

# Elderly Migration and Education Spending: Intergenerational Conflict Revisited

MEHMET S. TOSUN, CLAUDIA R. WILLIAMSON, AND PAVEL YAKOVLEV

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## INTRODUCTION

Retirees have become an important demographic group for the fiscal systems of governments in the United States. A major factor in the rise of their importance is the rapid increase in elderly population. An important possible 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 such as education that benefit the young. In other words, population aging can lead to an intergenerational competition for scarce resources between the voters of different age groups.

We show in Table 1 the political importance of the elderly population as a voting group: the percentage of registered and voting individuals consistently rises with age until it begins to decline for individuals 75 years of age and older. The 18–24 age group has the fewest registered voters (38.2 percent) and the lowest voter turnout (17.2 percent), while the 75–84 age category has the largest percentage of registered voters (76.9 percent) and the second highest voter turnout (61.9 percent). The 65–74 age group has the highest voter turnout rate of 63.1 percent. Although the total number of voters in the 65 years old and over group is smaller than in the middle age group, their higher voter registration and turnout rates compensate for their lack of strength in numbers.

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Mehmet S. Tosun is at Department of Economics, College of Business, University of Nevada, Mail Stop 030, Reno, NV 89557, USA. He can be reached at [tosun@unr.edu](mailto:tosun@unr.edu).

Claudia R. Williamson is at New York University, 70 Washington Square South, New York, NY, USA. She can be reached at [claudia.williamson@nyu.edu](mailto:claudia.williamson@nyu.edu).

Pavel Yakovlev is at Palumbo Donahue School of Business, Duquesne University, 819 Rockwell Hall, Pittsburgh, PA 15282, USA. He can be reached at [yakovlevp@duq.edu](mailto:yakovlevp@duq.edu).

**TABLE 1**  
**Voting Statistics in November 2002, Total United States (in Thousands)**

Age	Total population				
	Total	Reported registered		Reported voted	
		Number	Percent	Number	Percent
18–24 years	27,377	10,470	38.2	4,697	17.2
25–34 years	38,512	19,339	50.2	10,450	27.1
35–44 years	43,716	26,214	60.0	17,569	40.2
45–54 years	40,043	27,006	67.4	20,088	50.2
55–64 years	26,881	19,424	72.3	15,432	57.4
65–74 years	17,967	13,681	76.1	11,339	63.1
75–84 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.

The aforementioned voter statistics reveal the importance of elderly constituents in a competitive political environment. Slavov<sup>1</sup> demonstrates that government expenditures tend to be biased in favor of the elderly because they are easier to sustain politically due to an asymmetric distribution of benefits that generate broad political support for large transfers to older individuals. This could lead to lower public spending on education if the elderly do not see direct benefits from current education spending. In that case, they can effectively impose their preferences for lower education spending through the political process. This, in turn, could be detrimental to future economic growth.<sup>2</sup> However, there could be important positive fiscal impacts from retirees as well. First, most of retirees' social insurance expenditures are financed mainly by the federal government.<sup>3</sup> This could create positive economic impact (mainly through job creation and wages), which in turn leads to positive revenue impact for state and local governments. Additionally, elderly migrants, as

1. Sita Nataraj Slavov, "Age Bias in Fiscal Policy: Why Does the Political Process Favor the Elderly?" *Topics in Theoretical Economics* 6, no. 1 (2006), Article 11: 1–37.

2. See A. Razin, E. Sadka, and P. Swagel, "The Aging Population and the Size of the Welfare State," *Journal of Political Economy* 110, no. 4 (2002): 900–918; Mark Gradstein and Michael Kaganovich, "Aging Population and Education Finance," *Journal of Public Economics* 88, no. 12 (2004): 2469–2485; Douglas J. Holtz-Eakin, Mary E. Lovely, and Mehmet S. Tosun, "Generational Conflict, Fiscal Policy and Economic Growth," *Journal of Macroeconomics* 26, no. 1 (2004): 1–23; and Mehmet S. Tosun, "Endogenous Fiscal Policy and Capital Market Transmissions in the Presence of Demographic Shocks," *Journal of Economic Dynamics and Control* 32, no. 6 (2008): 2031–2060, for recent studies that addressed this issue.

3. The main exception to this is Medicaid, which is a program financed jointly by the federal and state governments.

empty nesters do not impose a burden on the cost of public education compared to migrants with school-age children, particularly in places where public schools are operating at full capacity.<sup>4</sup> On the other hand, while elderly themselves are less likely to commit crimes, the empirical evidence suggests that they attract crime (particularly property crime) leading to higher crime rates in the places they move to.<sup>5</sup> Due to these opposing influences, the net effect of elderly migration on education spending is not clear. Poterba<sup>6</sup> was one of the first to test the intergenerational conflict hypothesis using longitudinal panel data of state K-12 education spending. Poterba documents a negative effect from population aging on government spending on K-12 education.

This study aims to provide new evidence on the intergenerational conflict by addressing the problem of reverse causality, controlling for spatial dependence, utilizing migration rates rather than percentage of elderly population, and controlling for age heterogeneity in preferences.<sup>7</sup> Like Conway and Rork,<sup>8</sup> we take advantage of the available longitudinal panel data in addressing the reverse causality problem that complicates the estimation of the relationship between state fiscal policy and elderly migration. In addition, we test for the presence of intergenerational conflict using county-level data. We present newer and more detailed evidence that supports Poterba's<sup>9</sup> original conclusions despite some recent findings to the contrary as discussed below. However, our results suggest that preferences for education spending of elderly migrants vary with their age.

## PREVIOUS STUDIES

Elderly migration patterns have been widely examined in the gerontology, demography, and economics literatures. Studies used different data approaches such as microunit and aggregate datasets, and focused on different aspects or determinants of migration such as state and local fiscal policy and amenities among others. Examples to such studies are

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4. Another argument for the possible positive link between the elderly and the education systems is the promotion of successful aging in communities through greater involvement of the elderly in local education.

5. See Karen Smith Conway and Jonathan C. Rork, "No Country for Old Men (or Women)—Do State Tax Policies Drive Away the Elderly?" 2011, Manuscript, for recent evidence on this.

6. James M. Poterba, "Demographic Structure and the Political Economy of Public Education," *Journal of Policy Analysis and Management* 16, no. 1 (1997): 48–66.

7. Although important, this study does not address the question of why retirees move (see Tomas Jensen and Steven Deller, "Spatial Modeling of the Migration of Older People with a Focus on Amenities," *The Review of Regional Studies* 37, no. 3 (2007): 303–343). Instead, we focus on possible migration effects on education spending. We recognize other factors such as amenities may determine migration flows and we control for this partly by employing state dummies in the empirical exercise.

8. Karen Smith Conway and Jonathan C. Rork, "State 'Death' Taxes and Elderly Migration—The Chicken or the Egg?" *National Tax Journal* LIX, no. 1 (2006): 97–128.

9. James M. Poterba, "Demographic Change, Intergenerational Linkages, and Public Education," *American Economic Review* 88, no. 2 (1998): 315–320.

Longino,<sup>10</sup> Longino and Serow,<sup>11</sup> Gale and Heath,<sup>12</sup> Duncombe et al.,<sup>13</sup> Longino and Bradley,<sup>14</sup> Jensen and Deller,<sup>15</sup> and Conway and Rork.<sup>16</sup>

Several other studies that are more directly related to our paper also show evidence of a negative association between an aging population and education spending, suggesting the elderly may not want to bear financing responsibilities for public education.<sup>17–19</sup> Other studies do not support this finding.<sup>20</sup> Ladd and Murray<sup>21</sup> find no evidence in favor of the intergenerational conflict at the county level, while Harris et al.<sup>22</sup> find such evidence in school district data. Button<sup>23</sup> examines the voting behavior in tax referenda in six Florida counties and concludes that intergenerational conflict is very prevalent in education-related issues. Brunner and Balsdon<sup>24</sup> provide evidence on intergenerational conflict based on survey data from California, where support for local school district spending decreases with age. On the other hand, Deller and Walzer<sup>25</sup> find a much weaker evidence of such generational conflict in a survey of residents in rural Illinois that reveals retirees' support

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10. Charles F. Longino, "Going Home: Aged Return Migration in the United States 1965-70," *Journal of Gerontology* 34, no. 5 (1979): 736-745.

11. Charles F. Longino and William J. Serow, "Regional Differences in the Characteristics of Elderly Return Migrants," *Journal of Gerontology* 47, no. 1 (1992): 38-43.

12. Lewis R. Gale and Will C. Heath, "Elderly Internal Migration in the United States Revisited," *Public Finance Review* 28, no. 2 (2000): 153-157.

13. William Duncombe, Mark Robbins, and Douglas A. Wolf, "Retire to Where? A Discrete Choice Model of Residential Location," *International Journal of Population Geography* 7 (2001): 281-293.

14. Charles F. Longino and D. Bradley, "A First Look at Retirement Migration Trends in 2000," *The Gerontologist* 43, no. 6 (2003): 904-907.

15. Jensen and Deller (2007).

16. Conway and Rork (2011).

17. David Brunori, *Local Tax Policy: A Federalist Perspective*. (Washington, DC: The Urban Institute Press, 2003).

18. James W. Button, "A Sign of Generational Conflict: The Impact of Florida's Aging Voters on Local School and Tax Referenda," *Social Science Quarterly* 73, no. 4 (1992): 786-797.

19. Brunori (2003); Button (1992); Richard J. Reeder and Nina L. Glasgow, "Nonmetro Retirement Counties' Strengths and Weaknesses," *Rural Development Perspectives* 6, no. 2 (February 1990): 12-17. This result could be driven by the possibility that the elderly have different preferences for and against specific taxes. For example, they may have a strong dislike for property taxes, the primary source of education spending.

20. Walter A. Rosenbaum and James W. Button, "Is There Gray Peril?: Retirement Politics in Florida," *The Gerontologist* 29, no. 3 (1989): 300-306; James W. Button and Walter A. Rosenbaum, "Seeing Gray: School Bond Issues and the Aging in Florida," *Research on Aging* 11, no. 2 (1989): 158-173.

21. Helen F. Ladd and Sheila E. Murray, "Intergenerational Conflict Reconsidered: County Demographic Structure and the Demand for Public Education," *Economics of Education Review* 20, no. 4 (2001): 343-357.

22. Amy R. Harris, William N. Evans, and Robert M. Schwab, "Education Spending in an Aging America," *Journal of Public Economics* 81, no. 3 (2001): 449-472.

23. Button (1992).

24. Eric Brunner and Ed Balsdon, "Intergenerational Conflict and the Political Economy of School Spending," *Journal of Urban Economics* 56 (2004): 369-388.

25. Steven C. Deller and Norman Walzer, "The Effects of an Aging Rural Population on the Financing of Rural Public Education," *Journal of Research in Rural Education* 9, no. 2 (1993): 104-114.

for local education spending, albeit at a lower level than nonretirees. Clark et al.<sup>26</sup> examine the willingness of later life migrants to support education using a survey conducted in a retirement destination county (Cumberland County) in Tennessee. The survey suggests that retirees are in fact more supportive of local education than other residents. Fried et al.<sup>27</sup> argue that elderly could play an important role by supporting education, and thereby promote successful aging in communities. Among the studies that address the overall fiscal impact of the elderly population, Shields et al.<sup>28</sup> examine a rural area in Wisconsin and find that while the exact impacts vary by income and household size, all elderly groups bring positive net fiscal impacts for local governments. Stallman et al.<sup>29</sup> also find an overall positive fiscal impact from the elderly in Wisconsin where “the increased local government expenditures are covered by the increased revenues.” Serow<sup>30</sup> provides an extensive review of the literature from North America and points out that most studies on the economic (and fiscal) effects of retiree migration have a short-term focus and tend to emphasize the positive effects of such migration. He concludes by saying there is need for longitudinal studies that examine long-term effects.

The apparent lack of consensus on the intergenerational conflict may be attributed to an endogeneity problem. Elderly migration can influence state K-12 education spending, which in turn could influence elderly migration decisions.<sup>31</sup> Farnham and Sevak<sup>32</sup> provide evidence from the Health and Retirement Study (HRS) that households move to areas with lower per pupil expenditures and reduce their property tax liability by \$115 on average. Gale and Heath<sup>33</sup> find that elderly prefer states where wage earners carry more of the burden in financing publicly provided goods. On the other hand, Conway and Rork<sup>34</sup> find that elderly

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26. Christopher D. Clark, Dayton M. Lambert, William M. Park, and Michael D. Wilcox, “Willingness to Fund Public Education in a Rural, Retirement Destination County,” *Journal of Research in Rural Education* 24, no. 6 (2009): 1–16.

27. Linda P. Fried, Marc Freedman, Thomas E. Endres, and Barbara Wasik, “Building Communities That Promote Successful Aging,” *Western Journal of Medicine* 167, no. 4 (1997): 216–219.

28. Martin Shields, Judith I. Stallman, and Steven C. Deller, “The Economic and Fiscal Impacts of the Elderly on a Small Rural Region,” *Journal of the Community Development Society* 34, no. 1 (2003): 85–106.

29. Judith I. Stallmann, Steven C. Deller, and Martin Shields, “The Economic and Fiscal Impact of Aging Retirees on a Small Rural Region,” *The Gerontologist* 39, no. 5 (1999): 599–610.

30. William J. Serow, “Economic Consequences of Retiree Concentrations: A Review of North American Studies,” *The Gerontologist* 43, no. 6 (2003): 897–903.

31. Studies by Richard J. Cebula, “A Brief Empirical Note on the Tiebout Hypothesis and State Income Tax Policies,” *Public Choice* 67, no. 1 (1990): 87–89; Karen S. Conway and Andrew J. Houtenville, “Do the Elderly ‘Vote with Their Feet?’” *Public Choice* 97, no. 4 (1998): 663–685 and Karen S. Conway and Andrew J. Houtenville, “Elderly Migration and State Fiscal Policy: Evidence from the 1990 Census Migration Flows,” *National Tax Journal* 54, no. 1 (2001): 103–123; Karen S. Conway and Jonathan C. Rork. “Diagnosis Murder: The Death of State Death Taxes,” *Economic Inquiry* 42, no. 4 (2004): 537–559; Conway and Rork (2006); and Martin Farnham and Purvi Sevak, “Local Fiscal Policy and Retiree Migration: Evidence from the Health and Retirement Study” (2002) explore these reverse causality issues.

32. Purvi Sevak and Martin Farnham, “Local Fiscal Policy and Retiree Migration: Evidence from the Health and Retirement Study,” *Hunter College Department of Economics Working Papers*, 02/7 (New York, NY: 2002).

33. Gale and Heath (2000).

34. Conway and Rork (2004, 2006).

migration is likely to cause or influence changes in state tax policy rather than be influenced by them. Similarly, Voss et al.<sup>35</sup> discover that estate taxes do not seem to influence elderly outmigration, while Newbold<sup>36</sup> finds that onward migrants are more sensitive to physical amenities than public expenditures and taxation.

The empirical evidence on the intergenerational conflict is further complicated by the fact that it is not only the size of the elderly population but also their heterogeneity in preferences that could have different implications for education spending. According to He and Schachter,<sup>37</sup> the mobility of older population differs significantly by age, sex, and region. For example, the young old (people 65–74 years old) are 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 55–64 years old has mobility patterns similar to the young old group (people 65–74 years old). Hence, it is particularly useful to examine the migratory effects of different elderly age groups on education spending. This heterogeneity in education spending preferences across elderly age groups is not widely examined in previous studies. This paper fills the void.

### *Data, Empirical Methodology, and Results*

In this section, we test the intergenerational conflict hypothesis regarding K-12 education spending using U.S. county-level data. There are a few important aspects about the county dataset that are worth mentioning. The county dataset is a cross-section of counties from 48 continental United States and the District of Columbia. Several missing observations and outliers were detected and excluded from the county sample resulting in a total of 2,952 usable observations. Variable sources are available in Appendix and variable summary statistics in Table 2.<sup>38</sup>

The elderly migration data come from the PUMS dataset that contains county-level data on elderly migrants for several age categories such as 55–64, 65–74, 75–84, and 85 and older as opposed to just a single category of migrants 65 years of age and older. The ability to examine the heterogeneity of preferences for education across different elderly age groups at the county level is the most novel aspect of our paper. In Poterba's<sup>39</sup> 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.

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35. Paul R. Voss, Ronald J. Gunderson and Robert Manchin, "Death Taxes and Elderly Interstate Migration," *Research on Aging* 10 (1988): 420–450.

36. K. Bruce Newbold, "Determinants of Elderly Interstate Migration in the United States, 1985–1990," *Research on Aging* 18 (1996): 451–476.

37. Wan He and Jason P. Schachter, "Internal Migration of the Older Population: 1995 to 2000," *Census 2000 Special Reports CENSR-10* (Washington, DC: U.S. Department of Commerce, U.S. Census Bureau, 2003).

38. Our analysis reveals no alarming collinearity among the regressors included in the regressions.

39. Poterba (1997:5).

**TABLE 2**  
**Summary Statistics for the Variables Used in County-Level Regressions**

		Mean	Standard deviation
ED	Education spending per pupil	\$8,959	\$2,158
Y	Per capita personal income	\$24,685	\$5,051
OWNERS	Homeownership rate	75%	7%
NONWHITE	Percent of nonwhite population	12%	15%
URBAN	Percent of urban population	40%	30%
AID	Revenue from federal government, per capita	\$11,128	\$46,565
UNEMP	Unemployment rate	5.61%	1.53%
COLLEGE	Educational attainment, percent of persons 25 years and over with a bachelor's degree or higher	16.18%	7.31%
HV	Median value of owner occupied housing	\$82,091	\$37,465
SD	School districts per capita	0.0002	0.0005
INMIG65	Net immigration rate for population 65 and older	-0.00003	0.0048
INMIG5564	Net immigration rate for population 55-64 years old	0.0021	0.0052
INMIG6574	Net immigration rate for population 65-74 years old	0.0005	0.0030
INMIG7584	Net immigration rate for population 75-84 years old	-0.0004	0.0023
INMIG85	Net immigration rate for population 85 and older	-0.0002	0.0024

Poterba<sup>40</sup> also notes that cross-country data may not reveal an obvious relationship between the share of the elderly in the population and the share of government spending devoted to the elderly or children. Hence, the cross-country and state-level studies may yield ambiguous results due to too much aggregation and inability to explore age heterogeneity in preferences for education spending among elderly migrants. Thus, our county-level analysis may provide a more detailed understanding of the differences in elderly preferences for education across several elderly subgroups.

We rely on Poterba's<sup>41</sup> log-linear model specification, originally fitted to state-level data, to test the effect of 1995-2000 elderly net immigration on 2003 county-level K-12 education spending for several elderly age groups. The baseline linear model is shown in the equation below (all variables are in natural logarithms except for INMIG).

40. Poterba (1997).

41. Poterba (1997).

$$ED_i = \beta_0 + \beta_1 INMIG65_i + \beta_2 YOUNG_i + \beta_3 OLD_i + \beta_4 Y_i + \beta_5 AID_i + \beta_6 OWNERS_i + \beta_7 NONWHITE_i + \beta_8 URBAN_i + u_j + \varepsilon_i \quad (1)$$

where ED is real per pupil public spending on K-12 education in county  $i$ ,  $Y$  is real per capita income, YOUNG is the percentage of population 15 years of age or younger, OLD is the percentage of population 65 years of age or older, AID is real federal aid per capita, OWNERS is the percentage of home owners, NONWHITE is the percentage of nonwhite population, URBAN is the percentage of urban population, INMIG65 is the net immigration rate of population over 65 years old,  $u$  is state fixed effects for each state  $j = 1, \dots, 47$ , and  $\varepsilon$  is the disturbance term.<sup>42</sup>

Poterba<sup>43</sup> obtains a negative coefficient estimate for OLD and interprets it as evidence of the intergenerational conflict in education spending. In this study, we test the intergenerational conflict hypothesis at the county level using net immigration (INMIG) rates for several elderly age groups (65+, 55–64, 65–74, 75–84, and 85+), which has not been done before. The net immigration rate is calculated as total immigrants minus total outmigrants during 1995–2000 divided by total county population in 1995. INMIG enters the regression model in levels rather than logarithms because it contains negative values.

There are several reasons for testing the intergenerational conflict hypothesis in education using migration rates rather than elderly population shares as in Poterba.<sup>44</sup> First, population shares appear to display stronger correlations with the other regressors in the model compared to migration rates. Second, as a variable, elderly migrants are more likely to have an exogenous causal effect on state fiscal policies than elderly population shares.<sup>45</sup> Third, we think that the use of migration flow rates allows for a more pertinent test of the intergenerational conflict hypothesis since the existing elderly population shares consist primarily of the elder nonmovers with different preference for public education spending. The decision whether or not to support public education may differ significantly across elderly movers and nonmovers given that nonmovers tend to be older, less wealthy (i.e., subject to lower tax rates perhaps), and more attached to the area because of the relatives (grandchildren enrolled in the public school system, etc).

First, we test the intergenerational hypothesis for the 65 and older age group by estimating equation (1) via ordinary least squares (OLS). Second, we test the hypothesis by estimating a system of equations via three-stage least squares (3SLS) where the elderly migration rate is treated as endogenous equation (2). Third, we test the hypothesis using a combination of 3SLS and spatial autoregressive model (SAM) in order to control for the possibility of yardstick competition among counties in providing public (education (3)). All three models include state fixed effects (i.e., state dummies). Then, we fit the 3SLS + SAM estimator to

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42. We try two different dependent variables, K-12 state education spending per pupil versus per capita, but find that both measures yield similar results. We prefer the per pupil measure because it yields a higher predictive power.

43. Poterba (1997).

44. Poterba (1997).

45. Conway and Rork (2006).



every elderly age group (55–64, 65–74, 75–84, and 85+) to learn how they differ in affecting public education spending. Below, we discuss how each regression technique addresses specific empirical concerns from the existing literature.

The first regression in Table 3 is estimated via OLS with robust standard errors and state fixed effects. The fixed effects intend to capture unobserved state-specific characteristics such as amenities, weather, and private school prevalence that might be pertinent to education financing and elderly migration. The OLS results indicate that the net immigration rate for the 65 and over age group has a statistically significant negative effect on county K-12 education spending per pupil. Similar to Poterba,<sup>46</sup> we find that YOUNG and OLD have a negative, statistically significant effect on education spending. These estimates are consistent with the intergenerational conflict hypothesis.

However, the net immigration rate, even if it is lagged as is the case here, can be endogenous in or jointly determined with tax and spending policies. The Durbin-Wu-Hausman (DWH) test indicates that INMIG65 is indeed endogenous (results available upon request). This endogeneity bias is not unique to our paper and has been an issue in previous migration studies such as Serow et al.,<sup>47</sup> Fournier et al.,<sup>48</sup> Conway and Houtenville,<sup>49</sup> and more recently Conway and Rork.<sup>50</sup> For these reasons, the second regression in Table 3 is estimated via 3SLS for the simultaneous system of equations shown below, where the net immigration rate is instrumented by variables similar to those used in Conway and Rork.<sup>51</sup> The chosen instrumental variables pass the Sargan/Hansen overidentification test.

$$\begin{aligned}
 ED_i &= \beta_0 + \beta_1 INMIG65_i + \beta_2 YOUNG_i + \beta_3 OLD_i + \beta_4 Y_i + \beta_5 AID_i \\
 &\quad + \beta_6 OWNERS_i + \beta_7 NONWHITE_i + \beta_8 URBAN_i + u_j + \varepsilon_i \\
 INMIG65_i &= \gamma_0 + \gamma_1 ED_i + \gamma_2 YOUNG_i + \gamma_3 OLD_i + \gamma_4 NONWHITE_i \\
 &\quad + \gamma_5 UNEMP_i + \gamma_6 COLLEGE_i + \gamma_7 HV_i + \gamma_8 SD_i + v_i
 \end{aligned} \tag{2}$$

where UNEMP is the unemployment rate, COLLEGE is the percentage of population with college degree or higher, HV is median housing value, SD is school districts per capita, and all other variables are as previously defined. Compared to the OLS estimates in Table 3, this 3SLS regression yields almost 12 times larger coefficient estimate for the net immigration rate, which is also negative and statistically significant. The YOUNG and OLD coefficients are also negative and statistically significant.

46. Poterba (1997).

47. William J. Serow, Douglas A. Charity, Gary M. Fournier and David W. Rasmussen, “Cost of Living Differentials and Elderly Interstate Migration,” *Research on Aging* 8, no. 2 (1986): 317–327.

48. Gary M. Fournier, David W. Rasmussen, and William J. Serow, “Elderly Migration as a Response to Economic Incentives,” *Social Science Quarterly* 69, no.2 (1988): 245–260.

49. Karen S. Conway and Andrew J. Houtenville, “Elderly Migration and State Fiscal Policy: Evidence from the 1990 Census Migration Flows,” *National Tax Journal* 54, no. 1 (2001): 103–123; Karen Smith Conway and Andrew J. Houtenville, “Out with the Old, In with the Old: A Closer Look at Younger versus Older Elderly Migration.” *Social Science Quarterly* 84, no. 2 (2003): 309–328.

50. Conway and Rork (2006).

51. Conway and Rork (2006).

**TABLE 3**  
**Determinants of County K-12 Education Spending per Pupil (2003)**

	OLS	3SLS	3SLS + SAM
INMIG65	-1.40* (0.7)	-16.38** (2.57)	-18.41** (2.54)
YOUNG	-0.34** (0.03)	-0.33** (0.03)	-0.32** (0.03)
OLD	-0.09** (0.02)	-0.08** (0.02)	-0.08** (0.02)
Y	0.22** (0.03)	0.24** (0.02)	0.21** (0.02)
NONWHITE	-0.0001 (0.004)	0.002 (0.004)	0.006 (0.004)
OWNERS	-0.07 (0.05)	-0.03 (0.04)	-0.03 (0.04)
URBAN	-0.15** (0.02)	-0.12** (0.02)	-0.13** (0.02)
AID	0.13** (0.01)	0.11** (0.01)	0.11** (0.01)
$\rho$	-	-	0.16** (0.06)
$R^2$	0.6125	0.5166	0.4881

*Note:* All variables are in logarithms except for the net immigration rate. Robust standard errors are in parentheses. Significance level: \*\* at 1%, \* at 5%. Constant and state fixed effects are not reported. The sample consists of observations for counties from 48 continental United States (excluding Alaska and Hawaii) and District of Columbia. Missing observations and outliers were dropped from the sample resulting in a total of 2,952 usable observations. 3SLS+SAM is a three-stage least squares regression that includes a spatially lagged dependent variable predicted in a separate regression by its own and neighboring counties' regressors. To be able to compare coefficient estimates from the spatial (third) regression to the first two, one must divide the coefficient estimates in the third regression by the value of  $\rho$  (coefficient of spatial dependence).

Another potential complication in testing the intergeneration conflict hypothesis is spatial dependence, failure to control for which can lead to misleading estimates.<sup>52</sup> Case et al.<sup>53</sup> find that strategic spatial interaction in education spending exists between neighboring states, which means that Poterba's<sup>54</sup> and, by extension, our econometric model should be augmented with spatial effects. Spatial dependence or spatial lag is likely to be present in

52. Andrew D. Cliff and J. Keith Ord, *Spatial Processes, Models, and Applications* (London: Pion, and Anselin, Luc., 1981) A. Cliff and J. Ord, *Spatial Econometrics: Methods and Models*. (Dordrecht: Kluwer Academic Publishers, 1988), pioneered the spatial models to control for the influence of spatial dependence between cross-sectional observations).

53. Anne Case, James Hines, and Harvey Rosen, "Budget Spillovers and Fiscal Policy Interdependence," *Journal of Public Economics* 52, no. 3 (1993): 285-307.

54. Poterba (1997).

situations where counties engage in some form of “yardstick” competition in taxation or government spending on highways, health care, education, and other public services and infrastructure. Localities often compete for businesses and migrants in their quest for greater economic wealth and development.<sup>55</sup> Our Lagrange multiplier test and previous studies on interstate competition suggest that the SAM, as opposed to the spatial error model (SEM), is the more appropriate specification of spatial effects for our analysis. Therefore, the third regression in Table 3 is estimated via 3SLS with the spatially lagged dependent variable  $W \times ED$  as shown in the equation below.

$$\begin{aligned}
 ED_i &= \beta_0 + \beta_1 INMIG65_i + \beta_2 YOUNG_i + \beta_3 OLD_i + \beta_4 Y_i + \beta_5 AID_i \\
 &\quad + \beta_6 OWNERS_i + \beta_7 NONWHITE_i + \beta_8 URBAN_i + u_j + \rho W \times ED + \mu_i \\
 INMIG65_i &= \gamma_0 + \gamma_1 ED_i + \gamma_2 YOUNG_i + \gamma_3 OLD_i + \gamma_4 NONWHITE_i \\
 &\quad + \gamma_5 UNEMP_i + \gamma_6 COLLEGE_i + \gamma_7 HV_i + \gamma_8 SD_i + v_i
 \end{aligned} \tag{3}$$

where  $\rho$  is the spatial dependence coefficient,  $W$  is the first-order contiguity spatial weight matrix, and  $W \times ED$  is the spatially lagged dependent variable predicted in a separate regression by the determinants in equation 1 and their spatial lags. We use a row-standardized contiguity matrix computed from latitude and longitude coordinates of geographic neighbors. In a row-standardized matrix the rows sum up to one and allow the spatial effects to be interpreted as the change in the “average” neighbor.

The estimates for this 3SLS model with spatial effects are shown in the third column in Table 3. They indicate that INMIG65, YOUNG, and OLD have a negative and statistically significant effect on education spending. To be able to compare the marginal effects (i.e., regression coefficients) across the three regressions, we must divide the coefficients from

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55. Much of the research on interstate competition has focused on taxation and, to a much lesser extent, on government spending. For studies on interstate tax competition see Anne Case, “Interstate Tax Competition after TRA 86,” *Journal of Policy Analysis and Management* 12, no. 1 (1993): 136–148; Bruno Heyndels and Jef Vuchelen, “Tax Mimicking Among Belgian Municipalities,” *National Tax Journal* 51, no. 1 (1998): 89–101; Jan Brueckner and Luz Saavedra, “Do Local Governments Engage in Strategic Property Tax Competition?” *National Tax Journal* 54, no. 2 (2001): 203–229; Theiss Buettner, “Local Business Taxation and Competition for Capital: The Choice of the Tax Rate,” *Regional Science and Urban Economics* 31, no. 2–3 (2001): 215–245; Federico Revelli, “Spatial Patterns in Local Taxation: Tax Mimicking or Error Mimicking?” *Applied Economics* 33 no. 9 (2001): 1101–1107; Jonathan Rork, “Coveting Thy Neighbors’ Taxation,” *National Tax Journal* 56, no. 4 (2003): 775–787; and Conway and Rork (2004). David N. Figlio, Van W. Koplin, and William E. Reid, “Do States Play Welfare Games?” *Journal of Urban Economics* 46, no. 3 (1999): 437–454; Luz Saavedra, “A Model of Welfare Competition with Evidence from AFDC,” *Journal of Urban Economics* 47, no. 2 (2000): 248–279; and Katherine Baicker, “The Spillover Effects of State Spending,” *Journal of Public Economics* 89, no. 2–3 (2005): 529–544, find evidence of competition in state spending on health and public welfare, while Case et al. (1993) find evidence of competition in aggregate as well as specific state expenditures on education, health care, and highways. In contrast, Donald Bruce, Deborah A. Carroll, John A. Deskins, and Jonathan C. Rork, “Road to Ruin? A Spatial Analysis of State Infrastructure Spending,” (2006); available from: [http://web.utk.edu/~dbruce/bruce.carroll\\_deskins.rork.road\\_toruin.pdf](http://web.utk.edu/~dbruce/bruce.carroll_deskins.rork.road_toruin.pdf); accessed 20 April 2012, find evidence suggesting that states free-ride on positive spillover effects from infrastructure improvements by other states, which leads to a negative response to an increase in a neighbor’s spending on infrastructure.

the spatial regression by the value of  $\rho$  (0.16) because the marginal effects in the spatial regression also include the neighbor's influence.<sup>56</sup> Dividing the coefficient estimate ( $-18.41$ ) for INMIG65 in the third regression in Table 3 by 0.16, we get a coefficient estimate of  $-115$ , which is much higher than the coefficient estimates in the previous two regressions.

Given significant spatial dependence (significant  $\rho$ ) and probable endogeneity, we believe that the third model/equation is most suitable for testing the intergeneration conflict hypothesis. Therefore, we estimate the 3SLS model with the spatially lagged dependent variable for the remaining elderly age groups. These estimates are shown in Table 4. They reveal that the negative effect of elderly net immigration on K-12 education spending rises after the 55–64 age group, peaks at the 75–84 age group, and turns positive and significant for the 85+ age group. These estimates suggest that substantial difference (i.e. heterogeneity) exists between elderly age groups in their preferences for K-12 education spending at the county level.

The peak in preferences for lower education spending that occurs at the 75–84 age group is consistent with the rise and the decline in the voting turnout with age and a combination of rising income vulnerability and significantly lower benefits from public education for that age group. The relatively low coefficient for the immigration rate for the 55–64 age group is also consistent with the intergenerational conflict hypothesis because the 55–64 age group is on the cusp between the working-age group and the elderly group and may still have children who could benefit from K-12 education. While the positive and significant coefficient for the 85 and older age group may seem surprising, it could be explained by the fact that life expectancy is significantly lower particularly for that age group. One might expect the elderly in that age group to be less resistant to local taxing and spending initiatives or more generous about public good provision. Another possible explanation is that individuals within this age group may be relocating to their “home” state to be close with family who may have school-age children.<sup>57,58</sup>

Overall, our county regressions show that elderly population shares and elderly immigrants (with the exception of 85+ year olds) lower K-12 public education spending. This evidence is consistent with the intergeneration conflict hypothesis and Poterba's<sup>59</sup> original findings at the state level. The county regressions consistently show that per capita income increases K-12 education spending, while homeownership and urban population decrease it. The negative coefficient for the homeownership rate makes sense if one views, as does Poterba, the estimated equation as the demand schedule for education and the homeownership rate as the after-tax price of education. In contrast to the state-level regressions, the percentage of nonwhite population appears to have no significant or consistent effect on education spending.

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56. Chong Won Kim, Tim T. Phipps, and Luc Anselin, “Measuring the Benefits of Air Quality Improvement: A Spatial Hedonic Approach.” *Journal of Environmental Economics and Management* 45, no. 1 (2003): 24–39.

57. Longino (1979).

58. Longino and Serow (1992).

59. Poterba (1997).

**TABLE 4**  
**Determinants of County K-12 Education Spending per Pupil by Age Group (2003)**

	55–64	65–74	75–84	85+
INMIG	–13.79*** (1.53)	–30.91*** (3.69)	–115.28*** (14.74)	43.25*** (16.78)
YOUNG	–0.40*** (0.03)	–0.35*** (0.03)	–0.24*** (0.05)	–0.33*** (0.03)
OLD	–0.04*** (0.02)	–0.03** (0.02)	–0.20*** (0.03)	–0.06*** (0.02)
Y	0.17*** (0.02)	0.19*** (0.02)	0.18*** (0.02)	0.15*** (0.02)
NONWHITE	0.08** (0.004)	0.007* (0.004)	0.004 (0.005)	0.002 (0.004)
OWNERS	0.01 (0.04)	–0.02 (0.04)	0.02 (0.05)	–0.07* (0.04)
URBAN	–0.17*** (0.02)	–0.14*** (0.02)	–0.08*** (0.03)	–0.18*** (0.02)
AID	0.11*** (0.01)	0.11*** (0.01)	0.10*** (0.01)	0.12*** (0.01)
$\rho$	0.21*** (0.06)	0.17*** (0.06)	0.23*** (0.07)	0.20*** (0.06)
$R^2$	0.53	0.46	0.66	0.39

*Note:* Estimator: 3SLS + SAM. All variables are in logarithms except for the net immigration rate. Robust standard errors are in parentheses. Significance level: \*\*\* at 1%, \*\* at 5%, \* at 10%. Constant and state fixed effects are not reported. The sample consists of observations for counties from 48 continental United States (excluding Alaska and Hawaii) and District of Columbia. Missing observations and outliers were dropped from the sample resulting in a total of 2,952 usable observations. 3SLS + SAM is a three-stage least squares regression that includes a spatially lagged dependent variable predicted in a separate regression by its own and neighboring counties' regressors.

### CONCLUDING REMARKS

This paper reexamines Poterba's<sup>60</sup> pioneering study on the intergenerational conflict in public education financing by focusing on the U.S. county-level migration rates of the elderly rather than elderly population shares, as in Poterba's study. Our estimates based on a cross-sectional sample of 2,952 U.S. counties indicate that elderly immigration significantly decreases county K-12 education spending per pupil. However, we find substantial heterogeneity in preferences for education preferences among elderly subgroups. For instance, the 55–64 age group has a relatively small detrimental effect on K-12 education spending, the 65–74 age group has a relatively strong negative effect, the 75–84 age group has the largest negative effect among all elderly groups, while the 85 and older age group has a significant positive effect on education spending per pupil. The coefficient estimates for

60. Poterba (1997).

elderly immigration rates increase in magnitude after controlling for spatial dependence and endogeneity bias.

These estimates are consistent with the higher voting turnout and lower preferences for education exhibited by retirees, giving support to the intergenerational conflict hypothesis identified in Poterba's<sup>61</sup> paper. The implications of this finding is that the intergenerational conflict in education financing may lead to suboptimal level of education spending, resulting in lower future human capital and economic growth. This brings into policy debate retiree attraction policies in many states, particularly through various state and local tax breaks to the elderly.

Our study can be extended in the future with the addition of the Census 2010 data, which could reveal other insights in the face of the recent housing crisis, and subsequent financial crisis and the great recession. These recent developments have likely impacted both the elderly migration patterns and the link between elderly migration and education. Finally, it would be very interesting to see evidence on the intergenerational conflict using actual voting data on education-related initiatives at the local level. Such data were not available at the county level for the entire United States at the time of our study but studies focusing on elderly voting in multiple states at the same time would be valuable addition to this literature in the future.

## APPENDIX

### Data Sources and Links

Variables	Source
Education spending per pupil	United States Census Bureau: Public Education Finance Report 2003 <a href="http://www.census.gov/govs/www/school03.html">http://www.census.gov/govs/www/school03.html</a>
Per capita personal income	Bureau of Economic Analysis <a href="http://www.bea.gov/bea/regional/reis/">http://www.bea.gov/bea/regional/reis/</a>
Population data	United States Census Bureau: Population Estimates <a href="http://www.census.gov/popest/estimates.php">http://www.census.gov/popest/estimates.php</a>
Homeownership rate	United States Census Bureau: Population Estimates <a href="http://www.census.gov/popest/housing/files/HU-EST2004-CO.csv">http://www.census.gov/popest/housing/files/HU-EST2004-CO.csv</a>
Federal aid to states	United States Census Bureau: Statistical Abstracts <a href="http://www.census.gov/prod/www/abs/statab.html">http://www.census.gov/prod/www/abs/statab.html</a>
Unemployment rate	United States Census Bureau: Statistical Abstracts <a href="http://www.census.gov/prod/www/abs/statab.html">http://www.census.gov/prod/www/abs/statab.html</a>

61. Poterba (1997).

## APPENDIX

(Continued)

Variables	Source
College degree	United States Census Bureau: Statistical Abstracts <i><a href="http://www.census.gov/prod/www/abs/statab.html">http://www.census.gov/prod/www/abs/statab.html</a></i>
School districts	United States Census Bureau: Statistical Abstracts <i><a href="http://www.census.gov/prod/www/abs/statab.html">http://www.census.gov/prod/www/abs/statab.html</a></i>
Median house value	United States Census Bureau: Statistical Abstracts <i><a href="http://www.census.gov/prod/www/abs/statab.html">http://www.census.gov/prod/www/abs/statab.html</a></i>
Elderly migration rates (1995–2000)	United States Census Bureau: 2000 PUM

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