FEDERAL RESERVE BANK of ATLANTA

Voters Hold the Key: Lock-In, Mobility, and the Portability of Property Tax Exemptions

Ron Cheung and Chris Cunningham

Working Paper 2009-19
August 2009

WORKING PAPER SERIES

FEDERAL RESERVE BANK *of* ATLANTA WORKING PAPER SERIES

Voters Hold the Key: Lock-In, Mobility, and the Portability of Property Tax Exemptions

Ron Cheung and Chris Cunningham

Working Paper 2009-19
August 2009

Abstract: Since California voters approved Proposition 13 in 1978, fifteen states have enacted caps on the annual growth in assessed property values. These laws often impose a great burden on municipal finances and create horizontal inequity among homeowners. Why do voters choose to limit local government in this way? Reasons may include controlling the power of special interests, addressing agency failures of government officials (the "Leviathan" hypothesis), or preserving the impact of a current but fleeting antitax political alignment. Yet research has found that voters' perception of a limitation's fiscal consequences do not match reality, questioning the rationality of voter behavior. To counter this position, another strand of literature argues that support for tax limitations is driven not by perceptions of government inefficiency but by reasonable expectations of who will ultimately bear the tax limitation's burden. We explore this view by exploiting the differential tax treatment generated by assessment caps in the context of a recent, novel referendum in Florida. We examine voter support for a 2008 constitutional amendment that included a unique provision making the existing assessment cap portable within the state. We test the hypothesis that voters understood the mobility consequences of tax limitations and the net burden of the cap. We find that high potential tax savings and high expected mobility rates result in higher support for portability. We also find that the degree of racial segregation, the presence of nonresidential tax bases, and the share of migrants from out of state all contribute to support for the amendment. Results suggest that voters were as concerned with reducing their own tax share at the expense of other property owners as they were with curtailing local expenditures.

JEL classification: H3, H2, H7, J1, R4

Key words: property tax limitations, property tax, voting, assessment cap, lock-in, homeowner mobility, portability

---

The authors are grateful to Brad Huff at Florida State University for Geographic Information Systems assistance. This paper has benefited from comments from participants at seminars at Georgia State University, the University of Melbourne, the University of Adelaide, and Florida State University. The views expressed here are the authors' and not necessarily those of the Federal Reserve Bank of Atlanta or the Federal Reserve System. Any remaining errors are the authors' responsibility.

Please address questions regarding content to Ron Cheung, Department of Economics, Florida State University, 113 Collegiate Loop, Room 288, Tallahassee, FL 32306-2180, 850-644-5003, rcheung@fsu.edu, or Chris Cunningham, Research Department, Federal Reserve Bank of Atlanta, 1000 Peachtree Street, Atlanta, GA 30309, 404-498-8977, chris.cunningham@atl.frb.org.

Do Voters Hold the Key: Lock-in, Mobility and the Portability of Property Tax Exemptions

Since the property tax revolts began with California voters' approval of Proposition 13 in 1978, 15 states have capped the growth in assessed property values (Hoyt *et al*, 2009). While research has been directed at assessing the impact of these laws on the provision of local public goods (including Downes, 1992; Figlio, 1997), considerable effort has also been expended at understanding why voters would choose to restrict local governments' revenue raising ability by imposing state tax limitations. Voters may support limitations because they believe tax cuts will improve local government efficiency rather than reduce public services (Citrin, 1979; Ladd and Wilson, 1982). Consistent with this belief, Cutler, Elmendorf and Zeckhauer (1999) find that voters' personal tax liabilities color their view of government efficiency. Yet, several studies have shown that voters' perceptions of the consequences of tax limitations do not match the reality, questioning the rationality of voter behavior (Figlio and Rueben, 2001; Doyle, 1994). However, Fischel (1989) counters that support for Proposition 13 was driven by a (reasonable) expectation that revenue would be redirected to other constituencies, while Anderson and Papke (2008) suggest that current voter do not trust future voters to guard their interests. Thus, support for property tax limitation may not be driven by voters concern that their local government is unresponsive, but instead by fears of shifting tax burdens and services between citizens or over time. This paper examines this view by exploiting the differential tax treatment generated by assessment caps in an analysis of voter support for a fundamental change in an existing tax limitation.

The connection between property tax limitations and residential mobility is strong. While intended to stem rising property taxes, limitations may im pair the property market by inducing homeowners to overstay in their current residence. This distortion arises particularly because tax limitations usually include a provision for an assessment cap, in which the taxable, assessed value of the house does not climb as fast as the market value of the house. Because the cap remains in place until the homeowner moves away, inequity arises when the property tax bills of two similar houses differ because of the lengths of tenure of the residents. Distorted housing consumption can generate deadweight loss as the match quality between a homeowner's desired housing services and those provided by the current unit deteriorates over time (O'Sullivan, Sexton, and Sheffrin, 1995a; 1995b). At the same time, overstaying may reduce the supply of the existing housing, slowing household formation and increasing demand for new housing at the urban fringe. (Wassmer, 2008) Existing empirical work, primarily focusing on California's Proposition 13, has, with the exception of Nagy (1997), found that households subject to an assessment cap showed reduced mobility (Bogart, 1990; Stohs, Childs and Stevenson, 2001; Wasi and White, 2005; Ferreira, 2007). This finding is consistent with long staying residents being "locked-in" to their current home.

While there is a literature looking at assessment caps' effect on residential mobility, we turn the question around and ask why voters support caps. We test the hypotheses that voters understand the mobility consequences of tax limitations and that voters recognize the net burden of the tax cap. We take into account three factors: a voter's relative benefit from the cap, the impact it has on local budgets and the ability to shift the household's tax share onto other households. We examine these hypotheses in the context of a recent and novel referendum on altering Florida's existing assessment cap to make it portable within the state.

In 1995, Florida voters passed the "Save Our Homes" amendment to the state constitution, which capped assessed values for primary residences to the lesser of the rate of inflation or three percent, so long as the home remains the owner's homestead, or primary residence. Florida went on to experience a dramatic increase in home values, and long-time homeowners enjoyed substantial tax savings from the growing difference between a home's "just value" (market value) and its assessed value. As of 2008, despite recent declines in house prices, a homeowner who purchased her primary residence before 1995 and who experienced the average rate of house price appreciation in the state had an assessed value that was 48 percent below current market value.[1] Longtime homeowners in south Florida, with its higher price appreciation, enjoyed even greater savings. Like in other states with an assessment cap, Save Our Homes benefits reset when the homeowner moved. Recently this provision contributed to public concern that declining mobility, driven by lock-in considerations, was inflicting further pain on the slumping real estate market. Further, declining mobility may harm state revenues that rely, in part, on transaction fees associated with home sales. In response, Amendment 1 appeared on the January 29, 2008 presidential primary ballot. In addition to several other provisions, the constitutional amendment altered the Save Our Homes legislation by including the novel provision that homeowners could "port" up to 500,000 dollars of their current exemption to a new Florida residence. This represented the first instance in the United States where portability of tax savings was extended throughout a state[2]

[1] Based on the OFHEO purchase only house price index and an assessed value capped at the lesser of the CPI-U or 3 percent.

[2] Ferreira (2007) examines an amendment to California's Proposition 13 that permitted counties to port the exemptions of residents 55 and over. Counties had a choice whether to allow the portability or not.

The portability provision is unusual because it can impact not only a household's current and future property tax liability and thus the finances of its current town, but also the finances of any town the household may move to in the future. Formerly, cities were able to rely on a certain amount of turnover in the market to reset assessed prices back to market prices. In the post Amendment 1 environment, municipalities must either raise the tax rate or rely increasingly on non-homestead property and new Florida residents to increase the tax base. They must also contend with migrants from within Florida bringing their accrued tax exemption with them, potentially eroding the tax base further. Rational voters had to balance their potential tax savings, their likelihood of moving, the possible impact on local public goods and the response of local governments to a smaller tax base when deciding whether to support Amendment 1. In this paper, we attempt to identify key determinants of support for the amendment, which ultimately passed with 60% of the vote on January 29, 2008.

We combine precinct level election data from the 2008 vote with 2000 census block group data and assessor property records for all but three Florida counties. Controlling for socio-economic determinants drawn from the 2000 census, and political ideology inferred from the 2000 presidential election, we predict the share of the yes vote for Amendment 1 based on the expected average mobility rate and the existing tax savings (the "tax wedge") from Save Our Homes. The richness of our data allows us to devise a methodology to separate out the tax savings effects of the amendment from the mobility effects.

We find that precincts with high rates of expected mobility and large tax wedges between assessed and market values had a higher share of voters vote yes. The share yes vote also declines with educational attainment, the prevalence of children and the prevalence of elderly, and it rises with distance from the CBD and income.

Amendment 1, despite being passed at the state level, directly impacts the tax base of local governments. A rational voter would require some implicit model of local government behavior to determine whether the passage of Amendment 1 would cause her city or town to lower local public services or to simply increase the millage rate; and if the rate is raised, whether the tax reform would on net lower her tax share at the expense of other residents. In the second part of the analysis, we examine whether the election results demonstrate that voters exhibited some strategic consideration in how the burden of the Amendment would be distributed.

We control for the composition of the tax base, the source of migrants (from out of state or from another county in Florida) and voters' relative expected mobility. We find evidence that more racially heterogeneous towns had a lower yes share, by controlling for racial heterogeneity, find that more segregated towns had a higher yes share, which may be consistent with a desire to curb public expenditures. However, we also find evidence that voters were more likely to vote yes if their city's tax base included a lower share of homestead property. A precinct's yes share increased if the city received a higher share of out of state migrants. Finally, perhaps surprisingly, we find that relative mobility is a strong predictor of the share yes vote and that controlling for relative mobility leaves precinct level mobility only modestly significant and negative. The results from this section suggest that voters were savvy as to how tax shares would likely shift among homestead recipients if the amendment passed. Putting the evidence together, we argue that voters are rationally weighing the individual and short-run benefits of the portability amendment against the longer-term public finance consequences.

Section 2 describes the original Save Our Homes exemption, the details of Amendment 1 and its implication for the financing of local public government. Section 3 describes the

econometric specification. Section 4 describes the dataset and how we construct our independent variables of interest. Section 5 presents the results and then incorporates the relative mobility and relative tax base measures and discusses the findings. There is a brief conclusion in Section 6.

II. Institutional Detail

In 1995, 54 percent of Florida voters approved changing the state's constitution with the "Save Our Homes" (SOH) amendment. The provisions of Save Our Homes apply only to a homestead, a property that serves as the primary residence of the owner. Homeowners were (1) given a standard $25,000 homestead exemption on assessed value and (2) had the yearly increase in assessed value capped at the lesser of three percent the rate of inflation (based on the CPI for urban consumers).[3] Table 1 shows the annual capped increase in property values for every year since SOH's inception; in most years, the inflation rate (based on the previous year) represents the binding cap. For comparison, the annualized appreciation in the OFHEO house price index is reported in the second column of the Table and the third provides the resulting "wedge" for a property purchased before 1995 that experienced the average state appreciation rate. In subsequent years, many parts of Florida enjoyed extraordinary house price appreciation. For instance, house prices increased by 130 and 108 percent in Miami and Tampa, respectively, between 1995 and April 2008 (Case-Shiller repeat sales index).[4]

[3] In addition to the standard $25,000 homestead exemption, the amendment also provides a $500 exemption for a disabled homeowner, a $500 exemption for a widow or widower and a $5,000 exemption for a disabled veteran. Beginning in 1997, there is also a senior citizen's exemption in some jurisdictions. (Section 193.155(1), F.S.)

[4] Note that for long time homesteaders, assessed value will continue to rise even as current property value declines. In a time of declining house prices, the assessed value will gradually catch up with current market value. This is mandated by the provisions of SOH.

Like Proposition 13 in California and similar measures in other states, the assessed value resets to the market price upon sale.[5] The large difference between market or "just" value and assessed value, is called the "tax wedge" (or simply "wedge") and was believed to lock families into their existing homes.[6] This supposed lack of mobility, combined with the popular perception that property taxes were still too high, contributed to the desire to alter the SOH provisions once more.[7] On January 29, 2008, 64 percent of Floridians voted to approve Amendment 1. This constitutional amendment, which goes into effect for 2008 property taxes, has four elements: (1) the homestead exemption is doubled to $50,000 for non-school taxes; (2) a $25,000 exemption is created for business property; (3) beginning in 2009, an assessment cap of 10 percent is placed on all non-homesteaded property, including rental properties, second homes and commercial properties; and (4) the homeowner's tax wedge is made "portable" to new homes within the state. It is this last provision of the amendment that is at the center of our analysis

The statewide portability of the SOH tax wedge is unique among the states. If one buys a new home of greater value, the total value of the wedge from the past home is transferred to the new home, up to a maximum portable cap of $500,000. An example may be useful. Say a homeowner purchased a home in 1994 for $100,000 and that by 2008 it has a just value (assessor determined market value) of $270,000 and an assessed value of $140,000. The wedge between

[5] Florida is a relatively latecomer among the states in passing a statewide property tax limitation. Shadbegian (1998) points out that by 1992, half the states had passed some limitation measure. However, some of the states passed measures that did not limit annual assessment increases, which made it possible for local jurisdictions to override the limitation by inflating assessed values, while others directly capped revenue and forcing jurisdictions to reset the millage rate.

[6] Lock-in occurred in both directions of mobility: popular press cited large families that had outgrown their starter homes and retired empty-nesters who wanted to downsize, but neither group could afford to pay the additional property taxes that would come with a new house.

[7] Charlie Crist, who was elected governor of Florida in 2006, had campaigned on a platform of property tax reform. Prior to the passage of Amendment 1, the governor and the legislature enacted a rollback of 2007 property taxes to 2006 levels, reducing tax revenues by $15 billion.

market price and assessed price is $130,000. This homeowner moves up to a home with a just value of $300,000. Without portability, the assessed value of the new house is $300,000.[8] With portability, the assessed value is $170,000 (300K-130K).[9] This assessed value would then rise subject to the yearly cap. Should the homeowner instead choose to buy a cheaper house, she would get to keep her old tax wedge *percentage.* For example, if the new home were worth $230,000, the new assessed value would be $110,740 (230K*(130K/270K)).

Voters potentially confronted a difficult calculation of local public finance and political economy in deciding whether or not to support the referendum.[10] If the voter believed that the reduced tax base generated by the law would be offset by a higher millage rate, then she had to determine if other property owners, landlords/renters, commercial and industrial property owners would bear enough of the burden to result in a net reduction in her property taxes. At the same time, among owner-occupiers, a tax-minimizing voter would have to infer the mobility rate of other owners in their same local government relative to her own. A voter who expected to stay in her home for a long time *relative* to other homestead owners in her town may end up paying higher taxes after the passage of homestead exemption portability than before. On the other hand, the voter may simply believe that local governments will curtail expenditures; in which case she has to trade off the expected tax savings against fewer or poorer public goods. Finally, if a resident expects other homeowners from Florida to move into her jurisdiction, the increased

[8] Local taxes would then be levied on the assessed value less the original exemption of $25,000 available to all homesteaders. For clarity, we can ignore this in the example.

[9] Note that these values were not chosen randomly but instead conform to the state average appreciation rate and caps from Table 1.

[10] Many county appraisers have found it necessary to post instructions on their websites explaining to homeowners how to calculate their portable benefits. An example is found on the Leon County Property Appraiser's website: http://www.leonpa.org/Download/Portability.pdf.

millage rate or the loss of public services may outweigh the benefit of shrinking her property's tax assessed value and induce her to vote against the amendment.[11]

III. Empirical Framework

As discussed in section II above, the expected tax savings a voter might expect from Amendment 1 hinged on the voter's current and future tax wedge and her propensity to make a within state move. To test whether voters incorporated expectations of likely tax savings into voting behavior, we estimate a reduced-form linear regression of share of yes votes at the election precinct level on current tax wedges, expected mobility and a set of controls.

The formal specification is:

$$y_i = \mathbf{X}_i'\Phi + \boldsymbol{\alpha} W_i + \theta M_i + u_i \quad (1)$$

Where y_i is the share of yes votes in the precinct, X_i is the vector of control variables, W_i is the average size of the tax wedge between just and assessed value, M_i is a measure of average mobility in the precinct and an error term, u_i. Specifically, we test the null hypothesis H_0: $\boldsymbol{\alpha} = 0$, the size of the average wedge did not affect the share voting yes. Our alternative hypothesis is that precincts with a larger average wedge between market and assessed values will vote for the right to port those tax savings to a new home (H_a: $\boldsymbol{\alpha} > 0$). Similarly, we test the null hypothesis: H_0: $\theta = 0$, the average mobility of a household does not affect the precinct's share voting yes against the alternative— precincts with higher mobility will vote for the right to port those tax savings to a new home (H_a: $\theta > 0$). This study uses data from a variety of sources and combines them into a precinct-level analysis. We describe them in detail in the next section.

[11] For instance, the January 17, 2008, op-ed article in the *St. Petersburg Times* states that "While the major reason to oppose Amendment 1 is its lack of fairness, it would trigger further local government spending cuts that likely would affect the quality of life."

4. Data

4.1 Election Data

The unit of analysis is the election precinct, whose boundaries are determined by each of the 67 counties in Florida. The smallest county in our sample has 8 precincts, while the largest county has 711. The Amendment 1 initiative appeared on the ballot in the January 29, 2008, presidential primary election. All voters had the opportunity to vote on the amendment, and registered Democrats and Republicans also got to vote for a presidential candidate.[12] We obtain from the Florida Department of Elections the complete statement of vote at the precinct level. We supplement this with GIS data of the 2008 election precincts from the Department of Elections for each county. There was some difficulty in obtaining Union County's and Sumter County's election results, and so we drop these counties from our analysis.

Our dependent variable, denoted y_i, is the number of yes votes divided by the total number of votes cast for Amendment 1. Because there were other notable races on the ballot, not all voters cast a vote for or against Amendment 1. When the votes were counted, however, it was a clear victory for Amendment 1 supporters. Out of 67 counties, 53 had majorities in favor. Counties that supported Amendment 1 represented the whole state, but support was especially strong in south Florida. Miami-Dade, Palm Beach and Broward counties each voted about 70 percent in favor. Supporting counties ranged widely from small to large. In contrast, counties where a majority of voters opposed Amendment 1 generally were small and rural. Two notable

[12] We note that the winner of the Democratic primary could not receive any convention delegates because of a party sanction for moving the vote forward. Republican candidates received half their assigned delegates. Also, none of the leading Democratic candidates campaigned in Florida. Thus, Democratic turnout may have been depressed. We attempt to correct for political differences among precincts in some of our specifications later on.

exceptions were Duval County (Jacksonville) and Leon County (Tallahassee), large counties that both voted majority no.

4.2 Property Data from County Assessor Files

To develop a measure of the tax savings that can be expected, we obtain property-level data from the Florida Department of Revenue's 2007 tax roll. This is a complete listing of all parcels (residential and commercial) and is compiled from county assessors. Before proceeding, we make one more sample cut. Santa Rosa County's tax roll uses variable names that are different from the standardized names. Because of the difficulty in reconciling these variables, we choose to drop this county as well from the analysis, leaving us with 64 counties and 6,475 precincts in our sample.[13]

Key to our analysis is the homeowner's existing Save Our Homes "wedge," the difference between the home's just value and its assessed value, both of which are reported for every parcel. County assessors are required to update a home's just value yearly, not only to account for market appreciation, but also for any additional improvements that may have been made on the parcel.[14] The assessed value for a homesteaded property that has not changed hands in the previous year cannot climb more than the SOH cap. Therefore, the wedge, *W*, is simply the difference between the just value and the assessed value.

We calculate *W* for every parcel in the state. However, as our unit of analysis is the precinct, we need to aggregate up from the parcel level. As the tax roll also contains GIS parcel boundaries, we can assign each parcel to the appropriate election precinct in the county. Thus,

[13] We do not expect that the three counties dropped to distort our results greatly. They are small: Union, Sumter and Santa Rosa counties have 2007 estimated populations of 14,991, 72,246 and 147,044, respectively. (US Census Bureau)

[14] Assessors use standard appraisal techniques (comparables and replacement cost valuation) to determine the just value. In addition, there is a state requirement that a home be physically inspected at least once every five years.

we calculate the average W for single-family parcels within each precinct.[15] We denote the average wedge in each precinct as W_i.

4.3 Homeowner Mobility

We posit that in addition to the potential portable tax saving, a household's likelihood of moving also affects its support for Amendment 1. We expect that a household that is likely to move would find Amendment 1 more attractive. To quantify this, we begin with two simple neighborhood-level measures of mobility. As a robustness check we introduce and calculate additional measures of *expected* mobility rate based on the characteristics of a parcel that affect the likelihood of moving.

The property level data from the assessors contain the years of the latest and the second most recent sale. One way to characterize the likelihood of residents in a precinct to move is 1 divided by the average number of years between the latest and the second most recent sale. We call this measure the "churn" of the neighborhood. This reciprocal of the length of stay of previous homeowners in a precinct is a proxy for the expected mobility of a current resident of the precinct in 2008, and this is used as an explanatory variable in our voting equation.

Another way to characterize the mobility of households is to use the U.S. Census's measure of mobility. The 2000 Census defines a household as mobile if its residence in 1995 was not the same as it was in 2000. We obtain the percentage of each census block group that moved within the last five years. We average this measure (and all other census derived block group

[15] We exclude multifamily residences (but not townhomes) for three reasons: (1) there appears to be a lack of uniformity in how assessors report these properties to the state; (2) a high degree of reporting error can arise from condo conversions; and (3) some counties appear to aggregate across units to create a single parcel level variable. We are also concerned about the high degree of sub-leasing and number investment properties within condo buildings. It is not clear to us whether a condo owner, even one currently (and honestly) claiming a homestead exemption on condo unit would behave more like a homeowner or as a potential landlord when voting.

values described later) by precinct. As a precinct usually includes more than one block group, and block group boundaries are often not coterminous with precinct boundaries, we weight each block group by its share of the total number of housing units within the precinct.[16]

We develop a third, forward looking measure of *expected* household mobility that builds on the neighborhood churn measure by estimating a duration model. We know how long the previous owner was in the property and how long the current owner has lived there. We make several assumptions. First, we assume that if the current owner of the property receives a homestead exemption, then so did the previous. We also exclude any housing spells that ended before 1995 or started after 2006. Ownership spells that ended before 1995 are relative few (the current resident must have lived in the home for at least 13 years) and spells that end (or do not end) after 2006 may have been affected by homeowners beginning to anticipated Amendment 1 or because of the recent dislocation of the housing market resulting from the collapse of the Florida property insurance market.[17] All spells that were active in 2006 are treated as right-censored. We then estimate the duration model controlling for income, race, age, location and federal tax treatment of gains, accounting for the change in 1997. Finally, we use the 64 sets of parameter estimates to predict survival of current homeowners one, two and three years into the future; these are used to create our explanatory variables, one-, two- and three-year expected mobility. A richer discussion of the mobility hazard is presented in the Data Appendix.

[16] To elaborate, we create a measure of lot density defined as block group population in 2000 divided by the number of single family lots and then multiply this value by the single family parcels retained from our calculation of the wedge and mobility. Thus, a block group makes a large contribution to the precinct mean mobility if it shares a lot of parcels in common with the precinct and/or it contains a lot of multifamily housing. If there is no multifamily present, then the weight is simply based on the block group's share of total parcels in the precinct. We believe this weighting scheme is superior to one based simply on the coverage ratio of precinct area and block group area; a procedure often employed when a finer unit of analysis (parcel) is unavailable.

[17] We thank Geoff Turnbull for pointing out this second concern. Estimating survival functions with data through 2007 does not appreciably change our results.

4.4 Other Covariates

We also control for socioeconomic and demographic factors that may influence the likelihood of voting for Amendment 1. These mainly consist of block group level characteristics from the 2000 Census: percent non-Hispanic white, percent in various age groups, percent college-educated, median household income and income squared and the percentage of the housing units that is renter-occupied.[18] In the same way as the census mobility rate is defined, each housing parcel is assigned the characteristics of the block group that it is located in. Then the precinct average of this value is calculated, weighting by share of housing units. We also account for the predictions of the standard monocentric city model by using GIS to determine the distance to the nearest central business district (CBD) and including a dummy if the precinct is located in the central city of the MSA.

Voter may also be governed by ideology and may have turned out in different numbers because of the disparate treatment of Republican and Democratic contests. The Florida Senate has available 2000 presidential election data disaggregated to the block group level. We therefore assign to each parcel in our tax roll the percentage of votes cast for Al Gore in that block group. This is then collapsed up to a precinct level result as above.[19] Finally, there are institutional and

[18] We also tried specifications with additional covariates including poverty rate. These do not substantively affect the results and are not reported here.

[19] While results of the Gore vs. Bush election are available by election precinct, they are based on 2000 election precinct boundaries, which are not necessarily the same as 2008 precincts. There is some concern as to the extent of vote misreporting due to poor ballot design and/or faulty ballot scanning technology as discussed in *Bush vs. Gore* 531 U.S. 70 (2000) *p. 106-107*. We believe that any under vote should be largely uniform within counties and can thus be absorbed by county fixed effects. Note that the equal protection grounds upon which *Bush vs. Gore* 531 U.S. 70 (2000) and *Bush v. Palm Beach County Canvassing Board*, 531 U.S. 70 (2000) were largely decided highlighted inconsistencies in the hand recount of presidential "under votes" but as the election results as certified represents the second running of machine ballots but excludes (per the Supreme Court's decree) most hand recounts, we believe this is not concern for our empirical analysis.

cultural differences between Florida counties, and so we include a full set of dummy variables for the 64 counties. Table 2 provides summary statistics of the key variables in the analysis.

V. Analysis

5.1 Simple Mobility Measures

Estimation results using simple measures of mobility are reported in Table 3. All specifications in this table include a set of county fixed effects, and standard errors are robust to heteroskedasticity. We begin by looking at the median wedge in each precinct, *W*. In the simplest regression (Column 1) with no other covariates except for county controls, *W* is significant and positive as expected, suggesting that the portability of the wedge is attractive to precincts with high potential tax benefits. However, the magnitude of the parameter on *W* is small: increasing the wedge by $ 70,000 (the equivalent of increasing the wedge by one standard deviations) raises the yes share vote by .7 percentage points. However, this is the only specification in which *W* positively and significantly raises the yes share. Once we include richer specifications the effect of *W* is insignificant or negative. As we explore in last section, we claim this is due to the expected off-setting behavior by local governments.

Column 2 provides the parameter estimates when we include a rich set of additional control variables. The yes vote share in a precinct falls with educational attainment, rises with income, rises with the proportion white and rises with distance from the CBD. The signs on all of the age groups are negative and significant, (the omitted category is share 25-65) indicating that the presence of children and the presence of senior citizens are both associated with lower levels of support for Amendment 1. This may reflect a concern that local public services may suffer if Amendment 1 impacts local budgets, or they could reflect that households with children or

seniors simply are unlikely to move and hence to take advantage of the portability provision. After including covariates (Column 2), the estimated coefficient of *W* is negative and statistically significant at 5 percent. This finding is perhaps not surprising. Wedge size is closely tied to duration of occupancy which may be associated with lower desired mobility.

Columns 3 and 4 suggest that mobility plays an important role in determining support for Amendment 1. The churn measure (1 divided by the average of the previous residents' duration in the home) is positive and significant, so that precincts with shorter ownership spells are more likely to support Amendment 1; this finding is buttressed by the positive sign on the census measure of mobility. The magnitude of the churn suggests that a one standard-deviation increase in churn increases the yes share by .46 percentage points. The census measure, despite including renters (which we control for) implies a much larger effect. Increasing the 5-year mobility rate by one one-standard deviation increases the share yes vote by 1.5 percentage points.

Column 5 includes both the wedge and the churn measure; Despite the implicit linkage between wedge and mobility, including both variables does not alter either coefficient estimate. Finally, not every parcel receives the homestead exemption, usually because it is a second home or a vacation residence. Column 6 includes the percentage of the precinct receiving the homestead exemption. The sign for this variable is negative but insignificant, which may seem counterintuitive. However, non-homestead property owners are, almost by definition, ineligible to vote and thus owners in low-homestead areas may expect the law to shift more of the burden

onto non-residents and absentee landlords.[20] We test for such tax-share shifting considerations at the end of paper.

5.2 Expected Mobility Measures

Table 4 reports regression results from specifications incorporating the hazard-derived measures of mobility. Expected mobility seems to play an important role in support for Amendment 1. Whether we include a measure of expected mobility 1, 2, or 3 years into the future (Columns 2, 3 and 4), the estimated parameter is significant and positive although only at the 10 percent level for the 3-year measure.[21] The magnitudes are in line with the census mobility measures; increasing the 1-year expected mobility rate by one standard deviation increases the yes share by 3.6 percentage points. The impact is greater for two year mobility but less for three year. Results suggest that the higher the expected mobility in a precinct, the more likely that precinct is to support Amendment 1. However, the coefficient estimate on average wedge size remains insignificant, suggesting that even when we attempt to isolate the impact of mobility on tax wedge, the wedge is, in and of itself, not a strong predictor of support for Amendment 1.

While households with a large tax wedge or high expected mobility should support Amendment 1, the households with *both* high mobility and a large wedge should be especially

[20] On the other hand, the marginal buyer in low-homestead areas may be a non-homesteader and a current resident seeking to maintain their property value should oppose Amendment 1 for the same reason childless couples support school bonds (Hilber and Mayer, 2004). Or, perhaps the 10 percent nominal cap on assessment increases, though less generous than the flat (real) cap offered homesteaders, was still attractive by offering some protection to non-homesteaders and their proxies.

[21] The standard errors may suffer from a generated-regressor problem as the expected mobility measures were generated from hard model-derived estimates run on the parcel level data for each county. There is no ready analytical method for correcting the errors for this type of estimation. Experiments with bootstrapping the errors for two randomly drawn counties did not appear to grow our estimated standard errors, however any attempt to employ this strategy would for the entire state would be very computationally intensive. Instead we treat Table 4 as a robustness check of the churn and census mobility measures.

willing to support the law. The specification results presented in Column 5 includes this interaction. While the wedge remains negative and insignificant the (wedge*mobility) interaction is positive and significant at the five percent level. This suggests mobile households with a larger tax wedge were more likely to support Amendment 1.[22]

Finally, we control for underlying political ideology to guard against concerns about the irregular Democratic and Republican primaries. Column 6 of Table 3 includes the percentage of the precinct that supported Al Gore in the 2000 presidential election. The estimated coefficient is negative and highly statistically significant. To the extent that the variable represents a precinct that is relatively liberal, this result suggests that voters on the political left are less likely to support Amendment 1. In any case, controlling for ideology does not change our parameter estimates for wedge or expected mobility.

5.3 Strategic Political-Economic Voting Behavior

We now expand the specification to examine whether voters considered the likely response of taxing authorities to passage of the referendum. Leading up to the vote predicted that Amendment 1, many opponents of the measure claimed it would adversely affect the budgets of municipal and county governments, particularly those with substantial in-migration from other parts of the state. After Amendment 1 passed, a local government suffering an erosion in their real property base could pursue three different strategies. It could cut expenditures, raise the millage rate on the new lower tax base, or raise other taxes or fees such as imposing a local

[22] Note that it is somewhat remarkable that the interaction term comes in significant. The principal determinant of a precinct's average wedge, especially controlling for county fixed effects and thus metropolitan house price appreciation histories, is duration in the home. We believe the strong positive parameter estimate is a testament to our mobility measure's ability to exploit the non-linear function of duration on mobility and hence warrant the additional step.

option sales tax. Thus, a rational voter should have considered not only their own wedge and expected mobility, but the value of public services that might be cut or their tax liability if the their town raised millage rates. For example, a low mobility household in a high mobility city might suffer an increase in property taxes if the referendum leads to a higher tax rate.

This dynamic suggests that households who can pass the burden of Amendment 1 onto other taxpayers may be more likely to support the proposition. To address this we explore a series of new variables to explain the ability to "foist" the property tax burden onto other households. These are described in the regression specifications in Table 5.

5.4 Presence of racial and ethnic heterogeneity

Alesina, Glaeser and Sacerdote (2002) find evidence that racial heterogeneity may lower a county's willingness to support public goods because voters are less able to identify with likely recipients or because likely beneficiaries find it harder to form political coalitions. Voters may care more about the tax savings and individual benefits of portability if they do not support the redistributive effects of local public services that benefit racial or ethnic groups other than their own. We formulate two measures of dissimilarity, both based on the race categories from the Census. The first is a measure of racial heterogeneity that is the probability that two randomly drawn individuals in a municipality will be of a different race.[23] The second is the coefficient of dissimilarity that measures the degree of segregation across a taxing jurisdiction for any given level of racial heterogeneity in the population. A larger value suggests that blacks and Latinos are more concentrated within the jurisdiction. We also consider the possibility that voters do not

[23] This measure is defined in Alesina, Baqir and Hoxby (2004) as $1-\sum_i (group_i)^2$ where $group_i$ is the share of the population in the tax district that is non-Hispanic white, non-Hispanic black and Hispanic, respectively.

perceive the overall racial composition of their city or town but instead look only at their immediate surroundings so we create an alternative measure: racial heterogeneity at the census tract level.[24] Given the concerns about biased standard errors and confident that our results are generally robust to alternative measures of precinct level mobility, we revert to the neighborhood churn measure of Table 3.

Columns 1 and 2 of Table 5 present the estimates. Even controlling for share non-Hispanic white at the precinct level, more heterogeneous towns were less likely to support Amendment 1. However, Column 2 suggests that controlling for any given level of racial and ethnic heterogeneity, more segregated towns were more likely to support Amendment 1. A one standard deviation increase in dissimilarity increased the yes share by 1.3 percentage points. We take the combined findings as mixed evidence that voter expected Amendment 1 to actually lower expenditures. For the balance of the paper we will explore whether voters consider possible tax-shifting strategies by their municipality.

5.5 Presence of non-homestead and non-residential property

The portability rule affected only homesteaded residential properties. Thus, homesteaded voters may have been more willing to support Amendment 1 if they believed that revenue loss from their declining assessments would be made up by higher taxes on non-homestead or non-housing property.[25] Thus, one explanation for the negative parameter estimate on share homestead in the previous regressions is that a high homestead rate suggested that there are

[24] Again, because these indices are calculated at a geographical level different from the precinct, we weight the indices at our unit of analysis.

[25] Dye, McMillen and Merriman (2006), for instance, show that the residential assessment cap in Illinois resulted in higher tax bills for commercial property owners and residents ineligible for the cap. See Bradbury (1988) and Calabrese et al (2006) for similar evidence from Massachusetts.

fewer other properties that can shoulder the tax burden. There is of course a potentially off-setting consideration. Current homesteaders are potential sellers to non-homesteaders. If the marginal buyer of homes in a given neighborhood is likely to be a snow-bird (non-homestead recipient) the current voter may oppose Amendment 1 for fear of jeopardizing their home values. In Column 3 of Table 5, we include the share of the *jurisdiction's* tax base that is currently receiving a homestead exemption. Our prior is that controlling for a jurisdiction homestead rate and thus its capacity to absorb lower assessed values on homestead property, a precinct's homestead value should turn positive.[26] However, the parameter estimate on jurisdiction homestead rate, though positive, is not statistically different from zero, and the precinct's share of properties receiving a homestead exemption remains negative and significant. However, in Column 4 we include three new measures of the tax base of the precinct's jurisdiction[27]: the share of the jurisdictional tax base that is residential, commercial and industrial.[28] The omitted category, the share of assessed value that is agricultural or institutional appears to be negatively associated with a yes vote. This is not surprising given the political and statutory barriers to taxing this class of land. Within the remaining categories the (effectively) non-homestead residential tax base has the largest association with a yes vote, where as voters in towns with large shares of the tax base in commercial, industrial and homesteaded residential properties appear to have similar support for Amendment 1: 9.54, 11.38 and 8.41 (15.58-7.17), respectively. There are at least two explanations for this pattern of results. One is that it may simply be more difficult to change tax rates across property classes and so non-homestead

[26] Though not shown, Table 5 includes the rental rate from the 2000 census, so we believe the share non-homestead is capturing ownership of second homes, a large share of the housing market in Florida.

[27] Here and later in the paper, "jurisdiction" refers to a city or town if the precinct in located in an incorporated area, and to the county if it is in an unincorporated area.

[28] These do not add up to 1 because of additional tax base categories such as institutional and agricultural property. Agricultural land under Florida's Greenbelt law is taxed based on current use and is generally difficult to tax.

residential land, either rental or snow-bird is the easiest type of property to shift the tax burden onto. Alternatively, residents of town with a large share of commercial and industrial land may already enjoy a lower tax rate (which we do not observe) and are thus less concerned with their current assessed property value. Alternatively, owners or residents of a commercial property that reside within the same jurisdiction as their business may fear the imposition or increase in the Local Option Sales Tax (LOST). Similarly, owners and workers of industrial property may fear an increase in utility fees.

5.6 Mobility and support for Amendment 1

The most remarkable feature of Amendment 1 is the exemption portability. While one might like to port their exemption at some time in the future, so will other current homeowners. The ultimate tax burden one experiences may hinge on one's mobility, but also the mobility of fellow town residents. A resident living in a city where there are many migrants coming in from within Florida may expect these migrants to put pressure on local expenditures while not contributing to the tax base – thus dampening support for tax portability. On the other hand, residents living in towns with high rates of migration from out-of-state can rely on these "wedge-less" buyers to reset the assessed value and slow the erosion of the tax base. Column 1 of Table 6 provides the baseline result for this analysis. We use the 2000 census measure of tax jurisdiction (city-level) mobility and precinct level mobility. This specification also includes all of jurisdiction tax-base share measures from Column 4 of Table 5. Here we find results more consistent with our expectation regarding the homestead exemption. While precincts with high rates of mobility are more likely to support Amendment 1, controlling for precinct (own) mobility, voters in high-mobility jurisdiction appear to be less likely to support Amendment 1 though the parameter estimate is not statistically different from zero.

In Column 2 of Table 6 we include out-of-state mobility into the cities. Cities with a large share of out-of-state immigrants are significantly more likely to support Amendment 1: a one-standard-deviation increase in the share of voters from out-of-state increases support for Amendment 1 by 3.2 percentage points. We believe this evidence is consistent with some strategic consideration on the part of voters.

To examine the impact of in-state migrants, in Column 3 of Table 6 we include in-state but out-of-county migration rate. This variable does not appear to be associated with higher support for Amendment 1. To explore this result further, we argue that not all in-state migrants are equal. If a voter lives in a county where the average wedge is low, relative to other counties in the state, it is likely that migrants from other parts of Florida will port large wedges. This will place substantial pressure on local budgets, and the support for Amendment 1 should be lower. On the other hand, if the average wedge in the receiving county is high, in-state migrants will not port a very large wedge into the county, and migration should have relatively little effect on voter support. We include an interaction variable that is the (in-state, out-of-county mobility rate)*(county average wedge). Column 4 shows the results, but the parameter estimates on both the in-state mobility and on the interaction term are not statistically different from zero. Perhaps this occurs because most out-of-county moves are still likely to be within the same metro area and thus porting similar sized wedges. However, without knowing the origin of county of the migrating households, we cannot conclusively test for this hypothesis.

As a final examination of the tax shifting considerations in voting behavior, we construct a new variable based on the ratio of a precinct's own mobility relative to other homeowners in the same jurisdiction. The hypothesis is that if a precinct is relatively more likely to move than other precincts in the same jurisdiction, it is more likely to take advantage of the portability

provision. We again employ previous owners' churn as our proxy for current owners' mobility, but the following results are robust to other measures of mobility. Column 5 of Table 6 provides the parameter estimates for the relative measure. Note that own precinct's parameter on churn is now negative but *relative* churn is positive, though neither is statistically different from zero at 5 percent cut-off. However, in Column 7 we limit the sample to cities with twenty-five or more precincts in order to mitigate the effect of having precinct churn included as both a level and a ratio. We find that both the churn and relative churn parameters become strongly significant; combined, the marginal effect, calculated at the means is positive. In other words, support for Amendment 1 falls if people tend to own their single family homes longer than other property owners in town. We take this as evidence that voters understand the fundamental shifting in tax burdens that portability would provide: Under the original Save Our Homes provisions, long-stayers could expect the tax burden to slowly shift to high churn households . Amendment 1 reverses that effect and, assuming it leads to an increase in the millage rate or other taxes, causes the tax-share of long duration residents to rise. Thus, Amendment 1 acted as a way for high-mobility households to shift the burden back to the low-mobility ones, and the voting results are consistent with this claim.

VI. Conclusion

While many states have introduced property assessment caps in order to limit the taxing power of local governments, Florida's Amendment 1 was the first statewide provision that allows the benefits of the assessment caps to be portable within the state. This potentially will have significant impact on the mobility of homeowners and the efficient matching of homeowners to homes. The differential tax burdens that the amendment generates allow us to

test whether voters recognized the fiscal impact of this complicated provision upon themselves and upon others. Precinct-level voting data from the referendum were regressed on socioeconomic, geographic and political variables. The key explanatory variables were the potential tax wedge formed by the difference between the just value and the assessed value of a house and various measures of household mobility. These variables were derived from a complete statewide tax roll of properties. We found evidence that voters with high expected mobility were more likely to support Amendment 1 but the size of the existing wedge was not an important determinant.

In addition we have found evidence that support for Amendment 1 increased with income, distance from the CBD where public goods tend to be concentrated, and with racial segregation, consistent with certain households' interest in lowering local public expenditures. However, we have also found that Amendment 1 voters may be more concerned with shifting the tax burden to non-homestead properties, to out of state migrants or (back) to long staying residents. The results suggest that voters strategically anticipated the response of local budgets and millage rates to the new portability, and they were able to weigh the short-term tax savings benefits against longer-term consequences on the local budget and tax burdens.

References

Alesina , Alberto, Glaeser, Edward and B Sacerdote, 2002, Why Doesn't the U.S. Have a European-Style Welfare State?, *Brookings Papers on Economics Affairs* 187-277.

Alesina, Alberto, Reza Baqir and Caroline Hoxby, 2004, Political Jurisdictions in Heterogeneous Communities *Journal of Political Economy,* 112(2), 348-394.

Anderson, Nathan and Andreas D. Papke, 2008, "An Insurance Model of Property Tax Limitations", working paper.

Bogart, William (1990): Last Sale Assessment of Property and the Locked-in Effect, Research in Urban Economics, Vol. 8, p. 83-104.

Bradbury, Katharine (1988): Shifting Property Tax Burdens in Massachusetts, New England Economic Review, Federal Reserve Bank of Boston

Brunner, Eric, Sonstelie, Jon and Thayer, Mark (2001): Capitalization and the Voucher: An Analysis of Precinct Returns from California's Proposition 174, Journal of Urban Economics, Volume 50, 517-536

Calabrese, Stephen, Epple, Dennis, Romer, Thomas and Sieg, Holger (2006): Local Public Good Provision: Voting, Peer Effects, and Mobility, Journal of Public Economics 90, p. 959-981

Citrin, Jack (1979): Do People Want Something for Nothing: Public Opinion on Taxes and Government Spending, National Tax Journal, Vol. 32, p. 113

Cunningham, Chris and Engelhardt, Gary (2008): Housing capital-gains taxation and homeowner mobility: Evidence from the Taxpayer Relief Act of 1997, Journal of Urban Economics, Volume 63, Issue 3, May 2008, Pages 803-815

Cutler, David, Elmendorf, Douglas and Zeckhauser, Richard (1999): Restraining the Leviathan: Property Tax Limitation in Massachusetts, Journal of Public Economics, Vol. 71, p. 313-334

Downes, Tom (1992): "Evaluating the Impact of School Finance Reform on the Provision of Public Education: The California Case," National Tax Journal 45: 405-419.

Doyle, Maura (1994): Property Tax Limitations and the Delivery of Fire Protection Services, Federal Reserve Board of Governors Working Paper

Dye, Richard, McMillen, Daniel and Merriman, David (2006): Illinois' Response to Rising Residential Property Values: An Assessment Growth Cap in Cook County

Ferreira, Fernando (2007) You Can Take It With You: Proposition 13 Tax Benefits, Residential Mobility, and Willingness to Pay for Housing Amenities, Wharton School Working Paper

Figlio, David (1997): Did the "tax revolt" reduce school performance?, Journal of Public Economics, 65: 245-269.

Figlio, David and Rueben, Kim (2001): Tax Limits and the Qualifications of New Teachers, Journal of Public Economics 80: 49

Fischel, William (1989): Did Serrano Cause Proposition 13?, National Tax Journal 42: 465-473

Hilber, Christian A. L. and Mayer, Christopher J. (2004) Why do households without children support local public schools? NBER, Cambridge, Massachusetts

Hoyt, William H., Coomes, Paul A. and Biehl Amelia M. (2009) Tax Limits, Houses, and Schools: Seemingly Unrelated and Offsetting Effects", University of Kentucky Institute for Federalism and Intergovernmental Relations, Working paper.

Ladd, Helen and Wilson, Julie (1982): Why Voters Support Tax Limitations: Evidence from Massachusetts' Proposition 2 1/2 , National Tax Journal, Vol. 35, p. 121

Newman, Sandra and Reschovsky, James (1987): An Evaluation of the One-Time Capital Gains Exclusion for Older Homeowners, AREUEA Journal. Spring 1987. Vol. 15, Iss. 1; p. 704-724

Nagy, John (1997): Did Proposition 13 affect the mobility of California homeowners?, Public Finance Review 25:1 (Jan 1997): pp102(15).

O'Sullivan, Arthur, Sexton, Terri and Sheffrin, Steven (1995a) : Property Taxes and Tax Revolts: The Legacy of Proposition 13

O'Sullivan, Arthur, Sexton, Terri and Sheffrin, Steven (1995b) Property Taxes, Mobility, and Home Ownership, Journal of Urban Economics, Volume 37, Issue 1, January 1995, Pages 107-129

Shadbegian, Ronald (1998): Do Tax and Expenditure Limitations Affect Local Government Budgets? Evidence from Panel Data, Public Finance Review 26, 218-36

Sinai, Todd and Gyourko, Joseph (2004): The asset price incidence of capital gains taxes: evidence from the Taxpayer Relief Act of 1997 and publicly-traded real estate firms, Journal of Public Economics, Volume 88, Issues 7-8, July 2004, Pages 1543-1565

Stohs, Mark, Childs, Paul and Stevenson, Simon (2001): Tax Policies and Residential Mobility, International Real Estate Review 4, 95-117

Wasi, Nada and White, Michelle J.: Property Tax Limitations and Mobility: The Lock-in Effect of California's Proposition 13 (2005). NBER Working Paper No. W11108.

Wassmer, Robert W. (2008): Causes of Urban Sprawl in the United States: Auto Reliance as Compared to Natural Evolution, Flight from Blight, and Local Revenue Reliance, Journal of Policy Analysis and Management 27, 536-555.

Data Appendix A: Creating a Measure of Expected Mobility

The specification for the hazard of moving function is:

$$h(t) = h_0(t)\exp(X'\beta)$$

where the baseline hazard, $h_0(t)$, is estimated non-parametrically and then shifted proportionally by changes in a vector of covariates *X*. We include in *X* Census 2000 controls for the block group that the property is located in: income and income squared; share of population that is non-Hispanic white; educational attainment; and share of population in the following age groups: 0-4, 5-13, 14-17, 18-24, 25-64, and 64 plus. We also include the property's distance from the CBD as a control.[29] Building on the work of Sinai (1997), Newman and Reschovsky (1987) and Cunningham and Engelhardt (2008), we also include the following variables to account for lock-in effects generated by the federal treatment on capital gains in owner occupied housing: occupancy spell completed before 1997; capital gain in excess of $125,000; (occupancy spell completed before 1997*capital gain in excess of 125,000); occupancy spell completed after 1997; and (occupancy spell completed after 1997*capital gain in excess of $500,000). We run each model separately by county yielding 64 separate regression estimates. Some summary statistics of the parameter estimates for the county regressions are presented in Appendix Table A1. The full set of coefficient estimates is available from the authors upon request.

[29] These additional covariates, for the most part, appear in the main voting equation as well, and so they are described in greater detail in the "Other Covariates" section of the paper.

Using the estimated hazard functions and the coefficient estimates on the covariates, we calculate for each house the survival probability that the current owner will remain in the house (in other words, we ignore the previous owners' tenure) and set capital gains to zero to predict survival in the absence of a property tax lock-in effect. The predicted survival curve is thus:

$$\hat{S}(t) = \hat{S}_0(t)^{\exp(X'\hat{\beta})}$$

where the non-parametrically fitted baseline survival curve, $\hat{S}_0(t)$, is shifted proportionally by the exponeniated independent variable multiplied by the parameter estimates $X'\hat{\beta}$. Next we estimate the probability of the current owner remaining in the home *n* years into the future. We do this by moving *n* years (we do this for *n* = 1, 2 or 3 years) down the survival curve and then shifting it by the current set of covariates and parameter estimates (excluding capital gains):

$$\hat{S}(t+n) = \hat{S}_0(t+n)^{\exp(X'\hat{\beta})}.$$

Finally, we take the difference between the current survival curve and the projected future survival curve and annualize the change in probabilities to create a measure of expected future mobility with passage of Amendment 1:

$$mob_n = \Delta\hat{S}(t) = \frac{\hat{S}(t) - \hat{S}(t+n)}{n}.$$

Thus, mob_n is determined by both the underlying duration dependence of the data –a household, having lived ten years in a home is less likely to move next year than a household having lived in a home for just three years – and by characteristics of the census block group in which the property resides – high income individuals tend to move more. Like the other

independent variables, the expected mobility term is then averaged at the precinct level. The precinct average expected mobility is denoted M^n_i, $n = 1, 2, 3$.

Generally, we find that mobility falls with the share of children in the block group, increases with income and educational attainment and increases for non-Hispanic whites. We also find some evidence for lock-in effects from the tax treatment of capital gains on owner occupied housing. Homes in census block groups with higher shares of persons over 55 appear to enjoy a bump up in mobility before 1997 relative to after 1997, and having a gain of more than $125,000 (above the maximum one time exclusion pre-1997) was associated with reduced mobility compared to after 1997. This effect was strongest for homes in block groups with a larger share of persons age 55 and over. Similarly, gains in excess of $500,000 (the maximum post-1997 exclusion) lowered mobility after 1997 relative to before 1997.

Table 1. Yearly Assessed Value Increases Mandated by Save Our Homes

Year	CPI Change	Maximum Assessed Value Increase Under SOH	OFHEO State House Price Index Increase	"Wedge" between just and assessed property value for a home purchased before January 1st 1995
1995	2.7%	2.7%	2.2%	0.0%
1996	2.5%	2.5%	2.8%	0.0%
1997	3.3%	3.0%	2.6%	0.0%
1998	1.7%	1.7%	5.1%	2.7%
1999	1.6%	1.6%	3.9%	4.8%
2000	2.7%	2.7%	6.6%	8.3%
2001	3.4%	3.0%	10.0%	14.1%
2002	1.6%	1.6%	10.1%	20.8%
2003	2.4%	2.4%	10.4%	26.5%
2004	1.9%	1.9%	17.0%	36.0%
2005	3.3%	3.0%	25.6%	47.5%
2006	3.4%	3.0%	17.1%	53.8%
2007	2.5%	2.5%	-0.6%	52.4%
2008	4.1%	3.0%	-6.0%	47.8%

Table 2. Summary Statistics of Variables Used in Analysis

	(1) Full Sample		(2) Restricted	
	Mean	Stan Dev.	Sample	Stan Dev.
Share of Votes "yes"	0.631		0.623	
Wedge in $100,000s (market price – capped price)	0.639	(0.835)	0.619	(0.676)
Measures of Mobility:				
Moved in last 5 years (2000 census)	0.499	(0.119)	0.504	(0.123)
Moved into district from out of state	0.160	(0.052)		
Moved into district from out of county	0.089	(0.053)		
Churn-previous owner's duration in home	6.19	(2.10)	6.14	(1.98)
Relative churn – churn/churn in other precincts in tax jurisdiction	1.02	(0.30)	1.02	(0.30)
1-yr expected mobility (expected change in survival)	0.071	(0.013)	0.071	(0.012)
2-yr expected mobility (annualized)	0.059	(0.011)	0.059	(0.010)
3-yr expected mobility (annualized)	0.055	(0.010)	0.055	(0.009)
Educational Attainment:				
Some college	0.286	(0.065)	0.287	(0.065)
Bachelor's deg.	0.145	(0.088)	0.145	(0.088)
Graduate deg.	0.083	(0.065)	0.0834	(0.067)
Age Composition:				
Age 0-4	0.056	(0.022)	0.058	(0.021)
Age 5-14	0.127	(0.047)	0.129	(0.047)
Age 15-17	0.037	(0.014)	0.038	(0.015)
Age 18-24	0.076	(0.052)	0.079	(0.058)
Age 65 and above	0.189	(0.142)	0.180	(0.142)
Other Controls:				
Median income (log)	44.0	(19.3)	43.9	(18.7)
Non-Hispanic white (percent)	69.5	(27.4)	66.3	(28.7)
Share receiving homestead exemption	0.558	(0.221)	0.219	(0.219)
Share voting for Gore in 2000 general election	0.507	(0.169)	0.524	(0.176)
Racial concentration-tax district	0.40	(0.17)	0.44	(0.15)
Racial dissimilarity	49.62	(48.64)	51.53	(43.49)
Dummy - central city	0.20	0.38	0.44	(0.15)
Distance – CBD	12.9	(11.8)	11.4	(8.9)
Observations	6371		3968	

Table 3 Determinants of Vote Share for Amendment 1 – Wedge and Simple Mobility Measures
Dependent Variable = [Yes votes/(Yes + No)]*100

	(1) Wedge between assessed and market value	(2) Additional controls	(3) Churn	(4) Census 5-year mobility	(5) Wedge + Churn	(6) + Share with homestead exemption
Wedge	0.009**	-0.004*			-0.005*	-0.003
(just – assessed value)	(0.002)	(0.002)			(0.002)	(0.002)
Churn			0.777**		0.766**	0.749**
			(0.098)		(0.096)	(0.094)
Census mobility rate				13.314**		
				(1.349)		
% with homestead exemption						-1.552
						(1.041)
Some college		-3.924+	-4.081*	-6.883**	-3.786+	-3.088
		(2.074)	(2.072)	(2.041)	(2.073)	(2.112)
Bachelor's deg.		0.248	0.345	-3.855	0.693	1.000
		(3.158)	(3.182)	(3.176)	(3.168)	(3.150)
Graduate deg.		-22.552**	-24.173**	-23.971**	-22.970**	-23.232**
		(4.116)	(4.120)	(3.898)	(4.163)	(4.159)
Age 0-4		-14.514	-13.892	-40.270**	-14.015	-12.830
		(9.843)	(9.791)	(10.108)	(9.796)	(9.934)
Age 5-14		-36.461**	-36.211**	-29.519**	-35.628**	-35.446**
		(6.524)	(6.428)	(6.498)	(6.413)	(6.409)
Age 15-17		-69.742**	-63.360**	-32.597*	-62.005**	-59.036**
		(15.809)	(15.598)	(15.905)	(15.602)	(15.746)
Age 18-24		-12.044**	-11.161**	-15.232**	-10.906**	-10.804**
		(3.150)	(3.122)	(3.112)	(3.118)	(3.106)
Age 65 and above		-12.730**	-10.574**	-9.957**	-10.454**	-10.121**
		(1.845)	(1.816)	(1.836)	(1.809)	(1.823)
Median income		0.195**	0.191**	0.183**	0.192**	0.196**
		(0.035)	(0.036)	(0.035)	(0.035)	(0.036)
Median income^2		-0.0005**	-0.0005**	-0.0005**	-0.0005**	-0.0005**
		(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Non-Hispanic white		0.020**	0.020**	0.023**	0.021**	0.021**
		(0.008)	(0.008)	(0.007)	(0.008)	(0.008)
% Renters		-0.008	-0.007	-0.039**	-0.009	-0.012
		(0.010)	(0.010)	(0.011)	(0.010)	(0.010)
Distance to CBD		0.059**	0.059**	0.056**	0.057**	0.057**
		(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Constant	48.287**	58.088**	57.555**	53.152**	57.012**	57.396**
	(1.443)	(2.169)	(2.128)	(2.222)	(2.126)	(2.120)
Observations	6473	6471	6428	6471	6428	6428
R-squared	0.604	0.651	0.654	0.658	0.655	0.655

All specifications include county fixed effects. For scaling purposes, Wedge is measured in $1,000s. Robust standard errors in parentheses. +Significant at 10% level; *Significant at 5% level; **Significant at 1% level.

Table 4 Robustness Check / Alternative Measures of Mobility and Controls for Political Ideology
Dependent Variable = [Yes votes/(Yes + No)]*100

	(1) Wedge	(2) Expected Mobility 1-year	(3) 2-year	(4) 3-year	(5) W*M interaction	(6) Political control
Wedge	-0.003	0.000	0.001	0.000	-0.004	-0.003
(just – assessed value)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
1-yr expected mobility		25.915**			24.352**	24.620**
		(5.363)			(5.304)	(5.237)
2-yr expected mobility			45.290**			
			(8.891)			
3-yr expected mobility				12.280+		
				(6.990)		
Wedge*1-yr mobility					0.038*	0.032*
					(0.016)	(0.015)
Vote for Al Gore in 2000						-15.239**
						(0.814)
% with homestead exemption	-0.931	-2.440*	-3.285**	-4.628**	-2.324*	-3.478**
	(0.992)	(0.981)	(1.078)	(0.882)	(0.986)	(0.988)
Some college	-3.529+	-3.585+	-3.103	-3.402+	-3.534+	1.298
	(2.103)	(2.036)	(2.051)	(1.930)	(2.030)	(2.020)
Bachelor's deg.	0.426	0.282	1.876	1.027	0.077	3.286
	(3.138)	(2.814)	(3.055)	(2.776)	(2.808)	(2.680)
Graduate deg.	-22.760**	-24.740**	-24.445**	-25.452**	-24.970**	-16.832**
	(4.119)	(4.177)	(4.146)	(4.100)	(4.185)	(3.984)
Age 0-4	-13.905	-11.332	-14.018	-5.702	-10.909	-8.155
	(9.941)	(9.095)	(9.446)	(9.392)	(9.090)	(8.874)
Age 5-14	-36.460**	-35.263**	-32.986**	-34.367**	-34.332**	-21.951**
	(6.526)	(6.299)	(6.288)	(6.194)	(6.317)	(6.203)
Age 15-17	-67.980**	-57.460**	-62.390**	-58.602**	-56.046**	-44.371**
	(15.913)	(15.688)	(15.495)	(14.706)	(15.686)	(15.302)
Age 18-24	-12.039**	-10.529**	-11.415**	-10.147**	-9.842**	-6.563*
	(3.144)	(3.145)	(3.040)	(3.096)	(3.148)	(2.968)
Age 65 and above	-12.627**	-8.953**	-8.741**	-8.010**	-8.678**	-3.548*
	(1.859)	(1.830)	(1.802)	(1.812)	(1.831)	(1.764)
Median income	0.198**	0.228**	0.208**	0.247**	0.233**	0.096**
	(0.037)	(0.030)	(0.035)	(0.029)	(0.029)	(0.030)
Median income^2	-0.0005**	-0.001**	-0.001**	-0.001**	-0.001**	-0.000
	(0.0002)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
Non-Hispanic white	0.019*	0.021**	0.021**	0.023**	0.021**	-0.028**
	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
% Renters	-0.010	-0.008	-0.013	-0.013	-0.009	-0.027**
	(0.010)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)
Distance to CBD	0.059**	0.071**	0.061**	0.067**	0.072**	0.070**
	(0.017)	(0.015)	(0.017)	(0.015)	(0.015)	(0.015)
Constant	58.360**	51.870**	50.327**	55.353**	51.721**	62.282**
	(2.157)	(2.420)	(2.518)	(2.389)	(2.416)	(2.403)
Observations	6471	6338	6307	6274	6338	6338
R-squared	0.651	0.685	0.679	0.696	0.685	0.703

All specifications include county fixed effects. For scaling purposes, Wedge is measured in $1,000s. Robust standard errors in parentheses. +Significant at 10% level; *Significant at 5% level; **Significant at 1% level.

Table 5: Curbing Expenditure vs. Shifting the Tax Burden?
Dependent Variable = [Yes votes/(Yes + No)]*100

	(1) Tax district racial heterogeneity	(2) Tax district racial dissimilarity	(3) Share of tax base covered by homestead exemption	(4) Share of tax base by property class
Wedge	-0.001	-0.000	-0.000	-0.000
(just – assessed value)	(0.002)	(0.002)	(0.002)	(0.002)
Churn	0.700**	0.665**	0.663**	0.682**
	(0.099)	(0.103)	(0.102)	(0.104)
% with homestead exemption	-2.805**	-2.670**	-2.808**	-2.267*
	(1.021)	(1.021)	(1.017)	(1.058)
Vote for Al Gore in 2000	-14.008**	-13.621**	-13.643**	-14.172**
	(0.979)	(0.975)	(0.971)	(0.950)
Racial Heterogeneity	-8.918**	-10.192**	-9.999**	-8.772**
(tax jurisdiction)	(0.939)	(0.943)	(0.911)	(0.907)
Racial Dissimilarity		0.031**	0.031**	0.025**
(tax jurisdiction)		(0.003)	(0.003)	(0.003)
Share of tax base[1] covered by:				
• Homestead exemption			1.086	-7.174**
			(1.280)	(1.662)
• Residential (inclusive of homesteads)				15.577**
				(1.944)
• Commercial				9.540**
				(2.889)
• Industrial				11.375**
				(3.945)
Constant	72.023**	71.530**	71.214**	63.965**
	(2.128)	(2.140)	(2.166)	(2.495)
Observations	6393	6393	6393	6393
R-squared	0.684	0.691	0.691	0.697

[1]Excluded category is agricultural, which is assessed based on current use.

All specifications include county fixed effects and all demographic controls. For scaling purposes, Wedge is measured in $1,000s. Robust standard errors in parentheses. +Significant at 10% level; *Significant at 5% level; **Significant at 1% level.

Table 6: Types of Migrants, Portable Wedges and Relative Mobility
Dependent Variable = [Yes votes/(Yes + No)]*100

	(1) Jurisdiction mobility	(2) + Out-of-state mobility	(3) + In-state mobility	(4) In-state mobility interaction	(5) Relative mobility	(6)
					Full sample[1]	Restricted sample[1]
Wedge (just – assessed value)	0.001	0.001	0.001	-0.001	-0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Mobility	10.150**	10.148**	10.179**	11.703**		
	(1.379)	(1.380)	(1.384)	(1.495)		
Jurisdiction-wide mobility	-2.395	-24.279**	-25.724**	-27.081**		
	(2.088)	(2.984)	(3.318)	(3.417)		
Jurisdiction-wide mobility from outside Florida		38.851**	39.778**	39.615**		
		(3.918)	(3.996)	(3.963)		
Jurisdiction-wide mobility from another Fla. county			2.784	9.168		
			(3.078)	(7.280)		
(Jurisdiction mobility from another Fla. county)*(average wedge in county)				0.001		
				(0.095)		
Churn					-0.094	-0.540**
					(0.523)	(0.187)
Relative churn (own precinct churn / jurisdiction average churn)					0.126	0.187**
					(0.081)	(0.029)
• Marginal effect						0.588
Constant	62.128**	68.423**	68.495**	67.727**	63.036**	55.943**
	(2.660)	(2.623)	(2.627)	(2.936)	(2.506)	(3.029)
Observations	6435	6435	6435	6435	6303	3918
R-squared	0.698	0.704	0.704	0.705	0.703	0.700

[1] The *full sample* is the set of all precincts in the 64 counties. The *restricted sample* is the set of the precincts located in jurisdictions that have 25 or more precincts.

"Mobility" is the census-derived 5-year mobility rate. All specifications include county fixed effects, all demographic controls, controls for racial concentration, segregation and share of tax base classified as homestead, residential, commercial and industrial, consistent with the specification presented in Column 4 of Table 5. For scaling purposes, Wedge is measured in $1,000s. Robust standard errors in parentheses. +Significant at 10% level; *Significant at 5% level; **Significant at 1% level.

Appendix Table A1 – Summary of Parameter estimates from 66 Cox proportional hazard models of mobility[1]

	mean parameter estimate	Positive[2]	Not significant[2]	Negative[2]
Education (share)[3]				
some college	0.071	24	26	16
Bachelors	0.462	28	30	8
Graduate Degree	-0.074	22	34	10
Age distribution				
Share of pop 5-14 yrs old	-0.008	13	30	23
Share of pop 15-17 yrs old	-1.797	9	27	30
Share of pop 18-24 yrs old	0.668	14	32	20
Share of pop 65+ yrs old	-0.002	12	31	23
Income (000s)	0.013	19	33	14
Income^2	-0.0002	14	33	19
Share non-Hispanic	0.0001	17	35	14
Distance to CBD	-0.001	15	29	22
Capital gains (000s)[4]	-0.002	5	24	37
Federal Capital Gains Parameters				
Dummy spell completed pre-97	-1.318	0	3	63
Share population over age 55	-0.0002	17	17	32
Share population over age 55*Pre-97	0.0003	35	17	14
Dummy: gain>125K	0.034	29	18	19
Dummy: gain>125K*pre-97	-0.642	0	6	60
capgainovr125k_pre97age55	0.0001	22	23	21
Dummy: gain>500K	0.019	18	27	21
Dummy: gain>125K*post-97	-0.201	3	20	43

[1]Residence spell is defined as the time, in years, between the purchase and sale of the home by the previous owner or purchase year and 2008 for the current owner.

[2]Significance based on a 5-percent cut-off using a two tailed test.

[3]All variables relating to age, education and income are drawn from 2000 census block group summary statistics.

[4]Capital gain is either the realized gain: sales price less purchase price or for right censored spells the difference between purchase price and assessor determined "just value".