

Other People's Taxes: Nonresident Voters and Statewide Limitation of Local Government*

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Abstract

Why would voters resort to a statewide tax limitation to force change in their own local government? This paper develops and tests the hypothesis that property tax limitations succeeded because they allowed voters to lower tax rates in *other* communities. Statewide limitations effectively extend the voting franchise to individuals who have no standing in local elections. Voters may have preferences for tax and expenditure levels in other jurisdictions because they receive rents from employment in those jurisdictions, directly own taxable assets in those jurisdictions, or because changes in other jurisdictions might influence their own residential location choice. Empirical tests of this hypothesis focus on the Massachusetts experience with Proposition 2½, which passed in 1980. Voting patterns, household mobility patterns, and post-Proposition growth in property values all support the nonresident hypothesis.

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I. INTRODUCTION

Nearly a quarter century after California's Proposition 13 began a "tax revolt" aimed at limiting local government revenue collection, researchers continue to debate the causes and consequences of tax limitations.¹ The persistence of interest in this phenomenon can be attributed to two reasons. First, tax limitations continue to appear with some frequency on state ballots and voters continue to support them.² Second, the canonical economic model of local public choice suggests that rational voters would never choose to adopt a binding limit on their ability to raise revenue locally.³ Tax limitations thus pose a theoretical puzzle.

One intriguing piece of this puzzle has difficulty fitting in with existing explanations for property tax limitations: why would voters choose to take statewide action to limit their local government? The use of limitations to restrain "Leviathan" local governments should be most effective when the limitations are tailored to local voter preferences and voted on only by the local electorate.⁴ The claims that tax limitations were responses to statewide changes in public school

¹ See, for example, Katherine L. Bradbury, Christopher J. Mayer, & Karl E. Case, Property Tax Limits and Local Fiscal Behavior: Did Massachusetts Cities and Towns Spend Too Little on Town Services under Proposition 2½, VOL J. Pub. Econ. 287 (2001), David N. Figlio & Arthur O'Sullivan, The Local Response to Tax Limitation Measures: Do Local Governments Manipulate Voters to Increase Revenues? 44 J. Law & Econ. 233 (2001); David M. Cutler, Douglas W. Elmendorf, & Richard J. Zeckhauser, Restraining the Leviathan: Property Tax Limitation in Massachusetts, 71 J. Pub. Econ. 313 (1999) Terri A. Sexton, Steven M. Sheffrin & Arthur O'Sullivan., Proposition 13: Unintended Effects and Feasible Reforms, 52 Nat. Tax J. 99 (1999); Thomas A. Downes & David N. Figlio, Do Tax and Expenditure Limits Provide a Free Lunch? Evidence on the Link Between Limits and Public Sector Service Quality, 52 Nat. Tax J. 113 (1999); Therese J. McGuire, Proposition 13 and its Offspring: For Good or For Evil?, 52 Nat. Tax J. 129 (1999); Peter Schrag, Paradise Lost: California's Experience, America's Future (1998)

² See Richard F. Dye and Therese J. McGuire, The Effect of Property Tax Limitation Measures on Local Government Fiscal Behavior, 66 J. Pub. Econ. 469 (1997); David N. Figlio, Short-Term Effects of a 1990s-era Property Tax Limit: Panel Evidence on Oregon's Measure 5, 51 Nat. Tax J. 55 (1998).

³ Charles M. Tiebout, A Pure Theory of Local Expenditures, 64 J. Pol. Econ. 416 (1956).

⁴ See, for example, Perry Shapiro and Jon Sonstelie, Did Proposition 13 Slay Leviathan? 64 Am. Econ. Rev. 184 (1982) and Cutler, Elmendorf and Zeckhauser *supra* note 1.

financing or were initiatives to force the state to take more responsibility for local public goods overlook the fact that local voters in this type of scenario frequently have incentives to *avoid* reducing tax rates in other jurisdictions.⁵

This paper argues that one basic purpose of local tax limitations is to allow voters to influence local tax and expenditure decisions in jurisdictions where they do not reside. This hypothesis implies that tax limitations are most likely to succeed at the state level, even when a majority of voters in any single jurisdiction would oppose a unilaterally imposed limitation. Voters have preferences over tax and spending levels in other jurisdictions for several reasons. Benefit spillovers between jurisdictions are the most commonly cited rationale in the post-Tiebout literature. These spillovers should lead nonresidents to desire higher levels of taxation and expenditure in any given jurisdiction. This paper focuses on three additional rationales, each of which would lead nonresidents to desire lower tax and expenditure levels. The first rationale considers the role of absentee landowners, including both owners of renter-occupied housing and nonresidential land and structures. The second focuses on nonresident employees, who expect higher wages if lower taxes on structural capital cause more investment that raises the marginal product of labor. The third rationale examines “marginal residents,” or individuals for whom a discrete change in the tax and expenditure levels in a particular jurisdiction would cause them to re-optimize their residential location decision and potentially realize gains in utility.

Data from Massachusetts’ 1980 property tax limitation, Proposition 2½, are used to test the nonresident hypothesis. Analysis is conducted on a jurisdiction-by-jurisdiction basis, with

⁵ On the first point, see William A. Fischel, *Did Serrano Cause Proposition 13*, 42 Nat. Tax J. 465 (1989). On the second, see Thomas J. Nechyba, *Local Property and State Income Taxes: The Role of Interjurisdictional Competition and Collusion*, 105 J. Pol. Econ. 351 (1997).

observations from a non-tax limitation, or “control” state, Connecticut, included to separate out possible confounding trends. Evidence considered includes patterns of voter support for the tax limitation measure across jurisdictions, household mobility patterns in the decade following the limitation’s passage, and trends in property values over the same decade. The results, discussed in Section III, generally support the nonresident explanation.

The nonresident theory of tax limitations is decidedly more pessimistic than either of its alternatives. Both the Leviathan and state bailout hypotheses model property tax limitations as potential Pareto improvements. In the nonresident world, there may be clear losers when tax limitations are passed – the voters who desired high property tax rates in the first place. When not all interested parties have the right to vote in local elections, however, tax limitations may still be efficiency-enhancing. Section IV returns to this observation and concludes.

II. THE NONRESIDENT EXPLANATION AND ITS RIVALS

The central puzzle of property tax limitations is set up by the literature following Tiebout’s analysis of consumer choice of local public good bundles.⁶ In the Tiebout model, heterogeneous utility-maximizing agents achieve a Pareto efficient outcome by sorting themselves into homogeneous local jurisdictions, each one offering the combination of local taxes and services most preferred by its residents. In this model, a binding property tax limitation prevents some jurisdictions from offering residents their most preferred combination of taxes and services, leading to a clear decrease in utility for those residents. No individual jurisdiction would ever voluntarily submit to such a restriction, so long as residents retained the power to optimally set local taxes and

⁶ See note 3 *supra*.

services.⁷

If the Tiebout model is amended to permit voters to have preferences over taxes and spending levels in jurisdictions where they do not otherwise reside, situations may arise where a majority of voters in a system of jurisdictions would support a limitation measure. As mentioned in the introduction, the existence of benefit spillovers should lead voters to support increases, rather than decreases, in taxes and spending in jurisdictions where they do not reside. There are three countervailing arguments to support the case where nonresidents favor lower taxes and service provision in a particular jurisdiction.

Nonresident landowners. When only residents have the right to set local tax rates and expenditure levels, the “optimal,” or resident welfare-maximizing tax rate on any commodity increases when nonresidents consume a greater share of the commodity.⁸ A system of local jurisdictions where many individuals reside in one community but own property in another may therefore find itself in a form of prisoners’ dilemma. Each jurisdiction’s dominant strategy is to set relatively high property tax rates in order to expropriate revenue from nonresidents for the benefit of residents.⁹ A majority of voters in the system, however, might support an agreement to limit each

⁷ There have been a number of theoretical critiques of the Tiebout model. See for example Frank Westhoff, Existence of Equilibria in Economies with a Local Public Good, 14 J. Econ. Theory 84 (1977); Truman F. Bewley, A Critique of Tiebout’s Theory of Local Public Expenditures, 49 Econometrica 713 (1981); Dennis Epple and Allan Zelenitz, The Implications of Competition Among Jurisdictions: Does Tiebout Need Politics? 89 J. Pol. Econ. 1197 (1982).

⁸ See Richard Arnott and Ronald E. Grieson, Optimal Fiscal Policy for a State or Local Government, 9 J. Urb. Econ. 23 (1981); Junghun Kim, Local Property Taxation with External Land Ownership, 68 J. Pub. Econ. 113 (1998).

⁹ In this case, “relatively high” means higher than a jurisdiction would choose if the entire tax base were owned exclusively by residents.

jurisdiction's tax revenue in order to minimize distortionary losses from commodity taxation.¹⁰

Nonresident employees. Other things equal, taxation of investments in land and structural capital should cause firms to use other production inputs more intensively. Under the standard assumption of diminishing marginal product, tax-induced increases in labor intensity reduce the marginal product of labor and have the potential to decrease equilibrium wages.¹¹ Equilibrium wages in a system of local jurisdictions may decline still further if local taxes push some firms outside the system altogether, to other regions that offer incentives or other commitments to a low tax burden.¹² Employees who reside in the same jurisdiction as the firm should take these wage effects into account when setting local tax rates. Nonresident employees, on the other hand, have an incentive to seek lower tax rates in the communities where they work. To the extent that systemwide wage levels are capitalized into property values, even nonresidents with no ties to employment in other jurisdictions may have preferences over tax rates in those jurisdictions.

Marginal residents. Lower tax rates and public good provision levels in a particular jurisdiction might change the rank order of bids for housing in that jurisdiction. Suppose, for

¹⁰ The scenario considered here is slightly more complicated than that considered by Arnott and Grieson *supra* note 8, who model a local government as setting tax rates on commodities that trade at exogenously fixed prices. The price of land and structures in a jurisdiction, however, is endogenous and should capitalize the degree of confiscatory taxation. Whereas in an Arnott and Grieson-type model consumers in a system of jurisdictions could benefit from lower net-of-tax prices if they collude, in this scenario the benefit would accrue primarily as a windfall increase in property values.

¹¹ When relocation costs are low, firms may respond to local taxes by moving to jurisdictions that promise lower tax rates. Jurisdictions, in return, may set lower tax rates in order to prevent this relocation. The presence of either physical relocation costs or agglomeration economies that are specific to a single jurisdiction would reduce this mitigating effect.

¹² Firm departure would be expected to decrease wages in the short run until households have an opportunity to respond by migrating. Olivier J. Blanchard and Lawrence F. Katz, *Regional Evolutions*, 1 Brookings Papers on Econ. Activity 1 (1992) show that migration responses to statewide employment shocks are common, but occur over a period of years.

example, that firms are disproportionately located in a single central jurisdiction to take advantage of transportation connections or agglomeration economies. Residents of that jurisdiction, vested with the power to set local tax rates, will set high rates that effectively capture some of the rents associated with the community's locational advantage. Across the system of jurisdictions, households with a strong taste for local public goods will be drawn to this community, because of its superior technology in producing public goods – for any given per-household tax burden, the quantity of public goods produced will be greater. These households' willingness to pay a premium to reside in a jurisdiction with a better public good production technology will in many cases enable them to outbid other households in the market for land and housing.

A systemwide tax limitation deprives this jurisdiction of its public good production technology, making it less attractive to existing residents. The relative attractiveness of the central jurisdiction may increase for other households, however: those who value certain amenities present in that jurisdiction but who either attached little value to local public goods or displayed particularly strong tastes for the taxed good, housing. This combination of decreased attractiveness for existing residents and increased attractiveness for certain nonresidents implies that residential resorting would be a logical response to tax limitations. Moreover, if the potential new residents of the central jurisdiction can accurately forecast the limitation's impact, they may have an incentive to support the measure themselves.

Table 1 lists a series of empirical questions related to tax limitation measures, comparing the answers provided by the nonresident explanation to those offered by existing hypotheses. First among these alternatives is the basic Tiebout model of local public finance. The second alternative is the "Leviathan" theory, which posits that tax limitations allowed voters to rein in local

governments that disobeyed voter preferences by either overproducing local public goods or producing inefficiently.¹³ The third alternative, the “State Regime Shift” hypothesis, represents a collection of models that imply that voters used tax limitations to force state governments to accept more responsibility for collecting revenue or providing local public goods.¹⁴

The nonresident hypothesis offers a very clear explanation for why limitations are enacted on a statewide basis. Indeed, the theory implies that voters would never unilaterally impose a limitation on their own local government. While the Tiebout hypothesis offers no explanation for tax limitations of any kind, either the Leviathan or state regime shift hypotheses can be amended to rationalize the statewide nature of tax limitations. Voters wishing to shift tax or service burdens to the state level can expect to accomplish little unless they act in concert. Statewide limitations might also result in areas where Leviathan local governments are pervasive or have corrupted the local public choice process to preclude voter action at the local level.

The competing hypotheses offer very different predictions regarding what types of voters should support limitation measures. The nonresident explanation focuses on individuals who own property, work, or might like to reside in prospectively constrained jurisdictions. This explanation suggests that initial tax rates in one’s own jurisdiction should be less relevant than those in nearby jurisdictions in predicting support. The Leviathan and state regime shift hypotheses both predict strong support among certain individuals who wish to reduce tax burdens in their own community,

¹³ See Cutler, Elmendorf, and Zeckhauser *supra* note 1, Epple and Zelenitz *supra* note 7, Thomas Romer and Howard Rosenthal, Political Resource Allocation, Controlled Agendas, and the Status Quo, 33 *Pub. Choice* 27 (1978). Paul N. Courant and Daniel L. Rubinfeld, On the Welfare Effects of Tax Limitations, 16 *J. Pub. Econ.* 289 (1981) caution that the power of tax limitations to improve voters’ lives is limited when governments produce inefficiently, rather than simply overproduce. If government inefficiency continues after the limitation, then voters may end up worse off.

¹⁴ See note 5 *supra*.

either because the taxes pay for goods they do not value, or because they hope to at least partially shift the burden to nonresidents.¹⁵ Neither hypothesis directly suggests that voters' opinions should be influenced by tax rates in surrounding areas, though in each case a reference to other local political economy models could establish this connection.¹⁶ In its most basic form, the Tiebout hypothesis suggests that all voters should be either exactly indifferent to limitations (if they are not binding) or oppose them.¹⁷

Households that re-optimize their location decisions following property tax limitations form part of the hypothesized nonresident coalition. Household resorting in the wake of property tax limitations is not a unique prediction of the nonresident hypothesis, however. The restraint of a Leviathan government, for example, may prompt some households to move into former high-tax jurisdictions. Moreover, in each explanation, the set of voters most likely to re-optimize should resemble the set that supports a limitation in the first place: individuals with either a high tax price

¹⁵ Under both hypotheses, residence in a high-initial tax jurisdiction does not necessarily imply support for limitation measures. Under the Leviathan hypothesis, there may be some high tax jurisdictions where a majority of voters support the current tax rate. Under the state regime shift hypotheses, there may be high-tax jurisdictions where voters forecast that they will fare worse under the alternative regime.

¹⁶ For example, one could adopt a yardstick competition-style model into the Leviathan framework to generate predicted correlations between nearby tax rates and support for a limitation: see Timothy Besley and Anne Case, *Incumbent Behavior: Vote-Seeking, Tax-Setting and Yardstick Competition*, 85 *American Economic Review* 25 (1995). Suppose voters are uncertain whether their local government is a Leviathan and use data from surrounding jurisdictions to make inferences. Voters in jurisdictions surrounded by relatively low-tax jurisdictions would be more likely to conclude that their own government is a Leviathan, and would therefore be more likely to support a limitation. This is exactly the opposite prediction of the nonresident hypothesis. Alternatively, voters uncertain about their community's future tax rate could make predictions on the basis of tax rates in surrounding communities, concluding that high tax rates in neighboring areas amount to a prediction that their own rate will increase.

¹⁷ There have been several previous studies explaining voter support for property tax limitations, but none have explicitly considered the role of tax rates in surrounding jurisdictions: Alvin Rabushka and Pauline Ryan, *The Tax Revolt* (1982); Helen F. Ladd and Julie B. Wilson, *Why Voters Support Tax Limitations: Evidence from Massachusetts' Proposition 2½*, 35 *National Tax Journal* 121 (1982); Helen F. Ladd and Julie B. Wilson, *Who Supports Tax Limitations: Evidence from Massachusetts' Proposition 2½*, 2 *Journal of Political Analysis & Management* 256 (1983); Cutler, Elmendorf and Zeckhauser, *supra* note 1.

or a low taste for local public goods. Evidence of resorting can validate each hypothesis, but cannot distinguish between them.¹⁸

Several authors have shown that in a Tiebout model with endogenous housing prices, consumer choice of the utility-maximizing public bundle is equivalent to maximizing the value of housing in a given jurisdiction, so long as jurisdictions are homogeneous.¹⁹ It thus follows that a property tax limitation, if it disrupts a Tiebout equilibrium, should lead to a relative decrease in property values in constrained jurisdictions.²⁰ Both the Leviathan and state bailout explanations suggest that tax limitations have the potential to increase property values in constrained jurisdictions, by making those communities more attractive to their residents.

The nonresident hypothesis suggests a more complex pattern. The value of property other than owner-occupied housing should increase, since lower taxes imply that owners of this type of property will be able to capture a greater share of the rents from it. Resident owner-occupiers benefit from a reduction in tax rates but also suffer from a decrease in local public good provision. If the median voter in a jurisdiction is an owner-occupier, it can be inferred that the median voter's

¹⁸ Household resorting provides an alternative explanation for Shapiro and Sonstelie's (*supra* note 4) finding that the marginal rates of substitution between types of public goods changed in California after Proposition 13. Shapiro and Sonstelie interpret this evidence as suggesting that a different agent chose the public bundle before and after the limitation, and conclude that the two agents were Leviathan bureaucrats and median voters, respectively. Resorting implies that the optimizing agents may have been median voters in both cases, but that the *identity* of the median voter in each jurisdiction changes after the limitation is imposed.

¹⁹ Noel M. Edelson, Voting Equilibria with Market-Based Assessments, 5 J. Pub. Econ. 269 (1976); John Yinger, Capitalization and the Theory of Local Public Finance, 90 J. Pol. Econ. 917 (1982); Bradbury, Mayer, and Case *supra* note 1.

²⁰ The evidence regarding the impact of property tax limitations on housing values is mixed, with some studies showing significant increases following tax limitations (Kenneth Rosen, The Impact of Proposition 13 on House Prices in Northern California: A Test of the Interjurisdictional Capitalization Hypothesis, 90 J. Pol. Econ. 191 (1982) and others finding significant decreases (Kevin Lang and Tianlun Jian, Property Taxes and Property Values: Evidence from Proposition 2½, (unpublished manuscript, Boston Univ., Economics Dept., 1996); Bradbury, Case and Mayer *supra* note 1).

satisfaction with the tax rate and service level in the jurisdiction declines after the limitation is passed. The equilibrium value of owner-occupied property in a community, however, is determined not by the median voter but rather by a marginal resident – one indifferent between that jurisdiction and its closest alternative.²¹ Depending on the marginal resident’s preferences, a constrained community could become either more or less attractive, leading to either an increase or decrease in owner-occupied housing prices.

While overall trends in property values cannot reliably distinguish between the set of proposed explanations for property tax limitations, the theories are distinct in their forecasts of the correlation between support for the limitation measure and property value changes in constrained jurisdictions. If prospectively constrained communities that support a limitation are those that feature Leviathan governments, or those whose residents stand to benefit most from switching to a new state fiscal regime, then any property value increases should be concentrated in those jurisdictions that display more support. Opposition to the limitation should indicate a community that prefers a high tax level or whose residents would suffer under a switch to a new regime.

Under the nonresident explanation, opposition to a limitation measure should be strongest among those households that benefit from a system that allows greater tax exporting to nonresidents. The greatest increase in property values should therefore be observed in communities that *opposed* the limitation – those that extracted the most rents from nonresidents through high property taxes.²²

²¹ Dennis Epple and Thomas Romer, *Mobility and Redistribution*, 99 *J. Pol. Econ.* 828 (1991) presents a model of equilibrium in local jurisdictions where the marginal resident is referred to as a “border” household.

²² In either the Leviathan or state bailout scenarios, higher property value increases in constrained communities that initially opposed the limitation could be observed if some unobserved factor correlated with both high initial tax rates and opposition increased demand in certain jurisdictions. In the context of the model above, demand for the amenity present in one jurisdiction might be increasing independently. To address the concerns that unobserved factors contaminate the relationship between tax rate reductions and property value changes,

III. THE EVIDENCE: MASSACHUSETTS AND PROPOSITION 2½

On November 4, 1980, voters in Massachusetts passed a measure requiring all local jurisdictions to levy property taxes at effective rates no greater than 2.5%. Moreover, the dollar amount of tax revenue collected was constrained to grow no faster than 2.5% per year. Later amendments would weaken Proposition 2½'s provisions considerably, but at the time of passage almost half the state's 351 cities and towns faced the prospect of immediate forced reductions in tax revenue.²³ In some extreme cases, local governments could expect to lose over half of their property tax revenue over the course of the Proposition's phase-in period. For the most part, the jurisdictions facing the most severe tax cuts were urbanized, "property poor" communities experiencing slower population growth.²⁴ This section uses Proposition 2½ as a case study to evaluate the specific provisions of the nonresident hypothesis.²⁵

Anecdotally, several features of the Massachusetts experience lend credence to the nonresident hypothesis. The drive to enact Proposition 2½ was spearheaded by Barbara Anderson,

observations from a "control" state, Connecticut, will be included in the empirical analysis below. The identifying assumption is that any observed factor correlated with high initial tax rates in Massachusetts, where initial tax rates were forced to decline, will also correlate with high initial tax rates in Connecticut.

²³ See Cutler Elmendorf and Zeckhauser *supra* note 1 for further discussion of the provisions of Proposition 2½, as well as their impact on local government, and voter efforts to override them.

²⁴ Across 351 Massachusetts jurisdictions, the 1980 equalized property tax rate correlates at 0.60, -0.41, and -0.46 with 1980 population, 1980 equalized value per capita, and 1970-1980 population growth rate, respectively. Geographically, high-tax jurisdictions were concentrated in the Eastern part of the state, along with some urbanized areas of Western Massachusetts. Jurisdictions with the lowest taxes were concentrated on Cape Cod and the Islands, and the predominantly rural area north of Springfield.

²⁵ In principle, the analysis of Massachusetts after Proposition 2½ could also be performed with data from California after Proposition 13. In practice, several factors make California's experience more difficult to study. Proposition 13 dismantled the property assessment system (see Arthur O'Sullivan, Terri A. Sexton, and Steven M. Shefrin, *Property Taxes and Tax Revolts: The Legacy of Proposition 13* (1995) for details), making post-limitation estimates of the tax base quite scarce. Additionally, responsibility for local service provision falls upon many overlapping government authorities which frequently change their boundaries, unlike Massachusetts, where most all services are provided by cities/towns and boundaries are invariant.

head of the organization Citizens for Limited Taxation and resident of the town of Marblehead. In Fiscal Year 1980, Marblehead had an effective property tax rate of 2.3%, implying that Proposition 2½ would have no impact on Anderson’s community. She could not have been motivated by a desire to reduce taxes in her own jurisdiction. Similarly, the financing for the Proposition 2½ effort came largely from the Massachusetts High Technology Council, a business consortium rather than an organization of residential taxpayers.²⁶ The hypothesized impact of tax rate reductions on wages is born out in the anecdotal observation that household incomes in Massachusetts rose, both relative to national averages and neighboring states, in the years following Proposition 2½. Current Population Survey data show that median family incomes in Massachusetts rose from 6% above the national median to 18% above the national median between 1980 and 1984, as the Proposition’s tax rate reductions were phased in. Popular press accounts occasionally suggested that the so-called “Massachusetts miracle” was caused in part by Proposition 2½.

A. The Voting Data

Table 2 presents the results of an analysis of voter support for Proposition 2½. The number of votes cast for and against the limitation measure in each Massachusetts city and town were published in the November 6, 1980 edition of the *Boston Globe*. The logit transformation of the share of voters favoring the Proposition serves as the dependent variable in Table 3's regressions. Regression observations, which correspond to Massachusetts jurisdictions, are weighted by the total number of votes cast. This procedure allows some inferences about individual behavior to be made

²⁶ See Loth, Renee. “For Tax Opponent, Same War, New Front.” *Boston Globe*, July 23, 1989 p.B1.

from aggregate data.²⁷ This table introduces a measure of the forced reduction in tax rates, in percentage terms, brought about by Proposition 2½. Referring to a jurisdiction’s initial tax rate as τ_{1980} , the formula is $\ln(0.025) - \ln(\tau_{1980})$.²⁸ Cities and towns forced to reduce their tax rates the most – those with the highest values of τ_{1980} – have the most *negative* numbers on this scale. Communities with $\tau_{1980} \leq 0.025$ were not immediately affected by the Proposition, and are assigned values of zero for this variable.²⁹

The first regression in Table 2 provides a simple comparison of the impact of prospective tax rate changes within a jurisdiction and in the communities neighboring that jurisdiction. A neighboring jurisdiction in this case is defined as one with a population centroid within 20 miles of that of the city or town in question.³⁰ As the nonresident hypothesis predicts, support for the

²⁷ This procedure provides behavioral parameters under certain conditions. First, the standard logit assumptions must apply, that is, an individual i , living in jurisdiction j must support the limitation when $Y_{ij} = X_{ij}\beta + \epsilon_{ij}$ exceeds some threshold value, and ϵ_{ij} take on an i.i.d. Weibull distribution. Second, for the parameters in the aggregated regression to be equal to those in the individual regression, either X_{ij} must contain jurisdiction characteristics exclusively, or individuals must not base their decisions on the X_{ij} values of other jurisdiction residents. The standard concerns regarding model specification apply.

²⁸ The log mandated tax rate reduction is used in all specifications to facilitate the computation of elasticity estimates. Substituting the level of the mandated tax rate reduction does not significantly alter any results. Substituting a dummy variable to indicate whether a jurisdiction was constrained eliminates the statistical significance of the demographic results reported in Tables 4 and 5, but not in the property value results reported in Table 6.

²⁹ In reality, the provisions of Proposition 2½ forced most jurisdictions to lower their property tax rates below 2.5% over time, since tax collections were constrained to grow at a rate below that of inflation. Jurisdictions can vote to override the Proposition’s growth provisions, however, so I treat any tax rate reductions beyond the 2.5% limit as endogenous here and in later tables.

³⁰ The set of towns surrounding a particular jurisdiction is defined to exclude the jurisdiction itself. Average reductions in surrounding towns are weighted by the population of those towns. The correlation between a jurisdiction’s own tax rate reduction and average reductions in surrounding towns is 0.411 – significant, though not large enough to create severe collinearity problems. The estimated effect of surrounding tax reductions on support for Proposition 2½ increases when larger radius measures are used. The alternative explanation that residents use tax rates in neighboring jurisdictions to predict their own future tax rate is thus only valid if residents attach more weight to more distant jurisdictions.

Proposition is significantly higher among voters who live near, rather than in, high tax jurisdictions. This is a substantial relationship: controlling for a jurisdiction's own prospective tax rate reduction, a one-standard-deviation increase in average rate reduction in the surrounding area predicts a 1.2 standard deviation increase in support for the Proposition. Controlling for tax reductions in the surrounding area, jurisdictions with higher initial tax rates had slightly, but significantly, *lower* support for the Proposition.

The second regression adds two variables intended to measure the extent to which a jurisdiction has the ability to export its property tax burden to nonresidents. Jurisdictions with more renter-occupied housing may shift some tax burden onto absentee landlords. Those with higher employment to population ratios may shift a greater share of the burden onto firms, especially those with nonresident employees, rather than households. Coefficients on both variables have the expected sign. Communities with greater capacity for tax exporting exhibited significantly less support for the tax limitation, also consistent with the nonresident hypothesis. Interestingly, controlling for these tax exporting measures changes the sign of the effect of a jurisdiction's own tax rate. High tax jurisdictions opposing the Proposition were evidently those with high capacity for tax exporting. Higher taxes in surrounding jurisdictions continue to predict greater support for the Proposition, though the effect is slightly reduced in magnitude.

Some part of the neighboring tax rate effect may reflect regional variation in attitudes toward taxation or perceptions of Leviathan government. To explore this possibility, the third regression in Table 2 adds a set of county fixed effects to the specification.³¹ These fixed effects should be thought of as capturing primarily regional variation, since counties themselves have virtually no

³¹ For purposes of this analysis, Dukes (Martha's Vineyard) and Nantucket counties are combined with Barnstable county (Cape Cod).

governmental function in Massachusetts and some counties are not contiguous let alone topologically compact. The addition of fixed effects substantially reduces the magnitude of coefficients on both own and neighboring tax rate variables, implying that roughly half of the tax rate effects cannot be empirically distinguished from other factors that vary at the county level. These coefficients retain statistical significance, though only at the 10% level in the case of the neighboring tax rate effect. The magnitude of coefficients on the tax exporting variables is relatively unaffected by the inclusion of county fixed effects.

The final regression in Table 2 adds a set of average population characteristics for each jurisdiction. Conditional on a community's tax exporting ability, support for a mandated reduction in property tax rates should correlate with demographic factors that reflect either tastes for local public goods or tax prices.³² In heterogeneous communities, even a tax rate chosen by majority vote will exceed the value most preferred by some residents. Added voter characteristics, based on the 1980 Census, include the share of adults with education beyond the high school level, the nonwhite share of the population, the log of median household income, the percent of individuals residing in households below the poverty line, the share of households with at least one child under the age of 6, the share of households with children exclusively between the ages of 6 and 17, and the share of households headed by an individual over 65 years old. The regressions also control for a measure of voter preferences, the share voting for Ronald Reagan in the presidential election that took place on the same day as the vote for Proposition 2½.

Interpretation of this final regression should be somewhat guarded, as many of the right hand side variables are correlated and may indeed be causally linked. In particular, votes for Reagan and

³² David M. Cutler, Douglas W. Elmendorf, and Richard J. Zeckhauser, Demographic Characteristics and the Public Bundle, 48 Pub. Fin. 179 (1993).

initial tax rates may be a function of some of the demographic characteristics included on the right hand side. Nonetheless, it is instructive to examine the demographic correlates of support for Proposition 2½.

Several significant patterns appear in the data. Support for the tax limitation is highly correlated with support for Reagan. Voters in more nonwhite, less educated jurisdictions and in communities with lower poverty rates showed greater support for Proposition 2½. Communities with a higher density of families with young children expressed significantly greater support for the limitation, while those with school-age children did not. Jurisdictions with high concentrations of elderly residents exhibited less support for the Proposition. In general, the evidence suggests that groups associated with lower demand for local public services or higher demand for housing supported the Proposition.³³

Controlling for these characteristics, the tendency for voters to support the limitation when surrounding communities have higher tax rates persists, increasing slightly in magnitude and significance relative to the preceding specification. The effect of own tax rate also increases slightly relative to the preceding specification and retain significance. The tax exporting coefficients are smaller in magnitude and lack significance, though they continue to display the predicted sign.

In summary, this table shows evidence consistent with the nonresident hypothesis. Voters surrounded by high tax jurisdictions supported the limitation, while those in communities with higher potential for tax exporting to nonresident landowners or firms exhibited greater opposition.

B. Household Resorting

³³ *Id.*

Tables 3 and 4 test the prediction that some households respond to tax limitations by re-optimizing their residential location decision, using decennial Census data, collected only months before Proposition 2½ passed and once again ten years later. The nonresident hypothesis operates under the presumption that these households form part of a tax limitation’s supporting coalition, though resorting is consistent with alternative explanations of property tax limitations as well. The objective of this analysis is to determine whether tax limitations caused a resorting of households across jurisdictions in Massachusetts. The evidence supports a causal influence of this sort: the demographic composition of constrained communities changed significantly after 1980.³⁴

In practice, a community’s demographic composition can change for many reasons. The characteristics of individual households might change over time. Trends in interstate migration might change the composition of individual communities over time. Several controlling strategies will be used here, since the true objective of this empirical test is to isolate mobility directly related to the changes brought about by property tax limitations.

Jurisdictions facing mandated property tax rate reductions did not form a random sample of all municipalities in Massachusetts. Controlling for some dimensions of this selection can be accomplished by including relevant covariates in regression models. These covariates include county fixed effects, which restrict analysis to variation within smaller regional areas, measures of (log) population in 1980, and (log) land area, effectively controlling for log density.

This set of covariates cannot possibly capture all the dimensions along which towns with

³⁴ Additional regression evidence, not shown here, shows that jurisdictions more severely constrained by Proposition 2½ experienced more rapid population growth between 1980 and 1990, relative to less constrained communities and to initially high-tax municipalities in Connecticut. This trend occurred despite continuing suburbanization of the population in the greater Boston area. According to US Census microdata, the net outflow of households from Massachusetts to New Hampshire was greater between 1985-1990 than between 1975-1980. It is also noteworthy, however, that the gross inflow of households from New Hampshire into Massachusetts doubled in 1985-90 relative to 1975-80.

high tax rates in 1980 differed from those with low tax rates. To further combat the potential omitted variable problem, a set of “control” jurisdictions, the 169 towns of Connecticut, have been added to the pool of observations.³⁵ As the summary statistics in appendix table A1 show, jurisdictions in the two states are quite similar along many observable dimensions. The principal difference is that Massachusetts towns with high tax rates in 1980 were forced to reduce them, while Connecticut towns with similarly high initial rates were not. Any general trends influencing the composition of all places with high property tax rates in 1980 are captured by the first regression covariate listed in Table 3, which is simply the natural logarithm of the initial tax rate in each community. Compositional shifts related specifically to the mandated reduction of initial tax rates will be reflected in the coefficient on the second variable listed, the log of the mandated change in tax rates brought about by Proposition 2½. This latter variable is set to zero for Connecticut observations.

The final strategy used to control for exogenous changes in population composition involves the creation of a “predicted” change for each attribute of interest. In Table 3's first and second regressions, which examine the change in percent with high education and percent nonwhite respectively, the predicted share change is calculated by assuming that statewide group-specific growth trends are mirrored at the local level. In the third regression, the predicted change in share of householders over 65 is derived by simulating the aging process for a jurisdiction's 1980 population, applying nationwide mortality rates taken from *Vital Statistics of the United States*. Regressions in Table 4, which examine the change in the share of households with children, use a prediction based on the 1980 ratio of average cohort size among 1-9 year olds to average cohort size

³⁵ The results derived from the two-state sample are substantively similar to those derived from estimation using Massachusetts observations only.

of 10-17 year olds. In all cases, the predicted share changes have significant explanatory power.

The tax rate changes forced upon Massachusetts jurisdictions after 1980 are associated with significant changes in community composition between 1980 and 1990. In particular, more highly constrained communities experienced relative increases in the share of residents who were highly educated or nonwhite, and a relative decrease in the share of elderly householders.³⁶ Nonwhites, a group associated with stronger support for Proposition 2½, increased their share by 1.2 percentage points in the average constrained community relative to the average unconstrained community.³⁷ The share of highly educated individuals in the average constrained jurisdiction rose 1 percentage point relative to the share in the average unconstrained jurisdiction. The elderly appear to have been displaced in the process of compositional change. Elderly share fell 1 percentage point in the

³⁶ To further analyze the evidence of household resorting by education presented in Table 3, I assembled panel data from the American Housing Survey (AHS) metro samples for the Boston area in 1977, 1981, 1985, and 1989. The 1977 and 1981 surveys queried a constant set of housing units, as did the 1985 and 1989 surveys. Thus it is possible to observe turnover in existing housing units over the two four-year periods, one roughly corresponding to the immediate pre-Proposition period and one to the post-Proposition period. In 1977, the AHS interviewed 1,029 households in the city of Boston headed by an individual with no more than a high school diploma. By 1981, 158 of these households, or 15%, had been displaced by households headed by an individual with at least some college education. The comparable displacement rate between 1985 and 1989 was 31.5%. In Boston's suburbs, the pre-Proposition displacement rate was 16% and the post-Proposition displacement rate was 28%, implying a difference-in-difference estimate of 4.6%. This estimate is suggestive, but owing to the relatively small sample sizes in the AHS, it is not statistically significant ($t = 1.28$). Highly educated households were not only more likely to enter the city of Boston after the proposition; they were also less likely to leave. Of the 592 households with highly educated heads in the city of Boston in 1977, 18% had been displaced by less-educated households in 1981. The comparable displacement rate between 1985 and 1989 was 11%. In suburban areas, the equivalent rates were 11% in the pre-Proposition period, and 14% afterwards, implying a statistically significant difference-in-difference estimate of -0.102 ($t = -3.4$). Together, the increased inflow and decreased outflow of highly educated households imply a steady convergence in the educational composition of the city of Boston and its suburbs. Relative to its suburbs, the city of Boston had a significantly lower share of householders with some college education in the 1977 and 1981 samples (gaps of 8.3 and 8.9 percentage points, respectively), but actually had a higher share in the 1989 sample.

The AHS asks householders who have moved in the previous year where their previous residence was. The resulting sample of movers is quite small but reveals interesting patterns. Of the 43 surveyed householders with at least some college education who moved into the city of Boston from another jurisdiction in 1984-'85, thirty (70%) reported a previous residence in the same metro area. For further analysis of the Boston AHS data during this time period, see Jacob L. Vigdor, *Does Gentrification Harm the Poor?*, Brookings-Wharton Papers on Urban Affairs (2002).

³⁷ Here, the "average" constrained community is one with the mean mandated log property tax rate reduction, -0.24.

average constrained community relative to the average unconstrained community.³⁸

Households with children are perhaps the greatest consumers of local public goods, but they also bear greater costs, since their higher demand for housing implies that they have a higher tax price. Table 4 shows a pattern of results that suggest reduced tax prices were an important consideration for at least some households with children. Consistent with the result in Table 2, households with children not yet old enough to enroll in public school display a significant increase in share in constrained communities. Households with only school-aged children neither gravitated toward nor away from constrained jurisdictions.

C. Property Values

Estimation of the relationship between mandated tax rate reductions, initial opposition to Proposition 2½, and property values will use two of the control techniques described in the preceding section. First, the same set of covariates employed in Table 4 appear as right-hand-side variables in the value regressions, reported in Table 5. Second, Connecticut observations are included as “controls,” to separate the effect of having forced tax rate reductions from the effect of having high property tax rates in 1980.

Table 5 examines two different measures of property value growth in each jurisdiction: change in the equalized tax base and change in the median owner-occupied housing value reported in the decennial Census. The first measure captures changes in both the quantity and price of real

³⁸ While elderly households are at least anecdotally considered to be the most severely impacted by high property taxes, evidence suggests that these households also have high demand for local public goods (Cutler et al. 1993). Moreover, the benefit of reduced property taxes is most clear for existing residents, for whom the capitalization of tax rates into housing prices is irrelevant. As existing elderly residents die off, they are unlikely to be replaced by other elderly households. Vigdor *supra* note 36 shows that elderly renter households were most likely to report adverse changes in housing quality and price in the Boston area during the 1980s.

property in a jurisdiction, both residential and nonresidential.³⁹ The second is based on owner-reported estimates of value, omitting both renter-occupied and vacant housing units.⁴⁰ The coefficient estimates are remarkably similar across specifications, suggesting that the effect of tax limitations on the price of owner-occupied housing, theoretically indeterminate according to the nonresident hypothesis, is quite similar to the effect on non-owner occupied and nonresidential property.

The first regression in Table 5 indicates that jurisdictions in both Massachusetts and Connecticut with high property tax rates in 1980 experienced more rapid tax base growth over the subsequent decade.⁴¹ This might reflect mean-reversion in the tax base measure, or a trend towards greater investment in urban communities during the 1980s.⁴² Regardless, it is clear that this pattern was more pronounced in the Massachusetts data, which indicate significantly faster tax base growth in more constrained jurisdictions. Equalized value in the average constrained jurisdiction increased

³⁹ Other authors (Lang and Jian *supra* note 20; Bradbury, Case and Mayer *supra* note 1) raise concerns that tax base data from Massachusetts is systematically understated in high-tax jurisdictions prior to Proposition 2½, and that the incentives for underreporting were dramatically lessened by the limitation. Low equalized value per capita is one criterion used in the determination of state aid to localities in Massachusetts, thus communities interested in maximizing intergovernmental revenue have incentives to report underestimates of market value to the state. The passage of Proposition 2½ changed these incentives, since communities could minimize the revenue impact of cutting tax rates by increasing the tax base, rather than decreasing their levy. Once a city or town's tax levy was below 2.5%, these large incentives to inflate the tax base disappeared, since the statutory limit on growth in tax collections prevented local governments from reaping the benefits. This concern with the assessment statistics is one reason for corroborating the results with data on Census-reported housing values.

⁴⁰ Housing value is a self-reported assessment of the price a property would receive if placed on the market. John L. Goodman and John B. Ittner, The Accuracy of Homeowner's Estimates of House Value, 2 J. Housing Econ. 339 (1992) examine the accuracy of these reports by comparing respondent valuations with actual sales prices. They find considerable evidence of respondent error; in particular, homeowners display a tendency to overstate values on average. However, they report that respondent errors are essentially uncorrelated with owner, structure, and market characteristics.

⁴¹ Connecticut equalized tax base and tax rate data are not available for the years 1980 and 1990. Instead, the Fiscal 1981 rate substitutes for the initial rate, and the Fiscal 1981 and 1992 estimates of the tax base are used to calculate growth.

⁴² Vigdor *supra* note 36 discusses gentrification in the Boston metropolitan area during this time period.

3% relative to values in the average unconstrained jurisdiction. The table's third regression shows that the typical constrained jurisdiction experienced a 4% boost in median owner-occupied house value relative to unconstrained jurisdictions. These estimated mandated tax rate reduction effects suggest that the elasticity of property value with respect to tax rates in this sample is on the order of -0.15. This estimate, based on the exogenous tax changes brought about by the limitation measure, falls within the range of estimates in the existing literature.⁴³ Additional covariates in these regressions reveal that growth was larger in towns with smaller initial population, and in physically larger towns. Other things equal, greater support for Proposition 2½ predicts no significant change in property values over the subsequent decade.

The second regression introduces an interaction between the mandated tax rate reduction variable and the share of voters favoring Proposition 2½. The voting measure is set to zero for observations in Connecticut. The second and fourth regressions in Table 6 show that using either dependent variable, value appreciation was greater in communities that initially opposed the tax limitation measure. As support for the limitation grows, the estimated relationship between mandated tax cuts and growth becomes weaker. In the Massachusetts jurisdictions displaying the greatest support for the Proposition – 85 towns exhibited 65% or greater support – the point estimates suggest that value growth is essentially unrelated to mandated tax rate reductions. In the 23 towns where at least 60% of voters opposed the limitation, the estimated effect of tax rate reductions on subsequent growth is 2.5 to four times the initial point estimates reported in the regressions without interaction terms.

⁴³ Helen F. Ladd and Katherine L. Bradbury, *City Taxes and Property Tax Bases*, 41 *Nat. Tax J.* 503 (1988); Robert P. Inman, *Can Philadelphia Escape its Fiscal Crisis with a Tax Increase?* *Bus. Rev. of the Fed. Res. Bank of Philadelphia* (1992).

IV. CONCLUSIONS

This paper argues that statewide property tax limitations can be interpreted as efforts by voters to influence tax and spending decisions in jurisdictions where they would otherwise have no voting power. In theory, voters' interest in limiting taxes in neighboring jurisdictions can be explained by nonresident employment, nonresident landownership, and the desire of some marginal residents to alter the characteristics of the choice set they faced. Empirically, there is some evidence to support each of these hypotheses, in patterns of voter support for the Proposition, and in residential resorting and property value increases in its wake.

Are property tax limitations efficiency enhancing? The basic message of the nonresident hypothesis is that they can be. Statewide limitations offer local jurisdictions an opportunity to solve a prisoner's dilemma, wherein each jurisdiction initially follows a dominant strategy to charge high property tax rates when a significant portion of the tax burden can be exported.

The distributional implications of the nonresident hypothesis are somewhat less positive. Whereas existing explanations point to potential Pareto improvements made by limitations, the nonresident hypothesis suggests that tax limitations can create losers as well as winners. The "winners" are those individuals who either own property in other jurisdictions, or commute to work in a different jurisdiction. This group most likely represents an affluent segment of society. The "losers" were most likely households, especially renters, in jurisdictions with a considerable amount of commercial and industrial property. These individuals witnessed a reduction in local public spending accompanied by a substantial run-up in property values. Indeed, newspaper coverage in the post-Proposition era often portrays longtime residents of city neighborhoods who have been priced out of the market in the process of gentrification. The consequences of property tax limitations may therefore extend well beyond the widely-studied effects on public service quality.

Appendix. Data sources

This appendix lists the sources for each of the variables used in the text, along with summary statistics for those variables, in Table A1.

Massachusetts Department of Revenue, Division of Local Services, *Municipal Databank*: $\Delta \ln(\tau_j)$ Mandated by Proposition 2½ (measured as log difference between 1980 tax revenue divided by 1980 tax base and 2.5%), Equalized Value 1980 and 1990 (tax base estimates based on assessor's data and actual sale prices), Initial $\ln(\tau_j)$ for Massachusetts jurisdictions.

Connecticut Office of Policy and Management, *Fiscal Indicators for Connecticut Municipalities*: Initial $\ln(\tau_j)$ for Connecticut jurisdictions, Equalized Net Grand List FY1981 & FY1992 (tax base estimates based on assessor's data and actual sale prices).

U.S. Census of Population and Housing, Summary Tape File 3A, 1980 and 1990: Population, Share of Households with Children, Non-White Share, Elderly Share, Share with Greater than High School Education, Median House Value, Land Area.

GEOCORR Geographic Correspondence Engine <<http://www.census.gov/plue>>: Latitude and Longitude used to determine towns within 20 miles of a given jurisdiction.

***Boston Globe*, November 6th, 1980:** Votes for and against Proposition 2½ by city/town, and votes for Reagan as a share of presidential votes for Anderson, Reagan and Carter. Votes for other candidates amounted to less than one percent of all votes for President statewide.

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Table 1: Comparing Alternative Explanations for Tax Limitations

Question	Nonresident hypothesis	Alternative hypotheses
Why are limitations passed on a statewide basis?	Individuals wish to lower tax rates in jurisdictions where they do not reside.	<p>Tiebout: No explanation.</p> <p>Leviathan: Local agenda-setting constraints, fixed costs in mobilizing voters</p> <p>State Regime Shift: Collective effort to force change at the state level.</p>
Who supports tax limitations?	Individuals who own property, work, or might like to reside in a jurisdiction other than their own.	<p>Tiebout: No rational voter supports limitations.</p> <p>Leviathan: Residents jurisdictions governed by a Leviathan that sets tax rates above the proposed maximum.</p> <p>State Regime Shift: Residents of jurisdictions with tax rates above the proposed maximum and low state tax liability</p>
Should resorting occur following a limitation?	Yes; constrained jurisdictions become less attractive to current residents and more attractive to others.	<p>Tiebout: Yes.</p> <p>Leviathan: Yes, removal of Leviathan governments may prompt re-optimization by some households.</p> <p>State Regime Shift: Yes, reallocation of fiscal responsibility may prompt re-optimization by some households.</p>
What happens to property values after a limitation?	Increases except possibly for owner-occupied housing, for which effect is uncertain	<p>Tiebout: Constrained jurisdictions experience decrease.</p> <p>Leviathan: Constrained jurisdictions experience increase.</p> <p>State Regime Shift: Constrained jurisdictions experience increase.</p>
How should property value changes in constrained jurisdictions correspond to voter support?	Opposition indicates extensive extraction of rents from nonresidents: return of rents raises values	<p>Tiebout: All jurisdictions should oppose limitation.</p> <p>Leviathan: Support for proposition indicates presence of Leviathan government: removal of Leviathan increases values.</p> <p>State Regime Shift: Support for proposition indicates that community on average benefits from regime shift: regime shift increases values.</p>

Table 2: Patterns of Support for Proposition 2½ in Massachusetts

Independent Variable	Coefficient in weighted least squares logistic regression Dependent variable: share of voters favoring Proposition 2½			
Δln(τ _j) Mandated by Proposition 2½	0.094* (0.051)	-0.423** (0.076)	-0.286** (0.083)	-0.350** (0.067)
Average Mandated Δln(τ _j) in 20-Mile Radius	-0.675** (0.103)	-0.510** (0.097)	-0.210* (0.124)	-0.372** (0.105)
Percent renter households, 1980	—	-0.988** (0.135)	-1.026** (0.124)	-0.186 (0.180)
Employment to population ratio, 1980	—	-0.212** (0.075)	-0.184** (0.068)	-0.087 (0.056)
Share of presidential votes for Ronald Reagan, 1980	—	—	—	2.134** (0.253)
Percent with greater than HS diploma, 1980	—	—	—	-1.325** (0.182)
Nonwhite share, 1980	—	—	—	0.711** (0.326)
ln(median income, 1979)	—	—	—	0.198 (0.207)
Share in poverty, 1979	—	—	—	-2.645** (0.686)
Share of households with children 6-17 only, 1980	—	—	—	-0.564 (0.531)
Share of households with children under 6 1980	—	—	—	0.851* (0.514)
Share of households with head over 65, 1980	—	—	—	-0.590* (0.355)
County fixed effects	No	No	Yes	Yes
R ²	0.002	0.111	0.267	0.733
N	351	351	351	351

Note: Standard errors in parentheses. Observations are weighted by the total number of votes cast in the ballot on Proposition 2½.

** denotes a coefficient significant at the 5% level, * the 10% level.

Table 3: Tax Reductions and Demographic Change, 1980-1990

Independent Variable	Δ (% with Greater than HS Education)	Δ (% Nonwhite)	Δ (% of Householders over 65)
Initial $\ln(\tau_j)$	0.005 (0.011)	-0.009* (0.005)	-0.002 (0.007)
$\Delta \ln(\tau_j)$ Mandated by Proposition 2½	-0.043** (0.020)	-0.047** (0.014)	0.039** (0.011)
Predicted Change in Share	0.461** (0.185)	0.707** (0.144)	1.284** (0.107)
$\ln(1980 \text{ Population})$	-0.011** (0.004)	0.005** (0.001)	0.009** (0.002)
$\ln(\text{Land Area})$	0.003 (0.004)	-0.005** (0.002)	-0.009** (0.003)
County Effects	Yes	Yes	Yes
R ²	0.120	0.469	0.410
N	520	520	520

Note: Heteroskedasticity-corrected standard errors in parentheses. Initial tax rate and tax base figures taken from 1980 data in Massachusetts, FY1981 data in Connecticut. “Predicted Change in Share” is calculated by assuming statewide group-specific growth trends are mirrored at the local level in the second and third regressions. In the fourth, the predicted change in share is derived by aging the 1980 population forward ten years, applying nationwide mortality rates.
** denotes a coefficient significant at the 5% level, * the 10% level.

Table 4: Tax Reductions, Household Size, and Demand for Schools, 1980-1990

	Δ (% of Households with Children 6-17 only)	Δ (% of Households with Children under 6)
Initial $\ln(\tau_j)$	-0.018** (0.009)	-0.022** (0.009)
$\Delta \ln(\tau_j)$ Mandated by Proposition 2½	-0.011 (0.014)	-0.047** (0.013)
Predicted Change	0.525** (0.050)	-0.269** (0.047)
\ln (1980 Population)	0.0004 (0.002)	0.003* (0.002)
\ln (Land Area)	-0.0008 (0.003)	-0.003 (0.003)
County Effects	Yes	Yes
R ²	0.474	0.172
N	520	520

Note: Heteroskedasticity-corrected standard errors in parentheses. Initial tax rate and tax base figures taken from 1980 data in Massachusetts, FY1981 data in Connecticut. Predicted changes in share and students per capita are based on the 1980 ratio of average cohort size of 1-9 year olds to average cohort size of 10-17 year olds in each jurisdiction.
** denotes a coefficient significant at the 5% level, * the 10% level.

Table 5: Tax Limitations and Property Values

Independent Variable	Dependent Variable:			
	$\Delta \ln(\text{Equalized Tax Base}),$ 1980-1990		$\Delta \ln(\text{Median House Value}),$ 1980-1990	
Initial $\ln(\tau_j)$	0.134** (0.051)	0.123** (0.050)	0.0004 (0.024)	-0.008 (0.024)
$\Delta \ln(\tau_j)$ Mandated by Proposition 2½	-0.118* (0.078)	-1.130** (0.345)	-0.169** (0.044)	-0.942** (0.165)
Share Favoring Proposition 2½	0.171 (0.179)	0.395* (0.209)	-0.028 (0.090)	0.143 (0.104)
Share Favoring* Mandated $\Delta \ln(\tau_j)$	—	1.670** (0.539)	—	1.277** (0.240)
$\ln(1980 \text{ Population})$	-0.038** (0.011)	-0.039** (0.011)	-0.015** (0.005)	-0.016** (0.005)
$\ln(\text{Land Area})$	0.055** (0.016)	0.054** (0.016)	-0.011 (0.007)	-0.012* (0.007)
County Effects	Yes	Yes	Yes	Yes
R ²	0.771	0.775	0.594	0.612
N	520	520	520	520

Note: Heteroskedasticity-corrected standard errors in parentheses. Initial tax rate and tax base figures taken from 1980 data in Massachusetts, FY1981 data in Connecticut. End-of-period tax base figures taken from 1990 data in Massachusetts, FY1992 data in Connecticut.
** denotes a coefficient significant at the 5% level, * the 10% level.

Table A1: Summary Statistics

Variable	Massachusetts (N=351)		Connecticut (N=169)	
	Mean	Standard Deviation	Mean	Standard Deviation
Initial $\ln(\tau_j)$	-3.75	0.441	-4.26	0.269
$\Delta \ln(\tau_j)$ Mandated by Proposition 2½	-0.128	0.193	—	—
Average Mandated $\Delta \ln(\tau_j)$ in 20-Mile Radius	-0.296	0.164	—	—
Share of presidential votes for Ronald Reagan, 1980	0.463	0.074	—	—
Tax Base Growth 1980-1990 [†]	1.512	0.237	0.933	0.114
$\ln(1980 \text{ Population})$	8.82	1.41	9.17	1.17
$\ln(\text{Land Area in Square Miles})$	2.93	0.638	4.20	0.486
Median Value Growth 1980-'90	1.181	0.969	1.011	0.065
Population Growth, 1980-'90	0.099	0.128	0.100	0.084
Change in Share with Greater than High School Education, 1980-1990	0.147	0.051	0.141	0.035
Change in Non-White Share, 1980-1990	0.015	0.028	0.016	0.024
Change in Elderly Share, 1980-1990	0.016	0.037	0.021	0.034
Change in Share of Households with Children under 17, 1980-1990	-0.051	0.050	-0.060	0.038
Change in Share of Households with Children under 6, 1980-1990	-0.014	0.035	-0.007	0.027
Change in Share of Households with Children age 6-17 only, 1980-1990	-0.032	0.047	-0.048	0.039
Share of Voters Supporting Proposition 2½	0.582	0.096	---	---

[†] Connecticut tax base growth values use the period FY1981-FY1992.