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ABSTRACT

The adequacy of retirement savings is central to the U.S. debate about the effects of Social Security reform and pension changes that would place greater responsibility on individuals for accumulation of retirement resources. While gender issues have not been neglected in Social Security reform discussions, there has been little attention to gender issues in the discussion of the relative importance of Social Security benefits to retirement savings adequacy. We contribute to this discussion by examining the extent to which Social Security plays a role in the economic status of individuals as they age, specifically whether there is a gender effect on the maintenance of resource adequacy as women and men survive in retirement and experience changes in health and marital status. We use our results to draw conclusions about the importance of Social Security to the well-being of women and men during retirement.

I. INTRODUCTION

The Social Security reform debate cannot be separated from discussions of the savings behavior of U.S. citizens, specifically the ability to accumulate retirement assets sufficient to sustain economic well-being after retirement.[1] The United States is distinct from its economic peers in expecting individuals to take responsibility for accumulating the larger share of retirement assets. While the federal Old Age and Survivors Insurance program provides a basis of financial support, personal savings in the form of employer-provided pensions, housing, and financial assets is expected to assure financial adequacy. With the possible exception of low earners who are less likely to be in pension-covered jobs, it is these forms of savings that are expected to replace earnings lost when work ceases due to retirement.

A component of the Social Security reform debate is concern about the differential gender effect of reforms on economic well-being in retirement. This debate focuses on two gender disparities—in labor market earnings and fringe benefits (including pension coverage) and in the risk of superannuation and widowhood. These are not unrelated. To the extent that women are able to accumulate earnings and pension credits in their own right, they are less in need of protection against the loss of husbands' earnings and pensions. To the extent that they save and are covered by pensions, particularly defined benefit pensions, the less they are vulnerable to running out of resources due to longer female survival. Social Security, by paying benefits to individuals either as retired workers or as survivors of workers, reduces the disparity in the old-age risk between women who have substantial earnings and those who do not.

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[1] See Engen, Gale, and Uccello (1999) for references to media and governmental analyses of this issue. A report of the U.S. Congressional Budget Office (2003) summarizing recent findings highlights the current policy interest in this issue.

In this paper, we attempt to capture the importance of Social Security for women by examining the maintenance of resources during retirement among a sample of Social Security beneficiaries, asking whether resources and measures of resource adequacy at retirement are sustained during the first decade of retirement as resources are consumed and people are widowed. We study the evolution of retirement resources from the time of retirement (when most respondents are in their mid-to-late sixties) to ten years later (when most are in their mid-to-late seventies). Looking separately at married women and men and single women and men, we compare available resources against two "adequacy" standards. We describe correlates of falls and increases in resources for the entire group of retirees and for women and men separately. We examine the contribution of Social Security in the maintenance of resource adequacy.

II. PREVIOUS LITERATURE

While a number of studies have assessed and analyzed the adequacy of retirement savings of individuals, no study reports on changes in adequacy during the years after retirement for a cohort of retirees. Grad (1990) was the earliest of the set of studies that examined income adequacy during projected retired lives. Grad used the first year from the New Beneficiary Survey, the same data set we use. She examined the replacement of preretirement earnings by Social Security and pension income for workers who first received Social Security benefits in the 1980s. Using a variety of analytic approaches and standards against which to judge adequacy, Bernheim (1992), Moore and Mitchell (2000), Gustman and Steinmeier (1998), Mitchell, Moore, and Philips (2000), and Engen, Gale, and Uccello (2005) assess the adequacy of estimated resources available at some assumed retirement age if resources were uniformly consumed over

the years of remaining life. Years of remaining lifetime for couples include those years when only one spouse survives, although these studies are generally not explicit about the assumption made about resource allocation to those years. Nor do these studies compare savings adequacy across different household types.

Wolff (2002) uses the Survey of Consumer Finances for years 1983, 1985, 1989, and 1998 to examine how savings adequacy changed during this period across demographic groups, estimating the annuitized value of wealth (including Social Security and pension wealth) at an expected age of retirement. He reports large disparities in this measure of expected income between married couple and female- and male-headed households, with the disparity diminishing during this period. Married couple households had 3.3 times the income of unmarried women in 1983, although the annuitized wealth of unmarried women grew faster than did that of couples (11 percent versus 7 percent). Wealth gains for unmarried women lowered the percentage with expected retired-life incomes below the poverty level, but at 33.3 percent in 1998 it remained well above the (slightly increased) rate of 6.6 percent for couples. Differences between these two household types were largely due to the higher pension and savings wealth of couples. A comparison of unmarried women ages 47-55 in 1989 and unmarried women ages 55-64 in 1998 would imply large gains in wealth and declines in poverty (from 42.5 percent to 32.9 percent) for a cohort of women during this time period, but these comparisons and Wolff's conclusions are about cross-cohort differences, not about changes over time for individuals as they experience changes in work status and marital status.

In our own recent study (Haveman, et al., forthcoming) we explore the savings adequacy of resources accumulated at first Social Security benefit receipt if annuitized over remaining lifetimes, but we did not examine whether the potential consumption levels were maintained over

time. Nor was there special attention paid to federal Old Age and Survivors Insurance in achieving adequacy standards. In Haveman et al. (2002) we looked at changes in income over the first ten years of retirement, which fails to account for other forms of wealth in maintaining well-being. Early retirees, women who remained single and women who lost their spouses were more likely to experience large declines in income during the decade following first receipt of benefits. Whether these reflected real declines in resources or differences in income that were offset by changes in other forms of wealth was not examined in that paper.

Conclusions about the adequacy of wealth at retirement to maintain consumption during retirement implicitly assume the estimated annual consumption stream enabled by available resources persists throughout each individual's remaining lifetime.[2] Such snapshots of savings adequacy ignore likely variations in adequacy levels during retirement years. Initial levels of adequacy may grow, intentionally so if individuals explicitly include in their retirement plans strategies for continued asset accumulation. This may be the case if wives are younger than their husbands and continue to work when husbands are first retired. Assets may also grow because of the receipt of bequests or survivorship benefits from persons other than a spouse, or because post-retirement consumption was slower than expected. Thus, estimated levels of resource adequacy may improve during the retirement years for some individuals initially identified as having inadequate retirement savings. Conversely, the level of available resources may deteriorate during the years after retirement because of special needs (e.g., health), unwise investment choices or bad luck. One example of such bad luck may be the untimely death of a spouse without sufficient planning for that contingency. Thus measures of savings adequacy at

[2] Cited studies generally estimate resources at some assumed uniform retirement age. We would argue that it is actual retirement that matters most if individuals compose retirement savings plans with some age of retirement in mind and that actual age of retirement is the appropriate age from which to examine post-retirement wealth maintenance

retirement for both men and women, and especially for women in married couples, may provide a misleading picture of who is financially well prepared for retirement and, therefore, of the relative role of the different income sources in protecting against retirement contingencies. The importance of Social Security may be underestimated in these one-year assessments of savings adequacy since the actual role of these benefits in the maintenance of well-being will not be identified as inflation undermines the real value of other resources and as individuals enter widow(er)hood with the resources actually bequeathed to them.

III. OUR RESEARCH APPROACH

By comparing the picture of adequacy of resources both at the time of retirement and ten years later, we are able to assess how women and men, both those who are initially married and those are unmarried, fare economically during their retirement years, and to determine whether and why some are able to maintain resources that enable an estimated stream of lifetime consumption while others do not.

Our sample is from the Social Security Administration's New Beneficiary Survey (NBS), a sample of individuals who first applied for Social Security benefits in 1980–81. The NBS interviewed respondents shortly after first benefit receipt (in 1982) and the surviving members approximately ten years later (in 1991). Our sample consists of the new retired-worker beneficiaries age 62-72. The NBS separately sampled retired-worker women and men. We distinguish those groups here because female retired-worker beneficiaries are different from wives of male retired-worker beneficiaries; by definition the former must have sufficient covered work quarters to qualify for Social Security benefits. Likewise male retired-workers are more likely to be full-time and long-term workers than are husbands of female retired workers. Thus,

the distinguishing of female and male retired workers enable us to explore the role of Social Security retired worker benefits for women and men.

The NBS survey data are matched to Social Security administrative earnings and benefit records for respondents and benefit-eligible spouses, providing accurate measures of both pre-retirement covered earnings and unreduced Social Security benefits.[3] Individuals provided data on current and expected pension benefits as well as on financial and property holdings including, if married, of their spouse. With these data we are able to examine the persistence of retirement savings adequacy status over time. Statistics on the characteristics of this sample are shown in Appendix Table A.

The NBS is an ideal set for addressing the role of Social Security in resource adequacy during retirement. First, the NBS provides data on the wealth holdings and household structure of a large sample of men and women at the time of their retirement, defined by the first receipt of Social Security retired-worker benefits; hence we do not have to forecast these values from observations at a time prior to retirement. [4] Second, we observe these individuals at retirement, using a common definition of retirement—acceptance of Social Security retired-worker benefits.[5] These individuals have made this retirement decision at whatever is their level (in 1982) of resource adequacy. These data allow us to observe them over the subsequent decade as they consume or continue to accumulate resources. Third, the linked Social Security records,

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[3] Social Security records have been updated through December 2000 and earnings through 1999, providing data on intra-survey employment. We use these updated records.

[4] Respondent reports provide information on all of these values except Social Security benefits, which are from matched benefits data on both respondents and spouses.

[5] The NBS sample is of individuals who first received Social Security benefits between June 1980 and June 1981 (Ycas, 1992). Our sample is of retired-worker beneficiaries age 62-72 in 1982 who were interviewed in both 1982 and 1991. We require reinterview since for some younger spouses of retired-workers data on earnings and on social security and pension benefits are available only in 1991. Attrition of 1982 respondents is analyzed in Antonovics et al. (2002).

updated in a later year of retirement, allow us to estimate for each individual and married couple in both 1982 and 1991 a full net wealth measure, which is the sum of financial and property resources, the net value of own home (home value less outstanding mortgage), the present discounted values of currently received and expected pension benefits and the present discounted value of full Social Security benefits.[6]

In estimating the wealth of couples we consider the risk of widow(er)hood, survivor benefit rules, and consumption changes when one spouse dies. In estimating Social Security wealth in both 1982 and 1991, we project the monthly inflation-adjusted benefits to which each individual is entitled (obtained from the linked Master Beneficiary File) over the individual's expected remaining lifetime using 1982 race- and gender-specific life tables (U.S. Department of Health and Human Services, 1985), incorporating for married couples program-specific survivorship rules and the probability of being married or only one spouse surviving. We discount this stream to 1982 using a 2.75 percent rate, yielding the wealth value of Social Security benefits. The respondent-provided data on currently received or expected pension benefit amount reflect a nominal value of benefits at the time of interview and, thus we discount this expected stream by a rate that incorporates actual inflation adjustments made to NBS pensioners' benefits.[7] In calculating couples' pension wealth we account for whether the recipient indicated that his or her pension would continue to be paid to a surviving spouse. The Social Security plus pension and Social Security wealth of a couple is the sum of each spouse's

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[6] The 1982 NBS does not contain information on indebtedness other than the mortgage on a home, resulting in some overstatement of initial net wealth.

[7] On average pension benefits grew by 3.25 percent between 1982 and 1991 for fully retired NBS respondents, a rate that is 0.75 percent less than the 4 percent rate of inflation between those years. We thus use a 3.25 percent rate to discount pension benefit streams to 1982 (2.75 percent plus 0.75 percent).

wealth where pension and Social Security wealth calculations are over the probable separate and joint survival periods for husband and wife and the benefits expected under each status.[8]

We use these net wealth data to estimate the annuitized value of wealth holdings (ANW) in both years over the estimated remaining years of life of individuals and couples, including the years when only one spouse survives. We summarize these patterns and show the contributions to changes in wealth and ANW of the financial, home equity, pension, and Social Security components of these values. We then compare ANW to two standards of adequacy and examine changes in this ratio during the ten-year period. The first standard is one widely accepted in the literature—having available retirement income (ANW) equal to or greater than 70 percent of preretirement earnings (regarded as the income necessary in order to maintain preretirement consumption). The second is a social criterion of adequacy—having available retirement income (ANW) equal to or greater than poverty and near-poverty levels of income. Finally, we study the relationship of a variety of individual characteristics to changes in the level of resources and resource adequacy from the time or retirement to ten years after retirement. In examining changes in adequacy measures during the ten-year period after retirement, we test whether initial "adequacy" status persists into retirement, or if differential consumption, changes in family structure (e.g., death of a spouse), or post-retirement savings and work alters that status over time.

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[8]Social Security wealth for married couples is the sum of spousal wealth values. Each spouse's benefit is the higher of: 1) their own retired-worker benefit, or 2) the benefit as a spouse/widow. The value of Social Security benefits are estimated conditional upon remaining married or being a sole survivor, using Social Security survivorship rules. Pension benefits for married couples are estimated using answers that indicated whether a single-life or some form of survivor benefit was chosen. If a survivor benefit is indicated, a joint and two-thirds (66 percent) survivor benefit is assumed. For younger spouses and those for whom no age of receipt for an expected pension benefit was reported 1982, we used data from the 1992 survey, if available

IV. WEALTH AND ANW: 1982 AND 1992

Patterns of Wealth Levels and Change

Table 1 shows mean asset (total net wealth) holdings in 1982 and 1991 (in 1994 dollars) of our sample of retired workers, distinguished by gender and marital status. Table 1 also shows the composition of assets in each year, the percentage change over the period in both total net wealth and its components, and the contribution of changes in the level of each of the components of net wealth to the total change in net wealth.

[**Table 1 about here.]**

In 1982, the mean level of assets of both married men and married women exceeds $500,000. The asset value of Social Security benefits is about 40–50 percent of this total, while financial wealth accounts for 20–30 percent. By 1991, mean assets had fallen by about $150,000 (30 percent) for married women and by $115,000 (22 percent) for married men. The decrease in Social Security wealth accounts for about half of the 1982–1991 reduction in total assets; a reduction that is largely due to the shorter remaining lifetime in 1991 during which Social Security benefits must be spread in estimating the wealth value of Social Security benefits.[9] Social Security wealth of married women fell by 37 percent over this period, while for married men it fell by 25 percent, a gender difference due largely to the greater prevalence of widow(er)hood among women than men. The wealth value of pensions fell by about 25–30 percent from 1982 to 1991, reflecting both the reduced number of years of remaining life over which a pension benefit would be paid as well as reductions due to spousal death.[10] Financial

[9]Annual Social Security benefits are a lifetime annuity. The present discounted value of an annuity evaluated over a larger number of years of expected life (as in 1982) will be greater than its present value evaluated over a smaller number of years (as in 1991).

[10]Individual retirement accounts and 401(k) plan accumulations are included in financial assets.

wealth fell by about one-quarter, suggesting the drawing down of this wealth stock to support living costs during retirement. Interestingly, housing wealth remained virtually constant for both married men and women, suggesting that increasing housing equity offsets movement out of home ownership by retired couples. Pensions and financial wealth contributed about the same percentage to the total decline in wealth among married women and men.

A similar pattern is observed for single men and women. In 1982, single men held about $291,000 in assets upon retirement, while single women held $258,000. As with married couples, Social Security wealth accounts for the larger share, just under half, of total wealth. A substantial gender disparity in financial wealth exists, with the holdings of single men ($92,000, or 32 percent of total wealth) nearly double that of single women ($48,000, or 19 percent of total wealth). Conversely, housing wealth accounts for a larger share of the total wealth of single women (18 percent) than of single men (13 percent).

During the first ten years of retirement, the wealth of both single men and single women fell; the decrease for single women is 22 percent, and for single men is 13 percent. As with married couples, the decrease in pension and Social Security wealth accounts for the bulk of the reduction in wealth over the decade. It is noteworthy that the percent decrease in pension wealth (by 36 percent for single women and 28 percent for single men) is greater than the fall in Social Security wealth for each group.[11] For single men, housing wealth actually increased by more than 10 percent during the first ten years of retirement. However, the value of the housing stock of single women housing stock fell by over 15 percent over the 1982–1991 period, reflecting a more rapid rate of exiting home ownership or shifts to lower priced housing.

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[11]This differential pattern of pension and Social Security wealth change is likely due to a combination of factors that have negatively affected expected pension benefits, including only partial price indexing, the loss of benefits over time due to limited period payment (e.g., to survivors), and employer-related pension cutbacks.

For all of the groups, the change in Social Security wealth accounted for the major share of the decline in net wealth during the first decade of retirement; its contribution ranged from 46 percent of the overall decrease for single women to 60 percent for married women. Across the groups, decreases in financial wealth accounted for between 16 and 25 percent of the fall in net wealth, while pensions accounted for between 19 and 29 percent of the decrease. The fall in housing wealth accounts for about 12 percent of the decline in net wealth for single women; in contrast, the housing wealth of single men increased, offsetting about 12 percent of the decline in net wealth attributable to the decline in other wealth components. For married couples, housing wealth remained nearly unchanged over the first decade of retirement.

Patterns of Annuitized Net Wealth (ANW) Levels and Change

In Table 2 we show our estimates of the annuitized value of net wealth (ANW) in both 1982 and 1991 (again in 1994 dollars). ANW is the estimated constant level of annual real consumption over the remaining expected lifetime that is supported by initial wealth holdings. We estimate this value for 1982 and again for 1991 using wealth values for that year. In contrast to net wealth, ANW takes account of the remaining years over which wealth must be spread, thus differentiating between the sufficiency of wealth of older and younger retirees with identical net wealth, and of potential changes in the size of the consumption unit due to the probability of death of the husband or wife. For married couples, ANW reflects the probability and length of widow(er)hood and assumes a 1.6 ratio of couple to single-person consumption during married versus the years during which one spouse survives.[12] We annuitize wealth over the life of the

[12] Based on the equivalence scale work reported in the National Research Council's study of poverty measurement (Citro and Michael, 1995),

retired-worker and spouse assuming this equivalence scale. In effect we assume a joint and two-thirds survivor benefit for all assets, an allocation that reflects consumption needs during both the survival of the couple and the widow(er). The ANW estimates for married couples are single-person equivalent values; the values for single and married individuals are thus directly comparable.

[Table 2 about here.]

For women and men, mean equivalent ANW is between $23,000 and $25,000 in 1982, less than that of single men ($26,000), but greater than that of single women ($19,000). For all of the groups the mean level of ANW increased during the first ten years of retirement, with the increase for both married and single men (about 12 percent) exceeding that for women (2 percent to 5 percent). Married women experienced the smallest increase in ANW.

The percentage increase in annuitized housing wealth is large for all of the groups, though single women experienced markedly lower growth in the consumption potential from this asset. These increases are consistent with constraints on reducing net equity in housing without divesting entirely. The relatively constant levels of housing wealth observed in Table 1 result in large increases in housing-based ANW during the first decade of retirement, as housing value is spread over a shorter lifetime. In contrast to the substantial decreases in the wealth value of financial assets, the annuity value increased for all of the marital status/gender groups, though the increase was modest for married women. For all but married women, the annuity value of Social Security wealth increased modestly. Because these benefits are indexed and paid only as an annuity, the small change recorded from 1982 to 1991 is likely due to changes in household

composition that alter benefits or to benefit payments adjusted for additional earnings.[13] The annuity value of pension wealth fell for all of the groups, with married women experiencing the largest fall by about 16 percent overall, consistent with the large decrease in the wealth value of expected pensions reported in Table 1. The greater decrease in the annuity value of pension wealth for women than for men likely reflects the loss of husband's pension upon widowhood for women married in 1982 and the termination of period-certain pension payments for women already widowed in 1982.

V. ESTIMATES OF LEVELS AND CHANGE IN RESOURCE ADEQUACY

To provide a perspective on the extent to which differential changes in ANW for women and men are of social concern, we compare the resources available to these newly retired workers to preretirement earnings and to the poverty level (and twice poverty level). The first comparison is of ANW to "permanent preretirement earnings," which we operationalize as the average earnings of the individual or couple from age 50 to one year prior to the respondent's first benefit receipt.[14] The second ratio is of ANW to the poverty line.[15] We calculate these two indicators of resource adequacy both in 1982 and 1991.

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[13]While all sample members initiated benefit receipt, some continued to work with earnings under the earnings limit in place at that time. Some in the sample began benefits but upon returning to work temporarily ceased receiving benefits. Additional covered earnings and interruptions in benefit receipt can increase the benefits for which an individual is eligible. Note that our Social Security wealth values are based on Social Security benefits for which a person was eligible, unreduced by earnings but reflecting early or delayed retirement provisions.

[14]The estimation of our preretirement earnings measure is described in Appendix A. The estimation of preretirement earnings includes adjustments for covered earnings above the taxable maximum and for earnings in jobs not covered by Social Security. The earnings of couples are the average over the relevant period of the summed earnings for both spouses.

[15]For each household, the single-person equivalent ANW is compared to the single-person poverty line. For a couple a ratio of 1 or greater implies that including the probability and length of widow(er)hood and accompanying changes in income, annuitized resources provides a level of income persistently above the poverty threshold. We use the revised poverty lines suggested by the National Research Council study of poverty (See Citro and Michael, 1995).

[Table 3 about here.]

Table 3 summarizes the median levels of ANW, the earnings replacement rate (RR) and poverty ratio both in 1982 and 1991 for the four gender-marital groups. The message is of relative stability in these measures of well-being, with the possible exception of married women. Over all these NBS households, the median replacement rate was 0.83 in 1982 (not shown), indicating that the resources available to the median retiree more than meet the commonly accepted 70 percent maintenance-of-consumption standard.[16] This was true for each of the subgroups. During the first decade of retirement, the RR for the median retiree was fairly constant, although for married women it fell from 0.85 to 0.78. At the median, then, the picture is of fairly modest deterioration in well-being over time, mainly for married women. These medians, however, indicate little about the distribution of replacement rates and the prevalence of shortfalls from the 0.7 standard. In 1982, about 30 percent of the new beneficiaries had an ANW below 0.7 of preretirement earnings, though it was higher for single men. By 1991, ten years after retirement, the overall percentage increased only for married women.. The poverty standard shows even greater stability. It would appear that on average the overall level of resources is maintained during the first decade after retirement although some hint of the greater vulnerability of married women in this period is suggested by increases in the percentage below the RR standard between these two years for them.

[Table 4 about here.]

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[16]In the literature on savings adequacy, a standard of 70 percent of preretirement earnings is typically used as the level of post-retirement income necessary to maintain consumption. This 70 percent figure is supported by Boskin and Shoven (1987), who estimate that the "required" replacement rate is about 75 percent after adjusting for preretirement expenses in the form of savings, work-related expenses, and taxes that are avoided in retirement years. Bernheim, Skinner, and Weinberg (2001) using Consumer Expenditure Data, find reductions in "goods that are potentially complementary to work" (purchases of clothing, transportation and food away from home) do not vary substantially in percentage terms across income quartiles. (P. 852), thus supporting a uniform replacement standard across income groups.

Table 4, however, shows there were considerable upward and downward movements across these thresholds during the 1982 to 1991 period for all groups, with women more likely to experience shifts downward than were men. Due to good or bad luck, or to wise or foolish choices, some individuals increased their wealth over time while others did not. Table 4 shows the percent of those who's ANW was below or above the 0.7 earnings or twice the poverty threshold in 1982 who had crossed these thresholds in 1991. Of all married men above the 0.7 replacement rate in 1982, 15 percent did not meet that criterion ten years later. This compares to twice that percentage (30.4 percent) of married women. Of married men who had below ANW below the 0.7 RR a higher proportion (37 percent) moved above that threshold in 1991 than was the case for any of the other three groups. The same phenomenon is observable for twice the poverty threshold where movements out of near poverty were far more prevalent for married men than for married women and particularly than for unmarried men and women.

VI. ANW GAINERS AND DECLINERS

Table 4 suggests greater stability in the economic well-being of married men; in Table 5 we begin our exploration of the factors that could explain these gender differences, especially how important is Social Security to stability and change during retirement. The first column shows the percentage of the full sample with each characteristic. Columns 2 and 3 indicate the extent to which those with the indicated characteristics are represented among those whose ANW increased or decreased by more than 2.5 percent over the first decade of retirement (those for whom ANW remains stable are not separately identified).[17] We label the first group as

[17]The ANW calculations in both 1982 and 1991 are calculated as single-person equivalents and so the ANW of persons who are married and single can be aggregated and compared.

"gainers" and the second as "decliners." Over the entire sample of individuals and couples, 38 percent experienced a loss in ANW of more than 2.5 percent over the 1982–1991 period, and 53 percent experienced an increase in ANW of more than 2.5 percent.

[Table 5 about here.]

The bold numbers in columns two and three indicate the higher value for a characteristic that is significantly different for decliner and gainers. For example, those who retired at an older age are more likely to be gainers than those who retired when younger, suggesting a continued disadvantage in the economic prospects of those who receive benefits early, a characteristic more likely of women in our sample.[18] Several other patterns are also noteworthy. Consistent with the greater stability shown in Table 4, married men accounted for 47 percent of the entire sample in 1982, but for only 42 percent of those whose ANW fell by more than 2.5 percent over the next ten years, and for a significantly higher proportion (52 percent) of those whose ANW rose by at least this amount. Both single and married (as of 1982) women, on the other hand, are disproportionately represented among those whose ANW declines. Those who changed marital status over the period, widow(er)s as of 1982, and those with little education and health problems (either respondent or spouse) tended to experience substantial declines in ANW. Those who worked more years, either prior to or after retirement, and those with a spouse who worked after retirement tend to be relative gainers; this is as expected since earnings after retirement reduce the need to draw down assets in order to support retirement.

[18]Haveman, Holden, Wolfe, and Wilson (2000) describe the relatively disadvantaged economic status of individuals who took benefits before age 65. The economic status of early retirees in this sample is a consequence of characteristics of these retirees (e.g., low education, or weak labor force attachment) that are related to both early benefit receipt and low economic status. Because the data are for recipients only, they do not permit an analysis of the causal relationship between economic status and retirement timing.

Finally, those with low 1981 ANW relative to the poverty line and those with ANW below the 0.7 standard are more heavily represented among the gainers. The pattern of gainers and decliners by the composition of wealth holdings is consistent with the different concentration of those with ANW below and above the adequacy standards and by some shift toward the median or average. Those for whom Social Security wealth constitutes a relatively large share of 1982 asset holdings are gainers, while those with larger pension and financial asset shares tended to experience declines in ANW over the first decade of retirement. These patterns are also consistent with the higher risk of wealth declines for those retirees who hold a substantial share of their ANW in the form of more risky financial and pension assets, relative to Social Security wealth.

VII. CORRELATES OF CHANGE IN ANW

The patterns in Table 5 are suggestive of characteristics that increase the vulnerability of both married and unmarried women to changes in economic status during retirement—loss of a spouse for the former and perhaps earlier receipt of benefits, lower education and lower pension coverage for both. There is also suggestion that asset composition matters, which is explored further in Table 6 which examines how the change in ANW over the 1982–1991 period is related to the initial composition of assets, controlling for a set of retiree characteristics. We subdivide financial assets into three categories—relatively low risk financial assets, high risk financial assets, and equity in businesses and (non-home) property. The share of wealth that is accounted for by pension wealth is the excluded category. [19] Other variables are introduced to control for

[19] We define riskless financial assets as checking accounts, money market accounts, CDs, bonds, life insurance and similar assets. Risky assets are defined to include stocks, shares in mutual funds, Keogh, IRAs. The

sample selection and characteristics that would confound the relationship between asset share and ANW growth.

[Table 6 about here.]

Having a large share of assets in Social Security or housing is positively and strongly associated with the growth in resources during the first decade of retirement for all groups, with the exception of single men.[20] In a period during which the Consumer Price Index rose by nearly 50 percent, holding a large share of assets in these forms appears to contribute to both inflation protection and real wealth growth. What is striking is that only married men gained in terms of ANW growth from holdings of risky assets. Whether from more conservative investment decisions or bad luck in choosing risky investments, the other groups experienced no gain from a greater share of ANW in risky, high growth, assets. As was suggested by the simple comparisons in Table 5, those who retired when older, those without health problems, and those with health insurance had statistically significant increases in ANW over the 1982–1991 period.[21] The differential impact for women and men of spouses' death is striking—it had a significant positive impact on men's ANW, but a negative impact on that of married women.

[Table 7 about here.]

Table 7 explores the correlates of changes in the log of ANW, focusing on individual characteristics with an a priori expected relationship to changes in ANW. We estimate this model using a "value added" specification, including the level of ANW in 1982 (in log form) as a right

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third category of financial assets includes equity in housing other than the primary residence, and equity in businesses, professional practices, or farms.

[20] The far fewer number of single men may be one explanation for the lack of significance and lower R-square value of this estimation.

[21] These wealth-component results are quite robust across ANW groups. They are strongest for those whose ANW places them (over their remaining lifetime) between two and four times the poverty threshold, a group that accounts for 50 percent of our sample (estimates available from the authors).

hand side variable. The level of resources in 1982 is significantly associated with the growth in ANW over the period; the coefficient of less than unity suggests a convergence over time as higher ANW is associated with less growth in ANW.

Given initial ANW, what characteristics are correlated with increases or declines in ANW over the first ten years of retirement? For nearly all of the gender/marital status subgroups, the following characteristics are positively and significantly related to the growth of ANW from the time of retirement to ten years later:

- Age of benefit receipt, indicating continuing economic advantages accruing to those receiving benefits (retiring) at older ages
- Higher respondent and spouse education (if married)
- Being white (relative to nonwhite)
- More years worked prior to retirement
- More years worked after retirement
- Having fewer children (if married)
- Having better health, and spouse having fewer health problems (if married)
- Having private health insurance
- Being a homeowner

Many of these relationships are consistent with the group gain/loss patterns observed in Table 5 and Table 6, and none are particularly surprising. Many of the characteristics are proxies for human capital, and therefore would be positively related to earnings during working years. To the extent that these determine earnings, pension coverage and benefits, and savings, their effect is already present in the 1982 ANW. Their importance in explaining the growth in resources after retirement controlling for the base level of resources suggests a continuing

advantage of human capital in shaping post-retirement financial decisions and consumption choices.[22] Other characteristics indicate fewer demands on private resources (e.g., having better health, and having private health insurance).

Several variables point to the role of Social Security in maintenance of well-being over time. Interestingly, women, in contrast to men, whose longest job was not covered by Social Security showed less growth (or larger falls) in ANW over time.[23] This may be a consequence of the noncovered pension offset rule that reduces Social Security spouse/widow benefits when a pension from noncovered work is received by a spouse, and/or the failure of women in noncovered jobs to compensate for lower Social Security wealth with offsetting investment and pension decisions.[24] A change from being married at the time of retirement to being single 10 years later retains its positive significant effect on ANW for men in this specification, as well as its strongly negative and significant effect for women. The increase in ANW for men is likely due to the relatively small loss in income when a wife (in contrast to a husband) dies and the fact that the loss of an (on average younger) wife sharply reduces the number of years of expected life (of the household) over which assets need to be spread, increasing their annuity value. Conversely, for women, the decrease in ANW due to the loss of a spouse after retirement is likely due to the larger income (and wealth) loss suffered when husbands die and the shorter lifetime of the deceased husband compared to the wife.[25] For men, the number of years after

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[22]Alternatively, retirees with more human capital may hold assets (including pensions) that grow more rapidly, which effect is not captured in our crude measure of base year resources.

[23] Recall all these women are eligible for their own retired-worker benefits. Some may also be eligible for a higher spouse or widow benefit.

[24] An individual, upon an earlier change in jobs, may withdraw and consume contributions made to an uncovered pension. That person would have reduced Old Age and Survivors Insurance coverage and benefits without the benefit of the higher noncovered pension. If withdrawals were saved and invested, that wealth would be included in our ANW estimates.

[25]Parallel results exist for men and women who were single in 1982, and marry after retirement.

retirement that they continued to work is positively associated with increases in ANW over the first decade of retirement, but this relationship is present for only single women. However, for married women the change in ANW is positively and significantly associated with the number of years that their spouse but not they themselves worked after first taking retirement benefits.

VIII. CORRELATES OF CHANGES IN RESOURCE ADEQUACY

The analysis in Table 8 relates the characteristics of retirees to the change in the replacement rate (RR = ANW/preretirement earnings)—over the 1982–1991 period.[26] We, again, employ a value added approach, including the 1982 RR level. Coefficients indicate a change from that initial level. Statistically significant coefficients are shown in bold in the table.

[Table 8 about here.]

The results in Tables 7 and 8 are similar. For all of the gender/marital status categories other than single women, the relationship between the base level RR and the change in the RR is positive but less than unity; those with higher replacement rates in 1982 experienced decreases in RR over the first ten years of retirement, again suggesting that those with sufficient resources at the time of retirement were more able and likely to draw down their resources to support consumption during the retirement period. Becoming widowed during the first ten years of retirement diminishes RR for married women, but now for married men as well, while entering a new marriage improves the RR only for women. Married men and women with more children tend to have decreases in RR, suggesting that transfers of resources to offspring over the

[26]Correlates of change in RR (Table 8) may differ from those of change in ANW (Table 7) because of different distributions of ANW and preretirement earnings. Note that the denominator of RR is unchanged between 1982 and 1991 for each individual. This is not a problem for married couples since all our values are single-person equivalents.

retirement period are not just from "extra" gains in ANW over this period.[27] Having a college education increases RR, supporting speculation that human capital continues to have value beyond its effects on labor market earnings and pre-retirement savings decisions. Consistent with a pattern observed earlier, having a pension is associated with decreases in the RR during the first decade of retirement. Finally, for single men and women, and for married men, increases in the RR are positively associated with work after retirement.

IX. CONCLUSION

We have explored the changing circumstances of a sample of individuals as they survived the first decade of retirement. We argue that examining the accumulation and decumulation of resources during retirement for a panel of individuals is necessary to understand the role of individual components of retirement income, including Old Age and Survivors Insurance to retirement well-being. Our results show that initial measures of retirement savings provide only a partial picture of retirement security since there are important changes that occur during even the first ten years of retirement. Our analysis addresses the role of Social Security to the maintenance of economic well being of women and men during retirement. Gender considerations in the Social Security debate arise because women live longer men and because they are less likely to be fully engaged in labor market work throughout their working age years. The first is a phenomenon that will not be altered by labor market changes—whether they become fully engaged workers or not, even comparable retirement assets to men will have to be spread over a longer lifetime and couples will have to consider the resources required to maintain

[27] An interesting retirement research issue concerns the extent to which such intra-vivos transfers are intended at retirement, implying that measures of savings adequacy may be overstated

consumption levels during the period when only one (most likely the wife) survives. Labor market work is expected to continue to rise for women and here the debate centers around whether women will continue to require the protection currently provided by Social Security against lower lifetime earnings due to child rearing and against the loss of income when a spouse dies.

We believe our results provide some insight into this debate. We have estimated a measure of ANW, which takes into account the longer lives of women, and a replacement rate based on permanent preretirement earnings both at the time of retirement (1982) and ten years later (1991). While our results have some implications for the measured adequacy of retirement savings at retirement, we focus in this paper on the stability of these measures for the four gender-marital groups. Married women in this sample were economically vulnerable due to the loss of a spouse. That event plays a large role in RR change, reducing the RR by .71 when a husband dies.[28] Examining components of ANW growth suggests that Social Security (and housing) are more important for women in maintaining ANW. Men appear to be protected by their more diversified assets. Whether women are not because of their own more conservative financial decisions, their husband's bequests decisions, or because Social Security truly does play a dominant role remains an open and important question. Married women experienced a larger decline in pension wealth during this period, a result that appears to be due both to the loss when widowed of husbands' pension income and because of the greater consequence for married women (whether widowed or not) of having worked in an uncovered (and typically pension

[28] Note that the numerator and denominator are single-person equivalent indicators. This fall is not due merely to a smaller retirement income being compared to the couple's preretirement income. Both reflect the one person household consumption standards.

covered) job. We conclude this indicates the particular importance to women as workers and widows of Social Security's inflation adjusted worker and survivor benefits.

In both 1982 and 1991 approximately the same proportion of the total sample was below the RR standard (0.7 of preretirement earnings) and below twice the poverty threshold. The median replacement rate and ratio of ANW to poverty thresholds show the same stability. This was a consequence of some differential changes in these broad measures of average well-being for the four demographic groups, but even for the subgroups the picture was of remarkable stability, although there was some deterioration for married women. There was far greater instability in resource adequacy over time than is suggested by median levels. We find considerable shifting across these thresholds particularly by married and unmarried women. Changes in both the aggregate value of resources (ANW) and the RR are related to the characteristics of these retired people in expected ways. Pre-retirement economic advantages and disadvantages continued into retirement. Even controlling for initial levels of resources (and thus human capital effects on them), both women and men who had more education, received Social Security benefits at an older age, had fewer children, were in better health, had private health insurance and owned a home tend to have greater increases (or greater stability) in both ANW and RR. To the extent that these characteristics become more prevalent among future cohorts of women and more equal to men, male-female differences would be expected to disappear. However, being widowed after retirement decreases the annuity value of assets and the RR for women, suggesting insufficient provision for survivors in the U.S. retirement system (including pension survivorship provisions and husband's bequest decisions) than is consistent with the consumption needs of the survivor. Importantly, work after retirement increases ANW and RR, implying that this may be an important component of retirement adequacy, perhaps even a

planned component by individuals. However, it does not play a role for married women. Assuming that work ceases at retirement may underestimate retirement adequacy for an important percentage of individuals. To the degree that work lives of women lengthen, including into the years after formal retirement, they may be able to offset their relative disadvantages as widows and long-lived individuals.

We believe that our results have the potential to contribute to policy discussions regarding the alteration of social insurance programs so as to increase the adequacy of those whose resources fall below their own preretirement consumption patterns and, especially social norms regarding minimal consumption standards. The strong contribution of Social Security benefits in maintaining retirement well-being during the first decade of retirement has implications for proposals that would substitute private retirement accounts for Social Security benefits. The negative impact of private pension shares in ANW on the maintenance of retirement resources also has implications for proposals designed to increase the relative role of private savings in supporting retirement, especially for women.

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TABLE 1
Mean Household Net Wealth and Components
New Retired-Worker Beneficiaries, 1982 and 1991

Wealth Component	Mean 1982	Mean 1991	% Change	Contribution to Total Change
		(thousands of $1994)		
Married Women				
Net Wealth	502.4	350.5	-30.2%	100.0%
Financial	111.8	80.2	-28.3	20.8
Housing	72.1	71.7	-0.5	0.3
Social Security	249.0	157.6	-36.7	60.1
Pensions	69.5	41.0	-41.0	18.8
Married Men				
Net Wealth	534.7	419.3	-21.6%	100.0%
Financial	145.9	117.5	-19.4	24.6
Housing	85.5	83.0	-2.9	2.2
Social Security	230.2	172.9	-24.9	49.6
Pensions	73.2	45.9	-37.3	23.7
Single Women				
Net Wealth	258.0	201.5	-21.9%	100.0%
Financial	$48.0	$38.9	-19.1	16.3
Housing	45.2	38.2	-15.4	12.3
Social Security	125.1	99.1	-20.8	46.0
Pensions	39.7	25.3	-36.4	25.5
Single Men				
Net Wealth	290.8	254.3	-12.6%	100.0%
Financial	91.8	83.4	-9.2	23.0
Housing	38.5	42.7	11.0	-11.6
Social Security	122.2	100.5	-17.8	59.3
Pensions	38.4	27.7	-28.0	29.3

TABLE 2
Mean Household Annuitized Net Wealth and Components
New Retired-Worker Beneficiaries, **1982 and 1991**

Wealth Component	Mean 1982	Mean 1991	% Change	Contribution to Total Change
		(thousands of $1994)		
Married Women (N=1,505)				
Net Wealth	22.5	23.1	2.3%	100.0%
Financial	5.3	5.4	1.7	17.7
Housing	3.3	4.9	48.4	307.3
Social Security	10.9	10.2	-6.2	-128.7
Pensions	3.1	2.6	-16.3	-96.3
Married Men (N=2,634)				
Net Wealth	24.9	27.9	12.0%	100.0%
Financial	6.5	7.7	17.8	38.7
Housing	3.7	5.3	40.3	50.5
Social Security	11.1	11.8	6.5	24.1
Pensions	3.6	3.2	-11.1	-13.3
Single Women (N=1,028)				
Net Wealth	19.0	20.0	5.5%	100.0%
Financial	3.5	3.9	10.9	36.6
Housing	3.2	3.7	14.6	45.4
Social Security	9.3	9.9	6.7	59.8
Pensions	3.0	2.5	-14.7	-41.8
Single Men (N=412)				
Net Wealth	25.7	28.7	11.8%	100.0%
Financial	8.2	9.8	19.9	53.7
Housing	3.4	4.7	40.0	44.3
Social Security	10.8	11.2	3.2	11.5
Pensions	3.3	3.0	-8.6	-9.4

TABLE 3
Well-being Measures 1982 and 1991, by Gender

	1982	1991
MARRIED MEN		
Median Annuitized Net Value	$20,2860	$21,312
Median ANW to Preretirement Earnings	0.84	0.87
Median ANW to Poverty	3.25	3.41
Median ANW to Two-times Poverty	1.62	1.71
Percent Below .7 RR	29.84	29.20
Percent Below Poverty Threshold	1.90	1.86
Percent Below Two-times Poverty Threshold	15.19	12.11
MARRIED WOMEN		
Median Annuitized Net Value	$18,715	$18,977
Median ANW to Preretirement Earnings	0.85	0.78
Median ANW to Poverty	3.00	3.04
Median ANW to Two-times Poverty	1.50	1.52
Percent Below .7 RR	29.04	42.06
Percent Below Poverty Threshold	1.86	6.11
Percent Below Two-times Poverty Threshold	21.13	25.18
UNMARRIED MEN		
Median Annuitized Net Value	$18,733	$18,338
Median ANW to Preretirement Earnings	0.71	0.76
Median ANW to Poverty	3.00	2.94
Median ANW to Two-times Poverty	1.50	1.47
Percent Below .7 RR	49.51	42.72
Percent Below Poverty Threshold	7.52	6.07
Percent Below Two-times Poverty Threshold	32.04	29.61
UNMARRIED WOMEN		
Median Annuitized Net Value	$15,470	$15,733
Median ANW to Preretirement Earnings	0.81	0.84
Median ANW to Poverty	2.48	2.52
Median ANW to Two-times Poverty	1.24	1.26
Percent Below .7 RR	33.17	34.73
Percent Below Poverty Threshold	9.73	9.63
Percent Below Two-times Poverty Threshold	36.28	37.45

Table 4
1982–91 Change in Status
(% in 1982 group by 1991 status)

	1991	
1982	Meeting replacement (>.7)	Not meeting replacement(<.7)
MARRIED MEN		
Meeting replacement (>.7)	**85.1**	14.9
Not meeting replacement (<.7)	37.3	62.7
MARRIED WOMEN		
Meeting replacement (>.7)	**69.6**	30.4
Not meeting replacement (<.7)	29.5	70.5
UNMARRIED MEN		
Meeting replacement (>.7)	**85.1**	14.9
Not meeting replacement (<.7)	28.9	71.1
UNMARRIED WOMEN		
Meeting replacement (>.7)	**81.7**	18.3
Not meeting replacement (<.7)	32.3	67.7
1982	Meeting standard (>.2pov)	Not meeting standard(<.2pov)
MARRIED MEN		
Meeting replacement (>.2pov)	**96.9**	3.1
Not meeting replacement (<.2pov)	37.5	62.5
MARRIED WOMEN		
Meeting replacement (>.2pov)	**87.1**	12.9
Not meeting replacement (<.2pov)	28.9	71.1
UNMARRIED MEN		
Meeting replacement (>.2pov)	**95.4**	4.6
Not meeting replacement (<.2pov)	17.4	82.6
UNMARRIED WOMEN		
Meeting replacement (>.2pov)	**87.3**	12.7
Not meeting replacement (<.2pov)	19.0	81.0

TABLE 5
Declines and Increases in ANW 1982–1991, by characteristics of respondent.

	All Respondents	Decliners	Gainers
Number of Observations	5,579	2,144 (38.4%)	2,942 (52.7%)
Age	65.9	65.7	**66.1****
Proportion with Characteristic			
Single men	0.07	0.07	0.07
Single women	0.18	**0.19**	0.17*
Married men	0.47	0.42	**0.52*****
Married women	0.27	**0.32**	0.25*****
Below poverty in 82	0.04	0.01	**0.04*****
Below near poor in 82	0.22	0.15	***0.24****
Replacement rate <.7 in 82	0.32	0.22	***0.38****
>.7 replacement rate in 82	0.68	**0.78**	0.62*****
Nonwhite	0.10	0.09	0.09
Widowed in ‘82	0.46	**0.51**	0.44*****
Separated or divorced in ‘82	0.32	0.29	0.33
Married in ‘82; Single in ‘91	0.14	**0.18**	0.13*****
Single in ‘82; Married in ‘91	0.01	**0.02**	0.01*****
Respondent high school	0.30	**0.32**	0.29****
Respondent some college	0.15	0.14	***0.17****
Respondent college or higher	0.13	0.12	***0.15****
Spouse high school	0.34	0.34	0.34
Spouse some college	0.14	0.13	0.15
Spouse college or higher	0.09	0.09	0.10
With Longest Job Uncovered	0.18	0.19	0.18
Have Private Health Insurance	0.82	0.84	0.83
Have Pension	0.54	**0.63**	0.48*****
Own Home	0.80	**0.83**	0.81****
Number of Children	2.53	2.5	2.5
Years Worked	31.5	31.0	**31.8****
Respondent Years Worked after Retirement	2.29	1.80	***2.70****
Spouse Years Worked after Retirement	2.03	1.69	***2.28****
Number of Health Problems	2.17	**2.23**	2.08*****
Spouse Health Condition	0.42	**0.44**	0.40*****
% Wealth in 82 Accounted for by Asset Holdings	14.9	**19.2**	12.8*****
% wealth in 82 Accounted for by Housing Wealth	15.0	15.3	15.6
% Wealth in 82 Accounted for by Pensions	11.6	**14.5**	9.8*****
% Wealth in 82 Accounted for by Social Security	58.4	51.0	**61.8*****
Interaction: Private Health Insurance X Number of Respondent Health Problems	1.8	**1.8**	1.7*****

Note: Percentage of gainers and decliners with characteristic is significantly different at * p<.1; ** p<.05; *** p<.01.

Table 6
Contributing Components to Percent Change in ANW

	% Change ANW			
Dependent variable	Married Men	Married Women	Single Men	Single Women
Intercept	-2.41*	-2.93*	-0.43	-2.82*
Share of ANW in risky assets	0.74*	0.15	0.39	-0.28
Share of ANW in riskless assets	0.27**	0.01	1.65*	0.35
Share of ANW in equities in property	0.07	0.48*	0.20	0.13
Share of ANW in social security	0.68*	0.49*	0.37	0.77*
Share of ANW in housing	0.74*	0.76*	0.69	0.60*
Age in 82	0.03*	0.04*	0.00	0.03*
Married in 82, single in 91	0.40*	-0.34*		
Single in 82, married in 91			-0.40	0.20
Unexpected income received	0.12*	0.26*	0.08	0.21*
Number of health problems in 82	-0.02*	-0.02	0.04	-0.02*
Additional health problems by 91	-0.03*	0.01	-0.01	-0.02
Spouse health condition in 82	-0.05	0.00		
Spouse health condition in 91	-0.03	-0.12*		
Private health insurance in 82	0.03	-0.01	0.11	0.05
Private health insurance in 91	0.08*	0.13*	0.10	0.11*
Annuitized wealth in 82	-0.002	-0.002*	-0.004	-.0002
Number of observations	2634	1505	412	1028
	26.1	12.95	1.07	9.72
F-value (p-value)	(p<.0001)	(p<.0001)	(p=.385)	(p<.0001)
Adjusted R-squared	0.125	0.106	0.002	0.099
Mean change in ANW	.187	.084	.205	.135

Note: * significant at the 1% level ** 5% level

TABLE 7
Regression Results for 91 LOG of Annuitized Net Wealth, Controlling for Log(ANW'82)

Independent Variable	Married Men		Married Women		Single Men		Single Women	
	Parameter Estimate	t-Value	Parameter Estimate	t-Value	Parameter Estimate	t-Value	Parameter Estimate	t-Value
Intercept	-0.7022	**-3.08**	-1.3248	**-3.29**	-0.8299	-1.31	-1.6540	-4.34
log(ANW'82)	0.6335	**36.39**	0.6405	**23.51**	0.6891	**14.76**	0.6567	**22.08**
Age in 1982	0.0236	**6.71**	0.0334	**5.30**	0.0258	**2.61**	0.0337	**5.74**
Nonwhite	-0.1044	**-3.44**	-0.0538	-1.29	-0.1147	-1.91	-0.0904	**-2.39**
Widowed in '82					-0.1382	**-2.07**	0.0163	0.43
Separated or divorced in '82					-0.1096	-1.81	0.0156	0.40
Married in '82; Single in '91	0.2445	**10.48**	-0.2995	**-12.16**				
Single in '82; Married in '91					-0.2811	**-4.07**	0.1550	1.87
Respondent high school	0.0433	**2.27**	0.1009	**3.64**	0.1230	**2.12**	0.0653	2.05
Respondent some college	0.1209	**4.84**	0.2134	**5.95**	0.0955	1.29	0.1566	**4.19**
Respondent college or higher	0.2087	**7.81**	0.2529	**5.20**	0.2352	**3.14**	0.1798	**4.06**
Spouse high school	0.0382	**2.08**	0.0096	0.34				
Spouse some college	0.0719	**2.91**	0.0273	0.69				
Spouse college or higher	0.0652	**2.01**	0.1315	**3.04**				
Number of children	-0.0112	**-3.07**	-0.0182	**-3.01**	0.0103	0.90	-0.0084	-1.14
Years worked	0.0039	**3.43**	0.0044	**3.59**	-0.0012	-0.39	0.0059	**3.76**
Resp. years worked after ret.	0.0101	**4.40**	0.0013	0.33	0.0237	**3.31**	0.0271	**6.89**
Sp. Years worked after ret.	-0.0017	-0.69	0.0097	**2.55**				
Longest job uncovered	-0.0186	-0.99	-0.0768	**-2.34**	0.0305	0.52	-0.1083	**-2.68**
Number of health problems	-0.0094	**-2.43**	-0.0179	**-2.86**	-0.0167	-1.58	-0.0069	-1.02
Spouse health condition	-0.0362	**-2.28**	0.0028	0.12				
Private health insurance	0.0550	**2.53**	0.0554	1.74	0.0655	1.22	0.0537	1.61
Pension	-0.0152	-0.89	-0.0238	-0.97	0.0639	1.23	0.0398	1.33
Home ownership	0.1032	**4.43**	0.1151	**3.32**	0.1559	**2.95**	0.0731	**2.45**
Number of observations	2,634		1,505		412		1,028	
F-value (p-value)	215.83	<.0001	108.44	<.0001	58.47	<.0001	125.64	<.0001
Adjusted R-squared	0.62		0.59		0.70		0.67	
Mean log(ANW'91)	3.11		2.90		2.96		2.75	

Note: t values in bold are significant at the 5% level of significance.

TABLE 8
Regression Results for Replacement Rate in 1991, Controlling for 1982 Replacement Rate

Dependent Variable	Married Men		Married Women		Single Men		Single Women	
Regressor	Parameter Estimate	t-Value	Parameter Estimate	t-Value	Parameter Estimate	t-Value	Parameter Estimate	t-Value
Replacement Rate ‘82	0.9529	**88.35**	0.8174	**27.65**	0.7393	**9.33**	1.0241	**316.64**
Married ‘82; Single ‘91	-0.2042	**-2.76**	-0.7070	**-6.97**				
Single ‘82; Married ‘91					0.0699	0.23	1.0860	**2.39**
Respondent some college	0.0806	1.03	0.3684	**2.51**	-0.1093	-0.34	-0.1846	-0.92
Respondent college or higher	0.0964	1.17	0.0664	0.34	0.9176	**2.93**	-0.0678	-0.29
Number of children	-0.0194	-1.68	-0.0542	**-2.17**	0.0093	0.18	-0.0234	-0.58
Years worked	0.0014	0.38	-0.0063	-1.25	-0.0366	**-2.83**	0.0117	1.45
Respondent years worked after retirement	0.0236	**3.24**	-0.0192	-1.15	0.1233	**3.91**	0.0595	**2.76**
Longest job uncovered	-0.0199	-0.33	-0.0228	-0.17	0.2661	1.01	-0.6117	**-2.76**
Pension	-0.1089	**-2.10**	-0.1455	-1.50	0.2269	1.08	-0.0681	-0.45
Number of observations	2,634		1,505		412		1,028	
F-value (p-value)	428.7	<.0001	43.76	<.0001	9.7	<.0001	5983.48	<.0001
Adjusted R-squared	0.7646		0.3625		0.2647		0.9900	
Mean RR	1.2721		1.1166		1.2772		2.1623	

Note: t statistics in bold indicate statistical significance at the 5% level.

Appendix A
Estimation of Annuitized Net Wealth and Preretirement Earnings

Annuitized Net Wealth (ANW)

For both 1982 and 1991, we estimate the annuitized value of *all* assets over the remaining expected lifetime of respondents and, if married, of surviving spouses (again using race- and gender-specific life tables). Because our wealth estimates already reflect differences in inflation indexing, we use a uniform interest rate of 2.75 percent, taken to be the individual rate of time preference. The annuitized values we report are the single-person equivalent income that would be received if an individual or couple maintain a steady level of consumption potential over their remaining lifetimes, including the period when only one partner in a couple is expected to survive.[29]

Permanent PreRetirement Earnings

To assess the adequacy of available resources, we relate the ANW of each individual and couple in our sample to their level of "permanent" preretirement earnings—taken to reflect the income flow available to each respondent in the years before they retired. We estimate this indicator of preretirement living standards using the NBS-linked Social Security records on covered earnings for each respondent (and their spouse, if married) from age 50 to one year prior to the respondent's retirement (first benefit receipt). Because annual covered earnings records are capped at the maximum taxable earnings amount for each year, we use a Tobit estimation

[29]Based on the equivalence scale work reported in the National Academy of Sciences study of poverty measurement (Citro and Michael, 1995), a couple is assumed to require 1.6 times the resources of a single person. We annuitize wealth over the life of the retired-worker and spouse assuming this equivalence scale. In effect we assume a joint and two-thirds survivor benefit for all assets, an allocation that reflects consumption needs during both the survival of the couple and the widow(er).

procedure to predict total earnings for individuals when the capped value is recorded; predicted earnings values are substituted for the capped values. Hence, permanent preretirement earnings equal the average of earnings that are below the cap and predicted earnings (in place of capped values) over the relevant years. For married couples, the recorded/predicted earnings of each spouse are summed for each relevant year.

Consider the total covered earnings for individual *i* at time *t*, y_{it}^{*}. Social Security contributions are withheld from *i*'s earnings up to some taxable cap, c_t. Unfortunately, when *i*'s covered earnings exceed the cap, we observe $y_{it} = c_t$, rather than $y_{it} = y_{it}^{*}$. We therefore consider a model of the form

$$y_{it} = \begin{cases} y_{it}^{*} & if \;\; y_{it}^{*} \le c_t \\ c_t & if \;\; y_{it}^{*} > c_t \end{cases},$$

where y_{it} is the observed covered earnings value for *i*. In order to estimate total covered earnings, we posit an intertemporal covered earnings profile of the form

$$y_{it}^{*} = \rho y_{it-1}^{*} + z_{it}'\delta + \varepsilon_{it}.$$

Here, y_{it-1}^{*} is lagged (true) covered earnings, z_{it} is a vector of covariates (e.g., age, education, race, region, whether or not i was employed in the previous period, and spouse's age, spouse's education, and lagged spousal earnings, if married), ε_{it} is statistical error, and $[\rho, \delta']'$ are parameters to be estimated.

We estimate the model using a dynamic, rolling-scheme, two-limit Tobit approach. The log-likelihood function and the formula for conditional expectations can be found in Maddala (1983). The Tobit model is useful in econometric analysis of data that is censored due to corner solutions or top- or bottom-coding. In our case, we observe a corner solution (nonnegativity

constraint) at zero earnings and top-coding at the time-varying taxable maximum. We include lagged covered earnings as an explanatory variable in estimation, hence the term "dynamic." Moreover, we include (up to) five lags of total covered earnings (beginning at age 50) as explanatory variables in estimation, hence the term "rolling-scheme." Under this approach, we estimate the model year-by-year, rather than as a panel, proceeding as follows. We first estimate our model for $t = 1$ (year 1951), setting $y_{i0}^{*} = 0$ and excluding previous-year-employment indicator variables. We then use our parameter estimates to form Tobit predictions of total covered earnings, i.e., the conditional expectation of y_{i1}^{*}. We can then estimate the model for $t = 2$ (year 1952), using the predicted (lagged) y_{i1}^{*} and previous-year-employment indicator variables as additional explanatory variables. We use these estimates to form Tobit predictions of y_{i2}^{*}. We continue in this manner through $t = 31$ (year 1981).

We use the following algorithm to estimate total covered earnings. If reported covered earnings lie below the taxable maximum, we use the reported covered earnings value. When reported covered earnings are capped, we use NBS survey data on earnings during the last year on the last and longest jobs, if available *for that particular individual and year*. We assume these self-reported earnings provide better information on earnings in those individual years than do Tobit predictions. For years in which earnings are not self-reported, we use the maximum of our Tobit prediction and the taxable maximum. The taxable maximum amount, given by Administrative data, will be more accurate than the Tobit prediction if the Tobit prediction lies below the reported taxable maximum.

Preretirement earnings may now be calculated for the individual or couple as average (strictly positive) earnings between the year the retired-worker was age 50 and one year prior to his or her receipt of retirement benefits. We do not include years in which the individual's (or

couple’s) earnings are zero in calculating preretirement earnings. For married couples, we sum both individuals’ total covered earnings and average couple’s earnings over the retired-worker’s preretirement years.

Table A
New Recipients of Social Security Retired Worker Benefits
Characteristics of Sample

Variable Means	Married Men and Women	Single Men	Single Women
Distribution by Respondent type	73.1%	9.0%	17.9%
Age in 1982	65.8	66.2	66.8
% Nonwhite	8.0	18.5	14.9
% Widowed		34.2	50.1
%Separated or divorced		39.7	28.6
%Respondent high school	31.6	21.9	30.0
Respondent some college	13.8	10.3	19.7
Respondent college or higher	12.2	11.8	12.6
Spouse high school	35.1		
Spouse some college	13.6		
Spouse college or higher	9.2		
Number of children	2.7	1.9	1.9
Years worked	32.4	34.9	28.5
% with longest job uncovered	19.2	19.3	10.6
Number of health problems	2.3	2.4	2.24
Spouse has a health condition	41.6		
% with private health insurance	83.7	69.2	76.6
% with Pension	55.8	42.7	45.6
Owning Home	87.2	46.5	56.8
Preretirement earnings (PRE)	$24,095	$26,878	$20,113
Standard deviation	$10,948	$15,947	$10,167
Minimum	$336	$274	$24
Maximum	$113,332	$146,369	$54,554
Annuitized net wealth (ANW)	$24,741	$24,353	$19,509
Standard deviation	$28,041	$25,986	$15,608
Minimum	$2,006	$3,075	$2,687
Maximum	$742,278	$295,385	$167,945
Replacement rate (PRE)	1.26	1.12	1.91
Standard deviation	2.22	1.59	18.91
Minimum	0.11	0.20	0.33
Maximum	79.76	16.51	695.72
Replacement rate (PovLine)	3.96	3.90	3.12
Standard deviation	4.49	4.16	2.50
Minimum	0.32	0.49	0.43
Maximum	118.84	47.30	26.89
Number of observations	5,935	731	1,452