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Seat competitiveness and redistricting: Evidence from voting on municipal mergers

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Abstract

We analyze how (anticipated) changes in the competitiveness of the seats of municipal councilors affect their voting behavior over municipal mergers. The competitiveness of the seats changes because the merger changes the composition of political competitors and the number of available seats in the next election. We use this variation for identification and find that the smaller the increase in the competitiveness of a councilor's seat, the more likely he is to vote for the merger. These effects are not related to the behavioral responses of the voters, but arise from the councilors' desire to avoid electoral competition.

Key words: Seat competitiveness, local politics, municipal mergers

JEL classification numbers: H11, H77, C34, C35, C36, D72

Tiivistelmä

Tässä tutkimuksessa analysoidaan yksilöaineistoa käyttäen, miten kunnan-valtuutettujen huoli valtuustopaikkojensa kilpailullisuuden muutoksesta vaikuttaa heidän äänestyspäätöksiinsä kuntaliitosäänestyksissä. Valtuustopaikkojen kilpailullisuus muuttuu kuntaliitoksissa, koska liitos muuttaa seuraavien kuntavaalien poliittista kilpailua ja valtuustopaikkojen määrää. Hyödyntämällä tätä vaihtelua havaitsemme, että mitä vähemmän valtuutetun valtuustopaikan kilpailullisuus kiristyy, sitä todennäköisemmin valtuutettu äänestää kuntaliitoksen puolesta. Tulokset eivät selity äänestäjien käyttäytymisellä, vaan johtuvat siitä, että valtuutetut haluavat välttää kilpailua valtuustopaikoista.

Asiasanat: Uudelleenvalinta, kunnallispolitiikka, kuntaliitokset

JEL-luokittelu: H11, H77, C34, C35, C36, D72

Contents

1. Introduction

Do politicians *want* to reset the boundaries of their constituencies, if given a chance to cast a vote in favor of such a change? If not, why? Do they fear the ensuing mechanical effects, which mirror how votes are transformed into seats for a given vote distribution? Or do they want to escape behavioral effects (i.e., "psychological effects", as Duverger (1954) called them), which describes how voters react to a boundary change?

To answer these questions − even tentatively − turns out to be surprisingly hard despite the large cumulative literature on the effects of redistricting on electoral outcomes (e.g., Gelman and King 1990). As the U.S. evidence shows, the answer seems to depend in a subtle fashion on by whom and how the district boundaries are redrawn (e.g., Gelman and King 1994, Carson and Crespin 2004) as well as on how easily the politicians can anticipate and prepare for the political consequences of redistricting (Boatright 2004). The tradeoffs are real and severe, as redistricting may for example lead to a loss of the incumbency advantage (i.e., personal vote, see Desposato and Petrocik 2003).

The question of whether politicians want to redraw the boundaries of their constituencies is even harder to answer once we recognize that redistricting is often − especially outside the U.S. − intimately related to the integration or disintegration of local governments and to the associated resetting of local administrative boundaries, i.e., to fiscal federalism in its various forms (see Oates 1999). Both redistricting and resetting of the boundaries of local governments are among the most sensitive and conflict-prone issues in local politics. They also have a number of other common denominators: First, as the received literature on redistricting suggests, they both may change electoral outcomes, for example by either reducing or increasing seat competitiveness.[1] Second, they both affect the ability and willingness of the politicians to attend to the needs of their constituencies. For example, regional heterogeneity in voter preferences favours both smaller electoral districts and secession at the local level (see, e.g. Miceli 1993, Alesina and Spolaore 1997, 2003). Redistricting and resetting of the local government boundaries may also fundamentally shape policy outcomes.[2]

Further, political separation of regions is rarely desirable from an economic efficiency point of view (Bolton and Roland 1997). The two strongest arguments for this in the current context are the more efficient provision of local public

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[1] See, e.g., Gelman and King (1994), Desposato and Petrocik (2003) and Carson and Crespin (2004). Coate and Knight (2007) consider socially optimal redistricting and the role of seat competitiveness therein.

[2] See, e.g., Ansolabehere, Gerber and Snyder (2002) and Besley and Preston (2007) on how redistricting influences policy outcomes.

goods (due to better coordination and economies of scale; see also Alesina and Spolaore 1997, Ellignsen 1998) and the observation that most of the benefits of local secession can be contractually or administratively replicated by a suitable degree of decentralization of authority within the non-separated regions.

Taken together, the foregoing suggests that there is a myriad of interdependent mechanical and behavioral effects which determine whether incumbent politicians would want to redraw the boundaries of their constituencies. We aim at quantifying one of them, the behavioral response of incumbent politicians to (anticipated) political consequences of a change in the boundaries of their constituencies. Following the recent work by Blais, Lachat, Hino and Doray-Demers (2011) and Fiva and Folke (2012) on the mechanical and behavioral effects of electoral reforms, we analyze, in particular, how certain well-defined mechanical changes in the competitiveness of the seats of municipal councilors affect their voting behavior using data from a recent wave of municipal mergers in Finland.

A unique feature of this paper's empirical context is that it is about local politicians deciding whether or not to vote for a municipal merger and the immediate re-election consequences of this decision. The voting decision is directly linked to the future competitiveness of the councilors' seats because if the merger goes through, it changes not only the composition of voters but also the set of political competitors in the next election and the (relative) size of the municipal council. This set up allows us to study whether the councilors want to vote for the proposed resetting of the constituency boundaries in the light of the mechanical changes that such a change induces in the competitiveness of their seats. Moreover, as we show shortly, a decomposition of these mechanical changes makes it possible for us to study *why* the politicians react in the way they do.

Our analysis differs from the prior work in two important ways: First, unlike the earlier empirical literature on the effects of redistricting on politician behavior in the U.S. (Glazer and Robbins 1985 and Levuax-Sharpe 2001, Boatright 2004), we examine directly how the expected change in seat competitiveness due to redistricting influences the politicians' stance toward it. Second, our analysis differs from the prior work by Blais et al. (2011) and Fiva and Folke (2012), because these papers study the mechanical and behavioral effects of electoral reforms on *ex post* electoral outcomes, such as the vote obtained by parties, disproportionality, and the (effective) number of parties. Our analysis focuses instead on estimating the feedback effect of the mechanical change in seat competitiveness on the *ex ante* behavior of politicians. It is *not* known *a priori* how the councilors react, because the proposed merger can either increase or decrease the competitiveness of their seats.

Our key empirical finding is that a councilor is more likely to vote for a merger if the competitiveness of his seat does not increase in the merger state relative to the status quo of no merger. Moreover, we find that changes both in the composition of voters and political competitors as well as in the relative size of the municipal councils are important in explaining this behavioral response. This suggests that politicians pay a lot of attention to whom they compete with, and also to competition *per se*.

Our results bear directly also on the literature on fiscal federalism and, in particular, on the literature on the optimal formation of local governments. It seems that if boundary setting is delegated to the local level, local politicians' desire to avoid political competition may lead to sub-optimal mergers from the point of view of the society at large. This lesson ought to be of wider interest, because almost all nations have decentralized the provision of some basic public services to local governments and because their boundaries are, every now and then, in flux and reset.[3]

The remainder of this paper is as follows: In the next section, we describe the institutional framework and our data. We present our econometric approach in Section 3, where we e.g. explain how we measure the behavioral response of incumbent politicians to the anticipated political consequences of a change in the boundaries of their municipals. We report our main results in Section 4. Section 5 concludes.

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[3] How nations reset the boundaries of local governments appear to differ. For example, in Belgium, Canada, Denmark, Israel and Sweden mergers were implemented, or at least strictly overseen, by the central government, whereas in Finland, Germany and Japan recent merger decisions were made at the local level by local politicians. In the Netherlands, both types of mergers have occurred.

2. Institutional background and data

Our analysis uses data from Finnish municipalities and concentrates on the behavior of municipal councilors who were elected in 2004 for a four year term and who voted for municipal mergers that eventually took (or, if turned down, did not take) place between 2007 and 2009.

2.1 Local decision making and municipal mergers

In Finland, public goods and services are provided by two tiers of government where municipalities constitute the local level. The Finnish public sector is highly decentralized and municipalities are responsible for providing more services than in most other countries, including social and health care services and primary education. Municipalities are therefore of considerable importance to the whole economy, with the GDP share of municipality spending being roughly 18%.

The number of municipalities is high relative to population, with a large variation in municipal population size. During the past decade smaller municipalities have found it increasingly difficult to provide the large scale of services that they are responsible for. These difficulties are due to many things, such as population aging and internal migration from rural to urban areas. As a result of this, there has been a constant pressure to reduce the number of municipalities in recent years.

Each municipality has a council which is responsible for all major strategic and financial decisions.[4] Councils are elected every four years using *open list* elections, which apply the D'Hondt method. Parties select the candidates but voters determine their order within the lists.[5] Each municipality has only one electoral district. Council size is a step function of the municipality's population and is determined by law as follows: 13, 15 or 17 for municipal population 2000 or less, 21 for 2,001–4,000; 27 for 4,001–8,000; 35 for 8,001–15,000; 43 for 15,001–30,000; 51 for 30,001–60,000; 59 for 60,001–120,000; 67 for 120,001–250,000; 75 for 250,001–400,000 and 85 for over 400,000.

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[4] The council also chooses the municipal board, which has a preparatory role. The composition of the board is based on party shares in the council, i.e., each party in the council get seats in the municipal board according to their share of council seats.

[5] In the *open list* D'Hondt method, each voter casts a single vote to a single candidate. Parties gain seats based on the sum of votes that their candidates get. Within the parties, the seats are allocated by ranking the candidates based on their individual votes. There are eight parties in the Finnish parliament, which also dominate the municipal politics. Some local single-issue groups exist as well. The parliament and municipal councils are dominated by the three biggest parties with a combined overall share of votes of around 60 percent in both 2004 and 2008 elections.

Being a member of a municipal council is a part-time job, with meetings taking place monthly. There are limited direct pecuniary rewards from having a seat in the council.[6] Of course, holding a council seat can also generate indirect rewards, such as prestige, better chances of getting elected in the national parliamentary elections and improved non-political labor market prospects.

Mergers between municipalities are voluntary and the municipality councils are allowed to decide which potential mergers they consider. A typical merger process is as follows: After an initial feasibility study, the municipal boards make a proposal of the merger to the municipal councils. This proposal is voted on by the councils. In about half the cases, the potential merger includes more than two municipalities. If the proposed merger gains a majority in all the participating councils, the merger goes through. If not, it is cancelled and the municipalities continue as they were. In general, the merger votes are conducted simultaneously among the municipalities contemplating a merger.[7]

2.2 Data sources

We have collected data on how each individual councilor voted in the merger votes. These data were collected separately from each municipality and were often available online. We have linked these voting data to the data on municipal elections held in 2004 and 2008. These elections data were provided by the Ministry of Justice.[8] We were able to match the data on voting and re-election for 3,804 individual councilors coming from 135 municipalities and 59 (potential) municipal mergers. Out of the 135 municipalities in our data, 99 underwent eventually a merger.[9]

Besides data on the election outcomes, such as the number of votes the councilors received in the 2004 elections and whether they ran and were re-elected in 2008, we have data on the councilors' age, sex, and whether they have served more than one term. In addition to this, we have augmented our data by variables describing different municipal characteristics, such as population and mean income, provided by the Statistics Finland. Moreover, we used geographic information system techniques and Statistics Finland grid data to calculate the

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[6] The reward consists mainly of meeting fees, which vary roughly from 50 Euros to more than 300 Euros per meeting. There are also separate fees for subcommittee meetings, such as the subcommittee of education or health care. Council and municipal board chairmen also get an annual fee on the top of the basic meeting fees. All the fees increase with municipality size.

[7] The timing is not entirely simultaneous, because the lengths of council meetings differ. Moreover, it seems that in some rare cases, the voting was sequential on purpose.

[8] The data are managed on behalf of the Ministry of Justice by a commercial operator (Tieto Oyj).

[9] In a few cases, the same municipality was involved in two separate merger votes during the time period. These were, however, separate merger processes. For example, the city of Rauma underwent one merger in 2007 and another in 2009.

mean distance of municipal population to the center of the municipalities that contemplate a merger.

To give a flavor of our data, Table 1 reports the share of councilors who voted for a merger, conditional on the merger and re-election outcomes in 2008.[10] It shows, for example, that out of the councilors who are from the municipalities that merged and who were re-elected in 2008, 91% voted for the merger. The share is a bit lower, 88%, among the councilors who are from the municipalities that merged and who were not re-elected. The difference between these two shares (+3 %-points) is much larger than the corresponding difference among the councilors who are from the municipalities that did not merge (-11 %-points).

Table 1   *Conditional voting behavior*

	Re-election = 1	Re-election = 0	
Merger = 1	91.22 %	87.83 %	89.15 %
Merger = 0	54.12 %	65.73 %	60.63 %
	79.77 %	81.95 %	

Note: The numbers correspond to the share of councilors who voted for a merger in each cell.

The differences in Table 1 are consistent with the view that the re-election prospects of councilors influenced their voting in the merger votes, but obviously, the reverse is also possible. This means that how the re-election prospects affected the merger vote cannot be inferred from the raw data. For that, a more principled econometric approach is needed.

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[10] The 2008 elections were conducted using the new merged municipalities as constituencies even if the subsequent merger effectively took place at the start of 2009. The election dates are fixed and elections are held simultaneously in all municipalities. After a merger, there are no guarantees that the "old" municipalities get any representation in the new council. Further descriptive statistics can be found from Appendix A and B.

3. Econometric approach

3.1 Mechanical and behavioral effects

Building on the seminal insights of Duverger (1954), Blais et al. (2011) and Fiva and Folke (2012) have recently explored how the mechanical and behavioral effects of electoral reforms can be estimated. We follow their lead.

In our context, the resetting of municipal boundaries gives rise to three main effects. We consider each of them in turn:

First, for a given vote distribution, the resetting of municipal boundaries results in a mechanical effect, which mirrors how *differentially* the votes of the candidates of the merging municipalities are transformed into seats if their municipalities merge, as compared to them not merging.

Second, the resetting of municipal boundaries may lead to a behavioral effect of voters who in the subsequent 2008 election decide how to react to the merger, as compared it not having taken place. The vote distribution of the 2004 election does not contain information on such voter reactions, whereas that of the 2008 election does.

Third, there is a potential behavioral effect by the councilors, which can appear in two varieties. On the one hand, there is an *ex post* behavioral effect by the councilors, as the resetting of municipal boundaries may change for example their willingness to rerun for a seat as well as their campaign efforts in the 2008 election, as compared to the state of affairs when the boundaries remain intact. On the other hand, there is an *ex ante* behavioral effect, which mirrors the proactive behavioral response of the incumbent politicians to the anticipated political consequences of a change in the municipal boundaries.

We focus on quantifying the *ex ante* behavioral effect of the councilors. We do so by studying how the mechanical effect changes the competitiveness of the seats of the municipal councilors and how this (anticipated) change in the seat competitiveness then feeds back to the councilors' voting behavior when they vote for the proposed merger.

A priori, it is *not* known how the anticipated change in the seat competitiveness feeds back to the councilors' voting behavior in the merger vote. The reason for this is that if the merger goes through, it i) changes the composition of voters, ii) mixes the set of political competitors from the merging municipalities (which correspond to the electoral districts in the 2004 election) and iii) reduces the size of the municipal councils relatively to the size of the municipalities. As the prior literature on redistricting suggests (e.g., Gelman and King 1994, Desposato and Petrocik 2003, Carson and Crespin 2004), the first two of these can either

increase or decrease the competitiveness of a given councilor's seat. However, the expected effect of the change in the council size is that it increases the competitiveness of seats. The reason for this is that council size is, by law, an increasing but concave function in the population of the municipalities.

3.2 Measuring seat competitiveness

As Folke (2011) has stressed, measuring closeness of elections – and thus seat competitiveness – is not straightforward in proportional election systems. Under the (open-list) D'Hondt method, where voters cast votes to individual candidates and where the seats are allocated to multiple parties based on the total vote count of the parties' candidates, a candidate can be a close competitor to multiple candidates both from his/hers own party and from the other parties. This means that a small change in the number of votes to the candidate or to the other candidates can change the election outcome for a given candidate. There are therefore many potential counterfactual election outcomes for a given candidate. In particular, the election outcome for candidate i can change when candidate j wins votes from candidate k, even if i's own vote share does not change.

Our aim is to study how the voting behavior of councilors varies with the anticipated change in the competitiveness of their seats. We therefore need a measure that is capable of capturing such a change in the seat competitiveness in the Finnish proportional election system.

To this end, we study a well-defined mechanical change in the seat competitiveness and resort to a bootstrap elections procedure to generate counterfactual election outcomes. We explain these two important ingredients of our empirical approach next.

Mechanical change in seat competitiveness

We define the *mechanical change in seat competitiveness* for councilor i as ($p_{1i} - p_{0i}$), where p_{0i} and p_{1i} are proxies for the security of the seat of the councilor in the 2008 elections in the no-merger state (p_{0i}) and the merger state (p_{1i}), respectively. We calculate these proxies as if all the voters voted or abstained as they did in the 2004 (pre-merger) elections, but mimic uncertainty related to the election outcomes using the bootstrap procedure (explained below).

As defined, the mechanical change in seat competitiveness is convenient for three reasons. First, it allows us to abstract from the behavioral effect of voters in the subsequent 2008 election. It is hard to capture such effects empirically, especially if resetting the municipal boundaries cuts some voters loose from their old representative in a heterogeneous way, as the work by Desposato and Petrocik (2003) suggests. Second, it also is harder for the incumbent politicians to predict how voters react in the subsequent 2008 election than to anticipate the likely

effects of the mechanical change. This is important, because we aim at quantifying the *ex ante* behavioral reaction of the councilors to an anticipated change in the seat competitiveness. Anecdotal evidence moreover suggests that the difference between p_{1i} and p_{0i} corresponds to the intuitive thinking of the incumbent Finnish councilors about how a merger affects their re-election prospects.[11] Finally, focusing on the mechanical change in seat competitiveness is a means to study the *ex ante* reactions of the councilors. This means that we can abstract from the myriad *ex post* behavioral reactions by councilors (e.g., Boatright 2004), as they learn more about the new environment and prepare for the 2008 election.

Bootstrap procedure

We measure p_{0i} and p_{1i} by using a bootstrap elections procedure, which allows us to create a set of counterfactual re-election prospects.[12] The procedure uses information on the identity of the candidates, the vote distribution from the 2004 election and the number of available seats both in the 2004 and 2008 elections.

The procedure consists of three steps: First, we sample votes with replacement for each candidate from the vote distribution of the 2004 municipal election. The sampling probability of a vote for a candidate is the share of the votes that he or she received in the 2004 election. Repeating this vote sampling many times produces a set of votes for each candidate. Second, we use the sampled votes to calculate a hypothetical election outcome using the actual election rules. Third, we repeat this bootstrap election many times (S = 10 000) and count the share of times a particular candidate is elected. This share is our measure of seat competitiveness.[13]

We measure the competitiveness of the seat of a councilor in two ways. First, we use the 2004 municipalities as the constituencies in the bootstrap procedure, irrespectively of whether the merger actually took place or not. This gives us p_{0i}. Second, we repeat the bootstrap procedure as if all the mergers took place. The hypothetical post-merger constituencies are constructed by allowing both the set of candidates and voters as well as the number of available council seats to mirror the properties of the post-merger entity. For example, the number of available council seats is determined by the legal limit, which is a function of the

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[11] This is what a number of councilors have explicitly shared with us in confidential discussions and what can be inferred from public discussion, both in the media (e.g., http://yle.fi/uutiset/kuntapoliitikot_vastustavat_kuntaliitosta_-_perusteluna_lahidemokratia/5672050, in Finnish) and councilors' own online blogs (e.g., http://www.eskorepo.net/, in Finnish).

[12] The use of simulated elections to generate counterfactual outcomes is widespread. We follow here Kotakorpi, Poutvaara and Terviö (2012), who use the procedure to identify close winners and losers in a proportional election system for an RDD analysis.

[13] Further details of the procedure are explained in Appendix C.

population of the merged entity. We do this for all considered mergers, irrespectively of whether they eventually took place or not. This gives us p_{1i}.

We obtain a measure for the mechanical change in seat competitiveness as $(p_{1i} - p_{0i})$. This total mechanical change in seat competitiveness arises, as mentioned above, from three sources. First, the number of available council seats diminishes after a merger due to the council size rule. Second, the set of candidates change. Third, if the merger goes through, it changes the composition of voters, even for the given vote distribution from the 2004 election. This matters, because the number of seats that a party obtains is affected by how the votes are distributed over all the parties.[14]

We can make use of these various sources of variation to further dissect the mechanical change into its sub-components. The first sub-component relates to the change in the set of candidates and voters. The second is due to the reduction in the relative number of seats.

To identify the first of these two sub-components, we repeat the above bootstrap procedure as if all the mergers had taken place, but with the new council size being equal to the sum of the pre-merger council seats (instead of its actual legal size). This means that each councilor competes in these bootstrap simulations in the new, merged constituency with all the candidates from the merging municipalities, but with the twist that the overall number of available seats is not reduced as the law would require. We call this variable $\tilde{p}_{1i}$ and define $(\tilde{p}_{1i} - p_{0i})$ as the *competition mechanism*. This change in seat competitiveness arises, because the set of candidates that compete for the council seats changes for a given vote distribution from the 2004 elections.

Subtracting the competition mechanism from the total mechanical change gives the change in seat competitiveness that is due to the change in the number of council seats. This gives us the second sub-component, which we call the *council size mechanism*. It is equal to $\left(p_{1i} - \tilde{p}_{1i} \right) = \left(p_{1i} - p_{0i} \right) - \left(\tilde{p}_{1i} - p_{0i} \right)$.

Descriptive statistics of changes in seat competitiveness

The histograms for the seat competitiveness variables are presented in the three panels of Figure 1.

The histogram of p_{0i} is displayed in Panel A. It shows that the probability distribution has a lot of mass on the right. This means that it is very likely that many of the existing councilors *would* be re-elected in the 2008 election, if it was

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[14] That is, all the voters that reside in the merging municipalities other than a councilor's (prior) home municipality are "new" from his perspective and matter for the electoral outcome, even if the vote distribution of the merging municipalities is held constant.

organized so that the contemplated merger did not take place and voters behaved like in the 2004 election. The reason for why the probability of re-election is less than one for some of the councilors is related to them being marginal (i.e., lucky) and subject to electoral competition.

The histograms of $\tilde{p}_{1i}$ and p_{1i} are displayed in Panels B and C, respectively. They show, in turn, that holding other things constant (but for the merger outcomes), the contemplated mergers have a large mechanical effect on the election outcomes. The mass on the left of these histograms means that it is likely that a number of the existing councilors *would not* be re-elected in the 2008 election if it was organized so that the contemplated merger took place and voters behaved like in the 2004 election. These potential drop-outs are typically councilors from the smaller municipalities that are contemplating a merger with a larger municipality.

Figure1   *Histograms of p_{0i} (Panel A), $\tilde{p}_{1i}$ (Panel B) and p_{1i} (Panel C)*
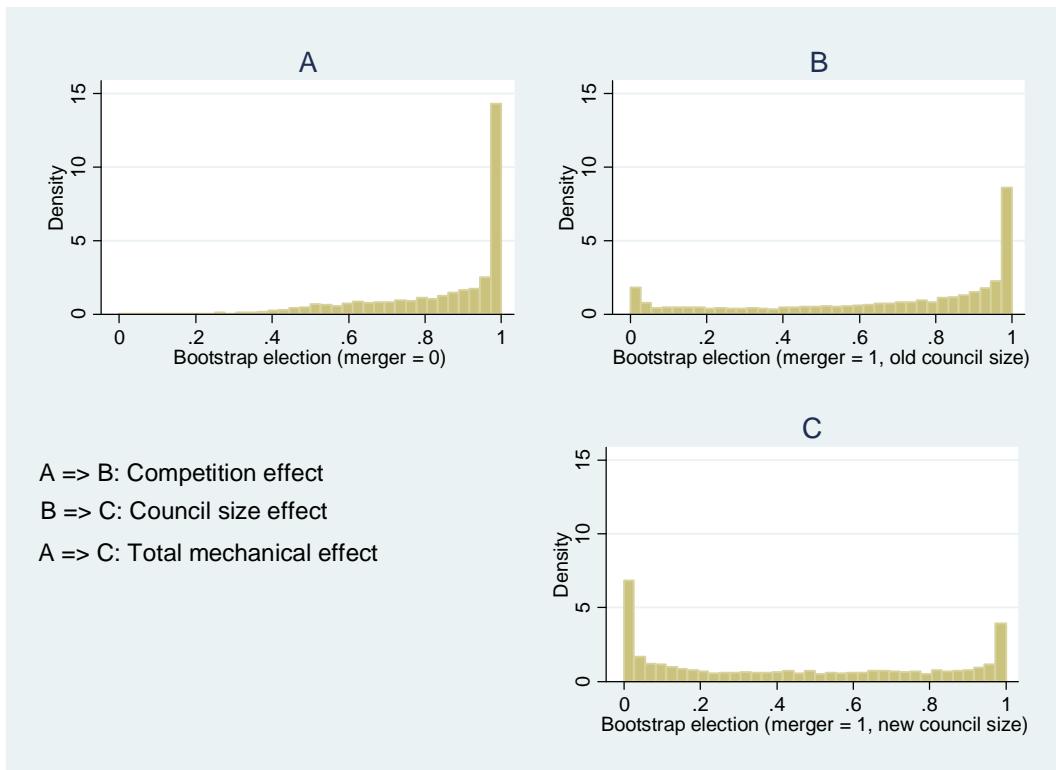
In Figure 2, we display the sub-components of the total mechanical effect. First, as the panel titled B-A shows, the competition mechanism decreases the seat competitiveness of some candidates, but hurts others'. Second, the council size mechanism is shown in the panel titled C–B. This mechanism hurts most of the candidates, but, as expected, benefits no one. Third, the total mechanical change

is displayed in the panel titled C–A. It shows that the merger increases the competitiveness of seats of most of the candidates, but actually benefits some rare candidates. Those who appear to benefit were typically marginal in the 2004 election in a municipality that then subsequently contemplated a merger with a much smaller municipality.

Overall, there is a lot of variation in our bootstrapped measures for seat competitiveness and in the total mechanical change over the candidates. The measures seem to work as expected (e.g., the council size mechanism is negative for everybody) and mirror what they were constructed for.

Figure 2   Histograms of competition and council size mechanisms and their sum
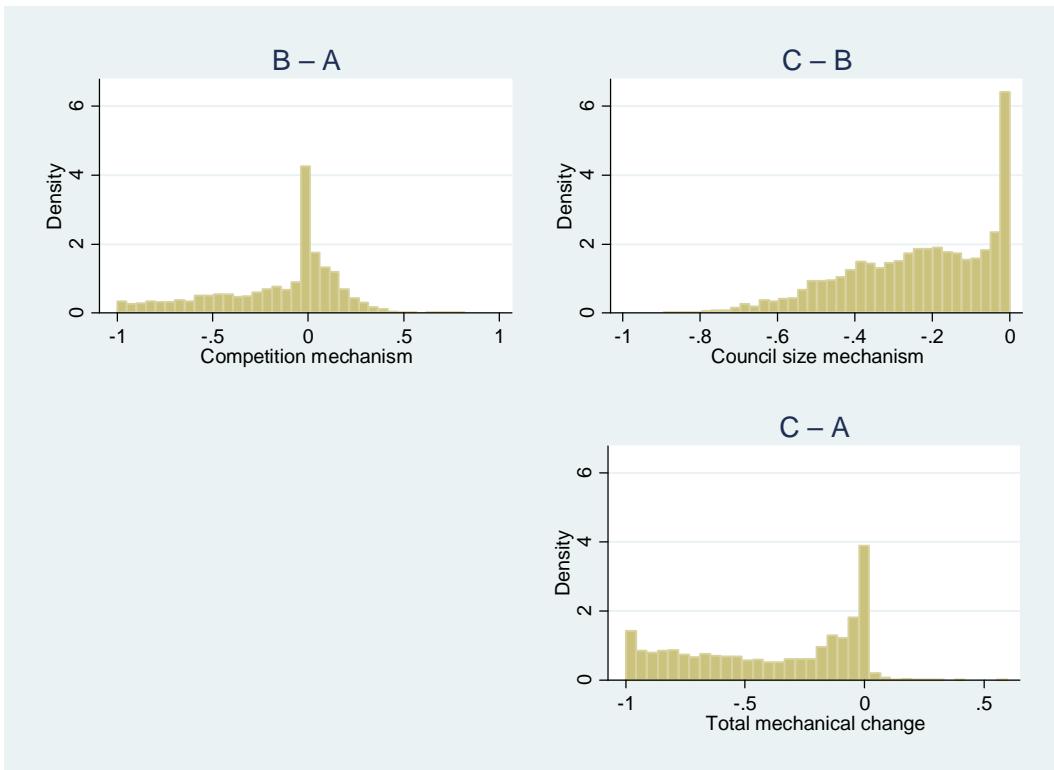
Table 2 reports descriptive statistics for the seat competitiveness measures unconditionally and conditional on the councilors' voting behavior and merger outcomes. The upper part of the table shows that the competition and council size mechanisms as well as the total mechanical change are on average more negative in the group of councilors who voted against the merger than they are in the group of councilors who voted for the merger. This means that the councilors who voted in favor of the mergers experience a smaller increase in the competitiveness of their seats. This is mostly due to a difference in p_{1i} (and $\tilde{p}_{1i}$)

between the two groups. The lower part of the table shows that there are similar differences if the numbers are conditioned on the merger eventually taking or not taking place.

Table 2 also shows that the mean of p_{0i} does not vary a lot between those councilors who voted for the merger and who did not vote for it, or between those who come from the merging municipalities and who come from the municipalities that did not eventually merge. Since this measure of seat competitiveness is based on the pre-merger 2004 vote distribution, it can be seen as a measure of the level of political competition in the municipalities at the time the mergers were contemplated. This suggests that a large part of the cross-sectional variation in the mechanical *change* in seat competitiveness is driven by the variation induced by the mergers, and not by variation in the seat competitiveness in the pre-merger municipalities.

Table 2   *Descriptive statistics of the seat competitiveness measures*

	All		Vote = 0		Vote = 1	
	Mean	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Number of councilors	3,804		720		3,084	
p_0	0.841	0.195	0.854	0.188	0.838	0.196
$\tilde{p}_1$	0.664	0.333	0.576	0.325	0.684	0.332
p_1	0.433	0.367	0.309	0.324	0.462	0.370
Competition mechanism	-0.177	0.333	-0.278	0.306	-0.153	0.334
Council size mechanism	-0.231	0.184	-0.267	0.180	-0.223	0.184
Total mechanical change	-0.408	0.352	-0.544	0.308	-0.376	0.354
			Merger = 0		**Merger = 1**	
			Mean	**Std. Dev.**	**Mean**	**Std. Dev.**
Number of councilors			1,077		2,727	
p_0			0.852	0.192	0.836	0.196
$\tilde{p}_1$			0.611	0.350	0.685	0.324
p_1			0.353	0.353	0.464	0.368
Competition mechanism			-0.241	0.348	-0.152	0.323
Council size mechanism			-0.258	0.188	-0.221	0.182
Total mechanical change			-0.499	0.346	-0.372	0.348

3.3 Econometric specification and estimation

Our empirical analyses use variants of the following econometric model

$$(1) \qquad v_{ikm} = \mathbf{x}'_{ikm}\boldsymbol{\beta} + \mu_k + \mu_m + \delta\left(p_{1i} - p_{0i}\right) + u_{ikm},$$

where v_{ikm} equals one if councilor i representing party k from municipality m votes in favor of the merger (and is zero otherwise); $\mathbf{x}_{ikm}$ is a vector of control variables; μ_k is a party fixed effect; μ_m is either a merger fixed effect or a municipality fixed effect depending on the model specification[15]; and $(p_{1i} - p_{0i})$ is our measure for the total mechanical effect of the merger on seat competitiveness. In alternative specifications, we decompose the effect of the total mechanical effect into the effects of the competitive and council size mechanisms by replacing $(p_{1i} - p_{0i})$ with $(\tilde{p}_{1i} - p_{0i})$ and $(p_{1i} - \tilde{p}_{1i})$.

We are interested in the parameter δ, which captures the effect of the mechanical change in seat competitiveness on councilors' voting behavior. We estimate it using variation in $(p_{1i} - p_{0i})$, which comes from the exogenous council size rule and from how the 2004 votes are distributed over the *other* candidates.

We control for the merger and, alternatively, municipal fixed effects for a number of reasons. On the one hand, the expected gains from the mergers may differ in various dimensions, such as the perceived economies of scale in the provision of local public goods, in the new entity's ability to cater to the heterogeneous preferences of voters and in its ability to internalize externalities in the provision of local public goods. Moreover, voting for a merger is a policy choice. It is therefore likely that it is at least partly driven by the municipals' past policy choices, which in turn may be correlated with the municipal-level averages of $(p_{1i} - p_{0i})$. On the other hand, the merger or municipal level fixed effects account for the fear that a merger will result in closing down of local services (e.g. elementary schools) in the smaller municipalities. It is important to control for this fear, because it may be correlated with changes in seat competitiveness. It is, if the councilors of the smaller municipalities are more likely to lose their political power as a result of the merger.[16]

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[15] The merger fixed effects refer to the constituencies that would result from the municipal mergers if they go through.

[16] See e.g. Knight (2008) on the link between regional representation in a legislative body and the geographic distribution of centralized spending.

The inclusion of the merger or municipal level fixed effects can also be motivated by a concern of sample selection.[17] To see why, it is useful to recall that sample selection due to unobservables can be formulated as an omitted variable problem (Heckman 1979). This problem can be corrected for by introducing the inverse Mills' ratio as an additional explanatory variable. Since the decision to vote for a merger is decided at the municipal level, selection into our sample on the basis of unobserved municipal level characteristics can be controlled for by using the municipality fixed effects.

We include a number of explanatory variables in our vector of control variables, $\mathbf{x}_{ikm}$. These explanatory variables are added to (1) in groups that refer to individual controls (i.e., councilors' characteristics), the vote shares of the councilors, as well as to party, municipality and merger-level explanatory variables.

The group of individual (councilor-level) controls includes gender, age, age squared, party affiliation and an incumbency dummy.[18] We control directly for the vote shares of each councilor at both the municipal and merger level in the regressions in order to focus on the variation in the distribution of votes over the other candidates. These vote shares of the councilors refer to the individual councilor's vote share in the old municipality and to the corresponding (hypothetical) share in the contemplated merger, as calculated using the 2004 vote data. These variables allow us to control, for example, for within-municipality variation in the perceived councilor-level costs and benefits of the mergers to the extent that they are correlated with the vote shares.

In order to capture the role of parties, we control for the mergers' mechanical effects on the parties' electoral success in the merging municipalities. We include these controls, because the *change* in the parties' success may be correlated with the anticipated change in the councilors' seat competitiveness. If they are, it could lead to an endogeneity problem. To account for this, we use two measures that mimic the councilor level change in seat competitiveness. First, we control for the change in the expected seat share of the party of a councilor, where the party's share refers (narrowly) to his/her party's share, as calculated using the boundaries of the 2004 constituencies. Second, we control for the same expected change in the seat share, but with the twist that the party's share refers to his/her

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[17] If sample selection is related to observable explanatory variables, it does not induce a bias in the standard OLS estimation. It could be, for example, that the municipalities that decided to vote for a merger are those where the adverse changes in seat competitiveness are smaller than in the municipalities that did not decide to have a vote. This kind of selection is not a source of concern to us.

[18] We also include a dummy for the rare cases where a vice-councilor voted in the merger-vote because the actual councilor was absent. See Appendix A for a further discussion.

party's share, as calculated for the constituencies that would follow if all the mergers took place.[19]

Finally, the groups of municipality and merger-level explanatory variables include population, per capita mean income, median population distance from the municipal center, unemployment, dependency ratio, per capita taxes, per capita grants and per capita expenditures, as measured in each municipality and at the merger level, respectively. The merger-level controls include, in addition, separate indicators for each of the different merger sizes in terms of the number of participating municipalities and an indicator for whether the merger partners were all involved in a municipal cooperation with each other at the time of the merger vote. It should be obvious that these groups of control variables can only be included in those versions of (1) that do not have the corresponding fixed effects.

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[19] These two measures are constructed using the results of the bootstrap procedure as follows: First, we sum the values of p_{1i} in each municipal-party cell, as defined by the old constituencies and then similarly in the merger-party cells, as defined by the new constituencies, assuming all mergers took place. We then subtract from these sums the *status quo* party share level, i.e. the party share in the actual 2004 elections in the pre-merger municipality, as measured by the sum of the values of p_{oi} in each municipal-party cell. These differences are proxies for the mergers' mechanical effects on the parties' electoral success.

4. Empirical results

4.1 Main results

We start from Table 3, which presents the results from the various versions of model (1) without any fixed effects (Panel A) and with the merger fixed effects (Panel B). The standard errors are clustered spatially, using the constituencies that would result from the mergers (if they go through) as the clustering unit. In the first column of Panel A of Table 3, the regression has no controls. As we move to the right across the columns, the models have progressively more controls.

The estimated effect of the mechanical change in seat competitiveness on councilors' voting behavior, $\hat{\delta}$, is statistically significant and positive in all columns of Panel A of Table 3. As Panel B shows, the effect is robust to adding the merger fixed effects. The effect is also economically large, as the point estimates vary from 0.145 to 0.220.

Table 3   Total effect results (no and merger fixed effects)

	Panel A: No fixed effects					
	(1)	(2)	(3)	(4)	(5)	(6)
$p_1 - p_0$	0.208***	0.200***	0.220***	0.190***	0.120**	0.173***
	(0.055)	(0.053)	(0.051)	(0.060)	(0.052)	(0.059)
R^2	0.03	0.07	0.07	0.08	0.11	0.22
	Panel B: Merger fixed effects					
	(7)	(8)	(9)	(10)	(11)	
$p_1 - p_0$	0.160***	0.155***	0.181***	0.214***	0.145***	..
	(0.048)	(0.047)	(0.051)	(0.055)	(0.050)	..
R^2	0.25	0.26	0.26	0.27	0.34	..
Individual controls	No	Yes	Yes	Yes	Yes	Yes
Vote shares	No	No	Yes	Yes	Yes	Yes
Party controls	No	No	No	Yes	Yes	Yes
Municipality controls	No	No	No	No	Yes	Yes
Merger controls	No	No	No	No	No	Yes

Notes: The results are from linear probability models where the dependent variable is whether the councilor voted in favor of the merger. Sample size in each regression is 3804. Standard errors are robust to clustering at the merger level and are reported in parentheses. ***, ** and * indicate statistical signifigance at 1, 5 and 10 percent level, respectively.

Table 4 repeats the regression analyses of Table 3 with municipality fixed effects. While still systematically positive, the point estimates are smaller and statistically significant only in the first two columns. This decrease in the estimated effect is not surprising, because adding the municipality fixed effects means that the effect of the mechanical change in seat competitiveness is identified from within-municipality variation only. This means, in particular, that the council size mechanism is largely closed down, because council size is a municipal-level variable.[20] These results should therefore be interpreted as the lower bounds of $\hat{\delta}$.

Table 4   Total effect results (municipality fixed effects)

	(1)	(2)	(3)	(4)
$p_1 - p_0$	0.069**	0.067*	0.058	0.050
	(0.035)	(0.034)	(0.039)	(0.039)
R^2	0.48	0.49	0.49	0.50
Municipality fixed effects	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes
Vote shares	No	No	Yes	Yes
Party controls	No	No	No	Yes

Notes: The results are from linear probability models where the dependent variable is whether the councilor voted in favor of the merger. Sample size in each regression is 3804. Standard errors are robust to clustering at the merger level and are reported in parentheses. ***, ** and * indicate statistical signifigance at 1, 5 and 10 percent level, respectively.

Tables 5 and 6 present the results from models in which $(p_{1i} - p_{0i})$ is replaced by $(p_{1i} - \tilde{p}_{1i})$ and $(\tilde{p}_{1i} - p_{0i})$. The former isolates the effect of the council size mechanism on the councilors' voting behavior and the latter captures the competition mechanism.

In Table 5, we present the results from various models that mirror those of Table 3. Its Panel A shows that the effects of the council size and competition mechanisms are positive and statistically significant. The former is also larger than the latter. These findings are robust across the columns and, as Panel B shows, to the inclusion of the merger fixed effects. These findings suggest that changes in the composition of voters and political competitors and in the relative size of the municipal councils are both important in explaining the councilors' voting behavior. It thus seems that politicians pay a lot of attention to whom they compete with, and to competition *per se*.

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[20] The council size mechanism is not completely absent, because it may have a heterogeneous effect on the seat competitiveness of the candidates within a municipality. If there is a limited amount of such heterogeneity, then the council size mechanism does not contribute to the identification in these regressions.

Table 5   *Decomposition results (no and merger fixed effects)*

| | Panel A: No fixed effects | | | | | |
	(1)	(2)	(3)	(4)	(5)	(6)
Council size mechanism	0.258***	0.289***	0.316***	0.265***	0.214**	0.217***
	(0.095)	(0.093)	(0.097)	(0.095)	(0.091)	(0.072)
Competition mechanism	0.197***	0.177***	0.206***	0.179***	0.104*	0.159**
	(0.059)	(0.057)	(0.054)	(0.063)	(0.053)	(0.064)
R^2	0.04	0.07	0.07	0.08	0.12	0.22
	Panel B: Merger fixed effects					
	(7)	(8)	(9)	(10)	(11)	
Council size mechanism	0.239***	0.246***	0.258***	0.274***	0.204***	..
	(0.067)	(0.066)	(0.078)	(0.078)	(0.059)	..
Competition mechanism	0.149***	0.142***	0.175***	0.205***	0.127**	..
	(0.052)	(0.051)	(0.053)	(0.058)	(0.055)	..
R^2	0.25	0.26	0.26	0.27	0.34	..
Individual controls	No	Yes	Yes	Yes	Yes	Yes
Vote shares	No	No	Yes	Yes	Yes	Yes
Party controls	No	No	No	Yes	Yes	Yes
Municipality controls	No	No	No	No	Yes	Yes
Merger controls	No	No	No	No	No	Yes

Notes: The results are from linear probability models where the dependent variable is whether the councilor voted in favor of the merger. Sample size in each regression is 3804. Standard errors are robust to clustering at the merger level and are reported in parentheses. ***, ** and * indicate statistical signifigance at 1, 5 and 10 percent level, respectively.

In Table 6, we present the results from models that mirror those of Table 4. It shows that when the municipal fixed effects are added, the effect of the competition mechanism is positive and statistically significant. However, the effect of the council size mechanism is small and insignificant. This is expected, because the council size mechanism varies mostly across the municipalities. These findings are robust across the various specifications.

At this point, it is useful to ask, is the reduction in the estimated effects of the council size and competition mechanisms mostly due to the fixed effects removing relevant variation in the data? Or is it due to them reducing endogeneity bias? These are hard questions to address conclusively. However, if we just inadvertently reduce (exogenous) variation by including the municipal fixed effects, then the estimates of Table 6 can be regarded as lower bound estimates. This is good to keep in mind when interpreting the quantitative significance of these results.

Table 6   *Decomposition results (municipality fixed effects)*

	(1)	(2)	(3)	(4)
Council size mechanism	0.026	0.031	0.003	0.005
	(0.033)	(0.031)	(0.036)	(0.037)
Competition mechanism	0.101**	0.093**	0.092*	0.078*
	(0.041)	(0.041)	(0.046)	(0.046)
R^2	0.48	0.49	0.49	0.50
Municipality fixed effects	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes
Vote shares	No	No	Yes	Yes
Party controls	No	No	No	Yes

Notes: The results are from linear probability models where the dependent variable is whether the councilor voted in favor of the merger. Sample size in each regression is 3804. Standard errors are robust to clustering at the merger level and are reported in parentheses. ***, ** and * indicate statistical signifigance at 1, 5 and 10 percent level, respectively.

4.2 Robustness tests

In this section, we report a series of sensitivity tests that we have implemented to probe the robustness of our results. The results of these sensitivity tests are reported in Table 7.

We start by repeating the analyses of Table 4 and 6 using the subsample of data that includes only the councilors from the three traditionally dominant (largest) parties. These estimates are reported in Panel A and B of Table 7. The results are stronger in terms of the size of the effects and their statistical significance.[21] There are several potential explanations for this apparently stronger *ex ante* behavioral effect. For example, the larger party organizations may be better able to inform their councilors on the potential adverse effects of the mergers on the seat competitiveness. Moreover, the politicians for whom political careers matter more may self-select into larger parties.

An alternative way to decompose the total mechanical change into its sub-components (i.e., the council size and competition mechanisms) is to use an instrumental variables (IV) approach. For this, we assume that $(p_{1i} - p_{0i})$ is the variable to be instrumented and use either the council size or the competition mechanism as the instrument. We report in Panel C of Table 7 estimations that include municipal fixed effects and use the competition effect as the instrument. As the panel shows, the IV approach gives results that are similar to those

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[21] The same is true also for the no fixed effects and the merger fixed effects models both in the total effect and decomposition regressions in all specifications. We do not report these for the sake of brevity.

reported in Table 6. The main difference is that the estimated coefficients are slightly larger. This is, in fact, natural, because Table 6 can technically be seen as the reduced form of this IV. We get similar results if we use the IV estimation without the fixed effects or with merger fixed effects.[22]

Table 7   Results for robustness tests

	Panel A: Total effect for large parties			
	(1)	(2)	(3)	(4)
$p_1 - p_0$	0.115***	0.117***	0.102**	0.102**
	(0.038)	(0.038)	(0.042)	(0.041)
R^2	0.50	0.50	0.50	0.51
N	3,108	3,108	3,108	3,108
	Panel B: Decomposition for large parties			
	(5)	(6)	(7)	(8)
Council size mechanism	0.065*	0.077**	0.042	0.054
	(0.035)	(0.036)	(0.043)	(0.042)
Competition mechanism	0.149***	0.143***	0.136***	0.131***
	(0.046)	(0.045)	(0.049)	(0.049)
R^2	0.50	0.50	0.50	0.51
N	3,108	3,108	3,108	3,108
	Panel C: Decomposition using IV			
	(9)	(10)	(11)	(12)
$p_1 - p_0$	0.144***	0.128**	0.135**	0.116**
	(0.052)	(0.052)	(0.056)	(0.056)
1st stage F-test	316	346	539	513
N	3,804	3,804	3,804	3,804
Municipality fixed effects	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes
Vote shares	No	No	Yes	Yes
Party controls	No	No	No	Yes

Notes: The results are from linear probability models where the dependent variable is whether the councilor voted in favor of the merger. Standard errors are robust to clustering at the merger level and are reported in parentheses. ***, ** and * indicate statistical signifigance at 1, 5 and 10 percent level, respectively.

4.3 Policy significance

How do the estimated effects translate into changes in the likelihood of mergers? This question cannot be answered solely on the basis of the point estimates,

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[22] The IV results become stronger if the large party subsample is used.

because for a merger to go through, it needs a majority in each municipal council contemplating the merger. To assess the policy significance of the estimates calls therefore for an evaluation of how much the likelihood of the mergers increases if the effect of mergers on seat competitiveness is neutralized.

To do this evaluation, we use the estimated models as follows: First, we simulate merger outcomes by setting the mechanical effect to zero. We then compare the rate of occurrence of mergers thus obtained to the simulated rate of occurrence when the effect is set at its (non-zero) estimated value.[23]

We report the results of the simulations in Table 8. The reported numbers are the rate of occurrence of mergers in the simulations for three different sets of municipalities. First, the set of municipalities that underwent the merger; second, the set of contemplated mergers that did not take place; and third, all the municipalities that voted for a merger. The table reports results for three different counterfactuals: one where both the competition and council size mechanisms are set to zero (columns 1–2) and one where either of them is set to zero, but the other is allowed to work (columns 3–4, and 5–6). The effect of the change in seat competitiveness is the difference between the actual and counterfactual rates of occurrence.

Table 8 illustrates two things. First, it shows that the estimated models predict a much higher rate of occurrence of mergers in those municipalities that actually merge, as compared to those who do not merge. Second, the table shows that the rate of occurrence of mergers increases by 8 percentage points (0.783–0.704) when we turn off the total mechanical change in seat competitiveness in the model that includes the merger fixed effects. Since there are 59 contemplated mergers in our data, these translate in total into about 5 (0.079*59) mergers that did not take place due to desire by the councilors to avoid more competitive seats. The increase is lower, about 2 percentage points (0.662–0.640), when the municipality fixed effects model is used. These effects are in relative terms larger in the group of municipalities that did not merge.[24]

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[23] The results we report in this section are based on the following simulation: First, we draw a random shock for a councilor from a uniform distribution (on the unit interval) and compare it to the fitted value generated by either the estimated model or the counterfactual model (with the effects set to zero). If the draw is smaller (larger) than the fitted value of the given councilor, he is assumed to vote for (against) the merger in the simulation. When we draw such a shock for all councilors, we can calculate whether a certain merger gains the required majority in all the participating municipalities or not. Second, we repeat this 1,000 times and take note of each merger occurrence. The merger fixed effects results are based on column 11 of Table 5 and the municipal fixed effects are based on column 4 of Table 6.

[24] It is worth pointing out two things about these simulations: First, the predictive accuracy of the estimated linear probability model that includes the municipal fixed effects model is better than that of the model with the merger fixed effects. However, , the estimated models do not need to automatically predict mergers accurately even if they predict councilors' votes accurately. The reason for this is that one opposing municipality can prevent a widely supported merger from taking place. Second, it could be argued that a Probit/Logit model would be better suited than a linear probability model for this type of

Table 8   Simulation results.

Effect:	Total effect		Council size mechanism		Competition mechanism	
Model specification:	Merger fixed effect	Municipality fixed effect	Merger fixed effect	Municipality fixed effect	Merger fixed effect	Municipality fixed effect
	(1)	(2)	(3)	(4)	(5)	(6)
Merger = 1:						
Actual	0.949	0.914	0.949	0.914	0.949	0.914
Counterfactual	0.980	0.939	0.970	0.915	0.965	0.938
Merger = 0:						
Actual	0.178	0.049	0.178	0.049	0.178	0.049
Counterfactual	0.358	0.064	0.304	0.050	0.231	0.063
All:						
Actual	0.704	0.640	0.704	0.640	0.704	0.640
Counterfactual	0.783	0.662	0.759	0.641	0.732	0.661

Notes: The table presents results from a merger vote simulation excercise. The numbers correspond to shares of realized mergers for each model specification and merger sub-sample. The simulations are based on 1,000 repetitions.

The simulation results reported in Table 8 apply to the group of municipalities that voted for a merger. This is a selected group of municipalities. It is therefore of interest to consider the possibility that the anticipated increase in seat competitiveness prevented some municipalities from voting on a merger, and thus reduced the likelihood of such mergers taking place.

To shed some light on this issue, we draw a stratified random sample from the universe of all *potential* mergers. To limit the set potential mergers to a feasible size, we do not allow them to cross county borders, they have to share a common border and they cannot include more than six partners.[25] The sample is stratified based on the number of merger partners so that the drawn sample matches our data in this dimension. Since we have election data for all municipalities, we can calculate the total mechanical effect of the mergers on seat competitiveness also for this stratified random sample.

We find that $(p_{1i} - p_{0i})$ is on average -0.458 in the stratified random sample of potential mergers. This total mechanical effect is larger (in absolute terms) than in the sample that voted on the mergers (-0.408, see Table 2). This is consistent

simulation exercise. We use the linear probability model, because it is not as sensitive to a perfect-predictor problem from which Probit/Logit models suffer and because the simulated voting decisions are robust to changes in the predictions near the ends of the probability unit interval [0, 1]. Moreover, we have experimented with Probit/Logit models and found that our main qualitative results do not change.

[25] See Saarimaa and Tukiainen (2012) for the details of this sampling procedure.

with the view that the anticipated increase in the seat competitiveness may have prevented some municipalities from formally voting on a merger.

We can also repeat the merger simulations of Table 8 for the stratified random sample of potential mergers. To this end, we generate out-of-sample predictions using our estimated regression models. A limitation of this procedure is, however, that we don't have estimates for the merger or municipal fixed effects for the municipalities that are included in the stratified random sample. Therefore, we follow a pragmatic approach and conduct the merger simulation using model (6) in Table 3. To account for the lack of fixed effects, i.e. to allow the voted mergers to be unobservably different from those potential mergers that were never actually voted upon, we calibrate the estimated models by introducing an unobserved shock to each potential merger. The idea of these shocks is to reduce the likelihood of the merger going through in the simulated merger votes so that the vote outcomes would better reflect the lower empirical rate of occurrence among the potential mergers that were never voted upon. We repeat the simulations over a range of such shocks. We find that the anticipated increases in the seat competitiveness reduce the rate of merger occurrence by [-0.13, -0.02] percentage points, as the calibrated shock varies between [0, -0.5]. These numbers suggest that the anticipated increase in seat competitiveness has prevented some mergers from taking place also in the stratified random sample of potential mergers. The effect appears to be non-negligible for a number of potential merger constellations, except for those that are the most unlikely to succeed (i.e., when the calibrated shock is very negative).

In sum, anticipated increases in seat competitiveness make municipal mergers less likely in two ways. First, conditional on a potential merger being voted, it reduces the likelihood of the merger going through by 2-8 percentage points. Second, the anticipated increase in seat competitiveness has also prevented some mergers from taking place also among the potential mergers that were never voted upon. These foregone mergers are the price that the society at large pays because the councilors care about the private gains that holding a public office generate and because they want to avoid electoral competition.

5. Conclusions

It is unclear whether politicians *want* to reset the boundaries of their constituencies, if given a chance to do so. Our analysis studies this question by estimating the feedback effect of an anticipated (mechanical) change in seat competitiveness on the *ex ante* behavior of politicians in a merger vote that determines whether the boundaries of their constituencies change or not.

Our key finding is that a councilor is more likely to vote for a merger if the competitiveness of his/her seat does not increase in the merger state relative to the status quo of no merger. Moreover, we find that changes in the composition of voters and political competitors and in the relative size of the municipal councils are both important in explaining this behavioral response. This suggests that politicians pay attention to who they compete with, and also to competition *per se*.

Our findings imply that incumbent politicians vote for policies that allow them to escape political competition. Because councilors react proactively to expected changes in political competition, the design of the boundaries of the Finnish local governments appears to be subject to strategic gerrymandering-type considerations (Gul and Pesendorfer 2010). This makes endogenous merging of (local) jurisdictions inefficient for a reason that the prior literature has not so far explicitly considered (e.g. Alesina and Spolaore 1997, 2003; Gordon and Knight 2009 and Weese 2011).

Appendix A: Structure of data

Table A1 illustrates the structure of our data with respect to actual re-election in 2008. It shows whether councilors got re-elected conditional on their vote and the merger taking place. Panel A displays the unconditional percentages whereas in panel B, each row is conditioned on the row above. The last row of panel A shows that most of our observations are in the cell corresponding to the outcome in which a councilor voted for the merger that took place but the councilor was not re-elected. In contrast, there are very few observations in the cell corresponding to the outcome in which a councilor voted against the merger that took place and the councilor was re-elected. The last row of Panel B shows that merger outcome is correlated with re-election probabilities, with mergers being associated with smaller re-elections probabilities.

Table A1   Data structure

Panel A							
Total: 3804 councilors							
Voted against 18.93 %				Voted for 81.07 %			
No merger 11.15 %		Merger 7.78 %		No merger 17.17 %		Merger 63.91 %	
Not re-elected 5.44 %	Re-elected 5.70 %	Not re-elected 5.34 %	Re-elected 2.44 %	Not re-elected 10.44 %	Re-elected 6.73 %	Not re-elected 38.51 %	Re-elected 25.39 %
Panel B							
Total: 3804 councilors							
Voted against 18.93 %				Voted for 81.07 %			
No merger 58.89 %		Merger 41.11 %		No merger 21.17 %		Merger 78.83 %	
Not re-elected 48.82 %	Re-elected 51.18 %	Not re-elected 68.58 %	Re-elected 31.42 %	Not re-elected 60.80 %	Re-elected 39.20 %	Not re-elected 60.26 %	Re-elected 39.74 %

Note: Panel A reports data frequencies and Panel B reports frequencies conditional on the previous row.

We analyze the voting behavior of individual councilors who voted for municipal mergers that eventually took (or, if turned down, did not take) place between 2007 and 2009. This calls for two clarifications:

First, in rare cases a vice-councilor voted in the merger-vote because the actual councilor was absent. We assume for the purposes of this paper in these cases that the vice-councilor is a perfect and obedient substitute for the councilor. We

therefore use the vote of the vice councilor on the L.H.S. but the characteristics of the absent councilor on the R.H.S.

Second, it could be that councilors' parties have all the agenda setting power, and thus, that the individual councilors simply vote according to the party line. However, from our data it is clear that this is not case. Out of the 3,804 councilors in our data, 2,109 councilors come from municipalities where there is no variation in vote within the councilors' home municipality. If these were the only data, it would be hard to analyze empirically the determinants of the voting decisions using councilor-level data. However, of the remaining 1,695 councilors, for which the voting varies within their home municipalities, there is councilor-level variation within the parties in the voting behavior (in 1,057 cases).

Appendix B: Control variables

Table B1 presents the descriptive statistics of the control variables.

Table B1   Descriptive statistic

	All		Merger = 0		Merger = 1	
	Mean	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Number of councilors	3,804		1,077		2,727	
Councilor characteristics:						
Age	48.3	11.0	48.0	11.2	48.4	10.9
Female	0.365	0.482	0.358	0.480	0.368	0.482
Two or more terms in council	0.600	0.490	0.617	0.486	0.594	0.491
Share of votes in municipality	0.024	0.016	0.025	0.016	0.023	0.016
Share of votes in merger	0.008	0.006	0.006	0.005	0.008	0.007
Municipality party success	-0.226	0.230	-0.284	0.239	-0.203	0.222
Party success	-0.047	0.118	-0.050	0.117	-0.046	0.118
Municipal characteristics:						
Population	9,656	15,241	7,896	10,333	10,686	17,450
Taxable income (€per capita)	10,511	1,761	9,691	1,476	10,991	1,742
Mean population distance to centre (km)	5.49	10.32	7.26	16.71	4.45	1.99
Unemployment rate (%)	10.9	3.87	12.5	3.74	9.9	3.65
Dependency ratio	1.51	0.27	1.64	0.26	1.44	0.25
Municipal income tax rate (%)	19.0	0.68	19.2	0.6	18.8	0.72
Central government grants (€per capita)	1,563	574	1,827	529	1,408	544
Total expenditures (€per capita)	5,000	737	5,266	825	4,845	635
Merger characteristics:						
Population	28,323	27,271	27,014	21,815	28,930	29,693
Taxable income (€per capita)	11,171	1,583	10,328	1,288	11,562	1,567
Mean population distance to centre (km)	8.91	4.71	12.68	6.16	7.16	2.39
Unemployment rate (%)	11.2	3.72	12.8	3.47	10.4	3.63
Dependency ratio	1.52	0.23	1.64	0.19	1.47	0.23
Municipal income tax percent (%)	19.0	0.51	19.2	0.4	18.9	0.54
Central government grants (€per capita)	1,431	501	1,688	440	1,312	487
Total expenditures (€per capita)	5,043	583	5,326	722	4,913	460
Cooperation	0.5	0.5	0.4	0.5	0.6	0.5
Merger size	2.9	1.5	3.4	1.6	2.7	1.5

Appendix C: Details on the bootstrap procedure

This Appendix provides some additional details and motivation on the bootstrap procedure used to generate the measures for the seat competitiveness. As we explain in the main text, our procedure follows that of Kotakorpi, Poutvaara and Terviö (2012). In our application this means that the procedure uses information on the identity of the candidates, the vote distribution from the 2004 election and the number of available seats both in the 2004 and 2008 elections.

The aim of the bootstrap procedure is to construct a smooth (continuous) measure for seat competitiveness in the 2008 elections that is capable of mirroring the complexities of a multi-party proportional election system and that varies between the candidates (who were all elected in 2004). In the Finnish open-list local election system, each voter gives a single vote to a single candidate. This implies that unlike in closed-list elections, a vote distribution over individual candidates is available in the Finnish system. It is therefore sensible to measure seat competitiveness at the level of candidates as opposed to the level of parties.

The purpose of the re-sampling procedure is to mimic uncertainty naturally present in the election outcomes of individual candidates: Some councilors could lose their seat due to only a marginal change in the vote distribution, whereas for others, the change would have to be much larger.

In principle, we could calculate p_{0i}, p_{1i} and $\tilde{p}_{1i}$ *without re-sampling* using the 2004 vote distribution. In this case, p_{0i} would be equal to one for all the elected councilors in our data. Moreover, p_{1i} and $\tilde{p}_{1i}$ would be either zero or one. These measures would be coarse proxies of the election uncertainty, and thus incapable of mirroring seat competitiveness for many candidates.

To mimic election uncertainty and to obtain less coarse measures, we sample votes with replacement for each candidate from the vote distribution of the 2004 municipal election. The sampling probability of a vote for a candidate is the share of the votes that he or she received in the 2004 election. An underlying assumption of this sampling procedure is that the distribution of voters at the margin of abstaining and participating is identical. Repeating this vote sampling many times produces a set of votes for each candidate. The sampled votes are then used to calculate a hypothetical election outcome using the actual election rules. This determines whether a candidate is elected or not and completes one round of bootstrap election. This bootstrap election is then repeated many times (S = 10 000). The share of times a particular candidate is elected over these repetitions gives us then a measure for seat competitiveness.

To obtain p_{0i}, we use the 2004 municipalities as the constituencies in the bootstrap procedure, irrespectively of whether the merger actually took place or not. To obtain p_{1i}, we repeat the bootstrap procedure as if all the mergers took place. For this, the hypothetical post-merger constituencies are constructed by allowing both the set of candidates and voters as well as the number of available council seats to mirror the properties of the post-merger entity.

An important detail of the re-sampling procedure is the size of each draw (i.e., the number of votes sampled per draw). For small municipalities the size of each draw is one vote. However, due to the law of large numbers, re-sampling will not introduce variation in the election outcomes over the repetitions if the draw size is small relative to the total number of votes given in the election. In other words, the larger the municipality is, the less likely it is to find candidates for whom the election outcome varies over the repetitions. This would lead to discrete and coarse measures of seat competitiveness. To avoid this, we follow Kotakorpi, Poutvaara and Terviö (2012) and sample votes in blocks. This re-introduces variation in the case of larger municipalities. For each municipality in which more than 1000 votes are given, we take only 1000 draws. We weight each vote in order to match the total number of votes in each bootstrap election round with the actual election. For example, in a municipality where 3500 votes were given, 3.5 votes are allocated to the same candidate in each draw. This approach can be motivated, for example, with the group voting theory (e.g. Coate and Conlin 2004). The number 1000 is *ad hoc*, but the distributions of the seat competitiveness measures are fairly stable over a reasonable range of the size of draws.

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