Competition and Property Tax Limit Overrides: Revisiting Massachusetts' Proposition 2 ½

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Abstract

This paper looks at the role of spatial proximity of other town's decision to hold an override vote on the decision of a Massachusetts town to hold an initial override vote under Proposition 2 ½. We find that if a neighboring town has already held a vote at some point in the past, your likelihood of holding an initial vote increases by 10-15 percent. A prior vote being successful has a strong impact, whereas losing votes are relatively ignored. The presence of spatial dependence remains when we look at the specific purpose of override vote, or at the total number of votes that have occurred between 1982 and 2010. We argue that this evidence points to a case where tax/yardstick competition is alive and well in Massachusetts, manifesting itself through the override vote, as opposed to the property tax rate.

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Introduction

2011 represented the 30th anniversary of Proposition 2 1/2, Massachusetts' voter initiated property tax limitation program. That year, 40 towns held 51 override votes, in which voters were asked to increase property taxes by nearly 30 million dollars. 20 such votes were successful, resulting in an average $745,000 increase in tax receipts for the winning towns. While the override process is now quite engrained in local governance, 2011 was not a particularly active year; in fact only five years had seen fewer votes.

In this paper, we look to go back to the beginning of Proposition 2 ½ and ask what caused Massachusetts municipalities to hold their first override vote. In particular, we are interested in the role of spatial proximity in voting patterns; does the fact that a neighboring town held a vote increase the likelihood that you hold a vote in subsequent years? We think that spatial proximity can affect voting via two simple mechanisms: competition and technology transfer.

Competition can manifest itself in two ways. In tax competition, a vote in town A causes town B to hold a vote in order to encourage capital to relocate. By signaling a willingness to increase taxes (and hence increased spending on public goods), towns are hoping to encourage Tiebout sorting and to attract a higher tax base. In yardstick competition, a vote in town A is used by voters in town B to proxy for financial conditions in their own town. Thus, if town B were to hold a vote in the future, voters would be less likely to blame their elected politicians for their town's financial condition because they saw that town A also had similar need. Under such a scenario, voters blame larger macroeconomic issues rather than political mishaps, making it easier for politicians to authorize a vote as they recognize voters will not hold the vote against them in future elections.

Under a scenario of technology transfer, the override vote is the actual technology in question. By watching a vote in town A, elected officials in town B can learn how to use the override vote and assess its suitability for future use. Seeing votes raise money in neighboring towns may make politicians more likely to use the technology in the future.

In both scenarios, what happens beyond the town border influences the decisions made at home; econometric results alone cannot distinguish between the two. But whereas any neighboring vote should have an impact in a tax/yardstick competition framework, only the first vote should happen under technology transfer; once a town has learned the technology, there's no need to rely on your neighbors. We can get at this subtle difference by using the presence of any neighboring vote to test for competition, but we can use the total number of votes to argue for or against technology transfer. Because override votes can be for multiple uses, we repeat this exercise for specific categories of votes (education, safety, etc.) to see if results are similar.

In the end, we find evidence of competition in Massachusetts, but when we go to wins and losses, we find wins have more clout. When we look at the total number of votes, we still find a pattern of spatial dependence. Combined, this is suggestive of tax/yardstick competition and not technology transfer. This becomes particularly acute when we look at spending categories, as K-

12 education spending is consistently the one category where voters are consistently comparing votes, and not outcomes, across the border.

The Nitty-Gritty of an Override Vote in Proposition 2 ½

Proposition 2 ½ was implemented in 1980, in response to voter anger over the high level of taxation in Massachusetts. It imposed constraints on the amount of property tax revenue raised by municipal governments and on how much governments can increase that revenue from year to year. In particular, a city/town[1] cannot raise more than 2.5 percent of the total value of all taxable property in the community (called a *levy ceiling*). Moreover, a town is further limited in that its maximum levy automatically increases by 2.5 percent a year (this is called a *levy limit*), provided that the increase does not take it over the levy ceiling. The levy limits were initially set beneath the levy ceiling, hence in most cases towns will levy less than the ceiling[2].

As an example, if a town has a taxable base of 1 million dollars, the levy ceiling would be 2.5 percent of the base, or $25,000. This represents the maximum amount the town could ever collect. If in the previous year, the town had a levy limit of $14,000, the new levy limit would automatically increase 2.5 percent to $14,350. Proposition 2 ½ limits the growth of the levy limit and not the levy itself. The town is free to raise as much of the $14,350 as it desires. This means that the levy itself is not tied to the 2.5 percent limit; if a town is under its levy limit one year and chooses to use the full limit the next, the levy will increase by greater than 2.5 percent. The difference between the levy limit and the amount a town actually chooses to levy is called the town's *excess capacity*.

Massachusetts municipalities have the ability to implement an increase above the levy limit (but not the levy ceiling) of 2.5 percent by passing an override in an election[3]. This can only occur if the community is currently below its levy limit and a majority of the town's selectmen or town/city council vote to have the override be put in front of voters. Override questions offered for a vote must specify a dollar amount and a specific purpose[4], which can range from the most general (general operating expenses) to the mundane (snow plowing, funding education) to the very specific (allowing residents to participate in Super Tuesday primaries, buying a sander for the Department of Public Works). A successful override requires a majority vote from the electorate and permanently increases the levy limit.

In our previous example, an override vote would be limited to $10,650, as the levy limit for the current fiscal year plus the override amount cannot be greater than the levy ceiling. If an override for $5,000 was passed, the levy limit for the following year would be 102.5 percent of $19,350, or $19,834, as the override amount is added to the prior year's levy limit before calculating the 2.5 percent.

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[1] Although towns and cities have differing governing structures in Massachusetts, going forward we use the terms interchangeably to refer to any of Massachusetts' 351 municipalities.
[2] The discussion that follows is based of Levy Limits: A Primer on Proposition 2 ½, published by the Massachusetts Department of Revenue.
[3] Municipalities can also add the value of new growth to the levy limit, but that is beyond the scope of our paper.
[4] For our purposes, votes for debt exclusions and capital overlays are not considered overrides. These are often temporary in nature, do not become part of the tax base from which future levy limits are calculated and require a 2/3 majority vote.

Prior Work

A lot of early work on interjurisdictional competition focused on property taxation (Brueckner and Saavedra 2001; Heyndels and Vuchelen 1998; Revelli 2001) and tended to find a good degree of competition between jurisdictions in setting the millage rate. The challenge in understanding such a finding, however, is knowing whether or not this interaction is due to tax (competition for mobile capital) or yardstick (competition for voters) competition. This ambiguity stems from the fact that the empirical specification used to determine the presence of interjurisdictional competition is the same regardless of the source (see Besley and Case (1995), Brueckner (2003) and Rork (2009) as examples of the discussion). In fact, recent work by Costa-Font et al. (2011) has undertaken a meta-analysis of over 50 papers on interjurisdictional competition to try to determine which motivation is at the forefront. While the authors suggest tax competition as a main motivator, the use of national level variables to tease this effect out is questionable given the large number of subnational studies.

Brueckner and Saavedra (2001) found evidence of property tax competition in Massachusetts prior to Proposition 2 ½. While they found evidence of competition continuing post Proposition 2 ½, they attribute that competition to the taxation of business and not residential property, where the limitation had more bite. Rather than focus on the property tax rate, our project focuses on the choice to have an override vote, which is a different mechanism by which a town can change its tax.

While there has also been a vast literature on Proposition 2 ½, early work tended to focus on questions of why it came into existence (Bradbury 1991; Cutler, Elmendorf, and Zeckhauser 1999; Ladd and Wilson 1982; Vigdor 2004). More recent efforts have focused on discovering the impact the act has on property values and fiscal outcomes (Bradbury, Mayer, and Case 2001; Bradbury and Zhao 2009; Lang and Jian 2004).

Our interest is in the determination of specific override votes, and in that regard, a recent paper by Wallin and Zabel (2011) is closest to ours. The authors are focused on the relationship between override votes and local fiscal condition, which they define as the gap between revenue capacity and costs. As a side finding, the authors discovered that if a town has successful votes, it was more likely to have additional successful votes.

Our work advances the Wallin and Zabel (2011) piece in three significant ways. First, our focus is specifically on understanding the determinants of initial override votes, whereas Wallin and Zabel (2011) make no distinction about the vote. Second, unlike Wallin and Zabel (2011), we specifically incorporate voting behavior in neighboring districts. Finally, we will focus on the specific purpose of the override votes, seeing if the distinction leads to different outcomes. We can also look at the interrelations between override purposes in the voting process. When our results are combined with those of Wallin and Zabel (2011), we believe a more complete picture of the override voting process in Massachusetts emerges.

Data

The data for this project stems from the various Municipal Spreadsheets provided online by the Massachusetts Department of Revenue (MADOR). All information regarding override votes, including the date of the vote, the amount of money asked in the vote, and the number of yes and no votes are included for each of the 4550 votes that have occurred between the first year of override voting under Proposition 2 ½ and 2010.

For each vote, the specific purpose of the vote is also provided. We therefore coded each vote as one the following categories. An education vote is any vote involving a K-12 school. This includes school vehicles and maintenance, as well as votes for regional school districts. A safety vote is any vote for police, fire, or ambulatory services or equipment. A vote is considered a Department of Public Works (DPW) vote if it concerned street or sidewalk maintenance (including snow removal), trash, and/or recycling, or water/sewer. Any other vote, including general operating budgets, was classified as general[5].

In addition, any vote crossing between categories (e.g., a vote for both a police car and a school bus), is considered a multiple category vote. If more than one vote occurred on a specific date, we say the town held a menu vote. A menu vote can contain two multiple category votes, but the opposite does not hold true. Thus, a vote for a school bus and a separate vote for a fire engine would be coded as one education vote, one safety vote, and one menu vote for that year. It would not be a multiple category vote, as each individual vote contained only one category.

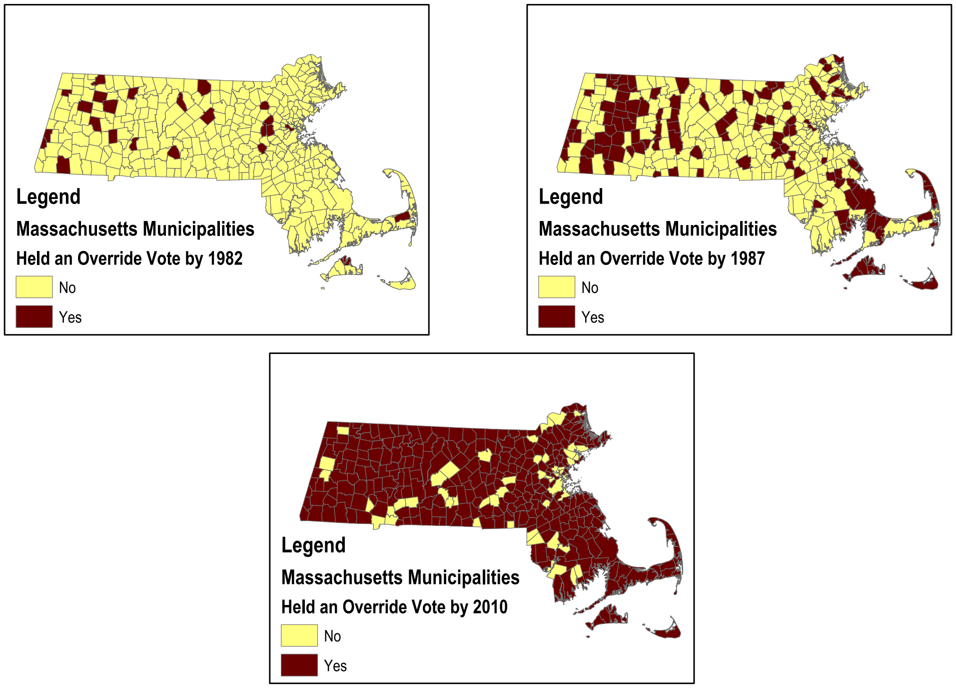
Table 1[6] shows the number of overrides that occur in the state, by year. A large portion of override votes took place between 1989 and 1995, with a second uptick happening in 2002-2006. Unsurprisingly, both of these spurts in voting activity coincided with recessionary times. We see a slight increase in 2008, as well as with the beginning of the Great Recession, but nothing approaching the activity of the early 1990s.

Figure 1 provides a snapshot of the number of towns that have held at least one override vote for various years. 34 towns held a vote in the first year (1982), the majority of which were in the western part of the state. By 1987, we see a geographic pattern beginning to form, with a large cluster of towns in the Connecticut River Valley along the I-91 corridor in the western part of the state having held votes. Additional clusters appear on the South Shore, the western part of I-495, and Cape Cod and the Islands. By 2010, 48 towns had not yet held an override vote. These were grouped along the coastal parts of southern Essex County in the northeastern part of the state, along with pockets inside Route 128 and along the Rhode Island border.

[5] The overwhelming majority of entries for this category are specifically for the general operating budget. Occasionally there are entries for libraries, councils on aging and environmental issues, but these categories were too small by themselves that we combined them into other.

[6] Tables can be found at the end of this paper.

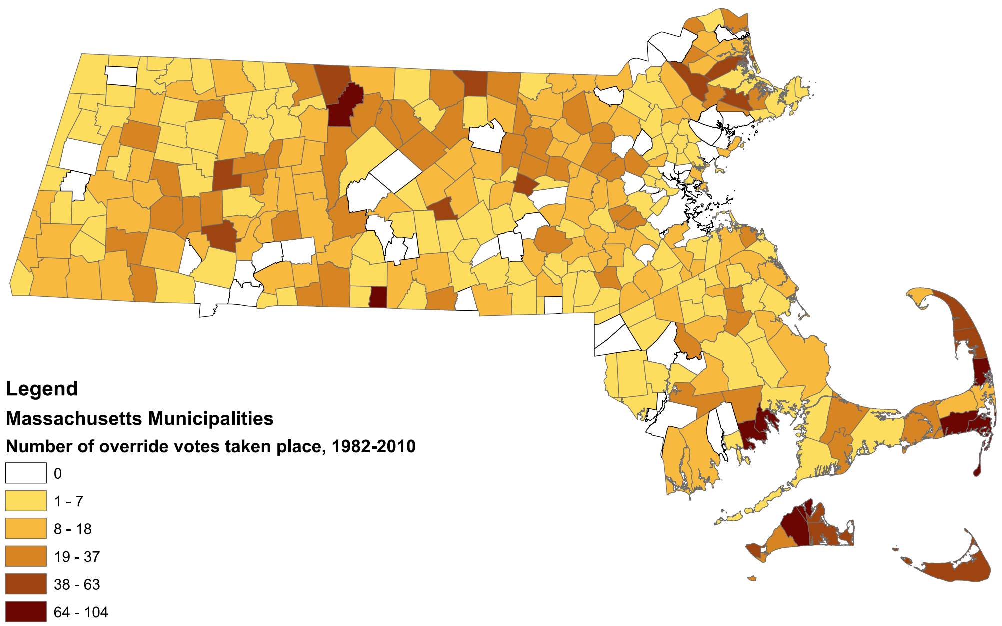
Figure 1. Snapshot by time of the number of municipalities that have held at least one override vote.



Source: Authors' calculations. Proposition 2.5 override data from Massachusetts Department of Revenue.

Figure 2 shows the total number of override votes that have taken place in each town in Massachusetts between 1982 and 2010. We note that the frequency of votes also clusters, with large numbers of votes taking place in Central Massachusetts, Northern Essex County, and the Cape and the Islands. The three towns holding at least 100 votes (Tisbury, West Tisbury and Chatham) are all located on Cape Cod or Martha's Vineyard.

Figure 2. Number of override votes taken place in each municipality, 1982–2010.

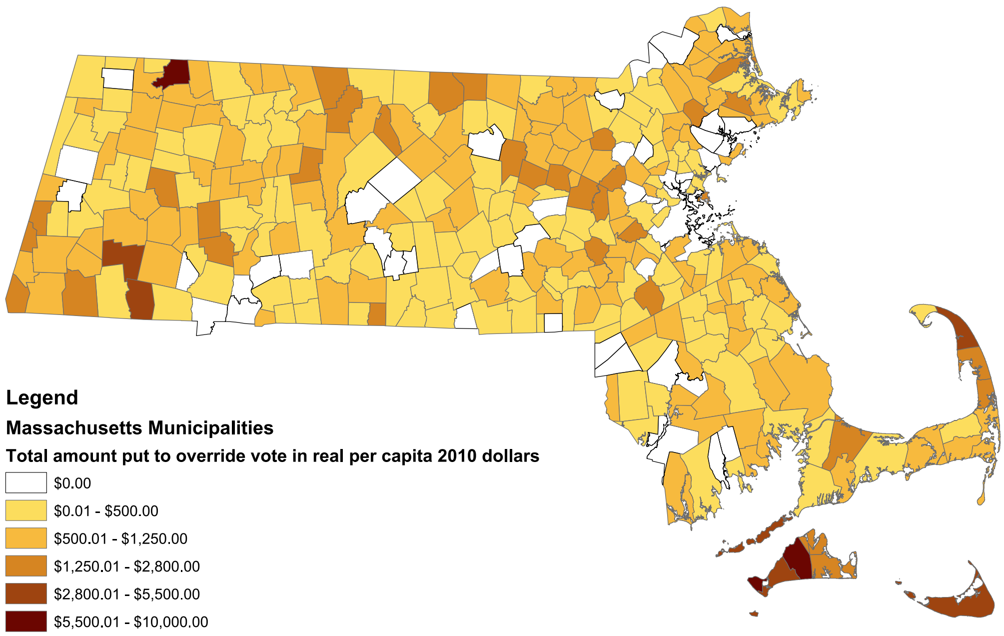


Source: Authors' calculations. Proposition 2.5 override vote data from Massachusetts Department of Revenue.

Table 2 lists the number of towns that held override votes for a given number of years. As we can see, the majority of towns have gone to the voters in no more than 4 different years. At the opposite end, approximately 10 percent of towns have gone to voters in at least 11 years, with Truro and West Tisbury voting in 22 and 21 of the 28 years in our sample respectively.

The cumulative real 2010 dollar amount asked for by each city is shown in figure 3. There is less of a clustering effect here, although we do see that the largest dollar amounts once again cluster in the Cape and the Islands, with 4 towns (Aquinnah, West Tisbury, Truro, Nantucket) asking over $4000 per capita throughout the time period. To put this in perspective, the average town in Massachusetts asked for $789 during this period.

Figure 3. Total per capita amounts (in 2010 dollars) put to vote, 1982–2010.



Source: Authors' calculations. Proposition 2.5 override vote data from Massachusetts Department of Revenue.

Finally, Table 3 illustrates the number of overrides that take place by category by year. Prior to 1988, votes were categorized as general operating budget, with the few menu votes offering differing components within the general budget. 1988 marks the beginning of specific categorical votes, with education being the most common. Safety and DPW tend to be roughly equal, although DPW votes tend to be higher in years of severe snow. Lumping different categories into one multiple vote had a slight uptick in the late 1980s, but has never been a particularly popular option among Massachusetts municipalities[7].

Additional MADOR spreadsheets provide information about annual population, income, and employment of each town, as well as detailed property tax information, including excess capacity, new growth applied to levy limit, and capital exclusions. MADOR also provides information on revenues and expenditures (by category) for each city. While most data is available starting in 1982, expenditure data is only available starting in 1987. This complicates our estimation procedure, which we discuss next.

Estimation Procedure

Our main interest is in determining the role neighboring towns play in a town's decision to hold its first override vote. Because this is a question of duration (how long does a town wait until having the first vote), we estimate this decision with a Cox proportional hazards model, using the

[7] Of the 145 multiple category votes, 124 specifically listed education spending.

year that the town held the first vote and allowing for time-varying covariates (Greene 1997, 997–99). The hazard model specifies the hazard rate:

[1] $$\lambda(t_i) = e^{-\beta X_i}$$

where *X* contains the explanatory variables. Specifically, the probability that town *i* exits the risk set by holding a vote at time T_i is:

[2] $$\Pr(t_j = T_i \mid riskset_i) = \frac{e^{\beta x_i}}{\sum_{j \in R_i} e^{\beta x_j}}$$

where the denominator includes the entire risk set; i.e., all those cities that have not yet held an override vote at time T_i. Allowing the *X's* to vary over time complicates the estimation only inasmuch that the appropriate values of *X* must be chosen for each event time[8].

To illustrate, suppose we are considering the probability that town Z holds its first override vote in 1984. We use 1984 data for all of the *X's* in this case. If the next event occurs in 1986 (let's say town Y), we use 1986 values for the *X's* and the risk set will include all the towns from 1984, except for town Z. Thus, at any given time, only those towns not yet having a vote are included in the risk set.

This method of estimation uses all the censored observations (the towns that have never held an override vote) because they always appear in the risk set. Because voting under Proposition 2 ½ started in 1982 for the entire state, we have a specific date for 'time zero'; traditionally, one just need assume that the time zero is the same for all cities. Another characteristic of this approach is that it is only the ordering of the events that matter. We are estimating which city will hold its first vote *next*, not *when*.

As for our explanatory variables, our main variable of interest is did neighboring towns already have a vote at some point in the past. We define a neighbor based on simple contiguity, meaning that the towns must share a common border[9]. This variable takes a value of 0 if no neighbors ever had a vote and a 1 if all neighbors had a vote, but often falls somewhere in between as the variable simplifies to the percentage of neighboring towns having held a vote.

We also explore an alternative approach where we define neighbors based on the alphabetical listing of each town. Under such a scheme, a town is considered a neighbor if it comes immediately before or after the town in question in the alphabet. There is no theoretical justification for why alphabetical positioning matters, so this weight scheme serves as a false experiment. Failure to find spatial dependency here adds credence that any results found with the contiguity weights are unlikely to be spurious. The weights are row-standardized, meaning that they sum up to one for any given town. This is a standard approach in spatial econometrics and allows for easy comparisons across weighting schemes.

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[8] Specifically, for X to be time-varying, it must be predictable, which all our explanatory variables are. See Van den Berg (2001) for further discussion.

[9] Traditionally, contiguity is defined as sharing a land border. Because rivers form the basis of many town borders in Massachusetts, especially in the northeastern part of the state, we expanded the traditional definition of border to allow for rivers and streams. Our results were not sensitive to this designation, so we stayed with the traditional land-based definition of contiguity in order to align better with the literature.

Finally, we lag the share of neighbors that held a vote by one year, so that votes in 1992, are influenced by whether or not neighbors held a vote by 1991. We do this for three reasons. First, we think a town needs to see a vote play out before it potentially becomes influenced by it. Second, although votes happen throughout the year, our vote data is organized annually. Using contemporary votes in a given year becomes complicated by the fact that they often occur on different dates or multiple dates within the same year. Thus, we eliminate this ambiguity by simply lagging the variable to account only for the prior years. Third, using a lag structure eliminates endogeneity concerns, because while the past can influence the future, the reverse does not hold true.

Our remaining variables follow Wallin and Zabel (2011) and can be characterized as either demographic or local government variables. For demographic variables, we included the population of the town, per capita income, and the percent of voters registered as Republican[10]. Towns in Massachusetts run the gamut in terms of size, so we posit that small towns may be more likely to hold a vote given their close-knit feel. Similarly, richer towns may feel as though they can afford an override vote; alternatively poorer towns may need the additional money to fund government so we see an ambiguous effect for income. Republicans tend to vote against tax increases, so we expect this to decrease the likelihood of a vote.

Our local government variables contain dummy variables for the type of town government. We therefore include a dummy if the municipality has a city form of government in which there is a Mayor/Council or a Council/Manager. Alternatively, most municipalities in Massachusetts operate under an Open Town Meeting form, where any voter is allowed to attend and/or vote on legislative matters, and we include a dummy variable for this form as well. The Representative Town Meeting, in which voters elect representatives to attend the town meeting, is held by fewer than 50 towns and is our excluded category.

We also have an array of local fiscal variables. Total per capita aid the town receives from the state is included as higher aid could preclude the town from needing to ask voters for more revenue[11]. Per capita revenues and expenditures are added separately, so as to differentiate the impact of different components of the budget. We also subtract expenditures from revenues to create a combined variable we refer to as local fiscal condition (LFC). This is similar in spirit to the LFC variable created by Wallin and Zabel (2011).[12]

Finally, we include the town's excess capacity as a percent of the maximum levy, which indicates how much additional money the town could raise without having a vote. A town in

[10] Wallin and Zabel (2011) also include demographics on age, race, and educational attainment. These variables are only available from the decennial census or ACS, and hence there are only 3 (or 4, depending on how one views 1980) distinct data points. Wallin and Zabel extrapolate to fill in the missing years, but the use of town government form essentially works like a city/town fixed effect, as very few towns switch form in our sample. We felt the extrapolation added more noise than value, so we excluded them from the model.
[11] A complication here is that state aid for schools goes straight to the district, which results in underreporting for towns in regional school districts (Wallin and Zabel, 2011).
[12] Wallin and Zabel (2011) define local fiscal condition as revenues minus costs, but because they are concerned specifically about this variable being impacted by the vote, they use a predicted LFC to purge endogeneity concerns. When we lagged our LFC variable by a year to similarly remove endogeneity concerns, our results remained the same. We therefore chose to use contemporaneous values for simplicity and the extra year of data doing so provides.

need of increased revenues could tap its excess capacity without going to a vote, so we anticipate this dampening the likelihood of a vote.

A final issue with the data is one with timing. Aid and revenue data are available from 1982, whereas expenditure and excess capacity data are only available starting with 1987. We therefore estimate a simpler model excluding these variables but starting in 1982. We then repeat the analysis starting in 1987, so as to isolate the impact of the time span of the sample. We then run variants using the expenditure and excess capacity data to see if there is a strong omitted variable bias in our original specification. Without the middle step, it becomes difficult to attribute any changes to timespan or model specification.

Results

The Decision to Vote

Table 4 reports the estimated hazard ratio for the determinants of a town's first override vote. Estimates greater than 1 indicate that a one-unit increase in the variable increases the likelihood of the first vote happening, whereas estimates less than 1 indicate that a one-unit increase in the variable of interest decreases the likelihood of the first vote happening. While a one-unit increase in most of our variables is easily understood, it becomes complicated for our spatial dependency variables. Here, a one-unit increase signals a switch from no neighboring towns having held a vote to all neighboring towns having done so. Since we are interested in the impact of one neighboring town, we divided the estimated coefficient by the average number of neighbors in the state (5.2) and then used that value to calculate the hazard ratio for the spatial dependency variables. Thus, the hazard ratio indicates the change caused by one additional neighbor (on average) having a vote on a town's likelihood to hold its first vote.

There are four groups within Table 4. The first group of results spans 1982-2010, using all explanatory variables available to us. The second grouping uses the same explanatory variables, but for the 1987-2010 time period, which allows us to see the impact of changing timeframes. The third grouping adds total expenditures and excess capacity to the model, whereas the final grouping combines revenues and expenditures into one measure of local fiscal condition, similar in spirit to Wallin and Zabel (2011).

Within each time grouping there are four different specifications of our spatial dependency variables, labeled (1) thru (4). We start by asking whether your neighbors ever held an override vote in the past. We then look at whether your neighbors ever had a previous winning or losing vote separately, and then add both at the same time in the final specification.

Our results indicate a statistically significant spatial relationship in override voting in Massachusetts. Having a neighboring town hold an override vote increases a town's likelihood of holding its own vote by approximately 15 percent. This effect is consistent across the four time groupings and is estimated within a very tight band (1.148–1.159). This effect carries over for neighboring wins and losses, with wins having a slightly stronger increase of 12–14 percent compared with losses having 11–13 percent. When we estimate a model with both wins and losses added separately, we find that losses are never statistically significant, whereas wins increase the likelihood of holding a vote by 10–12 percent. So while having neighboring votes matter, having them be winning votes matters more.

Our control variables act in the way we expect. Rich towns are more likely to hold a vote. Towns with large excess capacity are significantly less likely to have an override vote in a given period. Having a city form of government dramatically lowers the likelihood of ever having an override; these municipalities tend to have large populations as well. Revenues and expenditures, while being statistically insignificant, have point estimates in the directions we would expect.

Finally, we tested each of the specifications to ensure that we actually have proportional hazards. In all specifications, every variable passed with a p-value greater than 0.05, with the exception of the government form dummy variables, which are only time-invariant variables. When we interacted each variable with a time trend, the interaction terms themselves were insignificant (with the government form variables once again being the exception), consistent with the presence of proportional hazards. Dropping the government form variables from our specifications also yielded no changes to our remaining results. Moreover, testing each remaining variable generated p-values sufficiently large such that we cannot reject the hypothesis of proportional hazards for any variable or the remaining model as a whole. Ultimately, we chose to keep the government form variables in the model, as they have a theoretical justification for being included, are constantly significant throughout our specifications, and are not influencing any of our other results.[13]

Given that table 4 suggests winning overrides are what matters, we specifically focus on the determinants of a town's first winning vote in table 5. Point estimates suggest neighboring votes increase the likelihood of a first successful override vote by approximately 24 percent. This increases slightly when we look at neighbors having a winning vote, and once again, losing votes do not matter when combined with winning votes.

We include a dummy variable indicating whether the town had multiple voting dates in the year. Often a town will hold a vote, and if it fails, the town lowers the vote amount and holds another vote a few months later within the same year. The large point estimate we see here is indicative that such a strategy can be successful.

Other controls act similarly to table 4. The big change concerns revenues and expenditures, which are now statistically significant. The magnitudes of the point estimates, however, suggest that pressure from expenditures increases the likelihood of a first success more than a decrease in revenues. Towns with better fiscal conditions are also less likely to hold a winning override vote.

In combination, tables 4 and 5 paint an interesting picture. They suggest that there exists a strong spatial dependency in override votes of approximately 15-20 percent. Seeing a successful override vote in a neighboring town increases the likelihood of a success at home, but fiscal conditions, unsurprisingly, also play a role. When we estimate the determinants of a town's first losing override vote (see appendix A1), however, we find that our spatial dependency variables are no longer statistically significant. Moreover, the point estimates are lower as well. So while winning begets winning, losing does not attract losing. There is an asymmetry in spatial influence.

[13] We continued testing for proportional hazards in results that follow, and found similar results. Namely, government form remains the only variable that comes close to failing tests for proportional hazards.

One potential drawback of this specification is that the timing of a neighboring town's vote is ignored. If town A held its only override vote in 1983, should that carry the same weight in town B's decision to hold its first vote in 2006, as another town who held their first vote in 2003? In our current specification, we make no distinction between the timing, so as a robustness check, we only allow a neighboring town's vote to have influence if it occurred in the past 3 (or 5) years. If the neighboring town held a vote within 3 (or 5) years, the spatial dependency was included, but if the neighboring town held a vote further than 3 (or 5) years in the past, the spatial dependency was not included. We find measuring neighboring voting behavior 3 (or 5) years past yields identical results as tables 4 and 5.

Finally, we estimate tables 4 and 5 using our alphabetical weights. Our results consistently return coefficient estimates of less than 1 that are not significantly different from zero. This suggests that the spatial dependency reported in tables 4 and 5 are real and not a result of some spurious process.

We next turn to see if this pattern holds for a town having its first vote in a specific category. Table 6 shows results for the determinants of a town's first vote in each of four categories: general, education, safety, and DPW.[14] For our spatial dependency variables, we now include whether your neighbor has held a vote in each of the categories. We then break each neighboring vote into a win or loss as well, to see if the asymmetry carries through. For simplicity, table 6 only presents results from the 1987-2010 (group 3 from tables 4.2 and 5.2) while including total expenditures per capita and excess capacity as a percent of maximum levy as additional controls. We only include specifications (1) and (4) from table 4.2 here, but results for specifications (2) and (3) are consistent with these results and are available upon request.

Within the categories, we see that having neighbors hold a similar type of vote is not enough to influence the decision to hold a vote. For education and safety, it turns out that your neighbors must hold a successful vote. This increases the likelihood of you holding an education vote by 20 percent, and a safety vote by almost 37 percent. We see that DPW and general operating expenditures are influenced by the presence of a multiple category vote in neighboring towns. We suspect this is because 126 of the 145 multiple votes contained general operating expenses, whereas 50 multiple votes contained DPW expenditures. While the 50 seems low at first glance, keep in mind that there were only 500 DPW votes, whereas there were over 2300 general operating votes. Our controls continue to perform as expected.

Table 7 repeats this exercise for your first winning vote by category. Here, we see no spatial dependency for safety or DPW. General operating budget votes are influenced by prior DPW and multiple category votes, which is consistent with our prior supposition that this is driven by multiple being majority general operations. These three categories are not influenced by success or failure of similar votes in other towns. Education votes, on the other hand, are likely to succeed if the neighbors succeed, but they are less likely to succeed if the neighbors fail. This is consistent with a competition outcome; if the neighbors are spending more, we should spend more. If the neighbors are spending less, we should spend less. In fact, a recent paper by Zabel (forthcoming) argues that an increase in school segregation is a result of school districts using override votes to compete for wealthier residents via Tiebout sorting. Finally, the fact that our

[14] Because it is a combination of other categories, we do not consider multiple category votes for this exercise.

estimated impacts are the same magnitude in both directions adds further weight to this competition hypothesis.

Persistence in spatial dependency

So far, we have focused on the decision to have an initial vote, and have found that the categorical results suggest a competition type of argument, particularly in education votes. To further tease this out, we use the panel nature of our data to examine impact of spatial dependency over time. We estimate a panel random effects negative binomial count model, which like a more standard Poisson count model has an exponential condition mean but unlike a Poisson, can work with over dispersed data such as ours, where the variance of total votes is greater than the mean. The coefficient estimates report an incidence rate ratio, which is the multiplicative impact of the explanatory variable on the conditional mean and has a similar interpretation to a hazard ratio.[15]

Table 8 reports the results of our panel count model, where the non-spatially weighted control variables are included in the model but suppressed in the table for simplicity. Again we are focusing on 1987–2010 data and include excess capacity, revenues, and expenditures (group 3). We see that towns with more active neighbors have a higher vote count, as the incidence rate reported for all override votes is 1.1312. The magnitude of the incidence rate implies that if the neighbors of an average town hold an additional 5 votes (since there are on average 5 neighbors), then the town should experience 1.1312 times the average number of votes. In our sample, the average number of votes held in any one municipality is 13; thus, we need the town's neighbors to hold 3 additional votes in order to increase the town's vote total by one. If we exclude the non-voting towns, the average number of votes is 15, implying an additional 2.5 votes by neighbors would lead to one additional vote by the town.

When we look at the categories in table 8, we see that education has the largest estimated impact, and that wins matter the most. The incidence rate ratio is 1.7361 which implies that if a town's neighbors hold an additional 5 votes, we would expect 1.7361 times the incidence rate for education votes in that town on average. Since the average town has 3 education votes (3.5 if we remove the non-voting towns), a town's neighbors must hold an additional 2.5 education votes (2 additional votes if we remove the non-voting towns) for the town to hold one additional education vote on average. This calculation excludes the impact of additional votes by neighbors for any other category. The rate of additional general category votes is influenced by neighbor's general votes, but safety and DPW votes do not have this same category effect.

As our results have pointed to the importance of wins, table 9 reports the incidence rate ratios for the aggregate number of winning votes by category. The pattern of table 8 carries over here as well, with significant same category effects for general and education. We also see DPW votes influenced by neighbors' votes. Education votes still show the largest spatial dependency, the incidence rate ratio reported for education votes is 1.7101. As the average number of winning education votes is 1.35 (1.57 excluding non-voting towns), this magnitude implies that about 5 additional education votes (4.5 excluding non-voting towns) by neighbors would lead to one

[15] A common concern with count models deal with the treatment of zero counts. If the zero count is due to a separate process, such as non-exposure or under-exposure to the treatment versus other members of the study, we would need to utilize a zero-inflated count model. In our case, all towns are exposed similarly to Proposition 2 ½, so the zero-inflated models are not needed.

additional successful education vote by a town on average. This impact is even larger for neighbors' winning education votes, and no longer significant for neighbors' losing votes.

Conclusion

In this paper, we set out to see if spatial proximity played a role in the decision for Massachusetts towns to hold their initial override vote under Proposition 2 ½. We find that if a neighbor held a vote previously, your likelihood of holding a vote increases by 10-15 percent. When we make a distinction between the winning and losing votes of your neighbors, we find that success brings success, but defeat does not bring defeat. Rather, defeats have no noticeable impact at all.

What is the mechanism? Once technology is transferred, there should be no further reliance on one's neighbors. The fact that our panel count models find spatial interaction in the total number of votes suggests that the spatial effect is persistent, which would go against the one and done nature of technology transfer.

The estimated results on education votes ultimately tilt the deck in favor of tax/yardstick competition. Here, voters respond positively to successful neighboring votes and negatively to unsuccessful votes. While consistent with a keeping up with the Joneses philosophy, Zabel (forthcoming) argues this is ultimately tax competition at work. So while we are unable to disentangle the yardstick angle from the tax competition argument, in the end we are able to conclude that competitive forces continue to be alive and well in Massachusetts, even in the face of a property tax limitation program as large as Proposition 2 ½.

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Tables

Table 1. Number and Dollar Amount of Override Votes in Massachusetts Municipalities by Year, 1982-2010.

Year	Number of overrides	Amount from wins (in nominal millions of dollars)
1982	34	17.29
1983	44	1.28
1984	25	1.15
1985	41	0.88
1986	85	2.19
1987	110	6.15
1988	141	23.83
1989	440	26.78
1990	607	58.99
1991	550	31.40
1992	300	16.56
1993	300	8.56
1994	176	9.35
1995	167	8.38
1996	97	5.39
1997	92	7.17
1998	49	8.51
1999	57	6.96
2000	84	21.60
2001	81	29.98
2002	112	49.19
2003	152	39.10
2004	154	27.00
2005	170	48.89
2006	124	33.85
2007	99	36.08
2008	143	39.27
2009	60	14.49
2010	56	13.02

Table 2. Number of Years with an Override Vote and Override Win for Municipalities, 1982-2010.

	Attempts		Wins	
Number of years	Number of towns	Percent of all towns	Number of towns	Percent of all towns
0	48	13.68	98	27.92
1	37	10.54	58	16.52
2	37	10.54	44	12.54
3	43	12.25	39	11.11
4	32	9.12	21	5.98
5	24	6.84	22	5.98
6	29	8.26	16	4.56
7	15	4.27	12	3.70
8	20	5.70	10	2.85
9	8	2.28	4	1.14
10	16	4.56	6	1.42
11	7	1.99	2	0.85
12	12	3.42	4	1.14
13	4	1.14	6	1.71
14	6	1.71	4	1.14
15	4	1.14	0	0.00
16	4	1.14	1	0.28
17	0	0.00	0	0.00
18	1	0.28	1	0.28
19	2	0.57	1	0.28
20	0	0.00	1	0.28
21	1	0.28	1	0.28
22	1	0.28	0	0.00

Table 3. Override Votes by Category.

Year	Number of Override Votes	Categories of Votes: General Operations	Education	Safety	Department of Public Works	Multiple
1982	34	34	0	0	0	0
1983	44	44	0	0	0	0
1984	25	25	0	0	0	0
1985	41	41	0	0	0	0
1986	85	85	0	0	0	0
1987	110	110	0	0	0	0
1988	141	131	6	1	1	2
1989	440	247	62	49	59	23
1990	607	307	137	67	76	20
1991	550	236	154	68	81	11
1992	300	116	79	51	48	6
1993	300	130	76	50	43	1
1994	176	89	39	24	24	0
1995	167	60	46	26	35	0
1996	97	35	35	16	11	0
1997	92	45	30	10	7	0
1998	49	20	22	0	7	0
1999	57	27	21	5	3	1
2000	84	35	25	13	6	5
2001	81	34	27	9	9	2
2002	112	41	35	22	7	7
2003	152	74	38	15	12	13
2004	154	73	42	21	9	9
2005	170	81	42	18	15	14
2006	124	61	40	8	11	4
2007	99	45	29	7	10	8
2008	143	51	45	19	13	15
2009	60	30	12	8	7	3
2010	56	22	20	6	7	1

Note: The Multiple category of vote implies a single ballot had an override vote for more than one category.

Table 4. Estimated Hazard Ratio of Municipality's Likelihood of Holding First Override Vote.

Group:	1982-2010				1987-2010			
Specification:	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Spatial Dependency Variables[a]								
Neighbor's Override Vote	1.1583‡				1.1482†			
	(2.94)				(2.39)			
Neighbor's Winning Override Vote		1.1344†		1.1086*		1.1212†		1.0835
		(2.45)		(1.77)		(2.02)		(1.25)
Neighbor's Losing Override Vote			1.1113*	1.0554			1.1306*	1.0847
			(1.88)	(0.85)			(1.95)	(1.14)
Demographic Characteristics								
Per Capita Income	1.0344*	1.0317*	1.0312*	1.0337*	1.0537‡	1.0520†	1.0538‡	1.0556‡
	(1.95)	(1.80)	(1.75)	(1.90)	(2.62)	(2.54)	(2.58)	(2.69)
Republican Percentage	1.0253†	1.0277†	1.0276†	1.0268†	1.0322†	1.0339†	1.0333†	1.0317†
	(2.23)	(2.46)	(2.42)	(2.37)	(2.05)	(2.17)	(2.09)	(2.01)
Population (in 1,000s)	0.9916	0.9926	0.9900	0.9924	0.9973	0.9976	0.9968	0.9977
	(-1.28)	(-1.14)	(-1.48)	(-1.16)	(-0.59)	(-0.55)	(-0.64)	(-0.52)
Local Government Controls								
State Aid Received Per Capita	1.0335	1.0334	1.0275	1.0334	1.0762	1.0801	1.0744	1.0779
	(0.64)	(0.64)	(0.53)	(0.64)	(1.27)	(1.34)	(1.22)	(1.29)
Total Revenue Per Capita	0.9526	0.9360	0.9849	0.9241	0.7238	0.7059	0.7310	0.6936
	(-0.30)	(-0.40)	(-0.09)	(-0.48)	(-1.47)	(-1.55)	(-1.43)	(-1.63)
Total Expenditures Per Capita								
Excess Capacity (percent of Max.								

Levy)								
Local Fiscal Condition								
City/Town Form of Government (1=Yes)	0.5012†	0.4794†	0.5147†	0.4815†	0.4660†	0.4483†	0.4674†	0.4507†
	(-2.07)	(-2.19)	(-1.99)	(-2.18)	(-2.24)	(-2.35)	(-2.22)	(-2.34)
Open Town Meeting Form of Government (1=Yes)	1.4441*	1.4535*	1.4081	1.4295*	1.3123	1.3073	1.2895	1.2819
	(1.71)	(1.75)	(1.57)	(1.66)	(1.22)	(1.21)	(1.12)	(1.11)
N	3307	3307	3307	3307	1835	1835	1835	1835
Likelihood Ratio X^2-*statistic*	92.45	89.76	87.41	90.48	62.32	60.63	60.40	61.93
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: [a]Neighbors' hazard ratios are calculated by dividing the estimated coefficient by the average of the number of neighbors (5.2) then creating the hazard ratio to give the marginal effect of one neighbor having an override vote in any prior year. Total revenue per capita, total expenditures per capita, and local fiscal condition are measured in thousands of dollars. State aid received per capita is measured in hundreds of dollars. Z-values are shown in parentheses. *, †, ‡ signify statistical significance at the 0.1, 0.05, and 0.01 percent levels, respectively.

Table 4 (continued). Estimated Hazard Ratio of Municipality's Likelihood of Holding First Override Vote.

Group:	1987-2010				1987-2010			
Specification:	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Spatial Dependency Variables[a]								
Neighbor's Override Vote	1.1593†				1.1566†			
	(2.57)				(2.54)			
Neighbor's Winning Override Vote		1.1548†		1.1254*		1.1462†		1.1169*
		(2.52)		(1.79)		(2.43)		(1.70)
Neighbor's Losing Override Vote			1.1259*	1.0579			1.1229*	1.0574
			(1.91)	(0.79)			(1.88)	(0.79)
Demographic Characteristics								
Per Capita Income	1.0351*	1.0352*	1.0344	1.0369*	1.0290*	1.0260	1.0287*	1.0277
	(1.65)	(1.66)	(1.59)	(1.73)	(1.70)	(1.54)	(1.66)	(1.63)
Republican Percentage	1.0392†	1.0401†	1.0396†	1.0386†	1.0398†	1.0409‡	1.0402†	1.0395†
	(2.43)	(2.51)	(2.43)	(2.39)	(2.48)	(2.58)	(2.48)	(2.47)
Population (in 1,000s)	0.9949	0.9958	0.9942	0.9958	0.9947	0.9953	0.9939	0.9953
	(-0.88)	(-0.80)	(-0.93)	(-0.79)	(-0.92)	(-0.87)	(-0.97)	(-0.85)
Local Government Controls								
State Aid Received Per Capita	1.0362	1.0420	1.0306	1.0388	1.0258	1.0263	1.0214	1.0232
	(0.58)	(0.67)	(0.49)	(0.62)	(0.44)	(0.45)	(0.36)	(0.40)
Total Revenue Per Capita	0.5345	0.5289	0.5789	0.5120				
	(-1.38)	(-1.39)	(-1.21)	(-1.47)				
Total Expenditures Per Capita	1.6585	1.5724	1.5469	1.6250				
	(1.00)	(0.89)	(0.86)	(0.96)				
Excess Capacity (percent of Max. Levy)	0.8391‡	0.8319‡	0.8418‡	0.8349‡	0.8374‡	0.8299‡	0.8400‡	0.8327‡

	(-3.59)	(-3.71)	(-3.52)	(-3.65)	(-3.64)	(-3.75)	(-3.57)	(-3.70)
Local Fiscal Condition					0.5402	0.5423	0.5841	0.5248
					(-1.39)	(-1.39)	(-1.22)	(-1.46)
City/Town Form of Government (1=Yes)	0.5333*	0.5020†	0.5385*	0.5058†	0.5376*	0.5090†	0.5428*	0.5134†
	(-1.84)	(-2.03)	(-1.81)	(-2.01)	(-1.82)	(-1.99)	(-1.79)	(-1.96)
Open Town Meeting Form of Government (1=Yes)	1.3041	1.2987	1.2839	1.2810	1.3109	1.3092	1.2909	1.2917
	(1.17)	(1.16)	(1.08)	(1.09)	(1.19)	(1.20)	(1.11)	(1.13)
N	1835	1835	1835	1835	1835	1835	1835	1835
Likelihood Ratio X^2-*statistic*	85.15	84.75	82.21	85.37	84.92	84.23	82.02	84.85
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: [a]Neighbors' hazard ratios are calculated by dividing the estimated coefficient by the average of the number of neighbors (5.2) then creating the hazard ratio to give the marginal effect of one neighbor having an override vote in any prior year. Total revenue per capita, total expenditures per capita, and local fiscal condition are measured in thousands of dollars. State aid received per capita is measured in hundreds of dollars. Z-values are shown in parentheses. *, †, ‡ signify statistical significance at the 0.1, 0.05, and 0.01 percent levels, respectively.

Table 5. Estimated Hazard Ratio of Municipality's Likelihood of Holding First Winning Override Vote.

Group:	1982-2010				1987-2010			
Specification:	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Spatial Dependency Variables[a]								
Neighbor's Override Vote	1.2919‡				1.2339‡			
	(4.55)				(3.32)			
Neighbor's Winning Override Vote		1.2904‡		1.2824‡		1.2370‡		1.2131‡
		(4.99)		(4.36)		(3.85)		(3.16)
Neighbor's Losing Override Vote			1.1428†	1.0159			1.1489†	1.0507
			(2.29)	(0.25)			(2.23)	(0.73)
Demographic Characteristics								
Per Capita Income	1.0478‡	1.0463‡	1.0452‡	1.0467‡	1.0591‡	1.0587‡	1.0588‡	1.0601‡
	(3.20)	(3.11)	(2.99)	(3.12)	(3.63)	(3.65)	(3.57)	(3.72)
Republican Percentage	1.0181	1.0212*	1.0230*	1.0211	1.0246	1.0264	1.0287*	1.0257
	(1.39)	(1.65)	(1.76)	(1.64)	(1.48)	(1.61)	(1.71)	(1.57)
Population (in 1,000s)	0.9845*	0.9890	0.9808†	0.9890	0.9966	0.9984	0.9950	0.9985
	(-1.70)	(-1.20)	(-2.06)	(-1.21)	(-0.46)	(-0.26)	(-0.61)	(-0.25)
Local Government Controls								
State Aid Received Per Capita	0.9291	0.9264	0.9268	0.9268	0.9530	0.9534	0.9537	0.9540
	(-1.43)	(-1.50)	(-1.47)	(-1.49)	(-0.86)	(-0.86)	(-0.84)	(-0.85)
Total Revenue Per Capita	0.9449	0.8976	1.0173	0.8948	0.7328	0.7027*	0.7643	0.6955*
	(-0.36)	(-0.67)	(0.11)	(-0.69)	(-1.45)	(-1.65)	(-1.27)	(-1.69)
Total Expenditures Per Capita								

Excess Capacity (percent of Max. Levy)								
Local Fiscal Condition								
City/Town Form of Government (1=Yes)	0.4907*	0.4376*	0.5171	0.4371*	0.4115†	0.3806†	0.4192†	0.3798†
	(-1.69)	(-1.95)	(-1.57)	(-1.95)	(-2.07)	(-2.27)	(-2.01)	(-2.28)
Open Town Meeting Form of Government (1=Yes)	1.0643	1.1224	1.0268	1.1159	1.1094	1.1309	1.0796	1.1129
	(0.24)	(0.46)	(0.10)	(0.43)	(0.41)	(0.50)	(0.30)	(0.43)
Votes held on Different Dates within a Year (1=Yes)	7.1050‡	7.2875‡	7.2965‡	7.2855‡	5.8649‡	5.9776‡	5.9469‡	5.9776‡
	(10.93)	(11.02)	(11.09)	(11.03)	(8.62)	(8.69)	(8.71)	(8.70)
N	4,891	4,891	4,891	4,891	3,313	3,313	3,313	3,313
Likelihood Ratio X^2-*statistic*	232.2	235.4	216.9	235.5	165.0	168.2	159.0	168.8
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: [a]Neighbors' hazard ratios are calculated as described in Table 4. Total revenue per capita, total expenditures per capita, and local fiscal condition are measured in thousands of dollars. State aid received per capita is measured in hundreds of dollars. Z-values are shown in parentheses. *, †, ‡ signify statistical significance at the 0.1, 0.05, and 0.01 percent levels, respectively.

Table 5 (continued). Estimated Hazard Ratio of Municipality's Likelihood of Holding First Winning Override Vote.

Group:	1987-2010				1987-2010			
Specification:	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Spatial Dependency Variables[a]								
Neighbor's Override Vote	1.2476‡				1.2480‡			
	(3.51)				(3.53)			
Neighbor's Winning Override Vote		1.2672‡		1.2547‡		1.2656‡		1.2532‡
		(4.31)		(3.63)		(4.33)		(3.63)
Neighbor's Losing Override Vote			1.1453†	1.0233			1.1464†	1.0227
			(2.18)	(0.33)			(2.21)	(0.32)
Demographic Characteristics								
Per Capita Income	1.0409†	1.0411†	1.0411†	1.0416†	1.0415‡	1.0394‡	1.0429‡	1.0398‡
	(2.40)	(2.44)	(2.38)	(2.46)	(3.08)	(2.97)	(3.16)	(2.99)
Republican Percentage	1.0316*	1.0343†	1.0343†	1.0339†	1.0315*	1.0345†	1.0340†	1.0341†
	(1.84)	(2.03)	(1.98)	(2.00)	(1.84)	(2.05)	(1.97)	(2.02)
Population (in 1,000s)	0.9940	0.9964	0.9921	0.9964	0.9940	0.9963	0.9922	0.9964
	(-0.71)	(-0.52)	(-0.88)	(-0.51)	(-0.71)	(-0.53)	(-0.87)	(-0.52)
Local Government Controls								
State Aid Received Per Capita	0.9178	0.9212	0.9159	0.9210	0.9191	0.9177	0.9198	0.9172
	(-1.47)	(-1.42)	(-1.49)	(-1.42)	(-1.58)	(-1.63)	(-1.56)	(-1.64)
Total Revenue Per Capita	0.3107†	0.2896‡	0.3593†	0.2889‡				
	(-2.48)	(-2.68)	(-2.18)	(-2.68)				
Total Expenditures Per Capita	3.2640†	3.3231†	2.9021†	3.3181†				

	(2.27)	(2.36)	(2.03)	(2.35)				
Excess Capacity (percent of Max. Levy)	0.8763‡	0.8656‡	0.8793‡	0.8669‡	0.8765‡	0.8652‡	0.8799‡	0.8664‡
	(-2.76)	(-2.95)	(-2.69)	(-2.92)	(-2.76)	(-2.96)	(-2.69)	(-2.93)
Local Fiscal Condition					0.3104†	0.2909‡	0.3586†	0.2903‡
					(-2.48)	(-2.70)	(-2.16)	(-2.70)
City/Town Form of Government (1=Yes)	0.4901*	0.4466*	0.4979	0.4465*	0.4896*	0.4476*	0.4962	0.4476*
	(-1.66)	(-1.90)	(-1.62)	(-1.90)	(-1.67)	(-1.90)	(-1.63)	(-1.90)
Open Town Meeting Form of Government (1=Yes)	1.0887	1.1087	1.0614	1.1013	1.0879	1.1106	1.0587	1.1037
	(0.33)	(0.41)	(0.23)	(0.38)	(0.33)	(0.42)	(0.22)	(0.39)
Votes held on Different Dates within a Year (1=Yes)	5.7216‡	5.8912‡	5.7576‡	5.8827‡	5.7214‡	5.8933‡	5.7562‡	5.8847‡
	(8.55)	(8.68)	(8.57)	(8.68)	(8.55)	(8.68)	(8.57)	(8.68)
N	3,313	3,313	3,313	3,313	3,313	3,313	3,313	3,313
Likelihood Ratio X^2-*statistic*	182.2	187.5	174.6	187.6	182.2	187.5	174.6	187.6
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: [a]Neighbors' hazard ratios are calculated as described in Table 4. Total revenue per capita, total expenditures per capita, and local fiscal condition are measured in thousands of dollars. State aid received per capita is measured in hundreds of dollars. Z-values are shown in parentheses. *, †, ‡ signify statistical significance at the 0.1, 0.05, and 0.01 percent levels, respectively.

Table 6. Estimated Hazard Ratio of Municipality's Likelihood of Holding First Override Vote, by Category.

Category:	General		Education		Safety		Department of Public Works (DPW)	
Specification:	(1)	(4)	(1)	(4)	(1)	(4)	(1)	(4)
Spatial Dependency Variables[a]								
Neighbor's Same Category Override Vote	1.0543		1.0484		1.0805		0.9851	
	(0.79)		(0.63)		(0.80)		(-0.13)	
Neighbor's Same Category Winning Override Vote		1.0756		1.2010†		1.3686‡		0.9126
		(1.01)		(2.44)		(2.96)		(-0.69)
Neighbor's Same Category Losing Override Vote		0.9853		0.9612		0.9232		0.9561
		(-0.17)		(-0.54)		(-0.76)		(-0.36)
Neighbor's General Category Override Vote			1.0575	1.0397	1.0569	1.0432	1.0008	1.0050
			(1.04)	(0.72)	(0.82)	(0.62)	(0.01)	(0.07)
Neighbor's Education Category Override Vote	1.0743	1.0908			1.0158	0.9948	1.0585	1.0689
	(0.66)	(0.79)			(0.18)	(-0.06)	(0.62)	(0.73)
Neighbor's Safety Category Override Vote	0.8855	0.8923	0.9943	0.9943			1.0466	1.0847
	(-0.87)	(-0.81)	(-0.06)	(-0.06)			(0.41)	(0.74)
Neighbor's DPW Category Override Vote	1.0866	1.0918	1.1245	1.0987	1.0512	1.0187		
	(0.69)	(0.72)	(1.31)	(1.03)	(0.48)	(0.17)		
Neighbor's Mulitiple	1.2397*	1.2219*	1.0825	1.0504	1.0763	1.0421	1.2595†	1.2554†

Category Override Vote								
	(1.87)	(1.73)	(0.86)	(0.53)	(0.74)	(0.42)	(2.23)	(2.18)
Demographic Characteristics								
Per Capita Income	1.0279	1.0280	0.9846	0.9850	0.9633‡	0.9624‡	0.9895	0.9888
	(1.50)	(1.52)	(-1.44)	(-1.42)	(-2.86)	(-2.87)	(-0.95)	(-1.01)
Republican Percentage	1.0523‡	1.0528‡	1.0233	1.0207	1.0435†	1.0443‡	1.0331*	1.0334*
	(3.01)	(3.05)	(1.64)	(1.47)	(2.49)	(2.60)	(1.93)	(1.94)
Population (in 1,000s)	0.9937	0.9944	0.9991	0.9995	0.9997	1.0000	0.9700‡	0.9697‡
	(-0.84)	(-0.78)	(-0.22)	(-0.14)	(-0.07)	(0.01)	(-2.60)	(-2.62)
Local Government Controls								
State Aid Received Per Capita	1.0934	1.0998	0.9870	0.9941	0.9504	0.9488	1.0396	1.0339
	(1.42)	(1.50)	(-0.28)	(-0.13)	(-1.00)	(-1.04)	(0.74)	(0.63)
Total Revenue Per Capita	0.4892	0.4987	0.4671†	0.4472†	0.7194	0.6651	0.7035	0.7129
	(-1.53)	(-1.49)	(-2.39)	(-2.46)	(-1.05)	(-1.29)	(-0.99)	(-0.94)
Total Expenditures Per Capita	1.9691	1.8748	1.9171†	1.9491†	1.4664	1.5275	1.5002	1.4819
	(1.33)	(1.23)	(2.09)	(2.09)	(1.25)	(1.36)	(1.07)	(1.03)
Excess Capacity (percent of Max. Levy)	0.8826†	0.8785‡	0.8260‡	0.8264‡	0.6990‡	0.6950‡	0.7139‡	0.7143‡
	(-2.54)	(-2.60)	(-4.13)	(-4.10)	(-4.38)	(-4.39)	(-3.92)	(-3.91)
City/Town Form of Government (1=Yes)	0.3590†	0.3549†	0.3984†	0.3719†	0.8413	0.8393	0.4845	0.4990
	(-2.42)	(-2.45)	(-2.38)	(-2.56)	(-0.40)	(-0.41)	(-1.41)	(-1.35)
Open Town Meeting Form of Government (1=Yes)	1.2835	1.3039	1.4523	1.4484	1.5023	1.4704	0.8053	0.8020

	(1.00)	(1.06)	(1.61)	(1.60)	(1.34)	(1.27)	(-0.65)	(-0.66)
N	2,522	2,522	3,920	3,920	5,467	5,467	5,487	5,487
Likelihood Ratio X^2-*statistic*	81.61	82.10	92.75	98.25	75.93	83.92	75.86	76.59
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: Table 6 uses data from 1987-2010. Specification (1) includes the neighbors' voting behavior and specification (4) breaks that voting behavior into winning and losing votes for the same category of vote. [a]Neighbors' hazard ratios are calculated as described in Table 4. Total revenue per capita, total expenditures per capita, and local fiscal condition are measured in thousands of dollars. State aid received per capita is measured in hundreds of dollars. Z-values are shown in parentheses. *, †, ‡ signify statistical significance at the 0.1, 0.05, and 0.01 percent levels, respectively.

Table 7. Estimated Hazard Ratio of Municipality's Likelihood of Holding First Winning Override Vote, by Category.

Category:	General		Education		Safety		Department of Public Works (DPW)	
Specification:	(1)	(4)	(1)	(4)	(1)	(4)	(1)	(4)
Spatial Dependency Variables[a]								
Neighbor's Same Category Override Vote	1.1292		0.9310		1.1509		1.0408	
	(1.58)		(-0.75)		(1.25)		(0.29)	
Neighbor's Same Category Winning Override Vote		1.1264		1.1769*		1.1864		0.9494
		(1.59)		(1.94)		(1.32)		(-0.36)
Neighbor's Same Category Losing Override Vote		1.0592		0.8055†		1.0503		0.9321
		(0.63)		(-2.43)		(0.40)		(-0.46)
Neighbor's General Category Override Vote			1.2401‡	1.2120‡	1.1287	1.1264	1.0921	1.1038
			(2.97)	(2.66)	(1.34)	(1.31)	(0.93)	(1.04)
Neighbor's Education Category Override Vote	1.1043	1.1014			1.0155	1.0143	1.128	1.1499
	(0.93)	(0.88)			(0.15)	(0.14)	(0.97)	(1.13)
Neighbor's Safety Category Override Vote	0.8903	0.8891	1.1955*	1.2215†			0.9509	1.0024
	(-0.78)	(-0.80)	(1.77)	(1.98)			(-0.38)	(0.02)
Neighbor's DPW Category Override Vote	0.7865*	0.7886*	0.9827	0.9314	0.8403	0.8307		
	(-1.69)	(-1.71)	(-0.17)	(-0.66)	(-1.38)	(-1.40)		
Neighbor's Mulitiple Category Override Vote	1.5730‡	1.5290‡	0.9936	0.9641	1.1118	1.089	0.9576	0.9637

	(3.58)	(3.32)	(-0.06)	(-0.33)	(0.91)	(0.74)	(-0.29)	(-0.25)
Demographic Characteristics								
Per Capita Income	1.0232	1.0242	1.0028	1.0028	0.9667†	0.9674†	0.9930	0.9926
	(1.49)	(1.57)	(0.39)	(0.40)	(-2.27)	(-2.22)	(-0.52)	(-0.54)
Republican Percentage	1.0474†	1.0493‡	1.0279*	1.0251	1.0675‡	1.0674‡	1.0407*	1.0410*
	(2.53)	(2.67)	(1.66)	(1.47)	(3.07)	(3.08)	(1.81)	(1.82)
Population (in 1,000s)	0.9938	0.9957	1.0003	1.0008	0.9957	0.9965	0.9765	0.9760
	(-0.58)	(-0.46)	(0.05)	(0.15)	(-0.42)	(-0.37)	(-1.45)	(-1.48)
Local Government Controls								
State Aid Received Per Capita	0.9226	0.9292	0.8794†	0.8886†	0.9909	0.9919	0.8884	0.8875
	(-1.25)	(-1.13)	(-2.41)	(-2.23)	(-0.16)	(-0.14)	(-1.53)	(-1.52)
Total Revenue Per Capita	0.3551†	0.3486†	0.3432‡	0.3236‡	0.7738	0.7521	0.9039	0.8753
	(-2.14)	(-2.18)	(-2.99)	(-3.03)	(-0.76)	(-0.83)	(-0.26)	(-0.33)
Total Expenditures Per Capita	0.3597*	0.3417*	0.4025	0.3700	0.4190	0.4153	0.8823	0.9312
	(-1.68)	(-1.77)	(-1.50)	(-1.63)	(-1.32)	(-1.34)	(-0.19)	(-0.11)
Excess Capacity (percent of Max. Levy)	1.0220	1.0181	1.3945	1.4842	0.8156	0.8175	0.5662	0.5595
	(0.07)	(0.06)	(1.01)	(1.21)	(-0.49)	(-0.49)	(-1.13)	(-1.16)
City/Town Form of Government (1=Yes)	4.0861†	3.9611†	2.7887‡	2.8164‡	1.4396	1.4665	1.3889	1.4171
	(2.51)	(2.46)	(3.29)	(3.19)	(1.04)	(1.09)	(0.77)	(0.82)
Open Town Meeting Form of Government (1=Yes)	0.9006*	0.8961†	0.8232‡	0.8234‡	0.7842‡	0.7851‡	0.7178‡	0.7163‡
	(-1.94)	(-2.02)	(-3.58)	(-3.55)	(-2.85)	(-2.83)	(-2.90)	(-2.91)

Votes held on Different Dates within a Year (1=Yes)	6.1029‡	6.1015‡	4.1689‡	4.0330‡	9.1665‡	9.0788‡	8.7775‡	8.8007‡
	(7.53)	(7.52)	(6.47)	(6.33)	(9.08)	(9.05)	(8.52)	(8.50)
N	4,307	4,307	5,742	5,742	6,623	6,623	6,690	6,690
Likelihood Ratio X^2-*statistic*	142.8	145.0	139.7	148.6	125.3	125.8	120.2	120.6
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: Table 7 uses data from 1987-2010. Specification (1) includes the neighbors' voting behavior and specification (4) breaks that voting behavior into winning and losing votes for the same category of vote. [a]Neighbors' hazard ratios are calculated as described in Table 4. Total revenue per capita, total expenditures per capita, and local fiscal condition are measured in thousands of dollars. State aid received per capita is measured in hundreds of dollars. Z-values are shown in parentheses. *, †, ‡ signify statistical significance at the 0.1, 0.05, and 0.01 percent levels, respectively.

Table 8. Estimated Incidence Rate Ratios for Municipal Override Votes, by Category.

Category:	All Override Votes		General		Education		Safety		DPW[a]	
Specification:	(1)	(4)	(1)	(4)	(1)	(4)	(1)	(4)	(1)	(4)
Spatial Dependency Variables										
Neighbor's Total or Same Category Override Vote	1.1312‡		1.1992‡		1.7361‡		0.9259		1.2389	
	(8.64)		(4.67)		(5.74)		(-0.31)		(1.16)	
Neighbor's Total or Same Category Winning Override Vote		1.2091‡		1.3360‡		1.9689‡		1.0713		0.9251
		(5.68)		(4.99)		(4.41)		(0.17)		(-0.20)
Neighbor's Total or Same Category Losing Override Vote		1.0839‡		1.1095*		1.5707‡		0.8600		1.3631
		(3.15)		(1.65)		(3.28)		(-0.49)		(1.63)
Neighbor's General Category Override Vote					1.1072†	1.1038†	1.1254*	1.1276*	1.0802	1.0823
					(2.17)	(2.11)	(1.88)	(1.90)	(1.13)	(1.16)
Neighbor's Education Category Override Vote			1.1600	1.1489			1.6379‡	1.6148‡	1.6371‡	1.6519‡
			(1.60)	(1.51)			(3.47)	(3.27)	(3.37)	(3.41)
Neighbor's Safety Category Override Vote			0.6050‡	0.6187‡	1.0869	1.0766			1.0860	1.0951
			(-2.85)	(-2.73)	(0.50)	(0.44)			(0.33)	(0.36)
Neighbor's DPW Category Override Vote			1.2377†	1.3100†	1.0701	1.0844	1.3483†	1.3502†		
			(2.14)	(2.57)	(0.56)	(0.66)	(2.08)	(2.05)		
Neighbor's Mulitiple			3.1930‡	3.2461‡	3.1428‡	3.1398‡	2.4166	2.4442	7.7682‡	7.7253‡

Category Override Vote										
			(3.61)	(3.65)	(3.03)	(3.03)	(1.49)	(1.51)	(4.46)	(4.46)
Constant	0.2917‡	0.2939‡	0.2620‡	0.2586‡	0.4301‡	0.4374‡	0.1709‡	0.1713‡	0.1957‡	0.1922‡
	(-8.78)	(-8.72)	(-7.28)	(-7.36)	(-3.55)	(-3.48)	(-5.72)	(-5.72)	(-5.09)	(-5.13)
N	8,424	8,424	8,424	8,424	8,424	8,424	8,424	8,424	8,424	8,424
Likelihood Ratio test of model, *X2-statistic*	599.0	607.4	414.7	425.8	335.3	336.2	215.2	214.9	179.1	181.8
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Likelihood Ratio test of equidispersion, *X2-statistic*	287.2	283.5	208.0	205.2	141.9	139.1	28.61	28.45	53.54	53.51
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: [aDPW] is Department of Public Works. Neighbors' votes are calculated as a spatial weighting of neighboring municipalities voting behavior (vote, winning vote, or losing vote). Specifications (1) and (4) include demographic characteristics and local government controls consistent with earlier models, see table 6. Z-values are shown in parentheses. *, †, ‡ signify statistical significance at the 0.1, 0.05, and 0.01 percent levels, respectively.

Table 9. Estimated Incidence Rate Ratios for Municipal Winning Override Votes, by Category.

Category:	All Override Votes		General Category		Education Category		Safety Category		DPW[a] Category	
Specification:	(1)	(4)	(1)	(4)	(1)	(4)	(1)	(4)	(1)	(4)
Spatial Dependency Variables										
Neighbor's Total or Same Category Override Vote	1.0769‡		1.2251‡		1.7101‡		1.2144		1.4285*	
	(4.32)		(4.21)		(4.62)		(0.64)		(1.93)	
Neighbor's Total or Same Category Winning Override Vote		1.2148‡		1.3454‡		2.1981‡		0.8107		1.5487
		(5.12)		(4.28)		(4.63)		(-0.35)		(0.86)
Neighbor's Total or Same Category Losing Override Vote		0.9885		1.1564*		1.3191		1.4521		1.4101
		(-0.35)		(1.74)		(1.49)		(1.03)		(1.64)
Neighbor's General Category Override Vote					1.1549†	1.1566†	0.9904	0.9845	1.0285	1.0275
					(2.49)	(2.54)	(-0.10)	(-0.17)	(0.27)	(0.26)
Neighbor's Education Category Override Vote			0.9399	0.9301			1.9917‡	2.0690‡	1.5970†	1.5876†
			(-0.49)	(-0.56)			(3.46)	(3.59)	(2.21)	(2.14)
Neighbor's Safety Category Override Vote			0.4667‡	0.4708‡	0.6694	0.6429*			0.6988	0.6948
			(-3.01)	(-3.02)	(-1.62)	(-1.77)			(-0.83)	(-0.84)
Neighbor's DPW Category Override Vote			0.9662	1.0064	1.0932	1.1255	1.0060	1.0029		

			(-0.23)	(0.04)	(0.60)	(0.79)	(0.02)	(0.01)		
Neighbor's Mulitiple Category Override Vote			4.5566‡	4.5694‡	1.7290	1.7324	0.9808	0.9637	4.6944†	4.7089†
			(3.65)	(3.65)	(0.95)	(0.95)	(-0.02)	(-0.03)	(2.01)	(2.01)
Constant	0.3624‡	0.3610‡	0.4640‡	0.4529‡	0.3860†	0.4025†	0.0999‡	0.0992‡	0.1330‡	0.1337‡
	(-4.93)	(-4.96)	(-2.59)	(-2.68)	(-2.42)	(-2.32)	(-4.92)	(-4.92)	(-3.89)	(-3.87)
N	8,424	8,424	8,424	8,424	8,424	8,424	8,424	8,424	8,424	8,424
Likelihood Ratio test of model, X^2-statistic	363.5	381.4	210.4	217.1	216.2	221.1	102.7	104.0	80.20	80.18
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Likelihood Ratio test of equidispersion, X^2-*statistic*	254.0	247.2	195.4	194.2	134.1	130.9	16.15	16.32	20.90	20.72
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: [a]DPW is Department of Public Works. Neighbors' votes are calculated as a spatial weighting of neighboring municipalities voting behavior (vote, winning vote, or losing vote). Specifications (1) and (4) include demographic characteristics and local government controls consistent with earlier models, see table 6. Z-values are shown in parentheses. *, †, ‡ signify statistical significance at the 0.1, 0.05, and 0.01 percent levels, respectively.