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Demographic Change, Intergenerational Linkages, and Public Education

By JAMES M. POTERBA *

The prospective changes in population age structure that have stimulated discussion of the economic viability of transfer programs that benefit the elderly, such as Social Security and Medicare, also raise questions about the political viability of programs that transfer resources to children. If voters decide which expenditure programs to support on the basis of narrowly defined self-interest, as at least some politico-economic models assume they do, then as a society ages, there may be diminished support for youth-targeted programs such as public education. Samuel Preston (1984) argues that the growing political influence of elderly voters, and more generally of voters from childless households, may have important effects on the pattern of age-specific government transfer programs.

In this brief paper, I explore several issues related to demographic change and the political economy of public education. I begin with a brief summary of the projected demographic changes that will take place in the United States over the next three decades. Next, I describe the existing empirical evidence that suggests that older and childless voters are less likely to support public-school spending than younger voters with children. I then note several unresolved issues about the degree to which rational self-interest should lead older voters to vote for low levels of public-school spending. The closing section speculates about whether there have been changes in the age-specific patterns of political support for public education, and if so, what might account for such changes.

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I. Demographic Change: Young and Old Dependents

The age distribution of the U.S. population will change significantly in the next few decades. In 1996, 12.6 percent of the population was over the age of 65, while 25.7 percent was below the age of 18. Census Bureau projections suggest that, by 2030, the population share over the age of 65 will rise to 20 percent, while the share under the age of 18 will decline to 24 percent. By 2030 the share of over-65 individuals in the aggregate U.S. population will exceed that in Florida today. The ratio of elderly individuals to those under the age of 18 will rise from 0.49 in 1996 to 0.83 in 2030.

The declining share of children in the overall population will coincide with a rising share of children from minority groups. In 1995, 20 percent of those under the age of 18 were non-whites. By 2025, Census projections suggest that this share will rise to 26 percent. The decline in the share of children in the population will also coincide, not surprisingly, with a decline in the fraction of households with school-age children. In 1996, 34.3 percent of all households were family households with children under the age of 18 present. By 2010, Census projections suggest that this fraction will decline to 28 percent. In 1960, when the baby-boom cohort was of school age, 48.7 percent of all households were family households with children under 18. The prevalence of such family households is an important factor in analyzing the political economy of public education, because previous empirical work suggests that an individual's political support for public education depends strongly on whether he lives in such a household.

Incipient demographic changes will shift the age composition of dependent individuals in the population more than they will shift the total share of the population that is dependent. The elderly support ratio, the number of individuals aged 65+ divided by the number aged

18–64, will rise from 20 percent in 1996 to 38 percent in 2030. The total support ratio, however, the number of persons under the age of 18 plus the number aged 65+, all divided by the number aged 18–64, will rise from 61 percent to 74 percent. These total support ratios are lower than those experienced in the first two-thirds of the present century. In 1900, the total support ratio was 84 percent (76 percent from children). In 1960, this ratio was 82 percent (65 percent from children), and in 2010, it is projected to reach its lowest level in more than a century at 57 percent (35 percent from children).

II. Is Support for Public Education Age-Dependent?

Concern that an aging population will not support spending on public education is premised on the assumption that older voters are less likely than younger voters to support tax-financed spending on public schools. A growing body of empirical evidence suggests that this is the case. Three strands of evidence warrant discussion.

First, public-opinion surveys typically find greater support for public-school spending among younger voters and those with school-age children. Maris Vinovskis's (1993) analysis of data from the 1988 American National Election Study finds that 77 percent of respondents between the ages of 18 and 29 supported additional federal assistance for public schools, compared with 47 percent of those aged 70 and above. Daniel Rubinfeld (1977) analyzes data from a household survey with information on preferences about the level of school spending. He finds that whether the household has children in the local public-school system has a substantial and positive effect on whether the household head supports higher spending on local public schools. The age of the household head does not have any additional explanatory power once children's use of the public schools is controlled for. James Wyckoff (1984) reports similar findings from another survey of voters in a Michigan town. Although Rubinfeld's findings are sometimes cited as suggesting that age is not an important determinant of school support, in an aging population the fraction of households

with school-age children typically declines. Thus Rubinfeld's results suggest that prospective demographic changes may reduce support for public-school spending.

Second, empirical analyses of the outcomes of referenda on school finance suggest that, in communities with a higher fraction of older residents, school bond issues are more likely to be defeated. James Button (1992) presents a detailed analysis of voting on school bond referenda in six Florida counties. He finds that, in five of the six counties, the percentage of voters over the age of 55 has a negative and statistically significant effect on the probability of a precinct's approving a school bond issue. This does not appear to be the result of general antitax sentiment on the part of elderly voters; there is no statistically significant relationship between the fraction of voters aged 55+ and the approval of tax increases that are not related to schools. Because elderly individuals are more likely to register and to vote than are younger persons, they may have an effect on electoral outcomes that is disproportionate to their population share.

'Tax-limitation' referenda outside Florida also suggest that elderly voters are more likely to support tax-limitation legislation that may constrain local school expenditures. Helen Ladd and Julie Boatright Wilson (1983) show that elderly voters were more likely than younger voters to support Massachusetts' Proposition 2½ referendum in 1980. They cite related evidence showing similar age patterns in support for a tax-limitation bill in Michigan, although they note that there is little evidence that older voters were more likely to support Proposition 13 in California.

Anecdotal evidence supports these statistical findings, and it further suggests that elderly voters are particularly opposed to spending on public education when the individuals who benefit are from ethnic groups other than their own. William Bulkeley (1991) describes the experience of Holyoke, Massachusetts, where elderly white voters do not support programs that benefit young nonwhites. As the composition of Holyoke's school-age population has shifted toward nonwhites, political support for the schools has diminished. This observation is consistent with Alberto Alesina et al.'s

(1997) finding that local spending on publicly provided goods, including education, is lower in jurisdictions with ethnic fragmentation than in homogeneous communities.

The third source of evidence on demographic structure and public-school spending is cross-sectional and panel-data studies of local or state spending on public education. Robert Inman (1978) presented evidence of this type for Long Island school districts. He found that a 1-percent increase in the fraction of households in a school district that were headed by someone over the age of 64 reduced school spending by roughly 0.3 percent. David Cutler et al. (1993) survey a number of additional studies of education spending at the school-district and more aggregated level, many of which find negative effects of the elderly share of the population on either education spending per capita or per pupil. A negative effect on per capita spending is not surprising: even if expenditures per pupil were independent of the demographic structure of the voting population, one would expect per capita spending to fall as the share of children in the population declined.

My own recent study, Poterba (1997), investigates the link between demographic structure and the state-wide average level of public-school spending per student using a panel data set on the continental U.S. states for the 1961–1991 period. The results suggest that the level of per-child education spending is substantially (and statistically significantly) lower in states in which a greater share of the population is over the age of 65. The three key coefficients from the central regression specification, in which the dependent variable is the natural logarithm of per-child school expenditures, are shown in Table 1.

These results suggest that per-pupil expenditures are lower in states with a higher fraction of older persons, and particularly in states with a substantial population of older individuals who are from a different ethnic or racial group than the school-aged population. Expenditures per pupil also appear lower in states with large school-age populations. This is consistent with incomplete adjustment of aggregate spending to fluctuations in the number of school-age children.

TABLE 1—KEY RESULTS OF REGRESSION FROM POTERBA (1997)

Independent variable	Coefficient	SE
ln(population share aged 65+)	−0.244	0.122
ln(population share aged 5–17)	−1.025	0.212
Difference between nonwhite share of the population aged 5–17 and 65+	−0.621	0.394

These results are suggestive, but they should be viewed with caution. Claudia Goldin and Lawrence Katz (1997) find that, at the turn of the 20th century, there was apparently more support for expanding public high schools in states with more older voters; whether this is a proxy for other state conditions or a direct effect of demographic factors on education support is not clear. My (1997) findings with respect to ethnic differences between old and young residents are also sensitive to the inclusion or exclusion of other covariates, notably an indicator variable for the fraction of a state's population living in urban areas.

While mindful of these limitations, I tried to evaluate the potential effects of demographic change on public education as “predicted” by these equations. I computed the difference in predicted per-student education expenditures in two states, one with 12.6 percent of its population over the age of 65, and the other with 20 percent of its population in this age group. These hypothetical “states” have the elderly population shares corresponding to the United States in 1996 and 2030, respectively. The coefficient estimates presented in Table 1 suggest that per-pupil expenditures would be 12.2-percent lower in the “older” state. At 1997 expenditure levels, this would represent approximately a \$700 per-student expenditure decline. Evaluating how such a spending change would affect student performance and educational outputs is beyond the current study. It should be noted that similar calculations based solely on demographic factors would have predicted a decline in real per-pupil spending of 7.7 percent, even though actual spending rose over this period.

III. Reasons Why Self-Interested Elderly Voters May Support Public Education

The discussion so far has assumed that elderly voters vote based on their generational self-interest, and that this self-interest is best served by low levels of expenditures on public schools. In such a setting, as Antonio Rangel (1997) shows, the share of older voters may affect equilibrium expenditures, and there may be potential inefficiencies because future generations are unable to trade with current generations. The empirical evidence described above is broadly supportive of the assumptions that underlie these results. A number of objections can be raised, however, to each of these assumptions; this section outlines four of these arguments as a roadmap for future research.

First, intergenerational externalities may lead older voters to support educational spending even though it does not benefit them directly. Harold Richman and Matthew Stagner (1986) argue, in contrast to Preston (1984), that a rising number of elderly households could lead to greater government transfer flows toward the young as the elderly seek to raise the training of younger workers. Greater training for young workers would raise the pool of resources from which transfers to the elderly could be funded, and it would also raise the quality of services that the elderly receive from younger workers.

Second, it is possible that the assumption of self-interested generational voting is incorrect, or that intergenerational altruism overwhelms the elderly's opposition to education-supporting taxes. John Logan and Glenna Spitze (1995) dispute the basic premise that voters are interested primarily in their generation's welfare; they argue that altruism is a more appropriate model. David Stromberg (1997) presents a careful analysis of the difference between median-voter and social-planner outcomes in an economy in which voters are altruistically linked to both their parents and their children. The degree of altruism, both from older to younger individuals and vice versa, can be a critical determinant of the age-specific structure of government expenditures and taxes. Measuring the degree of altruism is difficult, however, and it is therefore difficult to evaluate this argument with any-

thing other than reduced-form statistical evidence.

A third circumstance in which older voters might support spending on education involves property-value capitalization effects. If potential home-buyers are concerned about school quality and are willing to pay more for better schools, then property-value maximization may lead older voters to support a higher level of school spending than they would otherwise. Property values are more likely to capitalize differences in school spending across jurisdictions within a metropolitan area, among which individuals may be making residential location choices, than across jurisdictions separated by longer distances. The capitalization argument also requires that elderly voters be able to borrow against the accumulation of value in their homes, or otherwise transform the gains from property appreciation into current consumption. The degree of property-value capitalization is likely to vary across places and also potentially over time.

A final factor that might break the link between the fraction of older individuals in the aggregate population and the level of per-pupil school spending is "Tiebout sorting" of individuals by tastes for such spending. If elderly households who do not wish to pay high taxes in support of public schools can move to communities with low levels of school spending, then the level of per-pupil spending in districts with large numbers of children could remain high even as the overall population ages.

Tiebout sorting seems unlikely to undo completely the effect of aggregate population aging on support for public education. The limited empirical evidence on migration decisions of the elderly provides a mixed message with respect to the effect of education spending and local taxes. Karen Conway and Andrew Houtenville (1998) find some evidence that the elderly are less likely to move to states with high per capita education expenditures. However, they also find evidence that the elderly are less likely to leave high-spending states. Moreover, migration within states offers a limited mechanism for sorting households into high-education-spenders and low-education-spenders. Centralized state funding of local public schools has become

more important in the last decade, as have court-ordered reductions in the disparities in spending per pupil across school districts. These developments make it more difficult for parents of school-age children who wish to spend heavily on public schools to segregate themselves into communities that will do so. They also make decisions about school-spending levels more dependent on state as opposed to local electorates and thereby weaken the power of community location to affect the provision of education.

The arguments developed above suggest that the link between population age structure and the level of public support for publicly provided education is ambiguous on theoretical grounds. Further empirical work is therefore needed to provide additional evidence on the net effect of demographic structure on the level of public-school spending.

IV. Conclusion and Historical Perspective

Limited historical evidence suggests that age-related differences in support for public education have not always been present in the United States. Caroline Hoxby (1997) presents fascinating evidence on the changing determinants of school spending in California, Illinois, and Massachusetts over the 1900–1990 period. She studies the links between per-pupil expenditures in individual school districts and the level of per capita income, per-pupil property-tax valuation, and district demographic structure. In all three states at the beginning of her sample (1900), she finds a statistically significant and positive effect of the elderly population share on school spending; this is consistent with Goldin and Katz's (1997) findings on high schools. By the end of her sample, however, Hoxby finds a statistically significant and negative effect of the same variable. There is a relatively smooth positive-to-negative pattern in the estimated coefficients for all three states. These cross-sectional findings represent important support for the panel-data findings on state expenditure levels described above.

These findings raise the critical question of whether the nature of political support for generation-specific publicly provided goods has changed over time, and if so, why this

change has taken place. One potential explanation is a decline in the family and other links that connect older and younger residents of communities. Eileen Crimmins and Dominique Ingegeri (1990) discuss the limited empirical evidence on the fraction of the elderly who live with or near their children. They present both historical and contemporary information, along with reference studies suggesting that rising rates of internal migration may weaken links between the elderly and their children. Census data do not show a recent increase in mobility rates among older households, although for this argument, mobility among younger individuals could also weaken intergenerational ties. In the 1960 Census, for example, 70 percent of those over the age of 65 reported that they lived in the same house that they lived in five years earlier. The analogous statistic in 1980 was 77 percent, and in the mid-1990's, the annual mobility rates for individuals over the age of 65, based on the Current Population Survey, were just over 5 percent per year. Data on the proximity of older individuals to younger family members is difficult to obtain, and there is the further possibility that nongeographic factors may also affect the strength of intergenerational linkages.

To provide a complete description of how the demographic changes that will affect the United States in the next half century will affect the level and composition of public spending, it is important to consider how an aging electorate may alter the nature of expenditure programs. This issue has not received as much attention as the impact of demographic change on the solvency and structure of Medicare and Social Security, and it deserves further analysis. This paper has outlined a number of issues that must be addressed in this research program.

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