in place. Standard errors are based on a cluster-robust covariance matrix, with clustering on the district level.

Table A.7: The effects of local representation on redistributive policy outcomes

Panel A: New road constructions (meter/100 inhabitants)

	(1) Prev.	(2) Prev.	(3) Curr.	(4) Curr.	(5) Next	(6) Next
1st or 2nd tier seat	0.123	0.032	-0.027	0.077	-0.607	-0.723
	(0.212)	(0.195)	(0.188)	(0.164)	(0.272)	(0.357)
Mean of outcome var.	0.540	0.497	0.544	0.585	0.627	0.615
R-squared	0.01	0.07	0.01	0.08	0.01	0.09
Observations	709	709	662	662	622	622

Panel B: Central government jobs (increase 100/inhabitants)

	(1) Prev.	(2) Prev.	(3) Curr.	(4) Curr.	(5) Next	(6) Next
1st or 2nd tier seat	-0.109	-0.129	-0.053	-0.054	0.068	-0.059
	(0.113)	(0.109)	(0.065)	(0.059)	(0.111)	(0.100)
Mean of outcome var.	-0.046	-0.031	0.039	0.008	0.001	0.033
R-squared	0.10	0.32	0.03	0.20	0.02	0.09
Observations	417	417	467	467	416	416

Panel C: Investment funding (NOK 2015/inhabitant)

	(1) Prev.	(2) Prev.	(3) Curr.	(4) Curr.	(5) Next	(6) Next
1st or 2nd tier seat	77.718	462.375	-172.730	-231.389	66.120	187.144
	(337.907)	(407.182)	(356.541)	(561.056)	(330.357)	(284.308)
Mean of outcome var.	2221.073	2102.874	2168.183	2170.322	1860.082	1861.549
R-squared	0.01	0.28	0.02	0.16	0.01	0.19
Observations	395	395	440	440	390	390
YearFE	No	Yes	No	Yes	No	Yes
PartyFE	No	Yes	No	Yes	No	Yes
DistrictFE	No	Yes	No	Yes	No	Yes
RankFE	No	Yes	No	Yes	No	Yes
Kernel	Unif.	Tria.	Unif.	Tria.	Unif.	Tria.

Note: "Prev.", "Curr." and "Next" refer to the previous, current and next election period, respectively. Policy outcomes are measured at the hometown (municipality) level. In the top panel, the hometowns of candidates are mapped to the municipality structure of 2014. The sample is limited to municipalities with exactly one candidate who is within 5 percentage points from winning a first-tier seat and no candidate winning a first-tier seat by a larger margin. All specifications include a linear control function on both sides of the electoral threshold and dummies for the periods 1989-2001 and 2005-2009. Standard errors are based on a cluster-robust covariance matrix, with clustering on the district level.

Table A.8: The effects of local representation on party support, by government alignment status

Panel A: Candidates from party/parties in government

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	0.008						
	(0.005)						
2nd tier seat	0.010						
	(0.007)						
1st or 2nd tier seat		0.008	0.010	0.011	0.011	0.011	0.006
		(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)
Mean of outcome var.	-0.008	-0.008	-0.008	-0.008	-0.008	-0.008	-0.005
R-squared	0.02	0.02	0.08	0.09	0.12	0.13	0.04
Observations	405	405	405	405	405	405	405

Panel B: Candidates from parties not in government

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st tier seat	0.012						
	(0.004)						
2nd tier seat	0.012						
	(0.004)						
1st or 2nd tier seat		0.012	0.013	0.013	0.012	0.012	0.010
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Mean of outcome var.	-0.009	-0.009	-0.009	-0.009	-0.009	-0.009	-0.009
R-squared	0.02	0.02	0.04	0.06	0.13	0.13	0.03
Observations	845	845	845	845	845	845	845
Time fixed effects	No	No	Yes	Yes	Yes	Yes	No
Party fixed effects	No	No	No	Yes	Yes	Yes	No
District fixed effects	No	No	No	No	Yes	Yes	No
Rank fixed effects	No	No	No	No	No	Yes	No
Kernel	Unif.	Unif.	Unif.	Unif.	Unif.	Unif.	Tria.

Note: The dependent variable is the increase from the current to the next election in the party's vote share in the municipality minus its vote share at the district level (excluding the focal municipality). In panel A, the sample consists of candidates from a party that is in government at the end of the election period (i.e., four years later). In panel B, the sample consists of candidates from a party that is not in government at the end of the period. The sample is further limited to municipalities in which the party has exactly one marginal candidate, defined as those within 5 percentage points from winning a first-tier seat, and no candidate winning a first-tier seat by a larger margin. All specifications include a linear control function on both sides of the electoral threshold and dummies for the periods 1989-2001 and 2005-2009, during which two different systems for allocating second-tier seats were in place. Standard errors are based on a cluster-robust covariance matrix, with clustering on the district level.

Appendix B: Distributive policy outcomes

Our first outcome variable related to distributive politics is construction work on national roads. Due to its large geographical area and relatively scattered settlement pattern, Norway has a wide and diverse network of public roads—overall totaling 94,000 kilometers. The network consists of national, regional, and local roads. The national government is responsible for the national roads, which amounted to 28,000 kilometers before 2010, or roughly five meters per capita.[36] In 2010, a large share of this network was transferred to the regional road network. Public funding of investments in national roads is allocated in the national budget, which is approved by parliament at the end of each calendar year.

The time at which a road project is first proposed and discussed in parliament varies across projects. Since 1970, the government is required to prepare a long-term plan of road projects to be discussed in parliament. In 2002, this plan was replaced by a national transport plan covering all modes of transport. The national plan is not a binding legal document, but rather simply a document of policy intentions. Before receiving funding, a road project has typically been included at least once in the national plan. Parliament is involved earlier in the decision-making process in the case of public toll roads, which must be approved by a vote in parliament.

To identify the local effect of national road policies, we use detailed data on constructions on national roads.[37] More specifically, our data set includes information on all bridges built on national roads over the 1953-2013 period, and is collected from the BRUTUS database of the National Public Roads Administration.[38] Given the topology of Norway, with its many fjords and mountains, bridges are a major component of infrastructure investments.

[36] Road investments made by one level of government are sometimes co-financed by other levels of government.

[37] An alternative would be to use map data to identify expansions of the road network. This is less relevant for the period we study, in which the network was more or less already established.

[38] We only include constructions on national roads, although the central government sometimes grants support to projects on the sub-national level. There are also some cases in the database where the bridge is part of a national road, but listed as part of the local or regional road which it crosses. Data on other types of constructions (e.g., tunnels) is incomplete and is therefore not used in our analysis. Seven municipalities have no national roads, and are excluded from our analysis.

Data on the *investment costs* of road projects is not available at the municipality level. Helland and Sørensen (2009) analyze aggregate road investments at the *election district level*. In Figure B.1, we compare their data on investments with our data on constructions at the district level, both cross-sectionally (left panel) and over time within each district (right panel). The relationship is positive and close to proportional, indicating that bridge constructions are a reasonable proxy for local road investments.

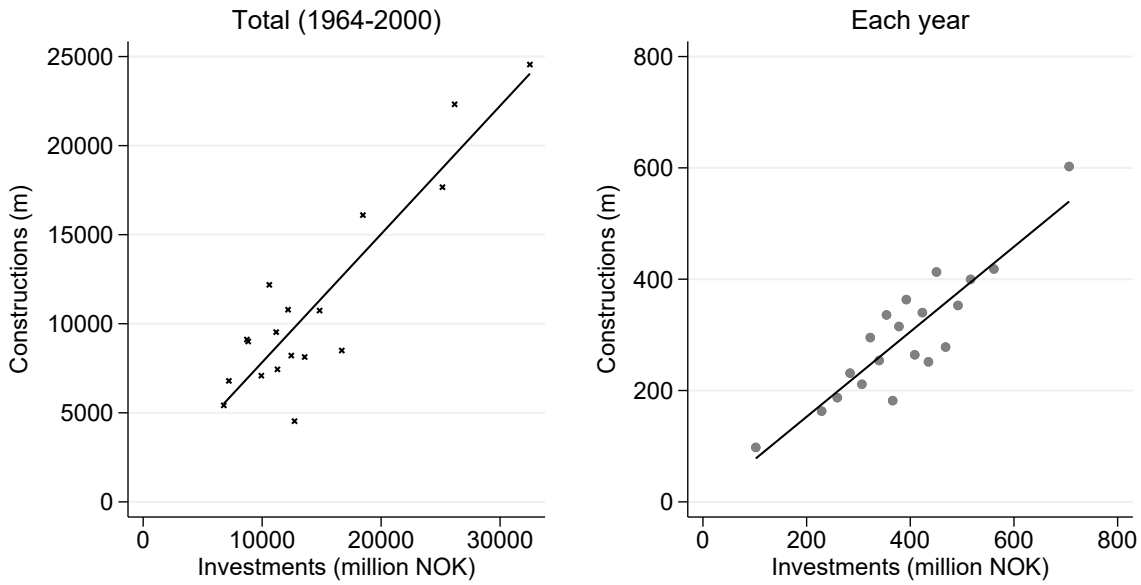

Figure B.1: Bridges on national roads and total road investments in the election district

Note: The vertical axis reports the total meters of new or rebuilt bridges on national roads within the election district. The horizontal axis reports national road investments in the district. The left panel compares total constructions and investments over all years 1964-2000. Each marker (x) in this panel represents one district. The right panel compares constructions and investments per year, controlling for district fixed effects. Each marker (dot) in this panel is a binned scatterpoint containing roughly the same number of observations. The linear regression line is based on the underlying data, not the binned scatterpoints.

Our second outcome variable for redistribution is the number of jobs connected to the central government located within a local municipality. The core government ministries and many of the central government agencies are located in Oslo. However, other central government agencies are located, or have local offices, in other parts of the country. In some cases, the location of a central government agency in a peripheral region is intended to ameliorate lower economic activity in the local private sector due to, for example, structural changes in specific industries. A prominent example is the National Library

of Norway, which established a division in the northern steel industry city of Mo i Rana in 1989 that today accounts for about half of the library's employees.[39] Information on the localization of central government jobs is attached to the national budget documents, and is provided by the Norwegian Centre for Research Data (NSD). The data cover all years from 1974 to 2012, which allows us to measure the growth in central government employment during ten of the election periods in our candidate sample.[40] The left panel of Figure B.2 shows that most municipalities have at least one central government position per 100 inhabitants, and some have many more. The right panel shows that the change during an election period is small in most municipalities, but that there are some municipalities that have experienced large decreases or increases.

Finally, for our third outcome measure, we explore the impact of local representation on fiscal transfers from the central government. While most of the grant allocations from the central government follow objective criteria, we focus on a type of grant where the central government has quite a bit of discretion: funding for local public investments. Based on all local government accounting sheets for each year from 1973-2013, we calculate investment funding per capita during each four-year legislative period between elections starting with 1974-1977 and ending with 2010-2013. In sum, all three measures capture distributive policies which are likely to matter for local welfare.

[39]Mo i Rana was home to the *Norsk Jernverk* public steel company until 1988, when it was divided and privatized. Mo i Rana, with a population of about 18,000, is also home to the fee-collecting office of the public broadcaster NRK, and the central government agency that collects fines and debts to the central government (Statens Innkrevingssentral). Another example is Statistics Norway, which employs over a third of its workers in the city of Kongsvinger, 93 kilometers away from the main office in Oslo. In 2015, Kongsvinger hosted 334 of 877 total employees of Statistics Norway. Kongsvinger also has a population of about 18,000.

[40]Until 1998, government positions were registered in October, but have subsequently been registered in March. Due to data availability issues, our first period of analysis runs from October 1974 to October 1977; the 1993-1997 period runs from October 1993 to March 1998; the 1997-2001 period runs from March 1998 to March 2001; and the last period runs from March 2009 to March 2012.

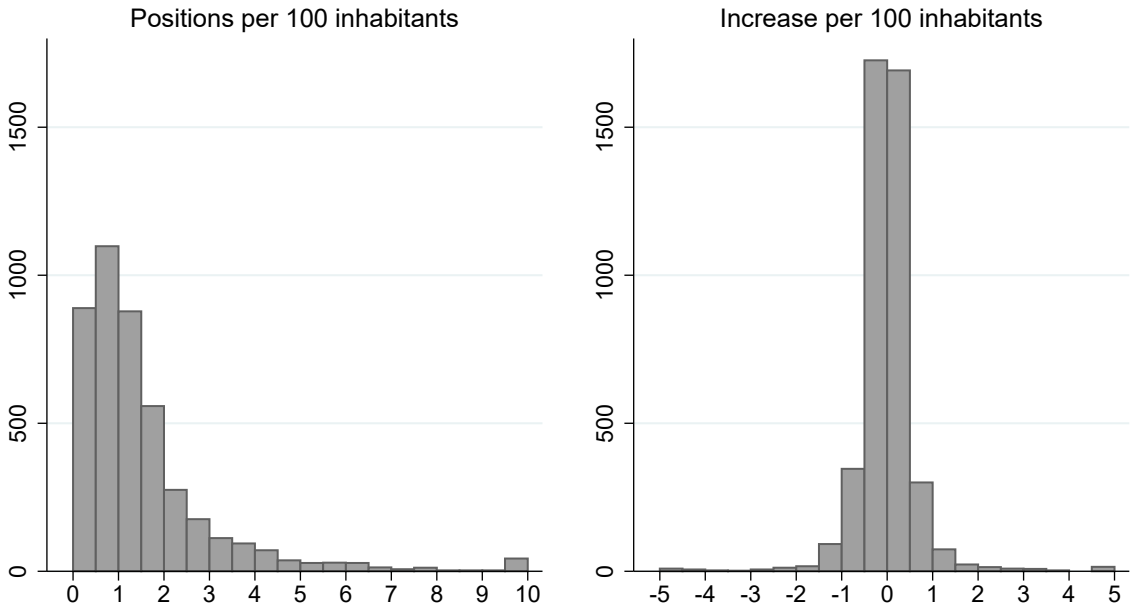

Figure B.2: Central government jobs in the municipality

Note: The left panel shows the frequencies by the number of jobs per 100 inhabitants by the beginning of the election period. The right panel shows the change in the same measure from the beginning of the election period to the beginning of the next election period, censored at −5 and +5 employees per 100 inhabitants. Each bar has a width of 0.5. The sample consists of election periods from 1973-1977 to 2009-2013.