Regional Science and Urban Economics 41 (2011) 173–186

Contents lists available at ScienceDirect

Regional Science and Urban Economics

journal homepage: www.elsevier.com/locate/regec

Who supports portable assessment caps: The role of lock-in, mobility and tax share

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ARTICLE INFO

Article history:
Received 1 September 2010
Received in revised form 29 December 2010
Accepted 5 January 2011
Available online 15 January 2011

JEL classification:
H71
R23

Keywords:
Property tax
Voting
Assessment cap
Lock-in
Mobility
Local public finance
Local political economy

ABSTRACT

Popular support for property assessment caps has been explained as attempts to protect long-time home owners and to constrain local public expenditures. However, in the absence of a binding cap on millage rates, an assessment limit simply lowers the tax share of low-mobility homeowners at the expense of high-mobility homeowners. A recent amendment in Florida made existing exemptions portable, lowering the tax share of high mobility households and raising the tax share of low mobility households. Examining vote share by precinct, we find that more mobile households support portability but that precincts with larger exemptions do not. We also find evidence that voters understood how the amendment impacts their tax share. Support for portability is higher when a city has many out-of-state and thus "exemption-less" immigrants and support is lower when mobility in the rest of the tax jurisdiction is high. These findings suggest that voters alter assessment rules to minimize their own tax share.

1. Introduction

Since California voters' approval of Proposition 13 in 1978, fifteen states have limited the growth in property assessments (Hoyt et al., 2009). The tax protection afforded by such caps may induce households to over-stay in their current home (Bogart, 1990; Stohs et al., 2001; Wasi and White, 2005; Ferreira, 2007).[1] If housing match quality diminishes over time, then this "lock-in" effect from assessment caps will generate an aggregate welfare loss (O'Sullivan et al., 1995, 1999) and could induce additional construction at the urban fringe (Wassmer, 2008). The leading explanations for popular support for property assessment caps are that they are intended to constrain local public expenditures or to protect long-time home owners.[2] However, in Florida, where an assessment cap has been in place since 1995, few cities have tax rates near the cap, discounting the first hypothesis. Then in 2008, voters passed a novel amendment to make the existing exemption portable, calling the second hypothesis into question and providing the subject for our empirical analysis.[3]

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[1] Nagy (1997) does not find an effect on mobility.

[2] When combined with a cap on millage rates, an assessment cap can significantly reduce local revenues and expenditures (Downes, 1992; Figlio, 1997). Voters may support these limitations because they believe they will improve local government efficiency rather than reduce public services (Citrin, 1979; Ladd and Wilson, 1982). However, these expectations are often not realized (Doyle, 1994; Figlio and Rueben, 2001; Hoyt et al., 2009). In addition, voters' estimation of government efficiency appears to be inversely correlated with their personal tax liabilities (Cutler et al., 1999). A related puzzle is why voters use state referenda to constrain a revenue source that is primarily utilized by local government. The common explanation is agency failure: Anderson and Pape (2008) suggest that current voters do not trust future voters to guard their interests and thus seek institutional barriers to future taxes, while Vigdor (2004) suggests it is residents of other cities in the same state that voters guard against.

[3] 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. Oregon has a system in place where the assessment cap is transferrable to new owner, but it is not portable.

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doi:10.1016/j.regsciurbeco.2011.01.001

By treating newly purchased homes in the same way as currently owned homes, the amendment ameliorates the lock-in effect but at the expense of administrative complexity, greater horizontal inequity between recent and longtime homeowners and a faster erosion of the property tax base. While the original assessment cap passed with popular support, there was even greater support for the mobility-enhancing amendment. The portability provision is unusual because it impacts not only a household's current and future property tax liability and thus the finances of its current city, but also the assessed value of any city 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 the tax base back to market prices; now the base will only be restored when a first-time or out-of-state homebuyer makes a purchase. In addition, in-state migrants from other parts of Florida can erode the local tax base faster if they port large exemptions into districts that have not experienced much appreciation. Thus, after the portability amendment, local governments must reduce their expenditures, raise other taxes or fees, tax non-protected property, or raise the millage rate, which was almost never constrained.[4] Rational voters thus had to balance their potential tax savings after a move against potentially higher immediate taxes or fewer public goods.

To explain support for the portability amendment, we combine statewide assessor property records with precinct level election data and 2000 census block group data. We predict the share of yes votes based on the mobility rate and the existing tax savings (the "tax wedge") from the existing assessment cap, controlling for average demographic characteristics, mean income and partisanship. Despite amendment supporters' claims that it would result in a tax reduction for owner-occupied property, we do not find higher support for the measure in precincts with a greater share of homesteaded property. Nor was support explained by the average size of a homeowner's current tax exemption, even though an existing exemption is a necessary condition for lock-in to occur. Instead, we find that precincts with more mobile households, and ones more mobile *relative* to other households in the same tax jurisdiction, were more likely to support portability. In addition, when examining inter-tax district migration, support increases when a jurisdiction has high rates of in-migration from other states but decreases with high rates of in-state migrants. These findings are consistent with voters understanding the mechanics of how portability affects their property tax shares. We believe that voters' behavior was motivated less by immediate tax savings and more by an attempt to shift the burden of financing government back to low-mobility households and especially to new homeowners in Florida.

Section 2 details the original Save Our Homes exemption and the proposed portability amendment. Section 3 lays out the theoretical framework. In Section 4, we describe the econometric specification and the dataset, and we explain how we construct our independent variables of interest. Section 5 presents the initial results for the effect of mobility and wedge on support for portability. Section 6 looks for more sophisticated voter behavior by introducing a measure of relative mobility within the city and decomposing types of in-migration. There is a brief conclusion.

2. Institutional detail

Since 1980, Florida law has exempted the first $25,000 of market value from assessment on a homeowner's primary residence or "homestead."[5] In 1995, 54% of Florida voters approved changing the state's constitution with the "Save Our Homes" (SOH) amendment which capped yearly increases in assessed value to the lesser of three percent or the rate of inflation (based on the CPI for urban consumers). Fig. 1 shows the growing "wedge" between market and assessed values that resulted. The light bars represent 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 dark bars show the annualized appreciation in the FHFA house price index. After a few initial years of low appreciation, many parts of Florida enjoyed extraordinary house price appreciation. For instance, house prices increased by 130 and 108% in Miami and Tampa, respectively, between 1995 and April 2008 (Case–Shiller repeat sales index). Fig. 1b demonstrates how the assessment cap results in a long-held property having nearly half of its value untaxed. The dashed line represents the market value of a house that was bought on December 31, 1994, and that enjoys the statewide appreciation rate. The solid line represents the assessed value of this house as long as it is not bought or sold. Thanks to Save Our Homes, by 2008, the wedge (vertical distance between the two lines) represents 47% of the market value of the house and is exempt from property tax.[6]

The motivation for altering SOH, like that for Proposition 13 in California and similar measures to cap the growth in assessments, was that the assessed value of a property reset to the market price upon sale, significantly increasing the property tax bill for the new owners.[7] The fear of losing the benefit of a large untaxed wedge was thought to lock families into their existing homes.[8] This fear of constraints on mobility, combined with the popular perception that property taxes were too high, created support to reform SOH.[9] On January 29, 2008, 64% of Floridians voted to approve "Amendment 1." The law went into effect for 2008 property taxes and had four provisions: (1) the homestead exemption doubled to $50,000 for non-school taxes; (2) the homeowner's tax wedge was made "portable" to other homes within the state; (3) a $25,000 tangible personal property exemption was provided to businesses; and (4) assessment growth on non-homesteaded property, including rental properties, second homes and commercial properties, was capped at 10% per year (excluding school taxes). The $25,000 increase in the exemption adds some modest progressivity to the property tax but is small relative to the average value of houses in the state. The business exemption on personal property was thought to be quite modest, and the 10% cap on non-homestead assessment growth does not appear to lower future non-homestead taxes.[10] In summary, most of the benefits of Amendment 1 were expected to be conferred to owners of homestead property. The portability provision generates roughly half of these savings and is at the center of our analysis.[11] Thus,

[4] Florida law limits the municipality property tax rate to 10 mills. In 2008, calculations by the authors show that of 388 municipalities, the median municipal millage rate is 4.1 mills. The municipality at the 95th percentile has a millage rate of 7.7 mills, comfortably below the cap.

[5] In addition to the standard $25,000 homestead exemption, there is also a $500 exemption for a disabled homeowner, a $500 exemption for a widow or widower and a $5000 exemption for a disabled veteran. Beginning in 1997, local jurisdictions can grant exemptions to senior citizens (Section 193.155(1), F.S.).

[6] 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.

[7] Florida is a relative latecomer among the states in passing a 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 forced jurisdictions to reset the millage rate.

[8] 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.

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

[10] In 2006, the statewide average millage rate (including municipal and county taxes) was 18.47 or less than 2% of just value, Florida's Property Tax Study Interim Report, Legislative Office of Economic and Demographic Research February 15, 2007.

[11] A pre-reform analysis conducted by Florida TaxWatch projected that over 80% of tax relief would go to homestead property. *Briefings,* Florida TaxWatch, January 2008.

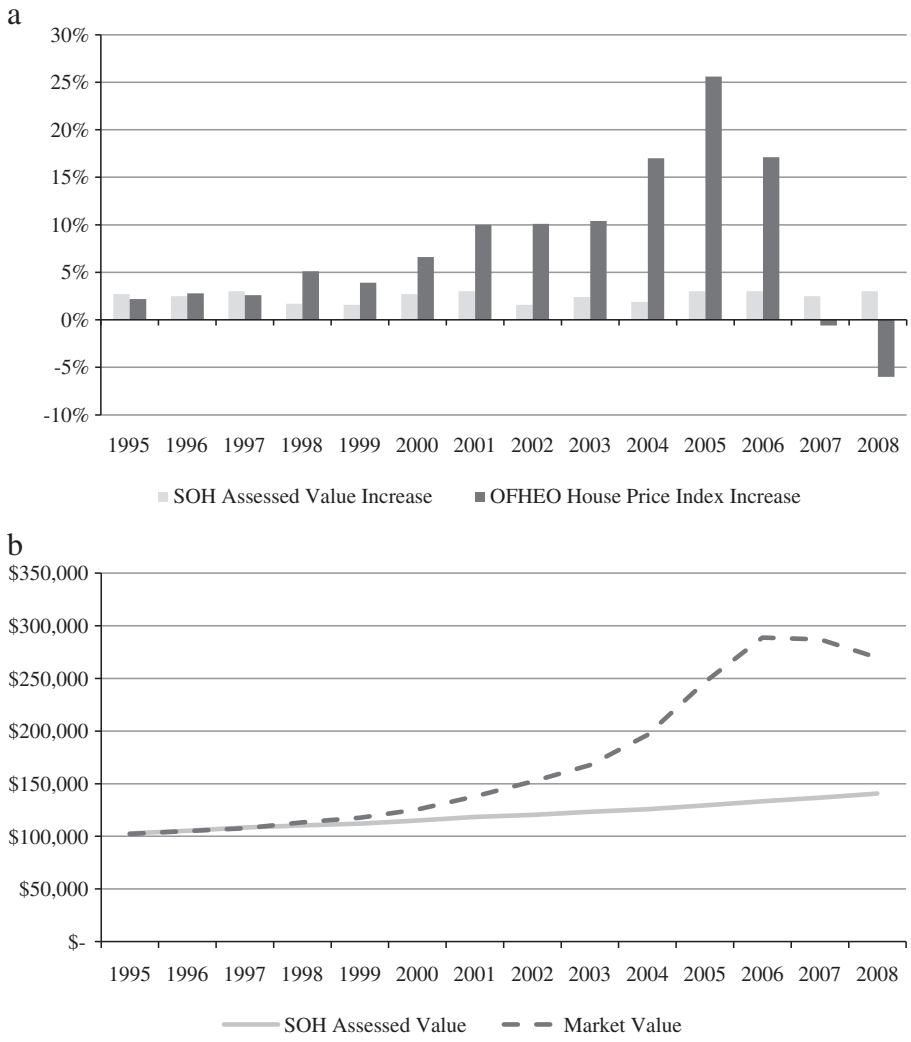

Fig. 1. a. Comparison of yearly increase in assessed value allowed by save our homes and yearly increase in FHFA state house price index. b. Comparison of assessed value and market value of a hypothetical home*.* This graph is based upon the following assumptions: (1) A house is bought for $100,000 on December 31, 1994; (2) It is homesteaded and is not bought or sold thereafter; and (3) Its value appreciates at the same rate as the statewide FHFA house price index.

we will refer to Amendment 1 as "the portability amendment" throughout the text.

The universal statewide portability of the assessment wedge is unique among the states. If one moves into a 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. If a homeowner purchased a home in 1994 for $100,000 that by 2008 has a just value of $270,000 and an assessed value of $140,000, then the wedge between market price and assessed price is $130,000. If the homeowner moves up to a home with a just value of $300,000, then without portability the assessed value of the new house is $300,000.[12] With portability, the assessed value is reduced to $170,000 ($300,000–$130,000).[13] This assessed value would then rise subject to the yearly cap. A homeowner who instead chooses to buy a cheaper house would get to keep the tax wedge *percentage* of the former house. For example, if the new home were worth $230,000, the new assessed value would be $110,740 ($230{,}000 \times (130{,}000/270{,}000)$).

Voters confronted a difficult calculation of projected benefits and costs in deciding whether or not to support the referendum.[14] In the next section, we review how changes in the method of assessment would change the taxes of different types of voters and thus their support for the portability amendment.

3. The property tax under different assessment regimes

An individual voter's tax bill, T, before an assessment limit can be expressed as:

$$T = \tau(V - 25K) \tag{1}$$

where τ is the jurisdiction's property tax (millage) rate, V is the assessed value of the house and all homes receive a standard $25,000

[12] 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.

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

[14] 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/documents/portability.pdf.

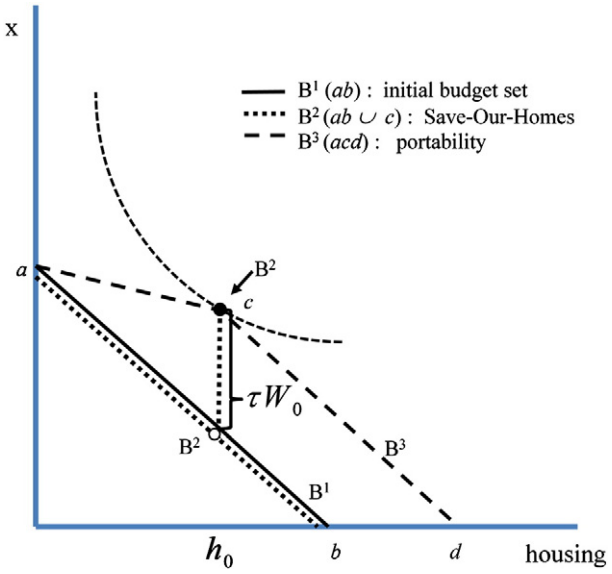

Fig. 2. Lock-in effect of assessment cap and portability on housing consumption. Note: To highlight the impact of the wedge between market and assessed values in this figure we show the current budget when inflation is greater than 3% (the nominal cap in assessment growth) which generates a discontinuity for consumption of the current home. A similar graph with real house price appreciation above the inflation cap would pivot the budget line in similarly stranding the household in the current home.

exemption.[15] Without Save Our Homes, V is also the market value. We call this assessment regime the "initial regime." The introduction of the original SOH legislation in 1995 capped the growth in assessed value at the lesser of inflation or 3%. Thus, the tax T was the millage rate multiplied by the difference between the lesser of the capped value or the market price and the basic exemption:

$$T = \tau\left(min\left(\overline{V}, V\right) - 25K\right). \tag{2}$$

The difference between a home's market value and assessed value is the assessment wedge, W, which we define as $\max(V-\overline{V}, 0)$. Prior to the portability amendment, moving to a new house resets W to zero. We call this assessment regime the "SOH regime."

The amendment doubles the initial homestead exemption and introduces wedge portability. If purchasing a home of greater value, the wedge is the nominal exemption on the previous home, and, if trading down, the wedge is capped at the ratio of the previous exemption to market value. Introducing subscripts, the annual property tax paid on the first home purchased after the portability amendment, T_1, depends on the accumulated wedge on the previous home, W_0.

$$T_1 = \left\{ \begin{array}{l} \tau_1(V_1 - W_0) - 50K) \text{ if } V_1 \geq V_0 \\ \tau_1\left(V_1\left(1-\frac{W_0}{V_0}\right)\right) - 50K) \text{ if } V_1 < V_0 \end{array} \right\} \tag{3}$$

We refer to this last assessment regime as the "portability regime." Under all three regimes, we can then express the consumption of all other goods, x, as a function of current income less the property tax:

$$x = y - T. \tag{4}$$

The lock-in effect created by the original Save Our Homes can be illustrated by Fig. 2. Assume that the average inflation rate exceeds three percent throughout. A household obtains utility from housing and from non-housing consumption, which are represented on the vertical and horizontal axes respectively. The $25,000 (and later, $50,000) flat homestead exemptions are suppressed for clarity. The figure shows the budget constraints corresponding to the three tax regimes. Initially, in the absence of a property tax exemption, the budget set is ab, and the optimal consumption level is h_0. The SOH assessment cap generates a discontinuous budget set, $(ab \cup c)$, where the owner can consume above the budget line, at point c, by remaining in the current house.[16] This differential treatment of current and future homes can generate a lock-in effect that may lower social welfare (O'Sullivan et al., 1999). Passage of the portability amendment shifts the budget set out to acd, as the accumulated wedge from a previous home can be used to increase non-housing consumption reducing much of the lock-in effect.[17] Since the shift of the budget set is clearly related to the size of the homeowner's accumulated wedge, our first hypothesis is as follows:

Hypothesis 1. Support for the portability amendment increases with wedge size.

However, an existing assessment wedge is a necessary, but not sufficient condition for households to experience a lock-in effect. If homeowners are happy with their current residence, then the portability feature benefits them not at all.[18] We adopt the O'Sullivan et al.'s (1995) framework, where housing mobility is driven by decaying housing match quality and households move when the current flow of housing services provides insufficient utility subject to the fixed cost of moving.[19] SOH can be thought of as simply a tax on the number of moves a household makes over their lifetime, as each move resets one's assessment to the market price and raise their lifetime property tax.

[15] Here and throughout the paper, the "jurisdiction" refers to the city if a household lives in an incorporated area and to the county if the household lives in an unincorporated area.

[16] An alternative diagram with real house price inflation would be similar but would shift the budget set in for any housing consumption other than the current one.

[17] There is still a kink in the budget set from the differential treatment of a "trade-up" or a "trade-down."

[18] And, if bequests are to be considered, heirs are satisfied as well.

[19] They must also make some judgment as to the trajectory of future house prices. If house prices continue to fall as they had in the year before the portability amendment, then the value of the wedge to be ported will decline over time. On the other hand, if long-run house prices return to their previous trend of increasing faster than inflation, then a voter would need to consider the value of accumulated wedges in future homes.

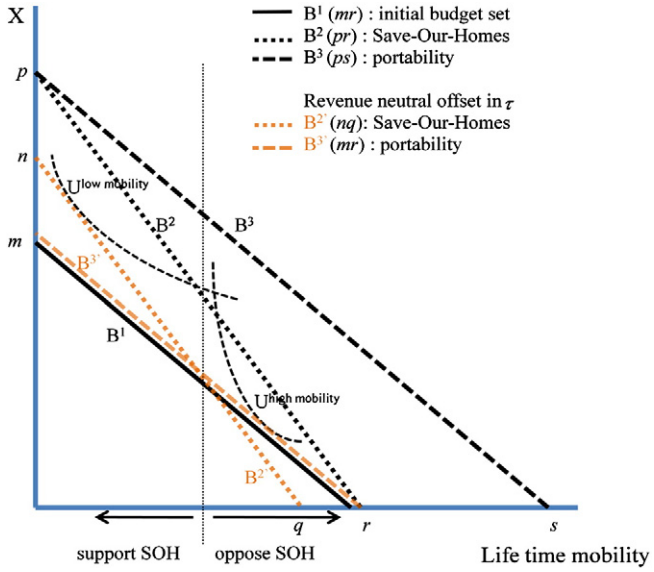

Fig. 3. Lifetime mobility and after-tax consumption under different assessment regimes. Note: B^2 and B^3 are the life time budget sets under the conventional assessment cap, SOH and when accumulated wedges are portable. $B^{2'}$ and $B^{3'}$ are the same budget sets when the millage rate is increased to hold revenue constant across regimes. It is the fact that rates must rise (or expenditures fall) that produces a tension between high and low mobility households affecting support for the portability amendment.

We illustrate this in Fig. 3 by graphing the permanent budget set when households consume only mobility and after-tax consumption. Each move incurs transactions costs, such as the commissions on the sale of a previous home. Were mobility costless, this figure would be a flat line ending at life time income. The initial budget set is denoted *mr*. Passage of SOH steepens the budget set, to *pr*, as lower mobility reduces the life-time tax burden and allows greater non-mobility consumption. Passage of the portability amendment shifts the budget set out to *ps*, which is parallel to the pre-SOH line. Thus households with a low taste for mobility (a low rate of decay in match quality) benefit more under a SOH regime and households with a high taste for mobility benefit more from portability. This gives rise to a mobility-related hypothesis.

Hypothesis 2. Support for the portability amendment increases with household mobility.

So far we have failed to offer any reason from a homeowner's budget standpoint to oppose Save Our Homes or the portability amendment. However, over time, Save Our Homes erodes a jurisdiction's base of assessed value. Portability further erodes the base because portability allows new movers to the jurisdiction to immediately reduce their assessed value below the market value of the new home. Jurisdictions that formerly relied on household mobility to reset assessed values to market values will find their tax base shrink (or fail to grow), forcing local governments to: increase the millage rate; increase some other taxes or fees; reduce public services; or pursue some combination of the above.

Much of the literature on assessment caps dwells on voters desire to limit expenditures and many opponents claimed it would harm public services.[20] However, in Florida some form of rate increase seems an equally plausible response. First, as the nominal cap on the millage rate is not binding, local governments can respond by simply increasing the tax rate. Florida voters may, in fact, anticipate such a policy response as county assessors are compelled by the state's Truth in Millage Act (passed in 1980) to mail each property owner the "roll-back" millage rate on the homeowner's tax bill — the rate that would leave revenue unchanged net of new construction.[21] We examine the tax share implications when revenue, R_j is held constant by endogenizing the tax rate, τ_i. In Fig. 3, a higher millage rate would pull the entire budget frontier in. We represent this effect by the budget constraints *nq* and *mr* for the SOH and portability regimes, respectively. Whether one is better off under SOH or portability depends on one's lifetime mobility. Households with low mobility attain a higher indifference curve under budget constraint *nq* than under *mr*, and so they oppose the portability amendment; the opposite is true for high mobility households.

To see this more clearly, note that in the case when revenue is held constant, a household's tax liability is determined by the property's share of the total assessed value in the jurisdiction (the tax base), B_j:

$$T = \frac{V}{B_j} R_j. \tag{5}$$

The greater the B_j, the smaller are the individual's tax share and tax. However, B_j, is just the sum of the market values of all taxable parcels in the jurisdiction, less total wedges:

$$T_i = \frac{V_i - W_i}{\sum V_n - \sum W_n} R_j. \tag{6}$$

The portability amendment, therefore, alters how $\sum W_n$ erodes the tax base. While the amendment increases a household's wedge for the next home, lowering tax share *then*, it can raise the tax burden in the *current* home, as other movers port their wedges and shrink the denominator in Eq. (6). More precisely, note that the $\sum W_n$ can be disaggregated into the sum of wedges of non-migrants (stayers), less

[20] Two examples of anti-amendment headlines appeared in the *Miami Herald* in the months leading up to the vote: "New Florida Residents Target Save Our Homes" (January 27, 2008) and "Tax Reform to Mean More Budget Cuts." (November 29, 2007).

[21] When property prices were rising, this rate would tend to fall; however, given the recent correction in house prices, the roll-back rate in many cities exceeds the actual rate. In addition to putting the portability amendment on the ballot, the 2007 legislature forced local governments to rescind recent increases in property tax revenue (lowering future non-school tax revenue between 3 and 9% for most municipalities) and made the existing roll-back rate the statutory rate (Clouser and Mulkey, 2008).

the wedges that sellers take with them, plus the wedges buyers port into their new homes:

$$T_i = \frac{V_i - W_i}{\sum V_n - \left(\sum W_n^{stayers} - \sum W_n^{seller} + \sum W_n^{buyer}\right)} R_j. \quad (7)$$

Under Save Our Homes but before portability, the reset provision set W_n^{buyer} to zero. However, after portability, W_n^{buyer} will be non-zero if the purchaser previously sold a home with an exemption in Florida. Thus, the portability amendment can raise or lower homeowners' lifetime tax burden depending not just on their own mobility, but on the mobility of other households in the city. Holding a voter's own mobility constant, higher mobility by other households in the jurisdiction raises the lifetime tax burden and should lower support for portability:

Hypothesis 3. Support for the portability amendment falls as the rate of mobility in the rest of the tax jurisdiction increases.

The ability to port wedges across jurisdictions introduces a final element of complexity into the voter's decision. If a migrant possessing a large wedge in one Florida city moves to another city that has experienced less appreciation, it will raise the assessment share of the existing residents in the destination city, holding others' mobility constant. This concern was voiced at the time of the vote by some north Florida counties, who feared an influx of south Florida residents porting large wedges and thus forcing budget cuts or rate hikes. Voters generally may have responded to this concern, as electoral support for the portability amendment was much lower in relatively affordable north Florida than in expensive south Florida. The impact of different types of mobility can be summarized in the fourth empirical hypotheses:

Hypothesis 4. Support for the portability amendment increases as the relative size of migrant wedges falls.

The balance of the paper tests these four alternative hypotheses empirically.

4. Data

This study combines precinct-level vote shares for the portability amendment with parcel level information on market and assessed property value, homestead status and date of purchase. We describe them in detail in this section.

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 portability amendment 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.[22] We obtained from the Florida Department of Elections the complete statement of votes at the precinct level. We supplemented this with GIS data of the 2008 election precincts from the Department of Elections for each county. It was not possible to obtain election results from Union County and Sumter County, so these counties were not included in our analysis.

Our dependent variable denoted y_i, is ln((number of yes votes divided by the total number of votes)×100 + 0.01).[23] There were other notable races on the ballot, and not all voters cast a vote for or against the portability amendment. When the votes were counted, however, it was a clear victory for portability. Out of 67 counties, 53 had majorities in favor. There were counties that supported the amendment throughout the state, but support was especially strong in south Florida. Miami-Dade, Palm Beach and Broward counties each voted about 70% in favor. Supporting counties ranged widely from small to large. In contrast, counties where a majority of voters opposed the amendment generally were small and rural. Two notable 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. Santa Rosa County was dropped from the analysis because variable names could not be reconciled with the standardized names used in other counties. This leaves 64 counties and 6475 precincts in our sample.[24]

Key to our analysis is the homeowners' existing Save Our Homes "wedge," the difference between the home's market value and its assessed value, both of which are reported for every parcel. County assessors are required to update a home's market (or just) value yearly, not only to account for market appreciation, but also for any additional improvements that may have been made on the parcel.[25] The wedge, W, is simply the difference between the just value and the assessed value. We then determine the precinct of each parcel and calculate the median wedge, W_i, value of that precinct for all single family, owner-occupied properties.[26] We also determine the share of property in the precinct that is currently claiming a homestead exemption.

4.3. Homeowner mobility

We expect that a household that would like to move but have a large wedge would support the portability amendment to escape the lock-in effect. While we do not observe taste for mobility directly, we can identify neighborhoods that appear to have faster turnover. We posit that people living in neighborhoods whose previous residents have exhibited shorter tenures would also have shorter occupancies — or would, but for the lock-in effect of Save Our Homes. We also attempt to model mobility and predict the *expected* mobility of current residents. These measures are described below.

The property level data from the assessors contain the years of the latest and the second most recent sale of each parcel in the state. Dividing 1 by the average number of years between the most recent

[22] 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.

[23] Before taking the log, we add a 0.01 so as not to exclude the several precincts that voted 0% in favor of the amendment. Removing these precincts from the sample did not change the results qualitatively.

[24] 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).

[25] 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.

[26] 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 a condo unit would behave more like a homeowner or as a potential landlord when voting.

and the second most recent sale yields a measure of "churn" in the precinct. We also construct an expected mobility measure by estimating a richly specified semi-parametric hazard model of the previous and current owners' duration in the home and then predict the share of homeowners likely to move in the next 1–3 years. A richer discussion of the expected mobility measure is provided in Appendix A.

Finally, we also rely on the U.S. Census, which asks whether a person occupied the same residence in 1995 as they did in 2000. From this question 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 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.[27]

A concern in our specification is the inherent simultaneity between wedge size and mobility: a homeowner with low mobility is likely to have built up a substantial wedge by not moving. We ensure identification by relying on lagged values in estimating churn and census mobility measures. In estimating the hazard-derived mobility, we control for the wedge but exclude it when we predict the current owner's duration in the home.

4.4. Other covariates

We control for socioeconomic and demographic factors that may influence the likelihood of voting for the portability amendment, specifically block group level characteristics from the 2000 census: percent non-Hispanic white, percent in various age groups, percent college-educated, median household income, median income squared and the percentage of the housing units that is renter-occupied.[28] In the same way as the census mobility rate is defined, each housing parcel is assigned the characteristics of the block group within which it is located. Then, the precinct average of this value is calculated, weighting by share of housing units. We also include GIS-determined distance to the nearest central business district (CBD) and include a dummy if the precinct is located in a central city of the MSA.

Voters 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 in the previous open presidential election for Al Gore in that block group. We then take a weighted average (as above) to create a precinct level variable.[29]

Finally, there are institutional and cultural differences between Florida counties, and so we include a full set of dummy variables for the 64 counties. County fixed effects are especially important for two reasons: (1) property appraisal and tax collection are done at the county level, and (2) Florida school districts are coterminous with counties, and a large portion of a homeowner's tax bill goes to the county to pay for schools. With the fixed effects, we are able to control for different assessment methods, practices and county public amenity levels. We are thus identifying the impact of tax wedge and mobility on votes across precincts and tax jurisdictions within each county. Table 1 provides summary statistics of the key variables in the analysis.

5. Analysis

To test our hypotheses, we first estimate a reduced-form linear regression of share of yes votes at the election precinct level on current tax wedges, measures of expected mobility and a set of controls.

The formal specification is:

$$y_i = X_i\Phi + \beta_1 + W_i + \theta_1 M_i + \mu_i \tag{8}$$

where y_i is the log share of yes votes in the precinct, X_i is the vector of control variables (which include a full set of county fixed effects), W_i is the median size of the tax wedge, M_i is a measure of average mobility and an error term, u_i. First, to test Hypothesis 1, we test the null hypothesis $H_0 1$: $\beta_1 = 0$, the size of the median wedge did not affect the share voting yes. Our alternative hypothesis is that precincts with a larger median wedge between market and assessed values will vote for the right to port those tax savings to a new home ($H_a 1$: $\beta_1 > 0$). Similarly, to test Hypothesis 2, we test the null hypothesis: H_0-2: $\theta_1 = 0$, that the average mobility of a household does not affect the precinct's share voting yes. The alternative is that precincts with higher mobility will vote for the right to port those tax savings to a new home (H_a-2: $\theta_1 > 0$).

5.1. Simple mobility measures

Estimation results using simple measures of mobility are reported in Table 2. 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, *W*. In the simplest regression (Column 1) with no other covariates except county fixed effects, *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 deviation) raises the yes share vote by 1.4%. For the precinct with the mean yes share of 63%, this translates to barely one percentage point increase. However, this is the only specification in which *W* positively and significantly raises the yes share.

Column 2 provides the parameter estimates after the inclusion of a rich set of additional control variables. The yes vote share in a precinct falls with educational attainment. Living in the central city reduces the likelihood of support. The precinct's share of non-Hispanic whites and median income are insignificant. Precincts with a high share of very young and elderly persons have lower levels of support for the portability amendment. This may reflect greater reliance on the local public services that would suffer if portability were to impact local budgets.

After inclusion of the covariates, the estimated coefficient of *W* is statistically non-significant. Given that a positive wedge is a necessary, but not sufficient, condition for Hypothesis 1, we find the small and non-significant parameter estimates on the wedge variable striking and suggestive that support for the portability amendment may have been driven by other considerations.

Columns 3 and 4 show that mobility plays an important role in determining support for portability. The churn measure is positive and significant, so that precincts with shorter ownership spells are more likely to support the amendment. The magnitude of the churn

[27] 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 has 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.

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

[29] 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, but we believe that any under vote should be largely uniform within counties and can thus be absorbed by county fixed effects.

Table 1
Summary statistics of variables used.

	(1) Full sample[a]		(2) Restricted sample[a]	
	Mean	S.D.	Mean	S.D.
Share of votes "yes" (percentage points)	63.1	(12.17)	62.3	(12.22)
Wedge in $1000s (market price–capped price)	48.773	(70.043)	0.619	(0.676)
Measures of mobility				
Moved in the last 5 years (census)	0.501	(0.120)	0.505	(0.126)
Moved into district from out of state	0.160	(0.052)	0.154	(0.041)
Moved into district from out of county	0.089	(0.053)	0.085	(0.051)
Churn (1/previous owner's duration)	0.190	(0.603)	0.195	(0.761)
Relative churn — churn/churn in other precincts in tax jurisdiction	1.02	(0.300)	1.02	(0.300)
1-yr expected mobility	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 on	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	

[a] 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.

suggests that a one standard-deviation increase in churn increases the yes share by 0.44 percentage points at the mean. The census measure of mobility implies a much larger effect.[30] Increasing the 5-year mobility rate by one standard deviation increases the share yes vote by 2.49 percentage points at the mean. These estimates provide support for Hypothesis 2.

Column 5 includes both the wedge and the churn measures. Despite the likely correlation 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 non-significant, which may seem counterintuitive given how favorably homestead property is treated under portability. However, with the exception of renters (which we control for) non-homestead property owners are unlikely to be voters. If the property owner could not claim the homestead exemption, it's unlikely they'd be eligible to vote. Thus, owners in low-homestead areas may support the measure because there is a large pool of non-homestead property to shoulder the tax burden.[31] However, any shifting would necessarily occur at the city or county level, not the precinct, so we introduce some additional jurisdiction variables and test for such tax-share shifting considerations in Section 6.

5.2. Predicted mobility measures

Table 3 reports the regression results from specifications incorporating the hazard-derived measures of mobility. Again, mobility seems to play an important role in support for the portability amendment. Whether we include a measure of expected mobility 1, 2, or 3 years into the future (Columns 1, 2 and 3), the estimated parameter is significant and positive.[32] 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 0.30 percentage points at the mean. The impact is about four times greater for two-year mobility. However, the coefficient estimate on wedge size remains non-significant.

Now, if expected future house price appreciation is modest, then an existing wedge and future mobility is necessary for portability to lower future taxes. In Column 4, we interact wedge size and predicted 1-year mobility. The (wedge × mobility) interaction is positive and significant at the five percent level. This suggests that mobile households with a larger tax wedge were more likely to support the portability amendment. These results lend further support for Hypothesis 2.

Finally, we control for underlying political ideology to guard against concerns about the irregular Democratic and Republican primaries. Column 6 of Table 2 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

[30] Note that while the census mobility definition encompasses renters who move as well as owners, we control for the level of renters in the precinct separately.

[31] 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 could oppose the portability amendment for the same reason childless couples support school bonds (Hilber and Mayer, 2004). We argue that most of the advantage of shifting the burden onto non-homestead properties occurred with the original Save Our Homes, and so the extra gain of shifting the portability cost is likely to be second order small.

[32] The standard errors may suffer from a generated-regressor problem as the expected mobility measures were created by predicting the survival in the home of each property owner and then averaging this value for each precinct. There is no ready analytical method for correcting the errors when the first stage is estimated at a lower level of analysis. 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 for the entire state would be very computationally intensive. Instead we treat Table 3 as a robustness check of the churn and census mobility measures.

Table 2
Determinants of vote share — wedge and simple mobility measures. Dependent variable = ln([Yes votes/(Yes + No)] × 100 + 0.01).

	(1)	(2)	(3)	(4)	(5)	(6)
	Wedge	Additional controls	Churn	Census 5-year mobility	Wedge + churn	+Share with homestead exemption
Wedge (just — assessed value)	0.0002**	0.00004			0.00003	−0.0001+
	(0.0001)	(0.0001)			(0.0001)	(0.00007)
Churn			0.012**		0.012**	0.014**
			(0.003)		(0.002)	(0.003)
Census mobility rate				0.316**		
				(0.076)		
% with homestead exemption						0.105
						(0.072)
Some college		−0.067	−0.063	−0.129	−0.065	−0.112
		(0.111)	(0.111)	(0.104)	(0.112)	(0.112)
Bachelor's deg.		0.269	0.283	0.182	0.281	0.260
		(0.224)	(0.230)	(0.221)	(0.227)	(0.219)
Graduate deg.		−0.470**	−0.472**	−0.470**	−0.479**	−0.461**
		(0.179)	(0.175)	(0.171)	(0.181)	(0.179)
Age 0 to 4		−0.782+	−0.781+	−1.400**	−0.780+	0.860+
		(0.412)	(0.412)	(0.447)	(0.412)	(0.443)
Age 5 to 14		−0.271	−0.240	−0.091	−0.244	−0.256
		(0.241)	(0.245)	(0.260)	(0.242)	(0.237)
Age 15 to 17		−0.820	−0.685	0.103	−0.694	−0.895
		(0.742)	(0.740)	(0.805)	(0.748)	(0.800)
Age 18 to 24		−0.095	−0.074	−0.164+	−0.075	−0.082
		(0.090)	(0.090)	(0.089)	(0.091)	(0.093)
Age 65 and above		−0.165**	−0.122**	−0.097*	−0.123**	−0.145**
		(0.043)	(0.044)	(0.048)	(0.044)	(0.047)
Median income		0.001	0.0004	0.0003	0.0004	0.0001
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Median income^2		1.90e−6	2.42e−6	2.68e−6	2.38e−6	4.77e−6
		(8.00e−6)	(8.29e−6)	(8.11e−6)	(8.24e−6)	(9.27e−6)
Non-Hispanic white		0.0006	0.0007	0.0008	0.0007	0.0007
		(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
% Renters		−0.0002	−0.0002	−0.001+	−0.0002	−3.42e−6
		(0.0005)	(0.0005)	(0.0006)	(0.001)	(0.0005)
Precinct located in central city		−0.034**	−0.033**	−0.025*	−0.033**	−0.033**
		(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Distance to CBD		−9.28e−7	−0.0001	0.0001	−0.00004	−0.00002
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	3.853**	4.006**	3.984**	3.874**	3.987**	3.961**
	(0.032)	(0.071)	(0.067)	(0.079)	(0.072)	(0.065)
Observations	6473	6471	6428	6471	6428	6428
R-squared	0.211	0.222	0.221	0.227	0.222	0.223

All specifications include county fixed effects. For scaling purposes, wedge is measured in $1000s. Robust standard errors in parentheses. +Significant at 10% level; *Significant at 5% level; **Significant at 1% level.

that the variable represents a relatively liberal precinct, this result suggests that voters on the political left are less likely to support portability. Still, controlling for ideology does not change our parameter estimates for wedge or mobility.

Alternatively, voters may have expected local governments to maintain revenues by raising taxes on other types of property.

5.3. Presence of racial and ethnic heterogeneity

We now expand the specification to accommodate alternative explanations of voter behavior. Leading up to the amendment, proponents claimed that it would lower taxes, while many opponents of the measure claimed it would adversely affect the budgets of municipal and county governments. This suggests that both proponents and opponents may have expected local governments to respond to portability, in part, by cutting expenditures. Examining county government data, Alesina et al. (2002) find evidence that racial heterogeneity may lower expenditures on public goods because voters are less able to identify with likely recipients or because likely beneficiaries find it harder to form political coalitions across ethnic lines. 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.[33] The second is the coefficient of dissimilarity that measures the degree of segregation across a municipality for any given level of racial heterogeneity in the population. A larger value suggests that blacks and Latinos are more geographically concentrated within the jurisdiction.[34]

The first two columns of Table 4 present the estimates. Controlling for share non-Hispanic white at the precinct level, Column 1 shows that more heterogeneous cities were less likely to support the portability amendment which in inconsistent with more heterogeneous

[33] This measure is defined in Alesina et al. (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.

[34] We also consider the possibility that voters do not 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. Again, because these indices are calculated at a geographical level different from the precinct, we weight the indices at our unit of analysis. Qualitative results from these measures are not significantly different, and so they are not reported here, although they are available from the authors.

Table 3
Robustness check/alternative measures of mobility/controls for partisanship. Dependent variable = ln([Yes votes/(Yes + No)] × 100 + 0.01).

	(1)	(2)	(3)	(4)	(5)
	Expected mobility			Wedge × mobility	Political indicator
	1-year	2-year	3-year		
Wedge	−0.0001	−0.0001	−0.00001	−0.0002^{+}	−0.0001
	(0.0001)	(0.0001)	(0.00004)	(0.0001)	(0.0001)
1-yr exp. mobility	0.375**			0.338*	0.343**
	(0.129)			(0.132)	(0.131)
2-yr exp. mobility		1.399**			
		(0.530)			
3-yr exp. mobility			0.093		
			(0.177)		
Wedge × 1-yr mobility				0.001*	0.001*
				(0.0004)	(0.0004)
Vote for Gore					−0.264**
					(0.030)
% with homestead exemption	0.036	0.107	−0.054*	0.038	0.018
	(0.053)	(0.081)	(0.022)	(0.054)	(0.055)
Some college	−0.078	−0.084	−0.095^{+}	−0.077	0.007
	(0.100)	(0.106)	(0.052)	(0.100)	(0.103)
Bachelor's deg.	−0.078	0.367^{+}	0.133	0.160	0.216
	(0.100)	(0.206)	(0.126)	(0.138)	(0.139)
Graduate deg.	−0.553**	−0.520**	−0.582**	−0.558**	−0.417*
	(0.167)	(0.177)	(0.138)	(0.167)	(0.165)
Age 0–4	−0.342	−0.697*	−0.120	−0.332	−0.285
	(0.220)	(0.347)	(0.196)	(0.218)	(0.215)
Age 5–14	−0.358^{+}	−0.265	−0.567**	−0.336	−0.122
	(0.214)	(0.234)	(0.114)	(0.218)	(0.216)
Age 15–17	−1.270^{+}	−1.163	−0.704**	−1.237^{+}	−1.035
	(0.746)	(0.785)	(0.267)	(0.742)	(0.752)
Age 18–24	−0.147*	−0.167**	−0.124*	−0.130*	−0.074
	(0.064)	(0.063)	(0.061)	(0.064)	(0.062)
Age 65 and above	−0.167**	−0.166**	−0.135**	−0.161**	−0.072^{+}
	(0.037)	(0.039)	(0.031)	(0.036)	(0.040)
Median income	0.002	−0.001	0.004**	0.002	−0.0003
	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)
Median income^2	−3.09e−6	8.20e−6	−0.0001**	−4.76e−6	5.25e−6
	(5.86e−6)	(9.79e−6)	(3.47e−6)	(5.46e−6)	(5.98e−6)
Non-Hispanic white	0.001**	0.001**	0.001**	0.001**	−0.0001
	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0002)
% Renters	−0.0001	−0.0003	−0.0001	−0.0001	−0.0004^{+}
	(0.0002)	(0.004)	(0.0002)	(0.0002)	(0.0002)
Precinct located in	−0.020*	−0.022*	−0.030**	−0.021**	−0.017*
central city	(0.008)	(0.087)	(0.005)	(0.008)	(0.0007)
Distance to CBD	0.001^{+}	6.18e−6	0.001*	0.001^{+}	0.001^{+}
	(0.001)	(0.001)	(0.0004)	(0.001)	(0.001)
Constant	3.898**	3.757**	3.969**	3.895**	4.077**
	(0.072)	(0.113)	(0.066)	(0.072)	(0.076)
Observations	6338	6307	6274	6338	6338
R-squared	0.382	0.265	0.541	0.382	0.392

All specifications include county fixed effects. For scaling purposes, wedge is measured in $1000s. Robust standard errors in parentheses. $^{+}$Significant at 10% level; *Significant at 5% level; **Significant at 1% level.

population being more tax averse. However, Column 2 finds that controlling for a given level of racial and ethnic heterogeneity, precincts in more segregated towns were more likely to support portability. This is expected and suggests that cities that are *a priori* less receptive to potentially redistributive public services (as indicated by their level of segregation) are more likely to favor the tax cutting potential of the portability amendment. We take the combined findings as mixed evidence that voters expected portability to actually lower expenditures. In any case, these additional controls do not reduce the magnitude or significance of the mobility measure or make the coefficient on wedge size positive.

5.4. 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 portability if they believed that revenue loss from their declining assessments would be made up by higher taxes on non-homestead or non-housing property.[35] Thus, one explanation for the non-significant parameter estimates on share homestead in the previous regressions is that a high homestead rate suggests that there are fewer other properties that can shoulder the tax burden.[36] In Column 3 of Table 4, we include the share of the jurisdiction's tax base that is currently receiving a homestead exemption. Our prior is that a high *jurisdiction* homestead rate should lower support while a high *precinct* homestead

[35] Dye et al. (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.

[36] 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 the portability amendment for fear of jeopardizing their home values. However, this effect is likely to be small and second order.

Table 4
Curbing expenditure vs. shifting the tax burden? Dependent variable = ln([Yes votes/(Yes + No)] × 100 + 0.01).

	(1)	(2)	(3)	(4)
	Tax jurisdiction racial heterogeneity	Tax jurisdiction racial dissimilarity	Share of tax base covered by homestead exemption	Share of tax base by property class
Wedge (just − assessed value)	−0.0001	−0.00004	−0.00004	−0.00004
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Churn	0.012**	0.011**	0.011**	0.011**
	(0.002)	(0.002)	(0.002)	(0.002)
% with homestead exemption	0.048	0.051	0.035	0.047
	(0.076)	(0.076)	(0.067)	(0.069)
Vote for Al Gore in 2000	−0.211*	−0.203*	−0.206*	−0.228**
	(0.089)	(0.090)	(0.087)	(0.077)
Racial heterogeneity (tax jurisdiction)	−0.177*	−0.202**	−0.180**	−0.144**
	(0.072)	(0.073)	(0.053)	(0.044)
Racial dissimilarity (tax jurisdiction)		0.0001**	0.001**	0.0004**
		(0.0001)	(0.0001)	(0.0001)
Share of jurisdictions tax base[a] covered by				
• Homestead exemption			0.124	−0.107
			(0.130)	(0.103)
• Residential (inclusive of homesteads)				0.516*
				(0.213)
• Commercial				0.457
				(0.293)
• Industrial				0.366
				(0.372)
Constant	4.233**	4.224**	4.187**	3.930**
	(0.106)	(0.107)	(0.115)	(0.209)
Observations	6393	6393	6393	6393
R-squared	0.276	0.279	0.280	0.289

All specifications include county fixed effects and all demographic controls. For scaling purposes, wedge is measured in $1000s. Robust standard errors, clustered at the jurisdiction level, in parentheses. +Significant at 10% level; *Significant at 5% level; **Significant at 1% level.
[a] Excluded category is agricultural, which is assessed based on current use.

rate increases support because it entails a large number of households that could benefit from portability.[37] However, the estimated parameter on jurisdiction homestead rate is positive, though not statistically different from zero. In Column 4, we include three new measures of the tax base of the precinct's jurisdiction: the share of the jurisdictional tax base that is residential, commercial and industrial.[38] The estimate on the share of homesteaded residential land (−0.107 + 0.516 = 0.409) is not significantly different from share commercial or industrial. It also is not statistically different from the share of non-homestead residential land. These findings suggest that voters did not expect their local government to offset the portability amendment by raising taxes on non-residential properties.[39]

6. Migration and relative mobility

The reason homestead property owners could be ambivalent about the portability amendment is that while they can port an exemption at some time in the future, so can other homeowners. The ultimate tax burden hinges on their mobility, but also the mobility of fellow residents. Citizens living in a city where there are many migrants coming in from other parts of 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 even after the passage of portability.

We augment our reduced-form linear regression equation with additional measures derived from Eqs. (6) and (7) in Section 3:

$$y_i = X_i\Phi + \beta_1 + W_i + \theta_1 M_i + I_j'\gamma + \theta_2 + \frac{M_i}{M_j} + e_j + \mu_i. \quad (9)$$

Where I_j is a vector of types of in-migrants to the tax jurisdiction and $\frac{M_i}{M_j}$, the ratio of mobility in the precinct over jurisdiction average mobility.

Column 1 of Table 5 provides the baseline result for this analysis. We return to the 2000 census measure of tax jurisdiction (city-level) mobility and precinct level mobility to be consistent with the census-derived migration variables discussed below. This specification also includes all of the jurisdiction tax-base share measures from Column 4 of Table 4. While precincts with high rates of mobility are more likely to support the portability amendment, controlling for precinct (own) mobility, voters in high-mobility *jurisdictions* do not appear to be more likely to support the amendment.

However, in Column 2 of Table 5, we include out-of-state mobility into the jurisdiction. Cities with a large share of out-of-state (and thus wedge-less) in-migrants are significantly more likely to support portability. A one-standard-deviation increase in the share of residents from out-of-state increases support for the amendment by 2.7 percentage points. Given the large magnitude of this coefficient compared to the previously estimated coefficients, we believe this evidence is consistent with the tax shifting hypothesis. At the same time, the parameter estimate on jurisdiction mobility which now captures the effect of in-state migration is negative and significant. Residents in cities with high rates of in-state migration can expect the assessed value of land to grow more slowly as wedges start to be

[37] Though not shown, Table 4 includes as a regressor the share renting from the 2000 census, so we believe the share non-homestead is capturing ownership of second homes, a large component of the housing market in Florida.
[38] 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.
[39] This may be because the shifting of the burden onto non-homesteaded properties was mostly done at the SOH adoption stage, rather than at the portability amendment stage. However this is simply a speculation as we do not attempt to test for it in the analysis.

Table 5
Types of migrants, portable wedges and relative mobility. Dependent variable = ln([Yes votes/(Yes + No)]×100 + 0.01).

	(1)	(2)	(3)	(4)	(5)	(6)
	Jurisdiction mobility	+Out-of-state mobility	+In-state mobility	+Accounting for source of migrants	Relative mobility	
					Full sample[a]	Restricted sample[a]
Wedge	−5.97e−6	−0.00001	−0.00001	0.00001	−0.00004	−0.00004
	(6.03e−5)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Mobility	0.203**	0.203**	0.204**	0.200**		
	(0.048)	(0.048)	(0.049)	(0.054)		
Jurisdiction-wide mobility	−0.018	−0.474**	−0.523**	−0.590**		
	(0.095)	(0.100)	(0.105)	(0.107)		
Jurisdiction-wide mobility from outside Florida		0.810**	0.841**	0.891**		
		(0.156)	(0.143)	(0.191)		
Jurisdiction-wide mobility from another Fla. county			0.094	0.134		
			(0.112)	(0.099)		
Jurisdiction's average wedge				−0.003		
				(0.003)		
Ratio of jurisdiction wedge to county immigrants' wedge[b]				0.009+		
				(0.005)		
Churn					0.0005	−0.010*
					(0.009)	(0.005)
Relative churn (own precinct churn/jurisdiction average churn)					0.002	0.003**
					(0.001)	(0.001)
• Marginal effect						0.01**
						(0.001)
Constant	3.875**	4.006**	4.008**	3.956**	3.911**	3.902**
	(0.228)	(0.208)	(0.209)	(0.255)	(0.212)	(0.112)
Observations	6435	6435	6435	6435	6303	3918
R-squared	0.292	0.296	0.296	0.297	0.289	0.341

"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 4. For scaling purposes, wedge is measured in $1000s. Robust standard errors, clustered at the jurisdiction level, in parentheses. +Significant at 10% level; *Significant at 5% level; **Significant at 1% level.
[a] 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.
[b] See text for explanation of how the weighted county immigrants' wedge is calculated.

ported around, and, controlling for their own desire to port a wedge, they are more likely to oppose the portability amendment.

We further divide the in-state migrants into those coming from the same county and those coming from a different county in Column 3 of Table 5. The resulting coefficient estimates do not appear to be statistically different from one another. However, not all in-state migrants should have the same effect on the tax base. If a voter lives in a locality where the average wedge is low, relative to other localities in the state, then the average in-migrant's wedge will be relatively large. Put differently, the assessment base of a low-wedge jurisdiction is more exposed to disruption from in-state migration than is a high-wedge district. To the extent that these produce countervailing effects, this may explain why the in-state migration coefficient variable is insignificant. In order to test this alternative hypothesis, more data are needed to determine *from where* a jurisdiction's in-state immigrants come.

We obtained from the Internal Revenue Service the U.S. Population County-to-County Migration Data for 2008. These data, compiled from individual tax returns, report the number of new residents who moved to each U.S. county and the county or state where they migrated from. Because the data are created annually, they represent a more accurate snapshot of migration during intercensal years. The principal limitation is that the IRS data lacks intra-county variation in migration flows. For each of the 64 counties in our analysis, we create the average "county in-migrants' wedge," which is the weighted average of the average wedges in the other 63 Florida counties, where the weight is the relative frequency of migration as given by the IRS data.[40] Now, as our specifications include county fixed effects, simply putting this calculated average into our regressions would be ineffectual; therefore, we create the ratio of jurisdiction's average wedge to the county immigrants' wedge. Column 4 reports the results. The coefficient on this ratio is positive and significant at the 10% level, providing some evidence that voters in low wedge towns in counties with high wedge in-state migrants are less likely to support portability. This is consistent with voters recognizing that the immigrants will erode the tax base with their ported wedges offsetting any savings they could enjoy from future portability. This finding gives some credence to why north Florida municipalities largely opposed to the amendment and why south Florida remained relatively silent. However, we note that the magnitude of our finding is small, which may be due to the lack of jurisdiction-level mobility data at our disposal.

As a final examination of the tax shifting considerations in voting behavior, we look at relative mobility. We construct new variables based on the ratio of a precinct's own mobility relative to other homeowners in the same jurisdiction. The hypothesis is that if people in one precinct are relatively less likely to move than those in other precincts in the same jurisdiction, they should be more willing to oppose the amendment because their own tax bill will rise. 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 5 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 the 10% cut-off.

However, when we limit the analysis to cities with twenty-five or more precincts in order to mitigate the effect of having precinct churn included in both the numerator and the denominator of the ratio (Column 6), 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 portability increases in precincts that are *relatively* more mobile compared with other precincts in the same town. We take this as further evidence for

[40] Here is a simplified example: County A receives migrants from only two counties: 30% come from County B and 70% come from County C. The average wedge enjoyed by residents of County B is $50,000, and the average wedge of County C is $80,000. The "county immigrants' wedge" of County A is then (0.3)($50,000) + (0.7)($80,000) = $71,000. In our calculations, we would use all the Florida counties that send migrants to County A.

Hypothesis 4, 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-mobility households. The portability amendment 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, the portability amendment 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 view.

7. Conclusion

While many states have introduced property assessment caps, Florida's Amendment 1 is the first law to allow all owners to port their exempted value. This policy shift may significantly improve the mobility of homeowners and increase the efficient matching of homeowners to homes, but at the expense of further horizontal inequity. It is also hard to reconcile the strong support for both the original cap and the portability amendment with a desire to reward low or high mobility residence. Also, we find only weak evidence that voters were attempting to constrain local expenditures, though these specifications are at best an indirect test.

We explore voter support for portability by regressing precinct-level voting data from the portability referendum on the assessment wedge formed by the difference between the just value and the assessed value of a house and various measures of household mobility, socioeconomic, geographic and political variables. We find evidence that voters with *ex ante* high mobility were more likely to support the portability amendment but the size of the existing wedge was not an important determinant. We also found that support was higher in tax districts whose in-migrants were "wedge-less" and support was lower when the mobility rate in the rest of the tax district was higher. However, support was affected by the share of non-homestead properties, perhaps because these properties were already taxed at the revenue maximizing rate. Our results are more consistent with voters attempting to lower their tax share at the expense of future Florida home owners.

Acknowledgements

We are grateful to Brad Huff at Florida State University for GIS assistance. This paper has benefited from comments from participants at seminars at the Federal Reserve Board of Governors, Georgia State University, the University of Melbourne, the University of Adelaide and Florida State University and session participants at the Annual National Tax Association and the North American Regional Science Association meetings. All errors are our own.

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.[41] Building on the work of Sinai (2000), 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 1. The full set of coefficient estimates is available from the authors upon request.

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:

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

where the non-parametrically fitted baseline survival curve, $\hat{S}(t)$, 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):

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

Appendix Table 1
Summary of parameter estimates from 66 Cox proportional hazard models of mobility.[a]

	Mean parameter estimate	Positive[b]	Not significant[b]	Negative[b]
Education (share)[c]				
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)[d]	−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

[a] 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.
[b] Significance based on a 5-percent cut-off using a two tailed test.
[c] All variables relating to age, education and income are drawn from 2000 census block group summary statistics.
[d] 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."

[41] 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.

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 the portability amendment:

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

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_i^n, $n = 1, 2, 3$.

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.

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