

State Taxes, Migration, and Capital Gains Realizations

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Abstract

We analyze the impact of state capital gains taxes on migration and realization. We find the probability of migrating to a zero-tax state before realization rises with potential tax savings. Exploiting individual-level variation in tax savings, we use a dynamic discrete choice model to quantify the behavioral effects of state capital gains taxes. Savings in zero-tax states drive \$2 billion in annual realizations by former residents of positive-tax states. Reducing top rates would decrease avoidance by out-migrants, but the fiscal externalities are below 3% of the mechanical cost. These effects are driven by changing migration rather than retiming existing moves.

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I Introduction

Capital gains taxes make up a substantial portion of state revenue collected from high-income taxpayers. Amongst millionaires in California, for example, they account for more than one-third of state personal income tax liability (California Department of Finance, 2019). Amid popular concerns that high state taxes may drive residents to migrate out of state, it is natural to ask: what is the impact of state capital gains taxes on interstate migration and capital gains realizations?

In this article, we examine the effect of state capital gains taxes on migration and realization decisions. We use US administrative tax records to examine decisions amongst individuals with large quantities of capital gains. We observe that, for residents of positive-tax states, the probability of migrating to a zero-tax state and then realizing one’s gains increases substantially with the size of the tax bill that an individual can avoid.

Motivated by that evidence, we seek to estimate the causal effect of state capital gains taxes on migration and realization decisions. While there is substantial body of prior work analyzing the impact of taxes on migration, responses to state capital gains taxes have remained relatively unexplored. Existing work tend to focus on the impact of labor income taxes (Young et al., 2016; Young and Varner, 2011; Varner et al., 2018; Akcigit et al., 2016; Kleven et al., 2013; Moretti and Wilson, 2017) or, in some instances, estate taxes (Moretti and Wilson, 2021) or corporate taxes (Suárez Serrato and Zidar, 2016). The closest work is Agersnap and Zidar (2021) who measure the impact of state capital gains tax changes on the share of top 10% earners located in each state. They use that elasticity in calculating the revenue maximizing federal rate.¹

In this paper, we build a dynamic discrete choice model where individuals can choose their location and the timing of their capital gains realization. We estimate our dynamic discrete choice model using the Euler conditional choice probability approach (Scott, 2013; Aguirregabiria and Magesan, 2013; Kalouptsi et al., 2021). This allows us to estimate the key parameters of the model with a simple difference-in-differences regression (Diamond et al., 2017). In our estimation, we exploit plausibly exogenous variation in migration and realization incentives due to variation in the size of one’s capital gains as a share of household wealth. We utilize the fact that potential tax savings are higher for individuals with larger realizations. Our primary regression compares individuals who migrate before realization to individuals who realize before migration. We examine how the relative probability of these choices varies with the size of one’s potential tax savings as a share of wealth.² The results of these regressions align with our initial graphical evidence: potential tax savings have a clear effect on the likelihood that individuals migrate to zero-tax states in advance of major

¹We focus on the realization and revenue impact of state tax reforms, rather than using the migration responses instrumentally to examine the revenue consequences of federal reforms. We exploit individual variation in the size of capital gains realizations interacted with state tax rates, rather than pooling event studies of small state tax changes. Our approach allows for counterfactual policy analysis that captures both migration and retiming responses. In Section IV.D we compare these estimates to ours. Our estimated migration response is meaningfully smaller.

²As we discuss in Section V, our results look similar if we dispense with the choice model and estimate a difference-in-differences regression that compares migration levels before and after realization. That alternate approach is not preferred because it relies on the somewhat crude assumption that those who migrate before realizing are “treated” while those who realize before migrating constitute a control group.

realizations.

We use the estimates from our difference-in-difference regression to examine the effects of unobserved counterfactual policy changes. In particular, we focus on two distinct policy counterfactuals identified in the model. First, we compare the status quo to a counterfactual where residents of positive-tax states cannot avoid state capital gains taxes via migration. In this scenario, residents of positive-tax states must pay capital gains taxes in their origin state regardless of whether they migrate. Compared to this counterfactual, we estimate that zero-tax opportunities in the status quo lead to an additional \$2.0 billion in yearly realizations in zero-tax states. This \$2.0 billion represents more than 20% of major realizations in zero-tax states by former residents of positive-tax states, but less than 1% of all major realizations in positive-tax states.

Second, we estimate the change in state revenue that would occur if the highest tax states were to make marginal reduction in their capital gains tax rates. We find that the decrease in out-migration amongst high income realizers has a de minimis impact on overall state tax revenue. We examine reductions in state tax, such as the elimination of California’s millionaire surtax, and find that the behavioral response from reduced tax avoidance by out-migrants produces a positive fiscal externality that is less than 3% of the mechanical revenue lost from those policies.

Taken together, these results suggest that state capital gains taxes produce a clear, detectable behavioral response on the part of those with large potential tax liabilities. That said, these behavioral responses have a very small impact on the estimated revenue collected from lowering top tax rates. Reductions in tax avoidance offset almost none of the revenue lost from lowering capital gains rates.

II Institutional Context and Data

II.A Institutional Context

Individuals can generally avoid state capital gains taxes if they migrate to a zero-tax state before they realize their gains. The success of this approach relies on two basic principles of state taxation:

Principle 1: State tax obligations differ substantially for residents and non-residents. Residents³ of a given state owe taxes to their home state on all income, but non-residents only owe taxes on income that is sourced to that state (Hellerstein et al., 2001).⁴ For example, a resident of California owes taxes to California on income sourced to any location. By contrast, a resident of another state only owes taxes to California on income sourced to California. This also means that residents of zero-tax states owe no taxes on income sourced to their home state.

Principle 2: Income on intangible assets is sourced to an individual’s current state of residence. This principle is important because many large capital gains come from the sale of intangible assets. For example,

³Individuals are considered generally residents if they have a primary residence in a given state or they spend more than 183 days there (Thomas, 2018).

⁴In order to avoid double taxation, residents are generally given a tax credit to offset their tax payments in other states. If the tax rate is lower in the non-resident state, the credit generally covers the taxes paid to the non-resident state but leaves the individual with a supplemental tax liability on that income. If the tax rate is higher in the non-resident state, this generally means no taxes are paid to the resident state on that income but no additional refund is provided by the resident state.

if an individual is selling stock, that asset is considered intangible.⁵ Similarly, if an individual is selling off a business, assets such as intellectual property or corporate “goodwill” are considered intangible.⁶

Putting these two principles together, it is clear how a motivated individual can avoid state capital gains taxes by changing residency to a zero-tax state. If an individual then can structure their capital gains sale such that most of their gains are on intangible assets, they will mostly be subject to capital gains taxes in their new destination state. In that case, the individual will pay little to no state capital gains tax.

II.B Data

Our data is drawn from the universe of US federal tax returns. In particular, we use data from IRS Form 1040 between 1996 and 2019. We collect information on capital gains realized from Form 1040, Schedule D. In our primary sample we restrict to individuals who, at some point, reside in a positive-tax state. We also restrict our sample to individuals who have a capital gains realization within 4 years of residing in a positive state. We classify individuals by size of their largest capital gains realization.⁷ Our primary sample is composed of individuals with a potential state capital gains tax liability over \$20,000.⁸ For each individual we measure the size of the tax bill they would face if they realized their gain in their state of origin.⁹ We then group individuals by the size of their tax savings relative to their estimated wealth. We estimate wealth using an version of the capitalization approach developed in Smith et al. (2023).¹⁰

Table 1 provides summary statistics about our primary sample. It shows that the mean age in our sample is approximately 60. The mean capital gains realization is \$3.16 million with a median realization of approximately \$890k. 34% of our sample is composed of individuals who initially reside in California, 11.3% from New York and 5.7% from New Jersey. According to a sub-sample of 2012 tax filers analyzed by the IRS Statistics of Income program, 29.7% of these large capital gains come from gains on C-corporation stock. 19.7% come from gains earned by pass-through businesses or through the sale of pass-through business assets. Gains on primary residences represent just 3.1% of these gains.¹¹

III Model and Estimation Strategy

We seek to estimate the impact of state capital gains taxes on migration and realization decisions. Our estimation strategy is motivated by the graphical evidence presented in Figure 1. We focus on a sample of

⁵These assets are considered intangible regardless of whether the gains are on stock in a publicly traded C-corp, closely held C-corp, or S-corp.

⁶For more on the tax considerations regarding business sales, see Collura and Friedman (2017)

⁷In our sample, this largest gain represents 84% of dollar-weighted gains in a 3-year window and 76% in a 5-year window.

⁸State tax liability is calculated net of SALT deductions. Dollar values are in 2014 dollars.

⁹Our data on state top tax rates are from NBER TAXSIM (Feenberg and Coutts, 1993) and Robinson and Tazhitdinova (2025). When calculating tax savings, we adjust for the federal SALT deduction.

¹⁰We adapt their method to add a measure of the present discounted value other non-capitalized income flows, in particular, we include wages, positive Schedule C income, pension income (excluding IRAs), and Social Security income. In the discussion to follow we refer to this as discounted labor income. This helps us capture the full set of cash flows that might impact migration and realization decisions. Details of our method can be found in Appendix B.IV.

¹¹Additional descriptive statistics including information on filer income and industry of employment can be found in Table 1. Appendix Table A.1 shows the same summary statistics for the subset of individuals who move to zero-tax states. That sub-group is relatively similar to the full set of realizers, but they have larger mean realizations at \$4.58 million and are less likely to originate in California (34.0% versus 23.7%).

individuals who live in positive-tax states seven years prior to their realization event. We plot their rates of migration to zero-tax states. We group individuals by the size of the state tax bill they would owe if they realized their gains in their origin state.¹² (We refer to this as their potential tax savings.) The pattern in this figure is clear: the probability of migrating to a zero-tax state in advance of realization rises substantially with the size of an individual’s potential tax savings. We see, for example, that individuals with more than \$1 million in potential tax savings have a 7.9% probability of migrating in the four years before realization. By contrast, individuals with less than \$20k in savings have a 3.3% probability of migrating.

This pattern suggests that state capital gains taxes have an impact on the migration and realization decisions of those with large capital gains. That said, this graphical evidence alone is not sufficient to determine the causal effects of state capital gains taxes. We turn to a dynamic discrete choice model to formally quantify those causal effects. We apply the Euler conditional choice probability approach to estimating our model and show that the key parameter of the model can be identified using a difference-in-differences regression. That regression examines the number of individuals who migrate before realization and compares them with individuals who realize before migration. It exploits variation in individual tax savings as a share of wealth to examine how migration rates change with the size of the migration incentive. Interpreted in the context of Figure 1, we are comparing the size of the hump before realization to the more limited levels of migration after realization. The model elucidates how the comparison of these two groups can be used to isolate our parameter of interest and subsequently explore relevant policy counterfactuals.

III.A Setting Up The Model

We set up the dynamic discrete choice model as follows. In each period t , individual make two choices: they choose their state of residence and they choose whether they realize. Their choice set is: $C_{it} = (s_{it}, r_{it})$. Here, s_{it} the state where individual i chooses to live in period t . We let $s_{it} = \{P_j, Z_j\}$. In other words, the individual can choose to be in a positive-tax state P_j or a zero-tax state Z_j .¹³ r_{it} is an indicator capturing whether the individual realizes in period t .

There are a number of state variables in the model, given by the vector x_{it} . We let: $x_{it} = (d_i, s_{it-1}, \tau_{s_{t-1}} Q_i)$, where d_{it} captures demographic characteristics of person i . This includes indicators for 10-year age bins and 10 decile bins for estimated household wealth, W_i . s_{it-1} captures the individuals state of residence in the previous period. Q_i captures the size of the individuals’ unrealized capital gains¹⁴ and $\tau_{s_{t-1}}$ captures the tax rate in state s , where the individual lived in period $t - 1$. Together, $\tau_{s_{t-1}} Q_i$, captures taxes owed on unrealized capital gains and $\tau_{s_{t-1}} Q_i / W_i$ captures taxes owed as a share of household wealth.

Our analysis utilizes the fact that individuals have differing tax obligations depending on the size of their

¹²This value is net of the federal SALT deduction.

¹³Here, j corresponds to the individual state that an individual chooses. In our simplest specification individuals choose to reside in a high- or zero-tax state. In our primary specification, they will chose individual states as destinations. For the time being, we put aside migration to non-zero-tax states. As discussed in Section V, tax motivated migrants travel almost exclusively to zero-tax states.

¹⁴As noted in Section II, we classify individuals by the size of their largest capital gain. In Section V, we show that this assumption has a minimal impact on our results.

capital gains. To calculate those tax obligations, we assume that each individual realizes some fixed quantity, Q_i . We consider this a reasonable assumption because we are examining the sale of major assets such as business interests. That said, in Section V we address the possibility that individuals adjust the size of their realizations in response to tax rates. We show that endogenizing realizations with respect to tax rates does not qualitatively impact our results.

Having established the choice set and state variables, we set up the following flow payoff for each individual:

$$\pi_{it}(s, r) = d'_{it}(\alpha_{s,g} + \eta m_{it}(s_{it}, s_{it-1})) - \theta f(\tau_{s_{t-1}} Q_i / W_i) r_{it} \quad (1)$$

$\alpha_{s,g}$ represents a vector of coefficients that can be estimated. $\alpha_{s,g}$ captures the value of residing in the current state, s during tax regime g , for individuals with the various demographic characteristics captured in d_{it} .¹⁵ A tax regime is simply a period of time where taxes in a given state remains approximately constant.¹⁶ $m_{it} = \mathbb{1}(s_{it} \neq s_{it-1})$ is an indicator for whether the individual has migrated since the previous period. η is the coefficient capturing the cost of migrating. $f(\cdot)$ captures the fact that the individuals payoff is a function of the tax savings.¹⁷ θ is our coefficient of interest.

Formally, θ captures the value of tax savings in the individual payoff function.¹⁸ It is the key input for conducting our counterfactual analysis in Section IV to follow. This is because we will conduct our counterfactual analysis by implementing hypothetical changes in tax laws. We will examine how these changes in policy impact the payoffs associated with various courses of action, such as migration before realization. With those corresponding payoffs we can estimate the change in probability of taking various courses of action. This gives us a direct way to estimate the change in realizations or change in tax revenue collected in response to hypothetical tax changes. It is also worth noting here θ is best interpreted relative to the other components of the payoff function, rather than interpreted in levels. This is because renormalization of the coefficients would not impact the probability that an individual takes each course of each course of action.¹⁹

Once we have our set of flow payoffs, we can write out the flow utility for each individual and, subsequently their value function. Flow utility is given by $u_{it}(s, r, x) = \pi_{it}(s, r) + \varepsilon_{it}(s, r)$ where we make the standard

¹⁵In this setup we allow the preference for locations to vary with demographic characteristics such as wealth. For simplicity, we omit income flows from our payoff functions. Our ultimately analysis compares the relative ordering of migration and realization for individuals with the same level of wealth. Differences in wealth will differ our in our primary regression equation and so the levels are omitted here.

¹⁶As discussed in Section IV.A, the inclusion of too many choice or state variables introduces bias in the calculation of our log-odds probability ratios. The use of tax regimes allows us control for changes in location preferences that vary over time with changes in state tax rates without using full state-by-year fixed effects. We define a tax regime as any time period in which state top tax rates do not vary more than 2pp.

¹⁷In setting up the model, we don't specify the function that translates potential tax savings into individual payoffs. We discuss this function in more detail in Section IV.A.

¹⁸It captures the monetary value of the reduction in taxes paid.

¹⁹Given the lack of a clear interpretation of the nominal values of the payoff coefficients, it is typical for the literature to discuss ratios between coefficients to facilitate an interpretation. For example, Kalouptsi et al. (2021) considers an example using the decisions of taxi drivers. As the paper estimates a coefficient on wages and a coefficient on fatigue costs, the implied nominal value of fatigue costs can be interpreted based on the ratio between coefficients. Almagro and Domínguez-Iino (2025) takes a similar approach to valuing locational amenities by comparing the value of the associated coefficients to the value of the rent coefficient. In the section below we highlight the value of tax savings in our regression to preferences across states as given by the fixed effect values in our primary regression.

assumption that $\varepsilon_{it}(s, r)$ are i.i.d across i, s, r , and t with a Type I extreme value distribution. Given this, the individual's dynamic optimization problem is given by the following e value function:

$$V(x_{it}) = \max_{s,r} \{u_{it}(s, r, x_{it}) + \beta E[V(x_{it+1}(s_t, r_t))]\} \quad (2)$$

We can also write down their choice-specific (or conditional) value function given by:

$$\bar{V}(s_t, r_t, x_{it}) = \pi_{it}(s_t, r_t) + \beta E[V(x_{it+1}(s_t, r_t))] \quad (3)$$

This gives us the returns of an action before the realization of the error term, $\varepsilon_{it}(s, r)$.

III.B Toward a Regression Equation

We apply the Euler Conditional Choice Probability approach (Scott, 2013; Kalouptsi et al., 2021) to derive a regression equation and estimate θ . This approach begins by drawing upon a version of Lemma 1 from (Arcidiacono and Miller, 2011):

$$V(x_{it}) = \bar{V}(s_t, r_t, x_{it}) - \log Pr(s_t, r_t | x_{it}) + \gamma$$

γ in this equation is Euler's Gamma. (This equation is derived in the context of the Euler CCP in Scott (2013), drawing upon properties of the logit.) We can use this to manipulate our equation for the choice-specific value function

$$\begin{aligned} \bar{V}(s_t, r_t, x_{it}) &= \pi_{it}(s_t, r_t) + \beta E[V(x_{it+1}(s_t, r_t))] \\ &= \pi_{it}(s_t, r_t) + \beta E[\bar{V}(s_{t+1}, r_{t+1}, x_{it+1}(s_t, r_t)) - \ln Pr(s_{t+1}, r_{t+1} | x_{it+1}(s_t, r_t)) + \gamma] \end{aligned}$$

This equation holds for any set of choices (s_t, r_t) and any set of follow-up choices (s_{t+1}, r_{t+1}) .

In order to handle the continuation values that appear in this equation, we utilize the logic of renewal actions. For two sets of individuals who start in the same place and end in the same place, their value forward-looking functions can be equal even if they took different paths to get to that end point. This is the key intuition from Scott (2013) that greatly improves the tractability of this problem.²⁰ In our setup we focus on two sets of individuals: those who migrate before they realize and those who realize before they migrate. These individuals start in the same place and end in the same place, even if they take different actions along the way. For the individuals who migrate before they realize, they make the following choices: $(Z, 0)$ and then $(Z, 1)$. For the individuals who realize before they migrate, they make the following choices: $(P, 1)$ and then $(Z, 0)$. Both of these groups find themselves in the zero tax state after period 2 having realized their capital gains.²¹ With that in mind, we write out the choice specific value function for the

²⁰Historical migration choices can impact future location choices Kennan and Walker (2011), which is why we only compare within individuals who start and end in the same location.

²¹The use of only two periods here is slightly stylized. Below we discuss how this maps onto our data.

initial choices along both of these paths

$$\begin{aligned}\bar{V}(s_t = Z_j, r_t = 0, x_{it}) &= \pi_{it}(s_t = Z_j, r_t = 0) \\ &+ \beta E[\bar{V}(s_{t+1} = Z_j, r_{t+1} = 1, x_{it+1}(s_t, r_t)) - \ln Pr(s_{t+1} = Z_j, r_{t+1} = 1 | x_{it+1}(s_t = Z_j, r_t = 0))] + \gamma\end{aligned}$$

$$\begin{aligned}\bar{V}(s_t = P_j, r_t = 1, x_{it}) &= \pi_{it}(s_t = P_j, r_t = 1) \\ &+ \beta E[\bar{V}(s_{t+1} = Z_j, r_{t+1} = 0, x_{it+1}(s_t, r_t)) - \ln Pr(s_{t+1} = Z, r_{t+1} = 0 | x_{it+1}(s_t = P_j, r_t = 1))] + \gamma\end{aligned}$$

We can then take the difference between these two choice-specific value functions and utilize the fact that the continuation values: $V(x_{it+1})$ are nearly identical.²² In particular, $V(x_{it+1}) = EV(x_{it+1}) + \epsilon_t(s_t, r_t)$. The value function is equal to the expected value function plus an expectational error. And we can substitute in this equation, cancel out the equal value functions and only be left with an expectational error. We will call that expectational error $\epsilon_t(s_t = Z_j, r_t = 0) - \epsilon_t(s_t = P_j, r_t = 1) = \Delta\epsilon_t$. Putting it together, we get:

$$\begin{aligned}\bar{V}(s_t = Z_j, r_t = 0, x_{it}) - \bar{V}(s_t = P_j, r_t = 1, x_{it}) &= \pi_{it}(s_t = Z_j, r_t = 0) - \pi_{it}(s_t = P_j, r_t = 1) \\ &+ \beta[\pi_{it+1}(s_{t+1} = Z_j, r_{t+1} = 1) - \pi_{it+1}(s_{t+1} = Z_j, r_{t+1} = 0)] \\ &- \beta[\ln \frac{Pr(s_{t+1} = Z_j, r_{t+1} = 1 | x_{it+1}(s_t = Z_j, r_t = 0))}{Pr(s_{t+1} = Z_j, r_{t+1} = 0 | x_{it+1}(s_t = Z_j, r_t = 1))}] \\ &+ \Delta\epsilon_t\end{aligned}$$

From there, we can utilize the following equivalence from Hotz and Miller (1993):

$$\bar{V}(s_t = Z_j, r_t = 0, x_{it}) - \bar{V}(s_t = P_j, r_t = 1, x_{it}) = \ln \left[\frac{Pr(s_t = Z_j, r_t = 0 | x_{it})}{Pr(s_t = P_j, r_t = 1 | x_{it})} \right]$$

We can then combine that with the previous equation to get:

$$\begin{aligned}\ln \left[\frac{Pr(s_t = Z_j, r_t = 0 | x_{it})}{Pr(s_t = P_j, r_t = 1 | x_{it})} \right] &+ \beta \left[\ln \frac{Pr(s_{t+1} = Z_j, r_{t+1} = 1 | x_{it+1}(s_t = Z_j, r_t = 0))}{Pr(s_{t+1} = Z_j, r_{t+1} = 0 | x_{it+1}(s_t = P_j, r_t = 1))} \right] \\ &= [\pi_{it}(s_t = Z_j, r_t = 0) - \pi_{it}(s_t = P_j, r_t = 1)] - \beta[\pi_{it+1}(s_{t+1} = Z_j, r_{t+1} = 1) - \pi_{it+1}(s_{t+1} = Z_j, r_{t+1} = 0)] + \Delta\epsilon_t\end{aligned}$$

We can then use our previous formula for the flow payoffs to simplify the right-hand side:

$$\begin{aligned}[\pi_{it}(s_t = Z_j, r_t = 0) - \pi_{it}(s_t = P_j, r_t = 1)] &- \beta[\pi_{it+1}(s_{t+1} = Z_j, r_{t+1} = 1) - \pi_{it+1}(s_{t+1} = Z_j, r_{t+1} = 0)] \\ &= d'_{it}(\alpha_{P_j, g} - \alpha_{Z_j, g}) + (d'_{it} - \beta d'_{it+1})\eta + \theta(f(\tau_P Q_i / W_i) - f(\tau_Z Q_i / W_i)) + \Delta\epsilon_t\end{aligned}$$

Putting it all together we get the following equation

$$\begin{aligned}\ln \left[\frac{Pr(s_t = Z_j, r_t = 0 | x_{it})}{Pr(s_t = P_j, r_t = 1 | x_{it})} \right] &+ \beta \left[\ln \frac{Pr(s_{t+1} = Z_j, r_{t+1} = 1 | x_{it+1}(s_t = Z_j, r_t = 0))}{Pr(s_{t+1} = Z_j, r_{t+1} = 0 | x_{it+1}(s_t = P_j, r_t = 1))} \right] \\ &= d'_{it}(\alpha_{P_j, g} - \alpha_{Z_j, g}) + (d'_{it} - \beta d'_{it+1})\eta + \theta(f(\tau_P Q_i / W_i) - \beta f(\tau_Z Q_i / W_i)) + \Delta\epsilon_t\end{aligned}$$

²²We see evidence for this in the data when considering future migration decisions. We examine a sample of individuals who are residing in a zero-tax state four years after their realization. We look at the rate at which these individuals return to their origin state and compare these rates among those who migrate before realization versus migrate after realization. The rates of return migration are very close, 12.40% versus 11.90% respectively.

(4)

When we set $\beta = 1$ ²³ this can be re-arranged into the following form:

$$\ln \left[\frac{Pr(s_t = Z, r_t = 0, s_{t+1} = Z, r_{t+1} = 1 | x_{it})}{Pr(s_t = P, r_t = 1, s_{t+1} = Z, r_{t+1} = 0 | x_{it})} \right] = z'_{it}(\alpha_{P_j, g} - \alpha_{Z_j, g}) + (d'_{it} - d'_{it+1})\eta + \theta(f(\tau_{H_j} Q_i / W_i) - f(0)) + \Delta \epsilon_t \quad (5)$$

This is our primary regression equation. On the left-hand side we have the log-odds ratio, which compares the probability of migrating before realization and the probability of realizing before migration.²⁴ On the right-hand side, $d'_{it}(\alpha_{P_j} - \alpha_{Z_j})$ captures individual preferences for residing in the positive-tax and zero-tax states. This is achieved using origin and destination fixed effects interacted with all demographic characteristics. $(d'_{it} - d'_{it+1})\eta$ captures time-varying demographic differences between those taking each path, and $\theta(f(\tau_{P_j} Q_i / W_i) - f(0))$ captures the role of potential tax savings. The model motivates a difference-in-differences regression that exploits variation in realization size as a fraction of an household's wealth, to estimate the causal effect of potential tax savings. (As we explain in Section IV.A, $f(\tau_{P_j} Q_i / W_i)$, measures the size of an individual's tax savings relative to their wealth.) Intuitively, we are comparing across sets of individuals who only differ based on the size of their capital gains as a fraction of their wealth, and therefore, the size of their potential tax savings. This regression equation examines how the relative odds of each course of action varies with the size of those tax savings. This formalizes our investigation of the pattern we saw in Figure 1 where the odds of migration before realization rose with tax savings.

The key exogenous variation in this setup is the variation in potential tax savings across individuals. Crucially, this setup requires that the relative ordering of migration before realization (and vice versa) is not impacted by potential tax savings except through the direct causal effect of those tax savings. It is important to note that this is distinct from assuming that the desire to migrate can't vary with potential tax savings or household wealth.²⁵ As Figure 1 Panel A shows baseline rates of migration can, and do, vary with the size of potential tax savings. And this is not a surprise, wealthier individuals may have different migration preferences than their less-wealthy peers. In the context of the model, these preference can even differ across destinations.²⁶ For example, Appendix Figure A.2 shows rates of migration to Florida as compared to other zero-tax states. When compared to zero-tax states such as Nevada and Texas, baseline rates of migration to Florida are disproportionately large among individuals with large gains. The primary estimation strategy

²³ β must be calibrated in this dynamic discrete choice exercise. For the purposes of our calculations we assume that $\beta = 1$. The structure of our setup means that small modifications to β will have a minimal impact on our results. In our primary regression the β will fall out of tax savings terms because we impose the assumption that $f(0) = 0$. In other words, tax savings should not have an impact on an individual's behavior if they don't have any tax savings. If we were to impose the assumption that β is less than 1, we would need to alter our analysis such that individuals who migrate and then realize \$Q are compared to individuals who realize slightly less than \$Q before migrating. Our analysis in Appendix B however, shows that this modification has very little impact on our results.

²⁴It is important to note that this is only calculated among individuals who are in a zero-tax state in period $t - 1$. This is captured in the state variables, x_{it} . So the set of individuals observed in the numerator here are moving to the zero tax state between period $t - 1$ and period t . The fact that $s_t = Z$ indicates that they have moved in the first period before realizing in the second.

²⁵Any level difference in migration rates across tax savings bins is irrelevant in the context of the model as the left-hand side simply captures the relative probability of migrating before or after realization.

²⁶The model allows for place specific preferences α_{Z_j} that vary with demographic characteristics d_{it} . As we control for wealth, W_i , our approach even allow for wealth to impact the preference for migration before versus after realization. It simply rules out differences in tax savings impacting that preference.

established in Equation 5 does not rule out such patterns. Instead, our estimation strategy is simply identified off differences relative ordering of migration and realization among individuals with different quantities of tax savings.

IV Results and Counterfactuals

IV.A Estimating our Coefficient of Interest

Capturing the causal effect of state tax changes requires estimating Equation 5. Informed by the evidence in Figure 1, we consider periods in the model to last for four years²⁷ and measure time w relative to realization or migration.²⁸ The left-hand side of the regression is a log-odds ratio with the probability of migrating before realizing in the numerator and the probability of realizing before migrating in the denominator. These probabilities are calculated conditional on x_{it} , which means they are calculated within demographic-specific cells. In our primary regression, we encounter a problem typical in dynamic discrete choice estimation – the number of observations in each cell is relatively limited. Such a limited number of observations could produce bias in our estimates (Almagro and Domínguez-Iino, 2021), and so we follow the approach of Kalouptside et al. (2021) and predict the left-hand side using a logit regression. In particular, we use the logit to smooth our conditional choice probabilities across our age, income and state bins. (We show in Appendix Table A.2 that this approach to estimating our conditional choice probabilities has a limited impact on our results.)

We are interested in calculating θ , our coefficient on $f(\tau_{P_j} Q_i / W_i) - f(0)$, which captures the impact of potential tax savings on individual payoffs. Thus far, we have written the expression $f(\tau_{P_j} Q_i / W_i) - f(0)$ rather than $\tau_{P_j} Q_{it} - 0$ in order to remain agnostic about the appropriate functional form in the context. In practice, we use the following functional form $f(\tau_{P_j} Q_i / W_i) = \ln(1 + (\tau_{P_j} Q_{it} / W_i))$, where W_i corresponds to the estimated wealth of individual i .²⁹ In other words, this captures tax savings as a fraction of total household wealth.³⁰ It reflects the fact that Figure 1 Panel B shows how migration to zero-tax states varies with normalized measure of tax savings. For each year relative to realization we regress the migration on tax savings as a share of wealth and plot the associated gradient. This is consistent with the same basic pattern found in Figure 1 with a concentrated spike in migration before realization among individuals with large tax savings.

This is the key variation used to estimate Equation 5. In that context, we focus on the relationship

²⁷As we show in Appendix Table A.2, shortening the period to three years misses some of the behavioral response but extending the periods out to five or six years has a very small increase on the size of our estimates. This serves to further justify the choice of the four year window.

²⁸If an individual migrates in year t and realizes in year $t+2$, we want to consider that realization that occurs after migration. If the timing of realization weren't measured relative to the timing of migration, it is possible these actions would be considered to take place in the same period. If individuals migrate and realize in the same tax year, we consider that to be a case of migration prior to realization. That is because individuals file tax year t based on their location between January and October of $t+1$.

²⁹As noted above, we estimate wealth using the capitalization approach developed in Smith et al. (2023) and then augmented to include the present discounted flow of labor income.

³⁰As this is approximately equal to $(\tau_{P_j} Q_{it} / W_i)$ it reflects the fact that the value of a fixed quantity of tax savings can decline with size of one's pre-existing wealth. The log functional form here also enables robustness checks in Section V that vary the curvature of this function by measuring savings relative to flow value of wealth rather than stock values.

between the log odds ratio (migration before realization relative to migration after realization) and potential tax savings as a share of wealth. Figure 2 visualizes our findings, plotting the relationship across bins of potential tax savings. The relationship is strongly positive, as the relative probability of migrating before realizing rises with the size of potential tax savings. In the context of the model, this regression produces an estimate for our primary object of interest, θ , which measures the payoff value of tax savings. In particular, we estimate that $\theta = 9.9$. As noted above, the magnitude of θ is best interpreted in relation to the other payoff parameters in the model. So for example we can compare this value of θ to baseline preferences of individuals to live in specific states, as measured by the coefficients on our fixed effects $\alpha_{Z_j,g}$ and $\alpha_{P_j,g}$. We find the coefficient on Nevada is approximately 0.20 greater than the coefficient on South Dakota. Comparing this to our value of θ , it suggests that the payoff from tax savings equal to 5% of wealth generates the approximately 2.5 times the average payoff of residing an additional period in before realization Nevada instead of South Dakota.³¹ We use the value of θ to conduct our policy evaluation, estimating the behavioral response to two key policy counterfactuals.

IV.B Impact of Zero-Tax Opportunities on Realizations

In this section we examine how tax avoidance opportunities impact capital gains realizations in zero-tax states. In particular, we consider a counterfactual where residents of positive-tax states cannot avoid state capital gains taxes via migration to zero-tax states. Those residents must instead pay capital gains taxes in their origin state regardless of whether they migrate. We compare this counterfactual to the status quo and estimate that zero-tax opportunities in the status quo lead to an additional approximately \$2.0 billion in yearly realizations in zero-tax states.

We estimate this counterfactual by evaluating the following expression:

$$\sum_Q \sum_x (N_{Q,x} Q (P(A|x, \tau_Z = 0) - P(A|x, \tau_Z = \tau_P))) \quad (6)$$

This gives us the change in total realizations in response to the policy change. Here, A represents the course of action of moving before realizing. So, $P(A|x, \tau_Z = 0)$ represents the probability of migrating in advance of realization if zero-tax states do not levy capital gains taxes. $P(A|x, \tau_Z = \tau_P)$ represents the probability of migrating in advance of realization if residents of positive-tax states must pay their origin state tax rate in any destination. In order to solve for the total change in realizations we multiply the change in probabilities by N_Q , the number of individuals realizing that quantity and Q , the quantity an individual realizes.

The key probability we need to estimate is $P(A|x, \tau_Z = \tau_P)$. That is a counterfactual probability not observed in the data, but it can be estimated using inputs from our primary regression equation. With that estimate in hand, we can then evaluate Equation 6 for each set of state variables x_{it} . In particular, we can

³¹This preference is identified of the rate of migration prior to realization relative to after realization. It measures a common preference across tax savings bins and is focused on the relative probability rather than the levels of migration.

plug in observed values for Q , N_Q , and $P(A|x, \tau_Z = 0)$ to estimate the change in realizations.³²

In order to estimate $P(A|x, \tau_Z = \tau_P)$ we draw upon the estimates from our dynamic discrete choice model and rely upon the properties of the logit. The probability of taking any given course of action can be written as the ratio of choice specific value functions. For example for a given course of action A ,

$$P(A|x, \tau_Z = 0) = \frac{\exp(\bar{V}(A, x_i, 0))}{\sum_J \exp(\bar{V}(J, x_i, 0))} \quad (7)$$

Here, $\bar{V}(A, x_i, 0)$ represents a choice-specific value function based on the flow payoffs from Equation 1. J indexes potential courses of action. When zero-tax opportunities are available, migrating before realizing produces the following choice-specific value function: $\bar{V}(A, x_i, \tau_Z = 0) = d'\alpha_Z + d'_i\alpha_Z + d'_i\eta - \theta f(0) + E[V(x_{i,t+2})]$. When zero-tax opportunities are eliminated, that value function changes to: $\bar{V}(A, x_i, \tau_Z = \tau_P) = d'_i\alpha_Z + d'_i\alpha_Z + d'_i\eta - \theta f(\tau_H Q_i/W_i) + E[V(x_{i,t+2})]$. These value functions only differ by a function of θ , which we have already estimated. So, we can use the change in the choice-specific value function to estimate a change in the probability of migrating before realizing.

Appendix B outlines the step-by-step procedure for outlining the change in $P(A|x, \tau_Z = \tau_P)$. As compared to $P(A|x, \tau_Z = 0)$, the expression of $P(A|x, \tau_Z = \tau_P)$ has both a different numerator and denominator when writing the ratio of choice specific value functions. The change in the numerator is simply $\exp(-\theta(f(\tau_2 Q_{it}) - f(0)))$, the change in the payoffs when the tax rate changes. The change in the denominator also includes that $\exp(-\theta(f(\tau_2 Q_i/W_i) - f(0)))$ adjustment term because choice specific value function $\bar{V}(A, x_i, 0)$ is also found in summation in the denominator. Subject to the assumption that the change in policy does not change the continuation value function for any course of action, we can solve for the new probability of migrating before realizing.³³

We then use that information to solve Equation 6 and produce our estimate of \$2.0 billion in yearly realizations, reported in Table 2. As noted above, this \$2.0 billion is more than 20% of major realizations in zero-tax states by former residents of positive-tax states, but less than 1% of all major realizations in positive-tax states.³⁴ This indicates that tax incentives are an important consideration amongst the specific population of movers from positive-tax to zero-tax states. When one considers the stock of all individuals originating in positive-tax states, however, tax incentives lead very few of those individuals to change to change the timing and/or location of their migration decisions.

³²In our simplest specification we observe $P(A|x, \tau_Z = 0)$ directly. In our primary specification we use the logit to get a smoothed prediction of this probability.

³³We consider this assumption to be reasonable as individuals who move to the zero tax state will have realized their gains by the time they arrive at period $t+2$. Relatively to the old policy, the only difference is the slight changes in their wealth level due to the additional tax savings. And for all other migration destinations, the policy change does not introduce any change in the tax rate.

³⁴Estimates of the total quantity of realizations are drawn from SOI data that does not restrict to the largest realizations by individuals. The realizations we observe are just 0.7% of this SOI figure. We use a conservative bound of 1% to account for the fact that among the large realizers in our sample, the primary realizations we observe are 84% of dollar-weighted gains in a 3-year window and 76% in a 5-year window.

IV.C Distinguishing Between New Migration and Retiming

In interpreting our results, it is important to note that the \$2.0 billion is simply the total quantity of new realizations in zero-tax states. The analysis thus far does not identify whether these realizers are individuals who have moved to a zero-tax state in response to the tax incentive or who would have moved anyway and have retimed their gain. In this section, we examine both of those channels and find that the \$2.0 billion in realizations is driven by new moves rather than the retiming of gains. Distinguishing between these channels is important in the discussion to follow as it impacts the fiscal externalities associated with tax rate changes. If an individual retimes their gain, their origin state only loses the tax revenue associated with that gain. If an individual is induced to make a new move out of state, then their origin state also loses the tax revenue associated with their future labor and capital income.

In order to build intuition on this question, we start by examining raw migration rates in the years after realization. Appendix Figure A.3 Panel A, extends from Figure 1 and plots the rate of migration to zero-tax states for 8 years after realization. In addition to showing a large spike in migration before the time of realization, the graph shows relatively flat rates of migration for all individuals in the years after realization. Across those years, it also shows no clear change in the migration rates across tax savings bins.³⁵ The key thing here is that there is the spike in migration prior to realization, “excess mass,” and there is no corresponding reduction in migration in the years after realization, “missing mass.” If one conceptualizes that missing mass as the quantity of migration that has been shifted across time, it is clear that that retiming is minimal relative to the quantity of new migration. This visual inspection suggests that new migration is the dominant behavioral response to zero tax opportunities but it does not, by itself, constitute proof. In this section, we build upon the existing estimation strategy to quantify the relative contribution of retiming and new migration to the total effect of tax rates on realizations in zero-tax states. We begin by estimating a window over which individuals retime and then estimate counterfactual realizations driving by retiming alone. We show that new migration explains essentially all of the realizations in zero-tax states.

In order to the extent of retiming, we need to determine the time window within which individuals might retime. Intuitively, if individuals retime within a certain window, then we can compare rates of migration in that window to rates of migration outside that window. We can utilize that logic in the context of the model to construct a new counterfactual and distinguish between choices that are influenced by retiming and those are not. We quantify the window of retiming by examining how the gradient of migration with respect to tax savings changes in the years after realization. We do this by examining a distinct set of migration decisions from those in our primary sample: in Figure 3 Panel A we focus on migration from zero-tax to positive-tax states. We regress the size of an individuals’ potential tax savings on an indicator on an indicator for migration. We construct this gradient in each year after realization. This panel shows two things: 1) a large reduction in the gradient in the years prior to realization and 2) a small increase in the gradient in the years after realization. Crucially for the purposes of our analysis, the missing mass begins at approximately

³⁵We can also see a similar version of this pattern in Figure 1B, as the gradient across savings bins is relatively after year 3.

four years prior to realization and the excess mass appears only in the three years after realization. This suggests that individuals are shifting their realizations from a maximum of four years relative to realization. This four year window for retiming is also broadly consistent with the pattern found in Figure 1 Panel B where the gradient decreases slightly from Years 1 through Year 3 after realization but then flattens out and rebounds just slightly in Year 4.

Having shown that retiming behavior is likely concentrated within a four year window around realization, we can now return to our model in Section III and seek to quantify the role of retiming relative to new migration. In particular, we are seeking to measure $P(B|x, \tau_Z = 0) - P(B|x, \tau_Z = \tau_P)$, this is the change in the probability of realizing in the high-tax state before migrating to the zero tax state. We observe $P(B|x, \tau_Z = 0)$ but in the context of our original model we have no clear way of identifying $P(B|x, \tau_Z = \tau_P)$, the counterfactual probability of migrating after realizing if there are no zero-tax opportunities. We cannot estimate this directly in the model because the logit model predicts that when the payoff to Action A (migrating before realizing) changes, there are proportional switches to Action A from all other courses of action. Rather than relying on the proportional switching assumption, we construct a separate estimate for $P(B|x, \tau_Z = \tau_P)$. The key is that original setup in the model only considers migration decisions through four years after realization. We now make use of the migration rates of individuals who migrate five to eight years after their realization. We draw a new sample of individuals who originate in a high-tax state and realize a large gain in that state. We then examine the rate at which these individuals migrate to the zero tax state five to eight years after realization. If retiming behavior is concentrated within four years after realization, then these individuals can be considered to have no tax incentive nor any retiming incentive. This means that the rate of migration in Years 5-8 after realization gives us a prediction of the counterfactual migration rate after realization in the absence of tax incentives. Details of our approach can be found in Appendix B. In the context of the model, the choice to migrate in Years 5-8 after realization has the following payoffs: $d'_i \alpha_P + d'_i \alpha_Z + d'_i \eta + \theta f(0) + E[V(x_{i,t+2})]$. The probability of making this choice is given by the payoff of this relative to all other courses of action in the two periods after realization. The payoffs associated with those courses of action are the same as in our zero-tax counterfactual in Section IV.B above. Taken at face value this means that the rate of migration in Years 5-8 after realization captures the counterfactual migration rate in the absence of retiming incentives. That said, in order to estimate the role of retiming we also need to account for one other factor in the context of our model: individuals may have a preference for non-tax reasons to coordinate their migration and realization, doing both in a relatively narrow time window. Mapping this to the model, we can conceptualize this as a preference to migrate within one period of realization rather than two. In order to account for this preference, we draw upon data from a new set of actions: migration between positive-tax states. We once again consider a set of individuals who realize in their origin tax state and now compare the rate at which people migrate to other positive-tax states in Years 1-4 versus 5-8 after realization. Neither of these actions come with tax savings, but we can use the probability of these two courses of action to estimate the relative increase in payoffs associated with migrating close to

realization.³⁶ We then multiply that relative increase in payoffs by the probability of migrating to a zero-tax states in Years 5-8 after realization. Putting it all together we can then estimate the change in migration due to the retiming incentive, $P(B|x, \tau_Z = 0) - P(B|x, \tau_Z = \tau_P)$ and we find that it is approximately zero. The average observed rate of migration after realization, $P(B|x, \tau_Z = 0)$ is 3.94%, and the predicted rate of realization in the absence of retiming incentives, $P(B|x, \tau_Z = \tau_P)$ is 3.99%. Consistent with the lack of an Ashenfelter Dip observed in Appendix Figure A.1, this suggests that our primary results are driven by new migration rather than retiming.

It is worth noting that while retiming decisions look to be relatively infrequent, there is strong evidence of switching across migration destinations. In particular, many of the individuals who migrate to zero-tax states appear to have been individuals who would have migrated to other locations in the absence of tax incentives. We can see this pattern in Figure 3 Panels B-D. These figures plots the gradient of migration with respect to tax savings across three sets of movers: movers between high-tax states, movers from high-tax to low-tax states, and movers from low-tax to low-tax states.³⁷ In each case, we see clear evidence of a negative gradient in the years period to realization. This means that individuals with large capital gains are less likely to migrate to these locations immediately prior to realization. Quantitatively, this decline in realization can explain more than 21% of the migration to zero-tax states observed in Figure 1.³⁸ In other words, many of the migrants to zero-tax states such as Florida and Texas would have migrated to higher tax states prior to their realization, but choose the zero-tax state due to the tax incentive.

IV.D Fiscal Externalities of State Tax Changes

Thus far, our focus has been on the impact of state capital gains taxes on dollars realized. In this section, we explore the fiscal externalities of a new policy counterfactual: a reduction in top marginal tax rates. We consider the impact of a 1 percentage point reduction in top tax rates and estimate the increase in state revenue from reduced tax avoidance by out-migrants. We find that this positive fiscal externality offsets at most 3% of the mechanical cost of the policy.

We consider the case of California to provide intuition for this result. From from 2005 to 2011, California had a 1pp surtax on those earning over \$1 million. We estimate the revenue change from eliminating the surtax in the following manner:

We begin by following the same approach as in Section IV and writing migration probabilities in terms

³⁶As noted in Appendix B, our implicit assumption here is that the relative probabilities across these courses of action capture the change in migration costs when migrating more years after realization. This also assumes that location switching incentives are not causing a meaningful change in rates of migration to high-tax states among the individuals who choose to realize in the four years after migration. In order to address this concern, we repeat our analysis with individuals with small tax savings who are subject to limited location switching incentives. These individuals have tax gains less than 1% of their wealth. We find approximately the same pattern as observed and counterfactual migration rates differ by just .12 percentage points or less than 4% of the observed migration rate.

³⁷We define high-tax states as those with tax rates above 6%.

³⁸As the dynamic discrete choice model is not well equipped to quantify substitution patterns that deviate from proportional switching, we quantify this effect by comparing the observed gradient in Figure 3 to a counterfactual gradient of zero. This is designed to be relatively conservative as the baseline gradient in observed in those figures is slightly above zero outside of Years -4 to -1.

of choice-specific value functions. In this case, we modify the payoff associated with realizing in one's origin state.³⁹ This allows us to estimate changes in the probability of migration in advance of realization. For example, from 2005-2011, Californians with potential state capital gains tax liabilities that were more than 8% of their wealth had a 6.09% probability of migrating to a zero-tax state prior to realization. We estimate that a 1pp reduction in California's top marginal rate would have reduced that migration probability from 6.09% to 5.77%. Translating those small probability changes into dollars realized, we estimate that individuals originating in California would realize \$45.3 million fewer dollars in zero-tax states. These results are reported Table 2.

Next, we then translate that figure into a fiscal externality. If we multiply the \$45.3 million realized by California's top marginal tax rate, we find that the state would gain approximately \$4.6 million in revenue.⁴⁰ Between 2005 and 2011, California collected an estimated \$36.05 billion in yearly capital gains revenue from large realizations. That means that a 1pp reduction in top marginal tax rates would have a mechanical cost of approximately \$360 million. Consequently, a \$4.6 million increase in revenue from reduced tax avoidance by out-migrants would offset approximately 1.29% of mechanical costs.⁴¹

While we focus here on the state of California due the presence of a millionaire surcharge, we can repeat this basic exercise for each individual state. We find that the fiscal externality is less than 2.5% in all cases, with an average of 1.1%. As explained in Appendix B.VII, this variation across states is primarily explained by variation in baseline rates of migration to zero-tax states as well as changes in baseline levels of wealth across states.

In interpreting this magnitude of this fiscal externality, it is important to be clear both about i) the time period over which these effects are measured and ii) which income can be shifted to the zero-tax state. For the fiscal externality calculated above, we assume that only the large capital gain can be shifted across state lines but that no labor income or future capital gains would be subject to the lower zero-tax rate. This could be an over-estimate or an under-estimate depending on the relative importance of several forces.

On the one hand, our 1.1% could be an underestimate if individuals are able to move future capital gains and labor income across state lines. For example, if we consider a window of 8-years after realization and assume that all future gains capitals are not subject to state tax, that would increase the fiscal externality from 1.1% to 1.4%. If we also assume that all future labor income is not subject to state taxes, that would increase the fiscal externality from 1.1% to 1.7%. Figure 4 displays the year-by-year changes in these externalities. In absolute terms, this is a relatively small change in the fiscal externality, but, in relative terms, it is quite a large increase as compared to the initial estimated effect. This suggests that the permanent residence change of these migrating individuals is driving a meaningful portion of the long-run externality.⁴²

³⁹This impacts individuals who take several different course of action. The reduction in top tax rates changes payoffs for individuals who stay in their home state and realize, individuals who realize in advance of migration, and individuals who realize before moving to a non-zero tax state.

⁴⁰This calculation implicitly assumes that realizations are subject the highest marginal tax rate. We consider this a reasonable approximation because 93% of the revenue here comes from dollars in excess of \$1 million AGI.

⁴¹These effects are approximately equal for larger changes in the tax rate. For a 3pp change in the tax rate, the fiscal externality would be 1.25% and for a 5pp change it would be 1.20%.

⁴²This 1.1% figure could also be an underestimate as individuals who migrate to zero-tax states may avoid sales tax and

There are also two key reasons why the estimate 1.1% fiscal externality might be a slight over-estimate. First, interstate migrants might not avoid 100% of their origin state tax burden. For example, an individual might sell a business that has gains on tangible assets, taxed in their origin, and gains on intangible assets, taxed in their destination. Adjusting for such considerations would be straightforward if we observed state taxes paid, but our federal data provides limited information about state taxes. To address this concern, we use data on the SALT deduction. In Figure 5, we plot the state income tax deductions as a fraction of AGI. The data suggests that migration to a zero-tax state results in a less than 64% reduction in state and local taxes paid.⁴³ This is merely an approximation, but it suggests that former residents of high-tax states may be unable to shift the entirety of their capital gains across states.

Second, our revenue calculation assumes that individuals realize a fixed quantity of capital gains. It could be, however, that the presence of a zero-tax opportunity causes individuals to realize assets they would have otherwise held indefinitely. For example, an individual who chooses to realize a \$10 million gain in Florida might have, in the absence of that opportunity, simply passed some of the unrealized asset along to their heirs. Step-up in basis tax rules mean that the individual’s origin state would collect no revenue on the unrealized gain. In that case, a reduction in top tax rates would reduce realizations in zero-tax states, but it would not increase revenue in high-tax states.

In order to aid in the interpretation of these results we compare our estimates to those reported in the recent literature. In particular we focus on Rauh and Shyu (2024) and Agersnap and Zidar (2021), which examine migration responses to changes in state tax rates. In the case of Rauh and Shyu (2024), they examine an increase in the top income rate in California and find very large income changes along the intensive margin. When it comes to changes on the extensive margin, however, changes in out-migration the effects are quite small. They report that the state loses only 4.2% of the mechanical tax revenue of the policy change due to increased out-migration. This small fiscal externality is consistent with the findings in our work.⁴⁴ Moreover, the policy they examine includes changes in labor income and capital gains taxes. While they do not separately isolate the impact of labor and capital gains taxes on out-migration, it is worth noting that they observe no statistically significant effect on capital gains along the intensive margin.

In the case of Agersnap and Zidar (2021), they estimate elasticity of population with respect to the net of tax rate of 1.52. In this paper, we calculate the change in population due to out-migration to zero-tax states and find an estimated elasticity of just 0.23. We caution against a direct comparison of these elasticities due to the differences in their underlying object of interest. Agersnap and Zidar (2021) examine changes in

property tax in their origin state.

⁴³This may be driven by the presence of tangible business assets in own’s origin state as well as gains on personal real estate. Table 1 reports the composition of capital gains among residents of high-tax states with large realizations. This data, drawn from the IRS’s Sale of Capital Assets Study shows that 3.1% of these gains are in primary residences while 7.3% are from depreciable real property and 6.7% are from residential rental property.

⁴⁴They calculate an elasticity but strongly advise against over-interpreting the result. In particular, they report an elasticity of the migration rate with respect to the tax rate is ~ 4 and the elasticity of the migration rate with respect to the net of tax rate is ~ 15 . They note, however, that they are observing a potentially large one-time response to a policy change rather than a change in migration rate flows. These elasticities differ meaningfully from those we discuss below in the context of Agersnap and Zidar (2021). In that work, they calculate the elasticity of the population with respect to the net of tax rate rather than the elasticity of migration flows with respect to the net of tax rate.}

the population of earners in the top 10% while we examine changes in the number of individuals with very large capital gains realization, and Agersnap and Zidar (2021) examine total changes in population while we focus on changes in population due to out-migration. That said, given the baseline rates of migration in our context, it is not surprise that our estimates that below those previous estimates. Even if we look at individuals in California with the greatest potential tax savings (more than \$1m in total and greater than 5% of their wealth) we observe that just 6.29% of those individuals migrate to zero-tax states before realizing. If we make the unrealistic assumption that the entirety of that effect were due to tax rates, (i.e. if the counterfactual migration rate were 0% in the absence of tax incentives), that would imply a maximum elasticity here of 0.76. So the rate of out migration from high-tax states to zero-tax states is simply too low to produce a high elasticity of population with respect to net of tax rates. An elasticity approaching 1.5 in our context would require a reduction in-migration many times the size of the out-migration response. This intuition mirrors the finding in Jakobsen et al. (2024) who note that even when tax changes spark meaningfully adjustments in the flow of migrating individuals, the stock of individuals may be relatively unchanged.⁴⁵

Taken together, these results suggest that out-migration has a de minimis effect on the welfare consequences of reducing state taxes. Placing the results in the context of the Marginal Value of Public Funds helps to illustrate this point. Let us imagine that, in the absence of any tax avoidance by out-migrants, reducing the top tax rate has an MVPF of 1. Incorporating the fiscal externality from reduced tax avoidance raises the MVPF to just ~ 1.03 . Compared to the typical variation across MVPF estimates (Hendren and Sprung-Keyser, 2020), a change from 1 to 1.03 is little more than a rounding error.⁴⁶

V Robustness

In this section, we address six key considerations regarding the robustness of our results:

First, we consider the role of aging and retirement as it relates to our primary results. We do so by first splitting our sample based on the age of realizers, examining those older and younger than age 70. We see that the vast majority of our tax motivated migration is driven by individuals under 70. As shown in Table 3, \$1.8 billion in realization in low-tax states is done by individuals under age 70 at the time of realization while just under \$200 million is done by individuals over age 70. We see a similar pattern when we condition in the trajectory of income before and after realization. The goal here is to identify potential retiree and so we split the sample based on whether post realization income is less than 75% of pre-realization income. Even with this relatively loose bound, we see zero-tax opportunities yield in $\sim \$1.3$ billion in gains among those without wage declines. Individuals with income declines realize under $\sim \$300$ million in gains due to the zero-tax opportunities.⁴⁷ These patterns suggest that the tax motivated migration we observe is not

⁴⁵They estimated migration responses in the context of a wealth tax reform. They find that intensive margin response offsets 54% of the earnings gains but extensive margin migration responses offsets a comparatively smaller 22%.

⁴⁶For a discussion of the MVPF of taxes from the perspective of individual competing states, see Agrawal et al. (2021).

⁴⁷Here, the total size of the realizations is slightly smaller than the \$2.0 billion reported in our primary specification. This is because individuals with negative income are not easily categorizable as retirees or non-retirees and so they are dropped from

driven by old individuals or near retirees, but rather younger workers with large capital gains.⁴⁸

Second, we address the potential role of primary residences and examine how they impact our analysis. The concern here is that individuals moving from high-tax to zero-tax states may realize substantial gains on primary residence but such gains could not be moved across state lines as they are not gains on intangible assets. As noted above, Table 1 examines the composition of gains among individuals who originate in positive-tax. Drawing upon evidence from the IRS’ Sale of Capital Assets study, we find that just 3.1% of these large capital gains are gains on primary residences. We also examine how excluding those gains from our calculations impact our primary results. We draw upon data from Form 8949, which indicates the magnitude of gains on primary residences.⁴⁹ We exclude those gains from our analysis and re-run our primary specification. (For this analysis, data constraints require us to restrict our analysis to individuals who e-file between 2012 and 2015. We apply that same sample restriction to our analysis with and without the omission of housing gains.) As shown in Table 3, this exclusion has no clear impact on our counterfactual estimation of the quantity of gains realized in zero-tax state. The counterfactual quantity rises by less than 7%, indicating that gains on primary residences are not a meaningful driver of our results.

Third, we consider the role of major realization spread out over several years. As we note in Section II, for individuals in our sample, this largest gain represents 84% of their gains in a 3-year window and 76% of their gains in a 5-year window. This suggests that our results are primarily driven by the one-year realizations we observe. After all, if we assumed that our treatment effects remained constant but we were underestimating the quantity of realizations moved across state lines, our counterfactual estimates would change minimally. In order to investigate this issue more formally, we recalculate our dynamic discrete choice model assuming that individuals are motivated by 3-year realization events rather than 1-year realization events. In other words, we use our state variable $\tau_{st-1}Q_i$ to classify individuals by their 3-year tax savings rather than their one year savings. (For simplicity we still determine the relative timing of realizations and migrations based on the year of the greatest realization.) As we report in Table 4, using this approach we estimate that zero-tax opportunities lead to \$1.8 billion in new realizations, relatively similar to the rather the \$2.0 billion figure in our baseline specification.

Fourth, we examine the interplay between state capital gains taxes and state income taxes. States generally apply the same marginal rates to capital gains and labor income, and so individuals moving to zero-tax states may also avoid labor income taxes. In our primary specification, we control for an individual’s wealth, which includes the predicted value of future income flows. This means our approach exploits variation

this split.

⁴⁸To be sure, this does not mean that retirees don’t move to places like Florida. They certainly do so at high rates. Our estimation strategy simply relies on variation in the size of capital gains among individuals with the same demographic characteristics. So, for example, it allows for higher rates of migration to Florida among older individuals and uses the gradient of migration with respect to realization sizes to estimate the causal effect of the tax incentive.

⁴⁹The gains on primary residents as measured on Form 8949 mirror our findings in the broader sample of individuals with large realizations as measured from the IRS’ Sale of Capital Assets study. Gains on primary residences represent 2.2% of total gains among individuals with large realizations and 1.7% of total gains among movers to zero-tax states with large realizations. When restricting to individuals who originate in high-tax states, which may also be high housing price locations, this share is just 3.4%.

capital gains realizations conditional on these income flows. In order to address this further, in Table 4 we report the results from an alternate specification that controls for non-capital gains income in the four years after realization. While certainly endogenous, this formally captures magnitude of non-capital gains income that is shifted to the zero-tax state. Adding these controls has no discernible impact on our results. We also explore an alternate specification where predicted income flows are excluded from our measure of wealth altogether. Omitting these income controls actually reduces our counterfactual estimates by approximately 22%. Or, put another way, accounting for the role of income flows actually increases our estimates by around 22%. This suggests that the size of gains relative to baseline wealth is the driver of these migration patterns rather than an incentive to move non-capital gains income.⁵⁰

Fifth, we address the role of endogenous realization quantities. Thus far our calculations have assumed that individuals realize some fixed quantity, Q_i . We believe this is a reasonable assumption because we are examining the sale of major assets such as business interests.⁵¹ That said, it is worth acknowledging that taxes might change an individual's decision of how much to realize, in addition to their decision of whether to realize. For example, it might be that an individual would have realized \$9 million in a high-tax state but now chooses to realize \$10 million after migrating to Florida. While we cannot directly estimate changes in realization quantities, we can conduct bounding exercises that demonstrate that this effect has a relatively small impact on the magnitude of our estimates. In order to assess this, we draw estimates from Gravelle (2020) on the elasticity of capital gains realizations with respect to the net-of-tax rate, using a value of 2.5.⁵² We apply this elasticity at the origin-state-by-year level to account for the differential increase in realizations across individuals based on the size of the tax decrease that occurs when they move to a zero-tax state.

The basic intuition of our approach is that we can use alternate comparison groups to account for the possibility that taxes change realization quantities. For example, let us imagine that individuals who realize and then migrate are induced to increase their realization by 10%. In that case, those who migrate and then realize \$11 million should be compared with individuals who realize \$10 million and then migrate. Those two groups have same quantity of potential tax savings, even if they choose to realize different amounts. We formalize that logic in the following way. Let us assume that moving from California's to Florida's tax rate leads to a 10% increase in realization quantities. In other words, if $Q(0.10) = x$, then $Q(0) = 1.1x$. We let an individual's state variables be $x_{it} = (d_{it}, s_{it-1}, \tau_{s_{t-1}}, Q_i(\tau_{s_{t-1}}))$. When an individual realizes in state s , they realize a quantity $Q_i(\tau_s)$. Using τ_s and our equation for $Q_i(\tau_s)$ we can back out $Q_i(\tau_{s_{t-1}})$.

Working through the same approach from above, we get the following equation:

$$\ln \left[\frac{Pr(s_t = Z_j, r_t = 0, s_{t+1} = Z_j, r_{t+1} = 1 | x_{it})}{Pr(s_t = P_j, r_t = 1, s_{t+1} = Z_j, r_{t+1} = 0 | x_{it})} \right] = d'_{it}(\alpha_{P_j} - \alpha_{Z_j}) + (d'_{it} - d'_{it+1})\eta + \theta(f(\tau_{P_j} Q_i(\tau_{P_j})/W_i) - f(0)) + \Delta\epsilon_t \quad (8)$$

⁵⁰If non-capital gains income were driving the migration decision then larger gains of this type would increase the migration incentive but adding it to our wealth measure would reduce the measure of tax savings as a fraction of wealth. This would attenuate our estimates rather than increase their magnitude.

⁵¹As noted in Section II, major realizations constitute 84% of dollars realized in the 3-year period containing the realization.

⁵²Gravelle (2020) reports that Treasury and the JCT use an average elasticity with respect to the tax rate of -0.7. Those are estimated at a tax rate of 22%, yielding a value of approximately 2.5 with respect to the net-of-tax rate.

This differs from our previous estimation equation in two key ways: First, when we calculate the left-hand side of our regression equation above, we compare individuals with different observed realization quantities. Both the numerator and the denominator condition on the state variables x_{it} . But, for a given value of x_{it} and a given value of $Q_{it}(\tau_{P_j})$, two individuals can have differently sized realizations if they realize in states with different tax rates. This captures the intuition above that when analyzing people who migrate and realize \$10 million, the proper comparison group might be individuals who realize \$9 million and then migrate. Second, the tax savings term in our regression is now $\theta(f(\tau_{P_j}Q_i(\tau_{P_j})/W_i) - f(0))$ rather than $\theta(f(\tau_{P_j}Q_i(\tau_{Z_j})/W_i) - f(0))$. These two terms differ slightly because this new term uses predicted realization quantities as determined by the tax rate τ_{H_j} . For the example given above, this means that we use the \$9 million realization quantity, rather than the \$10 million figure.

With these modifications, we can estimate the coefficient on θ in equation 8 above. We can then once again examine how the presence of a zero-tax opportunity impacts realizations. We report our estimates in Table 5 below. We find that realizations increase by an estimated \$1.3 billion, compared to the \$2.0 billion in our baseline specification. When we examine the impact on our second counterfactual, changes in the California tax rate, we find that the adjustment that is similar in magnitude.

Sixth, we address the impact of our particular regression specification on our results. In Table 5, we show that changes in the discount rate do not meaningfully impact our findings. (We discuss the details of the discount rate adjustment in Appendix B.VIII.) In Appendix Table A.2 we show that our results are not sensitive to our approach to estimating, $f(\tau Q/W_i)$. In particular, the magnitude of our estimates remain largely unchanged if wealth capitalized using income in years 5 and 6 prior to realizations rather than years 2. We also consider an alternate functional form where the value of tax savings is measured relative to the flow value of wealth, approximated as $.03W$ rather than W . Again the magnitudes of our estimates remain largely unchanged with our realization amounts varying by less than \$300 million. In Table 2, we show that the patterns remain very similar whether or not demographic controls are interacted with place fixed effects. As a final check, we dispense with the dynamic discrete choice model and adopt a simplified treatment-control framework in the context of a linear probability model. In this case we measure the probability of migrating in advance of realization in the following simplified manner:

$$P_{ioyt} = \alpha_o + \eta_y + \beta Q_i + \theta(T * Q_i) + \varepsilon \quad (9)$$

- P_{ioyt} is an indicator for whether individual i migrates to a zero tax state in period t .
- α_o is an origin state fixed effect
- η_y is an income-bin fixed effect
- β captures the impact of realization quantities on migration
- T is the tax differential between high-tax states and zero-tax states

- θ is our coefficient of interest

If we assume that individuals who migrate before realization are the treatment group and those who realize before migration are the control group, then this represents a differences-in-differences regression in migration levels. θ captures the treatment effect of tax savings. In truth, that simplifying assumption is not precisely correct. Membership in the control group is endogenous. It is only composed of those who did not choose to migrate before realizing.⁵³ It is useful, however, to make such an assumption and see how it impacts our primary results. In the context of our motivated evidence Figure 1, this approach is akin to capturing the spike in migration before realization relative to the lack of a spike afterward. The differential gradient with respect to tax savings captures the treatment. As we report in Table 2, we find an effect that is the same order of magnitude as our previous evidence. In our first counterfactual, the additional quantity of dollars realized is \$1.7 billion, entirely consistent with the \$2.0 billion value from our primary specification.⁵⁴ When we examine the impact on California realizations the effect size also remains very similar, rising slightly \$45.3 million to \$52 million, with a fiscal externality that remains less than a few percent of the mechanical cost of the policy.

VI Conclusion

In this paper, we analyze the impact of state capital gains taxes on realization and migration decisions. We find that state capital gains taxes produce clear and detectable avoidance behaviors. In quantifying the magnitude of this response, we find that zero-tax opportunities cause additional \$2.0 billion in yearly realizations by former residents of positive-tax states. That said, these behavioral responses have a very small impact on the revenue lost or gained from statutory changes in capital gains rates. In analyzing state tax reductions such as the elimination of California’s millionaire surtax, we find that the positive fiscal externality from reduced tax avoidance by out-migrants is at most 3% of the policy’s mechanical cost. This suggests that while sourcing of capital gains places a meaningful role in state tax revenue, states seeking to prevent revenue losses from tax-motivated migration might consider avenues other than reductions in top tax rates.

⁵³The dynamic discrete choice model accounts for that concern when deriving a causal effect from a comparison of those two groups.

⁵⁴We estimate the first counterfactual with the following expression: $\sum (N_q Q \hat{\theta} (T_{hi}^- - 0) Q)$. Similar to Equation 6, this expression evaluates how changes in the tax rate change the probability of migrating and then multiplies that figure by the quantity of individuals realizing in each realization bin and the average realization size in that bin.

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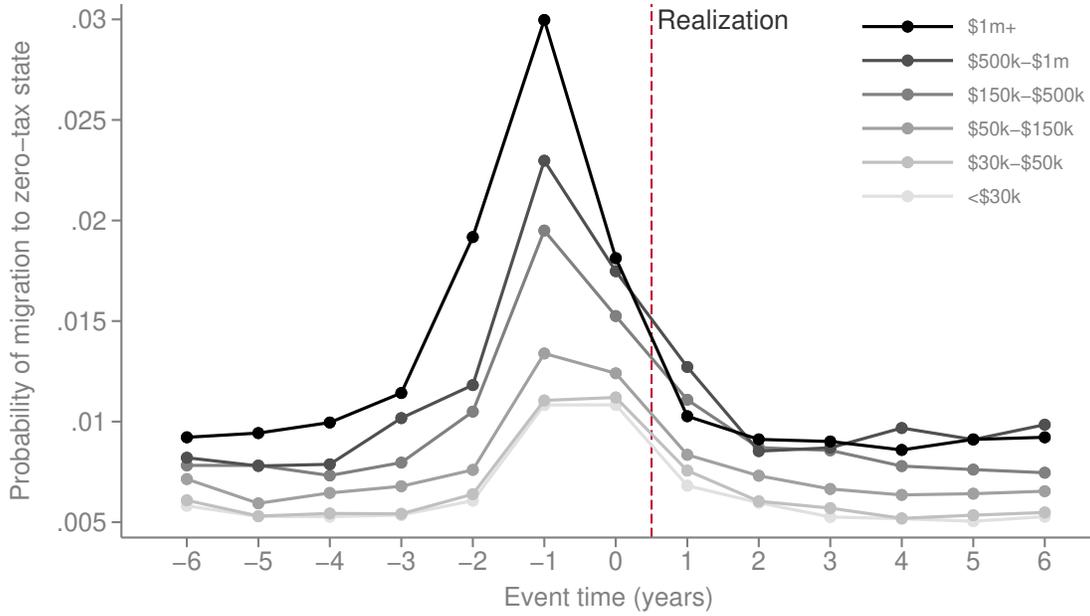
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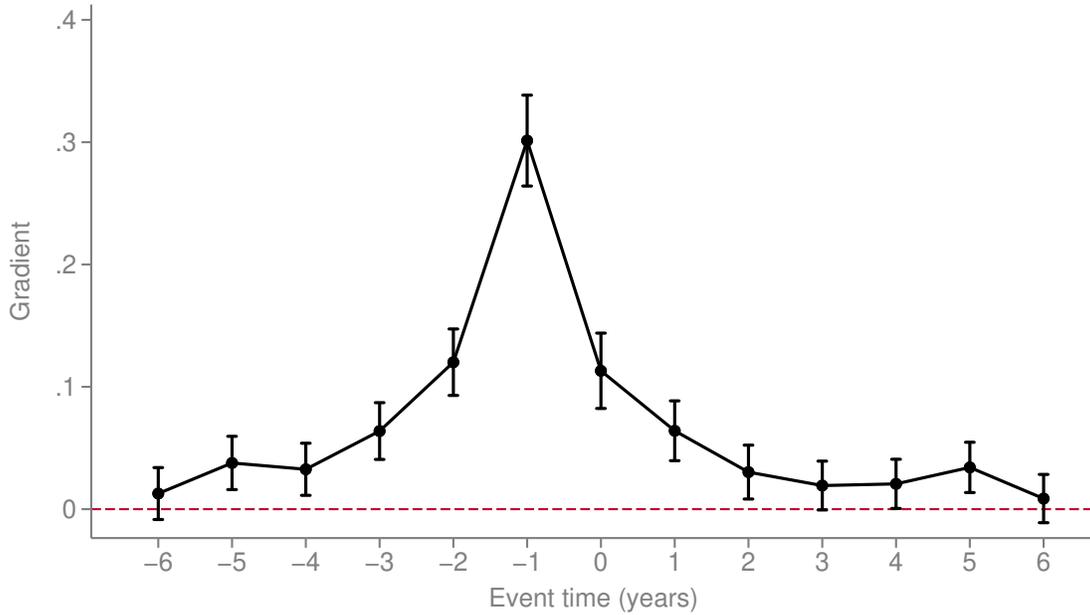
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Figure 1: Migration to Zero-Tax States Relative to the Timing of Realization

A. Migration Rate By Size of Potential Tax Savings

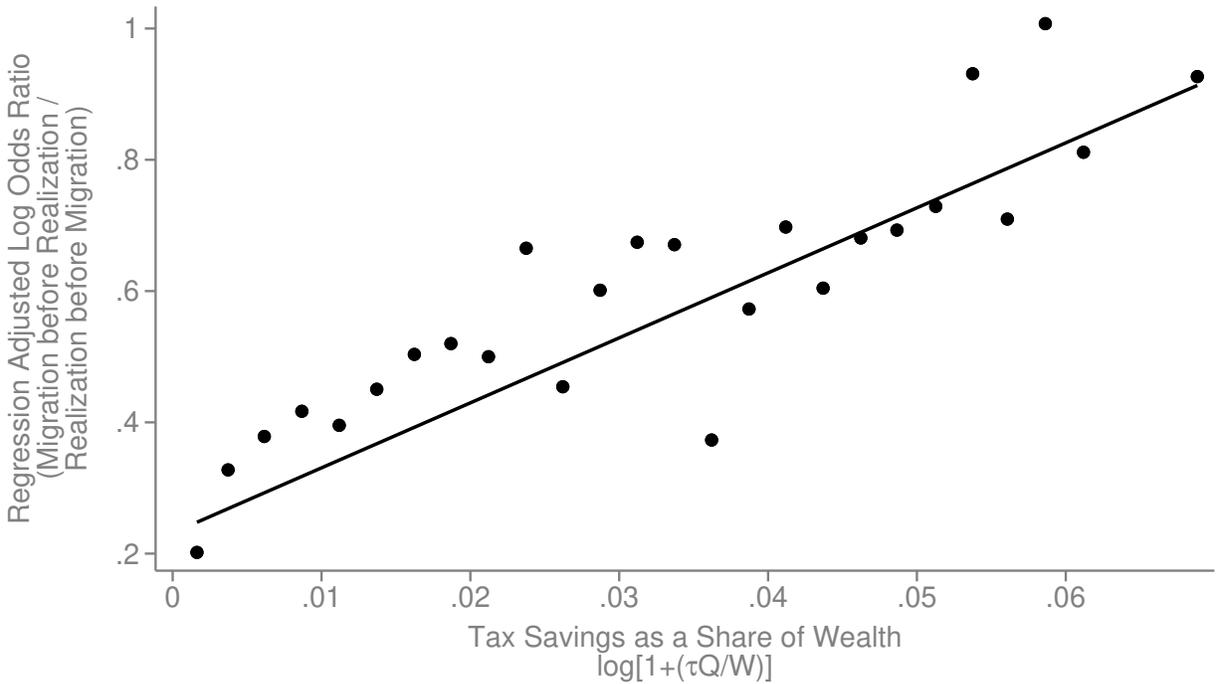


B. Gradient of Migration with Respect to Potential Tax Savings as a Share of Wealth



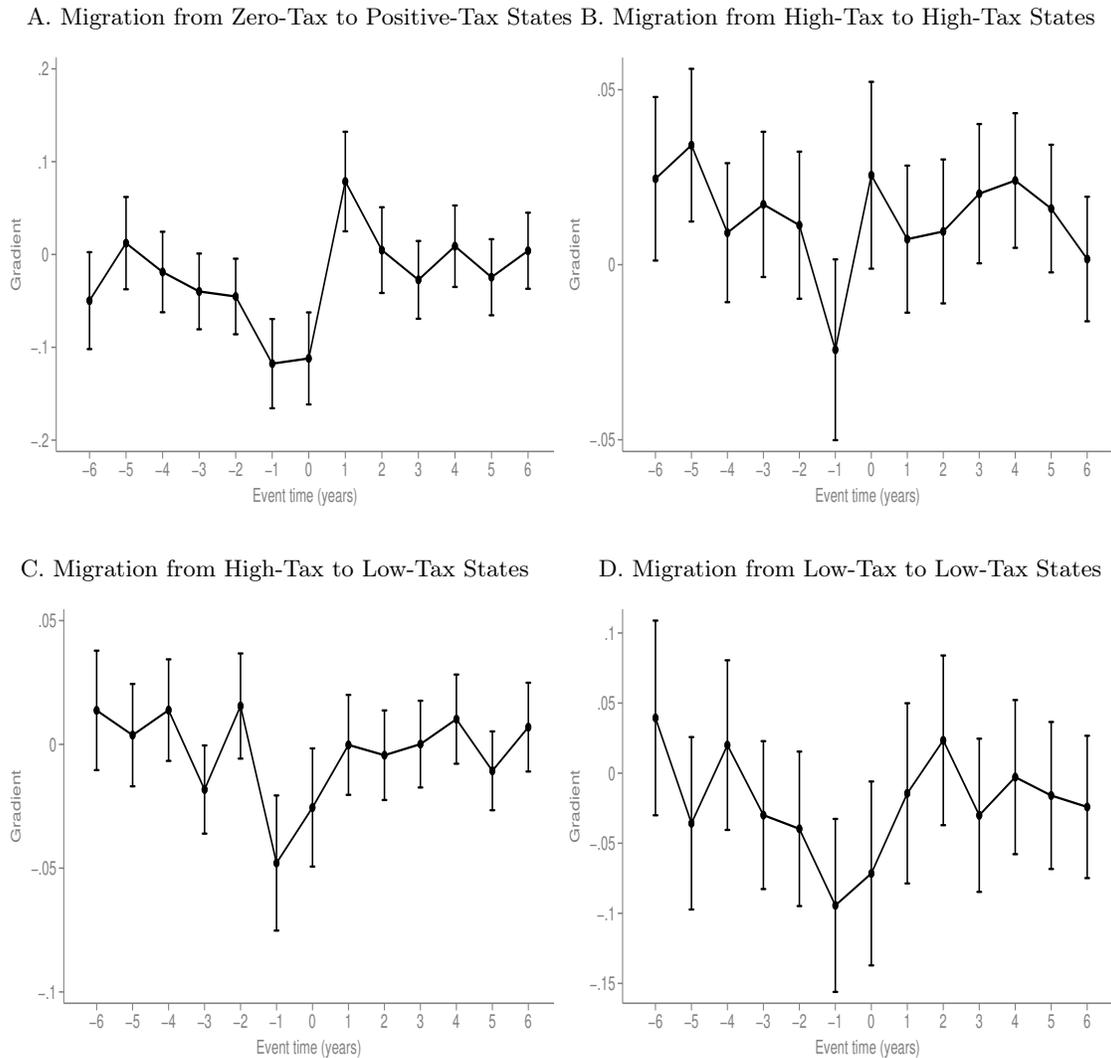
Notes: This figure shows rates of migration to zero-tax states. Rates of migration are plotted relative to the time of an individual's largest realization, $t = 0$. The sample is composed of all individuals who reside in a positive-tax state seven years in advance of their realization. In Panel A, individuals are binned by the size of the tax bill they would owe if they realized their gains in their origin state. We refer to this as their potential tax savings. Panel B shows the results of a year-by-year regression of the migration rate on tax savings as a share of wealth. Appendix B.IV outlines the wealth capitalization method adapted from Smith et al. (2023).

Figure 2: Relationship between Potential Tax Savings and Migration Relative to Realization



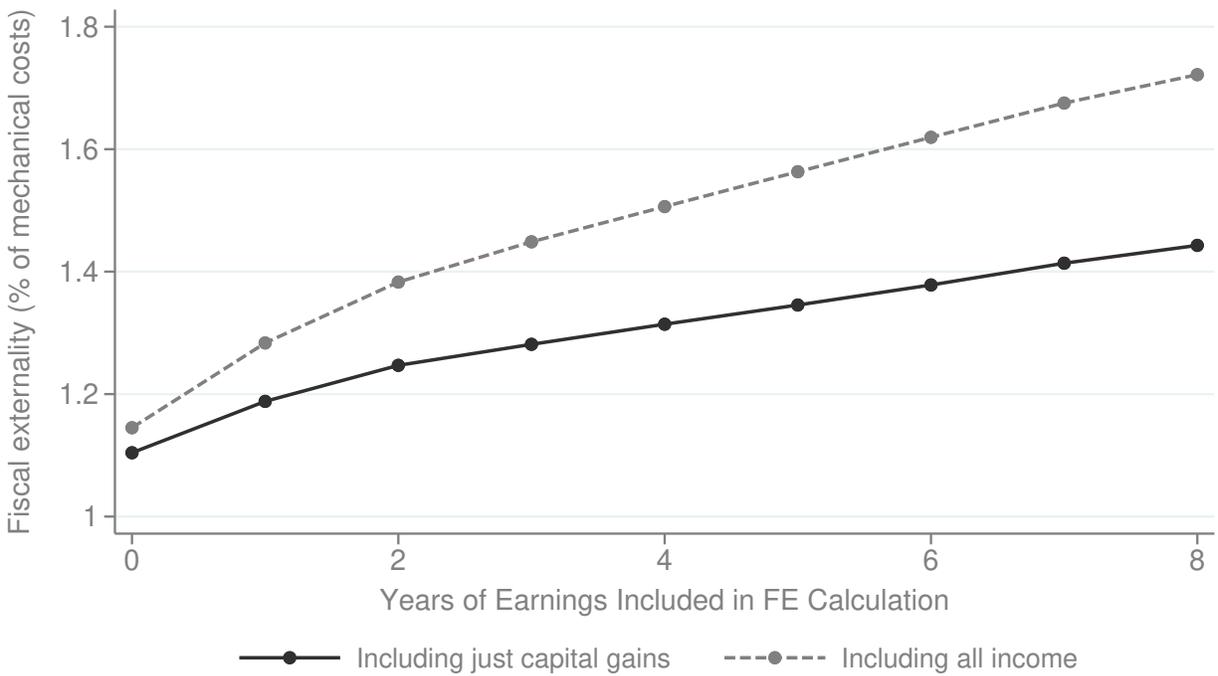
Notes: This figure plots the relationship used to derive the θ coefficient in our primary regression, displayed in Equation 2. The Y-axis corresponds to the left-hand side of that regression, the log-odds ratio comparing migration in advance of realization to realization in advance of migration. The X-axis displays potential tax savings. Individuals are grouped into potential savings bins and the non-parametric relationship is plotted using savings bin fixed effects. The figure also displays the parametric relationship between tax savings and the log-odds ratio based on the value of θ derived in our primary regression. Those results are displayed in Table 2.

Figure 3:



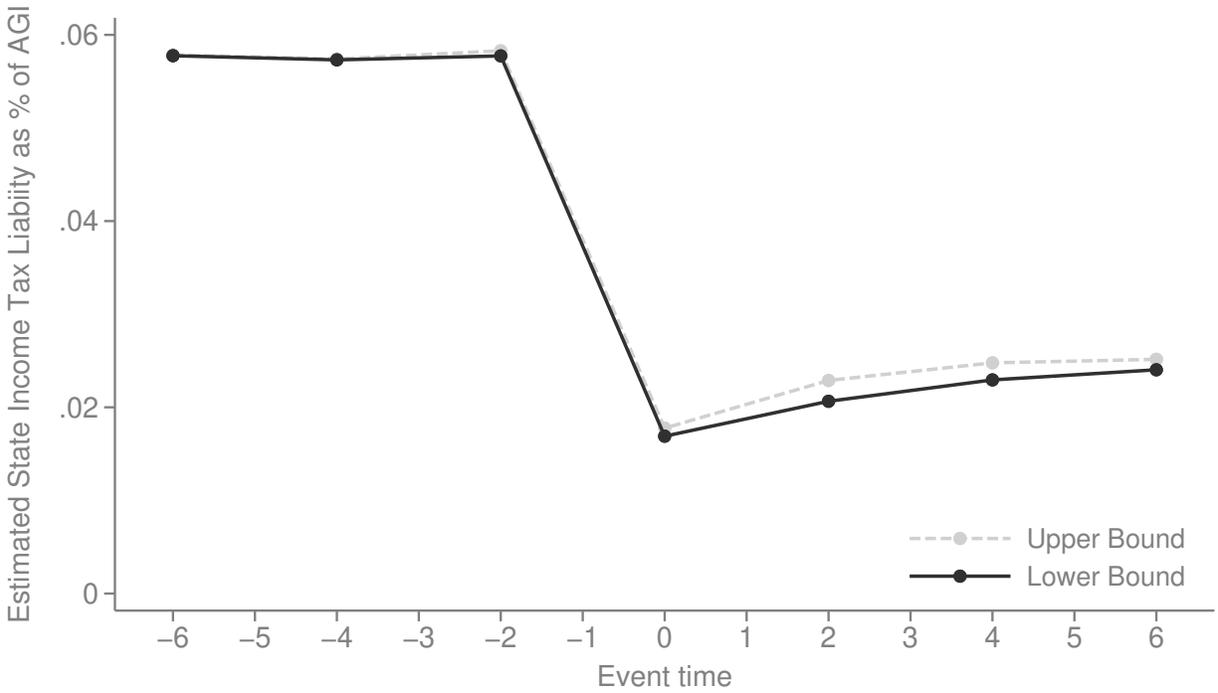
Notes: This figure plots the results of year-by-year regressions of migration probabilities on potential tax savings as a share of total wealth. Panel A reports this gradient for individuals migrating from zero-tax states to positive-tax states. For this panel, potential tax savings are assumed to be 5% of the total realization as the destination locations differ by individuals. Panel B reports this gradient for individuals originating in high-tax states (those with tax rates over 6%) and migrating to high-tax states. For this and all the following panels, potential tax savings are determined by the size of the realization and the origin state tax rate. Panel C reports the gradient for individuals migrating from high-tax to low-tax states (those with positive rates below 6%). Panel D reports the gradient for individuals migrating from low-tax to low-tax states.

Figure 4: Change in Fiscal Externality with Inclusion of Post-Move Income



Notes: This figure is based on results from a counterfactual policy change that reduces top tax rates by 1% in each US state. It considers the size of the fiscal externality if post-move income is also excluded from origin state capital gains. The effect is shown when only considering capital gains income and when considering all sources of income.

Figure 5: Estimated State Income Tax Liability Amongst Individuals who Migrate and then Realize



Notes: This figure uses information from State and Local Tax (SALT) Deductions to plot estimates for state income tax liability as a fraction of AGI. This fraction is plotted in year relative to the time of realization, $t = 0$. The sample is restricted to individuals who migrate to a zero-tax state in the year prior to their realization. The sample is also restricted to individuals with small quantities of non-capital gains income. In particular, it is restricted to individuals with non-capital gains income (AGI - capital gains) in the year after realization that is less than 20% of the size of the individual's largest realization. The upper bound plotted here reports the quantity of deductions claimed on state and local taxes (but not property taxes). The SALT deduction allows individuals to claim deductions on either their state and local incomes taxes or their local sales taxes paid. The upper bound here include state and local deductions claimed on either income or sales tax. The lower bound plotted here reports the quantity of deductions claimed on state and local income taxes alone. These two series produce approximate bounds on state income tax liability as a fraction of AGI amongst individuals who migrate to a zero-tax state and then realize.

Table 1: Summary Statistics on Residents of positive-tax states with Large Capital Gains Realizations

Panel A: Means and medians		
	Mean	Median
Income	456,496	143,112
Wages	270,749	28,775
Realization amount	3,162,204	892,172
Age	60	60
Observations	725,490	725,490
Panel B: Common industries		
<i>Industry</i>	<i>NAICS code</i>	<i>Share of obs</i>
Real Estate and Rental and Leasing	53	0.137
Professional, Scientific, and Technical Services	54	0.094
Finance and Insurance	52	0.086
Manufacturing	31-33	0.079
Health Care and Social Assistance	62	0.053
Retail Trade	44-45	0.242
Panel C: Common origin states		
<i>State</i>	<i>Share of obs</i>	
California	0.340	
New York	0.113	
New Jersey	0.057	
Massachusetts	0.032	
North Carolina	0.031	
Illinois	0.031	
Panel D: Source of realization (2012)		
<i>Description</i>	<i>Share of overall gain</i>	
C corp stock	0.297	
Passed-through Gain	0.197	
Pass-through Interests	0.087	
Other Assets	0.080	
Depreciable Real Property	0.073	
Residential Rental Property	0.067	
...		
Residential Rental Property	0.031	

Notes: This table provides summary statistics on our primary sample of individuals with large capital gains realizations. Panel A provides information on realization sizes, realizer income and realizer age. Medians are the mean of the 10 observation closest to the true median. Panel B reports the 2-digit NAICS code associated with the filer’s primary source of income. (NAICS codes are collected in the three years prior to realization from Form W-2, and Schedule K-1 of Form 1065 and Form 1120S.) Panel C reports the most common origin states. Panel D provides information on the composition of capital gains amongst sub-sample of 2012 tax filers that were also analyzed in the Sales of Capital Assets study produced by the IRS Statistics of Income Program. Appendix Table 1 reports these values among individuals who migrate to zero tax states.

Table 2: Variation in Results Across Alternate Specifications

	DDC Method			Linear Method
	(1)	(2)	(3)	(4)
θ Coefficient	11.369 [9.646, 13.211]	9.813 [7.938, 11.655]	9.904 [8.177, 11.781]	0.4938 [0.4279, 0.5596]
Zero-Tax Realizations	\$2,071m [1730, 2475]	\$1,969m [1573, 2430]	\$2,014m [1620, 2514]	\$1,739m [1507, 1970]
CA Fiscal Externality	\$77.4m [62.8, 92.5]	\$52.5m [41.4, 65.5]	\$45.3m [36.4, 57.6]	\$52.0m [45.1, 59.0]
Wealth/age controls (Demographics)	X	X	X	X
Origin and Destination controls		X		X
Demographic X Orig and Dest controls			X	
Smoothed dependent variable		X	X	

Notes: This table shows our primary estimates under a range of specifications. In each of the first three columns, we report our coefficient of interest, θ , from Equation 2. This captures the impact of potential tax savings on individual payoffs. Next, we consider a counterfactual where residents of high tax states cannot avoid state capital gains taxes via migration. We compare this counterfactual to the status quo and estimate the effect of the status quo on new realizations in zero-tax states. We report the quantity of new yearly realizations by former residents of positive-tax states. Finally, we consider a counterfactual where the state of California reduces its top marginal tax rate by 1%. We report the effect of reduced out-migration on capital gains realizations in zero-tax states. (Section IV.C discusses why this estimate is likely an upper bound.) In Column 1 we report estimates for the case where our dynamic discrete choice model where our demographic controls, x_{it} , include age and wealth. Here, we group together all positive-tax origins and zero-tax destinations. In Column 2 we add origin- and destination-specific fixed effects. Origin controls also vary by tax regime, as measured by times where tax rates vary more than 2%. This capture variation with origin preferences as tax rates change. In order to avoid the bias associated with estimating log-odds ratios in bins with very few observations, we estimate our conditional choice probabilities using a logit model. (Further discussion of this process can be found in Appendix B.IV.) In Column 3, we interact our demographic controls with both our origin and destination controls. Once again, we estimate the log-odds ratio on the left-hand side of Equation 5 using a logit. This is our primary specification. In Column 4, we dispense of the dynamic discrete choice model and adopt a simple linear probability model. (Details of this model can be found in Appendix C.III.) In this case we report the θ from Appendix Equation C.3. This approach produces a primary regression that is a difference-in-difference with migration probability levels on the left-hand side rather than a log-odds ratio. All 95% confidence intervals are obtained using the Bayesian bootstrap.

Table 3: Role of Retirement and Housing

	Under Age 70 (1)	Over Age 70 (2)	High Income, Post-Move (3)	Low Income, Post-Move (4)	Baseline, 2012-2015 (5)	Exclude Housing, 2012-2015 (6)
θ Coefficient	10.715 [8.701, 12.868]	5.583 [1.684, 10.227]	12.060 [9.532, 14.800]	6.677 [3.728, 10.195]	11.912 [8.696, 15.289]	12.888 [9.596, 16.297]
Zero-Tax Realizations	\$1,814m [1412, 2348]	\$197m [54, 377]	\$1,321m [977, 1740]	\$386m [209, 619]	\$1,385m [1008, 1771]	\$1,479m [1095, 1888]
CA Fiscal Externality	\$47.6m [36.8, 61.2]	\$2.2m [0.6, 4.3]	\$30.5m [21.4, 41.0]	\$7.1m [3.6, 11.9]		
Income/age controls	X	X	X	X	X	X
Origin controls	X	X	X	X	X	X
Destination controls	X	X	X	X	X	X
Smoothed dependent variable	X	X	X	X	X	X

Notes: Column (1) presents results of a subset of individuals who are under age 70 at the time of realization. Column (2) presents the results for individuals over age 70. Column (3) presents results for individuals who are high income after realization. These are individuals whose post-realization income is at least 75

Table 4: Income and Realization Controls

	Three-Year Realization (1)	Income Control (Post-Realization) (2)	Omit Income (3)
θ Coefficient	9.582 [7.940, 11.284]	9.835 [7.910, 11.625]	7.344 [5.697, 8.721]
Zero-Tax Realizations	\$1,766m [1456, 2092]	\$2,068m [1647, 2602]	\$1,570m [1223, 1965]
CA Fiscal Externality	\$55.4m [43.6, 70.5]	\$43.3m [33.7, 54.2]	\$34.8m [26.5, 43.4]
Income/age controls	X	X	X
Origin controls	X	X	X
Destination controls	X	X	X
Smoothed dependent variable	X	X	X

Notes: Column (1) presents the results using the sum of realizations for individuals over a 3-year period rather than 1-year events. Column (2) controls for observed non-capital gains income in the four years post-realization rather than predicting non-capital gains income from pre-realization income. Column (3) omits this non-capital gains income entirely from the measure of wealth used. In each case, we report our coefficient of interest, $\hat{\beta}$. This captures the impact of potential tax savings on individual payoffs. Next, we consider a counterfactual where residents of positive-tax states cannot avoid state capital gains taxes via migration. We compare this counterfactual to the status quo and estimate the effect of the status quo on new realizations in zero-tax states. We report the quantity of new yearly realizations by former residents of positive-tax states. Finally, we consider a counterfactual where the state of California reduces its top marginal tax rate by 1%. We report the effect of reduced out-migration on capital gains realizations in zero-tax states. All 95% confidence intervals are obtained using the Bayesian bootstrap.

Table 5: Endogenous Realizations and Discounting

	Endogenous Realization ($\epsilon = 2.5$) (1)	Discounting ($\beta = 0.97$) (2)	Discounting ($\beta = 0.94$) (3)	Discounting ($\beta = 0.9$) (4)
θ Coefficient	6.204 [4.374, 8.116]	8.726 [7.243, 10.424]	9.242 [7.719, 11.007]	9.630 [8.026, 11.443]
Zero-Tax Realizations	\$1,316m [903, 1759]	\$1,806m [1433, 2271]	\$1,898m [1520, 2374]	\$1,967m [1582, 2460]
CA Fiscal Externality	\$23.9m [16.2, 32.7]	\$40.0m [30.9, 50.4]	\$42.3m [33.0, 53.2]	\$44.1m [34.5, 55.6]
Income/age controls	X	X	X	X
Origin controls	X	X	X	X
Destination controls	X	X	X	X
Smoothed dependent variable	X	X	X	X

Notes: Column (1) presents the results in the scenario where individual realization size is endogenous to the tax rate. Informed by Gravelle (2020) apply an elasticity of capital gains realizations with respect to the net-of-tax rate of 2.5. Columns (2), (3), and (4) presents the results assuming per-period discount factors of 0.97, 0.94 and 0.90 respectively. Details on this estimation method are outlined in Appendix B.IX. In each case, we report our coefficient of interest, $\hat{\beta}$. This captures the impact of potential tax savings on individual payoffs. Next, we consider a counterfactual where residents of positive-tax states cannot avoid state capital gains taxes via migration. We compare this counterfactual to the status quo and estimate the effect of the status quo on new realizations in zero-tax states. We report the quantity of new yearly realizations by former residents of positive-tax states. Finally, we consider a counterfactual where the state of California reduces its top marginal tax rate by 1%. We report the effect of reduced out-migration on capital gains realizations in zero-tax states. All 95% confidence intervals are obtained using the Bayesian bootstrap.