

# **State Taxes, Tax Exemptions and What They Reveal about Elderly Migration**

***Ali Sina Onder***

Uppsala University, Department of Economics and Uppsala Center for Fiscal Studies

Uppsala, Sweden

email: [alisina.under@nek.uu.se](mailto:alisina.under@nek.uu.se)

***Herwig Schlunk***

Vanderbilt University, Law School

Nashville, TN, USA

email: [herwig.schlunk@law.vanderbilt.edu](mailto:herwig.schlunk@law.vanderbilt.edu)

## **Abstract:**

We use the U.S. elderly migration data for 1995-2000 to test how taxes and specific tax exemptions affect migration decisions of the elderly population. We show that the elderly prefer to migrate to states with low inheritance and estate tax, high property tax, low price level, low amount of Federal revenue transfers, high level of local amenities, and high temperatures. In addition, exemption of prescription drugs from sales tax and the existence of pension exemptions affect elderly in-migration positively and significantly.

***Keywords:*** Tiebout Hypothesis, Migration, State and Local Taxes, Tax Exemptions

***JEL Classification Codes:*** H24 H50 H72 H73

## **Acknowledgements:**

We would like to thank John Conley, Soren Blomquist, participants of the Public Economic Theory Meeting in Istanbul and participants of the Annual Congress of the International Institute of Public Finance in Uppsala for helpful comments and discussions. The usual disclaimer applies.

# 1. Introduction

Under the assumption that individuals are utility maximizers, they eventually reveal their preferences for public policies by the location choices they make. This revelation principle lies at the core of the Tiebout Hypothesis. According to Tiebout:

“The consumer-voter may be viewed as picking that community which best satisfies his preference pattern for public goods. [...] At the local level various governments have their revenue and expenditure patterns more or less set. Given these revenue and expenditure patterns, the consumer-voter moves to that community whose local government best satisfies his set of preferences.” (1956, p.418)

Thus when faced with various jurisdictions’ different combinations of local public goods and local taxes to finance these local public goods, individuals will sort themselves into jurisdictions on the basis of their preferences for local public good and tax combinations.

In this paper, we investigate the effect of local government policies on the interstate migration of the elderly population in the US between 1995 and 2000 using a gravity model of migration. Focusing on elderly migration provides two significant benefits, one practical and one analytical. The practical benefit is that the empirical results obtained can be expected to have important policy implications. The fraction of the elderly population in the U.S. is increasing, and according to reports of the U.S. Census Bureau, it is expected to increase further. In order to take advantage of the opportunities posed by this increase, and conversely to face the challenges posed by this increase, governments at the federal, state, and local level will need to focus more thought and resources on the elderly population. The analytical benefit is that the elderly population consists primarily of retirees and hence is relatively immune to labor market characteristics. While positive labor market characteristics may well attract younger migrants, elderly migrants generally do not need to consider such characteristics in their migration decisions. As a result, one would expect the effect of public policy variables and local amenities to manifest themselves more clearly in the migration decisions of elderly migrants than in those of younger migrants<sup>1</sup>.

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<sup>1</sup> Graves (1979) and Clark and Hunter (1992) compare different age groups’ migration decisions and show that the main attractions for migrants differ significantly by age group.

Specific questions we attempt to answer in this paper are: What policies attract the elderly and what policies drive them away? How do the elderly react to different types of taxes? How do amenities and specific tax exemptions affect their migration decisions?

We employ the elderly migration dataset published in a 2003 special report of the 2000 Census, entitled 'Internal Migration of the Older Population', and we use cross sectional analysis of elderly interstate migration. We overlay the data of elderly migration flows between states with data about state characteristics, in particular data about state and local government finances and data about certain state-specific amenities. Thus it is a follow-up on the cross sectional analyses of Voss et. al. (1988) and Cebula (1990), who attempted to answer similar questions using the 1980 Census, Conway and Houtenville (1998, 2001) and Gale and Heath (2000), who used the 1990 Census. We compare and contrast our results obtained from the 2000 Census to those that used earlier Census data.

We estimate a gravity equation for interstate migration that takes into account pushing effects of the origin state's characteristics as well as pulling effects of the destination state's characteristics. Using indicator variables for various tax exemptions and their interactions with tax variables, we show that the elderly prefer to migrate to states with low inheritance and estate taxes, high property taxes, low price level, low amount of Federal revenue transfers, high level of local amenities, and high temperature level. We also show that an exemption from sales tax for prescription drugs affects elderly in-migration positively and significantly. The effect of an individual income tax on elderly migration depends on whether a pension exemption is offered. If a state offers a pension exemption, then elderly migrants prefer such state to impose higher individual income taxes, presumably because they do not themselves pay them.

## **2. Literature Review and Background**

There exists an extensive literature on cross sectional analysis of the effects on elderly interstate migration of state and local public policy variables using the 1990 Census or earlier data. Cebula (1990) analyzed the 1980 Census, where elderly interstate migration between 1975 and 1980 are reported, and he shows that the mere existence of a state income tax has a significant negative effect on the volume of elderly in-migration into that state. Using the same data source for elderly migration, Voss et. al. (1988) focus on the effect on elderly

interstate migration of inheritance and estate taxes, which they refer to as death taxes. They show that high death taxes in a state have a statistically significant and negative effect on the elderly in-migration to that destination state<sup>2</sup>.

Instead of focusing on a single tax variable, we focus on a wide range of different taxes in our study. This is similar to Conway and Houtenville (1998) and Gale and Heath (2000). Both studies used the migration data from 1985-1990 to investigate elderly interstate migration. Gale and Heath (2000) focus on the determinants of elderly in-migration. They use two step least squares method that makes it possible to model endogenously the elderly-targeted state spending and estimate the level of public good provision for the elderly. They find significant effects for standard amenity variables. However, they obtain mixed results for the effect of tax variables. Property tax has a negative and statistically significant effect on elderly net in-migration: a result that is in line with what one might expect based on theory. However income tax has a positive and statistically significant effect on net in-migration, which deserves attention. We run into similar results in our study using the 1995-2000 elderly migration data, and we show that the interaction of income tax with pension exemptions yields an explanation for this particular outcome.

Conway and Houtenville (1998) use in-migration and out-migration estimations for testing the effects of several public policy variables on elderly migration across states, employing migration data from the 1990 Census. Their results on out-migration suggest that the Tiebout Hypothesis holds for elderly interstate migration. However, most of the estimated coefficients in the in-migration equation have the same sign as their counterparts in the out-migration equation. If a given variable is found to be a significant factor driving the elderly out of a jurisdiction, then one would expect this very same variable to be a significant factor keeping the elderly from migrating into the jurisdiction.

Voss et. al (1988) had already noted the above-mentioned problem, which is known as the 'same sign problem'. According to Voss et al (1988), it is due to 'counter-stream migration' that the regression results carry the same signs for in-migration and out-migration, i.e., that the states that have the highest in-migration rates are also the states that have the highest out-migration rates. One way to correct the same sign problem is to use data that is as disaggregated as possible. When we focus on different age groups within the elderly population, our regression results yield a clearer story compared to the results obtained by pooling all age groups of the elderly.

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<sup>2</sup> Death taxes have been attracting specific attention in elderly migration research. See Conway and Rork (2006) for recent findings on that topic.

Instead of estimating in-migration and out-migration separately, Conway and Houtenville (2001) estimate a gravity equation of elderly interstate migration using the 1990 Census. They report that low cost of living, exemption of food from sales taxes, low income taxes and low inheritance and estate taxes affect elderly in-migration positively. Somewhat less intuitively, they also report that lower spending on public welfare induces elderly in-migration.

In addition, Conway and Houtenville (2001) is significant for the elderly interstate migration literature because their results explicitly show that earlier studies which focus only on a restricted subset of state and local public policy variables may be subject to omitted variable bias in their empirical findings. We follow their advise and include a wide range of state and local public policy variables in our regression analysis.

Some research has put forward the theory that the availability of amenities in a jurisdiction may be partially (or even completely) compensated for in such jurisdiction's labor and real estate markets<sup>3</sup>. Graves and Waldman (1991) examine this theory under the plausible assumption that the elderly constitute a small group, whose aggregate migration decision cannot affect the wage structure in the jurisdiction to or from which it is migrating. They provide empirical evidence to show that “in a world in which compensation for amenities occurs in varying degree in land and labor markets at alternative sites and there are no moving costs, retirement migration will be toward areas in which more of the compensation for amenities is in wages.” (p.1376). This is not surprising: the elderly generally can free ride to the extent that compensation for amenities occurs in the labor market, but they generally cannot free ride to the extent that compensation occurs in the real estate market.

A similar argument of 'free riding' can be made about tax exemptions: Tax rates affect individuals' migration decisions only to the extent that individuals are affected by those taxes. In order to capture the actual effect of tax rates on individuals' migration decisions, one needs to estimate effects of various specific tax exemptions, too. Conway and Houtenville (1998, 2001) interact income tax with income tax exemption for the elderly and sales tax with exemption for food. Although this is a very intriguing methodology, and we will to some extent follow it in our paper, their estimates of interaction coefficients are generally too small, except with respect to sales tax in one specification. In contrast, using migration data for 1995-2000, we find relatively clear cut effects of income tax exemptions on elderly migration.

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<sup>3</sup> See for example, Haurin (1980), Roback (1982), Knoll and Griffith (2003).

### 3. Data and Methodology

Interstate migration data for the elderly population between the years 1995 and 2000 are taken from the 2000 Census. The elderly are defined as those who are 65 years of age or older. Migration flows are determined by the change in residence of the elderly from 1995 to 2000. The dataset is displayed as the state of residency in 2000 arrayed against the state of residency in 1995. We use migration flows between 48 states (excluding Alaska, Hawaii and District of Columbia). We don't consider within-state migrations, and we drop those state pairs which have zero migration for the 1995-2000 period. Migration flows between the U.S. and foreign countries are also not considered here.

Table 1 displays three rankings of states based on their in-migration and out-migration. We first rank the states according to their share of total elderly migration nationwide. As this ranking is considerably influenced by the different sizes of the different states, and thus says little of the relative intensity of the urge to migrate, we also rank the states according to the ratios of elderly migrants to the total population of the state, and the ratios of elderly migrants to the total elderly population of the state. The 'counter-stream migration' claim put forward in earlier studies is confirmed by the in- and out-migration ratios displayed in Table 1. Nevada, Arizona and Florida generally have the highest rankings in measures of in-migration, but they also generally rank high in measures of out-migration.

We estimate a reduced form gravity equation of the following form:

$$\begin{aligned} (Migrants)_{ij} = & \alpha + \beta_1(Neighbor)_{ij} + \beta_2(Distance)_{ij} + \gamma_1(Exemption)_i \\ & + \gamma_2(Exemption)_j + \gamma_3(Tax)_i + \gamma_4(Tax)_j + \gamma_5(Expenditure)_i \\ & + \gamma_6(Expenditure)_j + \gamma_7(Price)_i + \gamma_8(Price)_j + \gamma_9(Population)_i \\ & + \gamma_{10}(Population)_j + \gamma_{11}(Amenity)_i + \gamma_{12}(Amenity)_j + \varepsilon_{ij} \end{aligned}$$

We denote the natural logarithm of the total number of elderly migrants from state  $i$  to state  $j$  by  $(Migrants)_{ij}$ , which we use as the dependent variable for the estimation of gross migration flows. The dependent variable for the estimation of net migration flows is the natural logarithm of the difference between number of migrants from state  $i$  to state  $j$  and migrants from state  $j$  to state  $i$ , provided that the gross flow from state  $i$  to state  $j$  is greater than that from state  $j$  to state  $i$ . Table 2 lists the means and the standard deviations of the explanatory variables. Tables 3 and 4 present our regression results; destination and origin

state coefficients, which are denoted by 'Dest' and 'Org', respectively. We discuss our empirical findings in detail in the next section. Here we provide a brief description of the explanatory variables and our data sources:

1. Neighbor: A dummy variable for neighbor states. If states *i* and *j* share a common border, it is one, otherwise zero.

2. Distance: The linear distance between the population gravity centers of states *i* and *j*. The latitude and longitude of the population gravity center (as of 2000) for each state is provided by the U.S. Census Bureau.

3. Exemption: A vector consisting of four indicator variables for various tax exemptions.

a. 'Social Security Exemption' indicates whether social security payments are exempt or partially exempt from state income taxation in state *i*. We input one in case of exemption, and zero otherwise.

b. 'Pension Exemption' indicates whether pension payments are exempt or partially exempt from state income taxation in state *i*. We input one in case of exemption, and zero otherwise.

c. 'Drug Sale Exemption' indicates whether the sale of prescription drugs is exempt from sales tax in state *i*. We input one in case of exemption, and zero otherwise.

d. 'Inheritance Tax Exemption' indicates whether state *i* imposes any estate, inheritance or gift tax above and beyond the common baseline determined by the Section 2011 credit of the Federal estate tax. If there is no such incremental tax, then the indicator variable is set at one; otherwise, it is zero. The indicator variables are scored using the raw data about all states' tax exemption rules found in Schoenblum (2001) and in online sources<sup>4</sup>.

4. Tax: A vector consisting of the effective individual income tax rate, corporate income tax rate, property tax rate, general sales tax rate, and 'all other' tax rate in state *i*. The effective tax rates are calculated by dividing the revenue derived from the specified tax by the state's aggregate personal income. Data on tax revenues are obtained from the U.S. Census Bureau's 'State and Local Government Finances' database; we aggregate state and local government tax

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<sup>4</sup> The data in the online source (Retirement Living- Taxes by States, [www.retirementliving.com](http://www.retirementliving.com)) technically reflects the status of current state exemption rules. However, these rules, given their structural nature, historically change very slowly, if at all. Thus, the current rules are an excellent proxy for the rules in effect during the 1995 to 2000 time frame.

revenues and take the average of all years from 1990 to 2000<sup>5</sup>. We include also other sources of local and state government revenue in this category: 'Federal revenue' is the revenue state *i* receives directly from the Federal government in the form of transfers. To be consistent with our tax variables, we convert this variable into a ratio by dividing the Federal revenue by the state's aggregate personal income. 'Total charges' is the revenue derived from all other fees and charges imposed and collected by state *i*. Again, we calculate a ratio by dividing the revenue from charges by the state's aggregate personal income. Data on revenues from federal transfers and state charges are obtained from the U.S. Census Bureau's 'State and Local Government Finances' database. We take the average of all years from 1990 to 2000. In order to avoid omitted variables bias, we include all of the above mentioned tax and revenue items in our regressions, however we report only selected variables in our regression results in tables 3 and 4.

5. Expenditure: A vector of per capita state and local government expenditures in state *i*, including expenditures on education, highways, health and hospitals, police, fire protection, parks and recreation, and public transport. Data on these expenditure items are collected from the U.S. Census Bureau's 'State and Local Government Finances' database. We take the average of aggregate expenditures from 1990 to 2000, convert these to constant dollars using state price indexes, and then convert them to per capita amounts by dividing them by the state populations. In order to avoid omitted variables bias, we include in our regressions all public expenditure items aggregated at state level. We, however, report coefficients only for public education and public health expenditures, because other expenditure items are realized at very local levels, and hence it won't be helpful for our purposes to focus on their coefficient estimates.

6. Price: The natural logarithm of the consumer price index in state *i*. Berry et al (2000) present state level price indexes from 1960 to 2003, and we use the 1994 values provided in their study.

7. Population: The natural logarithm of the total population of state *i*. Population data are obtained from the U.S. Census Bureau. For each state, we take the average of its population in all years from 1990 to 2000. Population density and urbanization ration can also be considered in this category. We find the population density of state *i* by dividing the state's

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<sup>5</sup> Elderly migration in and out of a state during 1995-2000 corresponds on average to 0.7% of a state's population. As a result, we ignore the endogeneity concerns that the in-migrating elderly may actually have affected state public policy decisions within the 1995-2000 period.

total population by its area. Data for the urbanization ratios of states for the year 1990 are obtained from Morgan and Morgan (2000).

8. Amenity: An amenities vector for state  $i$  consisting of three variables. The first, which we call 'Amenity' in our regressions, is an indicator variable for the amenities available in state  $i$ . The indicator variable shows whether state  $i$  is amenity rich or amenity poor as determined by Greenwood et al (1991). If state  $i$  is classified as an amenity rich state, the indicator variable is set at one; if state  $i$  is classified as amenity poor, the indicator variable is set at zero. The second variable is the temperature in state  $i$ . State temperatures are provided in Morgan and Morgan (2000), and they are 30 years' averages over 1961-1990. The third one is the crime rate in state  $i$ , and data for the year 1997<sup>6</sup> are obtained from Morgan and Morgan (2000).

Additionally, we employ an interaction term for the individual income tax rate and the pension exemption in state  $i$ , and another interaction term for the logarithm of crime and the urbanization ratio in state  $i$ . Including additional interaction variables such as individual income tax and social security exemption as well as general sales tax and exemption of drugs from sales tax results in high levels of collinearity, as we find out by checking the variance inflation factor of our regressions. Since significance levels of coefficient estimates will be unreliable in this case, we avoid including these additional interaction terms in our regressions.

## **4. Empirical Results**

### **4.1. Gross Migration**

We begin by analyzing the interstate gross migration of the elderly. Coefficient estimates and their robust standard errors for various age groups among the elderly are shown in table 3. Our data allow us to report separate regression results for three age groups of the elderly population: young elderly (from 65 to 74 years old), middle-aged elderly (from 75 to 84 years

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<sup>6</sup> Investigating county level documentation on number of crimes (provided by the Disaster Center) reveals that crime to population ratio has been pretty much stable throughout the 1990s, so that endogeneity is not a concern to our study, and the 1997 crime rate may not have affected elderly migration between 1995 and 2000 more than the 1994 crime rate would have affected it. We use the state level crime rate data provided by Morgan and Morgan (2000) to ensure the homogeneity of data methodology across states.

old), and old elderly (older than 84). Gross migration is simply the number of people who migrate from state  $i$  to state  $j$ . When using gross migration as the dependent variable, the number of migrants from state  $i$  to state  $j$  as well as number of migrants from state  $j$  to state  $i$  will be contained in data. As a result there will be several cases where pulling and pushing effects on interstate migration cannot readily be told apart.

The neighbor dummy variable has a positive coefficient and is significant. In addition, the distance between two states also turns out to be significant: the greater the distance between two states, the less migration occurs between them. Quadratic form of distance is supposed to capture the non-linear nature of migration costs that can be attributed to distance. It is important to note that the positive sign of the coefficient of the neighbor dummy variable and the negative sign of the coefficient of the distance variable, as well as their statistical significance, occur uniformly in our regressions for all age groups among the elderly. These results, which match those in Conway and Houtenville (2001), are hardly surprising and are likely due to the confluence of a number of factors. For example, the direct costs of moving surely increase with distance. In addition, the degree of familiarity with prospective destinations almost surely decreases with distance, and that in turn should have a negative effect on long-distance migration.

Inheritance taxes<sup>7</sup>, which we define to include any estate, inheritance or gift taxes above and beyond the common baseline determined by the IRC Section 2011 Federal estate tax credit, yield an interesting outcome. We find that the elderly strongly significantly migrate to states that do not impose any such incremental tax on bequests or other transfers. This is an intuitively appealing result, for while only a small fraction of the elderly population is subject to such transfer taxes, that fraction of the population is both mobile (they are wealthy) and motivated to avoid such incremental taxes. Coefficients of inheritance taxes in the origin state are insignificant for all elderly age groups.

We also investigate the response of the elderly to a complete exemption of Social Security receipts from state income taxation. While the elderly migrate to states that do not tax social security receipts, they also migrate away from states that do not tax such receipts. We obtain somehow better results for the old elderly: they significantly migrate to states that offer social security exemptions, but such exemptions in the origin state do not have any significant effect on out-migration. While these results are significant in the case of gross migration, it is

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<sup>7</sup> Note that inheritance taxes enter our regressions as a dummy variable: it is one, if a state levies no inheritance tax or offers significant exemptions from it, and zero otherwise. Among states that actually levy inheritance tax, rates do not vary a lot.

difficult to ascribe much meaning to them. The reason is that while only thirty-five states exempt all social security receipts from taxation, those states include all of the biggest states in terms of population as well as every single state that falls into the category of being a traditional retirement haven.

In the case of general sales taxes, our results uniformly present a same sign problem across all elderly age groups. The elderly migrate to states where sales taxes are low. That is surely uncontroversial. But they also migrate away from states where sales taxes are low. The dummy variable that measures whether or not a state exempts drug sales from its general sales tax confirms that the elderly significantly migrate to states that exempt drugs from their general sales tax. However, it also shows that the elderly significantly migrate away from states that exempt drugs from their general sales tax.

The individual income tax variable yields an interesting result. We create an interaction variable between the individual income tax variable and the variable for a meaningful income tax exemption for pension or retirement income. We define a state as offering a meaningful exemption only if it exempts more than a nominal amount of private pension income from its income tax; we set the threshold a \$6000, which allows us to classify roughly half the states (29 in all, and 22 of the 43 states that impose an income tax) as offering a meaningful exemption. The possible relevance of a pension exemption should be obvious: for many or even most retirees, pension income, along with Social Security income, represents the lion's share of all income. Thus, to the extent that a state income tax, even a high state income tax, is accompanied by a meaningful tax exemption for such income, a retiree need not be overly concerned about the tax because she won't pay it. Indeed, the retiree may welcome the tax. Taking into account the interaction coefficient, we realize that the effect of pension exemption for the middle-aged and the old elderly is reversed: as income tax rate increases in the origin state, the middle-aged and the old elderly out-migrate less, provided that a meaningful pension exemption is offered in the origin state<sup>8</sup>.

A significant and surprising finding in our regressions is that the elderly do not appear to be attracted to states that derive a larger share of their revenues from the Federal government. One would expect the reverse to be true: from the vantage of a state's residents, funds received from the Federal government allow the state to provide public goods without any need for the state to impose any directly corresponding taxes or fees. A possible explanation

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<sup>8</sup> To have a rough idea of these magnitudes, one can multiply the mean of the individual income tax variable (which is given as 0.019 in table 2) with origin coefficients of the corresponding interaction variable and add up with the origin coefficients of pension exemption for the middle-aged and old elderly.

is that the mere fact of greater Federal revenues may be masking some other undesirable feature of a state, or a state may receive greater Federal revenues because it has a more powerful and perhaps concomitantly more corrupt political establishment, in which case the funds may not be spent in a manner that benefits the residents at large.

An interesting result is worth noting: except for the two major expenditure variables, and population<sup>9</sup>, most of the coefficients reported under pooled data in table 3 have the same sign for origin and destination variables. As already noted, this is due to the fact that we cannot tell pulling and pushing effects of migration apart when we look at gross migration.

The two major expenditure items mentioned above are education and health. On the aggregate level, education expenditure appears to have no significant effect. When we consider different age groups, then education expenditure happens to have a significant negative effect on in-migration decision of the middle-aged elderly and a significant negative effect on out-migration decision of the old elderly. Despite statistical significance, these two results are still hard to interpret. Health expenditures, on the other hand, provide a more solid story: for pooled data as well as for all age groups except for the old elderly, health expenditures significantly attract in-migrants into a state. Moreover, in case of the middle-aged elderly, origin and destination have the correct and opposite signs that are statistically significant. High public health expenditures significantly discourage the middle-aged elderly from out-migration, whereas high public health expenditures in a potential destination state significantly attract them.

Price level manifests itself as a significant variable positively affecting out-migration from an origin state. Price level in the origin is highly significant for the young and the middle-aged elderly, and has a positive coefficient, however insignificant, for the old elderly.

We interact crime rate and urbanization ratio, and this yields an interesting result: crime and urbanization in the destination state have significantly negative coefficients. Their interaction reveals, however, that as urbanization ratio increases, crime in the destination becomes more tolerable. This should most likely be taken as a hint that crime is correlated with an unobservable attraction for elderly in-migrants which becomes increasingly abundant with urbanization.

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<sup>9</sup> In a gravity model of migration, population in the origin as well as destination locations is expected to have a positive sign.

## 4.2. Net Migration

The regressions reported in table 4 use the natural logarithm of net migration as the dependent variable. Net migration between states  $i$  and  $j$  is equal to the difference between migrants from state  $i$  to state  $j$  and migrants from state  $j$  to state  $i$ . We call this difference the ‘net migration number’ or equivalently the ‘number of net migrants’. The net migration number is always a positive number: as between any two states we define the state with the greater number of in-migrants as the destination state and the state with the greater number of out-migrants as the origin state. In this section we focus on major differences in our regression results between net migration and gross migration.

Sharing a common border plays a significant role in inducing net migration of the middle-aged and the old elderly. This, however, is not the case for the young elderly.

Exemption from inheritance related taxes is a highly significant factor for inducing in-migration to a state for the young and the old elderly as well as for pooled data. In case of the middle-aged elderly, inheritance tax exemption has a positive yet insignificant effect on in-migration, however its existence significantly lowers out-migration for this age group.

There are several variables that turn out to be insignificant as a pull factor into a state as well as a push factor from a state when we consider net migration flows, although they were highly significant for in- and out-migration when investigating gross migration flows. Social security exemption, individual income tax, general sales tax, and population density of states are among such variables.

Considering individual income tax, exemption of pensions from individual income tax and their interaction, an interesting result is revealed: since pension exemption is a dummy variable taking the value of either zero or one, it is straightforward to calculate the marginal effect of individual income tax on in- and out-migration decision when pension exemption is offered. For the middle-aged and the old elderly, we obtain a positive marginal effect for in-migration and a negative marginal effect for out-migration when pensions are tax-exempt in destination and origin states, respectively. These results show that the middle-aged and the old elderly migrate out of states that couple high income taxes with no meaningful pension exemption, but tend to stay in states that couple high income taxes with a meaningful pension exemption. Similarly, they migrate to states that couple high income taxes with a meaningful pension exemption, but if no such exemption is offered then high income taxes affect in-migration negatively. Thus, as we conjectured, we find that the elderly dislike income taxes if

and only if they are among the ones who are required to pay them. Conway and Houtenville (1998), by contrast, report that pension exemptions had no bearing on either in-migration or out-migration based on the 1990 Census.

As for general sales taxes, none of the coefficients are significant in case of net migration. Exemption of drugs from general sales tax, on the other hand, is a highly significant pull factor for in-migration of the young and the middle-aged elderly. In case of the middle-aged elderly, this exemption has the correct sign for the origin state, but it is insignificant, whereas in case of the young elderly, it has the wrong sign and is significant. Overall, considering pooled data, drugs' exemption from general sales tax significantly affects in-migration and has no significant effect on out-migration.

Comparing our results to other studies, with respect to the level of sales taxes, Gale and Heath (2000) do not report a result that is statistically significant. However, they do report that a positive change in sales tax rates, i.e., a sales tax increase, significantly reduces the amount of in-migration. Conway and Houtenville (1998), meanwhile, report that the elderly statistically significantly migrate to states with high sales taxes and insignificantly migrate away from states with high sales taxes. These results are broadly consistent with our conjecture, provided the primary driver of elderly migration is an affirmative desire to free ride, as opposed to an affirmative desire to avoid high tax rates.

We find that elderly migration to states with higher property taxes is highly significant, and this was the case for gross migration, too. For the young and the middle-aged elderly, we find that property tax rates in the origin state are not a significant push factor in net migration, which is different from our findings for gross migration. Our finding about property taxes being a significant pull factor for all elderly age groups is inconsistent with that reported by Gale and Heath (2000), but is consistent with that reported in Conway and Houtenville (1998, 2001). While the result is at first counterintuitive, it may be the result of one of two factors. First, higher property taxes are generally strongly correlated with higher levels of locally provided amenities, and it may simply be the case that the elderly migrate towards such amenities. Second, property taxes are usually an increasing function of the value and hence generally of the size of the property. Since the elderly are predominantly empty-nesters, they may own properties that are on average smaller than those that predominate in a given locale. If this is so, the elderly may to some extent be able to free ride off of the property taxes paid by others. Moreover, their ability to successfully engage in such free-riding will be greater the higher the overall level of property taxes. Finally, as already noted, in the case of gross migration, a same sign problem appears; the elderly significantly move both toward and away

from high property taxes. This same sign problem also appears in Conway and Houtenville (1998, 2001).

Our regressions also allow us to test the effects of some non-fiscal variables on migration. While not all of our results are statistically significant, we find that the elderly tend to migrate to states with a lower cost of living and away from states with a higher cost of living. Considering gross migration flows, we find that high price level in the origin state has a significant and positive effect on out-migration, and considering net migration flows, we find that the elderly are affected significantly and negatively by high price levels in the destination state<sup>10</sup>. These results are consistent with those reported in Gale and Heath (2000) and Conway and Houtenville (1998, 2001). Since many of the elderly live on a fixed income, i.e. an income that does not change in response to changes in price levels, this is exactly the behavior we would expect: retirees move to states where their incomes go farther.

We reach somewhat mixed results of the effects of temperature and other locational amenities on elderly migration. Considering pooled data, the elderly prefer to move to warmer climates, and they are attracted significantly by the existence of local amenities in the destination state. Hence temperature and amenities are significant pull factors, whereas they are no significant push factors. Considering elderly age groups, one observation stands out: temperature and amenities are not significant at all for the old elderly. The young elderly exhibit a reluctance to migrate away from warmer climates, and this result is highly significant.

Our results on climate are consistent with Gale and Heath (2000), who report a statistically significant avoidance by migrants of states with a greater number of heating days, i.e., of colder states. However, our results for gross migration flows suggest that the elderly significantly move away from warmer climates. Conway and Houtenville (1998) report as significant findings both that the elderly avoid migrating to states with a larger number of sunny days, but also that they migrate to states with a larger number of cooling degrees; the latter finding, but not the former, indicates a preference for states that are warmer.

## 5. Conclusion

Using the 2000 Census we have shown that the lack of an incremental estate, inheritance or gift tax affects elderly in-migration positively and significantly; an exemption of prescription

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<sup>10</sup> Cebula and Alexander (2006) find the same result for net in-migration of the population between the years 2000 and 2004.

drugs from sales tax affects elderly in-migration also positively and significantly. Expenditure on public health is also a statistically significant factor in attracting elderly migrants. Another intriguing result is revealed when we interact individual income tax with a meaningful pension exemption: the effect of a state individual income tax on elderly migration depends on whether the state also offers an exemption for pension income. If a state offers such an exemption, then elderly in-migrants prefer the state to have higher individual income tax rates. In effect, high individual income taxes are desirable so long as someone else pays them.

Although the regression results from gross migration flows do not yield a clear story about how property taxes, temperature, and local amenities affect elderly migration, the results from net migration flows yield a somehow clearer picture: existence of local amenities and high temperatures significantly attract the elderly into a state, however they have no significant effect on the in-migration or out-migration decision of the old elderly. High property taxes significantly attract in-migration of the young and the middle-aged elderly, and they have no significant effect on out-migration of these age groups.

High price levels significantly and negatively affect in-migration when net migration flows are considered, and they affect out-migration significantly and positively when gross migration flows are considered. Revenue transfers from the Federal government significantly and negatively affect the in-migration decision of the elderly.

Previous studies based on earlier Census data have shown that prices of location specific amenities are to some extent implicit in wages and/or property prices. A state or local government's tendency to additionally impose higher taxes on residents to capture those residents' willingness to pay for amenities will inevitably lead to a sort of 'double taxation' of the tax base, as is noted in 'vertical tax competition' studies. The investigation of the effects of such a 'double taxation' is a promising area of future research.

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**Table 1. Interstate In-Migration and Out-Migration Statistics\***

<b>in-migration share in total elderly migration (%)</b>		<b>out-migration share in total elderly migration (%)</b>	
<i>FL</i>	19.6	<i>NY</i>	10.24
<i>AZ</i>	6.49	<i>FL</i>	9.4
<i>CA</i>	6.29	<i>CA</i>	8.64
<i>TX</i>	4.86	<i>IL</i>	5.02
<i>NC</i>	3.44	<i>NJ</i>	4.51

  

<b>ratio of in-migration to state's population (%)</b>		<b>ratio of out-migration to state's population (%)</b>	
<i>NV</i>	2.55	<i>NV</i>	1.21
<i>AZ</i>	2.14	<i>AZ</i>	0.95
<i>FL</i>	1.96	<i>FL</i>	0.94
<i>DE</i>	1.13	<i>NH</i>	0.93
<i>NH</i>	0.99	<i>OR</i>	0.84

  

<b>ratio of in-migration to state's elderly population (%)</b>		<b>ratio of out-migration to state's elderly population (%)</b>	
<i>NV</i>	18.88	<i>NV</i>	8.97
<i>AZ</i>	14.28	<i>NH</i>	7.35
<i>FL</i>	10.29	<i>WY</i>	6.79
<i>DE</i>	8.13	<i>NM</i>	6.54
<i>NH</i>	7.82	<i>AZ</i>	6.33

\*Total number of elderly migrants during 1995-2000 in the U.S. is 1,456,760.

**Table 2. Descriptive Statistics**

	<b>Mean</b>	<b>St. Dev.</b>
<i>Gross Flow</i>	5.07	1.72
<i>Net Flow</i>	4.25	1.85
<i>Neighbor</i>	0.1	0.3
<i>Distance</i>	2.68	0.75
<i>Inheritance Tax Exemp</i>	0.67	0.48
<i>Social Security Exemp</i>	0.69	0.47
<i>Pension Exemp</i>	0.52	0.5
<i>Drug Sale Exemp</i>	0.92	0.28
<i>Individual Income Tax</i>	0.019	0.01
<i>Property Tax</i>	0.031	0.01
<i>General Sales Tax</i>	0.023	0.01
<i>Federal Revenue</i>	0.038	0.011
<i>Education Exp</i>	0.019	0.002
<i>Health Exp</i>	0.005	0.002
<i>Price Level</i>	4.37	0.09
<i>Population</i>	15.1	0.995
<i>Urban</i>	0.68	0.15
<i>Crime</i>	8.42	0.27
<i>Density</i>	152.6	194.7
<i>Amenity</i>	0.65	0.48
<i>Temperature</i>	54.1	7.7

Summary statistics for gross flow, neighbor and distance are based on 2168 state pairs.

Summary statistics for net flow are based on 1104 state pairs.

Summary statistics of all other variables are across 48 states.

**Table 3: Interstate Gross Migration**

	<b>Pooled</b>	<b>65-74</b>	<b>75-84</b>	<b>85 and older</b>
<i>Neighbor</i>	0.7281*** (0.073)	0.7053*** (0.074)	0.8893*** (0.072)	0.9311*** (0.073)
<i>Distance</i>	-1.4726*** (0.145)	-1.4571*** (0.158)	-1.2438*** (0.135)	-1.0389*** (0.129)
<i>Distance Squared</i>	0.0783*** (0.028)	0.0842*** (0.030)	0.0593** (0.027)	0.0386 (0.026)
<i>Inheritance Tax Ex. (Dest)</i>	0.2454*** (0.045)	0.2943*** (0.048)	0.2289*** (0.051)	0.2259*** (0.056)
<i>Inheritance Tax Ex. (Org)</i>	0.0124 (0.045)	0.0155 (0.048)	0.0091 (0.050)	-0.0260 (0.056)
<i>Social Sec. Ex. (Dest)</i>	0.1854*** (0.054)	0.2235*** (0.057)	0.1757*** (0.060)	0.1464** (0.064)
<i>Social Sec. Ex. (Org)</i>	0.1620*** (0.053)	0.1928*** (0.056)	0.1381** (0.062)	0.0583 (0.065)
<i>Pension Exempt. (Dest)</i>	-0.5045*** (0.129)	-0.3603*** (0.138)	-0.4599*** (0.147)	-0.3354** (0.167)
<i>Pension Exempt. (Org)</i>	-0.0149 (0.135)	-0.0777 (0.145)	0.2556* (0.152)	0.3120* (0.161)
<i>Drug Sale Exempt. (Dest)</i>	1.0040*** (0.093)	1.0507*** (0.096)	0.9184*** (0.108)	0.5895*** (0.109)
<i>Drug Sale Exempt. (Org)</i>	0.5845*** (0.088)	0.7114*** (0.095)	0.3548*** (0.096)	0.4577*** (0.113)
<i>Ind. Income Tax (Dest)</i>	-18.5385*** (4.335)	-15.8447*** (4.413)	-12.3568** (4.888)	-16.2698*** (5.626)
<i>Ind. Income Tax (Org)</i>	-8.3069* (4.479)	-13.5924*** (4.840)	2.4823 (5.112)	3.2469 (5.444)
<i>Property Tax (Dest)</i>	17.6422*** (4.474)	17.6873*** (4.543)	20.6684*** (4.932)	13.8028** (5.539)
<i>Property Tax (Org)</i>	11.9160*** (4.575)	14.2757*** (4.813)	10.2712** (4.891)	18.8293*** (5.400)
<i>General Sales Tax (Dest)</i>	-10.9022*** (3.473)	-10.6785*** (3.458)	-8.0192** (3.995)	-12.5309*** (4.338)
<i>General Sales Tax (Org)</i>	-11.1617*** (3.712)	-12.2845*** (4.020)	-7.2280* (4.006)	-8.6710* (4.621)
<i>Federal Revenue (Dest)</i>	-10.6777*** (3.223)	-6.5164* (3.525)	-10.1017*** (3.634)	-2.6371 (4.100)
<i>Federal Revenue (Org)</i>	3.5450 (3.362)	4.1040 (3.482)	7.4403** (3.730)	10.0909** (4.299)
<i>Education Exp. (Dest)</i>	-15.8569 (21.294)	-18.0983 (21.661)	-38.7822* (23.440)	2.1418 (26.105)
<i>Education Exp. (Org)</i>	11.9479 (22.030)	22.0159 (22.502)	-14.3661 (23.234)	-58.8482** (26.028)
<i>Health Exp. (Dest)</i>	75.4704*** (29.209)	65.4359** (30.479)	59.5872* (33.522)	-33.5035 (37.334)
<i>Health Exp. (Org)</i>	-20.1826 (29.410)	4.5231 (31.500)	-86.5331*** (33.338)	-61.1762 (38.027)

<i>Price Level (Dest)</i>	-0.0918 (0.673)	0.2606 (0.744)	0.3528 (0.786)	1.1281 (0.824)
<i>Price Level (Org)</i>	2.5060*** (0.738)	2.3172*** (0.762)	3.4745*** (0.815)	1.2609 (0.891)
<i>Population (Dest)</i>	0.8526*** (0.044)	0.8002*** (0.048)	0.8018*** (0.050)	0.8054*** (0.056)
<i>Population (Org)</i>	0.9461*** (0.045)	0.8754*** (0.048)	0.8963*** (0.051)	0.8047*** (0.059)
<i>Urban (Dest)</i>	-26.3177*** (5.796)	-20.9997*** (6.206)	-26.2756*** (6.700)	-5.4613 (7.470)
<i>Urban (Org)</i>	-11.0916* (6.029)	-8.1638 (6.373)	-7.3678 (6.904)	-16.9072** (6.891)
<i>Crime (Dest)</i>	-1.2769*** (0.479)	-0.8855* (0.518)	-1.4137** (0.566)	0.3046 (0.631)
<i>Crime (Org)</i>	-0.4142 (0.512)	-0.4658 (0.545)	0.2387 (0.583)	-0.8556 (0.599)
<i>Density (Dest)</i>	-0.0012*** (0.000)	-0.0012*** (0.000)	-0.0010*** (0.000)	-0.0010*** (0.000)
<i>Density (Org)</i>	-0.0011*** (0.000)	-0.0012*** (0.000)	-0.0012*** (0.000)	-0.0009*** (0.000)
<i>Amenity (Dest)</i>	0.4839*** (0.054)	0.5025*** (0.058)	0.3529*** (0.059)	0.3418*** (0.066)
<i>Amenity (Org)</i>	0.2807*** (0.052)	0.2402*** (0.055)	0.3488*** (0.059)	0.1265* (0.067)
<i>Temperature (Dest)</i>	0.0012** (0.001)	0.0023*** (0.001)	0.0015** (0.001)	0.0010 (0.001)
<i>Temperature (Org)</i>	0.0020*** (0.001)	0.0017*** (0.001)	0.0029*** (0.001)	0.0024*** (0.001)
<i>IncTax*PensionExp (Dest)</i>	8.1629 (5.272)	4.3217 (5.559)	8.1560 (5.959)	4.8862 (6.746)
<i>IncTax*PensionExp (Org)</i>	-6.3372 (5.501)	-3.6729 (5.971)	-17.1130*** (6.136)	-17.5559*** (6.501)
<i>Crime*Urban (Dest)</i>	3.2468*** (0.705)	2.5883*** (0.756)	3.2125*** (0.815)	0.6557 (0.912)
<i>Crime*Urban (Org)</i>	1.4346* (0.732)	1.1027 (0.775)	0.9071 (0.841)	2.0707** (0.842)
<i>Constant</i>	-20.9142** (8.793)	-24.1018** (9.700)	-30.8238*** (9.766)	-29.2156*** (11.072)
<i>Observations</i>	2167	2090	1972	1724
<i>Adjusted R-squared</i>	0.835	0.809	0.774	0.710

**Table 4: Interstate Net Migration**

	<b>Pooled</b>	<b>65-74</b>	<b>75-84</b>	<b>85 and older</b>
<i>Neighbor</i>	0.2323 (0.168)	0.2302 (0.153)	0.6496*** (0.138)	0.6575*** (0.122)
<i>Distance</i>	-1.4459*** (0.258)	-1.5618*** (0.279)	-1.0521*** (0.243)	-0.8978*** (0.212)
<i>Distance Squared</i>	0.0881* (0.050)	0.1194** (0.053)	0.0919* (0.048)	0.0446 (0.042)
<i>Inheritance Tax Ex. (Dest)</i>	0.6381*** (0.106)	0.4994*** (0.108)	0.1274 (0.098)	0.2937*** (0.103)
<i>Inheritance Tax Ex. (Org)</i>	-0.1304 (0.108)	0.0452 (0.109)	-0.1961** (0.098)	-0.0869 (0.090)
<i>Social Sec. Ex. (Dest)</i>	-0.0741 (0.107)	0.0050 (0.107)	-0.0323 (0.099)	0.1139 (0.104)
<i>Social Sec. Ex. (Org)</i>	0.0555 (0.122)	0.2164 (0.136)	0.0664 (0.113)	-0.1428 (0.103)
<i>Pension Exempt. (Dest)</i>	-0.6910*** (0.225)	-0.3043 (0.251)	-0.3170 (0.230)	-0.7118*** (0.249)
<i>Pension Exempt. (Org)</i>	-0.0461 (0.439)	-1.0348** (0.484)	0.5594* (0.340)	0.5060* (0.275)
<i>Drug Sale Exempt. (Dest)</i>	0.4274* (0.221)	0.6451** (0.250)	0.7637*** (0.233)	0.4022 (0.245)
<i>Drug Sale Exempt. (Org)</i>	0.1482 (0.223)	0.5428** (0.225)	-0.1081 (0.186)	-0.0176 (0.175)
<i>Ind. Income Tax (Dest)</i>	-1.9697 (8.225)	-3.4041 (8.727)	-1.2858 (8.132)	-17.9333** (8.794)
<i>Ind. Income Tax (Org)</i>	1.2054 (13.340)	-27.4228* (14.614)	1.0556 (11.077)	9.8056 (9.405)
<i>Property Tax (Dest)</i>	40.9850*** (8.406)	26.6760*** (8.417)	46.9425*** (8.624)	21.8680*** (8.246)
<i>Property Tax (Org)</i>	23.8698** (10.295)	11.6049 (11.355)	0.4747 (9.499)	18.9899** (8.824)
<i>General Sales Tax (Dest)</i>	0.4954 (7.324)	1.7095 (6.994)	1.5333 (7.002)	0.1177 (6.852)
<i>General Sales Tax (Org)</i>	3.5150 (8.492)	-7.2219 (8.385)	-2.6292 (7.990)	3.0421 (7.530)
<i>Federal Revenue (Dest)</i>	-36.0388*** (6.687)	-19.2380*** (6.925)	-29.2716*** (6.965)	-6.7696 (6.691)
<i>Federal Revenue (Org)</i>	14.9571** (7.594)	-1.7694 (7.229)	8.1556 (6.665)	4.9967 (6.755)
<i>Education Exp. (Dest)</i>	-92.3636** (39.023)	-89.8189** (38.063)	-103.0989*** (38.192)	-3.4900 (40.112)
<i>Education Exp. (Org)</i>	-123.7092** (50.111)	-44.2943 (52.829)	32.2248 (48.829)	-49.8842 (43.549)
<i>Health Exp. (Dest)</i>	142.8361** (60.452)	23.8271 (58.869)	159.6047*** (60.162)	-2.9794 (58.717)
<i>Health Exp. (Org)</i>	-39.0074 (69.861)	146.4437** (72.133)	-88.8870 (56.213)	-36.3795 (54.922)

<i>Price Level (Dest)</i>	-3.1984** (1.342)	-2.0226 (1.329)	-3.1696** (1.372)	-1.8119 (1.316)
<i>Price Level (Org)</i>	1.4022 (1.585)	1.7167 (1.569)	1.9965 (1.498)	-0.7292 (1.422)
<i>Population (Dest)</i>	0.6237*** (0.111)	0.4576*** (0.121)	0.4528*** (0.111)	0.4653*** (0.101)
<i>Population (Org)</i>	0.7997*** (0.111)	0.8635*** (0.102)	0.5562*** (0.099)	0.4855*** (0.097)
<i>Urban (Dest)</i>	-45.2708*** (11.953)	-21.9633** (11.156)	-39.1452*** (10.736)	-5.9129 (11.959)
<i>Urban (Org)</i>	-20.9654 (13.098)	-30.4066** (12.308)	2.2673 (11.487)	-12.1185 (10.663)
<i>Crime (Dest)</i>	-2.4403** (0.982)	-0.5885 (0.895)	-3.0558*** (0.892)	-0.0567 (1.026)
<i>Crime (Org)</i>	-1.4646 (1.179)	-2.7017** (1.087)	0.2772 (0.997)	-0.6824 (0.906)
<i>Density (Dest)</i>	0.0000 (0.001)	-0.0007 (0.001)	-0.0006 (0.000)	-0.0001 (0.000)
<i>Density (Org)</i>	-0.0004 (0.000)	0.0002 (0.000)	-0.0006 (0.000)	-0.0002 (0.000)
<i>Amenity (Dest)</i>	0.6022*** (0.124)	0.6163*** (0.134)	0.2114* (0.125)	0.1830 (0.113)
<i>Amenity (Org)</i>	0.0316 (0.119)	0.2261** (0.115)	0.2119* (0.110)	0.1489 (0.120)
<i>Temperature (Dest)</i>	0.0030** (0.001)	0.0039*** (0.001)	0.0025** (0.001)	0.0000 (0.001)
<i>Temperature (Org)</i>	-0.0021 (0.001)	-0.0034** (0.002)	0.0001 (0.001)	0.0002 (0.001)
<i>IncTax*PensionExp (Dest)</i>	11.0191 (9.840)	-2.5679 (10.879)	10.8741 (9.957)	23.4784** (10.331)
<i>IncTax*PensionExp (Org)</i>	7.5342 (16.128)	40.0682** (17.770)	-23.1627* (13.577)	-18.1581 (11.923)
<i>Crime*Urban (Dest)</i>	5.2784*** (1.466)	2.5376* (1.366)	4.7653*** (1.313)	0.6495 (1.455)
<i>Crime*Urban (Org)</i>	2.6893* (1.616)	3.8147** (1.517)	-0.2005 (1.406)	1.4547 (1.299)
<i>Constant</i>	25.1622 (19.422)	13.9076 (17.908)	14.7096 (16.905)	5.6875 (18.644)
<i>Observations</i>	1091	1058	1027	939
<i>Adjusted R-squared</i>	0.691	0.682	0.605	0.514