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# Introduction

David A. Wise

This volume contains papers presented at a National Bureau of Economic Research conference on the economics of aging in May 1992. This is the fourth in a series of volumes associated with the NBER's ongoing project on the economics of aging. The preceding volumes, also published by the University of Chicago Press, are *The Economics of Aging* (1989), *Issues in the Economics of Aging* (1990), and *Topics in the Economics of Aging* (1992). The goal of the economics of aging project is to further our understanding of the consequences for older people and for the population at large of an aging population. The papers in this volume deal with death rates and life expectancy, saving for retirement, retirement behavior, demographic transition, international comparisons, and long-term care.

## Demographic Transition and the Federal Budget

An older age distribution of the population will affect many parts of the economy. Two important areas are considered in this volume: government spending and the housing market. In chapter 1 John B. Shoven, Michael D. Topper, and David A. Wise explore how government spending on a wide range of programs is likely to change with a different age distribution of the population. Since many programs are targeted to specific age groups in society, without change in program provisions demographic change will affect both the relative cost of these programs and the combined cost. In providing an indication of the magnitudes of the effects that might be expected, the paper serves

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to underscore the importance of the issues raised in the subsequent papers in this volume.

Shoven, Topper, and Wise focus on 22 government programs for whom the beneficiaries could be identified. The programs account for about 40 percent of all government expenditure, and they include Social Security, Medicare, Medicaid, education, and a range of income support, welfare, and work-related programs. In determining the cost of these programs, the study accounts for federal, state, and local government expenditures. To isolate the implications of demographic change, Shoven, Topper, and Wise assume no change in the real cost of each program for individuals of any given age. Thus the analysis is independent of any future policy changes, relative price changes, economic transitions, or economic growth.

The authors find that a high concentration of government spending on these programs is directed to older people. For example, single men between the ages of 15 and 44 receive an average of less than $1,000 from these programs, while single men over age 65 receive an average of over $10,000 from these programs. With the projected aging of the population, the total inflation-adjusted cost of the programs is estimated to increase from $669 billion in 1990 to $1,106 billion in 2040. This 65 percent increase in real expenditures compares with a total population growth of only 27.5 percent. The two largest increases are in Social Security expenditures, which would increase 103 percent from $203 billion to $412 billion, and Medicare expenditures, which would increase 125 percent from $78 billion to $176 billion. (The Social Security increases are likely to be smaller than this projection, owing to the change in normal retirement age from 65 to 67, but, based on current trends, the Medicare increases may well be larger, because the projection assumes no increase in the relative price of medical care.)

The results demonstrate the extent to which demographic changes are likely to exacerbate the existing budgetary pressures faced by the government. Even though many of the programs in this study are considered "entitlements," the authors anticipate strong pressure to cut benefits. They also anticipate that new government initiatives will be crowded out by the growing expense of existing programs.

In addition, the paper illustrates the effect of alternative demographic changes, about which there is great uncertainty, on government spending. As an alternative to the Social Security Administration's "best guess" population projections, the authors consider the effects of the "optimal" projections discussed by Kenneth G. Manton, Eric Stallard, and Burton H. Singer in chapter 2. Based on the Social Security Administration forecasts, per capita program outlays will increase by 37.7 percent between 2000 and 2040, but based on the admittedly optimistic estimates of Manton, Singer, and Stallard, the increase would be 126.5 percent.

## Death Rates and Life Expectancy

As demonstrated in chapter 1, our ability to predict future life expectancy has important implications for public policy. The future cost of Social Security and Medicare, for example, depends directly on the number of older people receiving benefits from these programs. While the government routinely makes population projections, two studies reported in this volume suggest that there may be a lot more uncertainty about future mortality than we typically assume. In particular, people may live considerably longer than widely used projections anticipate, so that there could be many more older people than the projections recognize.

In chapter 2, Manton, Stallard and Singer model mortality as a function of risk factor histories prior to death. They note that part of the decline in mortality at older ages has resulted from improvements in these risk factors over time. For example, smoking, cholesterol level, and hypertension among the elderly have declined over the past two decades. The authors suggest that further improvements can be expected as the result of continued reductions in smoking, increased education, and adoption of healthier lifestyles (such as more exercise and improved nutrition). Thus the objective of their paper is to estimate the future size of the elderly population, using alternative assumptions about how the risk factors which affect mortality may change in the future.

The results suggest that improvements in behavior (and in the resulting risk factors) could dramatically reduce mortality at older ages and lead to an older population much larger than that estimated by the Census Bureau. For example, the *highest* Census Bureau estimate of the elderly population in 2040 is 82.6 million people over age 65, and 17.9 million over age 85. By controlling risk factors to their "optimal" level, however, Manton, Stallard, and Singer project that there would be 138.1 million people over age 65, and 63.7 million over age 85. While the authors do not suggest that risk factors will be controlled to this level, the results demonstrate an enormous amount of uncertainty in current population projections.

This uncertainty is also apparent in chapter 3, by James Vaupel and Hans Lundström. This chapter attempts to distinguish between two contradictory views of how life expectancy will change in the future. One view is that there is a natural limit to longevity of about 85 years, that mortality rates rise dramatically approaching this age, and that improvements in mortality will simply lower the variance in life spans around this natural limit. The other view is that mortality rates rise smoothly to very advanced ages and that reductions in mortality rates will be achieved at all ages, even at 90, 100, or older. The controversy between the "limited-life-span" and the "mortality-reduction" paradigms has not been resolved, because there has been little reliable data available on mortality among the oldest old. Vaupel and Lundström use data from Sweden from 1900 to 1990 to address the issue.

This chapter finds that mortality rates have declined at all ages after 60 for

both men and women and that this decline has accelerated, particularly in the older age categories. In 1945, for example, single-year mortality rates for women rose above 12.5 percent at age 81, and above 25 percent at age 89. By 1990, single-year mortality rates of 12.5 and 25 percent did not occur until ages 87 and 94, respectively. Vaupel and Lundström suggest that one interpretation of this change is that an 87-year-old Swedish female in 1990 was as healthy (at least in terms of probability of death) as an 81-year-old Swedish female in 1945. If these historical rates of progress continue, newborn children today will have a life expectancy of 90 years. And if progress accelerates, life expectancies may rise to 100 years or more. Thus the oldest-old population of the future may be far larger than most current projections suggest.

## Retirement Saving

Low rates of saving have aroused concern among economists both from a macroeconomic perspective, where the concern is about aggregate saving and inadequate capital accumulation, and from a microeconomic perspective, where the concern is about older households with little or no retirement saving. Two studies reported in this volume address the issue of saving but deal with quite different aspects of the issue: one with the prospects for individual retirement saving in the future and the other with the low national saving rate.

Chapter 4 deals with 401(k) plans, which are tax-deferred retirement savings plans sponsored by employers. These plans were the fastest growing saving program of the 1980s and thus have the potential to significantly affect the financial status of elderly households in the future. In chapter 4, James M. Poterba, Steven F. Venti, and David A. Wise note, for example, that the number of workers eligible to participate in 401(k) plans rose from 7.1 million in 1983 to 27.5 million in 1988, that the number of participants increased from 2.7 million in 1983 to 15.7 million in 1988, and that total contributions reached almost $40 billion in 1988 and are much larger now. The comparison with Individual Retirement Accounts (IRAs) is particularly striking, because participation rates among those eligible to participate are far higher for 401(k) plans (about 60 percent) than for IRAs.

An important finding of the study by Poterba, Venti, and Wise is that most 401(k) saving appears to represent new saving, rather than the transfer of assets from other forms of saving. It appears that 401(k) contributions neither displace IRA contributions nor substitute for other financial assets. The authors make this case by comparing financial assets of similar households after different durations of 401(k) eligibility and by comparing the assets of those eligible for 401(k) participation and those who are not eligible.

Poterba, Venti, and Wise also look at the differences in 401(k) plan provisions across employers. The most important of these differences is the employer matching rate. For about 35 percent of 401(k) plan participants in the Survey of Consumer Finances, for example, the employer matches the employee con-

tribution at least dollar-for-dollar. About 25 percent of plan participants face match rates between 10 and 100 percent, and about 40 percent of participants face match rates below 10 percent. Higher employer matching may induce more participation among employees and higher contributions among those who participate, but the high participation rates are apparently due primarily to payroll deductions and other aspects of the employer sponsorship of the plans that facilitate saving in this form.

For many households, 401(k) plans represent more than half of their financial asset savings. Thus Poterba, Venti, and Wise conclude that 401(k) plans are likely to play a very important part in the economic security of retirees in the future.

In chapter 5, Edward P. Lazear argues that low savings rates may be no more than an expression of "tastes." It may not matter, therefore, that the saving rate is lower in the United States than in Japan or that the saving rate is lower today than at other times in U.S. history. In fact, Lazear argues, tastes seem to be the only way to reconcile the difference in saving rates between Japan and the United States. Lazear suggests that rather than making cross-national comparisons or historical comparisons, the relevant issue is whether the saving rate accurately reflects the intertemporal preferences of people today. Stated differently, if there were no tax distortions or other externalities, any government intervention to promote additional saving would lower social welfare. Lazear's discussion provides a quite different view of national savings than most studies present. Indeed, the comments on this chapter present a contrasting view.

## Retirement Behavior

A series of studies by Robin L. Lumsdaine, James H. Stock, and David A. Wise has demonstrated the dramatic effect of pension plan provisions on retirement behavior. Because the value of pension plans to employees varies significantly by age and service tenure, there are financial incentives to keep working at some ages and to retire at other ages. Using an economic model that accounts for these financial incentives in pension plans, Lumsdaine, Stock, and Wise have been able to predict, with considerable accuracy, retirement rates by age for employees of a Fortune 500 company. The models were even successful in predicting the retirement behavior that would result from a temporary "window" plan, using only information about employee decisions before the window plan took effect. Because firm pension plans typically contain financial incentives to retire even before Social Security eligibility, they are likely to have a substantial influence on the overall labor-force participation of older people.

Chapter 6 is the most recent study in this series. Most of the prior studies had used the pension plans and employment experience of one Fortune 500 company to understand the relationship between pension provisions and retirement behavior. The study in this volume extends this work to a second com-

pany with similar results. Again, retirement rates by age are predicted accurately based on the financial incentives in the pension plan both during normal periods and during a period when a temporary window plan was in effect.

Lumsdaine, Stock, and Wise also explore several other issues. For example, they find little difference between the retirement behavior of men and of women. They find that the simpler "option value model" of retirement is just as effective in predicting retirement behavior as a more complex stochastic dynamic programming specification, consistent with their prior findings. And they explore briefly the high rates of retirement at age 65 and the potential role of Medicare eligibility in explaining retirement at this age. A compelling estimate of the effect of Medicare eligibility, they conclude, will have to await more appropriate data.

### Demographic Transition and Housing Values

In chapter 7, Daniel McFadden explores the effect of demographic change on housing prices. In particular, he focuses on how the capital gains associated with home ownership have been (and will be) distributed across various generations of U.S. households. The issue has particular importance for older people, because a large percentage of the wealth of most elderly households is invested in housing. And for the current generation of elderly, much of the value of this housing asset resulted from capital appreciation.

McFadden's study is based on past and projected changes in the population and the resulting changes in the demand for housing. He finds that the real price of housing is likely to decline for an extended period in the future. People born between 1880 and 1910 achieved a real rate of return on their housing investment of about 3 percent per year. McFadden estimates that real housing returns will decline to about 1 percent (annually) for people born around 1915, to zero percent for people born around 1930, to $-1$ percent for people born around 1945, and to $-3$ percent for people born between 1960 and 1990. Despite the significant variation in capital appreciation (or depreciation) across generations, McFadden argues that real income growth over time has a far larger effect on the relative welfare of different generations. For example, a reduction of 0.2 percent in the lifetime income of people born between 1920 and 1940 would, according to McFadden, fully offset their housing appreciation relative to people born in 1950. Nevertheless, the capital gains to be expected from homeownership in the future appear to be dramatically lower than in the past.

### International Comparisons

This volume contains two chapters focusing on aging issues in other countries, one comparing aging-related policies in Germany and in the United States and one on aging and saving in Taiwan. In chapter 8, Axel Börsch-Supan

looks at the policies influencing retirement, saving, and elderly housing decisions in Germany and compares them with the policies in effect in the United States. Germany offers an interesting comparison, because the age composition of the population in Germany today is similar to the age composition expected in the United States two decades from now. Thus an analysis of the policies in effect in Germany today may provide insights that can be used to shape policy for an aging population in the United States.

Börsch-Supan finds that differences in behavior between Germany and the United States are largely consistent with differences in policy incentives. Retirement policies in Germany, for example, contain stronger incentives to retire at particular ages, leading to a more uniform retirement age in Germany than in the United States, where policies are more age neutral and more varied in their incentive effects. Housing policies in Germany provide subsidies to elderly renters equal to about one-quarter of the rental cost of housing. The result is that more older people in Germany rent their homes than is the case in the United States, where the subsidies are toward home ownership. Housing mobility among the elderly is much lower in Germany than in the United States, which Börsch-Supan attributes to the tenant protection laws. These laws restrict rent increases, even when market rates are rising more rapidly. Thus differences in retirement and housing behavior in the two countries can be partially explained by differences in policy incentives. Börsch-Supan also discusses the policies affecting saving in Germany and the United States, though the relationships between these policies and the higher rates of saving in Germany are less obvious. Why is it, for example, that more than half of the elderly population in Germany has an annuity income that exceeds expenditures?

In chapter 9, Angus S. Deaton and Christina H. Paxson consider trends in saving behavior in Taiwan and relate those trends to economic and demographic changes. The study provides four broad observations. First, gross national saving as a fraction of GNP is very high and is increasing in Taiwan—from an average of 19 percent between 1961 and 1965 to over 32 percent between 1976 and 1990. Second, Taiwan has experienced rapid per capita economic growth, averaging almost 7 percent annually since 1970. Third, fertility rates in Taiwan have decreased dramatically from 6.1 in 1958 to 1.9 in 1985. Fourth, life expectancies have increased substantially. High growth, declining fertility, and increasing life expectancy all affect saving behavior, and these relationships are explored in this study using household survey data on income and consumption in Taiwan.

An important methodological component of the study is the separation of age effects and cohort effects, using repeated cross-section data. For each year of data, Deaton and Paxson identify the variables of interest, by age, and then track people with the same birth year from one survey year to the next. Although each survey year has different respondents, the authors generate many of the benefits of a longitudinal sample using this methodology. Though presented with skepticism by the authors, the main conclusion of the paper is that

household saving behavior in Taiwan is broadly consistent with traditional life-cycle explanations of saving.

## Long-Term Care

The largest users of nursing home services are the oldest old. Because of the enormous population growth anticipated at the oldest ages (close to double in the next 30 years), there is a great deal of concern about the future demand for nursing home care, the cost of this care, and the extent of public funding and insurance for long-term care. Two papers in this volume address nursing home utilization, one estimating the probability and duration of nursing home residency and one exploring the variation in nursing home use that results from alternative long-term care policies.

In chapter 10 Andrew Dick, Alan M. Garber, and Thomas A. MaCurdy combine information from two nationally representative data files to more accurately estimate the likelihood of a nursing home admission, the likelihood of multiple nursing home admissions, and the distribution of how long people stay in nursing homes after an admission. These probabilities are important, because they influence insurers' decisions about how to structure and price long-term care insurance policies; government decisions about how to structure public health programs for nursing home care; and individual decisions about whether to purchase long-term care insurance, how much to save for the possibility of future nursing home expenses, and what type of living arrangements to choose at older ages.

The results suggest that most people will spend little or no time residing in a nursing home but that a substantial minority of people will have extended nursing home residency. Beginning at age 65, about 35 percent of individuals will have at least one nursing home admission, 10 percent will have more than one admission, and less than 1 percent will have more than four admissions. The median age of a first nursing home admission is 81 for men and 84 for women. Of the individuals with some nursing home utilization, almost 25 percent spend a total of one month or less, and only half have more than six months of accumulated nursing home residency. However, almost one-quarter of those with some nursing home residency have lengthy stays, of three or more years, and this minority of the population accounts for a large fraction of total nursing home utilization.

Dick, Garber, and MaCurdy conclude that the small probability of lengthy nursing home residency suggests the desirability of long-term care insurance. This conclusion, however, depends on the extent to which long-term care insurance induces additional nursing home use. At least some of the hesitancy to enact a comprehensive long-term care policy is based on this possibility. In chapter 11, David M. Cutler and Louise M. Sheiner examine the effect of government nursing home policies on nursing home use. While the extent of policy variation is limited, Cutler and Sheiner use variation across states in

both the generosity of Medicaid spend-down rules and the price differential between Medicaid reimbursement rates and private market rates.

Cutler and Sheiner conclude that there is indeed a large moral hazard effect in subsidizing long-term care. For example, states with more generous Medicaid spend-down rules or higher Medicaid reimbursement rates (relative to market rates) have more nursing home utilization. Higher Medicaid reimbursement rates (relative to market rates) also change the composition of nursing home residency, as poorer people have greater access to nursing home care. Cutler and Sheiner find that in states with more generous Medicaid policies, nursing home care is substituting for care from children or other helpers, rather than for independent living. Thus the elderly are less likely to receive help from their children, and more likely to live in nursing homes, when there is a greater government subsidy for long-term care.

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