Generation Wars: Does the relative size of the elderly population reduce per-pupil spending?

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INTRODUCTION

Over the past ten years, there has been much discussion of the implications of the baby boomers finally reaching thei retirement years. Commentary on television shows like *Capital Report*, often echoes sentiment that the baby boomers are going to raid most government funding as they become senior citizens. Lee and Skinner (1999) worry that through the first half of the 21st century, the government will stagger under the weight of these elderly baby boomers as they receive the medical, retirement, and disability benefits promised to them.

Government funding for programs like Social Security benefits, Medicare, and prescription drug benefits are already said to impose an unbearable fiscal burden. With the government operating under fixed resources and having little ability to match the proportions of revenue with the growth in elderly, researchers like Lee and Skinner are projecting that educational spending is going to diminish. As the percentage of the population that is elderly grows, the burden of Social Security and Medicare payments will rise and K-12 spending will diminish.

There are two main reasons that we should attend to this growing problem. First and foremost, taking away dollars from educational spending will eventually harm education and the learning processes of the youth population. If education spending falls, the harmful consequences include lower future productivity and falling living standards. Because productivity is linked to education and training, lower levels of education will cause slow productivity growth. Spending failures of this type will occur mostly at the local level because state and local governments are responsible for over 91% of educational costs (Ervin et al., 1997).

The second concern is the possibility that the income gap will widen. The income gap could widen because a decrease in the relative supply of highly skilled (i.e., educated) workers will raise the wages of highly skilled workers while an increase in the relative supply of unskilled workers will lower the wages of the unskilled. From about 1970 until the middle of the 1990s, workers that had the most educational skills experienced large increases in earnings, while the wages of lower skill employees stagnated or declined (Sawhill, 2002). This very same issue has the potential to affect future Social Security and retirement benefits. Benefits will fall because the requirements of the elderly population will outpace what the unskilled can add.

According to the United States Census Bureau, in New Jersey alone the elderly population is projected to grow 51.74% over the next twenty three years. Over the same time period in New Jersey, the 18-64 age group is forecasted to grow only by about 11.82% to 5,685,000 people. Lee and Tuljapurkar (1997) suggest the total U.S. population is predicted to increase by about two-thirds between now and 2070, and in this same time frame, the population over 65 will triple, and the population over 85 will increase by a factor of eight. Following this point Ervin et al. (1997) show that the elderly, those 65 and older, only made up about 1 in every 25 Americans in 1900, made up 1 in 8 in 1994. By the year 2050, as many as 1 in 5 Americans could be elderly. Most of the growth will occur during the time 2010 and 2030 when the baby boomers enter their retirement years.

This paper examines one possible negative consequence of the aging of America: whether increases in the relative size of the elderly population will reduce per-student school spending at the local level. Because the elderly no longer have children in school, they may rationally vote against school budgets. As a consequence spending falls. On the

other hand, larger elderly populations may raise per-student school spending. Because the elderly no longer have children in school, the ratio of school children to population falls. This allows a higher level of per-student spending for a given tax rate. Because most school spending takes place at the local level, we examine data on per-student spending for 69 New Jersey school districts. We find that an increase in the percentage of the population 65 years of age and older has a significant positive impact on educational spending per student.

BACKGROUND

Some researchers find that there is evidence to substantiate the claim that the elderly are reducing per-pupil spending. Other researchers refute that claim and find the elderly have no effect on education spending per pupil. Button (1992) studied whether there was really a conflict between the relative size of the elderly population and school spending and tax issues in Florida. Button considered eight Florida counties with above-average proportions of aging citizens. He selected the counties using factor analysis of basic demographic, socioeconomic, and political variables. After grouping the counties based on the above, he concluded that the political advantage that the elderly held in elections helped influence their decision during election time.

Button also found that age was very important and statistically significant for variations in voting preference on school bonds even when he controlled for the other factors. The underlying assumptions are that the elderly are going to do what is best for them in terms of voting on school budgets. Since it's assumed that elderly are going to do

whatever they could to promote their own well-being, this harms the younger school-aged people.

Poterba (1997) also considers the effect of demographic structure on school budgets. He used data from a panel of states within the United States over a 30-year period. He found that a rise in the proportions of elderly residents within a particular state was associated with a decline in educational spending. In essence, states with high levels of elderly citizens spend less on a per-pupil basis than states with moderate levels of elderly citizens. With the study, Poterba also tested three demographic variables: the share of the population over age 65; the share of population of school age 5 through 17; and the difference in the racial composition of the elderly and school age populations. Poterba's study is based prior research of state spending from the 1970s and the early 1990s. Poterba used 7 different variables all in logarithm form so they could be interpreted as elasticities. According to Poterba, the results suggest that the fraction of children and elderly in the population affect per-child spending on education. The share of elderly in the population is negatively related to this spending variable in the equations that include state and time effects.

Poterba (1998) examines the effect of demographic changes and intergenerational linkages on public education. First, he analyzes the demographic changes that are to take place over the next three decades in the United States. The demographic structure of the United States is changing because the elderly are growing in greater proportions. He finds evidence through version studies to support the claim the elderly are going to vote for programs that would benefit them more. If government resources are fixed, increases in the elderly population may decrease school spending. Poterba contends there are a many

reasons the elderly may continue to support public education. First and foremost, the elderly may want to improve skills and productivity of younger people. These higher wages will be taxed to fund programs like Social Security and Medicare. Secondly, he states the elderly may be altruistic and generous.

Ladd and Murray (2001) extend the work of Button, Poterba, and other researchers. Unlike Poterba (1997), who used state-level data, Ladd and Murray used county-level data because it provides a more disaggregated analysis by shifting observations to localities. Ladd and Murray consider how the elderly share of the population affects a jurisdiction's willingness to fund K-12 education. Ladd and Murray mimicked Poterba's equations and found that the direct effect of higher levels of elderly people on per-student educational spending at the county level is not statistically different from zero. However, the elderly do have the ability to affect educational spending dependent upon where they reside within the counties. They also argue that Poterba's estimates of the effects of rising elderly share overstate the negative effects of age on spending to the extent that increases in the elderly share are accompanied by greater dispersal of the elderly among local school districts.

Evans et al. (2001) determined the elderly have a relatively small negative effect on public education spending. In their paper, they used a nationwide panel of public school districts to examine the effect the elderly may have on public education spending. Rather that state-level or county data, Evans et al. use district –level data. The small negative effect is smaller than what Poterba (1997) found. Nevertheless, they do find that increases in the relative size of the elderly population reduce per-student educational spending.

METHODOLOGY

In general, there are several ways to test the effect of an increase in the relative size of the elderly population on educational spending. We employ a series of demographic and economic variables to explain differences in per-student spending across school districts. The results provide evidence on whether there is a problem brewing for future generations with public funding for education.

Data were collected from a random sample of 69 school districts throughout the state of New Jersey. The dependent variable for the analysis was per-capita spending on education (PCSPEND). We contend that per-capita school spending is determined by per-capita income, the poverty rate, percentage of the population over 65, and per-capita aid from the state. Per capita income (PCINC) was taken from the Census Report 2000 for the respective districts. All else constant, higher per capita incomes should be associated with higher spending-richer school districts will be able to spend more on students. The poverty rate (POVRATA) has an ambiguous effect on school spending. On one hand, higher poverty reduces the district's ability to fund education. On the other hand, higher poverty may cause high education costs and thus more spending.

Per-capita student aid (PCAID) equals the amount of state aid given to the district divided by enrollment or the number of students within the district for that particular year. We believe that higher levels of state aid will increase per-capita education spending. Higher levels of aid may displace funding from local taxes but the effect is unlikely to be complete. Because the effect is incomplete, higher spending results. Finally, the percentage municipalities' population that is over the age of 65 (OVER65a) included to see if there was any truth to the claim the elderly are going to adversely affect educational spending.

On one hand, larger elderly populations may reduce school spending because the elderly may rationally vote against school budgets. They no longer have children in school and see no need for high levels of school spending (Effect #1). Conversely, larger elderly populations may raise school spending. Because the elderly no longer have children in school, the ratio of school children to population falls which allows a higher level of per student spending for a given tax rate (Effect#2).

RESULTS

To test whether increases in the relative size of the elderly population reduce school spending, we regressed state aid per capita (PCAID), the per-capita income (PCINC), the proportion of the population over the age of 65 (OVR65a), and the poverty rate in the municipality (POVRATA) on per capita spending per student (PCSPEND). However, poverty and per-capita income were highly correlated with state aid per capita. Higher levels of poverty and lower levels of income caused higher levels of state aid per student. To control for that effect, we regressed the poverty rate and per-capita income on state aid per capita and we used the residual in place of state aid per capita in the regression.

We expected to get a result similar to Poterba's: a negative relationship associated with the relative size of the elderly population and per-student public school spending. In other words, the more elderly people in the district, the less money would be used to fund public schools. In New Jersey, we found the opposite situation occurred. From Table 2 we see that a one percentage-point increase in the population over 65 increased per student spending by $109. This suggests that the second effect dominates. That is, larger elderly

populations raise school spending. School spending per student rises because it easier to fund school operations at a given tax rate. The elderly no longer have children in school. This causes the ratio of school children to population to fall and allows a higher level of per-student spending for a given tax rate.

We also found that a one percentage point increase in the poverty rate raises per student spending by $117. This is likely the result of higher costs associated with educating students in poverty. In addition, the district with the highest poverty rates got the most funding from the state government.

New Jersey is aggressively redistributing resources from the rich districts to the poorer districts because of *Abbott vs. Burke*. *Abbott vs. Burke* is a combination of different rulings about school districts in New Jersey. In February of 1981, the Education Law Center of Newark, New Jersey filed a lawsuit against the state of New Jersey representing urban districts. The results they were seeking were to have New Jersey get the urban districts on the same levels as the suburban counterparts. Through the *Abbott vs. Burke* case, the Supreme Court mandated the state to give equivalent amounts of funding to the less fortunate districts that it does to suburban districts.

Income had a significant positive but modest effect on per-student spending. A $1000 increase in per capita income raised per student spending by about $28. Finally, per-capita student aid (residual) had no impact on school spending per student While the parameter estimate had the expected sign, it was insignificant. This suggests that the important effects of state aid on school spending were already captured in the poverty and income variables. The districts with the highest level of spending per student were those that had a high income per capita, a high percentage of people below the poverty line, and

a large percentage of elderly people. To get a lot of state aid, the district had to be poor. Schools with relatively large populations of middle-income students spent the least.

CONCLUSION

The data analyzed here suggest that the elderly do not reduce per-student educational spending. Instead, the evidence indicates that larger elderly populations increased per-student educational spending. This implies that at least one worry associated with the projected rise in the relative size of the elderly population may be overstated. Nevertheless, it remains unclear why this result is at odds with much of the research on the effect of the elderly population on per-student spending. It may be the result of the peculiar nature of education funding in New Jersey or some difference in the design of the statistical test. It is worth noting that the strongest negative effects of a relative increase in the elderly population on school spending occur in the state-level data examined by Poterba. Others, using county- or district-level data find weaker effects. Finally, the data shows only modest increases in school spending for increases in income. Higher poverty rates exert a much stronger effect on per-student spending.

Table 1

Generation Wars --- Summary Statistics for New Jersey

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
PCSPEND	69	8197.64	1300.52	5805	11392
PCINC	69	29670.9	12575.65	9815	76796
PCAID	69	3475.93	2923.63	239.19	11181.92
OVER65a	69	13.016	4.5165	6	29.6
POVRATa	69	6.78	6.1358	1.1	35.5

Table 2 - Cross Section Per-Student Spending
by New Jersey School Districts

Dependent Variable: Per-student spending in 1999-2000

Coefficients:

INTERCEPT	5126.35***
	(7.31)
INCOME PER CAPITA	.02866**
	(2.12)
POVERTY RATE	117.4094***
	(4.25)
PER CAPITA STUDENT AID	0.14852
	(1.48)
OVER65a	109.446 ***
	(2.92)

R^2	0.31
Adj-R^2	0.26
F-value	7.08
N	69

t-statistics given in parentheses
*** = significant at .01 level, ** = significant at the .05 level

Income per capita is in year 2000 dollars
Poverty rate = percentage of the population below the poverty line
Per capita student aid - in year 2000 dollars – residual
Over 65 = percentage of population in school district over age 65

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