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Overview

This volume contains papers presented at a National Bureau of Economic Research Conference on the Economics of Aging, in Carefree, Arizona, in May 1988. The conference was the second in a series of conferences associated with the NBER's ongoing Project on the Economics of Aging. The first conference was held in New Orleans in March 1987. The papers presented at that conference are contained in a volume entitled *The Economics of Aging* (Wise 1989). 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 are divided into two broad categories: (1) housing and living arrangements and (2) labor market behavior and retirement.

Housing and Living Arrangements

The majority of the wealth of most older people is in the form of housing equity. This housing wealth is a potential source of support during retirement. It is claimed that many older people would choose to decrease their housing wealth to finance current consumption expenditures, were it not for the large transaction costs associated with moving. Indeed, the rationale for a market in reverse annuity mortgages has been that older people would like to withdraw wealth from housing without moving and without incurring the large transaction costs of moving. "But They Don't Want to Reduce Housing Equity," Steven Venti and David Wise conclude. Venti and Wise address two related questions: (1) Would the typical elderly family like to withdraw wealth from housing? (2) Do the transaction costs of moving constrain adjustments in the housing wealth of older people as they age?

In answer to the first question, the authors conclude that, were all elderly homeowners to choose their most preferred levels of housing wealth, given

their existing financial and other circumstances, there would be little change in housing wealth on average. Although some elderly would make substantial changes in housing equity were they to choose new housing, some would choose to add to housing wealth and others to reduce it. On balance, were all elderly to move and choose optimal levels of housing equity, the amount of housing equity would be increased slightly. Thus, the results reinforce the earlier findings of Venti and Wise, and those of Feinstein and McFadden, both studies found in *The Economics of Aging*. Most elderly are not liquidity constrained. And, contrary to standard formulations of the life-cycle hypothesis, the typical elderly family has no desire to reduce housing equity. This is true even among families with low total wealth, for whom housing equity is a large fraction of total wealth. The desired reduction of housing equity is largest among families with low income and high housing wealth. Even in this case, however, the desired reductions are rather small and are more than offset by the desired increases of other families, especially those with high income and low housing wealth.

In answer to the second question, the authors conclude that the transaction costs of moving, including the psychic costs of changing neighborhoods and losing contact with old friends and the like, are very large. Because of these large transaction costs, the gain in utility from reallocating wealth from housing equity to more liquid financial assets has to be large in order to justify moving. The gain from moving, however, is very small for most older people. These results help explain the low rates of housing mobility. Based on the data in the Retirement History Survey, approximately 8 percent of homeowners move during a two-year period. Mobility rates increase to about 15 percent at the time of precipitating shocks like a change in marital status or retirement. The reluctance of most older people to move is reflected in the large transaction costs associated with moving.

The evidence of high moving transaction costs suggests that some families may be prevented from moving, even though they would like to reduce their housing equity. It is for these families that reverse annuity mortgages would apparently be most beneficial. Limited demand, though, may explain the absence of an active market for such financial instruments—most older people do not want to reduce their housing equity. Even families who overcome the moving transaction costs to move from one house to another are as likely to increase as to decrease the money that they tie up in housing. Moreover, the potential gain from reallocating wealth (either increasing or decreasing housing equity) is very small for most older people.

The paper by Chunrong Ai, Jonathan Feinstein, Daniel McFadden, and Henry Pollakowski, "The Dynamics of Housing Demand by the Elderly: User Cost Effects," is the second in a series of papers on the economic environment in which older people must make housing decisions, on the housing choices that they make, and on the consequences of these choices. The paper in this

volume concentrates on the construction of a comprehensive measure of housing price and on the user costs of housing for older people.

The user cost of housing described in the paper includes several components. Because of the high transaction costs of moving (once a housing decision is made), the authors argue that housing choices should be based on an inclusive measure of housing cost that includes both the current costs and the expected future costs of any given housing choice. Thus, the first component of the authors' user cost is the expected present value of the future stream of out-of-pocket costs that will be incurred as long as the current dwelling is occupied. For renters, the out-of-pocket costs include only rent and utilities. For homeowners, out-of-pocket costs include mortgage payments, real estate taxes, utilities, maintenance, and insurance. The deductibility of home mortgage interest offsets a part of these direct costs. The second component of user cost is the transaction costs associated with moves, purchases, or sales. The third component of user cost applies only to homeowners and reflects the capital gains on the housing asset. The typically increasing market value of a home (the capital gain) offsets the direct cost of home ownership and thus lowers the net user cost of housing.

The approach taken in the paper is to calculate an annualized expected present value of user cost, taking account of all these factors, in a fashion that mimics the calculations of a representative household. A particularly novel component of the authors' calculations is a "Ricardian equivalence" assumption. To incorporate the value of bequests, it is assumed that a unit of consumption by descendants in the future has the same marginal utility for the nonsurviving household (who leaves the bequest) as it does for the surviving descendants (who receive the bequest).

The primary conclusion of this paper is that carefully constructed user costs for housing, which adjust for income tax offsets and capital gains, show *declining* annualized housing costs after age 60. While the income of older people declines even more rapidly, so that the housing share of consumption expenditures rises with age, this increase is not dramatic. The ratio of housing costs to income appears to level off for the very elderly. The authors also find that the user costs of housing increase sharply with dwelling size. The user cost of owner housing generally exceeds that of rental housing for middle-aged and elderly households. The persistence of ownership in the face of this differential suggests the presence of substantial quality differences in owned and rental housing, the authors conclude. They find little evidence in the relatively small Panel Study of Income Dynamics (PSID) data set that, at the margin, households are modifying choices to avoid relatively high-priced housing. The findings of Ai et al. are consistent with the finding of Venti and Wise that the typical elderly family does not want to reduce housing consumption as it ages.

Axel Börsch-Supan presents "A Dynamic Analysis of Household Dissolution and Living Arrangement Transitions by Elderly Americans," using data

from the PSID. The stability of living arrangements over time is the most striking finding. Transitions to an institution or to the home of children are atypical. Even after the death of a spouse or the onset of disability or during the last five years before death, few older people change their living arrangements. While living arrangement transitions are infrequent overall, they are most common after the loss of a spouse. Almost all transitions take place in the same year as the spouse's death. Börsch-Supan also finds that older men are more likely to live in institutions or shared living arrangements and that nonwhite elderly are more likely than white elderly to live with family members or in other shared living arrangements.

Although living in an institution is inferior to other living arrangements from the point of view of most older people, the likelihood of institutionalization rose substantially between 1968 and 1984. During the same period, the likelihood of being "taken in" by relatives or friends fell dramatically. The author concludes, "this disturbing tendency toward isolation of the elderly—particularly pronounced among the very old, who are also the most vulnerable—is the most important message of this paper." The author suggests that the growing isolation of older people will affect the cost of health care and social support programs, which are largely assumed by a declining younger population. According to Börsch-Supan, if public policy stands any chance of improving the well-being of the elderly, the appropriate time for policy intervention is after the death of a spouse, when living arrangement transitions are most common.

In "The American Way of Aging: An Event History Analysis," David Ellwood and Thomas Kane also present a dynamic analysis of transitions in marital status, health and functional ability, living arrangements, and income. Like the Börsch-Supan analysis, their analysis is based on data in the PSID. The methodologies used in the two papers are different, however.

According to Ellwood and Kane, even though only 4 percent of the population aged 75–79 and 12 percent of the population aged 80 and over lived in institutions in 1980, a much larger percentage of older people enter institutions at some time during their lives. Their simulation analysis indicates that 12 percent of men and 38 percent of women will enter an institution at some time after age 65. Income was shown to be an important factor in both institutionalization and mortality. People with low incomes at age 65 lived four years fewer, on average, than people with high incomes and were much more likely to develop functional disabilities. People with low incomes were also much more likely to be in nursing homes or to be dependent on others in a shared living arrangement by age 80.

Comparing the previous characteristics of men who eventually entered institutions with the previous characteristics of men who did not enter institutions, the authors find no significant difference in previous functional ability but a substantial difference in previous income level. The men who

eventually entered institutions were disproportionately from low-income backgrounds. By contrast, women who eventually entered institutions were virtually indistinguishable from women who did not. The authors argue that these findings result from differential mortality. Disabled men are more likely to enter institutions, but disabled men also die more quickly, which decreases the likelihood of entering an institution. Similarly, lower-income women are more likely to enter an institution, but they also die more quickly, which again decreases the likelihood of entering an institution.

Ellwood and Kane find that men and women entering institutions come from different prior living arrangements. Over one-third of the men who entered institutions were previously dependent on others in shared living arrangements. Only 18 percent of women entering institutions came from a shared living arrangement. Women who entered nursing homes were more likely to have been living independently and more likely to have been widows for some period of time. In addition, the authors find that unmarried women who were poor at age 80 were often relatively poor at age 65 as well. Over half of poor unmarried women at age 80 were not married at age 65. Widowhood led to a 20 percent drop in the standard of living of women, but widowers experienced only a 10 percent drop in their standard of living.

Perhaps no single statistic raises more concern about postwar changes in the U.S. family than the proportion of older people living alone. Since 1940, the proportion of unmarried noninstitutionalized older people living alone has risen from less than 25 percent to over 60 percent. For people over age 85, the proportion has increased from 13 percent to 57 percent. The proportion of those over 85 living in institutions has also increased dramatically. Since 1940, those proportion of people over age 85 living in institutions has increased from 7 percent to almost 25 percent. Part of the reason that older people are less likely to live with their children is simply that they have fewer children. In 1940, for each person age 80 and over, there were four people between ages 60 and 65; in 1985, for each person age 80 and over, there were fewer than two people between ages 60 and 65; and, when the baby boom population is in its 80s, there will be only one person between ages 60 and 65 for each baby boomer.

While age demographics appear to explain some of the living arrangement changes occurring over time, many believe that the rising income of older people is also an important factor. Laurence Kotlikoff and John Morris point out, however, that the analyses underlying this view have not considered the incomes and preferences of the children of older people. In "Why Don't the Elderly Live with their Children? A New Look," Kotlikoff and Morris present a model of the joint living arrangement choice of parents and children. They then use a new data set to analyze how the preferences and income levels of older people and their children influence living arrangement decisions. Their findings suggest that the preferences and income levels of children may be

important factors in explaining why so many older people live alone. The analysis is based on new data collected through the 1986 Hebrew Rehabilitation Center for the Aged (HRCA) Elderly Survey and the 1986 HRC-NBER Child Survey.

The estimates reported by Kotlikoff and Morris suggest that many of the characteristics of adult children, such as income and marital status, are as important as parent characteristics in explaining living arrangement decisions. Their findings also indicate substantial differences in living arrangement preferences between elderly parents and their adult children. Almost half the parents appear to prefer shared living arrangements with their children. Only a quarter of the adult children appear to prefer shared living arrangements with their parents. This analysis suggests that a large number of elderly parents live alone, even though they would prefer to live with their children. The authors conclude that the intrinsic preferences of parent and child for shared living rather than the relative or absolute incomes of the two are most important in determining the probability of shared living. They also conclude that income differences are not as important as may previously have been thought in explaining living arrangements.

Alan Garber and Thomas MaCurdy concentrate on the determinants of "Predicting Nursing Home Utilization among the High-Risk Elderly." Their analysis is motivated by the needs of private insurers (particularly those developing and marketing private long-term care insurance products) and others for adequate information about expected future nursing home utilization. They consider the probability of nursing home admission, expected number of annual nursing home days, the distribution of lengths of stay in nursing homes, and how the aspects of utilization vary with other personal characteristics. They also explore some of the possible effects of moral hazard and adverse selection on future utilization. The analysis is based on data from the National Long Term Care Demonstration (Channeling), which has a sample population determined to have a high risk of nursing home utilization.

Garber and MaCurdy find that the factors that influence nursing home admissions are largely distinct from those that are generally expected to influence health and mortality. For example, functional limitations have very little effect on mortality but a very large effect on nursing home entry. Similarly, the factors that are associated with increased duration of nursing home stay are not necessarily the factors that indicate a strong risk of admission. The probability of nursing home entry is higher for nonhomeowners, people without living children, whites, Medicaid participants, older people, and functionally or mentally impaired people. Income does not appear to have a major independent association with nursing home entry. The probability of leaving a nursing home (shortening the duration of stay) is higher for married people and people with living children, confirming the important role of families in providing informal long-term care services. Homeownership and Medicaid coverage do not seem to matter once an individual is in a nursing home.

The authors point out that numerous previous studies have documented the association between socioeconomic factors and health status. The most important socioeconomic factors have been education and, to a lesser extent, income, wealth, occupation, and race. The authors found no evidence that these factors are closely tied to nursing home utilization, with two exceptions. Advanced education was associated with longer nursing home stays, and nonwhite race was associated with a lower probability of nursing home admission.

There were some differences in nursing home utilization between men and women. At any age, a woman is more likely to enter a nursing home than a comparable man. If she enters a nursing home, she will also tend to stay longer than her male counterpart. The authors emphasize, however, that elderly women are not comparable to elderly men. Women are more likely to be unmarried (because they usually live longer than their spouses) and to have functional impairment, so their nursing home utilization tends to be even higher, relative to men, than the authors' results suggest.

To show the effect of Medicaid coverage on nursing home utilization, the authors simulate the distribution of nursing home use for a very high risk individual—a severely impaired, unmarried 65-year-old male who does not own his home. Without Medicaid coverage, this person has a 54 percent probability of entering a nursing home by age 70 and will stay in the nursing home for an average of thirty-three weeks. An identically described person with Medicaid coverage has more than a 70 percent probability of entering a nursing home and will stay for an average of forty-six weeks. The same influence of Medicaid can be seen for women and for less-impaired persons with better social and economic supports. The authors find that, in every age category, both the likelihood of admission and the duration of stay in a nursing home are longer for men who have Medicaid coverage.

According to Garber and MaCurdy, forecasting future nursing home utilization involves distinguishing between the factors influencing survival and the factors influencing nursing home use. Disabled and sickly older people may not be the heaviest utilizers of nursing homes because they die early. In forecasting future nursing home utilization, life-prolonging technology might increase survival but have no effect on age-adjusted disability from chronic illness. As a result, life-prolonging technology could increase nursing home utilization dramatically. The different influence of dementia and functional impairment on survival and nursing home use is another example. Neither dementia nor functional impairment increase mortality (at least in this population), but both increase the likelihood of nursing home admission and the duration of stay in a nursing home. Both dementia and functional impairment are likely to be more common in the future as long as old-age survival continues to improve. Because there are no effective preventive measures or treatments for the most common causes of dementia or for most functional impairments, life-prolonging health interventions are likely to increase the demand for nursing home care.

Labor Market Behavior and Retirement

The labor force participation rates of older workers have declined dramatically in recent years. In 1971, for example, 74.1 percent of men aged 60–64 were in the labor force; in 1986, only 54.9 percent were in the labor force. A great deal of analysis has emphasized the role of Social Security provisions in encouraging earlier retirement. Particular attention has been directed to the large increases in Social Security benefits in the early 1970s. Largely ignored have been firm pension plans, which were introduced rapidly beginning in the late 1940s and 1950s and now cover about 50 percent of employees. About 75 percent of covered employees have defined benefit plans, under which the employer promises to pay the worker a specified retirement income. The amount of retirement income is typically determined by the final salary of the worker and the number of years of firm employment.

Previous work has demonstrated that defined benefit pension plans typically have substantial incentives for early retirement. The typical firm plan provides a very large reward for remaining with the firm until some age, often the early retirement age, and then a substantial inducement to leave the firm, often as early as age 55. Almost all plans incorporate a large penalty for working past age 65. The gain in wage earnings for working an additional year is often offset in large part by a loss in the present value of future pension benefits.

In "The Pension Inducement to Retire: An Option Value Analysis," James Stock and David Wise attempt to quantify the effects of pension plan provisions on departure rates from the firm and, in particular, to demonstrate the effect of potential changes in plan provisions. The analysis is based on the personnel records of a large *Fortune* 500 firm and applies the "option value" model described in the authors' earlier work. Comparing actual retirement rates with those predicted by the model, Stock and Wise have found that the model predicts very complicated retirement patterns with considerable precision.

A particularly important component of the analysis is to compare the effects of changes in Social Security provisions with changes in firm pension plan provisions. They find that the provisions of the firm's pension plan have a much greater effect than Social Security regulations on the retirement decisions of the firm's employees. Increasing the firm's early retirement age from 55 to 60, for example, would reduce by almost 40 percent, from .48 to .30, the fraction of employees that choose to retire by age 60. The effect of changes in Social Security rules, on the other hand, would be comparatively small. By raising the Social Security retirement ages by one year, for example, the proportion of workers retired by age 62 would decrease by only about 4 percent.

Stock and Wise suggest that changes in Social Security provisions that would otherwise encourage workers to continue working can easily be offset by countervailing changes in the provisions of the firm's pension plan. Firm responses, like delaying the Social Security offset to correspond to a later

Social Security retirement age, may simply be a logical revision of current firm plan provisions. The authors conclude that, in considering the effect of changes in Social Security rules, like the retirement age, it is important to understand the implications of private pension plan provisions. In particular, to predict the effect on retirement decisions of changes in Social Security rules accurately, the potential response of firms to the changes cannot be ignored.

Although their analysis is based on the retirement experience in a single large firm, Stock and Wise emphasize that the firm's pension plan is typical of defined benefit plans. Approximately 75 percent of the employees who are covered by a firm pension have defined benefit plans. Thus, the results suggest that pension plans in general have had a very substantial effect on the labor force participation rates of older workers.

Although the retirement behavior of men has been studied extensively, much less attention has been given to the retirement behavior of women and very little to the retirement behavior of couples. Studies of the labor supply decisions of couples typically find that the wife's labor supply is influenced by the husband's wage rate or by the husband's income. In "The Joint Retirement Decision of Husbands and Wives," Michael Hurd investigates the relation between the retirement decisions of husbands and wives.

Hurd's analysis, based on the New Beneficiary Survey, has two goals: (1) to study the correlation between the retirement dates of husbands and wives and (2) to determine whether observable economic variables contribute to any correlation in retirement dates. Hurd concludes that husbands and wives do indeed tend to retire at approximately the same time. For example, in a "male workers" sample, 6.1 percent of couples retired in the same month, 9.4 percent within one month of each other, 11 percent within two months of each other, and 24.6 percent in the same year.

A large fraction of the economic research on aging and retirement is motivated by—although possibly not constrained by—the assumption that individuals form rational and deliberate long-range plans. Implicit in these assumptions is the notion that individuals develop well-informed opinions about the economic factors that will affect their well-being in the future. But, in fact, very little is actually known about the manner in which individuals incorporate new information in arriving at expectations about future events. In "How Do the Elderly Form Expectations? An Analysis of Responses to New Information," Douglas Bernheim examines the evolution of self-reported expectations about Social Security benefits during the preretirement period and examines the effect of new information on these expectations. In particular, Bernheim considers whether changes, or "revisions," in expectations are "rational," in the sense that they closely resemble the effects of new information on actual measures of expected benefits.

This paper is the third in a series of papers by Bernheim on the accuracy and development of expectations. In a subsequent paper, he plans to study the relation between the self-reported expectations of individuals and the decisions

of these individuals. Like the previous two papers, the analysis in this paper is based on data from the Retirement History Survey. Bernheim estimates how expectations change with new information and considers whether these changes in expectations are rational. He concludes that responses to new information during the period immediately preceding retirement appear to be highly rational. According to Bernheim, the data support the view that individuals form accurate assessments of the ultimate effect of new information on actual benefits.

Bernheim points out that these results contrast sharply with findings based on analyses of expected benefit levels, rather than changes in expected benefits. In prior work, Bernheim concluded that individuals did not make complete use of available information, especially current statutory Social Security benefit entitlements. Nevertheless, Bernheim finds that these same individuals are very good at using new information that they obtain just before retirement. Although people appear incompletely informed about the level of Social Security benefits associated with actual benefit formulas, they revise their benefit expectations as if they understand how new information affects the benefits prescribed by these formulas at the margin. The results suggest that individuals formulate expectations about the retirement period much more carefully as retirement approaches, substantiating the speculative conclusions made by Bernheim in earlier studies.

Firms are likely to adapt their behavior in response to the aging of the population. In "Adjusting to an Aging Labor Force," Edward Lazear speculates about how the demographic changes will affect labor force policies in the coming decades. Lazear begins his analysis by considering some of the labor force changes that might be expected. According to Lazear, the composition of the labor force is likely to include a larger proportion of older workers and a larger proportion of female workers. Aging will not be as pronounced for males as for females because the trend toward early retirement among males will offset the demographic changes. The size of the labor force will grow until about 2015 and then will decline. Given these predicted changes in the labor force, Lazear then explores how these changes might affect firm behavior.

Several of Lazear's conclusions are based on the assumption that older workers tend to be paid more than their marginal product. Since employing older workers then causes a firm deficit (defined as the difference between sales and labor costs), an aging labor force may mean an increase in the size of the firm deficit. Under these circumstances, Lazear argues, firms may do well to invest in assets that are highly correlated with the future uncertain nominal wage bill liability. An aging work force might also increase the desire of the firm to encourage retirement among its older workers. Lazear suggests that implicit buyouts, through strategically designed pension formulas, may be the most desirable way to reduce the size of the older work force. Because defined benefit pension plans offer implicit buyout features that are absent in defined contribution plans, firms may have a tendency to shift to defined benefit plans

in the future. Lazear also speculates that an aging labor force is likely to affect firm productivity, but he acknowledges that the direction of the change is not clear.

John Rust's paper "Behavior of Male Workers at the End of the Life Cycle: An Empirical Analysis of States and Controls" is the second of a series of three papers on the retirement behavior of men. The first paper, "A Dynamic Programming Model of Retirement Behavior," presented a theoretical model based on the hypothesis that workers maximize expected discounted lifetime utility. The current paper explains how data from the Retirement History Survey were used to construct variables that will be used to implement the theoretical model. The third paper will use the constructed variables together with the theoretical model described in the first paper to estimate the unknown parameters and utility function that govern retirement behavior.

The success of the final stage depends critically on accurate measurement of the variables and on correct specification of workers' beliefs about the future. In the current paper, Rust discusses conceptual problems in measuring the variables in a way that closely approximates the theoretical underpinnings of his dynamic model. He presents solutions to the measurement problems and conducts an extensive comparative data analysis to assess the overall quality of the resulting variables.

This paper reports several interim findings. Although other authors have placed considerable emphasis on work after retirement, Rust finds that postretirement work is atypical. The typical male worker stays at a full-time job up until retirement (at age 62–65, e.g.), at which time he applies for Social Security and remains out of the labor force for the rest of his life. Rust finds that part-time work arrangements are also atypical. The distribution of total annual hours worked is highly bimodal, with most of its mass at either zero or two thousand, suggesting that workers do not treat annual hours of work as a continuous decision variable.

Rust finds that the distribution of real wealth changes is centered about zero, but with a large variance. On average, net worth is very small, about four times annual income, and 50–60 percent of this wealth is tied up in housing. These facts, he concludes, strongly support the view that the large swings in measured consumption implied by the changes in measured wealth are simply the result of response errors in measured wealth rather than erratic consumption-saving behavior. Thus, he concludes that implementation of his theoretical model will assume that workers choose labor force participation strategies to maximize the expected discounted value of future income, ignoring wealth and bequests and the theoretical possibility of smoothing consumption by borrowing and saving. Total income will be a good measure of actual annual consumption.

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