Millionaire Migration in California:

The Impact of Top Tax Rates

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Executive Summary

California is one of eight states that have established a "millionaire tax" in recent years. The popular appeal of these taxes is that they raise revenue from those seen to have greater ability to pay a higher rate on the highest portion of their incomes. The concern, however, is that millionaire taxes may lead to millionaire migration, with potentially serious loss of revenues for the state.

This study addresses the following key question: Do changes in California's top income tax rates lead to changes in the migration of top incomes?

There is limited existing evidence on the effect of top state tax rates. Available data sources such as the census or the IRS migration files do not provide data specific to people with top incomes. However, California income tax records provide a virtual census of millionaires, and show when millionaires enter or exit the state. These data offer a unique contribution to the policy discourse on state taxation of top incomes.

This study tracks migration by, in essence, identifying taxpayers who file a California full-year resident tax return in one year and file a part-year / nonresident return in an adjacent year. We calculate the rates of in-migration and out-migration as a percentage of population for different income groups over the period 1994 – 2007. We then compare migration patterns before and after two recent California tax law changes.

The main focus of this study is the introduction of the Mental Health Services Tax in 2005 ("2005 MHST"). This tax is levied at a rate of 1 percent on amounts of taxable income greater than $1 million. Secondly, the study examines the effect of tax cuts in 1996 that applied only to high incomes – though at income levels much lower than $1 million (approximately $110,000, and $220,000). If arguments about tax-flight migration are correct, the 2005 tax increase should cause millionaire migration from the state, while the 1996 tax cut should lead to greater in-migration (or less out-migration) of high-income tax payers.

Our six central findings are as follows:

1. Migration is a very small component of changes in the number of millionaires in California. While the millionaire population sees a typical year-to-year fluctuation of more than 10,000 people, net migration sees a typical year-to-year fluctuation of 50 to 120 people. At the most, migration accounts for 1.2 percent of the annual changes in the millionaire population. The remaining 98.8 percent of changes in the millionaire population is due to income dynamics at the top – California residents growing into the millionaire bracket, or falling out of it again.

2. Using difference-in-differences models, which compare migration trends of the group experiencing the tax increase to a group of high-income earners *not* facing a tax change, neither in-migration or out-migration show a tax flight effect from the introduction of the 2005 Mental Health Services Tax. In fact, out-migration has a "wrong-signed" estimate: out-migration declined among millionaires after the tax was passed (both in absolute terms and compared to the control group). In other words, the highest-income Californians were less likely to leave the state after the millionaire tax was passed.

3. Using an expanded definition of migration – the shift from resident to non-resident tax filer (i.e., not living in California but still earning some income in California), we continue to see no evidence of responsiveness to the MHS tax. This group is unexpectedly important: many high-income out-migrants do, in fact, continue to earn some income and pay some taxes in California. This group also shows the "wrong-signed" estimate for out-migration: this "partial" out-migration of millionaires fell – rather than rose – after the tax was passed.

4. The 1996 tax cuts on high incomes likewise had no consistent effect on migration. There was a small effect for those experiencing the small (0.7%) tax cut, but no effect at all for those experiencing the large (1.7%) rate cut. While we are planning to analyze the 1996 tax cut in greater detail, the overall picture is one of no clear effect.

5. There is a strong out-migration effect for high-income earners who become divorced. In the year of divorce, the migration rate more than doubles, and remains slightly elevated for two years after the event. This shows that there are circumstances that do generate millionaire

migration. The tax policy changes examined in this report are very modest compared to the life-impact of martial dissolution.

6. Most people who earn $1 million or more are having an unusually good year. Most "millionaires" earned less in years past, and they are not likely to earn this much again. A representative "millionaire" will only have a handful of years in the $1 million + tax bracket. The somewhat ephemeral nature of very high income is one reason why the top-income taxes examined here generate no observable tax flight. It is difficult to migrate away from an unusually good year of income.

1. Introduction

Since 2004, eight states have added new taxes on top incomes. These taxes have a notable impact on state budgets. In California, the 2005 Mental Health Services Tax ("2005 MHST") raised the tax rate on income above $1 million by one percentage point. Although just 0.3 percent of California tax filers reported more than $1 million in 2005, these filers accounted for more than 21 percent of all income.[1] Table 1.1 shows the new revenues generated by the MHST. In 2005, it raised $1.3 billion—roughly 2 percent of all income tax revenues and 1 percent of all state tax revenues.

Table 1.1 California revenues from Mental Health Services Tax

Tax year	$billions
2005	1.3
2006	1.3
2007	1.5
2008	1.0
2009	0.7
2010	1.0
Annual Average	1.2

Source: FTB.

Can states sustain these new revenue sources without losing tax filers at the top of the income distribution? Theoretical concerns have been raised about migration response to state-level progressive income taxes (Feldstein and Wrobel, 1998). Higher taxes suggest the possibility that a cheaper social contract may be had elsewhere, in a lower-tax state. However, existing research shows that residential tax arbitrage of this sort is *not* an important component of migration behavior. The proximity of income-generating jobs and social networks remains paramount, even within commutable regions that span multiple tax jurisdictions (Day and Winer 2006; Coomes and Hoyt, 2008).

For the wealthy, however, returns to human capital are one of several potential income sources. In addition to wage and salary income, the wealthy may also draw on substantial capital

[1] Source: Franchise Tax Board, 2006 Annual Report, p. 82, https://www.ftb.ca.gov/aboutftb/annrpt/2006/2006ar.pdf

resources. To the extent that these resources are not tied to a particular place, some people at the top of the income distribution may face fewer geographic constraints on earning capacity. If this is the case, their residential decisions may depend more on the 'tax price' of a given jurisdiction.

On the other hand, wealthy tax filers may be quite immobile. Positions in the most highly-skilled and most highly-remunerated professions are concentrated in particular places. Consider technological expertise in Silicon Valley or financial expertise on Wall Street. The agglomeration economies in these regions are important considerations for state fiscal policy (Baldwin and Krugman 2004). To be sure, there are top-income earners who do not depend on labor income. Yet even members of this group will have invested significant economic and social resources in a particular place in order to make their fortunes (Glaeser and Gottlieb 2009).

1.1 Regional income tax regimes in an expected utility theory of migration

Neoclassical economic theory suggests that people move when expected utility in their current residence falls below expected utility somewhere else, plus the costs of getting there. Clearly this simple cost-benefit analysis is not the only explanation for human migration. But as Douglas Massey and colleagues (1993) make clear, utility maximization is consistent with broader system logics of migration, such as those proposed in core-periphery theories (Castells, 1989; Sassen, 1988). In short, the paradigm remains an intuitively appealing and empirically tractable framework for the complex residential decision-making of individuals and households.

Taking utility as the sum of consumption and leisure, the migration decision then turns simply on a comparison of wage opportunities in potential residences. The simple model is generalizable. Greenwood (1997:670) points out that the neoclassical approach evolved in response to persistent wage differentials across regions, leading to a more flexible model:

$$PV_{ij} = \sum_{t=1}^{n}\left[\frac{1}{(1+r)^t}\right][(E_{jt} - C_{jt}) - (E_{it} - C_{it})] \qquad (1)$$

where place-*i* residents move to place *j* when the present value of the migratory "investment" (earnings *E* net of costs *C* expected at *j* minus the net earnings expectation at *i*) is positive. Although migration research in this tradition has concentrated on expected human capital returns—*E* in Sjaastad's (1962) sense—rather than expected costs, *E* did eventually incorporate other aspects of utility, including public goods and climate. These place-specific "amenities"

were viewed, in the early literature, as merely compensating for regional wage differences (Charney 1993; Graves 1979; Greenwood 1997). Empirically, taxes seem to have minimal effects on residential choices (Coomes and Hoyt 2008; Liebig, Puhani, and Sousa-Poza 2007). Thus, for most migration decisions, models that include taxes may add little to a more narrowly defined human capital model.

But taxes may be consequential for wealthy households. In absolute terms, the wealthy pay more taxes. They may also be able to "time" income and more easily withstand any interruption of earnings associated with an interstate move. Indeed, the potential tax effect on migration is at the center of a largely separate literature on regional tax competition. Mirrlees (1982:322) enters the tax price of residential location in the utility function

$$v(n) = u(x(n), n) \tag{2}$$

where utility *v* derived from a given level of productivity *n* is adjusted by the tax rate *x*. Though the standard model (1) implicitly equates earnings with productivity, (2) makes the price of residing in a tax jurisdiction explicit: Earners' consumption is limited to after-tax income *x(n)*. Faced with high tax costs, the wealthy may simply move elsewhere. The threat of greater migration responsiveness among the wealthy suggest a policy tradeoff between the "millionaire taxes" that are often popular with voters, and the loss of wealthy tax filers. If millionaires are in fact more mobile, state policymakers may be forced to "curse" the less-mobile middle with the largest tax bills (Simula and Trannoy 2011).

However, the presumption that exceptionally skilled, monied, and entrepreneurial individuals are also exceptionally mobile is debatable. Certainly, some millionaires do have the luxury of greater mobility, and recent studies verify Mirrlees' (1982) proposition in specific cases. For example, Kleven, Landais, and Saez (2010) show that European football stars prefer to play for teams in countries with lower tax rates. Yet, as the authors note, professional sport requires minimal place-specific investment of human capital. In fact, the game itself moves around, often across international borders. Kleven et al. (2010) provide an important upper bound estimate on the migration responsiveness of the highly skilled. Nevertheless, their estimated tax-elasticity of residential location is still only 0.4, suggesting that place considerations are significant even for the most mobile top-income earners.

In Young and Varner (2011), we examined the migration response to a millionaire tax in New Jersey, which raised its income tax rate on top-income earners by 2.6 percentage points. In

many ways New Jersey was an ideal testing ground, given its close proximity to lower-tax states (Connecticut and Pennsylvania) with whom New Jersey shares two multi-state cities (New York and Philadelphia metropolitan areas). The geography of New Jersey makes it relatively easy to arbitrage state tax systems without leaving one's city.

Drawing on the complete New Jersey state tax micro data (a virtual census of millionaires), that study found little responsiveness to the tax increase, with semi-elasticities generally below 0.1. There was evidence of modest tax-induced migration among some small segments of the millionaire population: millionaires past retirement age and those living primarily on investment income rather than wages (i.e., people not tied to their state by an employer or business). Overall, the New Jersey tax raises roughly $1 billion per year and modestly reduces income inequality.

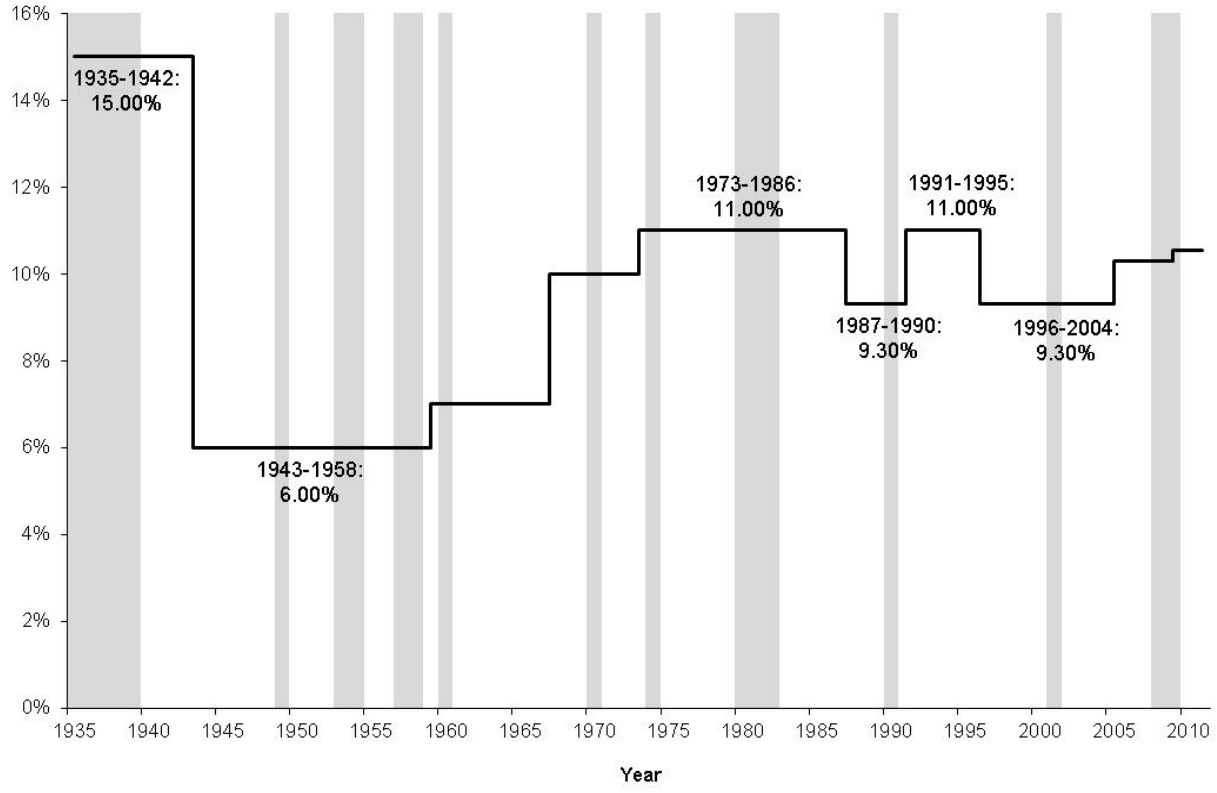
1.2 California Income Tax Rates

In California, the personal income tax rate structure has changed frequently. California first collected a personal income tax in 1935. The rate schedule was progressive, starting at 1 percent on income below $5,000 and adding several 5- and 10-thousand dollar brackets up to $80,000. There were four brackets on top incomes, adding 1 percentage point increments up to a 15 percent top marginal rate on income above $250,000.

Since 1935, the top marginal rate has changed 9 times, with 6 increases and 3 cuts. Figure 1.1 places these changes in economic context. It shows the top marginal tax rate against the backdrop of the business cycle, with recessions indicated by the shaded columns. The largest tax cut—9 percentage points—came in 1943, on the heels of a federal income tax hike. The rate cut was also accompanied by a reduction in the number of brackets, which topped out at $30,000 starting in 1943. Rates increased again in 1967, but the number of brackets remained essentially unchanged until 1991, when two top-income brackets returned. Most changes take effect between recessions. However, there are two crucial exceptions. The largest top rate change in history—a 15 percentage point increase—occurred when the income tax was first established—in the middle the Great Depression. Then, in 2009, California added a 0.25 percentage point surcharge on income above $1 million, in the middle of the Great Recession.

Figure 1.1 indicates that the California top bracket is not stable and that rate changes are unpredictable. Given the top rate volatility over time, top-income earners would have uncertainty regarding how long any particular rate will remain in effect.

Figure 1.1 California top marginal tax rate, 1935–present



In this paper, we analyze two specific tax policy changes. Figure 1.2 (below) shows the rate schedule before and after the 2005 Mental Health Services Tax came into effect. In November 2004, voters approved Proposition 63, which added 1 percentage point on income above $1 million effective January 1, 2005. Before this, marginal rates were progressive at low and middle income levels, but only up to about $40,000 for single filers or $80,000 for joint filers. Between 1996 and 2004, the marginal rate was the same (9.3 percent) for the top one-fifth of all income earners. Since the 2005 increase, income earners at the very top have paid 10.3 percent on income above $1 million.

Figure 1.2 The 2005 Mental Health Services Tax ("2005 MHST")

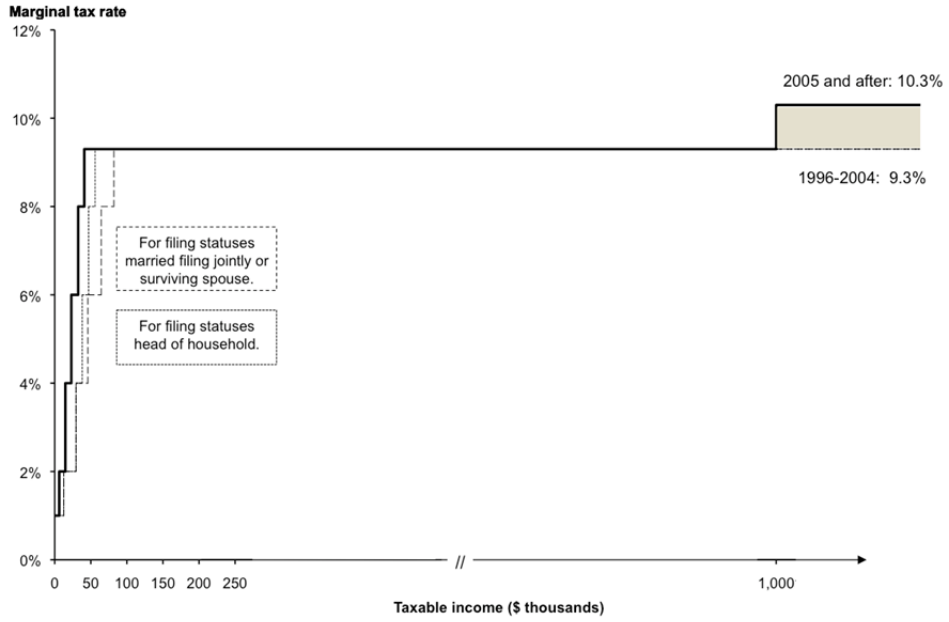
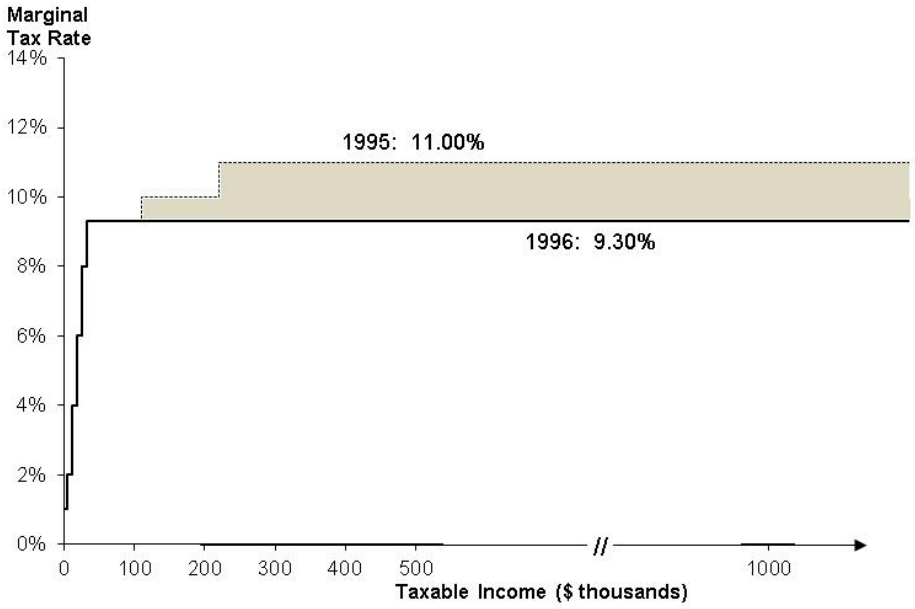


Figure 1.3 (below) provides a similar picture for the 1996 tax cuts, which returned the top marginal rate to its 1990 level. One important difference is that the 1996 changes applied to a much wider income range. The 1996 changes were not "middle class tax cuts," but any single filer above $109,936 or joint filer above $219,872 received a tax cut.

Figure 1.3 The 1996 Tax Cuts



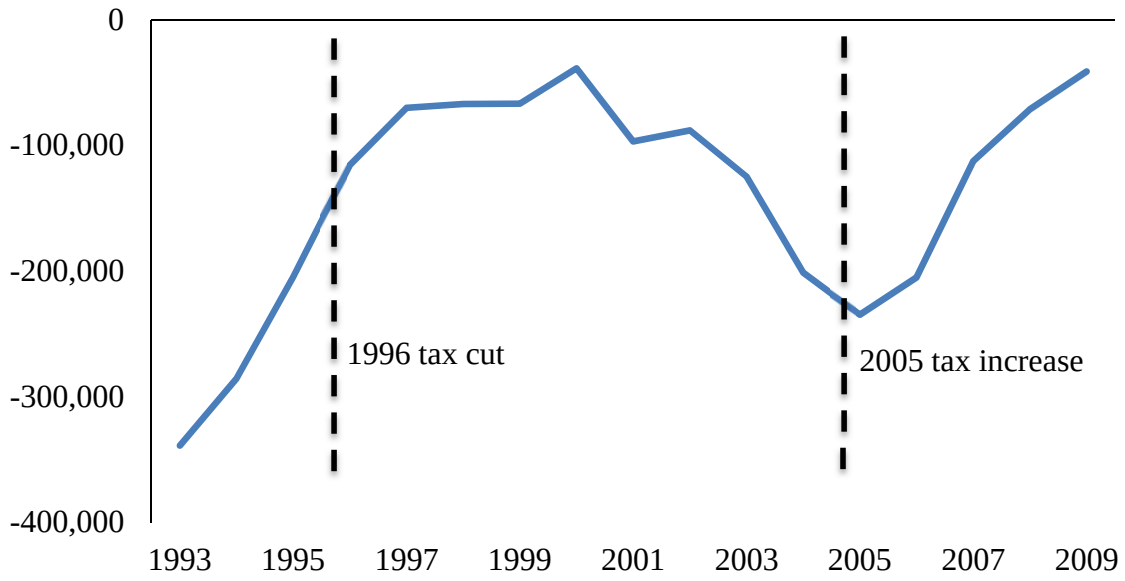
Note: Brackets shown are for single filers. Brackets were doubled for joint filers.

1.2 California Migration Trends

As the U.S. population has shifted away from the postwar industrial centers, states like New Jersey and now California are seeing a plateau in population growth. Some have suggested that higher taxes in these states are to blame. Figure 1.4 graphs the net migration flow between California and the rest of the country since 1993. During this period, California's domestic migration has fluctuated around an average net outflow of -139,000 people per year moving to other states. This is not a large outflow relative to the state's population. Based on the current population of 38 million, the net migration rate is only -0.4%. Nevertheless, as Figure 1.4 shows, it is clear that migrants leaving for other states outnumber domestic migrants arriving in California.

The net domestic migration trend closely tracks the California business cycle. California lost slightly fewer people as the economy expanded in the 1990s, then lost slightly more after the dot-com bubble burst. Since the MHST came into effect in 2005, net migration has risen again. Thus, it appears that after the MHST, more people are moving into California. This seems to contradict the claim that tax increases lead to more migration.

Figure 1.4 California net domestic migration, 1993–2009



Source: IRS.

Yet, it is important to note that the trend in Figure 1.4 is drawn from Internal Revenue Service data for the entire population. The IRS data set does not provide income-specific

migration counts. The IRS has also pointed out that their state-to-state migration data contain very poor coverage of top-income earners. Specifically, the IRS data do not include late filers. These late filers—about 2 to 5 percent of all filers—"are likely to have complex returns that report relatively high income, and so the migration data set may under-represent the very wealthy" (Gross, 2003:4). Thus, even if it were somehow possible to disaggregate by income, the IRS data would not offer a representative sample of high incomes or answer the question of what impact top tax rates have on millionaires. In contrast, the FTB data we analyze in this paper provide a virtual census of high incomes in California.

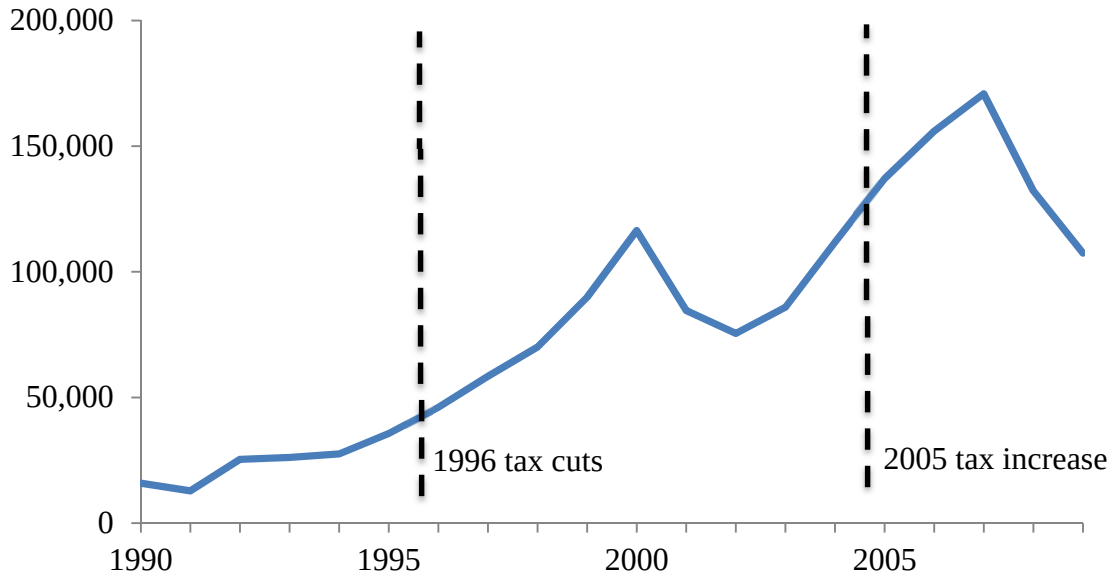
1.3 California's Wealthy Population

Did the 1996 and 2005 tax policies alter California's ability to attract the wealthy? The basic face validity test on overall net migration trends showed no evidence for a tax effect, but top-income tax filers may be different. If they are different—and if tax rates are important factors in their state residency decisions—we would expect to find two patterns in California's wealthy population. The number of top-income earners would fall after a tax increase and rise after a tax cut.

Figure 1.5 (below) shows the number of millionaires in the California tax data since 1990. The millionaire population grew from 15,000 in 1990 to more than 150,000 in 2007. Neither of the tax changes we study has any perceptible effect on the general upward trend in California's millionaire population. After the MHST came into effect, the number of millionaires continued to rise for three years, falling only during the 2008 financial crisis. This pattern does not indicate that the recent tax changes were of major concern to top-income earners.

If the population of top-income earners were determined mostly by tax rates, the basic population graph could be quite informative. However, population changes for other reasons. The strength of financial markets is critical, with the two peaks in Figure 1.5 corresponding to the dot-com boom (1999-2000) and the more recent stock market run-up (2007-08). These economic trends greatly increased the number of Californians earning very high incomes. Analytically, other drivers of the top-income population (particularly income growth) overshadow migration, which occurs on a smaller scale.

Figure 1.5 Number of Millionaires Filing California Tax Returns, 1990–2009.



Source: FTB.

Thus, though the net migration and millionaire population trends indicate that the tax changes had no effect on California's attractiveness to the wealthy, we need to examine migration data for top-income earners in order to identify any potential tax effect on migration. It is this analysis to which we turn now. The rest of the paper has four sections. Section 2 defines migration events in the FTB data and illustrates the intuition guiding our difference-in-differences model. Section 3 provides the main results for the 2005 MHS tax, as well as basic results for the 1996 tax cut. Section 4 contains extensions and robustness tests. Section 5 concludes.

2. Data and Identification Strategy

The available national data on migration can tell us almost nothing about top-income migration responses to taxation. Instead, we turn to a California Franchise Tax Board data set that offers full coverage of top incomes. Administrative data collected by state tax departments have unique value for the study of top-income migration behavior. For this study, the California Franchise Tax Board (FTB) granted us access to tax records. Using data from California personal income tax returns, the FTB created data sets for the tax years 1992–2009. Resident tax returns (Forms 540, 540A, 540EZ, and 5402EZ) and part-year / non-resident tax returns (Forms 540NR Long and 540NR Short) were included.

FTB then conducted three data processing steps necessary for the creation of a reliable longitudinal data set. First, because it is possible to file a tax return for a tax year other than the filing year, it was necessary to transfer the information from these returns to the appropriate tax year. Second, for each tax year, data on joint filers was replicated. The designation of the primary and secondary filers was switched on the replicated record. Third, the replicated tax year datasets were merged to create a panel dataset. This method creates an observation with time series data for each adult taxpayer regardless of changes in marital or filing status. After perfecting the data set, FTB removed identifying information such as names and SSNs from the data file to preserve taxpayer confidentiality.

The data set we received from FTB provides a virtual census of high-income earners, with information on income, taxes paid, and some limited demographic data reported on a standard tax form (such as marital status). Our analysis of the 2005 Mental Health Services Tax includes the filing history for any filer who reported annual adjusted gross income above $500,000 at least once in the FTB data. There is an average of 750,000 records per year, giving roughly 13.5 million records in total.

2.1 Migration Definitions

In this section, we discuss how migration is defined using the FTB data. Individuals in the tax data can have one of three basic filing statuses in any given year:

F = Full-year resident tax return

P = Part-year / non-resident tax return

M = Missing (no tax file)

We add subscripts to the notation to indicate the year relative to the reference year. So, if the reference year is 2004, then subscript -1 means 2003, 0 means 2004, and +1 means 2005.

In-Migration

Three year definition: $MPF = M_{-1}P_0F_{+1}$

Four year definition: $MMPF = M_{-2}M_{-1}P_0F_{+1}$

This definition of in-migration refers to the following sequence of tax filing: no taxes filed, M_{-1} (or $M_{-2}M_{-1}$for two years of non-filing), then a part-year return in the reference year (P_0), then a full-year return (F_{+1}). Though these individuals file their first full-year resident return in year +1, they arrived in California in the reference year 0.

Out-Migration

Three year definition: $FPM = F_{-1}P_0M_{+1}$

Four year definition: $FPMM = F_{-1}P_0M_{+1}M_{+2}$

This is the opposite sequence from in-migration: beginning with a full-year resident return (F_{-1}), in the reference year a part-year return is filed (P_0), followed by no further tax filing (M_{+1}), confirmed by $M_{+1}M_{+2}$.

We use four-year definitions to ensure that an incidence of M is not error. A tax filer could be missing either because they were not in the state, or because their tax return was miscoded in a given year.[2] In the latter case, even though the individual filed taxes and remains in California, they would appear to have migrated. Using two years of missingness, in our view, identifies individuals who have truly migrated (rather than having been misplaced in the tax data for a year).

2.2. Supplemental Migration Definitions

It is also possible that migration occurs without an episode of filing a part-year return. Some people who migrate very close to the beginning or end of the year, for example, will not be required to file a part-year return. Such individuals will simply disappear from the tax records.

[2] It is also possible that their income fell below the requirement for filing state income taxes in a given year. This should also not be confused with migration.

To measure this, we examine supplemental definitions of "migration", for individuals who simply shift from full-year filers to not filing at all:

In-Migration (supplemental definition): $MMFF = M_{-2}M_{-1}F_{0}F_{+1}$

Out-Migration (supplemental definition): $FFMM = F_{-1}F_{0}M_{+1}M_{+2}$

These supplemental "migration" definitions include "births" into the tax system, and more problematically, deaths. Filing for a time and then disappearing from the tax records is exactly the filing sequence of individuals who die. We do not currently have any way of otherwise identifying deaths from the tax records. In our data, we observe 70,000 instances of sudden (FFMM) "out-migration," which is roughly the number of deaths we expect to find for these income groups over this time period. Thus, we believe the supplemental definitions largely do not capture migration behavior. However, as a further check, the FTB is in the process of gathering the available data on filer deaths.

Table 2.1 Comparison of Migration Definitions

1994 – 2007. Tax Filers $500,000+						
Core Definition	**In-Migration**			**Out-Migration**		
3-year	mpf	90,230	100%	fpm	51,336	100%
4-year	mmpf	81,676	91%	fpmm	41,918	82%
	Not mmpf	8,554	9%	Not fpmm	9,418	18%
Supp. Definition						
3-year	mff	185,792	100%	ffm	164,558	100%
4-year	mmff	80,985	44%	ffmm	70,751	43%
	Not mmff	104,807	56%	Not ffmm	93,807	57%

Note: The four-year in-migration rates are available up until 2008, though the out-migration rates (which require two "forward" years) are only available to 2007. Likewise, although the current data set goes back to 1992, in-migration requires two lag years to observe, so our earliest year of in-migration rates is 1994.

2.3 Identification Strategy

How does one identify the effect of a millionaire's tax on migration? We use two complementary strategies. First, we look simply at annual migration rates for treatment and control groups. The treatment group is composed of individuals who earn enough to place them inside the tax bracket – i.e., people who pay more under the new tax rate. For the 2005 MHS tax, the treatment group is individuals who earned at least $1 million per year after 2004. The control group is high-income individuals who are not subject to the tax rate. We define the control group to be those earning $500,000 to $1 million per year.

There may well be differences in the migration rates between the treatment and control group. This is acceptable, since we are looking for a divergence between these groups' migration rates that occurs after the tax was introduced. Thus, we do not require that the treatment and control groups have the same baseline migration rates. We simply expect that the tax creates a new difference between the groups after 2005. Specifically, the net migration rate should increase for those affected by the tax relative to those in the control group.

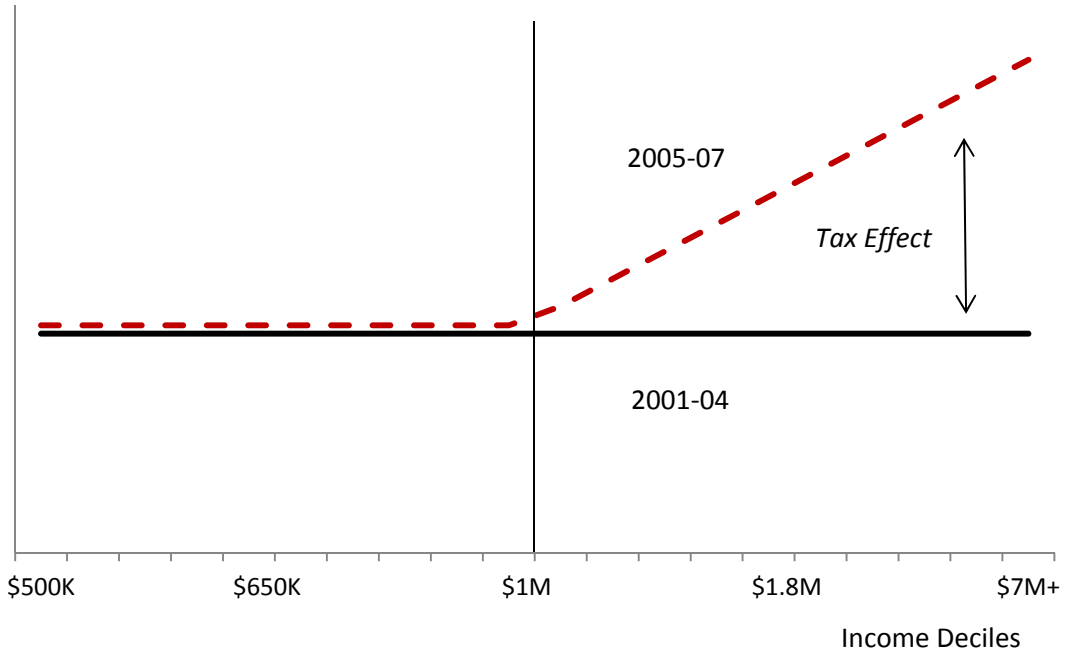
The principal purpose of the control group is to capture (non-tax) social, political, and macroeconomic trends that affect the migration behavior of top-income earners. The effect of the tax specifically is observed by a new increase in net migration among the treatment group, but not among the controls.

Our second identification strategy takes into account the marginal rate structure of the tax. Our first analysis treats the tax as if it were a lump sum fee that falls equally on all individuals with more than $1 million in income. However, with a marginal tax rate, all income below $1 million is exempt from the higher rate. The new rate only applies to earnings above $1 million. Thus, for individuals earning $1,000,001, their tax increase is 1 penny. For those making $10,000,000, their tax increase is $90,000. The magnitude and the effective rate of the tax hike grows with the amount earned above $1 million. Thus, we not only expect a net migration response for the treatment group relative to controls. We also expect that any effect of the tax hike would grow with income in the treatment group.

If the tax were to have an effect on migration, Figure 2.1 illustrates the change we would expect, by detailed income levels. (Using real data, we break up the control and treatment groups into income deciles; the income levels depicted here reflect our income deciles.) The solid line shows the income-migration profile for the pre-tax years, depicted here as completely flat: as

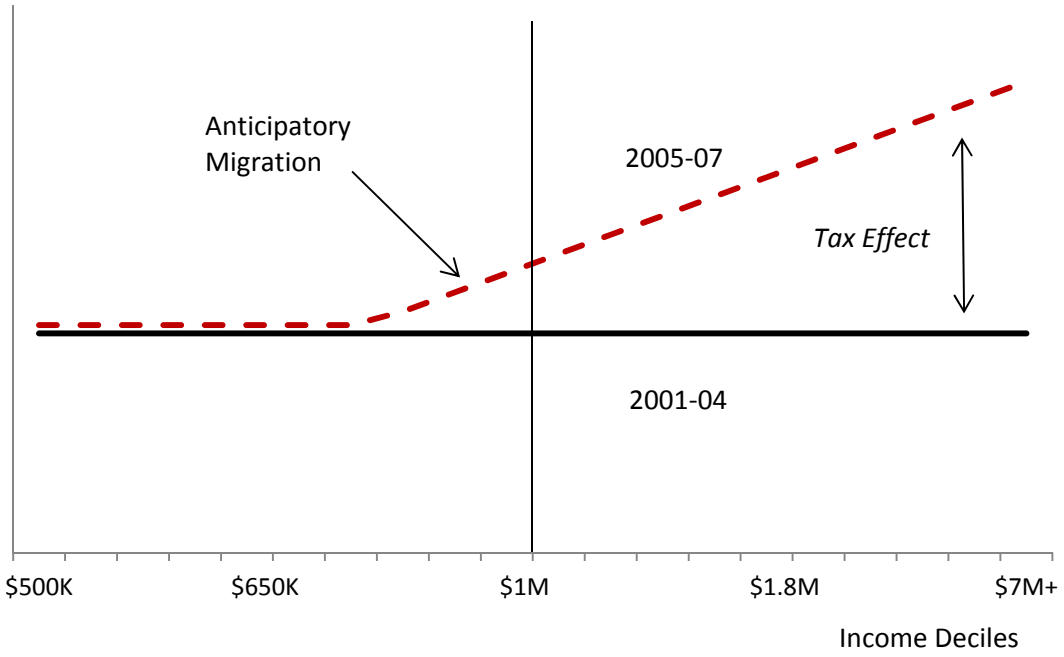
income grows, out-migration rates remain constant. The dashed line shows the income-migration profile in the three years after the tax was passed. On the left-hand side of the graph, we see that migration rates were unaffected for those earning less than $1 million. The right-hand-side shows a steadily increasing out-migration rate. This reflects the fact that those in the treatment group with the highest incomes experienced the largest tax increases – both in dollar terms, and in their effective tax rate.

Figure 2.1 Expected Effect on Out-migration Rates after the 2005 MHST



One criticism of this design is that there may be some anticipatory migration by people just below the tax bracket. Suppose that people in the control group anticipate future income growth, and migrate in response to the new tax, even though they are not yet affected by it. Such anticipatory migration should be readily observable in our analysis. It simply means that migration rates begin to increase at incomes below the $1 million bracket. The highest earners of the "control group" believe that they are better understood as being "treated" by the tax (not yet, but very soon). Figure 2.2 shows a pattern of anticipatory migration.

Figure 2.2 Expected Out-migration Effect, with Anticipatory Migration



For in-migration, the prediction is that the tax increase will reduce in-migration rates among those exposed to the tax. So, in Figure 2.3 (below) the pre-tax period (2001-04) provides baseline migration rates, represented by the solid flat line. The figure assumes that in-migration rates are constant as income increases, but the analysis can accommodate any income-migration profile. In the post-tax period (2005-07) migration rates should not be affected for incomes below $1 million; for higher incomes, in-migration rates should be declining, and the effect should grow stronger as more and more income is subjected to the higher tax rate. In other words, above $1 million, in-migration rates should start dropping as income increases (as illustrated by the dashed line).

And finally, for in-migration, any anticipatory migration effects would be observed in much the same way as for out-migration. (See Figure 2.4). In the post-tax period, some high-income earners in the control group would anticipate growing into the higher tax bracket, and decide not to move to CA before this happens.

Figure 2.3 Expected Effect on In-migration Rates, after the 2005 MHST

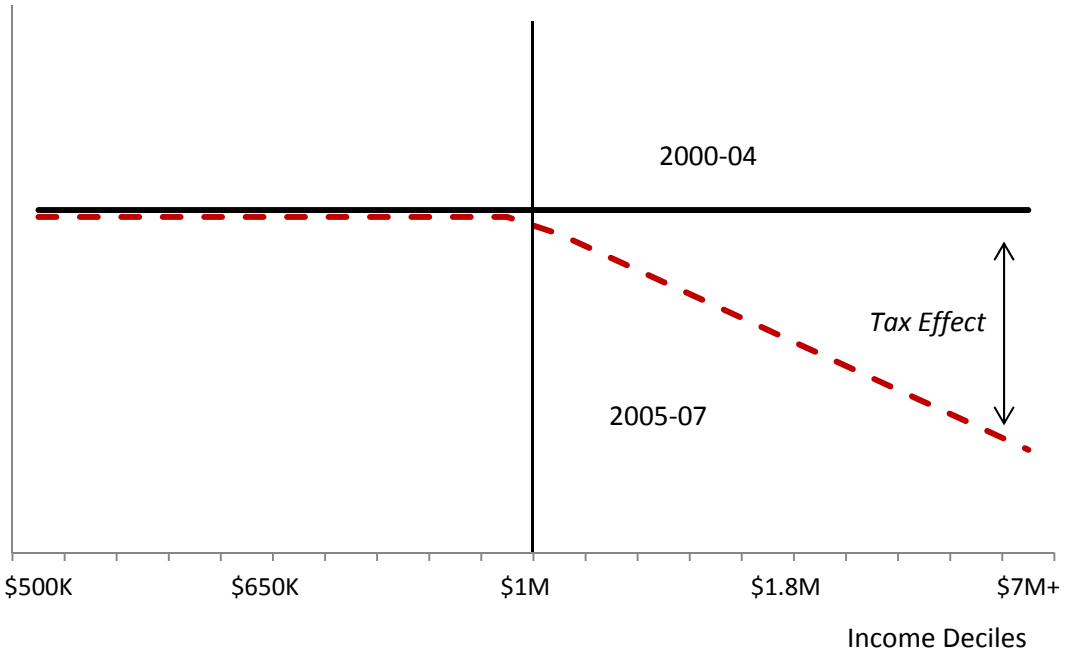
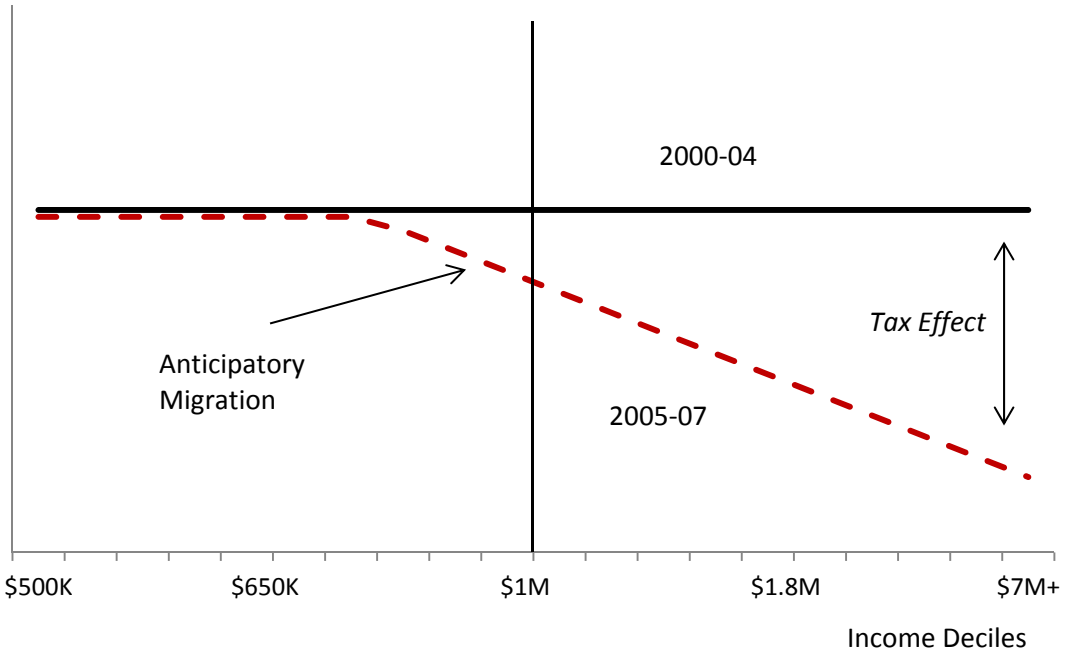


Figure 2.4 Expected In-migration Effect, with Anticipatory Migration



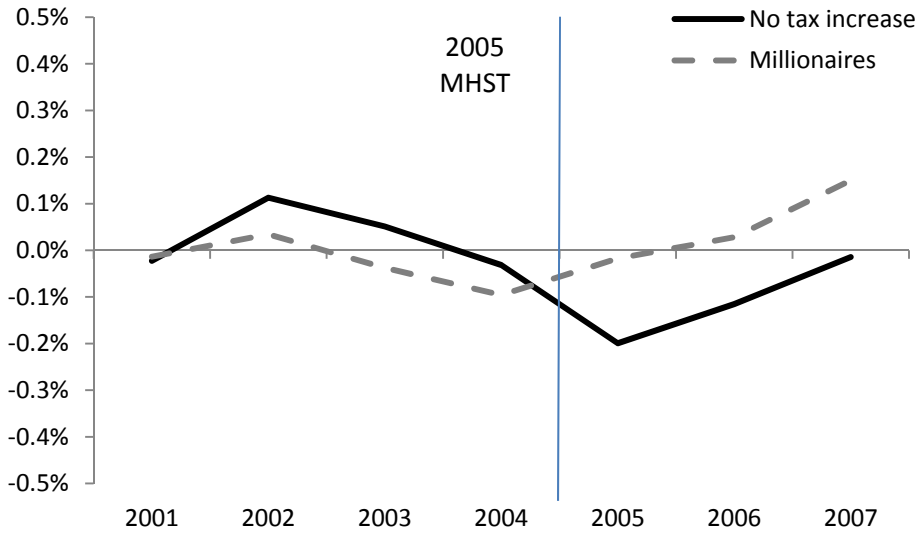
3. Results

In this section, we describe the results of our analysis. First, we examine the 2005 Mental Health Services Tax. We show the migration rates of millionaires before and after the tax, and compare these rates to the migration rates of high-income earners who did not pay the tax. Then, we show how the conclusions we draw from our main MHST analysis apply to another tax change: the 1996 tax cuts.

3.1 The 2005 Mental Health Services Tax

As a first analysis, we examine the net migration rates of people exposed to the new tax (those making $1 million +) compared to the control group of high-income earners not subject to the tax (those earning $500,000 to $1 million).

Figure 3.1 Net Migration Rates, Treatment and Control Groups, 2001-07



This analysis shows that in the years after the tax took effect, net migration for the treatment group (those exposed to the tax) increased relative to migration rates for the control group. The magnitude of difference is very small. Nonetheless, net migration of millionaires turned positive, while net migration of half-millionaires turned negative in the years after the tax. A reasonable interpretation is that, for both groups, net migration was "zero-plus-noise" over the whole period. But from an accounting perspective, there was a gain in millionaires after the tax.

Table 3.1 shows the raw counts of base population, in-migrants, and out-migrants in each year, for both the treatment and control groups. One can see that the net migration counts (in particular) are very small relative to the base population.

Table 3.1 Population and Migration Counts, 2001-07

Control Group ($500k - $1M)

	Pop	In-mig	Out-mig	Net	Net Rate
2001	88,191	754	774	-20	-0.02%
2002	80,676	691	600	91	0.11%
2003	90,036	711	665	46	0.05%
2004	110,382	822	857	-35	-0.03%
2005	131,393	1023	1285	-262	-0.20%
2006	145,805	1101	1269	-168	-0.12%
2007	158,562	1205	1228	-23	-0.01%
Std Dev	28,427	191	276	113	
Min	80,676	691	600	-262	
Max	158,562	1,205	1,285	91	

Treatment Group ($1M+)

	Pop	In-mig	Out-mig	Net	Net Rate
2001	51,445	408	415	-7	-0.01%
2002	43,663	294	279	15	0.03%
2003	50,140	281	300	-19	-0.04%
2004	65,809	354	417	-63	-0.10%
2005	79,759	471	485	-14	-0.02%
2006	89,110	543	518	25	0.03%
2007	97,289	638	492	146	0.15%
Std Dev	19,390	122	87	61	
Min	43,663	281	279	-63	
Max	97,289	638	518	146	

The population of full-year resident millionaires has ranged from 44,000 to 97,000, while out-migration has ranged from less than 300 to just over 500. Net migration has ranged from -63 to 146. One standard deviation in the population of millionaires is 19,390; the corresponding

number for net migration is 61. Migration accounts for only one-third of one percent of the variation in the number of millionaires in California.

To make this point more intuitively clear, Table 3.2 shows the annual change in the population of California millionaires, along with the annual change in the net migration of millionaires. The number of millionaires has gone up or down, on average, by 10,235 people a year. The net-migration of millionaires has gone up or down by 47 people.[3] Migration accounts for just one-half of one percent (0.5%) of the changes in the millionaire population.

Table 3.2 Millionaire Population Changes

	Change in Number of Millionaires	Change in Net Migration of Millionaires
2002	-7,782	15
2003	6,477	-19
2004	15,669	-63
2005	13,950	-14
2006	9,351	25
2007	8,179	146
Average of Absolute Changes	10,235	47

Despite the limited importance migration plays for the size of California's millionaire population, the central goal of the paper is to identify the responsiveness of migration to top tax rates. Next, we look at migration rates before and after the tax by detailed income group. We organize the control group into ten income deciles, and do the same for the treatment group. Table 3.3 shows the decile cut points for both the control and treatment groups, and shows the in- and out-migration rates at each level. The only noticeable pattern here is that migration declines with income. Individuals at the very top seem to be more strongly attached to their current state than other slightly less wealthy individuals.

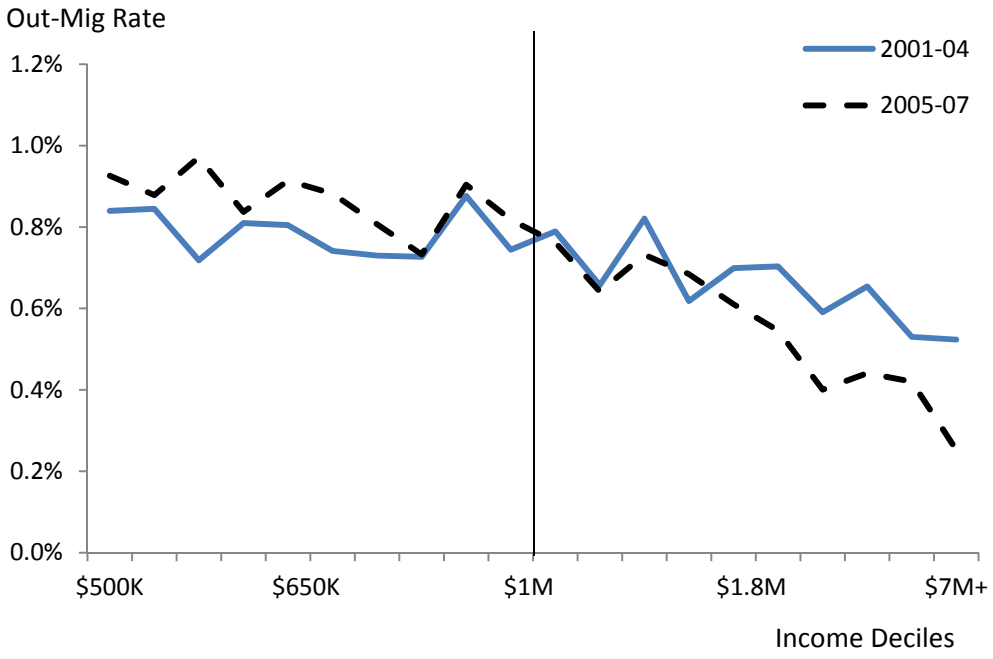
[3] Absolute changes ignore the signs (i.e., whether the population change was positive or negative) and focuses simply on the magnitude of typical year-to-year changes.

Table 3.3 Decile Definitions and Migration Rates

Decile Label	Greater than:	Less than / equal to:	In-migration rate		Out-migration rate	
	Control Group		2001-04	2005-07	2001-04	2005-07
1	$500,000	$523,401	0.9%	0.8%	0.8%	0.9%
2	$523,402	$549,708	0.8%	0.8%	0.8%	0.9%
3	$549,709	$579,636	0.9%	0.7%	0.7%	1.0%
4	$579,637	$613,628	0.8%	0.9%	0.8%	0.8%
5	$613,629	$652,954	0.8%	0.9%	0.8%	0.9%
6	$652,955	$698,873	0.7%	0.8%	0.7%	0.9%
7	$698,874	$752,860	0.8%	0.6%	0.7%	0.8%
8	$752,861	$818,440	0.8%	0.7%	0.7%	0.7%
9	$818,441	$898,938	0.8%	0.8%	0.9%	0.9%
10	$898,939	$1,000,000	0.7%	0.6%	0.7%	0.8%
	Treatment Group					
11	$1,000,001	$1,089,977	0.7%	0.7%	0.8%	0.8%
12	$1,089,978	$1,201,659	0.6%	0.6%	0.7%	0.6%
13	$1,201,660	$1,343,321	0.7%	0.7%	0.8%	0.7%
14	$1,343,322	$1,530,325	0.6%	0.6%	0.6%	0.7%
15	$1,530,326	$1,785,974	0.7%	0.8%	0.7%	0.6%
16	$1,785,975	$2,162,740	0.7%	0.6%	0.7%	0.5%
17	$2,162,741	$2,762,379	0.7%	0.6%	0.6%	0.4%
18	$2,762,380	$3,911,684	0.6%	0.5%	0.7%	0.4%
19	$3,911,685	$6,992,323	0.4%	0.5%	0.5%	0.4%
20	$6,992,324	> $1B	0.4%	0.4%	0.5%	0.3%

Recall that the tax flight argument anticipates increasing out-migration among the highest earners ($1 million+) after a tax increase. However, after the 2005 MHST, we actually observe the opposite. Figure 3.2 shows that out-migration rates *decline more* among the highest earners in the post-tax period.

Figure 3.2 Out-migration Rates by Income, before and after the MHST.

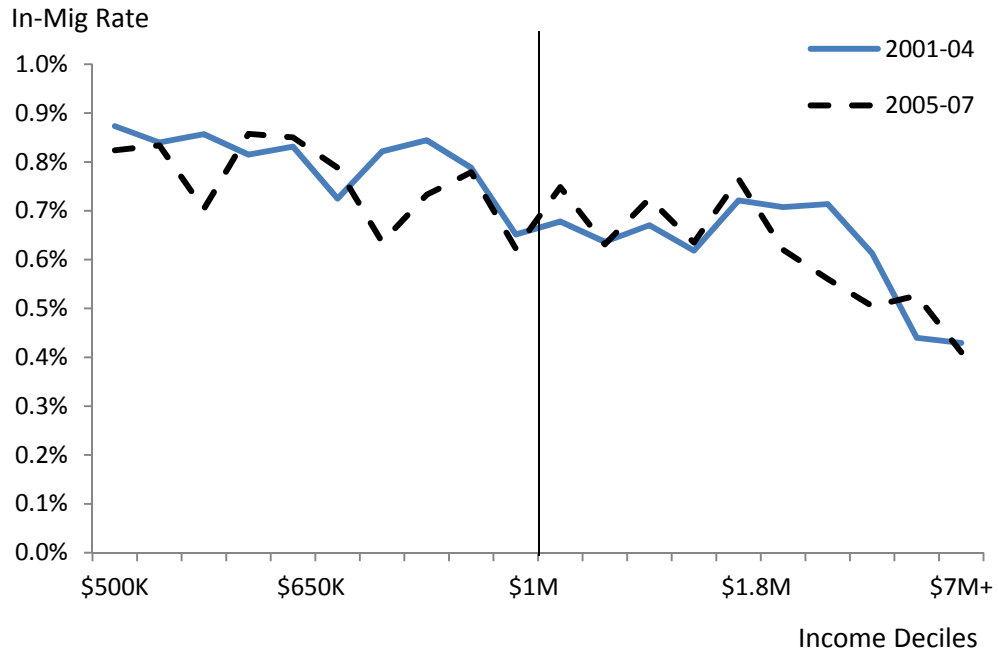


	Before	After	Diff
Control	0.8%	0.9%	0.1%
Treatment	0.7%	0.5%	-0.1%
Diff	-0.1%	-0.3%	-0.2%

The highest-income Californians were less likely to leave the state after the millionaire tax was passed. For the control group, the out-migration rate increased from 0.8% to 0.9%. This is shown on the left-hand side of the graph, with the dashed line (representing 2005-07) higher than the solid line (2001-04). For the treatment group (on the right-hand side of the graph), out-migration falls from 0.7% to 0.6%. The difference-in-differences estimate is calculated as the decline for the treatment group minus the increase for the control group (which provides the counter-factual expected migration patterns had the MHST not come into effect). The DiD estimate is -0.2%.

In-migration follows the general pattern of decline with income: high-income individuals are less likely to be new in-migrants. (See Figure 3.3 below). However, the pattern is the same both before and after the passage of the MHST. Support for the tax flight argument would require declining in-migration among those exposed to the tax after it was passed. The simple DiD estimate is zero.

Figure 3.3 In-migration Rates by Income, before and after the MHST



	Before	After	Diff
Control	0.8%	0.8%	0.0%
Treatment	0.6%	0.6%	0.0%
Diff	-0.2%	-0.1%	0.0%

3.2 The 1996 Tax Cuts

Migration "non-response" to modest changes in tax policy is also relevant for policymakers considering tax cuts. Just as new top tax brackets do not drive millionaires to flee California or New Jersey (Young and Varner 2011), we do not expect tax cuts to influence top-income earners' state of residency. To test this expectation, we also use the California data to measure potential effects of the 1996 tax cuts on the migration of top-income earners. The 1996 tax cuts included two changes, a smaller 0.7 percentage point cut and a larger 1.7 percentage point cut.

Figure 3.4 Net Migration Rates, 1994-97

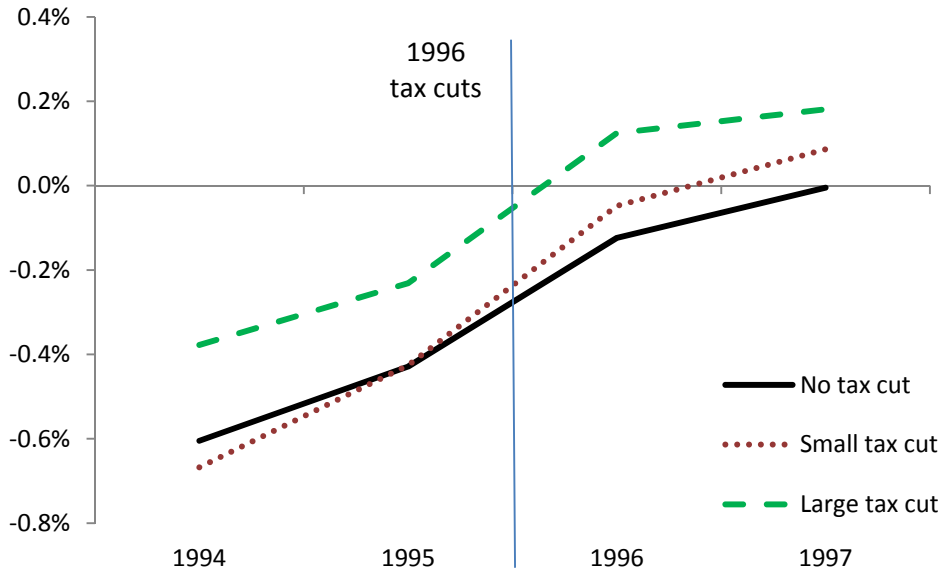


Figure 3.4 shows that net migration was trending positive for all groups during this period. These were economic boom times for California. Net out-migration was turning towards net in-migration.

The group with the small tax cut (dotted line) raised its net in-migration more than the control group (which received no tax cut). This is the expected effect for tax-induced migration (an increase in net in-migration following the tax cut, compared to the controls who did *not* receive a tax cut). In contrast, the group facing a large tax cut (dashed line) tracks the control group very closely, indicating no tax effect. The "large tax cut" group should have a growing

divergence from the controls after 1995 – it should look like a stronger version of the small tax group. Instead, we see the opposite – the group with the large tax cut had a smaller (zero) response than the group with a small tax cut. These results indicate no consistent effect of the 1996 tax cut.

Table 3.4 shows the raw counts of base population, in-migrants, and out-migrants in each year, for both the treatment and control groups. Again, one can see that the net migration counts (in particular) are very small relative to the base population.

Table 3.4 Population and Migration Counts, 1994-97

Control Group ($80,000 to $106,899)

	Pop	In-Mig	Out-Mig	Net-Mig	Net Rate
1994	910,007	4,967	10,470	-5,503	-0.6%
1995	980,134	5,882	10,083	-4,201	-0.4%
1996	1,068,998	7,669	8,994	-1,325	-0.1%
1997	1,180,908	9,310	9,366	-56	0.0%
Growth	30%	87%	-11%		

Treatment Group 1 ($106,900 to $212,379)

	Pop	In-Mig	Out-Mig	Net-Mig	Net Rate
1994	716,401	7,133	11,917	-4,784	-0.7%
1995	808,737	8,654	12,097	-3,443	-0.4%
1996	936,001	10,740	11,190	-450	0.0%
1997	1,103,190	13,470	12,518	952	0.1%
Growth	54%	89%	5%		

Treatment Group 2 ($212,380 +)

	Pop	In-Mig	Out-Mig	Net-Mig	Net Rate
1994	220,915	2,129	2,963	-834	-0.4%
1995	260,204	2,903	3,505	-602	-0.2%
1996	307,368	3,913	3,530	383	0.1%
1997	373,597	4,743	4,066	677	0.2%
Growth	69%	123%	37%		

Table 3.5 1994-97 Difference-in-Differences Estimates

Net migration

	Control	Small tax cut	Large tax cut	
1994	-0.6%	-0.7%	-0.4%	
1995	-0.4%	-0.4%	-0.2%	
1996	-0.1%	0.0%	0.1%	
1997	0.0%	0.1%	0.2%	
Before	-0.52%	-0.55%	-0.30%	
After	-0.06%	0.02%	0.15%	
Difference	0.45%	0.57%	0.46%	
DiD		0.11%	0.01%	-0.11%

Table 3.5 shows the difference-in-difference estimates. Relative to the control group, net migration increased for the group experiencing the small tax cut, i.e. those earning between $106,900 and $212,379. However, the large tax cut did not increase net migration for those earning more than $212,379. Again, their trend mimics the control group trend.

4. Discussion and Analysis Checks

We have found no observable effect of two California tax changes on the migration behavior of high-income earners. In this section, we consider whether these results might be sensitive to an alternative definition of migration. We also show, using a reverse placebo test, that the FTB data are capable of detecting migration responses to a well-established migration cause: divorce. Finally, we explain one reason why there is no migration responsiveness to the two tax changes we study here.

4.1 Sensitivity Analysis. "Partial" Migration

The main results consider migration events that are complete relocations from one state to another. The out-migrants defined above are full-year California residents before they move to another state and stop filing (and presumably owing) California taxes altogether (FPMM). Similarly, in-migrants had no previous economic attachment to CA before becoming full-year California residents (MMPF).

But interstate migration may also be partial in nature. For example, a full-year California resident can establish residency in another state but continue to earn (and pay tax on) California source income. This pattern may be common for top-income earners who can maintain second (or multiple) houses. These individuals may stay on with their current employer in an advisory or even permanent role, but live in California for only part of the year. Or, top-income earners may move away from California entirely but continue to take advantage of California income-generating opportunities.

Fortunately, the tax panel allows us to evaluate the sensitivity of our main results to this alternative migration mode. This is an important step in the analysis. "Partial migrants" do not imply complete losses to California—they continue to pay taxes on their California source income. Nevertheless, one might expect greater tax responsiveness among members of this group. If a person is "jurisdiction shopping" for a lower income tax rate, it is probably less costly to purchase a second house in, say, Nevada, rather than completely sever economic and social ties to California. By partially moving in this way, one may escape CA taxation on investment income while still drawing California salary.

There are a large number of non-residents who file tax returns in California. These are people who, for the most part, do not live in California, but earn some income here that requires them to file a CA tax return.

During 2001-07, 27% of those making between $500,000 to $1 million were not full-year residents; 42% of those making $1 million or more were likewise not full-year residents. For the control group, the non-residents made 17% of their annual income in California. For the treatment group, it was only 6%. In short, these are individuals who make the great majority of their income in ventures that are not sourced in California.

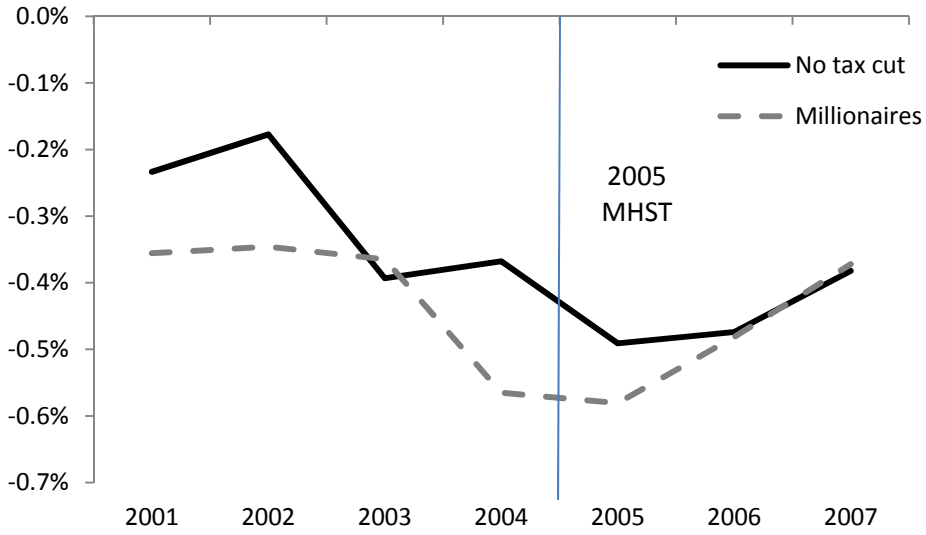
Table 4.1 looks at people making $500,000+ in focal year (-2), and then follows median income as they make the transition PPFF (in-migration) or FFPP (out-migration).

People who make the PPFF in-migration transition see a large jump in the share of their income that is CA-taxable, from 12%, to 32%, to 100% (this is partly because once a person is a full-year CA resident, all their income, regardless of source, is CA taxable). Likewise, people who out-migrate see a large drop in their income from 100% to 52% in the transition year, dropping to 17% the next year. These people are clearly reducing their economic attachment to California. For fiscal purposes, partial migrations are similar to full migrations.

Table 4.1 Income Trends of Partial Migrants

	Partial-to-Full In-Migration			Full-to-Partial Out-Migration		
	PPFF			FFPP		
Year	AGI		CA-Taxable Share	AGI		CA-Taxable Share
-2	$	878,849	12%	$	855,378	100%
-1	$	734,812	32%	$	741,661	100%
0	$	543,658	100%	$	699,356	52%
1	$	476,352	100%	$	590,196	17%

Figure 4.1 Net "Partial" Migration Rates



California sees a net loss in partial migrations in every year. The net volume of partial migrations is actually greater than that of the core migration definition (compare with Figure 3.1). There is a net loss of roughly 0.4% of the population every year through partial migration.

Nevertheless, the 2005 tax hike did not have an observable effect on partial migrations. If anything, partial out-migration among the treatment group declined (shifted towards zero) after the tax was passed.

Table 4.2 shows the raw counts of base population, in-migrants, and out-migrants in each year, for both the treatment and control groups.

Table 4.2 Partial Migration Rates, 2001-07

Control Group ($500k - $1M)

	Pop	In-mig	Out-mig	Net	Net Rate
2001	88,191	340	546	-206	-0.23%
2002	80,676	280	423	-143	-0.18%
2003	90,036	250	604	-354	-0.39%
2004	110,382	343	749	-406	-0.37%
2005	131,393	376	1,021	-645	-0.49%
2006	145,805	448	1,139	-691	-0.47%
2007	158,562	539	1,145	-606	-0.38%
Std Dev	28,427	92	275	201	
Min	80,676	250	423	-691	
Max	158,562	539	1,145	-143	

Treatment Group ($1M+)

	Pop	In-mig	Out-mig	Net	Net Rate
2001	51,445	204	387	-183	-0.36%
2002	43,663	183	334	-151	-0.35%
2003	50,140	214	397	-183	-0.36%
2004	65,809	230	602	-372	-0.57%
2005	79,759	305	768	-463	-0.58%
2006	89,110	309	738	-429	-0.48%
2007	97,289	372	734	-362	-0.37%
Std Dev	19,390	64	175	120	
Min	43,663	183	334	-463	
Max	97,289	372	768	-151	

The next table (4.3) shows the annual changes in the millionaire population, compared to changes in net partial migration of millionaires. Changes in partial migration account for less than one percent (0.7%) of the changes in the millionaire population.

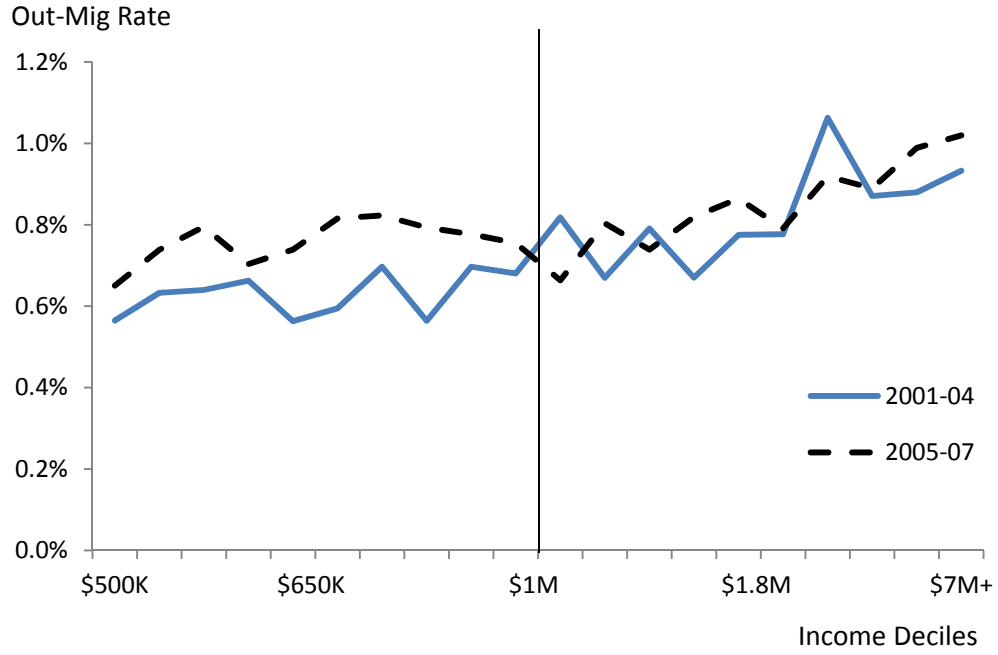
Table 4.3 Millionaire Population Changes and Partial Migration

	Change in Number of Millionaires	Change in Net (Partial) Migration of Millionaires
2002	-7,782	32
2003	6,477	-32
2004	15,669	-189
2005	13,950	-91
2006	9,351	34
2007	8,179	67
Average of Absolute Changes	10,235	74

Figure 4.2 (below) shows the "partial" out-migration rates, by income decile, before and after the MHST. Here, we define out-migration by two years of full-year filings followed by two consecutive years of part-year/nonresident filings (FFPP). The data show that partial migration is indeed common among top-income earners. "Partial" and "complete" out-migrants appear in the data in roughly equal numbers. In contrast to the pattern for "complete" migration, partial migration increases with income. This may help explain some of the downward slope we saw in the main results. Top-income earners may be more likely to change residences without giving up their job (or other income opportunity) in their current state.

We would expect to observe a widening gap across the income distribution, since multi-millionaires experience larger tax increases than millionaires do. However, Figure 4.2 does not show the expected pattern. Instead, the gap narrows slightly with a DiD of -0.1 percent. Contrary to the tax flight argument, there is no tax effect on California top-income earners who "partially migrate."

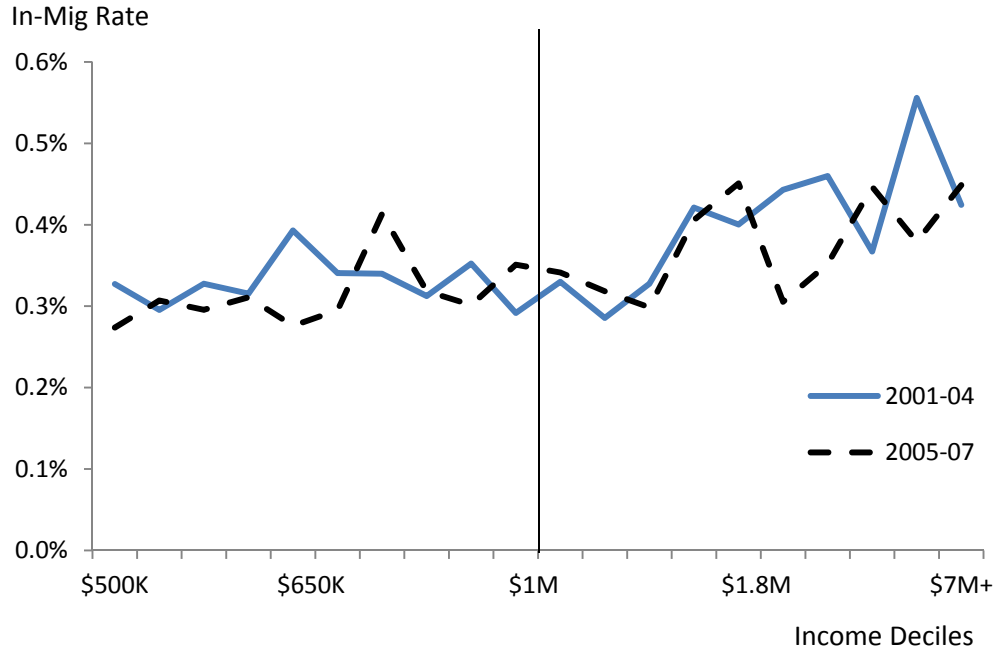
Figure 4.2 Partial out-migration (FFPP)



	Before	After	Diff
Control	0.6%	0.8%	0.1%
Treatment	0.8%	0.8%	0.0%
Diff	0.2%	0.1%	-0.1%

The story is similar for in-migration, shown in Figure 4.3 below. Again, "partial" in-migration is more common as a pattern among millionaires, and particularly, multi-millionaires. However, there is no difference in the rates before and after the MHST. For partial in-migration the DiD estimate is actually zero.

Figure 4.3 Partial in-migration (PPFF)



	Before	After	Diff
Control	0.3%	0.3%	0.0%
Treatment	0.4%	0.4%	0.0%
Diff	0.1%	0.1%	0.0%

4.2 Divorce Analysis

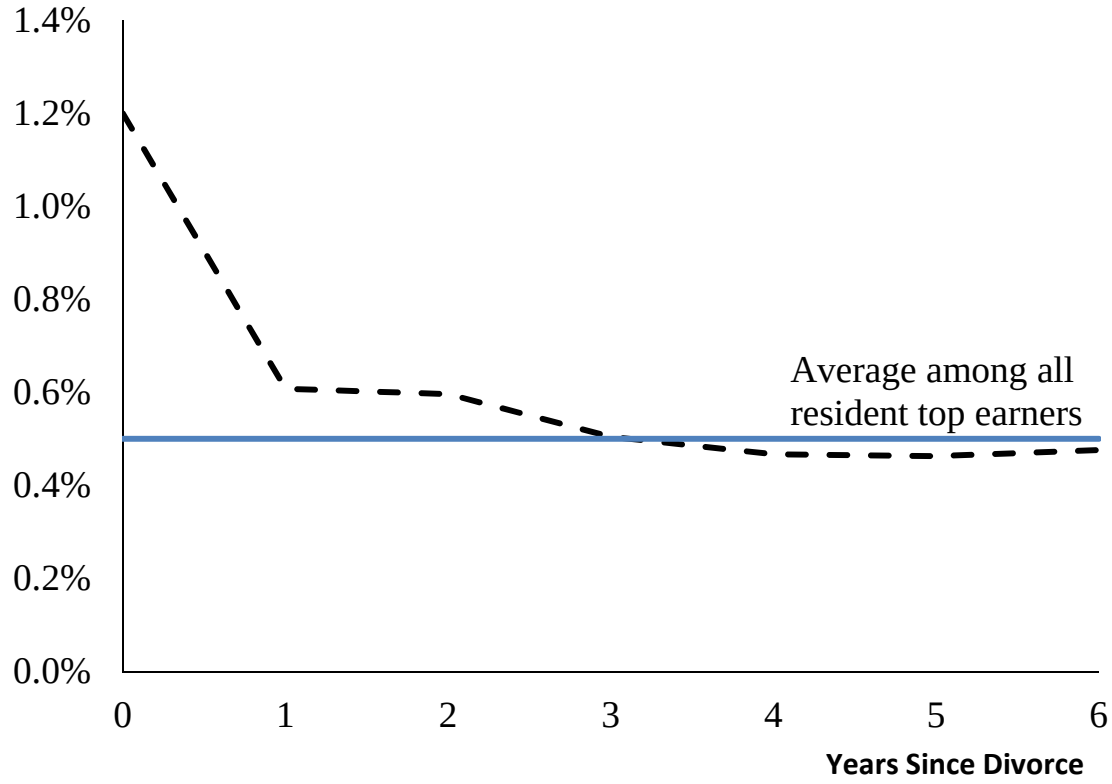
Both the main results and the sensitivity check on partial migration find no responsiveness to the tax changes. This could indicate that the migration measures in the data are just too noisy to detect a response. To check this possibility, we estimate responsiveness to a very probable migration cause—divorce. At least one member of the divorcing couple is changing residency, and is often seeking distance and a new start in life. We expect divorce to significantly increase the probability of migration.

We identify episodes of divorce when individuals changing their filing status from "married filing jointly" in year (-1) to "single" in year (0). In other words, these are individuals who filed as married in the previous year, and filed as single in the current (focal) year.

Figure 4.4 compares the out-migration rates among recent divorcees to the top-income earner population average out-migration rate. Divorced individuals are grouped by the number of years that have elapsed since divorce. Recent divorce has a clear effect on migration propensity. The more recent the divorce, the stronger is the migration response. Relative to the population average, divorces that occurred in the past year more than double the out-migration rate, from 0.5 to 1.2 percent. This "divorce effect" falls off as time passes and is fairly flat for divorces that happened more than three years ago. In short, divorce increases the likelihood of migration for the first three years – though much of this effect occurs in the first year. After three years, migration propensity returns to population-wide levels.

The basic conclusion from this analysis is that the FTB data can clearly detect factors that influence migration. Divorce is something that has a very clear effect on migration; modest changes in the tax rate for high-income earners do not.

Figure 4.4. Percent out-migrant, by years elapsed since a divorce.



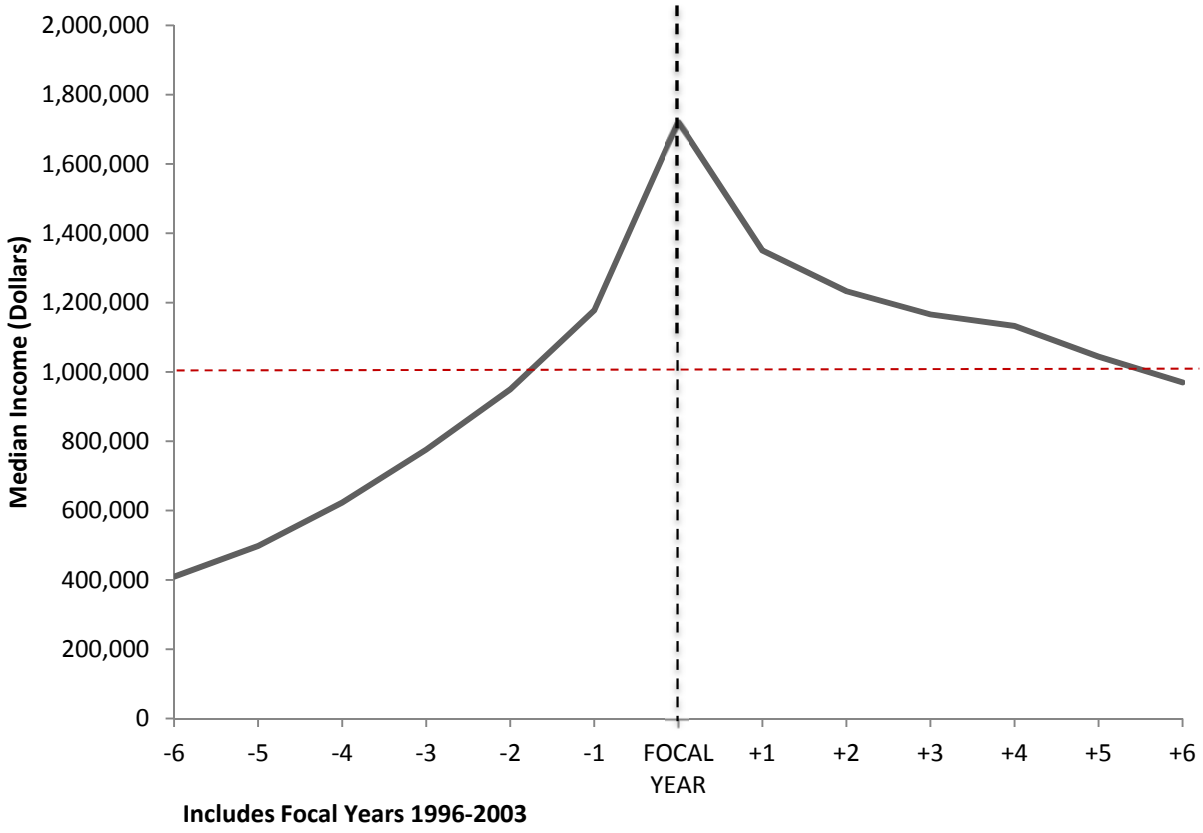
Note: Includes focal years 1999-2007. Includes individuals earning $500,000 + in focal year.

4.3 Income Profile Analysis

If a person is a "millionaire" in a given tax year, how many years should they expect to be in the bracket? This is a key question for someone considering whether to migrate for tax purposes.

We took people who were in the bracket in a given year, and looked at their income six years before and six years after. As shown in Figure 4.5, people are in the tax bracket for 7 out of 13 years, or 54 percent of the time.

Figure 4.5 Median Income Profile of People Making $1M+ in Focal Year



This varies based on the business cycle. But in general and for most people, earning a million dollars a year is a temporary situation. It is more of a spike in earnings than their usual, year-to-year income.

Also, what proportion of their long-term income is subject to the tax? This is important, since only the income above $1 million is subject to the tax.

In this analysis, annual median income aggregated over 13 years is roughly $13 million. Of that, only $1.8 million fell inside the millionaire tax bracket. This means that only 14% of their "lifetime" (13-year) income would be affected by the tax (if the tax had been in place all years). The total 13-year MHS tax bill for a representative millionaire would be about $18,000. As a share of lifetime income, this is an effective tax rate of roughly 0.1% (one-tenth of one percent).

In summary, the long-term view shows that a representative millionaire earns enough to hit the tax bracket in only half of their prime income-earning years, and over this period only 14% of their income is subject to the extra marginal tax rate. *For the representative millionaire, their effective tax increase is not 1 percent, but rather 0.1 percent.* For most people, the tax falls on a few unusually good years of earnings. This helps explain why we see so little responsiveness to the tax.

5. Conclusion

This study has used the California income tax data to evaluate how high-income tax-filers respond to the introduction of a millionaire's tax. Our central findings are as follows.

1. Migration is a very small component of changes in the number of millionaires in California. While the millionaire population sees a typical year-to-year fluctuation of more than 10,000 people, net migration sees a year-to-year fluctuation in a range of 50 to 120 people. At the most, migration accounts for 1.2 percent of the annual changes in the millionaire population. The remaining 98.8 percent of fluctuation in millionaire population is due to income dynamics at the top – California residents growing into the millionaire bracket, or falling out of it again.

2. Using difference-in-differences models, which compares migration trends of the group experiencing the tax increase to a group of high-income earners *not* facing a tax change, neither in-migration or out-migration show a tax flight effect from the introduction of the 2005 Mental Health Services Tax. In fact, out-migration has a "wrong-signed" estimate: out-migration declined among millionaires after the tax was passed (both in absolute terms and compared to the control group).

3. The 1996 tax cut for high-income earners likewise had no consistent effect on migration. There was a small effect for those experiencing the small (0.7%) tax cut, but no effect at all for those experiencing the large (1.7%) rate cut. While we are planning to analyze the 1996 tax cut in greater detail, the overall picture is one of no consistent effect.

4. Using an expanded definition of migration – the shift from resident to non-resident tax filer (i.e., not living in California but still earning some income in California), we continue to see no evidence of responsiveness to the MHS tax. This group is unexpectedly important: many high-income out-migrants do, in fact, continue to earn some income and pay some taxes in California. This group also shows the "wrong-signed" estimate for out-migration. This is similar to the wrong-signed estimate in our core migration measure: "full" out-migration of millionaires also declined after the tax was passed (both in absolute and relative to the controls).

5. There is a strong out-migration effect for high-income earners who become divorced. In the year of divorce, the migration rate more than doubles, and remains slightly elevated for two years after the event. This shows that there are circumstances that do generate millionaire migration. The tax policy changes examined in this report are very modest compared to the life-impact of martial dissolution.

6. Most people who earn $1 million or more are having an unusually good year. Income for these individuals was notably lower in years past, and will decline in future years as well. A representative “millionaire” will only have a handful of years in the $1 million + tax bracket. The somewhat temporary nature of very-high earnings is one reason why the tax changes examined here generate no observable tax flight. It is difficult to migrate away from an unusually good year of income.

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