

CHARLES UNIVERSITY
FACULTY OF SOCIAL SCIENCES

Institute of Political Studies
Department of Political Science

Master's Thesis

2019

Matthew Morgan Schneider

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**SOCIO-ECONOMIC MOTIVATED MIGRATION & TAX POLICY;
WHAT IS THE IMPACT OF TOP-TAX BRACKET AMERICANS
“VOTING WITH THEIR FEET” ON U.S. STATE BUDGETS?**

Master's Thesis

Author: Matthew Morgan Schneider

Study program: International Economics and Political Studies

Supervisor: PhDr. Kryštof Kozák, PhD.

Year of the defense: 2019

Declaration

1. I hereby declare that I have compiled this thesis using the listed literature and resources only.
2. I hereby declare that my thesis has not been used to gain any other academic title.
3. I fully agree to my work being used for study and scientific purposes.

In Prague on 30th July 2019,

Matthew Morgan Schneider

Bibliographic Reference

Schneider, Matthew. "Socio-economic Motivated Migration and Tax Policy; What is the Impact of Top-Tax Bracket Americans "Voting with Their Feet"? on U.S. state budgets". Master's thesis. Charles University, Faculty of Social Sciences. Institute of Political Studies. Supervisor: PhDr. Kryštof Kozák, PhD.

Length of the thesis: 49,511

Abstract

This paper explores the implications of tax policy on the migration habits of the wealthiest of tax paying groups in certain U.S. states, and quantifies those implications for readers so they have a better understanding of how human behavior and tax systems interact. This is done so by examining the general phenomena of tax related migration as it manifests itself in specific real-world examples.

As such, this paper projects the number of high-income taxpayers lost based on increases to the rates of personal income tax, and the associated tax dollar gains/losses (i.e. to what extent are top-tax bracket filers “voting with their feet”?). The paper provides calculations for three different rates of population sensitivity, and the corresponding numbers of lost tax payers in relation to a tax increase. The paper then goes on to show the diminishing returns of tax rate increases on top-tax bracket payers by calculating the amount of time needed for migration to completely offset the original gains from the high rate of taxation.

The findings of this paper, which examine the states of New York, California, and Connecticut, conclude that these states will exhaust tax gains from a 5% income tax increases on top-tax bracket payers in the long term (46 – 142 years), and further concentrate their top-tax bracket into a smaller number of payers. These results suggest that there is short to medium-term flexibility in top-tax bracket rates; however, these increases are not a sustainable long-term solution.

Keywords

Tax Competition, Top-Tax Bracket, Tax Burden, Population Behavior, Diminishing Tax Benefit, “Wealth Engine Effect”, Tax Migration

Title of Thesis in Czech: Sociálně-Ekonomicky Motivovaná Migrace a Daňová Politika; Jaký má Dopad "Hlasování Nohama" Američanů s Nejvyšším Daňovým Zatížením/Nejvyšší Daňovou Sazbou na Rozpočty Států USA?

Acknowledgement

Without the guidance of this my supervisor, PhDr. Kryštof Kozák, PhD., and the never-ending support from IEPS program director Doc. Ing. Vladimír Benáček CSc., this paper would not have come to fruition. Thank you both tremendously for your time and effort in this endeavor.



Master Thesis Proposal

Institute of Political Studies

Faculty of Social Sciences

Charles University in Prague Date: 28.08.2018

Proposed Topic: State Taxes, Economic Growth, and the Fiscal Health of U.S states

Registered in SIS: Yes; Date of registration: Late August, 2018

Topic Characteristics / Research Question(s):

Charles Tiebout outlined the theory in which people would move based upon how they valued the services provided for their taxes paid and believed that tax competition was a pillar of the contract between the citizens and their government. My research will better illustrate the ideas of Tiebout as human mobility is ever greater than it was when he published his work in 1956.

- 1. The vast majority of net taxes are paid by a small percentage of people; what happens if these people leave?**
- 2. What is the relationship between state tax rates, population growth and political bifurcation in the United States?**

2) How do state taxes impact the economic geography of the United States?

3) Do state tax rates play a role in the decision to change locations in the United States? As an example, by changing your legal address from one state to another, you could alter the amount of net income received for the same amount of work, or pension. The point of my research is to understand the relationship between the rate of state taxation, and mobility in the United States

Areas of potential analysis/measurement:

3004 U.S counties (3 counties in Delaware (smallest number) – 254 counties in Texas (largest number))

North East - South East

California, New York, Texas, Florida

Working hypotheses:

3. Hypothesis #1: Lower tax rate states have higher economic growth than higher tax rate states;
4. Hypothesis #2: Lower tax rate states have higher growth of HNW individuals than higher tax rate states
5. Hypothesis # 3: Lower tax states will have a higher growth rate of income tax receipts than high tax states.
6. Hypothesis # 4: At a certain point of migration top tax bracket filers, state budgets become unsustainable

Methodology:

I will employ panel data to create a regression of tax receipt growth and HNW population change over to show whether a correlation exists between tax receipt growth and HNW population growth, and if it is positive or negative. I will then run tests of certain migratory hypotheticals to see where a breaking point in state budgets are.

In an attempt to avoid spurious results, a population growth theory will be developed, containing variables explaining/related to population growth, all the while considering the stand-alone impacts of local birth and death rates on net migration.

Outline:

Introduction

Literature Review

Research Question

Methodology - cluster analysis/ multi-variable regression

Results

Analysis

References / Bibliography:

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I) Introduction

A) Context and Background

Surplus. Deficit. Forecast. Actual Receipts. These terms have come to impact government more than any four other words. Every decision, good or bad, that any government makes is only possible because of those four words. The decision makers in governments have themselves been students of history, and have also learned through trial and error (the hyper inflations of Weimar Germany and Zimbabwe, the municipal insolvency of Detroit, Black Wednesday and the GBP) importance of those four words, and how one arrives at each; *revenue minus costs, or the government's net income.*

As has been explored and detailed thoroughly elsewhere, most of the wealth, some 38.5% is concentrated in the hands of a very small group (the 1%)¹. It has also been established, beginning in the 431BC "Funeral Oration of Pericles"² to today's Universal Declaration of Human Rights³, that the purpose of government is to create legal institutions that treat each of its citizens in the same way, no matter their social class. Some countries have produced better results in their pursuit of building egalitarian systems than others, but one central question of government remained no matter the creed of its existence; *how will government pay for it all?*

¹ Federal Reserve of the United States. Survey of Consumer Finances (SCF). 2016

² Thucydides. *History of the Peloponnesian Wars*.

"If we look to the laws, they afford equal justice to all in their private differences; if to social standing, advancement in public life falls to reputation for capacity, class considerations not being allowed to interfere with merit; nor again does poverty bar the way".

³ Universal Declaration of Human Rights. Article 7.

"All are equal before the law and are entitled without any discrimination to equal protection of the law"

The answer for every government has always been taxation. Many people never contemplate their relationship with their government more than receiving the first paycheck and noting a tax deduction. For more inquisitive minds, the questions arise; Why don't I receive the full reward of my labor? Government taxation. What is the purpose of taxation? To provide the income for governments to operate and pay for the services they provide to its citizens. What is the purpose of governmental services? To provide citizens services/goods that would be not be otherwise available, under-supplied, or too costly if provided privately due to their inherent characteristics of *non-rivalry*⁴ and *non-excludability*⁵.

To this end, economic actors and governments live a very intertwined existence. Each pays some degree of their success to the other. Since the Neolithic, or Agrarian Revolution, the time in which people organized themselves into societies, which evolved to be administered by governments, the relationship between those entities that pay for more than they consume and those entities that consume more than they pay for has been a tumultuous one. What is it, that is produced and consumed? *Public Goods*.

Economic actors have varying measures of value as they relate to the delivery of public goods, and it was Charles Tiebout's understanding of the inherent competition between "deliverers" that led to his 1956 theory of "Voting with your Feet". Tiebout hypothesized that as individual taxpayers valued and benefitted from public services differently, they would physically move to political jurisdictions that provided public goods aligned with their perceived needs (A family

⁴ Consumption by one consumer does not change the ability to consume for other consumers – the marginal cost of supplying a public good to another consumer is zero. If the good is supplied to one consumer, it is supplied to consumers.

⁵ Non-paying consumers cannot be denied consumption of the provided good or service

with school- age children will value public education highly, while a 20 year-old with no car would place a higher importance on public transportation) (Tiebout, 1956).

Tiebout thought that tax competition between localities was essential to the economic and political well-being of the communities contained in those tax jurisdictions, and an integral component in the fiscal health of governments and the general populace alike. The decision to migrate or stay is the manifestation of a taxpayer's demand for a particular mix of public goods and local taxes (Tiebout, 1956).

Today we live in a different world from the world that led Tiebout to formulate his hypothesis. Governments around the world, especially those in the most developed of regions, find themselves straddled with unsustainable levels of debt, and as a result, have been looking towards their tax payers to provide them with more revenue. Government welfare and pension systems are woefully underfunded in most U.S states, and as a result, state legislatures have raised personal income tax levels on the highest of their earners attempting to balance their budgets. This development led to many tax payers relocating to more friendly jurisdictions. For example, renowned hedge fund manager David Tepper decided to move his primary residence from New Jersey to Florida. In doing so, he saved himself and deprived state of New Jersey around \$150 million in personal income taxes per annum⁶. If higher taxes in New Jersey were to trigger just four similar relocations, the increased tax rate would end up causing a net decrease in state revenues; the same effect would be achieved if only 40 families earning one-tenth as much as Tepper behaved accordingly (Shepard, 2018).

⁶ Robert Frank, *One Top Taxpayer Moved, and New Jersey Shuddered*, N.Y. TIMES (Apr. 30, 2016).

B) Paper's Focus

Given that such a small number of tax payers account for such a large percentage of personal income tax receipts in U.S. state's, this paper seeks to realistically look at the implications of tax policy on the migration habits of the wealthiest of tax paying groups, and to quantify those implications for readers so they may have a better understanding of how human behavior and tax systems intersect.

The heart of this paper is predicated upon the argument between two hypotheses regarding migration trends of top-tax bracket qualifying tax payers; the "elite embeddedness" versus "transitory millionaire" theories. This paper assumes that because of the emergence of technology and shift of the top-tax bracket demographic (majority corporate versus self-employment), this population is not as geographically dependent upon its income as it once was, contributing to higher rates of mobility in this class than what was previously believed, ultimately lending credence to the underlying research question of this paper.

As such, this paper will project the number of high-income taxpayers lost based on increases to the rates of personal income tax (i.e. to what extent is are top-tax bracket filers "voting with their feet"?), and to project those potential tax dollar gains or losses.

The main issue that this paper deals with is the calculation of the non-linear response by the population of the top-tax bracket (how sensitive are tax payers to tax increases?), and the second is how much is this lost revenue and when does this tax increase become self-defeating?

II) Literature Review

Today's academic climate in the United States is not describable as friendly to the highest of earners, and given economic academia's inherent level (6:1) of democrat political bias (Langbert, 2018), it is not without surprise that articles dealing with the wealthy, or ultra-wealthy, mostly suggest a blind increase of taxes paid without much attention paid to the possible consequences. That isn't to say, however, that there hasn't been some useful research devoted to this topic, of which I will be utilizing for the base of my research.

The United States provides researchers with a unique look at different tax strategies, and how these have served to grow, or diminish the number of filers in the highest tax brackets of each state government. While the federal government relies on a progressive income tax, states generally rely on more regressive sales and property taxes as well as relatively flat- rate income taxes (Piketty and Saez, 2007). That isn't to say, however, that there isn't variance – the income tax range applied to the highest income earners in US states varies from 0% to – 13.3% ⁷.

Indeed, the threat of millionaire migration is powerful leverage in an “exit versus voice” political negotiation over top tax rates (Carruthers and Lamoreaux, 2013). This “exit versus voice” conundrum is the essence of issue at hand; 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, such as Martha's Vineyard or Malibu Beach. These two perspectives offer

⁷ Alaska, Florida, Nevada, South Dakota, Texas, and Washington do not have individual income taxes; California has \$1,000,000+ = \$119,653.12 plus 14.63% of income in excess of \$1,000,000 (*US. Census Bureau, 2018*)

very different views on the likelihood of tax-induced migration, and thus on the social consequences of progressive taxation (Young, Varner, Lurie, Ithai, & Prisinzano, 2016).

A) Personal Income Taxes in the United States: A History at the State Level

“...but in this world nothing can be said to be certain, except death and taxes.” - Benjamin Franklin

The United States, or the precursor colonies, and their inhabitants had a unique relationship with taxes. The break from Britain did not occur because of a rejection of taxation, but merely the levying of without input from those that the tax was being imposed upon; “no taxation without representation” was the moniker of that time and place. Today, this attitude is expressed by the District of Columbia license plate since 2000, emblazoned with the slogan “End Taxation without Representation”, as the residents are taxed at the federal level without a voting member in the U.S. Congress.

Following independence from the British Crown, the colonies entered a relationship with one another, governed by the “Articles of Confederation”. This governing document was created out of a severe mistrust of authoritarianism, and the belief that a federal government was no different than the despised King and his court. As such, the central government, charged with tasks such as the national defense, was left beholden to the voluntary contributions of the states whom had the “power of the purse” in their institutional relationship.

The individual state’s “purse” was comprised mostly of revenue gained due to tax on property, with the first true personal income taxes levied by the state of Pennsylvania in 1840. The American Civil War and its subsequent re-construction period saw several other states enact personal income taxes, with most other states in the union enacting tax legislation in the American Progressive Era/Great Depression leading up until WWII; thirty-three states had

personal and/or corporate income tax by 1940 (Blakey, 1941). The final state to enact a personal income tax was Connecticut in 1991 ⁸.

Currently, 43 states levy taxes on some sort of personal income (Payroll vs. Interest; Dividends and Capital Gains from investment/property holdings) with the differences in state individual income taxes as the following;

- *States with state-level individual income tax*
- *States without state-level individual income taxes*
- *States with state-level individual income tax on interest and dividends only*
- *States with state-level individual income on payroll only*

The above four tax situations, coupled with their specific state to state tax rate differences, create an environment for which Tiebout's theory can play out – a choice for tax payer's to change their tax jurisdiction based on their personal trade-off between taxes paid and public goods/services received.

B) Tiebout's Model

In the simplest of representations, the scenario below (with assumptions to be detailed later) depicts the theory that Tiebout proposed in a real-life scenario taking into consideration certain assumptions (Tiebout, 1956).

Suppose there are $2 * N$ individuals with identical income Y , and each city supplies level P of local public transportation. There are two types of families:

1. *N young individuals who use public transportation, with utility $U(C, P)$. These individuals' value both private consumption C and public transportation provision P .*
2. *N older individuals who drive, with utility $U(C)$. These individuals only value private consumption C and gain nothing from public transportation provision.*

⁸ In 1991, Connecticut Gov. Weicker signed into law a flat 4.5 percent income tax

The assumption is made that in each city, P is decided by the average voter and public transportation is financed equally by city residents, young individuals would move to cities where local transportation where provided at $P = P^*$. Older individuals would move to where public transportation where provided at $P = 0$. Ultimately, one city would be all the young individuals and the other would be all the older individuals. In this scenario, both cities could provide the optimal level of public good P (P^* in the city with all the young individuals and 0 in the city with all the older individuals).

The assumptions of Tiebout's model are as follows:

- *Consumers possess the freedom of movement, absent of costs associated with moving.*
- *Consumers have access to complete information.*
- *There is a diverse set of communities to choose from.*
- *Commuting does not pose an issue.*
- *Public goods do not suffer from a "spill-over effect" in that benefits/costs from one community are not shared with the next.*
- *Economies of scale apply to cities.*
- *Communities are aware of/and attempt to utilize "economies of scale".*
- *Communities are rational and enforce rules limiting abuse of public goods.*
- *Housing prices reflect the cost (including all taxes) and benefits (including any/all public goods) of owning that home.*

There are obvious problems with these assumptions, such as zero costs to moving from point "A" to point "B", and housing prices include subjective benefits that have varied values across a population. However, I believe that some of these assumptions, such as access to complete information and a diverse set of communities, are truer today than they were when Tiebout postulated his public choice theory.

C) Why do Wealthy Individuals' Matter?

"Politicians are dividing Americans into two classes — those who work for a living and those who vote for a living." - James Bovard

The United States holds the highest number of wealthy individuals of any country, and these are individuals who are taxed in the highest bracket with incomes generally exceeding \$500,000.

These individuals pay a vast majority of personal income taxes, which make up a large percentage of state budget receipts⁹. Indeed, “taxes on top earners have an outsized effect on public revenues. At the same time, the migration of individuals in top tax brackets can have an outsized negative impact on state finances” (Varner, Young, and Prohovsky, 2018).

Inside the United States, the population is broken down in a relatively predictable pattern, where larger states dominate smaller states in numbers of tax filers. However, there are signs that a new migration trend in this population segment is developing; that is, the relocation from high tax states to lower tax states. If the continued realization of this trend continues, it will be accompanied by state budget crises in states experiencing the outflow of top-tax bracket individuals.

States have varying tax structures in the United States, with each state levying a unique set of taxes on their inhabitants. In a realization of the federal system of governments, states offer different services and charge different rates for them in a market of state governments.

Ultimately, the inhabitants can choose where they live if they feel the government takes too much of their money based on their personal preferences of public goods.

D) “Putting All of Your Eggs in One Basket?”

“It is the part of a wise man...not to venture all his eggs in one basket.” – **Miguel de Cervantes**

“Put all your eggs in the one basket and – WATCH THAT BASKET.” – **Mark Twain**

“Never do this” or “do this with extreme caution”; these are the two ways in which success can be derived from “putting all your eggs in one basket” (Winton, 1999). The idea is easily expressed in the terms of a poker hand – going “all in” - the payoff is the largest possible,

⁹ Congressional Budget Office, The Distribution of Household Income, 2015

however you risk the ability to play the game again. Professional poker players would use this strategy sparingly, and ultimately, they are playing a game, not governing over and providing for a population.

No matter the instance, “putting all of your eggs in one basket”, is a dangerous approach for consistent, long term fiscal health. States have done just that in what has become a reinforcing cycle. State governments offer services to increase popularity amongst the electorate, which then requires more money to deliver these extra services, pushing the number of net tax contributors down, raising the reliance on the fewer remaining net contributors. During the next election cycle, promises of more services, or tax cuts are made, which add cost to the budget, further shrinking the number of net tax contributors. By allowing such a large percentage of the population become neutral or net recipients, the state created for itself an over reliance upon a very small segment of its population.

Over reliance on a certain tax base presents a problem to budget planners because there is not a broad enough foundation of fiscal support to weather economic shocks. The functioning of entire state governmental systems – fire, medical, pension systems, police, etc., are tied to several hundred, or a few thousand individuals, and these systems interact with 340 million people daily. For example, Connecticut tax data from 2014 indicates that only three hundred and fifty-seven (357) tax filings accounted for 11.7% of collected personal income tax¹⁰.

Fathom a Randian thought experiment in which all billionaires decided together that they wouldn't work, sell all their assets, covert every digital dollar, euro, and pound (or, any other fiat

¹⁰ Connecticut Tax Incidence. December 2014. Pg. 25. <https://portal.ct.gov/-/media/DRS/Research/DRSTaxIncidenceReport2014pdf.pdf?la=en>

currency unit) to cash, and keep it at home, and just live off an ever-smaller pile of cash – no personal income from any source. Roughly 40% of every state’s budget is derived from personal income taxes, and the top tax bracket makes up a considerable portion of that figure. This would have serious budgetary implications for the government, but the billionaire’s life wouldn’t be drastically altered.

E) Growth of Income Inequality and Top-Tax Bracket Reliance

The cumulative percent change in real annual wages, by wage group, 1979–2017, shows that the top 1% of earners experienced a 157.3% increase in wages, while the bottom 90% of earners experienced a 22.2% gain ¹¹. As the trend of income inequality and wage growth concentration continues, states will find themselves more and more reliant on a shrinking base of net tax contributors, only to be exacerbated by the growing cost of state delivered goods and services outpacing the growth in wages.

For example;

1) Year 1 Income Tax = \$1000 / 100,000

Year 1 Cost of Government delivered goods and services = \$950

Year 1 tax status = \$50 / 99,050 Net Tax Contributor

2) Year 2 Income Tax = \$1025 / 102,500

Year 2 Cost of Government delivered goods and services = \$1050

Year 2 tax status = \$25 Net Tax Recipient / 101,450 Net Tax Contributor

Assumption: Cost of Government delivered goods and services grows faster than wage growth for the bottom tax brackets, where top-tax bracket wage growth exceeds government spending growth ¹²

Eventually, the conversion of tax contributors into tax recipients will result in a situation that is fiscally unsustainable – too many hands taking from the pot, and not enough putting in. The

¹¹ EPI analysis of Kopczuk, Saez, and Song (2010, Table A3) and Social Security Administration wage statistics

¹² According to the Office of Management and Budget, U.S federal government individual income tax receipts was 217.84B in 1979, compared to a Congressional Budget Office estimate of 1.587T for fiscal year 2017.

state's optimum position is revenue neutral, meaning that all governmental outlays are covered in full by receipts, and no surplus or deficit exists. This translates, in the simplest of terms, to a situation in which everyone pays in the amount of benefit they receive. However, this is not how public goods and services work, as tax payer's lack the ability to control how and where the government spends their tax contributions in relation to their individual demand for public goods. Naturally, due to wage differences, we would see a split between net contributors and recipients in taxation schemes, but expanding income inequality will exacerbate, and push state's budgets into unsafe reliance metrics.

F) Objects of Desire

Why have some states made it a fiscal objective to attract top tax-bracket individuals? The reasons are very much the same as why states would want to keep wealthy populations, but the ultimate reason is the **net contributor status** of these individuals. Attracting only one of these individuals would be a huge fiscal win, given the disparity between the amount of goods and services consumed and the taxes contributed.

Example:

UHNW income Tax = \$1m

UHNW public goods and services consumed = \$10,000

Tax status = \$990,000 tax contributor

Normal income tax = \$10,000

Public Goods and Services consumed = \$7,500

Tax status = \$2,500 tax contributor

- *In this example a single UHNW tax contributor = 396 normal tax contributors*

G) Debt Equals Future Consumption Today

*“Some debts are fun when you are acquiring them, but none are fun when you set about retiring them.”
-Ogden Nash*

Every unit of value borrowed today from tomorrow reduces future consumption by the amount spent today, plus the interest charged. Debt, like any other item, has marginal utility, meaning that at a certain point the cost of one extra unit exceeds the gain from that additional unit – in this context this idea is called the “marginal utility of debt”, and the problem arises when one unit of debt today equals less than one unit of growth tomorrow.

Why is this important to taxes? It is common public budgetary practice to borrow money – the financial situation of a country is considered more stable when it has a small, serviceable debt. This means that, inherently, governments are indebted to one degree or another.

The United States government places no budgetary rules on the individual states, but a “balanced budget” amendment has been added to forty-nine (49) of the fifty (50) states, with Vermont being the exception. Importantly, however, “state balanced budget requirements do not apply to state capital budgets, which generally allow states to use their debt capacity to finance long-term expenditures such as transportation and other infrastructure”¹³.

One takes the entire debt obligation of the country, and divides it by the number of inhabitants, and result is the amount of national debt attributable to each citizen. The issue, as we previously discussed, is that a large portion of societies are net tax recipients, which means that these individuals do not contribute more than they receive, making it impossible to pay down government debt. Debt can only be paid down by individuals paying more into the government than they consume.

¹³ National Association of State Budget Officers, "Capital Budgeting in the States". 2014.

When a state loses a top-tax bracket payer, the budget loses not only a net tax contributor and a taxpayer that can afford to pay for tomorrow's consumption today, but also a tax payer capable of paying for yesterday's consumption that was taken the day before. As the tax paying demographic shifts to a smaller number of larger contributors, future borrowing costs will rise in sync as perceived borrowing risks grow when the pool of potential payers shrinks. This is a self-reinforcing feed-back loop, and the only way to sustainably grow debt is to grow the number of net tax contributors paying to service it.

H) Measurable Migration Response

In further research which compiled tax data from all 50 states, it was found that millionaire migration is indeed responsive to top income tax rates. It is estimate is that a one-point increase in the top-income bracket tax rate leads to a 7 to 8 percent drop in migration flows. The practical application of this estimate of the millionaire population lost to migration show that, for the average state, a one-point tax increase leads to a **loss of 23 millionaire households** per year.

This loss stems from 11 additional out-migrations, and 12 fewer in-migrations (Young, Varner, Lurie, Ithai, & Prisinzano, 2016).

I) Case Study – New Jersey

A recent, and large increase to the top tax rate occurred in the state of New Jersey and has been the subject of much research and debate; providing a nice pool of pertinent information.

An analysis of New Jersey's 2004 "millionaires' tax" suggests that over time migration effects could offset a meaningful share of the revenue boost. Additionally, out- migration associated with higher income taxes will likely diminish other streams of state revenue, such as corporate tax, sales tax, and property tax, as well as degrade a state's overall economic performance, in turn associated with further out-migration. We estimate that higher New Jersey income taxes

after 2003 was associated with a **reduction of more than 20,000 taxpayers and a loss of annual income of at least \$2.5B** (Cohen, Lai, and Steindel, 2011).

The New Jersey tax increase has not waivered since its 2004 passage. The results suggest that by 2012 more than 700 millionaires (close to 2 percent of a typical year's number of millionaire taxpayers) had left the state, as determined by Young & Varner's 2016 methodology. In recent years, millionaire taxpayers have paid close to 40 percent of total New Jersey resident income tax. Thus, a loss of 2 percent of these top earners may reduce New Jersey's income tax by as much as 1 percent (the actual reduction depends on the specific income of the out-migrants).

While static estimates of the 2004 increase suggest a revenue boost of approximately 10 percent, it appears that the cumulative erosion of revenue through this migration channel over the years since the tax increase has offset a meaningful portion of the gain. **New Jersey's revenue loss from out-migration would not be limited to income tax. It is likely that the loss in sales tax revenue would be nearly as large as the loss in income tax revenue.** (Cohen, Lai, and Steindel, 2015). Furthermore, not many of New Jersey's highest earners have to move out of state for the new tax rate to end up producing far less net revenue than expected. The result is that if the state remains committed to meeting its current level of funding needs by increasing taxes rather than decreasing (at least some) benefits, then taxes will have to be raised on a less wealthy tranche of families—perhaps those earning over \$500,000 per year. Yet, some of these families will be unwilling to pay the surtax as well and will themselves move away. So the process will continue and will magnify because of the growth lost to the state as families or companies that might otherwise have moved to New Jersey elect to move to a different state or to stay where they are (Shumway, 2018).

J) Non-Linearity of Response to Tax Rate Increase

Estimations of the average elasticity of migration have made up most empirical research carried out on tax-induced migration (TIM) however, the estimates ignore the potential effect of the variations around this average; different taxes have unique nonlinear effects on migration (Zhang, Yizhou, and Hewings, 2019).

The research asked the question, “Do progressive state income taxes cause tax flight among the wealthy?”, it was concluded that that, at least in terms of the migration response to state income taxes, there is *some* level of progressive taxation that would provoke substantial millionaire migration; it is unlikely that a 10 percentage point tax increase would have a linearly proportional effect (i.e., a loss of four-tenths of 1 percent) (Varner and Young, 2011).

The inherent non-linearity of this issue is also highlighted by Feldman, whom finds that each positive 1 percentage point tax burden differential between states decreases the ratio of income migration into the high tax state by 6.78 percent in a given year (Feldman, 2012).

III) Research Question

At which point does top-tax bracket migration severely impact the financial positions of states that they are leaving?

IV) Methodology

Using Young, Varner, Lurie, Ithai, & Prisinzano's (2016) research findings of tax-related migration, this paper will forecast the potential number of tax payer losses faced by the average state, as described by the work mentioned above, and extrapolate these findings to the states of Connecticut, California, Florida, New York, New Jersey, and Illinois, and see which states have the highest dependence on the highest group of earners, suggesting more thoughtful tax policy in relation to this group of tax payers, and future potential fiscal problems.

This forecast will be based upon the application of an exponential growth model to the findings of Young, Varner, Lurie, Ithai, & Prisinzan, 2016. This model can be mathematically explained as;

$$P(t) = P_0^{rt}$$

Where as;

P(t) = the amount of tax payers lost at tax

P₀ = initial amount of tax payers lost at tax t = 0

r = the growth rate of population response per 1% increase in tax

t = tax

The forecast applies varying growth co-efficient to the previous academic findings relating to this subject. Once the results are known; the losses to state budgets will be calculated, and determinations of the fiscal vulnerability of various states will be made.

After the number of lost tax payers is calculated, the nominal amount in tax dollars gained or lost due to a tax rate increase is calculated based on the individual state's income tax data (number of filers, and amount of tax attributable to this tax bracket). This is then compared to the initial gain

in tax receipts to extrapolate the amount of time needed for tax payer population loss to fully negate the nominal gains from the tax rate increase.

V) Results

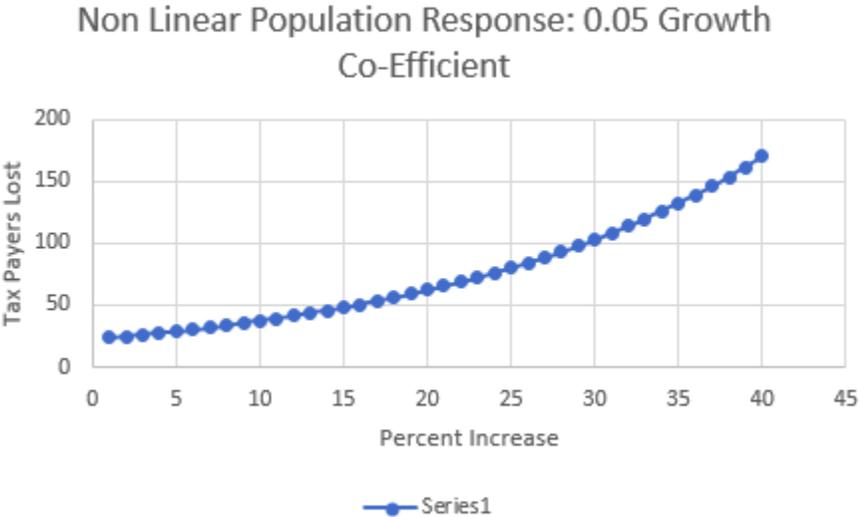
The following results illustrate the precarious position that an “average state” finds itself in regarding tax income lost from income tax increases. The graph below illustrates the exponential loss of top-tax bracket payers, starting with a base number of twenty-three lost tax payers in response to a one-percent increase in the top tax bracket rate;

Number of Top Tax Bracket Payers Lost for each 1% Increase in Top Tax Rate				
		Growth Co-efficient		
		Series I (0.05%)	Series II (0.1%)	Series III (0.15%)
Tax Rate Increase in Percent	1	24.179235 22	25.418931 12	26.722187 6
	2	25.418931 12	28.092263 44	31.046752 6
	3	26.722187 58	31.046752 57	36.071180 3
	4	28.092263 44	34.311968 05	41.908732 4
	5	29.532584 58	37.920589 23	48.691000 4
	6	31.046752 57	41.908732 41	56.570871 6
	7	32.638553 62	46.316312 27	65.725975 7
	8	34.311968 05	51.187441 36	76.362689 2
	9	36.071180 27	56.570871 56	88.720787 2

	10	37.920589 23	62.520482 05	103.07884 9
	11	39.864819 41	69.095818 55	119.76053 6
	12	41.908732 41	76.362689 22	139.14189 2
	13	44.057439 07	84.393823 36	161.65981 4
	14	46.316312 27	93.269599 24	187.82190 8
	15	48.691000 38	103.07884 86	218.21792 4
	16	51.187441 36	113.91974 58	253.53305 7
	17	53.811877 59	125.90079	294.56338 7
	18	56.570871 56	139.14189 17	342.23383
	19	59.471322 16	153.77557 22	397.61898 2
	20	62.520482 05	169.94829 03	461.96734 9
	21	65.725975 72	187.82190 8	536.72948 5
	22	69.095818 55	207.57531 05	623.59069 5
	23	72.638436 92	229.40619 65	724.50902 3
	24	76.362689 22	253.53305 68	841.75939 2
	25	80.277888 02	280.19736 11	977.98488 6
	26	84.393823 36	309.66597 48	1136.2563 3
	27	88.720787 21	342.23382 97	1320.1415 1
	28	93.269599 24	378.22687 57	1533.7856 1
	29	98.051633 85	418.00534 35	1782.0046 5
	30	103.07884 86	461.96734 92	2070.3940 2
	31	108.36381 42	510.55287 95	2405.4546 7
	32	113.91974 58	564.24819 45	2794.7396
	33	119.76053 6	623.59069 52	3247.0241 7

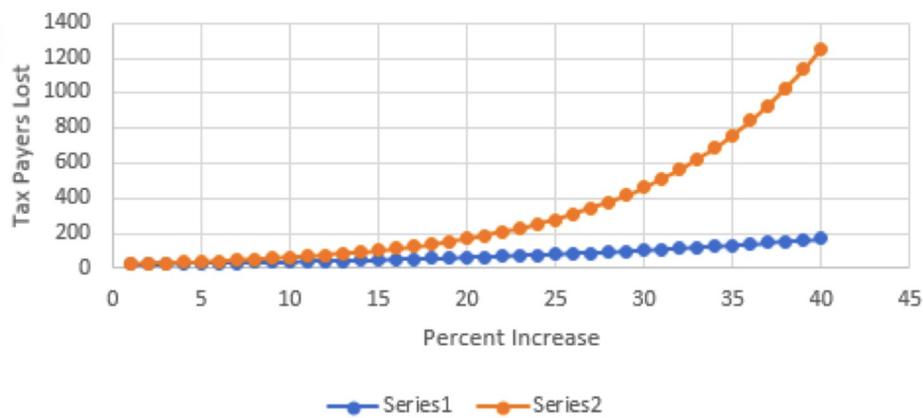
	34	125.90079	689.17430 11	3772.5038 7
	35	132.35586 15	761.65539 51	4383.0241 7
	36	139.14189 17	841.75939 22	5092.3475 7
	37	146.27584 9	930.28800 03	5916.4637 9
	38	153.77557 22	1028.1272 43	6873.9502 2
	39	161.65981 44	1136.2563 29	7986.3907 5
	40	169.94829 03	1255.7574 51	9278.8622 5

The graph's range is through a 40% state income tax rate applied in addition to a 37% top federal tax rate (2018), meaning these observations conclude at an overall top-tax rate close to the amount prescribed by Piketty, Saez, and Stantcheva (83%). This is done to provide readers with a more complete data of observations produced by this methodology, even if such high rates of increases are not utilized in the analysis below:

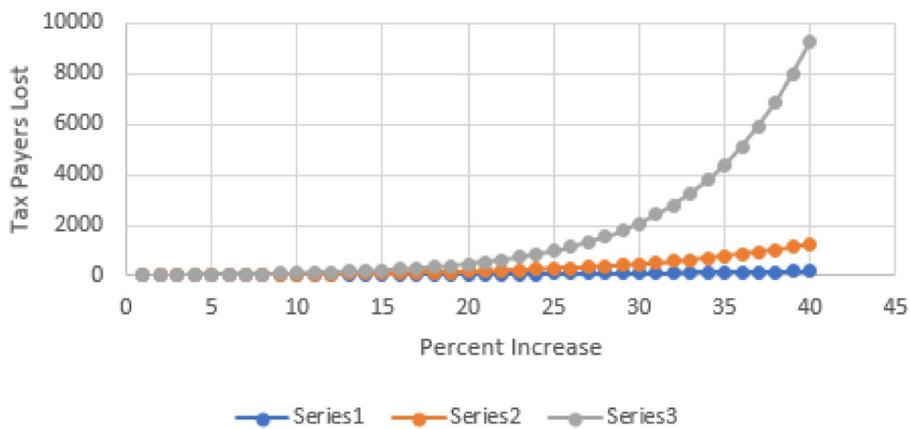




Non Linear Population Response: 0.1 Growth Co-Efficient



Non Linear Population Response: 0.15 Growth Co-Efficient



The previous line-graphs depict the rise in lost top-tax bracket payers as the income tax increases on them. The three growth projections depicted in the final graph clearly show an intensification of losses to the top-tax bracket payer population as the sensitivity to higher tax rates is increased.

The difference in the three charts is attributable to the different rate of exponentiality applied in the calculations – .05, .10, and .15. In the real world, this would be defined as the population response rate, or the rate at which individuals respond to the presence of a stimuli.

The data set and corresponding graphs show the *potential* losses faced by states that attempt to follow the tax policy advice of Piketty, et al., in a quest to achieve the optimum top-tax bracket rate. An increase of any state's top tax rate of 40% would be highly unlikely, but as a rate that corresponds to respected academics estimates of optimum rates of taxation, a range of tax increase up to this percentage cannot be discarded.

VI) Analysis

The mathematics of this paper are quite straightforward, but they attempt to show something that hasn't been done before in this area of research – project the exponentiality of the tax payer response to income tax increases.

The results showed, as expected, expanding losses up the tax increase curve, to the point where the numbers of tax payer lost becomes significant, no matter the population response rate, however, the higher the population response rate, the faster the population loss becomes significant.

Comparing the results to those of Cohen, Lai, and Steindel (2015), we find by multiplying the tax payer loss by three (as N.J. has roughly 3 times the median population of the average U.S

state), the numbers equate to this paper's projections nicely, and suggest a .1 population response (consult chart above) to top-tax bracket rate increases;

Cohen, Lai, and Steindel (2015) observation = 700 top-tax bracket payers lost

Tax Increase = 2.6%

Period of Observation = 8 years (2004-2012)

Per Year Tax Payer Loss = 87.5

Tax Payer Loss after Adjustment due to Population of New Jersey Relative to National Median = 29.17

Hypothetical Losses for Selected States

For these outcomes, we reverse the above adjustment, and multiply (instead of divide) by the state's population to that of the median U.S. state.

Median U.S. State Population (2018 est.) = Louisiana; 4,659,978⁴

Population Response Co-efficient = 0.1

Adjustment = State's Population Ratio x Applicable Tax Pay Loss From Graph

Connecticut

Population (3,572,665) to Median U.S. state population ratio: .77

Total Amount of Tax Filers (2017): 1,622,102¹⁵

Total Top Tax Bracket Filers: 4700

Top Tax Rate and Bracket: 6.99%; \$500,000+¹⁶

Total Amount Paid/ Average Per Person: \$2,977,944,140/ 633,605

Adjusted Annual Loss in Year One Due to Tax Increase of 5% = 29 filers / \$18,374,549

Annual Gain Due to Tax Increase =

\$633,605 - 31,550.00 = 602,055 derived from highest tax bracket tax; average income subject to this tax bracket = \$8,613,090.00

¹⁴ "Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2018" (XLSX). United States Census Bureau. Retrieved December 21, 2017.

¹⁵ Connecticut Personal Income Tax Data. Connecticut Department of Revenue Services 2017. <https://portal.ct.gov/DRS/DRS-Reports/Income-Tax-Reports/2017-Individual-Income-Tax-Reports>

¹⁶ <https://www.cga.ct.gov/2018/rpt/pdf/2018-R-0058.pdf>

11.99% = \$1,032,709.51 + 31,550.00 = 1,064,259.51(new average total paid) - 633,605 (old average total) = 430,654.51 New Total p.p/ 2,024,076,197 New Total Gain

*New tax only effects the highest income bracket = only income above the highest bracket is taxed at the new rate. Average tax paid per person – minus amount taxed in old tax brackets = Amount subject to new higher taxes.

Adjusted Tax Gain in Year One =

11.99% = 29 lost filers x \$1,064,259.51 = 30,863,525.80; 2,024,076,197 - 30,863,525.80 = 1,993,212,671.20

Year Two

11.99% = \$1,993,212,671.20 - 30,863,525.80 = 1,962,349,145.40

Year Three

11.99% = \$1,962,349,145.40 - 30,863,525.80 = 1,931,485,619.60

Years until Income Tax Gains per year are Nill = 66 (total new tax gain versus tax lost due to migration)

California

Population (39,557,045) to Median U.S. state population ratio: 8.49

Total Amount of Tax Filers (2016): 16,586,620¹⁷

Total Top Tax Bracket Filers: 69,441

Top Tax Rate and Bracket: 13.3%; \$1,000,000+

Total Amount Paid/ Average Per Person: \$26,950,170,000 / 388,102

Adjusted Annual Loss Due to Tax Increase of 5% = 322 filer/ 124,968,747

Annual Gain Due to Tax Increase =

\$388,102 - 108,424.00 = 279,678 in taxes derived from highest tax bracket; average income subject to this tax bracket = 2,102,842.11

¹⁷ California Personal Income Tax Data. California Franchise Tax Board. 2017.
https://www.ftb.ca.gov/Archive/AboutFTB/Tax_Statistics/Reports/2017/Annual_Report.shtml

18.3% = \$384,820.11 + 108,424 = 493,244.11 New Average P.P - 388,102 = 105,142.11 New Gain P.P./ 7,319,922,330.50 Total New Gain per year

Adjusted Tax Gain in Year One =

18.3% = 322 lost filers x \$494,244.11 = \$159,146,700; adjusted total = \$7,160,775,630.50

Years until Income Tax Gains per year are Nill = 46 years (total new tax gain versus tax lost due to migration)

New York

Population (19,542,209) to Median U.S. state population ratio: 4.19

Total Amount of Tax Filers (2016): 7,212,276 ¹⁸

Total Top Tax Bracket Filers: 92,128

Top Tax Rate and Bracket: 8.82%; \$1,077,550 + ¹⁹

Total Amount Paid/ Average Per Person: \$15,739,173,663/ 170,840

Adjusted Annual Loss Due to Tax Increase of 5% = 159 filers/ \$27,163,605

Annual Gain Due to Tax Increase =

\$170,840 - \$72,702.88 = 98,137.12 in taxes derived from highest tax bracket; average income subject to this tax bracket = 1,112,665.76

13.82% = \$153,770.41 + 72,702.88 = 226,473.30 New Average total P.P - 170,840 Old Average total P.P = 55,633.30 New Tax Gain P.P/ 5,125,383,555.20 New Total Tax Gain Per Year

Adjusted Tax Gain in Year One =

13.82% = 159 lost filers x \$226,473.30 = 36,009,254.70

Years until Income Tax Gains per year are Nill = 142.34 years (total new tax gain versus tax lost due to migration)

¹⁸ New York Personal Income Tax Data. New York Department of Taxation and Finance. 2016. <https://www.tax.ny.gov/research/stats/statistics/pit-filers-summary-datasets-through-tax-year-2016.htm>

¹⁹ New York Personal Income Tax Data. New York Department of Taxation and Finance. 2016. https://www.tax.ny.gov/pdf/2016/inc/it201i_2016.pdf

VII) Issues

A) As Varner and Young (2011) suggest, there is an inherent problem addressing the non-linear, exponential growth of population response to higher taxes. While slightly higher tax rates may only impact the amount of disposable income tax payers have, an exceedingly high rate will start to impact their financial solvency. I expect that the actual population response curve crosses all three data series, starting out with a low response to slight increases, but moving to a higher response rate as the tax increases.

This expectation is based upon the notion that as tax increases take up a larger and larger percentage of a tax payer's remaining disposable income, these increases will impact the day to day consumption decisions of economic actors – thusly, raising the sensitivity of tax payer's to such tax increases, which manifests itself in a shift across the Series, from I to III.

B) As described by the research of Cohen, Lai, and Steindel (2015), the amount of tax income lost due to this immigration trend is not limited to only income tax receipts as state residents pay a varying assortment of other taxes. Each *homo economicus* spends their disposable income in different ways amounting to different per capita tax collections, but as disposable income grows, so usually does spending and the resultant generation of other consumption-based taxation.

C) There is currently a large gap between income tax rates, and especially those of the highest tax bracket. The sensitivity of the underlying population would have a relation to its current tax burden, and the perceived increase or decrease in quality of life associated with the tax increase, ultimately bearing weight on the numbers choosing to find lower tax burdens.

D) States with low, or no income taxes still need funds for their budgets. The absence of income taxes usually coincides with the presence of high(er) property, and/or sales tax, making the overall tax burden more similar than it appears.

E) These results are U.S. centric. The United States is a special political jurisdiction in that large population/economic centers dot its entirety, and there is no internal language barrier. Both factors would make the United States an outlier in the world. No other region of the world has such economic and linguistic continuity lending its population such ease of mobility.

The previous research from which this paper models its projections upon utilizes only data from the United States. This suggests that potential bias exists in the core assumption of this paper, and that other jurisdictions may contain different population dynamics that influence an inhabitant's decision to relocate.

Outside of the United States, several economic areas in the European Union provide economic actors to span personal income tax jurisdictions (Luxembourg/Switzerland with their neighbors). Furthermore, the European Union may provide a better study for tax-induced corporate relocation than the United States, with Ireland, the Netherlands, and the British Crown Dependencies providing ample opportunity to explore this phenomenon.

F) Certain economic areas, such as New York City, levy an income tax on income earned in that political jurisdiction, so the benefits of “tax shopping” are diminished.

G) “Wealth Engine Effect (WEE)”, or in other words, how many new top tax bracket filers are there, compared to the year before? In this paper, this factor is held at a constant 0, in which economic factors neither increase, nor decrease the number of top-tax bracket filers.

The ability to project future growth would make even Warren Buffet jealous. The “WEE”, is the organic growth of top-tax bracket payers by an individual state’s economy, and is therefore an offsetting effect to the number of tax payers lost due to income tax increases. The greater the “WEE”, the larger the offsetting effect of increased tax rates as payers who relocate are replaced from within existing tax rolls. In the reverse, this assumption disregards tax payer losses due to economic contraction, which would increase budgetary reliance on the smaller population of top-tax bracket payers.

H) Certain states, or areas within, have intangible value in terms of weather/climate that promote higher levels of out/in migration than other regions. This is especially pertinent to the income group this paper focuses on, as the high-income group most likely to relocate based on intangibles such as weather, as opposed to economic factors such as job availability. These states include, but are not limited to Florida, Arizona, and Texas for warmer climates, or Idaho and Colorado for mountain living lifestyles.

I) The impact of technology on migration patterns of top-tax bracket filers is unknown, however, given the limitations of capital mobility in previous eras, one could safely conclude that in today’s era of instantaneous “everything”, the ability for wealthy individuals to reside in a tax jurisdiction that differs from that of the source of their income is infinitely more possible.

J) This paper only approaches migration as a response to higher tax rates, but it does not address the possibility of the same response due to lower tax rates, something akin to the fiat currency theory, a “Race to the Bottom”. In an attempt to drive up tax revenue, states may cut income tax rates on high income earners in an attempt to attract them their tax jurisdictions, hoping to create a larger tax bracket population that contributes a larger overall tax receipt, but a smaller per

capita burden. This may have a similar overall effect, but the reasons for migration are external rather than internal.

VIII) Conclusion

This paper relies on the observations of Varner, Young, et al, to project the exponential nature of tax payer loss in response to higher tax rates. The results of this projection are cross-referenced with results produced by Cohen, et al. in their examination of the effects of New Jersey's tax rate increase, in order to provide a population response rate of tax payers (the rate of exponential growth in lost tax payers) - this led to a 0.1 exponential growth factor from which tax payer lost was determined and the rest of our calculations are based upon.

The results yielded by this paper show that there is a steady decline in the benefits from higher taxes on the rich at a varying rate across the states measured. The decline is rather small over time, taking anywhere from 46-142 years (see analysis above) of top-tax bracket population loss for tax receipts to equal the previous amount of taxes collected prior to the new tax rate implementation. This means that the amount of revenue derived from the top-tax bracket will be nominally the same as the year prior to the new tax enactment, albeit now with a much small population paying a higher rate.

Without much examination, the above tax increases seem to make economic sense, however, the gain is significantly less year after year, meaning that the tax gain will be its best in year one, and future decreases will have to be accounted for, unless other tax revenue is found to fill this gap.

The paper shows that without a "Wealth Engine Effect (WEE)", or an organic replacement of lost tax payers, the tax gain will ultimately disappear from the budget, as well as many tax contributors. It is important to re-emphasize at this point that individuals do not only pay

personal income taxes, but a plethora of other taxes (sales, property, capital gains, etc.) that further add to the total tax revenue of the government.

How do states combat the problem of top-tax bracket payer loss in the face of increased taxation?

Why do states need to combat that occurrence of top-tax bracket payer loss in the first place? An answer to the first question, “tax rate harmonization”, is often proposed – if only there was a uniform tax structure between the states, then tax competition would cease to be a driver in the decision-making process of tax payers wanting to relocate. The U.S federal government has no constitutional authority to directly regulate (they may attempt to do so through de-facto legislation), and the individual states, whose current tax environment is a product of the local political culture, would find little room to change tax structures they deem so central to their uniqueness and perceived successes.

The second question is answered simply - necessity. States that find themselves with a “WEE” that is replacing top-tax bracket payers faster than the state is losing because of higher tax rates, then the necessity is quite low. However, should the “WEE” not replace these tax payers at an equal rate, tax receipts will shrink, and budgetary dependence on a smaller group of tax payers will grow. In that scenario, if the situation isn’t addressed, eventual tax revenues will fall below pre-tax increase levels due to unmitigated population loss.

The effectiveness of the tax rate increase also depends on the income and tax structure of the state measured. Connecticut’s average tax collected per tax filer compared to the minimum amount of earnings to qualify to the highest tax bracket was considerably larger than that of New York or California, with New York registering the closest average amount paid compared to the top-tax bracket minimum qualifying earners. This suggests that New York state would be less

sensitive to top-tax bracket rate increases as a much smaller percentage of their income is subject to the higher tax rate.

The results highlight an important problem in tax policy, in that benefits from higher rates diminish over time as a result of tax related migration, but they also show that the rate of benefit decline is not severe. If there is not organic growth in the numbers of top tax-bracket filers, then this loss is very much an issue, however, this assumption is as realistic as assuming that the number of top tax-bracket filers grows every year.

To conclude, U.S. states face the same human behavioral response to increased taxation, but all face unique circumstances based on their current income and population structures. The results show that there is a clear, short to medium term benefit of increased top tax-bracket rates, however, these gains diminish over time, and other sources of revenue must be found in order to fill these gaps, or the state must engage in deficit spending. The ultimate lesson provided by this research is that increased revenues due to tax rate increases are not naturally long-term in nature, meaning the only way to naturally grow personal income tax receipts is growing the underlying wages contributing that tax percentage.

IX) Future Research Agenda

The future of this research is bright, as several issues brought up here and in previous literature, remain unanswered – largest of all, the non-linearity of exponential growth of population sensitivity to tax rate increases. As tax increases take up a larger and larger percentage of a tax payer’s remaining disposable income, these increases will be “felt” more – thusly, raising the sensitivity of tax payer’s to such tax increases. This is very important to public policy makers as the loss of tax payers will more resemble Series III than Series I should they choose large tax

increases – but forecasting how this sensitivity grows in response to tax increases is space for new research.

Other areas of research that could prove fruitful pertain to growth rates and relationships between of various metrics: Government spending growth versus wage growth for the different tax brackets – the findings may show that governments need to actively index tax bracket rates and ranges much more to ensure budgetary solvency and optimum tax burdens; What is the prevalence of businesses that pay top-tax bracket salaries to relocate employees to other, presumably, lower cost states? If there is a large observation of high-level corporate relocations, this could be an ancillary effect of higher income tax rates, or a larger, more general trend that would individually impact the rates of migration in the top-tax bracket population.

Future research is necessary in the areas outlined here to give public policy makers more complete information regarding the impacts of their policy choices, and to bring into debate the temporary benefits versus the long-term harm of tax rate increases on the top-tax bracket payers.

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