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Introduction

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In 2008, the leading edge of the baby boom generation turns age sixty-two and becomes eligible to receive Social Security benefits. Projecting forward, the U.S. population age sixty-two and older will increase from forty-five million to nearly eighty million over a period of just twenty years. Compounding the impact of the aging baby boomers are trends in longevity. At age sixty-two, life expectancy is about twenty years for men and twenty-three years for women—and it is getting longer all the time. Whether this growing population of older Americans works or retires, how much they will have saved for their retirement, and what health care they will need—these are critical questions. Similar issues, questions, and challenges are being faced in countries around the world. What are the relationships between demographic trends, economic trends, health trends, and public policy, and what are the implications for individual health and wellbeing?

These questions motivate an ongoing research program at the NBER on the economics of aging. This is the eleventh in a series of NBER volumes that have emerged from that project effort. The previous ones were *The Economics of Aging, Issues in the Economics of Aging, Topics in the Economics of Aging, Studies in the Economics of Aging, Advances in the Economics of Aging, Inquiries in the Economics of Aging, Frontiers in the Economics of Aging, Themes in the Economics of Aging, Perspectives on the Economics of Aging* and *Analyses in the Economics of Aging.* Our aim is to understand more fully the relationships between age demographics, retirement and

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health care policy, economic behavior, and the health and economic circumstances of people as they age.

Many of the topics addressed in this eleventh volume address emerging issues in the economics of aging, as our retirement systems evolve over time and adapt to an aging population demographic, both in the United States and around the world. The papers are organized into four topic areas: retirement saving, intergenerational transfers, retirement behavior, and health and economic circumstances. These four themes are among the largest organizational components of our larger research effort, and the chapters contained in each section build on a significant collection of prior research findings. They are incremental pieces of a larger whole. This introduction provides some context for the individual studies, and brief summaries that draw heavily on the authors' own language.

Retirement Saving

One of the most important aging-related trends in the United States is the growth of targeted retirement saving. Over the past twenty-five years, personal retirement accounts have replaced defined benefit pension plans as the primary means of retirement saving, and contributions to 401(k)-type plans have expanded dramatically. Retirement saving has become a substantively important component of postretirement support for a growing number of new retirees, and its importance increases every year. Recent projections, for example, show 401(k) asset levels by 2040 that are many times larger than the savings ever accumulated in traditional employer pension plans, and more important in retirement than Social Security for a growing number of households. This represents a fundamental transition in the composition of postretirement financial support in the United States.

The growing importance of targeted retirement saving in individual accounts has been a central theme in most of the prior volumes on the economics of aging, and it continues here. One aspect of these plans is that they shift responsibility for managing retirement assets from the professional money managers who oversee defined benefit plan investments to individual participants in defined contribution plans. The amount of assets that accumulate in individual retirement saving plans depends on decisions made by the workers themselves, such as whether to enroll in the plan, how much to contribute, and how to invest the assets. The first two chapters in the volume address issues that relate to 401(k) decisions: focusing first on the asset allocation decision among the investment options in a 401(k) plan, and second on the decision to initially enroll in a plan.

In chapter 1, "Lifecycle Asset Allocation Strategies and the Distribution of 401(k) Retirement Wealth," James Poterba, Joshua Rauh, Steven Venti, and I present evidence on the distribution of balances in 401(k)-type re-

tirement saving accounts under various asset allocation strategies that investors might choose. In addition to a range of age-invariant strategies, such as an all-bond and an all-stock strategy, we consider several different lifecycle funds that automatically alter the investor's mix of assets as he or she ages. These funds offer investors a higher portfolio allocation to stocks at the beginning of a working career than as they approach retirement. We also consider a no lose allocation strategy, in which households purchase enough riskless bonds at each age to ensure that they will have no less than their nominal contribution when they reach retirement age, and then invest the balance in corporate stock. This strategy combines a riskless floor for retirement income with some upside investment potential.

Our results suggest several conclusions about the effect of investment strategy on retirement wealth. First, the distribution of retirement wealth associated with typical lifecycle investment strategies is similar to that from age-invariant asset allocation strategies that set the equity share of the portfolio equal to the average equity share in the lifecycle strategies. Second, the expected utility associated with different 401(k) asset allocation strategies, and the ranking of these strategies, is very sensitive to three parameters: the expected return on corporate stock, the relative risk aversion of the investing household, and the amount of non-401(k) wealth that the household will have available at retirement. At modest levels of risk aversion, or when the household has access to substantial non-401(k) wealth at retirement, the historical pattern of stock and bond returns implies that the expected utility of an all-stock investment allocation rule is greater than that from any of the more conservative strategies. When we reduce the expected return on stocks by 300 basis points relative to historical values, however, other strategies dominate the all-equity allocation for investors with high levels of relative risk aversion. The no lose plan yields an expected utility of wealth at retirement that is comparable to several of the lifecycle plans, but both the expected value of wealth and the expected utility level are slightly lower than the values associated with the lifecycle strategies.

In chapter 2, "Reducing the Complexity Costs of 401(k) Participation through Quick Enrollment," James Choi, David Laibson, and Brigitte Madrian focus on the decision to initially enroll in a 401(k) plan. Previous research has shown that 401(k) participation increases dramatically when companies switch from an opt-in to an opt-out (or automatic) enrollment regime. One reason that automatic enrollment increases 401(k) participation is that it allows workers to defer, temporarily or permanently, the complex decisions of how much to contribute and to allocate those contributions among investment alternatives. By creating a default contribution rate and investment allocation, and by making enrollment automatic, participation becomes easier, and more people participate sooner than they would do otherwise.

Chapter 2 considers another approach to simplifying enrollment, but in the context of an opt-in plan, rather than an automatic enrollment plan. What Quick Enrollment does is to establish a default contribution rate and a default asset allocation, just like the automatic enrollment plans, but without the automatic enrollment. So employees can opt into the 401(k) without being required to analyze the more complicated set of options available in the plan. The authors evaluate three different implementations of Quick Enrollment at two firms. Two of the implementations were short-term interventions that targeted nonparticipating employees who had previously been hired by the firms in the study. The third was an ongoing intervention for newly hired employees.

The authors find that Quick Enrollment tripled participation among new hires relative to a standard enrollment mechanism in which employees must actively select both a contribution rate and an asset allocation. When Quick Enrollment was made available to previously hired employees who were not participating in their 401(k) plan, 10 to 20 percent of these nonparticipants enrolled in the plan. The chapter goes on to consider possible modifications that would incorporate elements of an "active decision" approach without defeating the purpose of Quick Enrollment. For example, it compares the simplicity of alignable options, such as contribution rates, as compared with nonalignable options, such as investment allocation. Literature on the psychology of consumer choice suggests that increasing the number of alignable options (i.e., savings rates), will lead to increased Quick Enrollment utilization, whereas increasing the number of nonalignable options (i.e., asset allocation options), will lead to reduced participation.

Intergenerational Transfers

In all societies, intergenerational transfers are large and potentially have a strong influence on inequality and growth. The development of each generation of youth depends on the resources that older generations devote to their health, education, and sustenance. The direction of transfer, in this case, is from older to younger generations. At the same time, however, the well-being of the elderly depends on public programs that provide health care and income support and also on familial systems that dominate in many developing countries. These are transfers in the other direction, from younger to older generations. The importance of intergenerational transfers has not gone unnoticed by the research community. During the last two decades there have been important advances in measuring, modeling, and assessing the implications of intergenerational transfers at both the micro and the macro level. A comprehensive macro-level intergenerational transfer framework and accounting system, however, has not been devel-

oped, nor have there been efforts to model and measure familial transfers at the aggregate level.

In chapter 3, "Population Aging and Intergenerational Transfers: Introducing Age into National Accounts," Ronald Lee, Andrew Mason, An-Chi Tung, Mun-Sim Lai, and Tim Miller outline the key concepts and methods that are being used to construct National Transfer Accounts (NTAs). The goal of this accounting system is to measure intergenerational transfers at the aggregate level in a manner consistent with National Income and Product Accounts. Another critical objective of this research is to quantify both public and private transfers in a way that allows comparison and analysis. Although the research reported here is at an early stage, the authors believe that the development of the National Transfer Account system will prove useful in the same way that National Income and Product Accounts are useful despite their flaws, particularly as it becomes possible to follow the flow of intergenerational transfers of individual cohorts over their lifecycles.

A second aspect of the paper is to compare the lifecycles and support systems of Taiwan and the United States. The differences between these two countries are particularly interesting because of the relative importance of their familial support systems: strong in Taiwan and weak in the United States. The authors conclude that familial transfers from adult children to their parents in Taiwan are very large and comparable in magnitude to the transfers made in the United States through public programs, such as Social Security and Medicare. The results provide information about support systems that has not been previously available, including detailed information about the asset accumulation process and how it relates to variation in lifecycle needs.

Retirement Behavior

Another core theme of the NBER retirement program since its inception has been to better understand the determinants of retirement behavior, the effects on retirement of public and private retirement policies, and how they relate to retirement trends over time. In studies reported in previous volumes, we have explored the impact of pension plans on retirement at companies that offered traditional pension plans, documenting the powerful effect of plan provisions on retirement behavior. We have also looked at the influence of public retirement policies, particularly Social Security and Medicare, on retirement. Comprehensive modeling of retirement behavior, incorporating a diversity of influencing factors, has been a part of past NBER work as well.

Importantly, our ongoing analysis of retirement behavior has taken place at a time of historic transition in both public and private retirement

policy. The significant transition from traditional pension plans, often with retiree health insurance benefits, to 401(k)-like programs without retiree health insurance, is one important change. Another is the reform of social security programs that have been implemented around the world in response to the financial pressures of population aging. The policy environment in which individual retirement decisions are being made is different from what it was even a decade ago. In this volume, retirement behavior remains a core component of our work, though with a focus on two more exploratory topics: one relating to asset accumulation and retirement, and the other to wellbeing or satisfaction in retirement.

In chapter 4, "The Effect of Large Capital Gains or Losses on Retirement," Michael Hurd, Monika Reti, and Susann Rohwedder consider the effect on retirement of unanticipated changes in wealth. Although it is natural to suppose that years in retirement are a normal good, so that increases in wealth would lead to earlier retirement, it has been difficult for researchers to disentangle the influence of wealth from the influence of other interrelated factors. For example, higher-paying jobs may have characteristics and amenities that make work more pleasant, thereby delaying retirement, relative to lower-paying jobs. Since higher-paying jobs also increase wealth, the result is a positive cross-sectional correlation between wealth and retirement age; just the opposite of what one might expect if one were analyzing the influence of wealth in isolation from these related factors. The stock market boom of the mid-1990s to 2000 and the subsequent bust between 2000 and 2002 provide an opportunity to study what was likely an unexpected wealth change for at least part of the population.

The researchers found no evidence that workers in households which had large gains retired earlier than they had anticipated, or that they revised their retirement expectations compared with workers in households that had no large gains. Going the other direction, however, there is some suggestion that the decline in the stock market led to an increase in the expected retirement age. The authors report that they have no good explanation for the asymmetry, but speculate that part of the answer may lie in expectations about future rates of return, and in the psychological adjustment of spending expectations, which may rise after a wealth increase, but not fall after a wealth decrease.

Chapter 5 also deals with retirement behavior, and also relates to the question of whether retirement should be considered a normal good. In "Early Retirement, Social Security and Well-Being in Germany," Axel Börsch-Supan and Hendrik Jürges look at the potential changes in subjective well-being or overall life satisfaction that may occur as individuals transition into retirement, comparing workers who retire early with those who retire later. Specifically, is the effect of retirement on well-being more favorable for those taking early retirement, as compared with those retir-

ing at the normal retirement age? Several hypotheses are presented: (1) early retirees suffer from retirement, compared with later retirees, because they are more likely to have been forced out of jobs involuntarily, or by declining health, (2) early retirees benefit from retirement, compared with normal retirees, because they can make use of generous early retirement incentives not available to those who may retire later, or (3) there is no difference between early and normal retirement because both types of individuals have chosen retirement optimally.

The study finds that at ages younger than sixty, those who are retired are on average much less happy than those who are working. The difference is mainly due to a composition effect, as these early retirees are generally covered by disability pensions. Controlling for disability status, the well-being differential between early retirees and those still working vanishes. Thus, it is not retirement as such that reduces life satisfaction, but disability. The study also concludes that when workers develop functional disabilities, early retirement (because of disability) increases well-being significantly. Following over time the life satisfaction of individual workers who take early retirement, there is a marked drop in life satisfaction in preretirement years, and into retirement, but satisfaction returns to preretirement levels one or two years after retirement.

Health and Economic Circumstances

The remaining five chapters in the volume deal in some way with the relationship between health and economic circumstances. This, too, is a continuing theme of our research program more broadly. The pronounced gradient in health between people in different socioeconomic groups is well known. People who are richer or better educated live longer and have a higher quality of life than people in groups with lower socioeconomic status (SES). There are many reasons for this relationship, some of which result from the effects of poor health on economic outcomes, some of which result from the effects of economic circumstances and their long-term impact on health over the life course, and some of which relate to independent factors that affect both health and economic outcomes. Disentangling these interrelationships has been an important aspect of many recent investigations.

The diversity of methodological approaches we have applied in past research reflects the complexity of the topic. Interactions between health and work, childhood health and economic circumstances and those in adulthood, health events and out-of-pocket medical spending, demographics and health behavior, differential access to medical care, absolute economic circumstances versus relative circumstances, the impact of education on both economic and health outcomes, the role of extreme poverty, and the differences in both standards of living and social circumstances across

countries—have all been explored as part of our ongoing NBER research effort. Five new directions are considered in this volume.

In chapter 6, "How Do the Better Educated Do It? Socioeconomic Status and the Ability to Cope With Underlying Impairment," David Cutler, Mary Beth Landrum, and Kate Stewart focus on how elderly people in different socioeconomic groups cope with disability in performing basic personal care activities, including dressing, bathing, and getting around inside the home, and activities required to live independently, such as preparing meals, grocery shopping, and managing money. The analysis considers two primary issues. The study evaluates first how much of the gradient in health is a result of underlying differences in functioning versus the ability to cope with impairments. The authors find that while the majority of socioeconomic differences in disability can be attributed to differences in underlying functioning—the better off have much less difficulty with these measures even in the absence of help—coping is important as well. In other words, the better educated are less likely to have functional disabilities in the first place, and cope with them better when they occur.

The second part of the study analyzes how people cope with impairments, how coping strategies vary by education, and whether the use of personal help and technological aids are important for successful coping. On these issues, the study finds that better-educated people use substantially more assistive technology and are more likely to use paid help than people with less education. They are less likely, however, to receive help from relatives, so that the overall use of personal care is actually lower among the better educated than among the less educated. The authors suggest that more work is needed on the complex interrelationships between underlying functional limitations, coping strategies, and the environment in which people live, in order to further understand how the better educated are better able to cope with their functional limitations.

In chapter 7, David Cutler and Edward Glaeser ask "Why Do Europeans Smoke More than Americans?" Americans have one of the lowest smoking rates in the developed world. The authors examine three potential explanations for the low level of smoking in the United States relative to other developed countries. One is the possibility that cigarette prices are higher in the United States, after accounting for taxes and other regulations on tobacco products. A second potential explanation is the higher income levels in the United States, compared with much of Europe, and the inverse relationship between income and smoking. The third potential explanation is that there are differences in beliefs across countries on the harmful health effects of smoking.

After analyzing the data, the authors firmly reject the first hypothesis, that differences in cigarette prices and regulations explain differences in smoking rates between Europe and the United States. If anything, tobacco consumption in the United States is less regulated than in most European

countries, and controlling for regulation only makes the lower smoking rates in the United States more surprising. Moving on to the second hypothesis, the authors find that income differences explain no more than one quarter of the difference between European and American smoking rates. The most important factor appears to be differences in beliefs about the health consequences of smoking. While 91 percent of Americans think that cigarettes cause cancer, only 84 percent of Europeans share that view. Cutler and Glaeser estimate that this difference can explain between one quarter and one half of the total smoking difference between the United States and Europe. Moreover, the history of cigarettes within the United States suggests that American beliefs about smoking seemed to come about only after substantial information about the harms of smoking were presented—first by private researchers, then by the federal government. The authors refer to "soft paternalism" as a major factor in reducing smoking in the United States.

The study also speculates about why the United States, with its lower propensity toward regulation and paternalism generally, was more effective in changing beliefs about the health consequences of smoking. A review of smoking history suggests that entrepreneurial actions on the part of antismoking interest groups were quite important. According to this view, while greater U.S. entrepreneurship and economic openness led to more smoking during an earlier era (and still leads to more obesity today), it also led to faster changes in beliefs about smoking and ultimately less cigarette consumption.

In chapter 8, Jay Bhattacharya, Alan Garber, and Thomas MaCurdy explore "Trends in Prescription Drug Use by the Disabled Elderly." With the implementation of the Medicare Modernization Act in 2006, the federal government became responsible for the financing of prescription drugs for all Medicare recipients. Though there have been several attempts to forecast how much financial risk will be borne by the government in future years as a consequence of the introduction of Medicare Part D, no forecast has separately analyzed the effect of disability on Part D spending. This is unfortunate, because the disabled elderly are among the groups that might be most affected by pharmaceutical innovations and changes in the way prescription drugs are financed. This paper analyzes separately trends in the utilization of pharmaceuticals by disabled and nondisabled beneficiaries between 1992 and 2001. It examines trends for both the over-sixty-five population and the population under sixty-five that qualifies for Medicare by virtue of their disability.

The study finds that for those with and without functional limitations, and for both elderly and nonelderly Americans, expenditures on prescription drugs as a fraction of total medical expenditures grew sharply over this period. The most rapid growth was experienced by Medicare recipients covered by disability insurance (DI), a population that was also the

fastest-growing segment of Medicare enrollees in the 1990s. The DI Medicare population had large increases in expenditures on all drug categories examined (psychotherapeutic, analgesic, antiarthritic, cardiovascular, and all other drugs), with especially large increases for psychotherapeutic drugs. Among the DI Medicare population with the highest pharmaceutical expenditures, the study finds particularly large increases in the prevalence of mental illness, with smaller increases in other chronic diseases.

Among the elderly Medicare population (as distinct from the DI Medicare population), there were also increases between 1992 and 2001 in pharmaceutical expenditures for all drug categories. Among the 10 percent of elderly Medicare enrollees with the highest expenditures, with and without functional limitations, there were moderate increases in the prevalence of several chronic diseases, including hypertension, arthritis, diabetes, and osteoporosis. Among those with functional limitations, the prevalence of mental illness also increased sharply. The authors suggest that if the trends indicated by these results continue, then Medicare's financial risk represented by the introduction of the new Part D drug benefit could be substantial.

In chapter 9, "Health and Well-being in Udaipur and South Africa," Anne Case and Angus Deaton present a descriptive account of health and economic status in India and South Africa, focusing on data from three research sites: one in rural Rajasthan, India; one in a shack township outside of Cape Town, South Africa; and one in a rural South African site that, until 1994, was part of a Bantustan. Income levels across the three sites are roughly in the ratio of 4:2:1, with urban South Africa richest and rural Rajasthan poorest. The paper emphasizes the lack of any simple and reliable relationship between health and wealth between and within these sites.

Among the comparative results reported in the study, South Africans were found to be taller and heavier than the Indians, though their children are no taller at the same age. South African self-assessed physical and mental health is no better, and South Africans are more likely to report that they have to miss meals for lack of money. In spite of differences in incomes across the three sites, South Africans and Indians report a very similar list of symptoms of ill health. Although they have much lower incomes, urban women in South Africa have fully caught up with black American women in the prevalence of obesity, and are catching up in terms of hypertension. These women have the misfortune to be experiencing many of the diseases of affluence without experiencing affluence itself.

Because health, like well-being, is multidimensional, and because the components of health do not correlate perfectly with one another, or with income-based measures, the study concludes that income on its own is likely to be misleading as a shortcut measure of international health. Even within places, such as those examined here, the links between health and wealth are far from universally strong. Where the "wealthier is healthier"

hypothesis seems to work better is in comparisons between the three poor sites and much richer Americans. White Americans self-report better health than do black Americans, but both report substantially better physical and mental health than do South Africans and Indians in the three sites studied.

Finally in chapter 10, "The SES Gradient on both Sides of the Atlantic," James Banks, Michael Marmot, Zoe Oldfield, and James Smith present data on some of the most salient aspects of the SES-health gradient in England and the United States. There are several key findings. First, looking across a wide variety of diseases, average health status among men is much worse in America compared to England. Second, there exists a steep negative health gradient for men in both countries, where men at the bottom of the economic hierarchy are in much worse health than those at the top. This social health gradient exists whether education, income, or financial wealth is used as the marker of one's SES status. While the negative social gradient in male health is apparent in both countries, it appears to be steeper in the United States. These central conclusions are maintained even after controlling for a standard set of behavioral risk factors such as smoking, drinking, and obesity, and are equally true using either biological measures of disease or individual self-reports.

In contrast to these disease-based measures of health, the health of American men appears to be superior to the health of English men when self-reported general health status is used as the measure of health status. This apparent contradiction does not result from differences in comorbidity, emotional health, or ability to function, all of which still point to American men being less healthy than their English counterparts. The contradiction most likely stems instead from different thresholds used by American and English men when evaluating their health status on subjective scales. For the same objective health status, Americans are much more likely to say that their health is good than are the English.

While the ten chapters in this volume address somewhat diverse topics in the economics of aging, they contribute to an integrated research agenda that has focused on the health and economic circumstances of individuals as they age, and a worldwide population that is not only growing older, but experiencing fundamental changes across countries in terms of economic growth, age demographics, and population health.