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Population Aging, Elderly Migration and Education Spending: Intergenerational Conflict Revisited

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Abstract

Elderly have been increasingly targeted as a group to enhance economic development and the tax base in communities. A major factor in their rise in importance is the rapid increase in the number of retired elderly through aging of the U.S. population. While recent literature on elderly migration tends to focus on how elderly migration patterns are influenced by state fiscal variables, the reverse effect from elderly population on fiscal variables is very plausible as shown to be the case for estate, inheritance, and gift taxes by Conway and Rork (2006). In this paper, we reexamine the intergenerational conflict in education financing raised by Poterba (1997) using U.S. state and county level data that allows to analyze how preferences for education might vary across different elderly age groups, which has not been explored before. Moreover, this paper uses a variety of advanced econometric techniques to estimate the impact of elderly population and elderly migration on education spending. Our state and county regression results broadly support the presence of intergenerational conflict in education financing. We also find dramatic age heterogeneity in preferences for education spending among elderly migrants.

JEL Classification: H75, R23

Keywords: Population aging, elderly migration, education spending, intergenerational conflict

POPULATION AGING, ELDERLY MIGRATION AND EDUCATION SPENDING: INTERGENERATIONAL CONFLICT REVISITED

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Abstract

Elderly have been increasingly targeted as a group to enhance economic development and the tax base in communities. A major factor in their rise in importance is the rapid increase in the number of retired elderly through aging of the U.S. population. While recent literature on elderly migration tends to focus on how elderly migration patterns are influenced by state fiscal variables, the reverse effect from elderly population on fiscal variables is very plausible as shown to be the case for estate, inheritance, and gift taxes by Conway and Rork (2006). In this paper, we reexamine the intergenerational conflict in education financing raised by Poterba (1997) using U.S. state and county level data that allows to analyze how preferences for education might vary across different elderly age groups, which has not been explored before. Moreover, this paper uses a variety of advanced econometric techniques to estimate the impact of elderly population and elderly migration on education spending. Our state and county regression results broadly support the presence of intergenerational conflict in education financing. We also find dramatic age heterogeneity in preferences for education spending among elderly migrants.

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1. Introduction

Retirees are becoming increasingly important for state and local economies and budgets. While retirees pose significant fiscal challenges to state and local governments, they have been increasingly targeted as a group that can enhance local economic development. A major factor in the rise of their importance is the rapid increase in the number of retired elderly in the U.S. population and its fiscal and economic implications. An important consequence of population aging is increasing fiscal pressure to spend on social security, health care, and other welfare programs that benefit the elderly at the expense of other programs that benefit the young. Slavov (2006) demonstrates that government expenditures tend to favor the elderly because policies favoring the old are easier to sustain politically across a broad class of majoritarian institutions due to asymmetric distribution of benefits that generate broad political support for large transfers to older individuals. These generational biases in government spending may lead to lower government spending on education, which could result in lower levels of human capital and economic growth for the future generations.

Recent research on aging indicates the existence of intergenerational competition for government funds between non-working elderly and the younger working population. For instance, population aging can affect the spending programs such as education through the enhanced political power of the elderly as a voting group. Since education is a major input to human capital accumulation, aging can have a significant impact on future economic growth. One strand of literature uses the link between increasing political power of the elderly and government spending on education to examine economic growth effects. Recent examples of such studies include Gradstein and Kaganovich (2004), Holtz-Eakin, Lovely and Tosun (2004), Tosun (2003), Tosun (2005) as well as Razin, Sadka, and Swagel (2002). This literature is motivated by the studies that examine the impact of the intergenerational conflict between

elderly retirees and working young on public spending programs, particularly education. While some studies argued and presented evidence that the elderly have a strong dislike for education spending (Brunori, 2003; Button, 1992 and Reeder and Glasgow, 1990), others did not find strong evidence of such relationship (Rosenbaum and Button, 1989; Button and Rosenbaum, 1989). Button (1992) examined the voting behavior in tax referenda in six Florida counties and suggested that generational conflict is quite apparent on education issues. Deller and Walzer (1993) found a much weaker evidence of such generational conflict based on a survey of residents in rural Illinois. They showed that retirees actually support local education, albeit at a lower level than non-retirees. The 2004 AARP Aging American Voter Survey indicates that a strong majority of older people support federal government's responsibility in educating young people.[1]

James Poterba (1997) started an interesting empirical literature on aging and education spending by providing empirical evidence at state level that older citizens prefer lower levels of public spending on education. Another study by Harris, Evans, and Schwab (2001) confirms Poterba's finding using school-district-level data, however with a smaller estimated impact than Poterba's (1997) estimates. However, Ladd and Murray (2001) did not find any evidence of generational conflict from a similar study that used county-level data. Poterba (1998) noted that the link between population aging and public education is theoretically ambiguous and argued that more empirical research is needed in this area. In summary, this literature shows that the increasing number of retirees in the U.S. could result in an intergenerational conflict between elder and younger individuals. Finding the evidence of this conflict is important because of the threat posed to human capital of younger generations and future economic growth from lower education spending due to the intergenerational conflict for government funds.

[1] However, the survey question did not have a similar question for state and local governments. The same survey shows that a large group of older people became more conservative in issues such as bureaucracy and taxes. See

But it is not only the size of the elderly but also their migration patterns and age heterogeneous preferences that could matter for education spending. According to a U.S. Census report by He and Schachter (2003) on migration patterns of the elderly between 1995 and 2000, the mobility of older population differ significantly by age, sex and region. For example, the young old (people 65 to 74 years old) were more likely to move to a different state compared to the older old, particularly the oldest old (people 85 years and over). In addition the population 55 to 64 years old had mobility patterns similar to the young old group (people 65 to 74 years old). Hence, it is particularly useful to examine the migration effects of this near retirement group (some already retired) in addition to the older age groups as we do in this paper.

The recent literature that used elderly migration data examined whether elderly migration patterns are influenced by state fiscal variables as in Conway and Houtenville (1998, 2001), Conway and Rork (2004, 2006) or by local fiscal variables as in Farnham and Sevak (2002). Farnham and Sevak (2002) provide evidence from the Health and Retirement Study (HRS) that moving households live in areas with lower per pupil expenditures than previously, and reduce their property tax liability on average by $115. Newbold (1996) examined the determinants of elderly interstate migration from 1985 to 1990 broken down by groups of return and onward migrants and the young and old migrants. They found that onward migrants were more sensitive to physical amenities offered by a state while Medicare expenditures did not influence the return or the onward group. Gale and Heath (2000) found evidence supporting the idea that the elderly prefer states where wage earners carry more of the burden for financing publicly provided goods. They found little support for state expenditures affecting elderly migration. Voss, Gunderson and Manchin (1988) found not support that state death taxes contributed to out-migration. Using historical elderly migration data to explain interstate tax competition in estate, inheritance, and gift (EIG) taxes, Conway and Rork (2004, 2006) find that elderly migration is likely to affect

AARP (2004) for a summary of findings from this survey.

state tax policy rather than the other way around. However, the literature discussed above does not examine education spending changes that might have been impacted by elderly migration patterns. Motivated in part by Conway and Rork's (2006) finding of reverse causality between state fiscal policy and elderly migration, this paper reexamines the debate on the intergenerational competition started by Poterba (1997) by analyzing both size and migration impacts of elderly population on state and county education spending per pupil.

The paper is structured as follows. The next section provides an illustrative model of preferred taxing and spending changes amid population aging. The paper then discusses the empirical strategy and methodology in section 3. Section 4 presents results from state and county level regressions. The last section contains our concluding remarks.

2. A Model of Preferred Taxing and Spending

One important consequence of aging of the population is the increasing political power of the elderly. Table 1 gives an overview of the political weight of elderly as a voting group using voting statistics compiled by the U.S. Census Bureau. The age group 18 to 24 had the fewest registered voters (38.2 percent) and the least number to vote (17.2 percent), in 2002. With an increase in age, the percentage registered and voted also increased. Sixty-one percent over eighteen years of age were registered to vote and 42.3 percent actually voted in 2002. Age groups below 45 years of age fell below this average in both categories. However, in the 45 to 54 years category there are 67.4 percent registered and 50.2 percent voted. The largest percent registered was in the 75 to 84 age category with 76.9 percent, and this group also had the second highest turnout with 61.9 percent voting in 2002. The 65 to 74 age category had the highest voting percentage with 63.1 percent.

To illustrate the possible impact of the political power of the elderly on education spending, we use a political economy model developed by Holtz-Eakin, Lovely and Tosun (2004). That model has a median-voter framework where voter heterogeneity is introduced by assuming a distribution of genetic ability levels for the working generation. The ability level of the individual determines the value he receives from public education. The model is built into an overlapping generations growth model, where individuals live for two periods and seek to maximize a lifetime utility function,

$$U = \ln C_{jt} + \left(\frac{1}{1+\delta}\right)\ln C_{jt+1}, \tag{1}$$

here *j* indexes individuals, C_{jt} is consumption when young, C_{jt+1} is consumption when old, and δ is the pure rate of time preference. The period-specific budget constraints in the first and the second periods are:

$$\text{First period: } C_{jt}\left(a_j\right) + S_{jt}\left(a_j\right) = \theta_t w_t l_t\left(a_j\right)$$

$$\text{Second Period: } C_{jt+1}\left(a_j\right) = \left(1+\theta_{t+1} r_{t+1}\right) S_{jt}\left(a_j\right), \tag{2}$$

where $\theta_t = \left(1-\tau_t\right)$, $S_{jt}\left(a_j\right)$ is first period saving, w_t is the wage rate individual *j* faces, $l_t\left(a_j\right)$ is effective labor[2], where a_j is the ability level of individual *j*, r_{t+1} is the rate of return to capital, and τ_t is the rate of income taxation.

Tax policy is a flat tax on the labor income of the young and the capital income of the old. We also assume there is a continuous distribution of abilities that is replicated in each new generation. The ability level of individual j is indexed by a_j, which ranges from 0 to 1. The density function of abilities is denoted by *f(a)* where by definition:

[2] Here, the young supply one unit of time to the economy. Note that making the allocation of time between "schooling" and supplying labor endogenous does not change this analysis.

$$\int_0^1 f(a)\,da = 1\,. \tag{3}$$

Human capital is accumulated from the interaction of ability level (a_j) of the individual and education spending per worker (g_t):

$$l_t(a_j) = \Phi\left[a_j g_t + 1\right]^{\psi}, \tag{4}$$

here, Φ denotes an index on human capital efficiency and ψ is a parameter indicating the return to human capital from the inputs (a_j and g_t). The form of the human capital function is chosen so that even individuals with the lowest ability $(a_j = 0)$ will contribute to the economy in terms of human capital (see Holtz-Eakin, Lovely, and Tosun 2004). From the maximization of (1) subject to (2) and (4); we get the familiar first order condition:

$$C_{jt}(a_j) = \frac{1+\delta}{(1+r_{t+1}\theta_{t+1})} C_{jt+1}(a_j). \tag{5}$$

Using (5) and (2), we derive the optimal saving of an individual j:

$$S_{jt}(a_j) = \frac{1}{2+\delta}\theta_t w_t l_t(a_j). \tag{6}$$

Saving of an individual depends on net labor earnings but it is independent of the interest rate. This is due to the Cobb-Douglas form of the utility function. Given (5) and (6), it is easy to derive consumption functions in each period:

$$\begin{aligned} C_{jt}(a_j) &= \frac{1+\delta}{2+\delta}\theta_t w_t l_t(a_j) \\ C_{jt+1}(a_j) &= \frac{(1+r_{t+1}\theta_{t+1})\left(\theta_t w_t l_t(a_j)\right)}{2+\delta}. \end{aligned} \tag{7}$$

To characterize the preferred policy, we substitute the consumption functions in (7) into the utility function (1) to get the indirect utility function

$$V_t(a_j) = \ln(1+\delta) - \frac{2+\delta}{1+\delta}\ln(2+\delta) + \frac{2+\delta}{1+\delta}\left[\ln\theta_t + \ln w_t + \ln l_t(a_j)\right] + \frac{1}{1+\delta}\ln\left(1+r_{t+1}\theta_{t+1}\right). \quad (8)$$

Voters are assumed to be myopic, seeing no strategic gain from misrepresenting preferences. Hence each voter takes w_t and r_{t+1}, and θ_{t+1} as given. As a result, the preferred value of τ_t will maximize current after-tax income, subject to the government budget constraint, $\tau_t y_t = g_t$,[3] where y_t is income per young person, which is also taken as given by an individual voter. Then the preferred tax rate of individual *j* when young is:

$$\tau_{jt}\left(a_j\right) = \frac{a_j \psi y_t - 1}{\left(1+\psi\right) a_j y_t} \ . \quad (9)$$

Equation (9) is the tax rate each individual prefers based on his ability level. This preferred tax rate is increasing in both ability level a_j and income per young y_t. Because the old do not derive any benefit from publicly provided education and there are no bequests in the model, they incur a cost without enjoying any benefits. Therefore, their preferred tax rate will always be zero, regardless of their ability. Equilibrium level of the government spending on education can be written as

$$g_t = \frac{m_t \psi y_t - 1}{\left(1+\psi\right) m_t}, \quad (10)$$

where m_t is the ability level of the median voter in period t. At each period of the model, a cohort of size N_t is born. Then total population in each period is $N_{t-1} + N_t$ where $N_t = \left(1+\eta_t\right) N_{t-1}$ and η_t is the population growth rate at period *t*. Given this, the median voter is defined by

$$N_{t-1} + N_t \int_0^m f\left(a\right) da = \frac{N_{t-1} + N_t}{2}, \quad (11)$$

This can be used to show

$$\frac{dm}{d\eta_t} = \frac{2}{F'(m)4(1+\eta_t)^2}, \tag{12}$$

which is positive. With population aging, the median voter becomes a person with lower ability and the preferred tax rate and education spending of the median voter is lower. The intuition behind this is as follows: as the population ages (dependency ratio rises), older people will need fewer young voters to form a majority. These young voters are the ones at the lower end of the ability distribution. They prefer lower taxes and spending than higher ability people because their return from public education is lower. While we don't discuss the other aspects of the model, Holtz-Eakin, Lovely and Tosun (2004) and Tosun (2003) show that this political economy effect is weighed against the growth effect which exerts a positive pressure on the government spending on education through increased income (y) in (9) and (10). Hence, in an overlapping generations growth model with a political process for taxation and education spending, the effect of aging on education spending is ambiguous.

3. Empirical Methodology

In this section, we examine the empirical evidence on the intergenerational conflict in education financing and augment previous empirical methodology to account for elderly migration and spatial dependence. We follow Poterba's (1997) basic empirical model specification for the state and county level regressions, but we improve upon Poterba's analysis by utilizing dynamic and spatial econometric techniques and by examining richer elderly migration data, especially at the county level. Application of spatial dependence models in the public finance literature is a relatively recent development. Spatial dependence is a serious concern in the type of data that involve interstate (or intercounty) comparisons. Cliff and Ord (1981) and Anselin (1988)

[3] Government uses the entire tax revenue to finance public education for all young equally, regardless of their ability level (Bearse, Glomm and Ravikumar 2000).

pioneered these models to control for any direct influence of spatial neighbors, spillover effects, and externalities generated between cross-sectional observations. Failing to address spatial dependence may lead to biased, inefficient, and/or inconsistent coefficient estimates. Elhorst (2003) explains in detail the panel data spatial error and spatial lag models.[4] We use Poterba's (1997) basic empirical model specification for the state level regressions:

$$\begin{aligned} \text{ED/CHILD}_{\text{it}} &= \beta_0 + \beta_1 Y_{it} + \beta_2 \text{KID}_{it} + \beta_3 \text{OLD}_{it} + \beta_4 \text{OWNERS}_{it} \\ &+ \beta_5 \text{NONWHITE}_{it} + \beta_6 \text{URBAN}_{it} + \beta_7 \text{INMIG65}_{it} + \beta_8 \text{OUTMIG65}_{it} + \varepsilon_{it} \end{aligned} \tag{13}$$

Where ED/CHILD is the logarithm of per pupil government spending on K-12 education, Y is the logarithm of real state per capita personal income, KID is the logarithm of the state population shares aged 0 to 15, OLD is the logarithm of the state population shares aged 65 and over, OWNERS is the logarithm of the population share that owns homes, NONWHITE is the logarithm of the population share that is nonwhite, and URBAN is the logarithm of the population share that lives in urban areas.[5] We extend Poterba's (1997) basic model to include the logarithms of in-migration and out-migration rates for people 65 years old and over (INMIG65 and OUTMIG65, respectively). These variables are calculated as total in-migrants or out-migrants divided by total state (or county) population in a given year.

Because of significant correlation between KID, OLD, and Y variables at the state level (see Table 6) that is likely to bias regression estimates and theoretical ambiguity with respect to interpreting KID and OLD variables, we argue that elderly migration variables are better suited for capturing the effects of intergenerational competition for education spending. Moreover, Conway and Rork (2006) find evidence suggesting that elderly migration determines state tax policy and not the other way around. Thus, we are able to reexamine the intergenerational

[4] We use MATLAB routines of spatial error model (SEM), spatial autoregressive model (SAR), and general spatial model (SEC) which can be downloaded from LeSage's web site www.spatial-econometrics.com.

[5] Due to the data availability constraints, our database omits the federal aid and poverty variables used in Poterba's (1997) regressions. Also, our KID variable is different from Poterba's variable defined as the logarithms of the state

conflict by including elderly migration rates in both state and county regressions. Like Poterba (1997), we expect the OWNERS variable to capture the after-tax price of education spending and the URBAN variable to capture the differences in the cost of delivering school services as a function of the spatial distribution of population or potential taste differences for public spending between urban and rural residents. Poterba (1997) points out the difficulty of interpreting the coefficient for NONWHITE because it may proxy not only for the racial mix effect on education spending but also for higher moments of the income distribution.

Our state dataset is a balanced panel that includes observations on each state (except for Alaska and Hawaii) for years 1970, 1980, 1990, and 2000 amounting to 192 observations. Nominal values of per capita personal income and education spending per pupil are deflated using GDP deflator obtained from the *Bureau of Economic Analysis*. Tables 2 and 3 provide the descriptive statistics for the state and county level data used in our regressions. Table 4 gives the data sources and web links for the data.

We use the same basic econometric model as shown in equation (13) in our county level regressions. However, there are a few important differences about the county dataset that are worth mentioning. Unlike the state dataset, the county dataset is just a cross-section of counties from 48 continental United States and District of Columbia for the year 2003 where all variables are the same as in the state dataset except for a more detailed age-group breakdown of elderly migration rates, which are not in logarithms due to zero values for some observations. These more detailed elderly migration rates (calculated as in-migration or out-migration divided by 1995 population) come from the Census 2000 PUMS dataset for the period 1995-2000 and correspond to these age groups: 55-64, 65-74, 75-84, and 85 and older.

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population shares aged 5 to 17. We do not find these specification differences alarming (our basic model passes link and Ramsey specification tests) and our findings resemble those of Poterba.

The county dataset has at least two advantages over the state dataset: (1) with 2957 observations it is significantly larger than the state dataset containing only 192 observations, (2) county dataset contains migration variables for four distinct age groups, and (3) by using migration data prior 2003 it avoids the simultaneous causality between education spending (or fiscal policy in general) and migration. We believe that the biggest advantage of the county dataset is its ability to examine the heterogeneity of preferences for education across different elderly age groups, which is probably the most important contribution of our research. But county-level analysis has its challenges as well as its benefits. In Poterba's (1997, p.5) own words:

> One drawback of analyzing state-level data on spending and demographics is that many of the critical decisions on spending levels are made by voters in local jurisdictions. State average spending levels therefore conceal substantial heterogeneity within states. Studying local jurisdictions brings a different set of empirical problems, because the demographic composition of a small community cannot be viewed as exogenous, but rather depends on the structure of local public spending. This can make it impossible to generalize from the local level relationship between demographic structure and spending patterns to broader based changes.

We attempt to address a number of challenging econometric issues in the county-level regressions. In addition to examining the heterogeneity of preferences for education spending across age groups, we improve upon earlier studies by subjecting our estimates to a variety of advanced econometric techniques at different levels of aggregation (i.e. state vs. county). To account for the potential influence of state-specific and time-specific factors and omitted variables on our estimates, we use state and time fixed effects modeled as $\varepsilon_{it} = \delta_i + \tau_t + \sigma_{it}$. We also utilize a number of econometric techniques that address potential autocorrelation, heteroskedasticity, endogeneity, outlier, and spatial dependence issues that could make empirical estimates biased and inconsistent.

Spatial dependence could seriously bias the estimates when observations respond similarly to spatially-correlated exogenous shocks or their neighbors' actions. Spatial dependence is likely to be present in situations when states, for example, engage in some form of

"yardstick" competition in taxation or government spending on highways, healthcare, education, and other public services and infrastructure. States are often forced to compete for businesses and migrants in their quest for greater economic wealth and better standards of living. Much of the research on interstate competition has focused on taxation and to a much lesser extent, unfortunately, on government spending.[6] Yet, the limited number of existing studies on interstate competition in public services finds that states increase their spending on education, highways, healthcare, and welfare in response to spending increases by their neighbors.[7] Given the finding of strategic spatial interaction in education spending between neighboring states by Case, Hines and Rosen (1993), we argue that it is necessary for Poterba's (1997) basic econometric model in equation (13) to be augmented with spatial effects. States or counties that engage in some sort of "copycat" behavior (a la Baicker 2005) or "yardstick" competition in education spending would be better characterized by a spatial lag model in which each state (county) spending depends on spending by its neighbors. Equation (14) features the spatial lag or spatial autoregressive model (SAM) specification that uses maximum likelihood (ML) estimation of the spatial lag component without which the ordinary least squares (OLS) estimates for β would be biased and inconsistent.

$$\begin{aligned} \text{ED/CHILD}_{it} &= \beta_0 + \rho W(\text{ED/CHILD}_{it}) + \beta_1 Y_{it} + \beta_2 \text{KID}_{it} + \beta_3 \text{OLD}_{it} + \beta_4 \text{OWNERS}_{it} \\ &+ \beta_5 \text{NONWHITE}_{it} + \beta_6 \text{URBAN}_{it} + \beta_7 \text{INMIG65}_{it} + \beta_8 \text{OUTMIG65}_{it} + \varepsilon_{it} \end{aligned} \quad (14)$$

where W is the spatial weight (contiguity) matrix, ρ is the spatial dependence coefficient, and $W(ED/CHILD_{it})$ is a spatially lagged explanatory variable.

Another form of spatial dependence could also be present in the relationship we are trying to estimate. Spatial dependence that occurs due to spatially correlated omitted variables,

[6] For studies on interstate tax competition see Case (1993), Heyndels and Vuchelen (1998), Brueckner and Saavedra (2001), Buettner 2001, Revelli (2001), Rork (2003), and Conway and Rork (2004).

[7] Figlio et al. (1999), Saavedra (2000), and Baicker (2005) find evidence of competition in state spending on health and public welfare, while Case, Hines and Rosen (1993) find evidence of competition in aggregate as well as specific state expenditures on education, health care, and highways. On the contrary, Bruce et al. (2006) find evidence suggesting that states free-ride on positive spillover from infrastructure improvements by other states, which leads to a negative response to an increase in a neighbor's spending on infrastructure.

spatially correlated aggregate variables or spatially correlated errors in variable measurements is different from spatially lag dependence and should be modeled accordingly. Equation (15) features the spatial error model (SEM) specification that uses ML estimation of the spatial error term without which the OLS estimates of β would be inefficient.

$$\begin{aligned} \text{ED/CHILD}_{\text{it}} &= \beta_0 + \beta_1 Y_{it} + \beta_2 \text{KID}_{it} + \beta_3 \text{OLD}_{it} + \beta_4 \text{OWNERS}_{it} \\ &+ \beta_5 \text{NONWHITE}_{it} + \beta_6 \text{URBAN}_{it} + \beta_7 \text{INMIG65}_{it} + \beta_8 \text{OUTMIG65}_{it} + \varepsilon_{it} \end{aligned} \tag{15}$$

All the variables here are as previously defined except for ε_{it}, which now equals to $\lambda W \varepsilon_{it} + u_{it}$, where W is the spatial weight (contiguity) matrix, λ is the spatial dependence coefficient, and u is a vector of homoskedastic errors. We also use a general spatial model (SEC) that combines both spatial error and spatial lag components. Both spatial error (SEM) and spatial autoregressive lag (SAM) models are going to be estimated at the state and county levels in this paper. The next section presents our findings.

4. Empirical Results

Shown in Table 5 are our empirical estimates of the determinants of state K-12 education spending. The first (basic) OLS regression in Table 5 shows that higher real per capita income, homeownership rate, and share of population under 15 are positively and significantly related to education spending per pupil, while share of nonwhite population is negatively and significantly related to education spending per pupil. Although the coefficients for per capita income, homeownership, and nonwhite population have the expected signs, the coefficient for population under 15 does not, albeit being significantly different from zero only at 90% confidence level. Moreover, the coefficient for population 65 and over is positive, but not significantly different from zero. These results are not consistent with either the intergenerational conflict or Poterba's (1997) findings. As mentioned previously, the estimates for these variables could be biased and

inconsistent due to being significantly correlated with each other (refer to correlation matrix in Table 6). Therefore, we argue that migration variables can be better suited for examining the intergenerational conflict. And in fact, the first OLS regression in Table 5 yields the expected negative and statistically significant coefficient for in-migration rate for population 65 years old and over plus the expected positive and statistically significant coefficient for out-migration rate for population 65 years old and over. According to these estimates, an inflow of retirees lowers and outflow of retirees raises state K-12 education spending per pupil. These estimates are supportive of the intergenerational conflict presence in education financing.[8] However, these estimates need to be checked for robustness across different estimators.

The second OLS regression in Table 5 incorporates two-way (state and time) fixed effects, which are preferred to a random effects regression according to the conducted Hausman test. These two-way fixed effects OLS regression yields the expected signs for per capita income, population under 15 and over 65, and nonwhite population. However, the coefficients for population under 15 and over 65 are not significantly different from zero and the coefficient estimate for the elderly in-migration rate is now unexpectedly positive and statistically significant, while out-migration rate is positive and significant as expected. While the second (two-way fixed effects) regression improves upon the first one in terms of explanatory power, its estimates are likely to suffer from panel level heteroskedasticity and autocorrelation problems. We address these issues by specifying a panel specific heteroskedastic and first-order autoregressive error structure in the next regression (FGLS with two-way fixed effects) in Table 5. The FGLS estimates, however, do not improve dramatically over the second OLS estimates and reveal the existence of the "same-sign" problem for the in and out migration rates, which should have the opposite signs according to the intergeneration conflict theory. The "same-sign"

[8] We perform link and Ramsey RESET tests of omitted variable bias and find that the basic model specification for the state level regression in Equation 13 was not rejected by both of these tests at the 95% confidence level.

problem is not unique to our paper and has plagued past elderly migration studies such as Serow et al. (1986), Fournier et al. (1988), Conway and Houtenville (2001, 2003), and more recently Conway and Rork (2006).

We attempt to address the "same-sign" problem in our next regression. The "same-sign" problem could be the result of the endogeneity bias. It could be argued that state fiscal policies that are favorable towards retirees, such as lower K-12 education spending, can induce more elderly migration that will be reflected in the share of elderly population. In turn, due to high rates of elderly electoral participation, retirees can have a significant influence on state fiscal policy in general and education spending in particular. This is analogous to the "which came first, chicken or the egg?" argument. Conway and Rork (2006) identify the same issue in their paper in which they argue that the percentage of elderly population could reflect past state tax policy and migration decisions. Like Conway and Rork (2006), we address this problem by using 10-year lags of in and out elderly migration rates in the next FGLS regression.[9] The second FGLS regression with two-way fixed effects (Table 5) and lagged migration rates yields the expected relationships between education spending and its determinants. Namely, per capita income, homeownership, and lagged elderly out-migration have a significant positive effect on K-12 education spending per pupil, while nonwhite population, population under 15 and over 65, and lagged elderly in-migration have a significant negative effect. Not only shares of population under 25 and over 65 but also in and out elderly migration rates have the correct signs and

[9] Although 10-year lags indicating the existence of 10-year relationships between migration rates and current education spending may appear to be far fetched, the fact that amenities, which are virtually fixed, rather than taxes (as found by Conway and Rork 2006) appear to be the most important determinants of migration should also give credence to their long run (10 and more years) determination of migration patterns and their effects on state policies. We also use more recent lags of the in and out migration rates in county regressions given better data availability and find similar results.

statistical significance in this regression. This evidence provides strong support for the existence of the intergenerational conflict in education financing.[10]

In the next two regressions with two-way fixed effects we address the detected spatial error and lag effects that could potentially bias previous non-spatial regression estimates. Since the presence of spatial error can manifest itself as a spatial lag in a ML framework, the spatial error model (SEM) should be chosen for inference over the spatial lag model (SAM) if both appear to be significant. Nevertheless, we present the regression results from both models for comparison purposes in Table 5. The SAM and SEM regression results indicate that most variables have the expected signs. However, the SAM and SEM regressions produce different estimates for some variables. For instance, the SAM regression yields a negative coefficient for population over 65 (as expected), while the SEM regression yields a positive coefficient for the same variable. Both coefficient estimates are not significantly different from zero, however. The SEM regression also yields a negative and statistically significant (as expected) coefficient for the lagged elderly in-migration rate, while the SAM regression yields a negative but not statistically significant coefficient for the same variable. Both SAM and SEM regressions yield a positive and significant coefficient for the lagged elderly out-migration rate and reveal statistically significant spatial dependence of both types (ρ for spatial lag and λ for spatial error). The SAM and SEM estimates appear to be consistent with the intergenerational conflict in education financing.

In the next set of regressions (Table 7), we examine the effect of age heterogeneity in elderly migrants on education spending using county level data. We obtain in and out migration rates during 1995-2000 for the following age groups: 55-64, 65-74, 75-84, 85 and older. A priori,

[10] We also run a dynamic Arellano-Bond GMM regression where in and out elderly migration rates are treated as endogenous variables and are instrumented with their own lags. The Arellano-Bond GMM regression yields a negative and significant coefficient for in-migration variable and positive but insignificant coefficient for out-migration variable. These estimates agree with the intergenerational conflict in education financing argument.

we expect the 55-64 and 65-74 age groups to have similar (positive) preferences for education spending since these two groups appear to be similar in their migration (see Table 8) and retirement decisions. Moreover, these two age groups are more likely to have grandchildren (or even children) who are in primary and secondary schools compared to the older age groups (75 and over). Therefore, the in-migrants in 55-64 and 65-74 age groups are expected to have a positive effect and out-migrants to have a negative effect on education spending. The in-migrants in 75-84 and 85 and over age groups are expected to have a negative effect on education spending because of the limited benefit they derive from education (direct effect on education policy through voting) and due to high healthcare costs crowding out other government expenditures such as education (indirect effect through fiscal pressure). The expected overall effect of elderly migrants 65 years old and over is ambiguous due to the age heterogeneity in preferences for education among elderly migrants. The overall effect would depend on the relative strength of each age group, which makes our county-level regressions complimentary to our state-level regressions because state level data can yield ambiguous results due to being too aggregate to address the issue of age heterogeneity in preferences for education spending among elderly migrants.[11] We also address the potential endogeneity bias in our county level regressions by using more recent than in the state regressions lagged migration rates (for the 1995-2000 period), which occur prior to the 2003 share of elderly population and education spending per pupil figures.

The first county-level (OLS) regression in Table 7 examines the effect of elderly migrants ages 65 and over on education spending.[12] This regression shows that per capita income and out-migration of elderly 65 and over increase education spending per pupil, while population

[11] Poterba (1997) notes that cross-country data does not suggest an obvious relationship between the share of the elderly in the population and the share of government spending devoted to the elderly or to children.

[12] We identify statistically and drop some 102 outliers from our county dataset. We also run median and robust regressions with outliers in the dataset and observe that the estimates do not change dramatically.

under 15, population over 65, homeownership, nonwhite and urban population, and in-migration of elderly 65 and over reduce education spending per capita. However, we detect that this OLS regression suffers from both types of spatial dependence (ρ and λ). We address both types of special dependence in a general spatial model (SEC) that combines into one both spatial error (SEM) and spatial lag (SAM) models. Furthermore, we estimate separately the effect of elderly migration on education spending for each age group due to significant correlation between migrations rates for each age group. The first general spatial regression in Table 7 shows that in-migration of 55-64 year olds has the expected positive and significant effect on education county spending per pupil, while out-migration of 55-64 year olds has the expected negative and significant effect on county education spending per pupil. This regression also shows that per capita income increases county education spending per pupil, while homeownership, nonwhite and urban population decreases it. Interestingly, both population under 15 and population over 65 have a positive and significant effect on education spending per pupil. The third regression in Table 7 featuring the migrants from the 65-74 age group shows similar results: in-migrants 65-74 years old have the expected positive and significant effect on education spending per pupil (the opposite holds for the out-migrants). The estimates for migrants in the 55-64 and 65-74 age groups meet our a priori expectations.

The next three regressions also meet our expectations about the effects of elderly migrants on education spending. Namely, the fourth and fifth regression in Table 7 show that in-migrants 74-85 years old and 85 years old and over have the expected negative and significant effect on education spending per capita (the opposite holds for out-migration, except for the insignificant estimate for the 85+ group). What is interesting is that the magnitudes of the coefficients for in-migration and out-migration rates (not in logarithms in county regressions) increase with age, which make sense as we expect older generations to benefit less from K-12

education spending. Furthermore, the relatively strong anti-education spending preferences by the older in-migrants (75 and over) outweigh the pro-education spending preferences of the younger in-migrants (65-74) as shown in the last regression (Table 7) that analyzes the overall impact of retired migrants (65 and over). The last regression also indicates that the overall effect of retired migrants 65 years old and over is weaker than the overall effect of out-migrants for the same age group. The estimates in the last column of Table 7 also imply that a one standard deviation change (0.0067) in retiree (65 years old and over) in-migration rate results in a 7 percent decline in education spending per pupil. This estimate is similar to Poterba's (1997) finding of a 5 percent change in per-pupil education spending from a one standard deviation change in state's share of elderly population.

The other variables maintain their signs and significance levels in all five spatial regressions that are shown in Table 7. The spatial regressions also show that the spatial error component is much stronger than the spatial lag in the county-level regressions compared to the state-level regressions. The high R-square for the spatial county regressions may suggest the presence of multicollinearity, but the OLS regression in Table 7 and the correlation matrix in Table 8 suggest the high R-squares must be the result of the spatial error and spatial lag matrices that are used simultaneously in our general spatial regressions.

Altogether, our painstaking empirical analysis at the state and county level reveals significant, albeit not perfectly consistent, evidence supporting the presence of the intergenerational conflict in the U.S. K-12 education financing. These results persist regardless of whether the net in-migration or in and out migration rates are used in the regressions. However, we find that a number of control variables change their signs and significance levels depending on estimator and dataset being used making their effects on education spending difficult to interpret. For instance, the shares of population under 15 and over 65 tend to have

negative signs in the state-level regressions and positive signs in the county-level regressions. While the negative state-level estimates for these two variables are consistent with the intergenerational conflict argument, the positive county-level estimates for the same variables might capture the more localized and therefore more visible spill-over benefits from education spending to the younger and older generations alike. The negative coefficient for the homeownership rate that we find in both state and county-level regressions, albeit being contrary to Poterba's (1997) estimates, makes sense if one views the estimated equation as the demand schedule for education and the homeownership rate (in Poterba's own view) as the after-tax price of education. In other words, our results suggest an intuitive relationship: if the tax price of education rises, people demand less of it. The share of nonwhites in total population shows up consistently negative (and often significant) in our state and county-level regressions and could be interpreted as indicator of poverty or lower financial resources for education spending. Finally, the negative coefficient for the share of urban residents in total population suggests that urban areas spend less on education probably due to being more efficient at providing it because of potential economies of scale or lower transportation costs.

5. Concluding Remarks

In this paper we reexamine the presence of the intergenerational conflict in education financing using a variety of advanced econometric techniques that are applied to U.S. state and county data on education spending and elderly migration. Our findings broadly support the existence of the intergenerational competition for education spending and are robust to the existence of different forms of spatial dependence, heteroskedasticity, autocorrelation, outliers, endogeneity bias, fixed effects and random effects.

The state-level regression results broadly support the intergenerational conflict in the U.S. education financing found by Poterba (1997) and other researchers. Using a balanced panel of 48 contiguous states for 1970, 1980, 1990, and 2000, we show that states with higher share of elderly population and higher elderly migration experienced lower education spending per pupil. In the next set of regressions, we examine the impact of age heterogeneity among elderly migrants on education financing using county-level data. We find that in-migration of people 55-64 and 65-74 years old increases education spending per capita at the county level, but in-migration of people 75 years old and over decreases it. The overall effect of retiree (65 years old and over) in-migration on education spending per pupil is negative and significant. Likewise, the out-migration of retirees (65 years old and over) has a positive effect on education spending per pupil that more than cancels out the negative in-migration effect. Our results also show that the magnitude of the negative effects on education spending from elderly in-migration and positive effects from elderly out-migration increase with age.

Unlike results from the state level analysis in Poterba (1997) and the county level analysis in Ladd and Murray (2001), we find a positive and significant effect on education spending for the share of population 65 and older. This could mean that the elderly migrants may have a less favorable view of K-12 education spending than the existing elderly population. While the elderly that have resided in a community for a long time may support K-12 education due to the external benefits they may receive from such spending (e.g. reduced crime, etc.), such intergenerational link may not exist for the elderly that recently moved to that community.

Table 1: Voting Statistics in November 2002, Total U.S.

(in thousands)

		Total Population			
		Reported Registered		Reported Voted	
Age	Total	Number	Percent	Number	Percent
18 to 24 years	27,377	10,470	38.2	4,697	17.2
25 to 34 years	38,512	19,339	50.2	10,450	27.1
35 to 44 years	43,716	26,214	60.0	17,569	40.2
45 to 54 years	40,043	27,006	67.4	20,088	50.2
55 to 64 years	26,881	19,424	72.3	15,432	57.4
65 to 74 years	17,967	13,681	76.1	11,339	63.1
75 to 84 years	12,287	9,446	76.9	7,600	61.9
18 years and over	210,421	128,154	60.9	88,903	42.3
65 year and over	30,254	23,127	76.4	18,939	62.6
85 year and over	3,640	2,573	70.7	1,729	47.5
75 years and over	15,925	12,020	75.5	9,328	58.6

Source: U.S. Census Bureau, Current Population Survey, November 2002.

Table 2: Summary Statistics for the Data Used in State Level Regressions

	Observations	Mean	Standard Deviation
Real education spending per pupil	192	5,048	2,069
Real per capita personal income	192	20,630	6,279
Share of population under 15	192	0.24	0.04
Share of population 65 and over	192	0.12	0.02
Homeownership rate	192	0.67	0.05
Share of nonwhite population	192	0.14	0.10
Share of urban population	192	0.68	0.15
In-migration rate for population 65 and older	192	0.06	0.05
Out-migration rate for population 65 and older	192	0.05	0.02

Table 3: Summary Statistics for the Data Used in County Level Regressions

	Observations	Mean	Standard Deviation
Education spending per pupil	2957	8,959	2,158
Per capita personal income	2957	24,685	5,051
Share of population under 15	2957	0.20	0.03
Share of population over 65	2957	0.15	0.04
Homeownership rate	2957	0.75	0.07
Share of nonwhite population	2957	0.12	0.15
Share of urban population	2957	0.40	0.30
In-migration rate for population 65 and older	2957	0.0076	0.0067
Out-migration rate for population 65 and older	2957	0.0076	0.0068
In-migration rate for population 55-64 years old	2957	0.0072	0.0079
Out-migration rate for population 55-64 years old	2957	0.0051	0.0054
In-migration rate for population 65-74 years old	2957	0.0039	0.0040
Out-migration rate for population 65-74 years old	2957	0.0034	0.0034
In-migration rate for population 75-84 years old	2957	0.0023	0.0023
Out-migration rate for population 75-84 years old	2957	0.0027	0.0028
In-migration rate for population 85 and older	2957	0.0014	0.0015
Out-migration rate for population 85 and older	2957	0.0016	0.0021

Table 4: Data Sources and Links

Variables	Source
State education spending per pupil	United States Census Bureau: Statistical Abstracts and http://www.census.gov/prod/www/abs/statab.html
County education spending per pupil	United States Census Bureau: Public Education Finance Report 2003 http://www.census.gov/govs/www/school03.html
State per capita personal income	Bureau of Economic Analysis http://www.bea.gov/bea/regional/spi/
County per capita personal income	Bureau of Economic Analysis http://www.bea.gov/bea/regional/reis/
All state population data	United States Census Bureau: Statistical Abstracts http://www.census.gov/prod/www/abs/statab.html
All county population data	Population Estimates http://www.census.gov/popest/estimates.php
State homeownership rate	United States Census Bureau: Housing and Household Economic Statistics Division http://www.census.gov/hhes/www/housing/census/historic/owner.html
County homeownership rate	United States Census Bureau: People Estimates http://www.census.gov/popest/housing/files/HU-EST2004-CO.csv
State elderly migration rates	United States Census Bureau: Statistical Abstracts and http://www.census.gov/prod/www/abs/statab.html
County elderly migration rates	United States Census Bureau: 2000 PUMS

Table 5: Determinants of State K-12 Per Pupil Education Spending

(standard errors reported in parenthesis)

Variable	OLS	OLS	FGLS	FGLS	SAM	SEM
Two-way fixed effects	-	Yes	Yes	Yes	Yes	Yes
Constant	-3.435*** (0.690)	-0.991*** (2.32)	-3.017*** (0.899)	-2.791*** (0.946)	-	-
Real per capita personal income	1.254*** (0.076)	0.782*** (0.228)	0.952*** (0.095)	0.836*** (0.093)	0.857*** (0.087)	1.100*** (0.093)
Share of population under 15	0.015* (0.187)	-0.955 (0.372)	-1.072 (0.138)	-1.777*** (0.127)	-1.581*** (0.243)	-1.680*** (0.265)
Share of population over 65	0.199 (0.086)	-0.305 (0.186)	-0.269 (0.079)	-0.581*** (0.086)	-0.177 (0.145)	0.004 (0.157)
Homeownership rate	0.092* (0.150)	-0.126 (0.423)	-0.371 (0.158)	0.224 (0.285)	-1.210*** (0.427)	-1.419*** (0.462)
Share of nonwhite population	-0.008*** (0.012)	-0.063*** (0.037)	-0.051*** (0.015)	-0.048** (0.021)	-0.025 (0.048)	-0.003 (0.057)
Share of urban population	-0.136 (0.052)	0.185 (0.123)	0.174 (0.049)	0.309*** (0.044)	0.368*** (0.095)	0.402*** (0.100)
In-migration (65+) rate	-0.034*** (0.022)	0.048** (0.057)	0.022** (0.030)	-	-	-
Out-migration (65+) rate	0.068*** (0.043)	0.071* (0.093)	0.024* (0.038)	-	-	-
Lag of in-migration (65+) rate	-	-	-	-0.110*** (0.041)	-0.091 (0.060)	-0.125** (0.062)
Lag of out-migration (65+) rate	-	-	-	0.299*** (0.040)	0.344*** (0.071)	0.348*** (0.076)
ρ	-	-	-	-	0.227*** (0.026)	-
λ	-	-	-	-	-	0.263*** (0.100)
R^2	0.89	0.96	-	-	0.95	0.95
Observations	192	192	192	144	144	144

Notes: Dependent variable: education spending per capita in real dollars. Significance level: *** at 1%, ** at 5%, * at 10%. The sample is a balanced panel of 48 continental United States (excluding Alaska and Hawaii) for the years 1970, 1980, 1990, and 2000. All variables are in logarithms. Robust standard errors are used to control for heteroskedasticity. Robust and median regressions that are resistant to outlier bias show similar results. The Hausman test rejected the random effects estimator in favor of the fixed effects estimator. In and out migration lags are 10-year lags due to data limitations. Both spatial lag (SAM) and spatial error (SEM) models are estimated using maximum likelihood, where ρ and λ are spatial lag and spatial error components, respectively. Using net in-migration rates instead of in and out migration rates yield similar results.

Table 6: Correlation Matrix for State Regression Variables

	log(education exp./pupil)	log(income)	log(age15)	log(age65)	log(nonwhite)	log(home owner)	log(urban)	log(in-migration 65+)	log(out-migration 65+)
log(education exp./pupil)	1								
log(income)	0.9329*	1							
log(age15)	-0.7821*	-0.7953*	1						
log(age65)	0.5017*	0.4428*	-0.7082*	1					
log(nonwhite)	-0.0376	-0.0897	-0.021	0.2042*	1				
log(home owner)	0.2146*	0.2963*	-0.2511*	-0.0359	-0.2121*	1			
log(urban)	0.2290*	0.3470*	-0.0704	-0.072	-0.2646*	0.2679*	1		
log(in-migration 65+)	0.0052	0.0507	-0.0496	-0.1669*	0.0039	0.0432	0.1448*	1	
log(out-migration 65+)	0.2014*	0.2167*	-0.0662	-0.1580*	-0.2336*	-0.1554*	0.1608*	0.5945*	1

Table 7: Determinants of County K-12 Education Spending per Pupil

(standard errors reported in parenthesis)

Variable	OLS	General Spatial Model	General Spatial Model	General Spatial Model	General Spatial Model	General Spatial Model
Constant	5.565*** (0.250)	6.192 *** (0.117)	5.860*** (0.152)	6.304*** (0.088)	6.047*** (0.132)	6.540*** (0.082)
Per capita personal income	0.292*** (0.025)	0.362*** (0.019)	0.400*** (0.021)	0.322*** (0.016)	0.386*** (0.020)	0.313*** (0.016)
Share of population under 15	-0.270*** (0.038)	0.258*** (0.030)	0.301*** (0.027)	0.227*** (0.030)	0.271*** (0.028)	0.213*** (0.032)
Share of population over 65	-0.003 (0.018)	0.212*** (0.016)	0.217*** (0.014)	0.162*** (0.016)	0.251*** (0.015)	0.202*** (0.017)
Homeownership rate	-0.242*** (0.053)	-0.638*** (0.048)	-0.703*** (0.048)	-0.647*** (0.044)	-0.698*** (0.047)	-0.554*** (0.046)
Share of nonwhite population	-0.020*** (0.004)	-0.009*** (0.004)	-0.013*** (0.004)	-0.014*** (0.004)	-0.005*** (0.004)	-0.002*** (0.004)
Share of urban population	-0.055*** (0.027)	-0.442*** (0.023)	-0.455*** (0.023)	-0.228*** (0.023)	-0.408*** (0.023)	-0.266*** (0.025)
In-migration (55-64) rate	-	2.751*** (0.521)	-	-	-	-
Out-migration (55-64) rate	-	-3.851** (1.009)	-	-	-	-
In-migration (65-74) rate	-	-	10.783*** (1.055)	-	-	-
Out-migration (65-74) rate	-	-	-10.570*** (1.259)	-	-	-
In-migration (75-84) rate	-	-	-	-20.301*** (1.299)	-	-
Out-migration (75-84) rate	-	-	-	26.319*** (1.204)	-	-
In-migration (85+) rate	-	-	-		-23.486*** (1.948)	-
Out-migration (85+) rate	-	-	-	-	11.299 (1.724)	-
In-migration (65+) rate	-4.278*** (0.909)	-	-	-	-	-10.501*** (0.796)
Out-migration (65+) rate	4.052*** (0.901)	-	-	-	-	13.420*** (0.906)
ρ	-	-0.0004*** (0.0008)	-0.0000*** (0.0008)	0.003*** (0.0008)	0.0001*** (0.0008)	0.0024*** (0.0008)
λ	-	2.37*** (0.005)	2.374*** (0.005)	2.38*** (0.005)	2.38*** (0.005)	2.38*** (0.005)
R-squared	0.13	0.98	0.99	0.99	0.99	0.99

Notes: Dependent variable: education spending per pupil in 2003. Significance level: *** at 1%, ** at 5%, * at 10%. The sample consists of observations for counties from 48 continental United States (excluding Alaska and Hawaii) and District of Columbia in 2003. Some 102 outliers were detected and dropped from the sample resulting in a total of 2957 observations. Robust and median regressions that are resistant to outlier bias show similar results with outliers included in the sample. All variables are in logarithms, except for the in and out migration rates that have zero values. Robust standard errors are used to control for heteroskedasticity. In and out migration numbers for the 1995-2000 period are divided by 1995 population to get the migration rates. The general spatial model combines the spatial lag (SAM) and spatial error (SEM) models estimated using maximum likelihood, where ρ and λ are spatial lag and spatial error components, respectively. Using net in-migration rates instead of in and out migration rates yield similar results.

Table 8: Correlation Matrix for County Regression Variables

	Log (education exp./pupil)	log (income)	log (age15)	log (age65)	log (nonwhite)	log (home owner)	log (urban)	In-migration (55-64)	In-migration (65-74)	In-migration (75-84)	In-migration (85+)	In-migration (65+)
log(education exp./pupil)	1											
log(income)	0.2592*	1										
log(age15)	-0.2015*	-0.03	1									
log(age65)	0.1003*	-0.1145*	-0.5842*	1								
log(nonwhite)	-0.1610*	-0.0400*	0.3114*	-0.3896*	1							
log(home owner)	-0.0676*	-0.2081*	-0.1606*	0.3229*	-0.3217*	1						
log(urban)	0.0222	0.4231*	0.2983*	-0.4323*	0.3115*	-0.5696*	1					
In-migration (55-64)	0.0064	-0.0532*	-0.1688*	0.1183*	-0.0426*	0.1793*	-0.1666*	1				
In-migration (65-74)	-0.0076	-0.0477*	-0.1724*	0.1817*	-0.0400*	0.1642*	-0.1200*	0.8919*	1			
In-migration (75-84)	-0.0172	0.0457*	-0.1161*	0.1332*	-0.0537*	0.0996*	-0.0405*	0.6944*	0.7234*	1		
In-migration (85+)	-0.0036	0.0424*	-0.1273*	0.1983*	-0.1082*	0.0716*	-0.0898*	0.3439*	0.3477*	0.4368*	1	
In-migration (65+)	-0.0114	-0.0030	-0.1729*	0.2006*	-0.0674*	0.1495*	-0.1066*	0.8553*	0.9312*	0.8818*	0.5889*	1
Out-migration (55-64)	0.0670*	0.0753*	-0.0356	-0.0075	-0.0412*	-0.0020	-0.0176	0.7573*	0.7029*	0.7091*	0.3453*	0.7473*
Out-migration (65-74)	0.0679*	0.0037	-0.1271*	0.1450*	-0.0902*	0.0821*	-0.0978*	0.7167*	0.6936*	0.6760*	0.3218*	0.7249*
Out-migration (75-84)	0.0550*	-0.0445*	-0.1965*	0.2718*	-0.1367*	0.1346*	-0.1931*	0.6618*	0.6543*	0.6143*	0.3126*	0.6777*
Out-migration (85+)	0.0095	-0.0698*	-0.1565*	0.2506*	-0.1296*	0.1203*	-0.1949*	0.3340*	0.3324*	0.3344*	0.1929*	0.3599*
Out-migration (65+)	0.0595*	-0.0382*	-0.1931*	0.2624*	-0.1417*	0.1339*	-0.1891*	0.7339*	0.7188*	0.6942*	0.3493*	0.7526*

	Out-migration (55-64)	Out-migration (65-74)	Out-migration (75-84)	Out-migration (85+)	Out-migration (65+)
Out-migration (55-64)	1				
Out-migration (65-74)	0.7761*	1			
Out-migration (75-84)	0.6629*	0.6591*	1		
Out-migration (85+)	0.3233*	0.3189*	0.4499*	1	
Out-migration (65+)	0.7606*	0.8687*	0.8819*	0.6546*	1

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