Millionaire Migration and the Taxation of the Elite: Evidence from Administrative Data

Cristobal Young\textsuperscript{1}, Charles Varner\textsuperscript{2}, Ithai Lurie\textsuperscript{3}, Richard Prisinzano\textsuperscript{3}

October 20, 2015

1. Department of Sociology, Stanford University. 2. Center on Poverty and Inequality, Stanford University. 3. Office of Tax Analysis, U.S. Department of the Treasury.

The authors wish to thank Monica Prasad, Emmanuel Saez, David Pedulla, Pablo Mitnik, Sarah Quinn, David Grusky, Andrew Friedson, Michael Weber, Christof Brandtner, and Patricia Young for helpful comments and feedback in preparing this manuscript. Daniel Allen, Brandon Baum, Adam Ginzberg, and Ryan Leupp provided valuable research assistance. This research was supported by the Russell Sage Foundation (Project Number 83-15-04) and a seed grant from the Institute for Research in the Social Sciences at Stanford University. This research uses confidential taxpayer information from the Internal Revenue Service that is not publicly available. Interested researchers may contact the Office for Tax Analysis at IRS to inquire about data access. The views expressed are those of the authors and not necessarily those of the U.S. Department of the Treasury. Direct correspondence to Cristobal Young, 450 Serra Mall, Building 120, Room 160, Stanford, CA 94305, 650-723-3956, cristobal.young@stanford.edu.

Key words: elites, migration, income tax, administrative data, regression discontinuity.
Abstract

A growing number of U.S. states have adopted ‘millionaire taxes’ on top income earners. This increases the progressivity of state tax systems, but raises concerns about tax flight: elites migrating from high-tax to low-tax states, draining state revenues and undermining redistributive social policies. Are top income earners ‘transitory millionaires’ searching for lower-tax places to live? Or are they ‘embedded elites’ that are reluctant to migrate away from places where they have been highly successful? This question is central to understanding the social consequences of progressive taxation. We draw on administrative tax returns for all million-dollar income earners in the United States over 13 years, tracking the state from which millionaires file their taxes. Our data set contains 45 million tax records and provides census-scale panel data on top income earners. We advance two core analyses: (1) state-to-state migration of millionaires over the long-term, and (2) a sharply-focused discontinuity analysis of millionaire population along the borders of states. We find that millionaire tax flight is occurring, but only at the margins of statistical and socio-economic significance.
1. Introduction

Rising income inequality is one of the deepest challenges facing American society in the 21st century (Keister 2014; McCall and Percheski 2010; Piketty 2014; Volscho and Kelly 2012). Yet there have been few clear policy responses to growing inequality. Indeed, over the last three decades, federal tax policy has shifted away from the taxation of the elite, reducing tax rates on top incomes, capital gains, and multi-million dollar inheritances – a process to “untax the one percent” (Martin 2013; Piketty and Saez 2007). Increasingly, state governments have been tempted to fill this void with ‘millionaire taxes’ on top incomes (Young and Varner 2011). In essence, states have been “going where the money is” to find new revenues at the very top of the income distribution (Fairfield 2013:42; Volscho and Kelly 2012; Piketty and Saez 2007).

Taxation, as Morgan and Prasad emphasize, “is one of the central social obligations of the modern world” (2009: 1350). However, the size of this tax obligation varies over time and place, and is subject to political negotiation and unintended consequences such as tax migration. This may be particularly true for the highest income earners, who have marketable skills and deep pockets to invest in relocation. In a federal system with free migration, can different states sustain significantly different policies of elite taxation? Understanding how the demography of the elite responds to progressive taxation is central to the sociology and political economy of taxation.

In a globalizing world, many countries and regions are concerned about capital flight and the migration of top taxpayers. The United States provides an ideal empirical testing ground: a ‘world’ comprised of 51 small open economies with free migration between them (cf., Fligstein and Mara-Drita 1996). Millionaire migration across U.S. states sheds light on how, with the
ongoing advancement of globalization, top international tax rates may affect the geographic distribution of the world’s elites.

Millionaire taxes provide revenue to support public services and serve to moderate the growing inequality in market incomes. However, millionaire migration – the flight of the largest taxpayers – can drain state revenues and undermine state-level redistributive social policies (Mirrlees 1982; Feldstein and Wrobel 1998). The potentially out-sized impact of millionaire migration on state tax revenues may be one mechanism by which elites exert disproportionate influence over state policy (Khan 2012; Page, Bartels, and Seawright 2013; Dobbin, Simmons and Garret 2007; Martin 2010). Indeed, the threat of millionaire migration is powerful leverage in an ‘exit versus voice’ political negotiation over top tax rates (Carruthers and Lamoreaux 2013; Hirschman 1970).

We contrast two core perspectives on millionaire migration. The ‘transitory millionaire’ hypothesis presents top income earners as highly mobile actors searching for lower-tax places to live. The ‘elite embeddedness’ hypothesis, in contrast, suggests that most top income earners have strong social and economic ties to place, making it difficult to move away from places where one has achieved exceptional success. These perspectives offer two very different views on the likelihood of tax-induced migration, and thus on the social consequences of progressive taxation.

We develop a new framework and critical data set for demographic analysis of the elite, and apply it to understanding elite response to tax policy. Elites are difficult to study using conventional data sources. However, they must file their taxes – providing census-scale, panel data on how much they earn and where they live (cf. Piketty and Saez 2003; Chetty et al. 2014).
This study draws on restricted IRS data on the tax returns filed by all million-dollar income earners in all U.S. states between 1999 and 2011. The panel nature of the data allows us to track the state and county from which millionaires file their taxes.

Previous studies on elite tax flight have struggled with data limitations either by using narrow segments of the millionaire population (such as professional athletes) or by analyzing narrow geographic regions (such as one or two U.S. states). A study of the migration of elite European soccer players (Kleven, Landais, and Saez 2013) found clear evidence of top players moving away from teams in high-tax countries. However, athletes are not representative of top income earners in general, and for demographic and occupational reasons are probably an especially mobile segment of elite earners (as the authors note, ibid:1923). In the United States, studies have used administrative data on the full population of millionaires, examining the effect of ‘natural experiments’ in raising or lowering millionaire taxes (Young and Varner 2011; Varner and Young 2012). These studies found little or no elite migration response to top tax rates. However, these studies were limited to two U.S. states (New Jersey and California) that have high concentrations of millionaires and locational advantages that, compared to other states, may allow greater capacity to tax the rich.

This study provides an ideal combination of the broad-geography, multi-state lens of Kleven, Landais, and Saez (2013), and the scaled-up administrative data of Young and Varner (2011). We draw on data on all millionaire earners, from all occupations, across 50 states and the District of Columbia. This allows new analyses that give a comprehensive understanding of how top tax rates affect millionaire demography. First, we focus on millionaire migration in response to progressive state income taxes. Is there a pattern of millionaires moving from high-tax to low-tax states? Are the migration patterns of the elite different from those of the general population?
Second, we analyze millionaire population along the borders of states. Do millionaires tend to cluster on the low-tax side of state borders? This provides a sharply-focused regression discontinuity analysis of border-county regions, examining small geographic zones where tax responsiveness should be most visible (Keele and Titiunik 2014).

We find that millionaire migration is indeed responsive to top income tax rates. However, the magnitude of the migration response is small, and has little effect on the millionaire tax base. The implied revenue-maximizing tax rates on top incomes are much higher than current state policies – upwards of 68 percent on incomes above $1 million. Moreover, evidence for tax flight rests entirely on high migration rates into Florida, and not to any other low-tax state. Finally, when we focus on the border regions of states, we do not find compelling evidence that millionaires cluster on the low-tax side of state borders. Elites are embedded in the regions where they achieve success, and have limited interest in changing where they live to procure tax advantages.

2. The Challenges of Elite Taxation

Americans generally support the principle of reducing inequality, but remain ambivalent over how to do it (McCall 2012; Page, Bartels, and Seawright 2013). There are intense debates over how to fund programs that reduce inequality and support economic opportunity (Morgan and Prasad 2009; Martin 2008; Kenworthy 2014; Newman and O’Brien 2011; Prasad 2014). From a political economy perspective, flat taxes on sales and consumption may be more politically viable and help to sustain elite support for safety net policies. European counties, for example, tend to rely heavily on flat taxes to finance broad welfare states (Prasad 2014; Morgan and Prasad 2009). In contrast, progressive income taxes may be more politically polarizing, but offer
the potential of greater redistribution of income and economic opportunity across socio-economic classes (Martin and Prasad 2014; Fairfield 2013).

A central question in these debates is whether some regions can have systems of elite taxation when others do not. In an open economic system with free migration, states will face pressure to reduce the tax burden on highly mobile residents, and increase the tax burden on the less mobile (Slemrod 2010). Indeed, Feldstein and Wrobel (1998) argue that progressive income taxes at the state level are quickly self-defeating. In principle, raising taxes on the wealthy and providing transfers and services to the poor directly reduces inequality in a state. However, in a context of free migration, states will see an out-migration of top income earners (fleeing taxes) and an in-migration of the poor (seeking services). For the state’s labor market, this means a shortage of high-skill workers and an oversupply of low-skill workers. In response, the market bids up wages for high-skill workers, and bids down wages for low-skill workers. Inequality in the state returns to its initial, equilibrium level.

Tax flight is closely related to questions of how economic globalization creates pressures for an international race to the bottom in social welfare states (Brady, Beckfield and Seeleib-Kaiser 2005; Brady, Beckfield and Zhao 2007; Beckfield 2013). Over the 20th century, distinct varieties of capitalism and social welfare states have coexisted among developed countries (Hicks and Kenworthy 2003; Esping-Andersen 1990). At least in Europe, this variety has narrowed over the last two decades. “E.U. citizens in various countries are living in an increasingly similar welfare regime” – primarily one that offers fewer social protections than in the past (Beckfield 2013:99). This convergence suggests that greater economic integration and market openness limits the range of viable socio-economic policies.
The Transitory Millionaire Hypothesis

The view that millionaires are highly mobile has gained much political traction in recent years, and has become a central argument in debates over millionaire taxes. Before Oregon voters approved a new millionaire tax, Nike chairman Phil Knight predicted the tax would set off a “death spiral” in which “thousands of our most successful residents will leave the state” (Knight 2010). In Washington State, a millionaire tax referendum was defeated after opposition from the state’s top companies: Microsoft warned that the tax would “make it harder to attract talent” while Boeing stated the tax would “erode Washington state's competitiveness” (Garber 2010). New Jersey Governor Chris Christie simply declared “Ladies and gentlemen, if you tax them, they will leave” (Office of the Governor 2010).

In some areas, compelling evidence shows that tax and regulatory discontinuities at the borders of states lead to migration-like reactions, including changes in the location of sales, manufacturing, and corporate domicile. Sales and excise taxes, for example, frequently lead to cross-border shopping (Goolsbee, Lovenheim, and Slemrod 2010; Merriman 2010). In online shopping, the effects of sales taxes appear quite strong. Analysis of eBay.com transactions show that online shoppers avoid buying from retailers located in states with high sales taxes, indicating that such taxes “play a significant role in shaping the geography...of online retail trade” (Einav et al. 2014:1). Similarly, corporations tend to incorporate or ‘domicile’ in states with minimal regulatory restrictions or tax burdens. An overwhelming number of large American firms are incorporated in Delaware, even when their operations and physical headquarters are located elsewhere (Carruthers and Lamoreaux 2013; see also Homes 1998). Internationally, corporate

---

1 Similar arguments are common in Europe. Debate was especially heated in 2013, after the French actor Gerard Depardieu renounced his citizenship and moved to Russia to avoid the high French tax burden. Russia’s Deputy Prime Minister Dmitry Rogozin, commenting on his country’s flat 13 percent income tax, remarked “The West has an especially poor knowledge of our tax system. When they learn about it, we expect a mass migration of wealthy Europeans to Russia” (Quoted in Erb 2014).
‘inversion’ strategies allow U.S. companies to shift their legal address to a foreign country with preferred regulatory and tax structures (Marples and Gravelle 2014; Marian 2015). Individuals with high incomes may deploy similarly sophisticated strategies to arbitrage state borders and locate in low-tax states.

**The Elite Embeddedness Hypothesis**

There is, however, reasonable skepticism about the ready mobility of the elite. In principle, top-income earners are mobile in the sense that they have fewer financial constraints on where they choose to live. In practice, their actual migration patterns may or may not be particularly high or sensitive to tax rates. We note two core factors that may embed elites in their regions and states: lifecycle constraints and place-specific social capital.

First, millionaires are not typically at a lifecycle stage where migration is common (Geist and McManus 2008). The top one percent are primarily the ‘working rich’ who have employers and derive most of their income from wages and salaries (Piketty and Saez 2003). In general, high income earners are more likely to be married, to be in a dual-career household (Alm and Wallace 2000; Schwartz 2013), to have school-age children, to own rather than rent their home, and to own a business – all factors that discourage migration (Geist and McManus 2008; Young and Varner 2011; Hernández-Murillo et al. 2011; Molloy, Smith and Wozniak 2011; Kiester 2014:356-7). College-educated workers are more mobile than those with less education (Hernández-Murillo et al. 2011; Wozniak 2010). However, migration tends to occur early after graduation, when income is lowest, rather than at the advanced career stage when income is highest. And millionaires are unlikely to be unemployed and searching for work – a key factor that encourages migration. Thus, elite income earners tend to have many social attributes that deter migration, and fewer attributes that encourage migration.
Second, the socio-economics of location points to tangible limits on the easy migration of elite income-earners. Tax-induced migration models typically assume that income is exogenous to location, and that it does not depend on social or economic ties to place (Simula and Tannoy 2011; Mirrlees 1982). However, most millionaires are at their peak years of earnings, and are drawing on long personal investments in a career or business line from which they cannot easily migrate away (Saez 2013; Varner and Young 2012). Income-earning capacity derives not just from individual talent and human capital (which is movable) but also from place-based social capital – social and business connections to colleagues, collaborators, funders, and co-founders.

Entrepreneurs, for example, tend to cluster and thrive in their ‘home’ markets where they have deep roots, social ties, and accumulated local market knowledge (Dahl and Sorenson 2009; 2012; Sorenson and Audia 2000; Michelacci and Silva 2007). Co-founders and other allies are often critical to a successful entrepreneurial enterprise (Ruef, Aldrich and Carter 2003). Moreover, successful team work is difficult to accomplish without face-to-face interaction and co-presence. Despite modern communications technology, distance is still an impediment to communication, collaboration, information-sharing, and trust (Olsen and Olsen 2000). When economic success is a joint product – rather than a purely individual accomplishment – there is a difficult network coordination problem for migration: one’s own willingness to migrate for tax purposes must align with that of co-founders, collaborators, and perhaps even clients (Young and Lim 2014). Migrating away from these social connections is costly. “Unlike human capital, which entrepreneurs carry with them wherever they go, social capital depreciates as one transports it from the regions in which it had been developed” (Dahl and Sorenson 2012:1061).
Those who achieve top incomes, in this view, are deeply embedded insiders who yield remarkable returns in part because of their social placement in a localized economic world. Top-level income status makes players more, rather than less, bound to the regional economy.

The embeddedness of earning potential means that those making $1 million a year in Silicon Valley or Manhattan often cannot leave those regions without a (potentially large) drop in income (Saxenian 1994; Powell et al. 2002; Baldwin and Krugman 2004). Elites become enmeshed in the regions where they make their fortunes, and are increasingly tied to those regions for their best economic opportunities.

**Existing Evidence on Elite Mobility and Tax Flight**

Are top income-earners ‘transitory millionaires’ searching for lower-tax places to live? Or are they ‘embedded elites’ that are reluctant to migrate away from places where they have been highly successful? The evidence so far on elite mobility and tax flight is limited and equivocal. The world’s billionaires, for example, appear quite grounded in their home countries, with some 87 percent residing in their country of birth (Sanandaji 2013). Moreover, the few billionaires who have moved were more likely to migrate to large market economies such as the United States, than to tax havens like Monaco (ibid). Among the world’s top physicists, however, only about 50 percent live in their country of birth, indicating high mobility among top academics and a problem of ‘brain drain’ facing many small countries (Hunter, Oswald, and Charlton 2009; Zucker and Darby 2007). Yet, academia appears to be an unusually mobile profession.

A few studies have specifically addressed the role of income taxes in elite mobility. In Europe, economists Kleven, Landais, and Saez (2013) study the migration of elite European soccer players, finding clear evidence of migration of players towards teams in low-tax countries. After
restrictions on foreign players were lifted in 1996, top players migrated from teams in high-tax countries (such as France and Sweden) to teams in low-tax countries (England or the Netherlands). Teams in low-tax countries were “better able to attract good foreign players and keep good domestic players at home” (ibid: 1905). They note, however, that European soccer players are a “particularly mobile segment of the labor market,” suggesting that their results represent an “upper bound on the migration response” (ibid: 1923).

In the United States, there have been two studies of ‘natural experiments’ in taxing millionaires in New Jersey and California (Young and Varner 2011; Varner and Young 2012). These studies use micro-data from state income tax records to measure millionaire migration before and after changes in the top tax rate. They find that increases in the top tax rate had little effect on millionaire migration, raised substantial revenues (on the order of $1 billion annually in both states), and modestly reduced income inequality. A skeptical replication of the New Jersey study (Cohen, Lai and Steindel 2015) found similar migration effects, narrowing the question to whether that state’s millionaire tax migration is small, or very small (Young and Varner 2015). However, these two states may be unrepresentative of the United States as a whole.

3. Data

This article uses confidential Internal Revenue Service tax return information to examine how top tax rates influence elite migration. Our data selects all federal income tax filers with reported earnings of $1 million or more in any year between 1999 and 2011. The data provides 45 million tax records, representing 13 years of panel data on 3.7 million unique tax filers, yielding census-scale evidence on the top income-earners in America. We obtain annual income as reported on 1040 tax returns, and adjust incomes for inflation to constant 2005 dollars. Tax filers who ever
report annual income of at least $1 million are pulled into our dataset and we track their income and residency for the full 13 years regardless of annual income in any other year. On average, we have 12.5 years of tax returns for each tax filer. The unit of analysis is tax records, which often includes married couples filing jointly. For simplicity, we refer to millionaire tax returns as “millionaires”. While the term “millionaire” often connotes accumulated wealth, our focus is on top annual incomes – those who earn in one year what few ever accumulate in wealth (Keister 2014).

For comparison, we also draw a one percent sample of the total population of tax filers. This gives us an additional 24 million tax records from 2.6 million unique filers from across the income distribution. This allows us to ask, are the rich different? Do they have higher migration rates than the general population? Is elite migration more sensitive to income tax rates?

State residency in each year comes from the home address reported on the 1040 form. Migration is identified by changes in the state from which households file their federal taxes. For example, suppose an individual files their tax return from New York in 2005, and then files from Florida in 2006. Such individuals are simultaneously classed as out-migrants from New York, and in-migrants to Florida. Millionaire migration is defined by those who earned $1 million or more in year $t$, and changed their state of residency between years $t$ and $t+1$. From this, we construct a state-to-state matrix of millionaire migration, which shows migration flows between each possible pairing of states, such as New York to Florida, New York to California, etc.

State income tax rates are drawn from the NBER’s Taxsim program (Feenberg and Coutts 1993), estimating the combined federal and state effective income tax rate for couples earning $1.7 million in labor income (the median income of millionaires in our data), taking into account the
cross deductibility of federal and state taxes (Stark 2003).\(^2\) We also use state-level data on a range of characteristics relevant to residential desirability. These include sales and property taxes, which are the core revenue sources for states with low income taxes. Economic conditions are captured with state per capita income and the unemployment rate. Finally, we include the price of residential land in each state (Davis and Heathcote 2007). This measure subtracts out the “structure cost” of home prices, focusing on the intuition that land prices reflect the market value of a home’s location (ibid:2595). These variables aim to capture factors that influence migration and may be correlated with the adoption of elite income tax rates. Appendix A lists our variables, descriptive statistics, and sources.

### 3.1 Basic Facts

Little is known about the migration patterns of the rich and their broader demography. We begin our analysis by describing the core empirical facts of elite mobility.

In any given year, roughly 500,000 households file tax returns reporting $1 million or more (constant 2005 dollars). From this population, only about 12,000 millionaires change their state in a given year. The annual millionaire migration rate is 2.4 percent, which is lower than the migration rate of the general population (2.9 percent). Figure 1 shows the income-migration curve over the whole distribution of income, as income rises from nearly zero to millions of dollars per year. The highest rates of migration are seen among low income tax filers: migration is 4.5 percent among those who earn around $10,000.\(^3\) The migration rate drops steadily with

---

\(^2\) We also examine the tax rates of those earning 50 percent and 100 percent of their income through capital earnings, to measure state-level tax advantages for capital. We do not find clear effects for capital tax rate differences, and do not report these models.

\(^3\) One concern with using tax data on low-income earners is that not all need to file tax returns. However, the Earned Income Tax Credit (EITC) leads most families with children to file a tax return even if they do not owe taxes (Jones
income, and migration is lowest (2.0 percent) for those making around $90,000. Above this point, and into millionaire-level incomes, we see a curvilinear effect: migration rates begin to rise again, but only gradually. The migration rate of those making $5 million or more is still only 2.7 percent. The elite are mobile only relative to the upper-middle class. Overall, higher income earners show greater residential stability and geographic embeddedness than do low income earners.

**Figure 1. Migration Rates by Income Level, 1999-2011**

What factors help explain low migration among elite earners? Basic social and economic characteristics are observable from tax returns, including marital status, dependent children, age 65 or older, and ownership of a business. In Table 1, we examine basic evidence of embeddedness – factors that ground people in their states and lower their migration rates.

---

2014). Unattached individuals have lower filing rates. Such individuals are also more mobile than families with children. This pattern of non-filing suggests that, if anything, we are underestimating the migration rates of the poor.
Marital status stands out as a prominent factor in millionaire migration. Single individuals have roughly twice the migration rate of married couples (4.1 percent versus 2.2 percent), and a similar pattern is seen for the general population. However, nearly all millionaires are married (90 percent, compared to only 58 percent of the general population). Similarly, millionaires are more likely to have children at home (50 percent, compared to 40 percent among the general population). High levels of family responsibilities – marriage and children – ground elites in their communities and states.

[Table 1]

Business ownership is also a strong embedding factor. Among millionaires, those who own a business have a migration rate of 2.0 percent, well below that of non-business owners (2.6 percent). A similar pattern – but even stronger difference – is seen in the general population: business owners have strong economic attachment to where they live. Notably, millionaires are much more likely to own a business (23 percent) than the population overall (4 percent), making business ownership an important distinguishing factor that embeds millionaires in their states.

These simple findings do not bode well for the transitory millionaire hypothesis. Millionaires have lower migration rates than the general population, and are rooted in their states by the ties of family responsibilities, business ownership, and ultimately by high income itself.

However, these descriptive facts do not speak directly to the dynamics of tax flight. Despite low migration rates, millionaires may still be keenly focused on ensuring that migration leads them to a lower-tax state. To understand this, we turn to the rich evidence found in the state-to-state migration flows of millionaire earners.
4. State-to-State Millionaire Migration Flows

In this section, we analyze long-run millionaire migration flows between all states and the District of Columbia over 13 years, using both simple and complex models. There are longstanding differences in state tax rates. For example, Florida, Texas, and Nevada have never had an income tax, while New York, New Jersey, and California have long had progressive tax regimes. Over the long-term, is there a general pattern of millionaires moving from high-tax to low-tax states?

First, we illustrate our analysis intuitively using raw migration data, after which we proceed to formal log-linear gravity models of migration. Figure 2 shows net out-migration flows of millionaires for several key states, plotted against the tax differences between the states. The x-axis shows whether other states have lower (-) or higher (+) taxes on the elite; the y-axis shows whether there is net out-migration from (-) or net in-migration to (+) the other states. If tax flight is occurring, states with higher taxes would show disproportionate flows of millionaires moving to lower tax states. Specifically, the data in Figure 2 should show a downward sloping pattern.

The evidence from Figure 2 is affirmative, but modest. Florida has net in-migration from virtually every other state – shown as negative values on the y-axis. More importantly, migration into Florida is more likely from states that have higher tax rates. The greater the tax rate advantage of Florida over another state, the more likely millionaires from that state will migrate to Florida. However, the correlation is low (less than -0.1) and shows considerable noise. Texas (panel 2) also has no state income tax, but has different migration patterns, as it sees both net in-migration from and net out-migration to other states. In-migration tends to come from higher tax

---

4 Similar models have been applied to census data by Herting, Grusky, and Rompaey (1997), to international migration by Beine, Docquier, and Ozden (2011), and to elderly migration in the United States by Conway and Rork (2012). Santos Silva and Tenreyo (2006) provide an excellent discussion of the core model. Note that while our base data set contains 13 years of data, one year is lost as we require two years of information to define migration.
states like New York and California, and out-migration tends to go to other low tax states. But much of the relationship is driven by high out-migration from Texas to Florida. New York (panel 3) is a strong contrast to Florida: a high tax state, with net *out*-migration to most states. The negative slope indicates that millionaires leaving New York are more likely to choose a state that has a low tax rate. However, this is due to very high levels of migration to Florida; other states with low tax rates do not disproportionately attract millionaires from New York. The last case study, Illinois (panel 4), has millionaire migration patterns that look very similar to New York: net out-migration to virtually every state, with greater out-migration to lower tax states. The correlation is -0.29, though it is visually clear that the negative relationship between tax advantage and migration flows is driven by Florida as a powerful outlier.
The final two panels of Figure 2 pool together the entire migration matrix – the flows between every state pair. In panel 5, using all states, the overall correlation of migration and tax rate difference is -0.24, suggesting a consistently modest relationship. Closer inspection shows that the upper left quadrant is mostly every state’s net out-migration to Florida, while the bottom right quadrant mostly reproduces the graph of Florida’s net in-migration from these states. This is further illustrated in the final panel 6, excluding the Florida observations, which leaves a flat
relationship between taxes and migration, and a correlation of -0.08. Migration to Florida appears to be the core pathway for tax-induced migration.

4.1 Gravity Model of Migration

To formally analyze these data, we use the gravity model of migration (Herting, Grusky, and Rompaey 1997; Conway and Rork 2012; Santos Silva and Tenreyo 2006). The number of millionaire migrants \( M_{ij} \) from state \( i \) (origin) to state \( j \) (destination) is a function of the size of the base millionaire populations in each state \( \text{Pop}_i, \text{Pop}_j \), the distance between the states \( \text{Distance}_{ij} \), and a variable indicating if the states \{\( i, j \)\} have a shared border \( \text{Contiguity}_{ij} \). These are the core elements that define the basic laws of gravity for interstate migration (e.g., Santos Silva and Tenreyro 2006). To this core model we add the difference in top income tax rates between each state pair \( \text{Tax} \_\text{Difference}_{ij} \). Finally, we specify this as a log-linear model, taking logs of the right-hand side count variables, and estimating with Poisson:

\[
M_{ij} = \exp(\alpha + \beta_1 \log \text{Pop}_i + \beta_2 \log \text{Pop}_j + \beta_3 \log \text{Distance}_{ij} + \beta_4 \text{Contiguity}_{ij} + \beta_5 \text{Tax} \_\text{Difference}_{ij}) + \varepsilon_{ij} \quad (1)
\]

The coefficients from the log-linear model give the semi-elasticity of migration counts with respect to the tax rate – the percent change in migration flows for each percentage point difference in the tax rates.

4.2 Results

Table 2 shows our regression results. Model 1 reports the coefficients from the core gravity variables and the top tax rate difference. The populations of the origin and destination states show nearly-unit elasticities: 1 percent higher millionaire population leads to .94 percent higher
migration flows. As the distance between states grows, migration flows are less frequent, so that a 1 percent increase in distance reduces migration flows by .26 percent. Contiguity has a very strong effect, as states with shared borders have especially high millionaire migration volumes between them.\(^5\) Finally, the top tax rate has a significant impact on millionaire flows, with a semi-elasticity of -0.07. Migration tends to flow from high-tax to low-tax states, and migrations flows are larger when the tax advantage is larger.

Model 2 incorporates a basic set of state-level controls, addressing winter climate, alternative tax instruments (sales and property tax rates), the economic strength of the states, and the price of residential land. These variables have little impact on our coefficient of interest: the effect of the top tax rate is barely changed (-0.08), and is still significant.\(^6\) The main contribution of the controls is to show that millionaires tend to move to states with high residential land prices. This is an important result, as it shows that millionaires are not focused on finding low-cost places to live, but rather are attracted to expensive locations. Millionaires, it seems, are not gentrifiers.

[Table 2]

Model 3 applies the same model to our sample of the total population of tax filers, at all income levels. Are the rich different? For the gravity variables, the estimates for the whole population are strikingly similar to the millionaire population. The origin and destination populations have similar, though slightly smaller, elasticities. The distance elasticity is the same for millionaires as the general population, and the contiguity effect is somewhat smaller for millionaires. But the

---

\(^5\) Note that in log-linear models, the coefficients of dummy variables need to be exponentiated for interpretation (Giles 2011). In model 1, contiguity raises migration flows by 113 percent = 100 \times (\exp(0.76) - 1).

\(^6\) In alternative specifications, we included a coarse dummy variable for a state-level inheritance tax, and computed effective top tax rates under different assumptions about capital gains income (which mostly affects the federal tax rate). Neither of these affects the results.
most striking difference is that for the general population, there is no significant tax migration effect.\textsuperscript{7} Millionaires are more sensitive to income tax rates than are the general population.

### 4.3 The Florida Effect

Descriptive analysis suggested that evidence for tax migration is largely driven by Florida as an attractive destination for American millionaires. Are elites more able to exploit geographic tax opportunities, or are they just more likely to move to Florida? We test this in model 4, by excluding Florida migration flows from the analysis. Model 4 shows that, outside of Florida, differences in tax rates between states have no effect on elite migration. Other low tax states, such as Texas, Tennessee, or New Hampshire, do not draw away millionaires from the high tax states.

The uniqueness of the Florida effect is a very robust finding. In supplemental models, we test the effect of excluding each state from the analysis one at a time. In essence, this is a Cook’s-D examination of influential observations (in this case, sets of observations associated with each state) (Cook 1977; Andersen 2008). When we exclude any other state but Florida, the results are stable and always achieve statistical significance. The main results depend fundamentally on Florida: when Florida is excluded, there is virtually no tax migration; when any other state is excluded, our core finding of tax-induced migration is supported.

Florida is the leading destination for millionaire migration, and this state is critical to the evidence for tax-induced migration. Florida has no state income tax, but is also attractive in other unique ways – for example, it is the only state with coastal access to the Caribbean Sea. It is difficult to know whether the Florida effect is driven by tax avoidance, unique geography, or

\textsuperscript{7} Note that in model 3, we use the income tax rate at the median income level (roughly $53,000). As a placebo test, we also estimate the model using the tax rates that apply to millionaires, and likewise find a non-significant result.
some especially appealing combination of the two. Disentangling these factors for one specific state is beyond the scope of this research, but is an important venue for future study.

4.4 Millionaire Heterogeneity

Next, we explore differences in migration responsiveness among distinctive sub-sets of millionaires. We estimate separate regression models for the migration of elites by different economic status, such as business owners and those with super-elite income of $10 million or more. We also run separate models for those of retirement age, those with children at home, and those who are married – looking separately at families with one primary earner, and families with significant dual earnings. Finally, we run models by the persistence of millionaire income – the total number of years that households earn $1 million or more in our 13-year time frame. For each group, Table 3 reports the tax effect coefficient, as well as the group’s overall migration rate and the share of the millionaire population they represent. Most of the models in Table 4 show consistent estimates that are close to the Model 2 result of -0.08.

[Table 3]

Tax migration is not driven by retirees, nor is it any higher among those earning $10 million. However, one particular set of findings that stands out is the persistence of millionaire income over time. ‘One-time’ millionaires show no sensitivity to the top tax rate (-0.02), while households that routinely earn $1 million have the highest tax responsiveness (-0.12). This suggests that tax avoidance is indeed an element of elite migration: those with a greater lifetime exposure to top tax rates have migration patterns that are more sensitive to these rates. In other words, income tax rates are more salient to those who routinely earn elite incomes.

8 The difference between these two coefficients is statistically significant at the 5 percent level.
However, persistent millionaires also have the lowest overall migration rates. ‘One-time’ millionaires have an overall migration rate of 3.2 percent, compared to only 1.9 percent among the most persistent millionaires. This supports the hypothesis that elite incomes have a strong place-specific component which ties millionaires to their home states. These results help explain how elite income embeds people in their local regions: those who can expect continuous flows of million-dollar income over time do not tend to move.

Thus, evidence from the persistence of millionaire income gives support to both the tax-migration and embeddedness perspectives. On one hand, persistent millionaires are less likely to ever change their state of residence. But when they do move, they are more attentive to top tax rates and are more likely to choose a lower-tax state as their destination. For state tax policy, these two factors would seem to largely cancel each other out. For socio-economic theory, the findings shed new light on the dynamics of elite migration. Those with the strongest incentive to avoid state taxes are also most strongly embedded in their state.

4.5 Implied Optimal Tax Rates

Our core estimate is that a one point increase in the tax rate leads to an 8 percent drop in migration flows. However, the practical effect of interest is how this translates into the share of the millionaire population lost to migration. Because migration rates are low, changes in migration flows have a very muted impact on the population. To illustrate, we calculate millionaire population loss for each state on an annualized basis, using the parameter estimates from Table 2, Model 2. For each state, we calculate how many millionaires would be lost if the state raised its tax rate on millionaires by one percentage point (with tax rates constant in all
other states). For the average state, a one-point tax increase leads to 12 fewer in-migrations, and 11 additional out-migrations, for a total population loss of 23 millionaire households. Since the average state has an annual millionaire population of over 9,000, this is clearly a small effect size. The millionaire population elasticity (η) – defined as the percent change in the population for a percent change in the top tax rate – is 0.1. In other words, a ten percent increase in the top tax rate leads to a one percent loss of millionaire population.

More formally, we incorporate our results into models for the optimal tax rate on top incomes (Kleven et al 2013; Mankiw et al 2009). From the perspective of revenue maximization, the optimal top state tax rate \( \tau^* \) is driven by three factors: (1) a measure of the portion of total income held by millionaires, \( a \), (2) the elasticity of taxable income, \( e \), and (3) the millionaire population elasticity, \( \eta \). The formula for optimal tax rates on top incomes, taking into account both migration and income effects, is given as follows (Piketty and Saez 2013:429):

\[
Optimal \ rate: \quad \tau^* = \frac{1}{1 + a \cdot e + \eta} \quad (2)
\]

Roughly speaking, when the tax rate increases, those with top incomes (reflected in the parameter \( a \)) may react negatively by reporting lower earnings (given by \( e \)), or by moving to a lower-tax jurisdiction (given by \( \eta \)). We do not estimate \( a \) and \( e \), but draw on credible estimates from existing literature (\( a = 1.5, e = 0.25 \)) (reviewed in Saez, Slemrod, and Giertz 2012).

Inputting these values with our population elasticity estimate (\( \eta = 0.1 \)) into equation 2 gives an optimal tax rate on top incomes of 68 percent.

---

9 The full table of these results is available on request. We estimate these quantities by predicting migration flows for each state using actual tax rates, and then predicting migration flows after increasing the tax rate in one state by one percentage point. We calculate this for each state, one at a time. Of course, if all states increased their tax rates at the same time, this would leave the tax differences unchanged and have no expected impact on migration.
Table 4 provides a range of optimal tax rate calculations, according to different possible estimates of the migration (and income) elasticity. When there is no tax migration at all ($\eta = 0$) the optimal rate on top incomes is 73 percent. With the level of tax migration we find ($\eta = 0.1$), the rate is five points lower (68 percent). To substantially reduce the optimal rate, there would need to be a population elasticity in the area of $\eta = 1.0$ – roughly ten times greater than our estimate. Even assuming a higher-range estimate for the income elasticity ($e = .60$), the optimal top tax rate is still 50 percent given our migration findings. At low-range estimates for the income elasticity, the optimal rate is 80 percent. All of these rates are higher than the current combined federal and state top tax rate in any state.\textsuperscript{10} To rationalize current tax rates, the migration response to taxes would need to be 10 to 15 times greater than what we actually observe.

Caution is needed in interpreting these rates. It is difficult to forecast the effect of tax rates that are so much higher than what we currently observe. Such higher rates could become more salient to elites, leading to non-linear increases in migration. Nonetheless, these estimates suggest that in present times, elite migration is not a significant limitation on tax policy for states.

\textbf{[Table 4]}

Finally, to clarify the implications of our results for understanding elite behavior, we ask how much millionaire migration in America is due to different top tax rates across states. If we eliminated any tax incentive to migrate, by setting all state tax rates to be the same, how much migration among elites would continue to occur? We use the parameter estimates from Model 2 to conduct a counterfactual analysis. At existing state income tax rates, our model predicts

\textsuperscript{10} Note that historically, the top federal tax rate was 70 percent as recently as 1980, and has been as high as 90 percent.
11,250 migrations per year. When we reset the top tax rates to be equal in all states, the model predicts 11,000 migrations – roughly 2.2 percent fewer. Little more than two percent of elite migrations appear to have an income tax motivation.

5. Millionaire Population along the Borders of States

State-to-state millionaire migration flows give positive but limited evidence of tax-migration among top income-earners in the United States. We triangulate on these findings with a sharply-focused discontinuity of millionaire populations along the borders of states. Do millionaires tend to cluster on the low-tax sides of state borders? This is a regression discontinuity design in which “a geographic or administrative boundary splits units into treated and control areas… in an as-if random fashion” (Keele and Titiunik 2014:2). In narrow geographic border regions, there are sharp discontinuities in top tax rates, but few barriers to crossing the border, while the social and economic differences between states are at their minimums. Border regions usually span short commuting distances, allowing continuity of family, social, and business ties (Dahl and Sorenson 2010). A similar quasi-experimental strategy has been used to study the effect of state minimum wage rates on employment (Dube, Lester, and Reich 2010), and of anti-union “right-to-work” laws on both manufacturing employment (Holmes 1998) and the location of Walmart stores (Rao, Yue, and Ingram 2011).

Counties along the border of Washington and Oregon (Figure 3) illustrate the analytic strategy. Oregon has long had one of the most progressive income tax regimes in the U.S., while Washington State has never had a state income tax (Pearson 2014). The distance between the major cities of these two states (Portland and Seattle) is large: they are roughly 170 miles apart, which imposes potentially significant migration costs, especially in the form of separation from
family, friends, colleagues and business partners. However, moving just across the border – from Portland, OR to Vancouver, WA – is a small life change, and is more like changing neighborhoods within a city. Indeed, most points along the border seem readily commutable, substantively similar, and arbitrarily separated by a state border. This is an area in which the costs of migration are smaller and tax flight should be most clearly visible.

**Figure 3. Border Counties of Washington and Oregon**

Figure 4 maps all the counties in our border analysis. There are 1,134 counties adjacent to interstate borders, containing 32 percent of the U.S. population and 35 percent of all millionaires in our data set. Blue counties in Figure 4 are on the high-tax side of the state border, and orange counties are on the low-tax side. Darker shading indicates larger cross-border tax differences. The mean cross-border tax difference is 2.3 percentage points, with the sharpest differences greater than 7 points. Among the largest differences are Oregon–Washington (7.3), Vermont–New Hampshire (6.7), and North Carolina–Tennessee (6.4). Thus, we frequently see large tax differences at state borders.
Figure 4. Border Counties and Tax Differences in the United States

Note: The high-tax side of the border is in blue, while the low-tax side is in orange. Larger tax discontinuities are indicated with brighter coloring.

The border county analysis can be understood as a matching algorithm, matching a treatment county (with higher taxes) to one or more control counties on the opposite side of the state border (Keele and Titiunik 2014). A key question then is the covariate balance between the treatment and control cases (Ho, Imai, King and Stuart 2007). Are the county pairs well-matched and comparable on observables? If the matching algorithm is successful, border-county pairs will be effectively identical on all explanatory factors except the income tax rate, creating “as if” random assignment to the treatment and control conditions. We consider the covariate balance across county pairs for a broad set of observable characteristics including natural amenities, real estate values, and other state policies (such as sales taxes and “right to work” laws) that may
differ at borders. Balance statistics, available upon request, show that the counties are indeed well-matched and largely equivalent on a broad set of non-income-tax characteristics. Based on observables, the contiguous border county framework appears to provide good quasi-experimental matching of treatment and control cases.

5.1 Spatial Discontinuity Model of Population

Our formal model of millionaire population first considers the basic state-level relationship between millionaire population and top tax rates. The outcome variable is log millionaire population in state \( i \) in year \( t \) (\( \log M_{it} \)), which we expect to vary with a state’s overall population (\( \log pop_{it} \)), and potentially with its effective top tax rate (\( tax_{it} \)). We also include year fixed effects (\( \lambda_t \)).

\[
\log M_{it} = \alpha + \beta_1 tax_{it} + \beta_2 \log pop_{it} + \lambda_t + \epsilon_{it}
\]  

Next, we move to the matched sample of contiguous county-pairs. All border counties match to at least one cross-border county, and on average they pair with 2.1 cross-border counties. This yields 1,172 county pairs (each with 2 counties). With 16 years in our millionaire population data set, this gives a sample of 37,504 county-years.\(^{11}\) In this model, we estimate the effect of the top tax rate on millionaire population within county pair-years. We define a unique pair-year term for each county pair in each year (\( \tau_{pt} \)), and the model is identified solely on the remaining cross-border variation in a given year. In other words, within each county pair, and in a given year, does millionaire population cluster in the county on the low-tax side?

\[
\log M_{cpt} = \alpha + \beta_1 tax_{ct} + \beta_2 \log pop_{ct} + \tau_{pt} + \epsilon_{cpt}
\]  

\(^{11}\) The data draw for this millionaire county population analysis allows three extra years of data (1996-98), as it does not use the detailed W-2 data that we leveraged in the state-to-state migration flows analysis (Table 3). The detailed W-2 data are not available for 1996-98.
Next, we focus on changes in the tax rates over time, within county pairs. For example, if a state raises its top tax rate, while its neighboring states do not, the tax difference at the border increases. We isolate these changes in the tax rates by adding fixed county effects ($\theta_c$) to the model. Within county pairs, what happens when the top tax rate changes in one of the counties?

$$\log M_{cpt} = \alpha + \beta_1 tax_{ct} + \beta_2 \log pop_{ct} + \tau_{pt} + \theta_c + \epsilon_{cpt} \quad (5)$$

This may be considered to give the short-run or immediate effects of tax changes, while equation 4 gives the long-run effect of established tax differences (Baltagi and Griffen 1984). We estimate these models using OLS, with standard errors clustered by both state and border segment (Dube et al. 2010). Statistical routines that allow for multidimensional clustering of standard errors are not implemented for Poisson regression.¹²

5.2 Results

Table 5 shows regression results for the millionaire population models. First, we test whether states with higher tax rates have smaller millionaire populations. Beyond the observed migration flows already analyzed, are there simply fewer millionaires in high tax states? Model 5 shows that the effect of the tax rate is indeed negative but small and not statistically significant. The implied elasticity is 0.08, meaning that a 10 percent higher tax rate could lead to a 0.8 percent lower millionaire population. This is similar in magnitude to our findings from the state-to-state migration flows analysis.

¹² When we run these models using Poisson, we achieve the same coefficients, but standard errors that are biased by an order of magnitude. Thus, these parameter estimates appear to be robust to the estimator employed.
Models 6 and 7 make specific cross-border comparisons between contiguous counties. Do higher tax rates reduce millionaire population when we compare sharply-focused regions that seem otherwise equivalent? Model 6 shows supportive evidence of clustering on the low-tax side. Among border county pairs, the county on the high-tax side has a significantly lower millionaire population. The implied elasticity is 0.19, which is still modest but suggests greater tax sensitivity in the border regions than what we see across states overall.

However, we note that some of the border counties included in Model 6 are large geographic areas that are not realistic commuting zones and do not form strong test cases. Some border counties are “larger than the state of New Jersey” (Holmes 1998:381) but are home to a scant population. In California, for example, San Bernardino County shares a border with Clark County, Nevada – home to Las Vegas. The population centers of these two counties are 184 miles apart, and in between them is the Mojave Desert. While these are technically border counties, their large geographic expanse and sparse population near the border make them poor test cases.

In Model 7 we limit the analysis to border counties that span plausible commuting zones, where the population centers of the county pairs are no more than 40 miles apart. This retains 75 percent of the counties, and over 90 percent of the millionaire population, while eliminating county pairs that do not represent small, commutable geographic areas. The results in Model 7 show that in the narrower border regions that motivate this analysis, the tax effect is not statistically significant (with an elasticity of 0.14).

To triangulate and help clarify these results, we also look at metropolitan areas that cross state borders (Coomes and Hoyt 2008). Metropolitan statistical areas (MSAs) are designed to capture
distinct labor markets – they are areas of high economic integration based on commuting
patterns. There are currently 381 MSAs in the United States, and 50 of these span at least one
state border. These cross-state cities provide an alternative way to focus on small, regionally
integrated, commutable zones. Model 8 applies the same basic regression model to counties on
different sides of a cross-state city. The tax rate coefficient is again negative, but not statistically
significant. Within cities that cross state lines, there is limited evidence that millionaires cluster
in the part of the city that has lower state income taxes.

Finally, we revisit the border county and city analyses focusing purely on changes in the top tax
rates. For example, in 2004, New Jersey raised its top tax rate, but Delaware, Pennsylvania and
New York did not, leading to a change in the tax difference at the border. By incorporating
county fixed effects into these models, we isolate changes over time in the tax rates. Over our
period of analysis, there were 8 tax policy changes of roughly one percentage point or more
(similar to common state millionaire tax proposals), as well as many smaller changes. In the
border regions, these policy shifts have not led to observable changes in the millionaire
population. In both the commutable border counties (Model 9) and the cross-state cities (Model
10) the results are insignificant and the elasticities are essentially zero. In other words, we see no
evidence of short run effects of (modest) tax policy changes. Even in long-run models with larger
and long-standing tax differences, the evidence that millionaires choose to live on the low-tax
side of state borders is weak.

6. Conclusion: Elite Demography and the Social Consequences of Progressive Taxation

---

13 This captures a different set of treatment and control counties for two reasons. First, it excludes border counties
that are not part of an MSA. Second, it adds counties that, while not exactly contiguous with a state border, are
nonetheless part of an integrated border region.
Taxes on elite income earners provide a way to moderate the sharp growth in inequality seen over the last several decades, particularly the rising share of income held by the top one percent (Keister 2014; Piketty 2014; Volscho and Kelly 2012). However, in contemporary policy debates, millionaire migration from higher tax regions is often presented as a key threat to redistributive social and fiscal policies. For this reason, the mobility of the elite is a salient concern for policy-makers not only in U.S. states, but for governments in many countries (Beckfield 2013; Martin and Prasad 2014).

We presented two core frameworks for understanding elite mobility. In the ‘transitory millionaires’ hypothesis, top earners are residentially mobile and sharply attuned to locational tax advantages. Redistributive policy initiatives are quickly defeated by out-migration of the rich, to the detriment of states with progressive taxation (Feldstein and Wrob 1998; Slemrod 2010). In contrast, the ‘embedded elites’ perspective emphasizes social and network costs of migration that limit the attractiveness of moving for tax reasons, and that ground millionaires in the regions where they become successful (Dahl and Sorenson 2009; 2012; Ruef, Aldrich and Carter 2003; Saxenian 1994). In this view, progressive taxation is simply part of the regional cost of living for an elite that is not especially concerned with residential affordability.

We draw on big administrative data from restricted IRS tax records, providing a census of top income-earners in America over 1999-2011. While elites are often difficult to interview in conventional surveys, their tax returns document state and county residence over time. This allows multiple and detailed analyses of millionaire migration, using a sample of 45 million observations on millionaires’ income and location.
The most striking finding of this research is how little elites seem willing to move to exploit tax advantages across state lines in America. Millionaire tax flight is occurring, but only at the margins of statistical and socio-economic significance. First, millionaires are not very mobile, and actually have lower migration rates than the general population. This is in part because family responsibilities and business ownership are higher among top income earners, and these serve to embed individuals in their local regions. Nevertheless, there is an observable pattern of elite migration from high-income-tax to low-income-tax states; when millionaires migrate, their re-location decisions are influenced by tax rates, in a way that we do not see for the general population. Yet, because migration flows represent a very small share of top income earners, the observed patterns of migration have little impact on the millionaire population tax base even over 13 years. Our core migration estimate translates into a population elasticity of roughly 0.1, meaning that a 10 percent increase in the top tax rate leads to a 1 percent loss of the millionaire population. Incorporating this estimate into optimal tax rate models (Piketty and Saez 2013; Mankiw et al 2009) suggests that the revenue-maximizing top marginal tax rate on income above $1 million is much higher than the current tax rates in any state.

We expand on these results by looking at millionaire population along the borders of states and in cities that cross state borders. Border regions create spatial discontinuities in top tax rates that offer a quasi-experimental identification strategy, and provide an upper-bound estimate (Keele and Titiunik 2014; Rao, Yue, and Ingram 2011). Overall, states with higher tax rates do not have fewer millionaires. But along the borders of states, we do see noticeable differences, consistent with millionaire tax flight within these small geographic zones. However, among the more compelling, easily commutable border regions, the difference in millionaire population at the state border is not significant. Nor is the difference significant within cross-state cities that
represent small, commutable, economically integrated zones. Finally, in short-run fixed effects models, there is no population response to changes in the tax difference at the border.

America has increasingly become a “winner-take-all society,” where the most successful competitors reap a disproportionate share of economic rewards (Frank and Cook 1995; Hacker and Pierson 2010). The gap between the ‘winners’ and everyone else has grown sharply in recent decades. The challenge of rising inequality is frequently seen as requiring greater coordination and harmonization of progressive tax policies across countries (Genshel and Scwharz 2011; Beckfield 2013). The hallmark of tax policy coordination is the proposed global tax on wealth, as advocated by Piketty (2014). A global tax ameliorates the problem of capital flight by setting a world-wide minimum tax rate on the wealthy, narrowing the window for tax-migration. However, in the United States, political stalemate and growing polarization between red and blue states suggests that greater tax cooperation and harmonization is unlikely. Our findings show that state – and by extension, national – governments have considerable leeway for independent tax policy. States can make policy choices that contribute to the reduction of inequality without waiting for national or international agreements.

The transitory millionaire hypothesis, in its simple form, contains a grain of truth: millionaires pay more attention to tax rates than do the general population. Yet, in its strong forms, the transitory millionaire hypothesis is a misperception of both elites and of the attractiveness of moving to a different state.

First, the hypothesis incorrectly portrays millionaires as frictionless agents that have little or no social ties to place. Under this assumption, the primary constraints on migration are simply the ‘moving truck’ costs, which seem easy for top earners to absorb. However, our results ultimately
imply high social and economic costs of migration, even for the rich. Millionaires do not use their higher income to achieve greater mobility across states, but rather are more grounded in their states. The rich are different from the general population. They more often have family responsibilities – spouses and school-age children that embed them in place. They own businesses which tie them to place. And their elite income in itself embeds them in place: millionaires are not searching for economic opportunity – they have found it.

Migration is a discourse of empowerment. Mobility and migration are engrained ideals in American culture, and it fits with intuition that the rich are more geographically mobile than the poor. “To move, to change – that is what enjoys prestige, as against stability, which is often synonymous with inaction” (Boltanski and Chiapello 2005:155; quoted in Costas 2013:1469). The discourse of migration elevates the elite as possessing the mobility that is widely admired. For example, in California, the Senate Republican leader asserted, “There's nothing more portable than a millionaire and his money” (Yamamura 2011). The fact that it is the poor who most ‘enjoy’ this fluidity of place – who most often change their state of residence – should give pause to our understandings of migration. Despite its evocative resonance with ideals of freedom, inter-state migration has been declining for decades (Ferrie 2005; Molloy, Smith, and Wozniak 2011). Today, migration seems to be not a privilege of riches, but rather a burden of dislocation and a loss of social ties – something that high income earners can and do avoid.

Finally, the transitory millionaire hypothesis assumes that the ‘lifetime income’ of top earners is independent of where in the country they live. In this view, income derives simply from an individual’s own merits and abilities, and is unrelated to their location or their proximity to others. The role of social capital and network ties in the production of elite income is often underappreciated, and not well connected to an understanding of elite demography. Most
millionaires are the ‘working rich,’ and their incomes derive in part from place-based social
capital in highly networked industries (Saez 2013; Saxenian 1994; Powell et al 2002; Varner and
Young 2012). Low levels of elite migration and limited responsiveness to top tax rates implies
that an important portion of income is place-specific and not portable. This leaves us with a
future research agenda to better understand the economic embeddedness of the elite, and to study
the specific social and economic dynamics that ground millionaires in the places where they
achieve success.
References


Office of the Governor. 2010. “Remarks of Governor Chris Christie to the Joint Session of the New Jersey Senate and General Assembly Regarding the Fiscal Year 2011 Budget,” March 16, 2010, 


https://www.census.gov/geo/reference/docs/cenpop2010/CenPop2010_Mean_ST.txt;


## Table 1: Migration Rates by Socio-Economic Group

<table>
<thead>
<tr>
<th></th>
<th>Millionaires</th>
<th></th>
<th>All Population</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Migration Rate</td>
<td>Share of sample</td>
<td>Migration Rate</td>
<td>Share of sample</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td>2.4%</td>
<td>100%</td>
<td>2.9%</td>
<td>100%</td>
</tr>
<tr>
<td>Married, filing jointly</td>
<td>2.2%</td>
<td>90%</td>
<td>2.3%</td>
<td>58%</td>
</tr>
<tr>
<td>Single / non-joint filer</td>
<td>4.1%</td>
<td>10%</td>
<td>3.7%</td>
<td>42%</td>
</tr>
<tr>
<td><strong>Difference</strong></td>
<td>-1.8%**</td>
<td>-1.4%**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One child or more</td>
<td>2.0%</td>
<td>50%</td>
<td>2.5%</td>
<td>40%</td>
</tr>
<tr>
<td>No children</td>
<td>2.9%</td>
<td>50%</td>
<td>3.3%</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Difference</strong></td>
<td>-0.9%**</td>
<td>-0.8%**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 65 +</td>
<td>2.2%</td>
<td>20%</td>
<td>1.6%</td>
<td>15%</td>
</tr>
<tr>
<td>Under age 65</td>
<td>2.5%</td>
<td>80%</td>
<td>3.1%</td>
<td>85%</td>
</tr>
<tr>
<td><strong>Difference</strong></td>
<td>-0.2%*</td>
<td>-1.4%**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business owner</td>
<td>2.0%</td>
<td>23%</td>
<td>1.6%</td>
<td>4%</td>
</tr>
<tr>
<td>Not business owner</td>
<td>2.6%</td>
<td>77%</td>
<td>2.9%</td>
<td>96%</td>
</tr>
<tr>
<td><strong>Difference</strong></td>
<td>-0.5%**</td>
<td>-1.4%**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * p<0.05 ** p<0.01, using robust standard errors clustered by state. One percent sample of all tax filers (N = 24 million), and 100 percent sample of those making $1 million or more per year (N = 45 million). Source: U.S. Department of the Treasury, IRS Micro Data, years 1999-2011.
Table 2. Log-Linear Regressions for Millionaire Migration

<table>
<thead>
<tr>
<th></th>
<th>Model 1 Millionaires</th>
<th>Model 2 Millionaires</th>
<th>Model 3 All Population</th>
<th>Model 4 Millionaires Excl. Florida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log pop. origin</td>
<td>0.94***</td>
<td>0.96***</td>
<td>0.84***</td>
<td>0.96***</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.07)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Log pop. destination</td>
<td>0.95***</td>
<td>0.93***</td>
<td>0.79***</td>
<td>0.81***</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Log distance</td>
<td>-0.26***</td>
<td>-0.26***</td>
<td>-0.26***</td>
<td>-0.25***</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Contiguity</td>
<td>0.76***</td>
<td>0.82***</td>
<td>1.16***</td>
<td>1.09***</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.12)</td>
<td>(0.07)</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Income tax difference</td>
<td>-0.07*</td>
<td>-0.08*</td>
<td>0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.02)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Winter temp / 10</td>
<td>0.09</td>
<td>0.04</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td></td>
</tr>
<tr>
<td>Sales tax</td>
<td>-0.05</td>
<td>-0.01</td>
<td>-0.03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td></td>
</tr>
<tr>
<td>Property tax</td>
<td>-0.05</td>
<td>0.03</td>
<td>-0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.08)</td>
<td>(0.06)</td>
<td></td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td></td>
</tr>
<tr>
<td>Average income</td>
<td>-0.03*</td>
<td>-0.01</td>
<td>-0.02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
</tr>
<tr>
<td>Residential Land Value</td>
<td>0.19**</td>
<td>0.03</td>
<td>0.14**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-0.66***</td>
<td>-0.73***</td>
<td>-18.24***</td>
<td>-0.67***</td>
</tr>
<tr>
<td></td>
<td>(0.14)</td>
<td>(0.15)</td>
<td>(1.17)</td>
<td>(1.15)</td>
</tr>
<tr>
<td>N (State pairs)</td>
<td>2550</td>
<td>2550</td>
<td>2550</td>
<td>2450</td>
</tr>
<tr>
<td>N (Migrations)</td>
<td>139,573</td>
<td>139,573</td>
<td>593,365</td>
<td>98,211</td>
</tr>
<tr>
<td>pseudo R-sq</td>
<td>0.754</td>
<td>0.788</td>
<td>0.793</td>
<td>0.805</td>
</tr>
</tbody>
</table>

* p<0.05  ** p<0.01  *** p<0.001. Robust standard errors clustered by state in parentheses. The outcome variables represents counts of millionaire (or all population) migration flows between each state-pair, summed over 1999-2011. Model 3 uses a one percent sample of the total population, rather than just millionaires, and the income tax rate at the median. Model 4 excludes Florida migration flows. Source: Office of Tax Analysis Microdata, 1999-2011.
Table 3. Tax-Migration Effects by Socio-Economic Groups

<table>
<thead>
<tr>
<th></th>
<th>Tax Migration Coefficient</th>
<th>SE</th>
<th>Overall migration rate</th>
<th>Share of millionaires</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All millionaires</strong> (Table 2, Model 2)</td>
<td>-0.08*</td>
<td>(0.04)</td>
<td>2.4%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Economic Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Owner</td>
<td>-0.09*</td>
<td>(0.04)</td>
<td>2.1%</td>
<td>23%</td>
</tr>
<tr>
<td>Capital Gains 75%+</td>
<td>-0.07</td>
<td>(0.04)</td>
<td>3.0%</td>
<td>11%</td>
</tr>
<tr>
<td>$10M+ annual income</td>
<td>-0.07</td>
<td>(0.04)</td>
<td>2.6%</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Retirement Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under Age 65</td>
<td>-0.07*</td>
<td>(0.03)</td>
<td>2.5%</td>
<td>80%</td>
</tr>
<tr>
<td>Age 65+</td>
<td>-0.07</td>
<td>(0.06)</td>
<td>2.3%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Family Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children at home</td>
<td>-0.05</td>
<td>(0.03)</td>
<td>2.0%</td>
<td>50%</td>
</tr>
<tr>
<td>No children at home</td>
<td>-0.09*</td>
<td>(0.04)</td>
<td>2.9%</td>
<td>50%</td>
</tr>
<tr>
<td>Single Filer</td>
<td>-0.05</td>
<td>(0.03)</td>
<td>3.6%</td>
<td>7%</td>
</tr>
<tr>
<td>Married, one primary earner</td>
<td>-0.08*</td>
<td>(0.03)</td>
<td>2.5%</td>
<td>81%</td>
</tr>
<tr>
<td>Married, dual earners</td>
<td>-0.10*</td>
<td>(0.04)</td>
<td>1.7%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Persistence of Millionaire Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One year</td>
<td>-0.02</td>
<td>(0.03)</td>
<td>3.2%</td>
<td>15%</td>
</tr>
<tr>
<td>2 to 3 years</td>
<td>-0.05</td>
<td>(0.03)</td>
<td>3.1%</td>
<td>18%</td>
</tr>
<tr>
<td>4 to 7 years</td>
<td>-0.08*</td>
<td>(0.03)</td>
<td>2.6%</td>
<td>29%</td>
</tr>
<tr>
<td>8 years +</td>
<td>-0.12**</td>
<td>(0.04)</td>
<td>1.9%</td>
<td>38%</td>
</tr>
</tbody>
</table>

* p<0.05  ** p<0.01. Robust standard errors clustered by state in parentheses. Estimates are income tax rate coefficients from log-linear migration models (Table 2, Model 2 specification), run separately for each socio-economic group. The outcome variables represents counts of millionaire migration flows between each state-pair, summed over 1999-2011. Source: Office of Tax Analysis micro data.
<table>
<thead>
<tr>
<th>Estimate of Income Elasticity ($e$)</th>
<th>Estimate of Population Elasticity ($\eta$)</th>
<th>$\eta = 0.0$</th>
<th>$\eta = 0.1$</th>
<th>$\eta = 0.2$</th>
<th>$\eta = 0.5$</th>
<th>$\eta = 1.0$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$e = 0.10$</td>
<td></td>
<td>87%</td>
<td>80%</td>
<td>74%</td>
<td>61%</td>
<td>47%</td>
</tr>
<tr>
<td>$e = 0.25$</td>
<td></td>
<td>73%</td>
<td><strong>68%</strong></td>
<td>63%</td>
<td>53%</td>
<td>42%</td>
</tr>
<tr>
<td>$e = 0.60$</td>
<td></td>
<td>53%</td>
<td>50%</td>
<td>48%</td>
<td>42%</td>
<td>34%</td>
</tr>
</tbody>
</table>

Note: estimates calculated using equation 2, at $a = 1.5$. Shown in bold is our millionaire population (migration) estimate of $\eta = 0.1$, and a representative estimate of income elasticity, $e = 0.25$, from the published literature (reviewed in Saez, Slemrod, and Geirtz 2012). We also show the higher-end and lower-end estimates of the income elasticity (0.60 and 0.10, respectively).
Table 5. Log-Linear OLS Models for Millionaire Population

<table>
<thead>
<tr>
<th>Log general population</th>
<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
<th>Model 8</th>
<th>Model 9</th>
<th>Model 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>States</td>
<td></td>
<td>Border Counties</td>
<td></td>
<td></td>
<td>FE: Border Counties</td>
<td>FE: Cross-state MSAs</td>
</tr>
<tr>
<td>Log general population</td>
<td>1.095***</td>
<td>1.252***</td>
<td>1.329***</td>
<td>1.330***</td>
<td>0.883***</td>
<td>0.860***</td>
</tr>
<tr>
<td>(0.047)</td>
<td>(0.052)</td>
<td>(0.034)</td>
<td>(0.042)</td>
<td>(0.219)</td>
<td>(0.138)</td>
<td></td>
</tr>
<tr>
<td>Tax rate</td>
<td>-0.021</td>
<td>-0.049**</td>
<td>-0.036</td>
<td>-0.045</td>
<td>-0.011</td>
<td>-0.002</td>
</tr>
<tr>
<td>(0.018)</td>
<td>(0.018)</td>
<td>(0.021)</td>
<td>(0.024)</td>
<td>(0.026)</td>
<td>(0.028)</td>
<td></td>
</tr>
<tr>
<td>Implied elasticity (η)</td>
<td>0.08</td>
<td>0.19</td>
<td>0.14</td>
<td>0.18</td>
<td>0.04</td>
<td>0.01</td>
</tr>
<tr>
<td>Year effects</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>County-pair (or MSA) x year effects</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>County effects</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>816</td>
<td>37504</td>
<td>28224</td>
<td>5616</td>
<td>28224</td>
<td>5616</td>
</tr>
<tr>
<td>adj. R-sq</td>
<td>0.914</td>
<td>0.891</td>
<td>0.903</td>
<td>0.871</td>
<td>0.380</td>
<td>0.492</td>
</tr>
</tbody>
</table>

Notes: * p<0.05  ** p<0.01  *** p<0.001. Standard errors in parentheses are clustered by state in Models 8, 11, and 13, by state and interstate border in Models 9, 10, and 12. The implied elasticity is the percent change in population for a percent change in the tax rate, evaluated at the mean state tax rate and millionaire population. Sources: Office of Tax Analysis micro data, 1996-2011; U.S. Census Bureau, Intercensal Population Estimates, 1996-2011.
### Appendix A. Variables, Descriptive Statistics, and Data Sources (1999-2011)

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State-to-State Relational (Matrix) Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Millionaire migrants</td>
<td>53</td>
<td>195</td>
<td>0</td>
<td>3,637</td>
</tr>
<tr>
<td>All migrants</td>
<td>239</td>
<td>485</td>
<td>0</td>
<td>6,416</td>
</tr>
<tr>
<td>Distance</td>
<td>1,221</td>
<td>912</td>
<td>20</td>
<td>5,112</td>
</tr>
<tr>
<td>Contiguity</td>
<td>0.1</td>
<td>0.3</td>
<td>0.0</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>State Attributes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Millionaire population</td>
<td>109,966</td>
<td>167,090</td>
<td>5,923</td>
<td>877,643</td>
</tr>
<tr>
<td>All population</td>
<td>405,595</td>
<td>442,032</td>
<td>33,415</td>
<td>2,407,673</td>
</tr>
<tr>
<td>Income tax rate, $1.7M</td>
<td>38.6</td>
<td>2.1</td>
<td>34.6</td>
<td>41.4</td>
</tr>
<tr>
<td>Income tax rate, $53K</td>
<td>12.1</td>
<td>1.8</td>
<td>9.0</td>
<td>15.5</td>
</tr>
<tr>
<td>Winter temperature</td>
<td>32.3</td>
<td>12.2</td>
<td>2.6</td>
<td>67.4</td>
</tr>
<tr>
<td>Sales tax rate</td>
<td>4.8</td>
<td>1.9</td>
<td>0.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Property tax rate</td>
<td>1.0</td>
<td>0.4</td>
<td>0.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>5.6</td>
<td>1.0</td>
<td>3.4</td>
<td>7.6</td>
</tr>
<tr>
<td>Residential Land Value</td>
<td>68,558</td>
<td>89,692</td>
<td>7,518</td>
<td>407,016</td>
</tr>
<tr>
<td>Average Income</td>
<td>34,731</td>
<td>5,712</td>
<td>26,553</td>
<td>56,659</td>
</tr>
</tbody>
</table>