Property Tax Limitations and Local Fiscal Conditions: The Impact of Proposition 2½ in Massachusetts

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Abstract

In Massachusetts, Proposition 2½ limits local property taxes to 2.5% of assessed value (the "levy ceiling") and restricts the current limit on property tax revenue (the "levy limit") to an annual growth rate of 2.5%. Town residents can vote to override the 2.5% increase in the levy limit, but not if it exceeds the 2.5% levy ceiling. An override results in a permanent increase in the city or town's levy limit. We look at the role that Proposition 2½ has played in the fiscal conditions of towns in Massachusetts. To do so, we develop a model of Proposition 2½ override decisions and local fiscal condition. We estimate the model using panel data on Proposition 2½ override attempts since the mid-1980's as well as other town-level socioeconomic and fiscal information. Using a fixed effects estimator, we find that passing a reasonably sized override can significantly strengthen local fiscal conditions.

The recent economic downturn has resulted in difficult times for local governments. Impending cuts in state aid will have a disproportionate impact on poorer towns. These towns have not been able to pass overrides and hence they have not been able to reap the benefits that this has for their fiscal condition. They are faced with reducing expenditures (e.g. teacher layoffs) or passing overrides to increase revenues. We find that worsening fiscal conditions lead to more overrides so we expect to see more override activity in the near future.

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1. Introduction

In 1978, California's Proposition 13 touched off what some have called "The Modern Day Tax Revolt" when voters overwhelmingly approved an initiative that resulted in a large reduction in property taxes, and imposed strict limits on future increases. The tax-cutting initiative drew nationwide attention: within two years, 43 states had implemented some kind of property tax reduction or limitation (Sears and Citrin 1985). One of those measures was the voter-initiated and approved Proposition 2½ in Massachusetts, which at base placed a cap on local property taxes of 2.5% of assessed value (the "levy ceiling"), and restricted the current limit on property tax revenues (the "levy limit") to grow by no more than 2.5% annually.

Proposition 2½ provides an interesting case study of taxpayer preferences and local democracy in that a simple majority of a local government's voters can approve an annual increase in the levy limit beyond the 2.5% growth rate, an action known as a property tax override. The most common rationales for such action would be a need for public services or facilities that property tax revenues were insufficient to fund under the limit, or in response to stagnation or loss of revenue due to insufficient property tax base growth and/or a reduction in state aid.

The current economic conditions are a perfect case in point. The recent downturn has resulted in difficult times for local governments. Starting in fiscal year 2008, local property assessments have declined though total revenues (at the state level) have yet to decline. But given that state aid to towns was cut by 13%, on average, for fiscal year 2010, budgets are likely to decline. Jurisdictions are faced with cutting services or raising revenues. Many towns are proposing to cut back on teachers. For example, Brocton MA recently handed out pink slips to one third of its teachers (Patriot Ledger.com, May 14, 2010) and Lawrence has closed half its fire stations (Boston Globe, August 12, 2010). One means for raising revenues is via override. Some towns have passed override votes this year (HeraldNews.com, June 26, 2010).

The purpose of this paper is to evaluate the role that Proposition 2½ has played in the fiscal conditions of towns in Massachusetts and to analyze how the slowdown in the housing market is likely to affect its use and success during the current economic downturn. Has Proposition 2½ been a factor in putting some towns in their current financial straits? Further, is this impact different for rich and poor towns (i.e. those towns with high and low values of median household income)? What is the likelihood of passing overrides under the current economic conditions? Is the likelihood different for rich and poor towns?

To answer these questions, we develop a model of Proposition 2½ override attempts and local government fiscal condition. We apply a fixed effects estimator using panel data for 1987-2009 for the 351 towns in Massachusetts. We find that successful override votes can significantly improve local fiscal conditions. The recent economic downturn has resulted in difficult times for local governments. Impending cuts in state aid will have a disproportionate impact on poorer towns. These towns have not been able to pass

overrides and hence they have not been able to reap the benefits that this has for their fiscal condition. They are faced with reducing expenditures (e.g. teacher layoffs) or passing overrides to increase revenues. We find that worsening fiscal conditions lead to more overrides so we expect to see more override activity in the near future.

We provide details of Proposition 2½ in Section 2. In Section 3 we survey the relevant literature. Section 4 provides a basic analysis of trends in property taxes and local fiscal conditions in Massachusetts since the passage of Proposition 2½. In Section 5, we develop the model of Proposition 2½ and local fiscal conditions. We provide estimation results in Section 6 and conclusions are laid out in Section 7.

2. Details about Proposition 2½

2.1 Passage and Implementation of Proposition 2½

California's Proposition 13 came near the end of an economically and politically challenging decade. The1970s were a period of economic stagnation for much of the nation, and when combined with the inflation of that period, produced a new term to characterize the result: "stagflation." Inflation pushed federal income taxpayers as well as those in states with graduated income taxes into higher (un-indexed) tax brackets, in effect increasing their income taxes at a rate greater than their real income, which came to be known as taxflation. Many Americans also perceived a shift in federal government spending priorities toward social programs that benefited the poor at the expense of the middle class (Sears and Citrin 1985). A failed Vietnam War and the near impeachment of President Nixon over Watergate further soured the nation's mood toward government, leaving citizens disaffected. (Lowery and Sigelman 1981) The decade was to climax with Ronald Reagan's anti-tax and anti-Washington presidential campaign allowing him to successfully defeat the incumbent, President Jimmy Carter.

Economic and political factors particular to Massachusetts added to its residents' dissatisfaction with government, and set the stage for the enactment of Proposition 2½. Real family income for Massachusetts residents made almost no gain in the 1970s, after twenty years of strong growth. Meanwhile Massachusetts statewide government was facing expenditure pressures on several fronts. At the state level there was a continuation of a rapid increase in welfare spending that began when the Commonwealth took over administration of welfare from local government in 1967, and which resulted in Massachusetts soon offering the highest benefits in the nation under the Aid to Families With Dependent Children (AFDC) program. (Adams 1984) A major expansion of the state's junior college system was also underway. Adams (1984) notes that direct *state* spending rose from 6.8% of Massachusetts personal income to 9.6% between 1970 and 1974 alone. Meanwhile both the welfare program and junior college expansion encountered well-publicized fraud accusations, undermining support for Massachusetts government in general.

Program expansion required new revenue, and taxes grew quickly in Massachusetts to pay for it. Adams (1984) reports that the tax burden in Massachusetts rose from 103% of

the national average in 1968 to 118% in 1973. Then, in response to a 1975 budget deficit, the state sales tax was increased by 40%, the corporate income tax by 10%, and a 7.5% surcharge was placed on the personal income tax. The US Advisory Commission on Intergovernmental Relations (ACIR), a nonpartisan federal government commission, developed its own more sophisticated measure of a "Representative Tax System" to determine tax capacity and tax effort for state and local governments in each of the states, with each state's score indexed to the average 100. (US Advisory Commission on Intergovernmental Relations 1994)) Massachusetts residents saw their overall state and local tax effort as determined by the ACIR rise from an already high 129 (29% above average) in 1975 to 133 in 1977 and 144 in 1979, second highest in the nation to New York. The characterization of Massachusetts as "Taxachusetts" soon appeared.

There had been hope among Massachusetts taxpayers that the property tax burden would fall with the state revenue increases, state takeover of welfare, and explicit provisions of the 1965 sales tax legislation that were aimed at reducing property tax rates. But it was not to be. In fact, by 1977 its property taxes per capita were almost twice that of the average state (Cutler et. al 1999). In1980, the year Proposition 2½ was on the ballot, local property taxes provided 49.5% of the general revenue of local governments in Massachusetts, compared to 28.2% in the average state. (Bradbury and Ladd 1982) This was due in part to the fact that local revenue options were limited, and state aid to local governments in Massachusetts at 27.8% was well below the national average of 35%. Were it not for the fact that local governments had been over-assessing commercial and industrial properties for years, and under-assessing residential ones, a taxpayer rebellion might have come earlier.

All taxes have strengths and weaknesses, and their weaknesses tend to become more prominent the higher the reliance on the tax, and this was the case for the property tax in Massachusetts. The negative aspects of the property tax are well known. Property taxes are often inequitable. While some (Youngman 2002) argue that their overall economic incidence is not regressive, the more traditional view holds that they are in that they take a higher percentage of an individual's income the lower that income is, and a smaller percentage the higher an individual's income. (Fisher 1996) Most dramatically, the property tax doesn't even drop when someone loses their job or is given reduced hours. In such cases an individual's income tax burden falls with the loss of income, people generally tend to buy less reducing their sales tax liability, but the property tax is due in full. There are also often inequities in assessment, resulting in unequal tax burdens for similar properties.

The property tax has historically been due in one to four lump-sum payments, making it more painful to pay (property is a relatively non-liquid asset) as well as highly visible. The withholding of the income tax reduces its "pain" when due, and sales taxes are relatively invisible, added to hundreds or thousands of for the most part small transactions for taxpayers during a year, and thus resulting in a total burden that is unknown. From the residential taxpayer's point of view, the visibility of the property tax that comes with lump sum payments and its lack of direct relation to income may be its most aggravating aspects, and provide the primary motivation for property-tax cutting

initiatives. Indeed, one of the arguments made in California by proponents of Proposition 13 was that some senior citizens on fixed incomes could no longer afford to live in their homes due to the tremendous rise in property values, and hence property taxes (Sears and Citrin 1985). All of this was reflected in the findings of a national 1981 poll by the US ACIR that found 33% of respondents choosing the property tax at "the worst tax – that is the least fair," second only to the federal income tax at 36% and well above state sales taxes at 14% and state income taxes at 9%.

Residential taxpayers often pay a disproportionate share of local taxes due to other less obvious aspects of the property tax. Commuters or other non-residents pay no direct property taxes to the local government that hosts them. They benefit from services such as public safety, transportation services, public works, emergency services, etc., but pay no tax for them themselves. Sales taxes on items purchased by non-residents belong to the Massachusetts state government and hence do not provide local tax revenue.

While not as obvious to the average property tax payer, businesses have increasingly used the threat of locating or relocating their activity to other cities/towns or states unless given a tax break. Such tax breaks also introduce more inequity into the overall tax system as businesses without such a relocation option still pay the full rate, and they, along with all other taxpayers, may have to pay more to subsidize the tax cuts.

This is not an insignificant point – with corporate income tax loopholes and creative accounting resulting in lower state and federal corporate income taxes, the property tax has become the largest tax paid by the corporate sector (Fox et al. 2003). For fiscal year 2006, Ernst and Young estimated that 37% of all state and local corporate taxes paid were property taxes on real, personal, and utility property, the largest component. Sales and use taxes came in second at 23%, and corporate income taxes were third at 9%. In Massachusetts, of the total business taxes paid in fiscal year 2006, 45% involved taxes on property.

The existence of state or federally designated property tax-exempt land in cities and towns, including federal and state government buildings, religious and charitable organizations, and universities, further reduces the revenue-raising capabilities of local governments. It also results in a higher tax burden for non-exempt business and residential taxpayers.

The changing economy has also weakened the property tax by shrinking its base, again shifting the cost to residents. A greater percentage of our nation's economic activity now involves the service sector, which generally requires less taxable property than do manufacturing facilities (Tannenwald 2002). All of these shortcomings obviously make the decision of local voters in Massachusetts to override their tax limit a difficult one.

It should be noted that there are several traditional arguments for local government use of the property tax. Land is an immobile asset, and thus a tax on it is not as affected by the same tax competition concerns that use of other taxes may cause (e.g. people moving to avoid an income tax, a corporation moving to avoid business taxes, people shopping in

another state to avoid sales taxes, etc.) Many of the services that local governments provide, including police and fire protection, roads, and water and sewer, for example, relate directly to buildings. (Bird,1992) Other services provided by local government, such as a good educational system, can increase the value of residential property, and thus also meet the "benefits-received" principle of taxation (that a good tax is one that is directly tied to a public benefit). It is relatively easy to administer, and most of the time is a stable source of revenue. And for both economic and political reasons, it is often argued that a "good tax is an old tax." For all of these reasons, some public finance scholars see it as the ideal source of revenue for *local* governments (Brunori 2003).

Facing some of the highest property taxes in the nation, the news of California's Proposition 13's passage in 1978 and reduction of property taxes there energized Massachusetts citizens, who also had access to the ballot through the initiative process, a leading predictor of the imposition of tax and/or expenditure limitations (TELS) in states. (Mullins and Walln 2004)

The primary organizer of the Proposition 2½ movement in Massachusetts was a group called Citizens for Limited Taxation, which was formed in 1972, and which in 1976 successfully opposed a ballot initiative that would have changed the Massachusetts income tax rate from a flat to graduated one. Their charismatic leader, Barbara Anderson, became the face of Proposition 2½. Two business groups, The Massachusetts High Technology Council and The Associated Industries of Massachusetts were also involved. As James Ring Adams commented, "AIM-High Tech offered funding and respectability; CLT offered manpower." (Adams 1984). The strongest opponent of Proposition 2½ was the Massachusetts Teacher Union, which spent $547,000 in an effort to defeat it (Lo 1990).

On November 4, 1980, voters approved Proposition 2½ by a margin of 59%-41%. The measure limited local property taxes to 2.5% of assessed value, and restricted growth in the levy limit to 2.5% a year. Many localities were well above the 2.5% level and thus were forced to reduce their collections. The measure did allow residents to vote to override the 2.5% increase in the levy limit, but not if it would result in exceeding the 2.5% levy ceiling. An override results in a permanent increase in the city or town's levy limit (increasing the base for each successive year's allowable 2.5% increase). To do this, the town's selectmen or a town or city council must by majority vote place the override on the ballot, in some cases with the approval of the mayor (Commonwealth of Massachusetts).

In an analysis of the vote for Proposition 2½, Ladd and Wilson found that as in California, taxpayers thought that they could cut taxes without any reduction in services. (Ladd and Wilson 1982). Their findings included over 80% of respondents believing that government spending could be reduced by 5% without a reduction in the quantity or quality of services, while 60% thought a cut of 15% or more would not have any impact.

The impact of Proposition 2½ on Massachusetts local governments would have been more dramatic had the state legislature not made several amendments to it. Chief among

them was the 1981 amendment to allow property taxes on new growth in assessed value that is not due to reevaluation to be added to the 2.5% allowable increase in the levy limit, in effect to pay for the increased demand on services they would produce. The amount added to the levy limit is the product of the increase in qualifying assessed valuation times the prior year's tax rate for the relevant class of property.

The legislature also subsequently changed the percentage of votes needed to override the 2.5% increase from the two-thirds majority of the initiative to a simple majority, and by allowing override attempts to be voted on in special elections, not biennially as the initiative intended. Finally, the legislature also gave voters the option of approving a *debt exclusion* to raise property taxes more than 2½% to pay for debt service for capital projects, with the increase limited to the life of the debt, and *capital outlay expenditure exclusions*, good only for the year the project occurs. (Wallin 2004) As opposed to an override, neither type of exclusion becomes a permanent part of the base used to calculate the limit for future years.[1] Our analysis focuses on overrides as they represent the only *permanent* increase in property taxes approved by the voters.

2.2 **Proposition 2½ and Local Fiscal Conditions**

Budgeting at the city and town level is more difficult than that of federal or state governments for several reasons. (Bland and Rubin 1997) While the federal government may borrow for current expenditures, state and local governments face annual balanced budget requirements, and may borrow only for capital improvements. Tax competition, or competition for taxpayers, both individuals and businesses, is obviously greater at the local level of government as it is easier for individuals or firms to move from one city or town to another than it is to flee a high-tax state or to leave the country (Tiebout 1956).

Local governments, as legal creatures of their respective states, are also not able to impose new taxes without approval of their respective state governments, which has led to the property tax being the most widely used among them. The situation is particularly bad in Massachusetts. In fiscal year 2006, Massachusetts local governments had the fewest local revenue options of any state other than New Hampshire. That year the U.S. average for local non-property tax revenue as a percentage of own source general revenue was 17.9%, while Massachusetts local governments raised only 2.8% from such sources. Thus any Proposition 2½ type restriction on the ability to raise property taxes makes overall revenue-raising much more difficult for the Commonwealth's cities and towns. Furthermore, local governments in all states, including Massachusetts, are dependent on state aid for a significant portion of their revenues. When states face fiscal pressure, they often reduce the growth in or enact an absolute cut in this fiscal assistance. (Greenblatt 2010)

On the expenditure side, roughly seventy percent of local budgets are for wages, and related benefits such as retirement and health care costs. Most of what local government

[1] See Commonwealth of Massachusetts, Department of Revenue, "Everything You Always Wanted to Know About Levy Limits … But Were Afraid to Ask: A Primer on Proposition 2 ½" for further explanations.

does is labor intensive, with the largest expenditures of cities and towns involving K-12 education and public safety. This greatly limits the possibility of productivity gains. From a political perspective, public employee unions are particularly strong at the local level, placing strong demands on wage and benefits increases, and are very strong in the Northeast.

As noted above, Massachusetts' cities and towns had a tremendous reliance on property tax revenues when Proposition 2½ was passed. In its first year of implementation, fiscal year 1982, Proposition 2½ resulted in a property tax reduction of $311 million, or 9%. The drop-off would have been worse had cities and towns not been given three years to get below the cap. A large number of localities also reassessed properties upward between the time of the measure's passage and its implementation on July 1, 1981. (O'Sullivan et. al 1995) Steady increases in state aid through fiscal year 1988 also lessened the shock.

But since then state aid has been more erratic, especially in times of economic slowdown. Further, expenditure pressures have grown at the municipal level, especially as related to health care costs of municipal employees and retirees. Framingham, Massachusetts, for example, has seen the portion of its health care costs in its budget rise from 7% of the town budget in 1991 to 10% in 2001 and 17% in fiscal year 2011. A forthcoming report by the Boston Municipal Research Bureau will highlight "Based on the fiscal 2010 average single-family tax bill of $2,935, it takes approximately *five* average taxpayers to pay the City's share of the family HMO health insurance premium of *one* city employee, and *nine* average taxpayers to pay the family Master Medical Indemnity premium of one city employee." (emphasis added)

3. Literature Review

Bradbury (1991) asks two questions: "Do citizens get what they want from the public sector?" and "What is it they want?" She looks at the passage and implementation of Proposition 2½ in Massachusetts as a way of answering these questions. Bradbury notes that the "conventional wisdom says that the Commonwealth's voters approved Proposition 2½ because they no longer trusted local officials to serve the best interests of residents." Page 7. Hence, the passage of Proposition 2½ was a way for community residents to gain control of the budget. The limitation on the property tax level along with the override process lets residents decide on the level of local public goods services that they want. But, Bradbury points out three reasons why this might not be the case; 1) the ballot is set by local officials (this has led to menu ballots which multiple proposals on each ballot), 2) the provision of local public services is dictated by public officials, and 3) voters are not representative of all residents and they can be influenced by special interest groups

Bradbury runs regressions of whether or not a town attempted an override and passed an override (both conditionally and unconditionally on attempting an override) in fiscal year 1991. The regressions only include 306 of the 351 towns due to missing data restrictions.

Towns that attempted at least one override vote had higher incomes per capita, lower new growth as a percent of the previous year's levy limit, and lower levels of excess capacity and were less likely to have a City government (5% significance level). They also tended to be smaller and have lower property tax rates (10% significance level). Similar results are obtained when the dependent variable is whether or not a town passed at least one override (both conditional and unconditional on attempting an override). Bradbury concludes that voters in many towns in Massachusetts do appear to get what they want from the Proposition 2½ override process. But she notes that one problem with the override process is that towns in most need of additional public services; those with relatively low incomes, are less likely to pass an override. This places a greater burden on the state to address disparities in towns' revenue raising capacity.

Cutler, Elmendorf, and Zeckhauser (1999; hereafter CEZ) use data on override and exclusion votes and the initial vote for Proposition 2½ itself to understand why communities supported Proposition 2½ and why voters believed that Proposition 2½ would lead to lower taxes but not reduce services. They test four theories of voter sentiment: 1) Agency loss theory – governments spend money on projects people do not value, 2) Regret theory – initial belief of waste but later regret (observationally equivalent to mission accomplished theory), 3) Personal finance theory – people's view of the efficiency of government is inversely related to their person tax burden, and 4) Demographic differences theory – government is wasteful because it spends money on demographic groups that are different from themselves. The evidence supports theories 1-3 but not 4.

CEZ estimate two models where the dependent variables are; the percent of voters in favor of Proposition 2½ and the ratio of the cumulative value of overrides passed in fiscal years1990 – 1995 plus the change from 1989 to 1995 in the value of exclusions in force to the levy limit in 1995 if the community had not passed any overrides or exclusions.

CEZ find that larger towns were less likely to favor Proposition 2½ and were less likely to increase taxes above Proposition 2½ limits. If one believes that agency problems are worse in larger towns, this provides conflicting evidence (we expect larger towns to vote in favor of Proposition 2½). Surprisingly, while they find that low income towns were less likely to support Proposition 2½ (though not significant), they were more likely to approve overrides and exclusions. Average house value is significantly positively correlated with the amount of override and exclusions though the change in house value had the opposite relationship. CEZ find that towns with greater excess capacity and a greater share of renters passed less valuable overrides and exclusions.

Our analysis of Proposition 2½ takes advantage of the long period of data available since its inception in 1983. This allows up to construct a panel data set for 1987 – 2009 of the 351 towns in Massachusetts. Unlike the previous two studies which are cross sectional in nature, we can include town fixed effects to account for unobserved, time-invariant town characteristics that are potentially correlated with the regressors in the model of Proposition 2½. This allows for results that can be interpreted in a causal manner and

not just as partial correlations which is generally the best that can be accomplished in a cross sectional analysis.

4. Trends in Property Taxes and Local Fiscal Conditions in Massachusetts

Even with the restrictions of Proposition 2½, property taxes would continue to grow in the Commonwealth, the product of increasing property values and their effect on assessments, the new growth provision noted above, and the passage of overrides.

Figure 1 shows that statewide property tax revenue grew on average 4.6% from fiscal year 1981 to fiscal year 2009, obviously well above the 2.5% original limit of Proposition 2½. Of particular significance is the growth in property tax revenues between fiscal years 1985 and 1990, incorporating part of a period of economic growth in the Commonwealth that came to be known as "The Massachusetts Miracle."

Figure 2 shows that property tax revenues as a percentage of all local government revenues dropped immediately after the imposition of Proposition 2½ and the accompanying increase in state aid.[2] There was first a rather dramatic fall, from property taxes providing 58.9% of revenues in fiscal year 1981 to 51.0% in fiscal year 1983, and then a slower decrease to fiscal year 1988 when the percentage of local revenues from the property tax would bottom out at 46.0%. It has remained in the 49% to 53% range since fiscal year 1991, fairly consistent with one noteworthy jump from fiscal year 1990-1992 when state aid was cut during the recession, and again in 2003 when state aid was reduced again

Local government property tax burden per capita in Massachusetts stood at $1,332 in fiscal year 1981 (in 2007 dollars), compared to the US average of $716 per capita.[3] The lowest it would drop was three years later to $1,056 in 1984, before it would climb back to $1,699 per capita in 2007, closer to the US average of $1,228 for that year. On a per capita basis then, property taxes grew more slowly for the Commonwealth after Proposition 2½ was enacted than they did for the average state. This suggests that many voters may have gotten the result they wanted, although the distribution of that satisfaction is something we will analyze below in our analysis of overrides. Obviously municipalities who attempted, and those who approved overrides, felt constrained by the limit on property tax growth.

From fiscal year 1984 to fiscal year 2009, real assessed values went up in all but eight of the twenty-five years, but obviously not all could be taxed due to the Proposition 2½ levy limit (see Table 1). On average real residential property assessments grew 5.9% per year, while total assessed value grew at 5.2%. Real tax levies, however, grew at an annual rate of 2.2%

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[2] All data are from, or calculated from, MA Department of Revenue, Division of Local Services, Municipal Data Bank.

[3] Calculated from the US Bureau of Census, Governments Division, using the Brookings-Urban Institute Tax Policy Center website, http://slfdqs.taxpolicycenter.org/

Many municipal officials have reported how important the "new growth" exemption from the Proposition 2½ levy limit is. First, it in effect "self-finances" the new demand on services created. But second, it may give local officials additional revenue to support existing as well as expanded services. The Division of Local Services has provided data on new growth since fiscal year 1992. New growth has been significant in the Commonwealth over the period 1992-2009, adding from between 1.8% to 2.9% a year to the property tax revenues of municipalities. When added to the potential maximum 2.5% annual limit on the property tax levy, and any override amounts, this helps explain the growth in property tax revenue noted above. Figure 3 gives the proportion of the percentage increase in new growth revenue to the total annual change in statewide property tax levy.

As might be expected, there is also a relationship between decreases in property taxes and increased state aid, and vice versa. Figure 4 shows the drop in property taxes that Proposition 2½ initially caused, and the resulting state aid response. Municipalities face limited borrowing ability, balanced budget requirements, limited revenue raising ability, and steady expenditure pressure. Thus it is not surprising to see that when the growth in state aid was dramatically reduced in 1989 and reductions experienced in 1990 due to the impact of the economic slowdown on state finances, local governments increased property taxes by the greatest percentage over any three-year period to account for the loss in state revenues. Similarly when state aid fell in fiscal years 2003 and 2004, property tax levies again went up well above the average year in which there was an increase.

While known as a liberal state, voters in Massachusetts have often expressed their anti-tax concerns through the initiative process (Wallin 2004). Most notably, the initiative Question 1 in 2002 would have entirely *repealed* the state income tax, which would have immediately reduced state revenues by 60%. Given its extremity, it failed by a rather narrow margin of 55%-45%. In 2009 the state legislature increased the general sales tax rate from 5% to 6.26% in response to a large deficit. This year it appears two initiatives will be on the ballot in November, one to rollback that increase, and another to roll the sales tax rate back to 3%. Thus it still takes political courage for local officials to ask residents to increase their own property taxes.

Table 2 presents the total amount proposed in all overrides and winners (in millions of 2007 dollars) and the yearly percentage change. The latter represents the property tax revenue added through Proposition 2½ overrides since 1983. Other than 1990, the amount added to the property tax levy in the later part of the 2000's was similar to that in the early 1990's. The exception is 2009, which saw a dramatic drop in the amount corresponding to winning overrides.

Recall that the tax rate cannot exceed the levy ceiling that is set at 2.5% of total assessed value. Given the large increase in house prices in the mid-to-late 1980s and the rapid rise in the beginning of the 2000s, this ceiling has not been a factor when it comes to setting tax rates in Massachusetts. Figure 5 gives the 99th percentile of tax rates and it is rarely equal to 2.5%. The levy limit is the maximum amount of property tax revenues that a

town can raise without passing an override (or temporary exclusion). The excess capacity is the difference between the levy limit and actual revenues. Figure 6 displays the mean value of the percent of excess capacity. Generally it is well above zero. The exception was in the early 1990s. This is when there was a large increase in the number of override attempts. This was followed by continuous growth in the (mean) percent excess capacity until 2001. Since then, it has shrunk every year as the percent increase in property tax revenues has consistently exceeded 2.5%. Clearly, many towns will soon be faced with the scenario where the only way to increase revenues by more than 2.5% will be to pass an override.

As noted above, we would expect override attempts to be related to changes in state aid. Success might well be tied to changes in non-farm residential employment or to the unemployment rate in the state, a proxy for economic performance. The latter may obviously also influence state aid. Table 3 presents data for these categories along with the number of override votes, the amount of override wins in millions of $2007 and the percent change in real per capita total receipts. One can see that the downturn in the early 1990s was characterized by a high unemployment rate and employment loss. During this period there was a large drop in state aid and a drop in total receipts. As previously discussed, there was a large increase in the number of override attempts but not a huge increase in the dollar amount added to local budgets since the success rate was low.

The current downturn is only apparent in fiscal year 2009 when the unemployment rate jumped to 8.7% and employment fell by 3.4%. Surprisingly, both per capita real state aid and total receipts increased in 2009. This might explain why the number of overrides and the amount going to local budgets was so small. The increase in state aid was likely due, in part, to the stimulus money that Massachusetts received as part of ARRA that was directly targeted for school budgets. In particular, the State Fiscal Stabilization Fund - Education Stabilization Fund began issuing aid to public elementary, secondary, and postsecondary schools in February 2009 so it may not have had much affect on FY2009 revenues. Nominal state aid declined by 10.3% percent in FY2010 but this drop will likely be mitigated by the $26 billion funding bill just passed by Congress.

5. Model

Because there is a lot of variation in the public goods provided by the 351 towns in Massachusetts, households can sort into locations that closely fit their demands for these services where demand depends on both preferences and ability to pay (i.e. income). Households that have a high demand for school quality will sort into towns with good schools. Households will relatively low demand for public goods will sort into towns with low levels of public services and also lower property taxes. We speculate that Proposition 2½ has led to enhanced sorting in Massachusetts and hence greater separation between rich towns with high levels of public services and poor towns with low levels of such services (more on this is in the Conclusion). Under normal circumstances, this is probably not a problem since the revenue constraints imposed by Proposition 2½ are not binding when it comes to providing the “basic” services that residents expect. The

question is what happens when there is a recession? Does the existence of Proposition 2½ mean that the poor towns are constrained in that they can no longer provide even the basic level of services that the residents' desire? That is, if these towns are not able to pass overrides to increase revenues, will they have to cut back on the (limited) services that they do provide? To address these questions, we develop a model of Proposition 2½ and local fiscal conditions.

5.1 Modeling Local Fiscal Conditions

We are interested in determining what role Proposition 2½ has played in local fiscal conditions (LFC). LFC is often expressed as some measure of revenue capacity minus some measure of costs. Bradbury and Zhao (2009) and Reschovsky and Schwartz (1992) are interested in measuring the gap between costs and revenue capacity as a basis for assessing state aid allocations in Massachusetts. To do so, they need exogenous measures of costs and revenue capacity that are outside the town's control. We do not want an exogenous measure of revenues since we want the history of successful overrides to affect actual revenues. Hence we will meet Bradbury and Zhao and Reschovsky and Schwartz halfway; we measure LFC as actual revenues minus exogenous costs.

In order to derive an objective measure of costs, both Bradbury and Zhao and Reschovsky and Schwartz run regressions of expenditures on its determinants, some of which control for residents' demand for services and some of which control for exogenous cost factors that are outside of the government's control. The former capture the level of local public services provided and measures of production efficiency which are generally not observed. To obtain a cost measure, the predicted values from these regressions are generated where demand variables are set to mean values so only the variation in the exogenous cost variables determine differences in costs across towns. Hence, out measure of local fiscal conditions is based on the town's ability to pay for those factors that are beyond the town's control.

Bradbury and Zhao include as exogenous cost factors population density, log population, the percentage of the population in poverty in 1999, the unemployment rate and private jobs by place of work per resident, 2001-2002. Preference variables include equalized per capita property value, per capita income, per capita school-age children and other school type dummies. Reschovsky and Schwartz use a similar set of controls as Bradbury and Zhao but also include per capita state aid, local non-property tax receipts, federal aid, employees in different job categories, and local road mileage per vehicle.

We estimate a cost equation where the dependent variable is expenditures per capita and the independent variables include factors that affect spending, both in a more exogenous sense such as population and in an endogenous sense (i.e. that accounts for preferences)

$$\text{EXPEND}_{it} = \gamma_{0t} + \text{W}_{1it}\gamma_{1t} + \eta_{it} \qquad (1)$$

where EXPEND_{it} is per capita real expenditures in town i and fiscal year t and W_{1it} is a vector of time-varying variables. The variables included in W_{1it} will be similar to those

variables included in the expenditure equations in Bradbury and Zhao (2009) and Reschovsky and Schwartz (1992). We estimate this equation every year to get town-level costs on an annual basis. The predicted value from these regressions-setting all but the exogenous cost factors at sample means-is our measure of costs.
We measure LFC as the difference between per capita real total town revenues and per capita real town costs

$$LFC_{it} = \text{Total Revenues}_{it} - \text{Costs}_{it} = \text{Total Revenues}_{it} - \hat{EXPEND}_{it} \qquad (2)$$

We then model LFC as

$$\begin{aligned} LFC_{it} = {} & \varphi_{0t} + \sum_{j=1}^{J} \varphi_{1j} LFC_{it-j} + \sum_{k=1}^{K} \varphi_{2k} AMOUNT\_TOT_{it-k} \\ & + X_{2i}\varphi_3 + W_{2it}\varphi_4 + e_i + \omega_{1it} \end{aligned} \qquad (3)$$

where X_{2i} and W_{2it} are vectors of time-invariant and time-varying factors that affect LFC and AMOUNT_TOT is the sum of the per capita real amounts of all successful overrides as a percent of the levy limit. AMOUNT_TOT is zero when there is no successful override vote (including cases where no override vote took place). We expect that $\varphi_{1j} > 0$ since the revenue raising capacity and the costs of providing local public services are likely to vary little from year to year. This means that there is likely to be considerable inertia in local fiscal conditions over time. Because of the timing of the override process, in most cases, the amount of a successful override is not applied to the levy limit until the following fiscal year. Hence, AMOUNT_TOT is included as a lag in the LFC equation. We expect that $\varphi_{2j} > 0$ since a successful override allow towns to increase their levy limit and hence generate more revenues through property taxes. Note that we leave the number of lags of LFC and AMOUNT_TOT indeterminate in equation (3). We will test for the lag length of these variables in the empirical section of the paper (the same is true of all variables that enter as lags in the override equations).

5.2 Modeling Proposition 2½

We will develop and estimate three models relating to Proposition 2½. This will allow us to investigate what factors are important in determining if a town attempts an override vote, passes an override vote, (given that it attempts one) and the amount of successful overrides (that lead to a permanent increase in the levy limit).

For the first model, the dependent variable is whether or not town i had at least one override vote in a given fiscal year t, $OVERRIDE_{it}$

$$\begin{aligned} OVERRIDE_{it} = {} & \beta_{0t} + \sum_{j=1}^{J} \beta_{1j} OVERRIDE_{it-j} + \sum_{k=1}^{K} \beta_{2k} WIN_{it-k} + \beta_3 LFC_{it} \\ & + X_i\beta_4 + Z_{it}\beta_5 + u_{1i} + \nu_{1it} \end{aligned} \qquad (4)$$

where WIN is a binary variable that is 1 if the override passes, X_i is a vector of time invariant variables, Z_{it} is a vector of time-varying variables, u_{1i} is an unobserved (time-invariant) town effect and v_{1it} is an unobserved error term. Note that the intercept is allowed to vary over time. This will capture the impact on OVERRIDE of changing economic conditions that are common to all towns in Massachusetts.

Having an override in the previous fiscal year can also affect the likelihood of having an override in the current period for a number of reasons. First, towns gain experience from going through the override process and this can make it easier to go through the process in the current year. In this case, $\beta_{1j} > 0$. Given that lags of WIN are also included in equation (4), this means that the experience of having gone through a losing override vote last year makes it more likely that there will be an override vote this year. On the other hand, fatigue from going through the override process in the previous year might reduce the likelihood of attempting an override vote in the current year.. In this case, $\beta_{1j} < 0$. Note that we are conditioning on tax rate and excess capacity – factors that a successful override in the previous fiscal year would affect in the current fiscal year. Hence negative values for β_{2j} the coefficient on the lags for WIN could arise if officials believe that voters would be less likely to vote for an override if there was a successful override in the previous fiscal year.

For the second model, the dependent variable is whether at least one override vote in town i and fiscal year t, passed, WIN_{it}

$$\begin{aligned} WIN_{it} = {} & \alpha_{0t} + \sum_{j=1}^{J} \alpha_{1j} OVERRIDE_{it-j} + \sum_{k=1}^{K} \alpha_{2k} WIN_{it-k} + \alpha_3 LFC_{it} \\ & + \alpha_4 AMOUNT\_PCT_{it} + X_i \alpha_5 + W_{it} \alpha_6 + u_{2i} + v_{2it} \end{aligned} \tag{5}$$

We will estimate this model for town-years in which there was at least one override vote. AMOUNT_PCT is the amount of the override vote as a percentage of the levy limit. If more than one override vote passed, then AMOUNT_PCT is based on the largest amount of the successful overrides; the binding value. If no override vote passed, then AMOUNT_PCT is based on the smallest amount of the unsuccessful votes, again, the binding value.[4]

For the third model, the dependent variable is the total amount of all successful overrides as a percent of the levy limit, AMOUNT_TOT_PCT. We limit the sample to town-years with at least one successful override vote. The motivation is to determine what factors

[4] We believe that this method for calculating AMOUNT_PCT provides a more accurate estimate of how a marginal change in AMOUNT_PCT will affect the likelihood of a win. If there are two or more wins in a year, the smaller amounts among winning votes don't tell us much about the margin since there was an override vote with a higher amount that passed. The same logic holds in the case of multiple losses.

affect the amount of successful override votes that will permanently affect the levy limit and also future local fiscal conditions.

$$\begin{aligned} AMOUNT\_TOT\_PCT_{it} = \delta_{0t} + \sum_{j=1}^{J} \delta_{1j} OVERRIDE_{it-j} + \sum_{k=1}^{K} \delta_{2k} WIN_{it-k} \\ + \delta_5 LFC_{it} + X_i \delta_6 + Z_{it} \delta_7 + u_{3i} + v_{3it} \end{aligned} \quad (6)$$

6. Results

The main sources of data for this analysis are the Municipal Spreadsheets provided by the Massachusetts Department of Revenue. This includes all information on override activity, town fiscal information, annual population and road miles per capita. Data on member town enrollments in regional school districts that was needed to apportion state aid to the regional school districts to the towns was obtained from the Massachusetts Department of Education with the special assistance of Roger Hatch. Information on residents' demographic and economic characteristics was obtained from the 1980, 1990, and 2000 decennial censuses. Annual values for these variables were interpolated and extrapolated using these three data points.

We include the following census demographic variables as explanatory variables; the median household income, percent of residents greater than or equal to twenty-five years old with a BA degree and with some college, the percent of residents greater than or equal to 65 and less than or equal to 18 years old, percent nonwhite residents. We also include the town population, employment per capita, and the percent of registered voters who are republican. Explanatory variables related to Proposition 2 ½ include excess capacity, new growth, and residential new growth as a percent of the levy limit. We also consider the following time-invariant town characteristics; percent of residents who voted for Proposition 2 ½, whether the town has a city form of government and an open town meeting and a representative town meeting. Summary statistics are given in Table 4.

Overrides took place in 19% of the town years and 64% of these overrides were successful. The average proposed amount of an override as a percentage of the levy limit was 5.9%. The number of years with override attempts and wins by town is given in Table 5. One can see that 53 towns had no override attempts and 106 towns did not pass an override vote in the 1987-2009 period.

The proof that Proposition 2½ has made budgeting at the municipal level more difficult in Massachusetts is reflected in the number of cities and towns that have attempted override votes. As Figure 6 shows, the number of overrides attempts on local ballots since 1983 have ranged for a low of 31 in 1984 and 1985 (after the infusion of state aid) to 538 and 548 in 1990 and 1991, respectively in response to the state aid reductions. The number of overrides showed a steady increase at the beginning of this decade but never reached the number attained in the early 1990's. In fact, the number has decreased in the past few years with only 95 override attempts in fiscal year 2009. The percentage of

wins was 45.9 in the 1980s, 33.4 in the 1990s, and 51.1 in the 2000s. Hence the difference in the number of recent wins compared to those in the early 1990's is not as great as the difference in overrides. In particular, the percentage of wins in 1991 was 27.4 and in 2009 it was 44.2.

In order to calculate LFC, we first need to first estimate the cost equation (1). We estimate a separate equation for each year.[5] We include as exogenous cost factors the natural logs of population and its square , total area and per capita employment, the unemployment rate, and the percent of residents less than or equal to 18 years old. The unemployment rate is included to capture costs associated with economic neediness. Variables that represent preferences of residents include the logs of median household income, real per capita equalized assessed value and state aid, road miles per 100 residents, the percent of residents who are renters, nonwhite, less than or equal to 18 years old, and greater than or equal to 65 years old, the percent of residents who are 25 years or older who have some college (but not a BA) and who have a BA degree, and the percent of registered republican voters. As in Bradbury and Zhao (2009), we include indicators of towns that are members of regional K12 school districts and towns that have mixed regional and local school districts because they capture "the lower measured municipal spending on benefits and debt of towns with separate regional school districts." (footnote 23).

The predicted values from these regressions are used to generate exogenous costs with one exception. The values of preference variables are set to the mean value across towns, so only the variation in exogenous costs determines the differences in the predicted cost variable across towns. We then use this predicted cost variable to generate LFC (equation 2).

We provide the mean values of LFC by fiscal year in Table 6. We also provide the difference in means relative to 1987. One can see that, on average, local fiscal conditions were at some of their lowest levels in the early 1990's during the last major economic downturn in Massachusetts. LFC then increased gradually until the end of that decade. The fiscal situation worsened slightly in the first half of the 2000's and then got substantially better by 2009. Given the current situation (and the end of the federal stimulus), it seems likely that this situation has to worsen substantially in the near future. There are two ways to view this. One is that if we expect the current economic climate to be at least as bad as the early 1990's then LFC will worsen substantially and hence there are bad times ahead. If the last major downturn in any indication, this is likely to spur more override votes though the increase in the unconditional probability of a successful override is likely to be muted if the conditional probability declines (as in did in the early 1990's). The second view is that given the relatively positive state of LFC, maybe times will not be as bad in the next few years as they were during the early 1990s.

[5] Since we interested in prediction and not causal impacts, we do not include town fixed effects. Hence, there is no need to pool the data and hence make the limiting restriction that the coefficients are constant across years.

If the unobserved town characteristics are correlated with the explanatory variables then the consistent estimator of the Proposition 2½ and LFC equations is fixed effects (FE). Otherwise, the random effects estimator (RE) is consistent and efficient. We test for correlated effects using the Hausman test and soundly reject the null hypothesis of no correlated effects for each of these models. Hence, we estimate these equations using fixed effects. In this case, time invariant town characteristics such as percent of voters that voted yes on the Proposition 2½ ballot initiative in 1980, whether the town has a city form of government, and whether the town had an open or representative town meeting will fall out of the models.

Along with the regression results, we also look at the partial correlations to get an idea of what factors are the correlated with the override and LFC variables (conditional on the other explanatory variables). To do so, we first take the means of the variables across time. This gives us a measure of how the average outcomes in towns are related. The partial correlation results are comparable to those in Bradbury (1991) and Cutler, Elmendorf, and Zeckhauser (1999) since they are based on cross-sectional models.[6] As a point of reference, we also estimate the bivariate correlations though discussion will focus on the partial correlations.

The simple and partial correlations between OVERIDE and the explanatory variables in this model (equation 4) are given in columns (1) and (2) of Table 7. First, we see that most of the explanatory variables are significantly correlated with OVERRIDE. For many of the variables, the partial correlations result in values that are much smaller in magnitude and significance than is the case for the simple correlations. Small towns with less excess capacity, more residential new growth (per capita), fewer residents who voted for Proposition 2½ and higher percentages of registered republican voters and nonwhites were more likely to attempt override votes. Bradbury (1991) finds that larger towns and those with a city form of government are less likely to have an override vote and towns with higher incomes are more likely to attempt an override. We find this is true for the simple correlations but much less so for the partial correlations.

Given the binary nature of the dependent variable, we use fixed effects logit to estimate the OVERRIDE model.[7] This estimator involves differencing across years within towns to exclude the unobserved town effects. Hence, only towns with at least one override attempt can be included. This means that the 53 towns that never had an override vote are dropped when using the fixed effects logit estimator. The estimation results are given in column (3) of Table 7. We also provide elasticities in column (4).

The coefficient estimate for the first lag of OVERRIDE is positive and significant at the 1% level. Given that the first lag of WIN is also included, this means that the experience of having gone through a losing override vote last year makes it more likely that there will be an override vote this year. The coefficient estimate for the first lag of WIN is

[6] Partial correlations are based on regressions of the dependent variables (OVERRIDE, WIN, AMOUNT, and LFC in this case) on the other variables listed in the tables of results (Tables 7-10).

[7] The command is Stata is clogit. We chose not to use fixed effects Probit because it is problematic (Wooldridge 2002).

negative and significant at the 1% level.[8] Hence the fact that a town had a successful override in the previous year means that it is less likely (as compared to a losing vote) that there will be an override vote in the current year. Note that we are conditioning on LFC, so it is not the fact that the successful override leads to a strengthening of LFC and hence there is less need for an override in the current year. Rather, it is likely that town officials recognize that residents are less likely to pass an override vote two years in a row and hence are less likely to attempt another override.

As expected, an increase in LFC makes it less likely that there will be an override vote though the elasticity is fairly small; -0.115. Regressors that are significant at the 5% level or better include Excess Capacity and the percent of residents who are young and those ages 25 or older with some college (but not a BA degree). The corresponding elasticities are -0.153, 0.232, and -0.108, respectively. These are small but potentially meaningful in an economic sense. As the percent excess capacity increases, towns have more room to increase taxes without the need of an override. Further, as the percent of households with young children increases there is a need for more funding for schools and hence the likelihood of an override vote increases.

Note that the coefficient estimate for the log of median household income is positive but not significant. Thus, whereas rich towns are more likely to attempt override (the correlation is positive and significant), we find that an increase in income does not have a significant impact on the likelihood of an override vote. That is, it is not the fact that residents have higher incomes that make towns more likely to attempt overrides, but that these households tend to have other characteristics such as a taste for public services that make it more likely that an override vote will take place.

We next investigate what factors determine the success of an override vote (equation 5). We estimate this equation conditional on an override vote.[9] The results are given in Table 8. The correlations between the regressors and WIN are given in column (1). These are very similar in sign and significance to the correlations with OVERRIDE (see Table 7). Many of the partial correlations are not significant (see column (2) of Table 8). Conditional on an override vote, smaller towns with larger override amounts proposed that are not on a menu ballot, in stronger fiscal condition, higher income, less new growth, higher percentage of residents who are registered republican voters, older, with a BA degree, and a lower percentage of yes-votes on Proposition 2½ were more likely to pass overrides when they were on the ballot.

The results from estimating the WIN model by fixed effects logit are given in column (3) of Table 8.[10] In this case, only observations from the 244 towns with at least one

[8] Higher order lags of OVERRIDE and WIN are not significant.

[9] The results using the full sample are fairly similar to those when OVERRIDE is the dependent variable and we do not present the results to save space but they are available on request.

[10] Since we are limiting the sample to override attempts, it is important to correct for potential sample selection bias. The problem is that this correction is not straightforward when using fixed effects logit. To assess the need to correct for sample selection bias, we estimate the WIN model using the fixed effects linear probability model. In this case, selection bias can be corrected by including the inverse Mills ratio. We generate this term after estimating the OVERRIDE model using random effects Probit. The inverse

successful override are used by the fixed effects logit estimator. The first and second lags of OVERRIDE have positive and statistically significant impacts on WIN. Hence, having a losing override vote in the previous two years makes it more likely that a town will have a successful override vote in the current year. This could reflect the experience from having gone through a recent override vote. For example, legislators may have learned from their past mistakes and proposed an override that was more likely to pass. The second lag WIN has a negative and significant impact of WIN (even though the first lag is not). This indicates that a recent successful override vote makes it less likely that an override vote in the current year is successful. Interestingly, an override vote that is part of a menu ballot is less likely to succeed. This seems contrary to the purpose of the menu ballot to give voters a chance to vote for one override measure even though they disapprove of other spending initiatives (versus putting them all in one override).

LFC has a negative impact on the likelihood of a win and the elasticity, -0.504, is large (though it is only significant at the 5% level). The only other explanatory variable that has a significant impact on WIN is the percent of renters in the town. Renters are less likely to vote for overrides, possibly because they have less of a long-term commitment to the town and hence do not want to pay more in rent to cover the additional public services the override is intended to pay for (presumably landlords will increase rent to cover the increase in property taxes).

We next consider equation (6) where the dependent variable is AMOUNT_TOT_PCT (the total amount of all successful overrides as a percent of the levy limit). The sample is limited to successful override votes. This is comparable to Cutler et al (1999) who model the ratio of the cumulative value of overrides passed in fy1990 – 1995. Like CEZ, we find that population and excess capacity are negatively correlated with the total amount of successful overrides. CEZ also find that income and the percent of yes votes on Proposition 2 ½ are negatively correlated with the total amount of successful overrides whereas we only find this to be the case for the simple correlation between income and the total amount of successful overrides (and not at all for percent of yes votes on Proposition 2 ½).

We use fixed effects to estimate equation (6). The results are given in column (3) and elasticities are provided in column (4) of Table 9. We include the inverse Mills ratio as a regressor to correct for potential sample selection bias though it is not significant. None of the lags of OVERRIDE or WIN are significant in this equation. Interestingly, if a successful vote was part of a menu ballot, then the total amount of all successful override votes is greater. Whereas the likelihood of a successful vote is lower given a menu ballot, the total amount is greater given a successful vote.

LFC has negative and significant impact on AMOUNT_TOT_PCT and the elasticity is large; -0.439. This result makes sense since the better is a town's fiscal condition the less

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Mills ratio is not significant in the WIN equation. We view this as evidence that sample selection is not significantly biasing the results. Hence we do not correct for sample selection bias when we estimate the WIN model (conditional on an override vote) using fixed effects logit.

is the needed increase in the levy limit. The percent of young residents has a positive and significant impact on AMOUNT and the elasticity is very large; 1.625. One interpretation of this result is that as the percent of residents less than or equal to eight years old increases, the greater is the need for school finances and hence a larger increase in the levy limit is required to cover these costs.

Results for the local fiscal conditions equation (3) are given in Table 10. Many of the partial correlations with LFC are significant (column (2) of Table 10). Smaller towns with more employment per capita, higher median household income, percent renters, percent nonwhite residents, percent of older residents, percent of residents (25 or older) with some college, and fewer residents who voted yes on Proposition 2 ½ are in better fiscal condition.

The coefficient estimates for the LFC model are given in column (3) of Table 10.[11] Two lags of LFC are significant and fairly large. That there is evidence of a high level of inertia in LFC is not surprising. We provide the short-run and long-run elasticities in column (4) of Table 10. The long-run elasticities are substantially larger in magnitude given the large coefficient estimates for the two lags of LFC.

Both the first, second and third lags of the per capita total amount of successful overrides have a positive and significant impact on LFC. This is because an increase in the levy limit leads to higher town revenues that are not all converted into expenditures. While none of the impacts are particularly large in the short-run, the long-run elasticities of 0.307, 0.203, and 0.164 for the three lags of AMOUNT_TOT are individually big and collectively substantial. Note, also, that this is evaluated at the mean of AMOUNT_TOT which is 0 if there is not a successful override. A successful override vote with an amount that is 10% of the levy limit (85th percentile of AMOUNT for successful overrides) will increase LFC by 72% (in the long-run) compared to its mean. This is a substantial improvement in local fiscal conditions.

An increase in population will has a negative and both statistically and economically significant impact of LFC. This could reflect that larger towns are less efficient is producing public services. The only other factors that have both statistically and economically significant effects on LFC are the percent of residents 25 years or older with some college or a BA degree. In both cases the effect is negative.

7. Conclusions

In this paper, we investigate the role that Proposition 2½ plays in the local fiscal condition of towns in Massachusetts. We have a rich set of data on overrides, fiscal, economic and demographic information for the 1987-2009 period. We find that it is important to control for town fixed effects in our models of Proposition 2½ and local fiscal conditions. That is, the factors that appear to have significant causal impacts on override behavior and local fiscal conditions are quite different from the characteristics of

[11] The presence of the lagged dependent variables along with town fixed effects requires a special estimator. We use xtabond in Stata.

towns that are likely to attempt and pass overrides and that tend to be in good fiscal condition.

We find evidence that Proposition 2½ directly affects local fiscal conditions. That is, the amount of successful overrides improves LFC in the following fiscal year since it raises the levy limit. In fact, a successful override that increases the levy limit by 10% (85th percentile for successful overrides) will lead to a long-run increase LFC by 71% compared to its mean. An increase in LFC also significantly decreases the likelihood of an override attempt, the likelihood of a successful override, and the amount of the override and the elasticities for the latter two factors are quite large. What is interesting is that LFC is actually significantly positively correlated with OVERRIDE and WIN. Thus we find that towns in good fiscal condition are the ones that tend to attempt and pass overrides yet an increase in LFC has the opposite effect on a town's likelihood of attempting and passing an override. This could be because towns that pass overrides are those that have historically done so. That is, towns that pass overrides will attract households that have preferences for local public goods and who are, themselves, willing to pass overrides to enhance public services. Since passing overrides can greatly improve local fiscal conditions, these are the towns continue to pass overrides.

While there are many significant correlates with override activity and local fiscal conditions, fewer observable factors have a significant causal impact on override activity. For example median household income is significantly positively correlated with the likelihood of an override vote, with the likelihood of a win conditional on an override attempt, and with local fiscal condition and is significantly negatively correlated with the amount of the override (as a percent of the levy limit). But in none of these cases is there evidence of a significant causal impact of income. So, overall, we find that richer towns tend to have more successful override votes and tend to be in better fiscal condition than poorer towns. That is, richer towns contain households with a relatively high demand for public services who can afford to pay for them. But an increase in income does not directly impact override behavior or local fiscal conditions.

Another interesting result is the percent of residents who are less than or equal to 18 years old. This is positively correlated with OVERRIDE and negatively correlated with the amount of the override (partial correlation) and with local fiscal condition. Yet an increase in the percent of residents who are less than or equal to 18 years old leads to an increase in the likelihood of an override vote and in the amount of successful override votes. Towns with high percentage of young residents tend to be in worse fiscal condition and tend to pass smaller overrides but an increase in this percentage will lead towns to pass higher levels of overrides; ostensibly to pay for increased school expenditures.

Population is negatively correlated with the likelihood of an override attempt, the likelihood of a win, and the amount of the override. Yet it does not have a significant (at 5% or better) causal impact in any of these cases. Hence, we find that larger towns are less likely to engage in override behavior yet an increase in population does not significantly affect such behavior. Population is also negatively correlated with LFC and

this is the one case where population does have a causal impact; the elasticity is large and both statistically and economically significant. One interpretation of this result is that increases in population are accommodated with cheaper than average housing so these new residents do not "pay their way" in the sense that the costs they impose on the provision of public services are greater than the benefits they provide in terms of property taxes.

The percentage of renters in a town is negatively correlated with attempting and passing an override. Further as the percentage of renters increases, there is a decrease in the likelihood of an override passing. One explanation is that renters are less likely to vote for overrides because they are less vested in the town (and recognize that an increase in taxes will increase their rent). The percentage of renters is positively correlated with LFC there is not significant causal impact. Whereas renters tend to reside in towns with stronger fiscal conditions, it appears that replacing an owner occupier with a renter has no impact on fiscal conditions.

We find that relative to the last economic downturn in Massachusetts, towns are currently in good shape financially. But this is, in part, due to the funds received through the federal stimulus plan. Nominal state aid for fiscal year 2010 has been cut dramatically by 10.3% on average and this is likely to continue for the near future (though there is likely to be some reprieve given that Massachusetts will receive $655 million in federal aid to mitigate cuts in spending). This will negatively affect local fiscal conditions since it directly reduces town revenues. Further, it will have a disproportionate impact on the poorer towns that depend more heavily on state aid. The poor towns have not been able to pass overrides and, as we just discussed, they have not been able to reap the benefits that this has for their fiscal condition. Hence, they tend to be in worse financial shape. These towns have seen the largest drop in assessed values in recent years as well. Hence the dire impending fiscal condition of these towns leaves two choices for balancing future budgets. They can cut services or try and pass overrides to raise revenues. There has been much less override activity recently as compared to the last major economic downturn in Massachusetts in the early 1990's. Recall that we find that as fiscal conditions strengthen, towns propose fewer overrides. So the lower level of overrides could be due to the recent increase in average local fiscal conditions (see Table 6). But as local fiscal conditions worsen, particularly in those towns that receive a high proportion of their revenues from state aid, we may start to see increased override activity.

An indirect way that Proposition 2½ can affect LFC is through its impact on residential sorting. We speculate that Proposition 2½ has enhanced sorting as the passage of overrides leads to greater levels of public goods which, in turn, leads to a greater concentration of residents with high demands for these goods. The ability of these towns to provide more services is enhanced as the "median voter" is now more likely to vote for more services. Given that these additional services are capitalized into house prices, this can further entice high-income households to move in and further raise house prices resulting in a multiplier effect. The result is an even greater distinction between the high and low spending towns than otherwise would be the case without Proposition 2½. Providing empirical support for this hypothesis is left for future research.

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Table 1
Annual Real Assessed Values and Tax Levy; State level

Fy	Residential Assessed Value	% Change	Total Assessed Value	% Change	Tax Levy	% Change
1984	206.02		292.52		6.50	
1985	216.54	5.11	306.95	4.93	6.50	-0.11
1986	260.85	20.47	371.29	20.96	6.71	3.22
1987	343.41	31.65	461.25	24.23	6.87	2.39
1988	386.57	12.57	514.80	11.61	6.97	1.44
1989	466.94	20.79	617.58	19.97	7.14	2.48
1990	510.43	9.31	660.74	6.99	7.31	2.38
1991	492.71	-3.47	639.39	-3.23	7.49	2.46
1992	447.19	-9.24	576.04	-9.91	7.68	2.53
1993	410.66	-8.17	526.30	-8.63	7.81	1.68
1994	401.28	-2.28	511.17	-2.88	8.02	2.75
1995	393.33	-1.98	499.38	-2.31	8.17	1.90
1996	389.89	-0.87	492.95	-1.29	8.25	0.86
1997	390.43	0.14	492.79	-0.03	8.34	1.19
1998	398.93	2.18	504.26	2.33	8.55	2.48
1999	413.65	3.69	524.40	4.00	8.73	2.05
2000	427.57	3.36	543.37	3.62	8.80	0.84
2001	471.08	10.18	594.99	9.50	8.93	1.50
2002	526.52	11.77	658.60	10.69	9.26	3.73
2003	577.60	9.70	711.61	8.05	9.47	2.27
2004	658.91	14.08	795.57	11.80	9.79	3.31
2005	733.39	11.30	872.78	9.70	9.97	1.83
2006	788.87	7.57	932.74	6.87	10.18	2.11
2007	831.16	5.36	981.99	5.28	10.49	3.07
2008	803.70	-3.30	958.18	-2.43	10.62	1.25
2009	788.12	-1.94	949.71	-0.88	11.24	5.82

Table 2: Amount of Overrides:
Total and Winners in $ Millions

	All Overrides		Winning Overrides	
Year	Amount	% Change	Amount	% Change
1983	8.85		2.66	
1984	9.52	7.63	2.89	13.84
1985	6.18	-35.08	1.08	-60.92
1986	27.16	339.19	4.59	335.13
1987	62.24	129.19	7.28	65.72
1988	59.46	-4.48	46.43	576.17
1989	137.83	131.82	35.32	-19.59
1990	254.01	84.30	103.53	210.09
1991	181.66	-28.48	48.97	-50.62
1992	93.17	-48.72	24.84	-48.01
1993	42.82	-54.03	16.33	-32.38
1994	34.65	-19.09	12.96	-19.57
1995	41.33	19.30	14.48	14.41
1996	30.03	-27.36	7.48	-46.84
1997	20.72	-30.99	7.89	8.42
1998	16.58	-19.96	12.42	61.11
1999	19.94	20.26	9.30	-23.24
2000	40.81	104.63	25.11	181.50
2001	36.81	-9.82	28.21	17.21
2002	89.78	143.93	65.35	137.68
2003	121.05	34.83	42.91	-31.85
2004	64.46	-46.75	28.88	-30.86
2005	104.60	62.27	48.98	75.19
2006	69.11	-33.93	36.41	-23.35
2007	69.30	0.27	34.94	-2.19
2008	72.41	4.48	38.15	13.02
2009	27.20	-62.44	17.54	-54.34

Table 3: Overrides and Related State-Wide Factors

Fiscal Year	Number of Overrides	Amount from Wins[1]	Percent Change: Per Capita State Aid[2]	Percent Change: Per Capita Total Receipts[2]	Percent Change: Employment	Unemp Rate
1988	153	4643	1.74	0.75	1.20	3.3
1989	376	3532	1.53	2.23	0.19	4.2
1990	538	10324	-15.67	-3.31	-1.28	6.4
1991	548	4897	-9.39	-1.57	-3.16	9
1992	325	2484	-14.37	-2.37	-0.53	8.9
1993	315	1633	4.11	0.80	1.21	7.2
1994	229	1296	6.72	3.25	1.47	6.2
1995	204	1448	7.24	2.67	1.31	5.5
1996	86	748	5.83	1.96	1.97	4.5
1997	84	789	6.37	0.16	2.27	4.1
1998	78	1242	6.90	2.76	1.56	3.4
1999	51	930	7.57	4.13	1.00	3.4
2000	70	2511	1.40	-1.32	0.67	2.7
2001	92	2821	2.01	1.43	0.19	3.7
2002	105	6535	2.91	3.16	-0.91	5.4
2003	127	4291	-3.69	-0.67	-1.28	6
2004	153	2888	-13.00	-0.54	0.13	5.2
2005	168	4891	-0.95	1.19	0.55	4.8
2006	130	3634	-10.65	0.94	1.02	4.8
2007	101	3494	8.64	4.06	0.75	4.4
2008	125	3815	0.39	0.57	0.24	5.3
2009	95	1716	5.60	5.56	-3.36	8.7

1. In millions of $2007's, 2. In $2007's

Table 4: Summary Statistics

Variable	mean	Std dev	min	max
Override	0.19	0.40	0	1
Successful override (given override=1)	0.64	0.48	0	1
Menu Ballot	0.06	0.23	0	1
Amount of override as percent of the levy limit	5.88	6.25	0.002	72.99
Local fiscal conditions (real, per capita, $1,000s)	0.58	0.98	-2.49	11.81
City form of government	0.12	0.32	0	1
Percent voting yes on Proposition 2½	58.24	9.37	24.06	73.39
Open town meeting	0.74	0.44	0	1
Representative town meeting	0.13	0.33	0	1
Property tax rate	1.33	0.38	0.16	2.50
Real median household income, $10,000s	3.27	1.14	0.67	10.94
Excess levy capacity as pct of levy limit	2.53	4.93	0.00	67.56
New growth as pct of prior year levy limit	2.37	1.89	0.00	88.34
Residential new growth as pct of total	73.12	20.92	0.00	100.00
Real per capita state aid, $1000's	4.59	3.34	0.07	24.50
Real per capita assessed value, $10,000s	14.31	20.11	2.09	328.99
Real per capita residential assessed value, $10,000s	12.18	18.97	1.49	323.27
Real per capita commercial assessed value, $1,000s	6.08	31.82	0.01	1001.11
Real per capita industrial assessed value, $1,000s	10.35	15.27	0.12	733.71
Percent nonwhite	5.72	7.53	0.00	65.92
Percent <= 18 years of age	25.97	4.13	1.74	42.37
Percent >= 65 years of age	13.32	4.54	0.00	42.52
Percent>= 25 years of age with a BA	33.22	15.90	4.53	98.73
Percent>= 25 years of age with some college	25.98	5.42	0.00	71.08
Population in 1,000s	17.66	36.45	0.05	620.54
Percent of republican voters	15.00	5.36	2.06	41.85
Road Miles per 100 population	1.67	2.30	0.14	18.77

Table 5: Number of Years with Override Attempts and Wins for Towns; 1987-2009

	Attempts		Wins	
Number of Towns	Frequency	Percent	Frequency	Percent
0	53	15.1	106	30.2
1	36	10.26	54	15.38
2	36	10.26	52	14.81
3	56	15.95	34	9.69
4	31	8.83	25	7.12
5	26	7.41	18	5.13
6	19	5.41	16	4.56
7	20	5.7	12	3.42
8	17	4.84	10	2.85
9	16	4.56	3	0.85
10	10	2.85	5	1.42
11	12	3.42	5	1.42
12	4	1.14	2	0.57
13	4	1.14	4	1.14
14	3	0.85	1	0.28
15	3	0.85	0	0.00
16	2	0.57	1	0.28
17	2	0.57	2	0.57
19	1	0.28	1	0.28
Total	351	100	351	100

Table 6: Local Fiscal Condition
Per Capita in 1000's of $2007

Fiscal Year	Mean	Difference From FY1987
1987	0.434	0.000
1988	0.448	0.014
1989	0.480	0.046
1990	0.430	-0.004
1991	0.418	-0.016
1992	0.443	0.009
1993	0.473	0.039
1994	0.492	0.058
1995	0.548	0.115*
1996	0.569	0.135**
1997	0.603	0.170**
1998	0.646	0.212***
1999	0.660	0.226***
2000	0.672	0.238***
2001	0.637	0.203***
2002	0.693	0.259***
2003	0.638	0.205***
2004	0.601	0.167**
2005	0.593	0.160**
2006	0.577	0.144*
2007	0.719	0.285***
2008	0.720	0.286***
2009	0.802	0.368***

*** p<0.01, ** p<0.05, * p<0.10

Table 7: Regression Results for OVERRIDE Model

Variable	Correlation (1)	Partial Corr (2)	Coeff Est (3)	Elasticity (4)
Lag of Override			0.487***	
			(0.112)	
Lag of Win			-0.270**	
			(0.122)	
Local Fiscal Condition	0.227***	0.031	-0.730***	-0.163
			(0.157)	
Log Median Income	0.361***	-0.029	0.238	0.046
			(0.780)	
Log State Aid (PC)	-0.265***	-0.079	0.192	0.038
			(0.127)	
Log Population	-0.265***	-0.131**	-0.019	-0.004
			(0.587)	
Excess Capacity (Pct)	-0.248***	-0.303***	-0.216***	-0.238
			(0.025)	
New Growth (Pct)	0.005	0.038	-0.003	-0.001
			(0.039)	
Residential New Growth (Pct)	0.502***	0.245***	-0.000	-0.002
			(0.003)	
Percent Renters	-0.354***	-0.027	-0.025	-0.120
			(0.018)	
Percent Nonwhite	-0.139**	0.165***	0.027	0.029
			(0.028)	
Percent <= 18 years old	0.167***	0.098*	0.098***	0.468
			(0.032)	
Percent >= 65 years old	-0.079	0.066	0.015	0.043
			(0.033)	
Percent with BA	0.417***	0.099*	-0.010	-0.072
			(0.017)	
Percent with Some College	0.006	0.029	-0.035*	-0.138
			(0.018)	
Registered Republicans (Pct)	0.431***	0.129**	0.005	0.015
			(0.018)	
Pct Yes on Prop 2½ Vote	-0.190***	-0.126**		
City form of Government	-0.348***	0.000		
Open Town Meeting	0.401***	0.044		
Representative Town Meeting	-0.149***	-0.009		
Observations	351	351	6,831	
Number of Towns	351	351	297	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.10

Table 8: Regression Results for WIN Model, Conditional on OVERRIDE=1

Variable	Correlation (1)	Partial Corr (2)	Coeff Est (3)	Elasticity (4)
Lag of Override			0.789***	
			(0.185)	
Second Lag of Override			0.824***	
			(0.204)	
Lag of Win			-0.364*	
			(0.216)	
Second Lag of Win			-0.887***	
			(0.235)	
Menu Ballot	-0.142***	-0.077***	-0.486**	-0.450
			(0.195)	
Amount	0.003	0.082***	0.012	0.060
			(0.018)	
Local Fiscal Condition	0.358***	0.065**	-0.849**	-0.526
			(0.397)	
Log Median Income	0.348***	0.011	-2.822	-2.608
			(1.939)	
Log State Aid (PC)	-0.337***	-0.039	-0.182	-0.168
			(0.317)	
Log Population	-0.320***	-0.289***	-1.106	-1.023
			(2.020)	
Excess Capacity (Pct)	0.179***	0.036	-0.068	-0.048
			(0.049)	
New Growth (Pct)	-0.217***	-0.097***	0.045	0.063
			(0.089)	
Residential New Growth (Pct)	0.301***	0.022	0.001	0.067
			(0.007)	
Percent Renters	-0.136***	-0.019	-0.112**	-2.150
			(0.052)	
Percent Nonwhite	0.056	0.026	-0.004	-0.016
			(0.076)	
Percent <= 18 years old	-0.079***	0.021	0.058	1.432
			(0.078)	
Percent >= 65 years old	0.143***	0.083***	0.123	1.434
			(0.104)	
Percent with BA	0.467***	0.171***	0.044	1.529
			(0.036)	
Percent with Some College	-0.231***	-0.008	-0.020	-0.472
			(0.043)	
Registered Republicans (Pct)	0.322***	0.182***	0.075*	1.184
			(0.044)	
Pct Yes on Prop 2½ Vote	-0.329***	-0.097***		
City form of Government	-0.163***	0.034		
Open Town Meeting	0.186***	0.027		

Representative Town Meeting	-0.103***	0.024	
Observations	298	298	1,192
Number of Towns	298	298	244
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10			

Table 9: Regression Results for AMOUNT Model, Conditional on WIN=1

Variable	Correlation (1)	Partial Corr (2)	Coeff Est (3)	Elasticity (4)
Menu	-0.279***	-0.323***	1.542***	0.271
			(0.349)	
Local Fiscal Condition	-0.252***	0.226***	-3.176***	-0.468
			(0.558)	
Log Median Income	-0.255***	0.079	5.161	0.907
			(4.266)	
Log State Aid (PC)	0.155**	0.042	1.053**	0.185
			(0.462)	
Log Population	-0.216***	-0.277***	-6.522*	-1.146
			(3.428)	
Excess Capacity (Pct)	-0.012	-0.191**	-0.243	-0.039
			(0.188)	
New Growth (Pct)	-0.037	0.074	0.165	0.065
			(0.200)	
Residential New Growth (Pct)	0.036	0.126	0.014	0.204
			(0.015)	
Percent Renters	0.026	-0.072	0.011	-0.037
			(0.091)	
Percent Nonwhite	0.050	0.303***	0.018	0.015
			(0.111)	
Percent <= 18 years old	-0.012	-0.115**	0.335***	1.563
			(0.102)	
Percent >= 65 years old	-0.070	-0.043	0.032	0.074
			(0.217)	
Percent with BA	-0.267***	-0.098	-0.309**	-0.255
			(0.128)	
Percent with Some College	0.028	0.012	-0.117	-0.516
			(0.119)	
Registered Republicans (Pct)	-0.173***	0.080	0.002	0.007
			(0.079)	
Inverse Mills Ratio			1.167	
			(0.805)	
Pct Yes on Prop 2½ Vote	-0.081	-0.057		
City form of Government	0.022	0.061		
Open Town Meeting	-0.041	-0.063		
Representative Town Meeting	0.034	-0.007		
Observations	298	298	997	
Number of Towns	298	298	245	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.10

Table 10: Regression Results for LFC Model

Variable	Correlation (1)	Partial Corr (2)	Coeff Est (3)	Elasticity (SR/LR) (4)
Lag of LFC			0.384***	
			(0.039)	
Second Lag of LFC			0.130***	
			(0.018)	
Third Lag of LFC			0.083**	
			(0.038)	
Lag of Amount	0.516***	0.422***	0.970***	0.156/0.389
			(0.290)	
Second Lag of Amount			0.567**	0.092/0.228
			(0.246)	
Third Lag of Amount			0.466***	0.075/0.187
			(0.133)	
Log of Employment (PC)	0.192***	0.188***	0.052	0.090/0.223
			(0.091)	
Log Median Income	0.290***	0.062***	0.173	0.300/0.744
			(0.444)	
Log Population	-0.075	-0.051	-3.006***	-1.868/-4.634
			(0.261)	
$(\text{Log Population})^2$			0.335***	
			(0.084)	
Excess Capacity (Pct)	0.038	-0.048	-0.007***	-0.032/-0.080
			(0.003)	
New Growth (Pct)	-0.107**	0.204***	0.004	0.018/0.046
			(0.003)	
Residential New Growth (Pct)	0.043	0.224***	0.000	0.016/0.040
			(0.000)	
Percent Renters	0.099*	0.274***	0.010	0.437/1.084
			(0.008)	
Percent Nonwhite	0.182***	0.200***	0.003	0.034/0.083
			(0.007)	
Percent <= 18 years old	-0.154***	0.114*	0.005	0.202/0.503
			(0.012)	
Percent >= 65 years old	0.197***	0.224***	0.012**	0.288/0.714
			(0.006)	
Percent with BA	0.344***	0.134*	-0.010**	-0.592/-1.468
			(0.005)	
Percent with Some College	-0.049	0.216***	-0.030***	-1.337/-3.310
			(0.011)	
Registered Republicans (Pct)	0.194***	0.074	-0.003	-0.087/-0.217
			(0.011)	
Pct Yes on Prop 2½ Vote	-0.240***	-0.025		

City form of Government	-0.037	-0.007	
Open Town Meeting	0.019	0.037	
Representative Town Meeting	0.023	0.030	
Observations	351	351	6,619
Number of Towns	351	351	351
Robust standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.10			

Figure 1: Tax Revenue Percentage Change

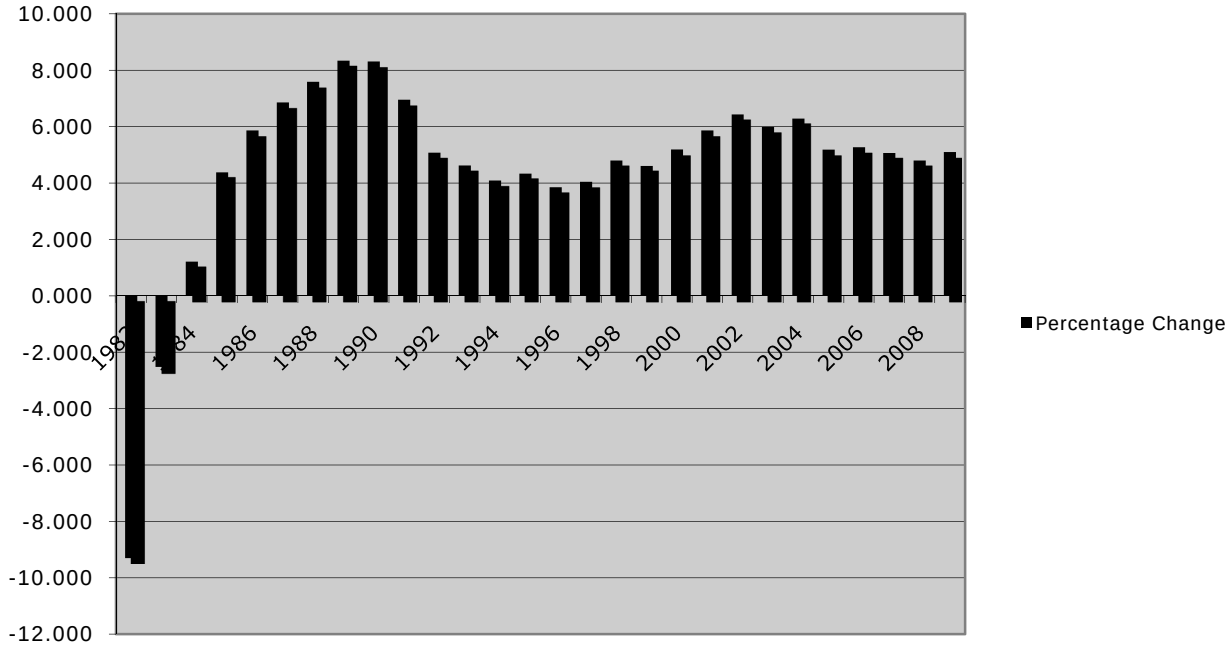

Figure 2: Tax Levy as Percent of Total

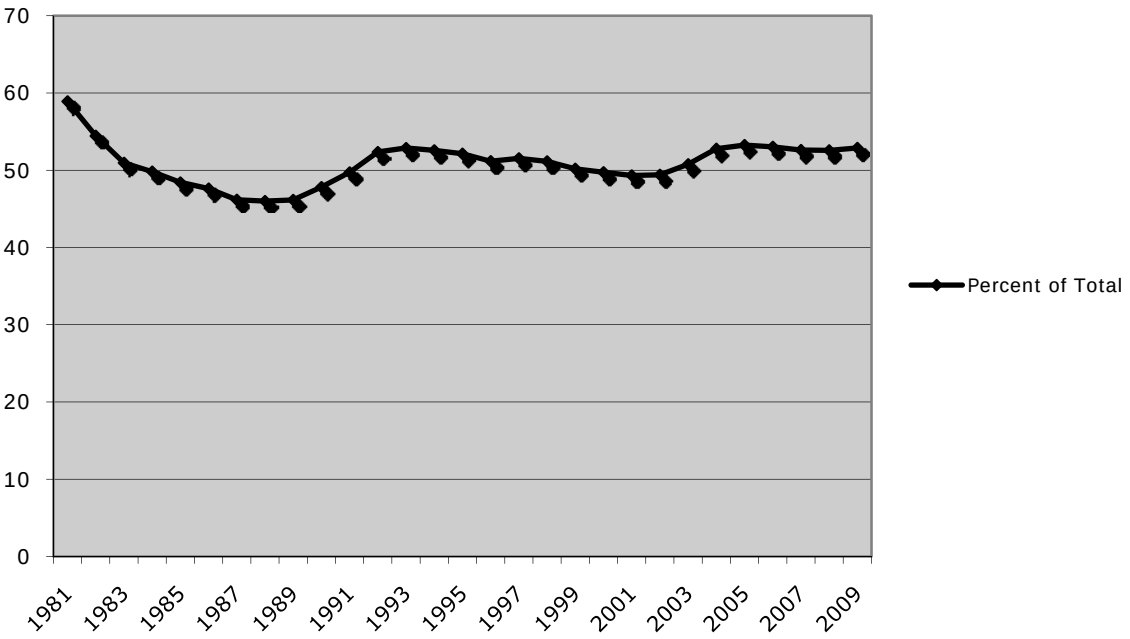

Figure 3 New Growth vs Percentage Change in Tax Levy

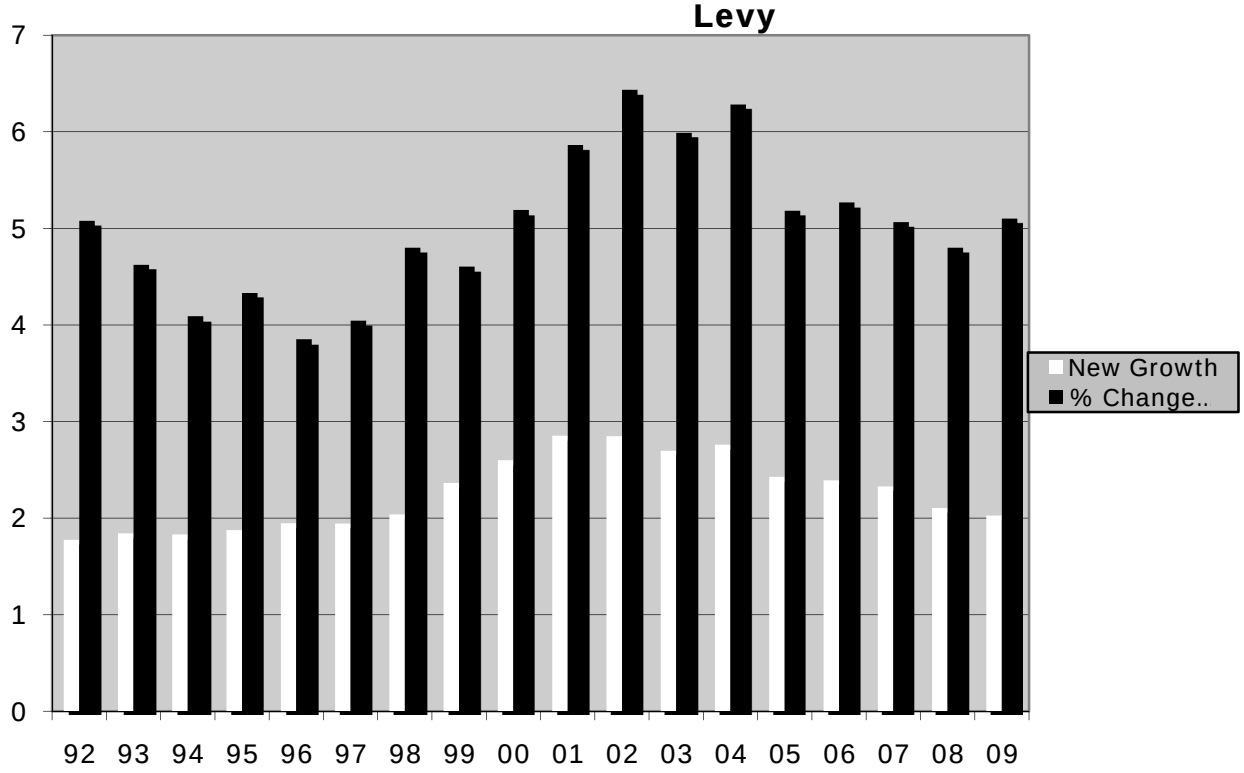

Figure 4: Tax Levy vs State Aid

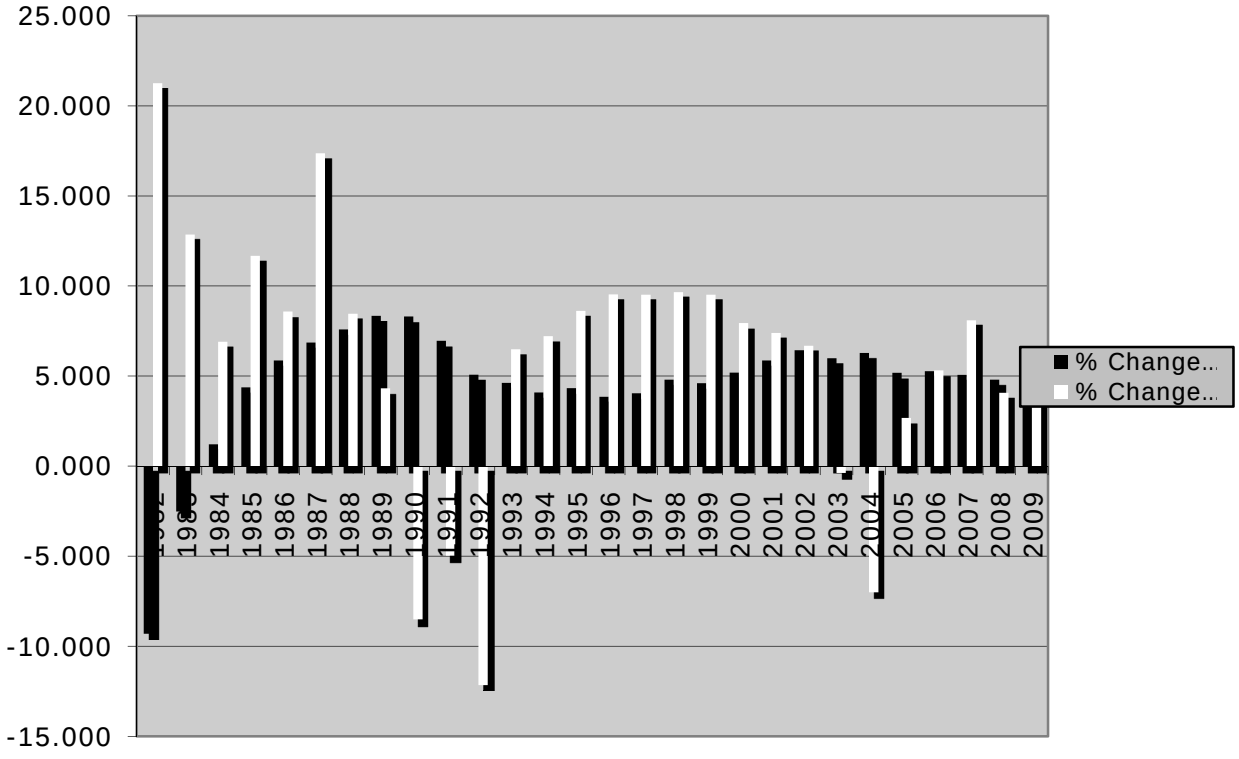

Figure 5: Percent Excess Capacity and Tax Rate

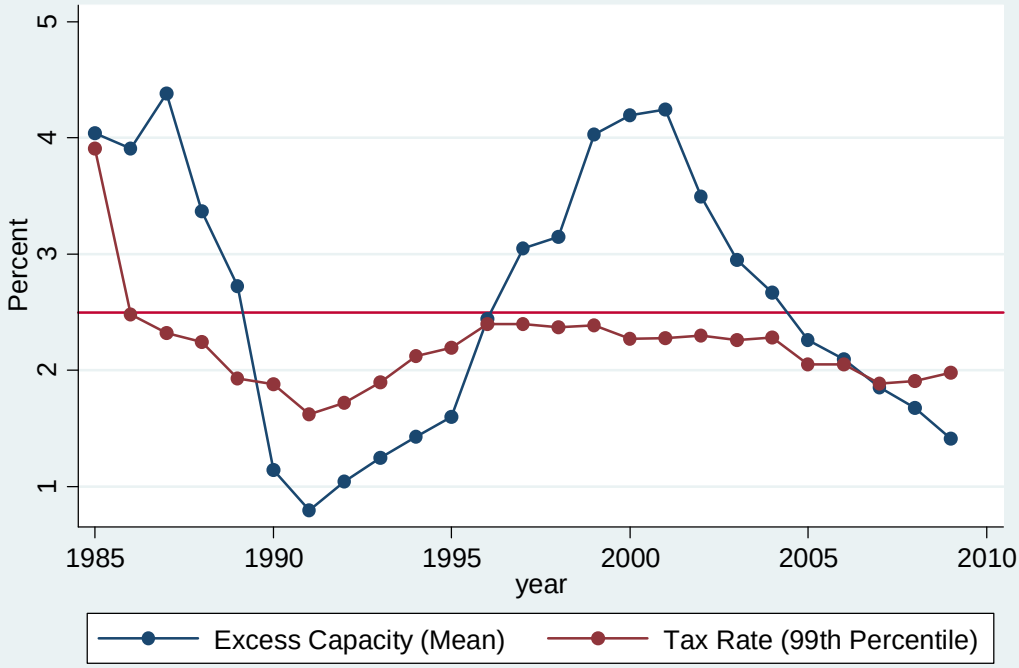

Figure 6: Number of Override Votes and Wins