

The Adequacy of Retirement Resources among the Soon-to-Retire, 1983-2001

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I. Introduction

A central issue confronting the soon-to- retire workers (i.e., in the age group 47-64) is whether they will have command over enough resources (both private and public) to maintain a decent standard of living in retirement. Typically, the adequacy of projected retirement income is judged in relation to some absolute standard (e.g. poverty threshold) and pre-retirement income ("replacement rate"). In a previous study, utilizing data up to 1998 (Wolff 2002), I found that among the households headed by a soon-to- retire worker, the proportion expected to be in poverty or unable to replace at least half their pre-retirement income rose from 1989 to 1998. Since 1998 until 2001 at least, the economy boomed, the stock market surged, and the unemployment rate fell sharply. The principal focus of this paper is to update the findings of the earlier study utilizing the 2001 Survey of Consumer Finances in order to shed light on the retirement income security of the soon-to- retire. Particular attention will be paid to the adequacy of pensions, social security, and financial wealth in relation to pre-retirement income.

I find that retirement income adequacy did indeed improve from 1989 to 2001. For instance, the share of households between 56 and 64 that could expect to have retirement incomes that were less than twice the poverty line declined from 41 percent in 1989 to 27 percent in 2001. Also, the share of households that could hope to replace at least half of their projected pre-retirement income at age 65 in retirement rose from 77 percent in 1989 to 79 percent in 2001.

Despite these improvements, there were still large gaps in retirement preparedness for many households. First and foremost, it appears that improvements in pension coverage may have leveled off. By 2001, still more than 20 percent of households nearing retirement, especially between the ages of 56 and 64, could expect to retire without a

private pension plan, either a traditional defined benefit plan or a defined contribution plan.

Further, retirement wealth was unequally distributed. The levels of retirement wealth – private pensions plus Social Security wealth – were substantially higher on average than for the median household, suggesting large inequities in the wealth distribution. These inequities are the result of an unequal distribution of private pension assets rather than of Social Security wealth.

Because Social Security offered almost universal coverage and because Social Security wealth grew on average at a respectable pace, it actually had a relatively larger effect on the retirement preparedness of vulnerable groups than private pension wealth. Among African-Americans, single women, people with less than a high school education and renters, Social Security played a comparatively stronger role in improving retirement income adequacy than private pension wealth. In some cases, such as for African-American and Hispanic households, the resulting gains in retirement income adequacy were in fact faster than for their respective counterparts.

Although there were important gains in retirement income adequacy, many households were still inadequately prepared for retirement in 2001. Taking a generally accepted replacement ratio of 75 percent of retirement income relative to pre-retirement income as a threshold, the data show that still more than 40 percent of households between the ages of 56 to 64 would fall below this threshold. The shortfalls are larger for African-American or Hispanic households and for single women.

Seeing how well prepared for retirement today's near elderly are and how this preparedness has changed in the 1990s sheds some light on important policy conclusions. For instance, the fact that many households are still inadequately prepared for retirement is closely linked to the fact that they have little or no private pension wealth. This is especially true for African-American and Hispanic households and for single women. Hence, policies that could help to improve private pension coverage and wealth accumulation for these groups should be considered more seriously. Further, private pension wealth plays an important role for retirement income adequacy for those that have it. Thus, public policy should focus on securing private pension wealth to ensure that the accumulated savings are available when people retire. And finally, Social

Security appears to be at the heart of improving retirement income security for many groups. Consequently, public policy should focus on securing Social Security for the long-term as an important step to improving retirement income adequacy.

The remainder of the paper is organized as follows. The next section of the paper (Section 2) provides a review of the pertinent literature on retirement wealth and retirement adequacy. Section 3 describes the data sources and develops the accounting framework used in the analysis. Section 4 shows time trends in standard measures of household wealth over the 1983-2001 period. Section 5 investigates changes in retirement wealth and total (augmented) household wealth. In Section 6, I present measures of retirement adequacy for age group 47 to 64. Concluding remarks are made in Section 7.

II. Literature Review

Previous work has focused on just one or a few of the aspects of the adequacy of retirement income or wealth. For instance, a number of papers have presented estimates of Social Security and/or pension wealth. The seminal paper on this topic is by Martin Feldstein (1974), who introduced the concept of Social Security wealth and developed its methodology. His main interest was the aggregate level of Social Security wealth and its effect on aggregate savings and retirement patterns. In a follow-up paper, Feldstein (1976), using the Federal Reserve Board's 1962 Survey of Financial Characteristics of Consumers (SFCC), considered the effects of Social Security wealth on the overall distribution of wealth. He found that the inclusion of Social Security wealth had a major effect on lowering the overall inequality of (total) household wealth.

Edward Wolff followed up Feldstein (1976) by examining the distributional implications of both Social Security and private pension wealth. These studies include Wolff (1987), which used the 1969 Measurement of Economic and Social Performance (MESP) database and was the first paper to add estimates of private pension wealth and examine their effects on the overall distribution of wealth. The paper showed that, while Social Security wealth had a pronounced equalizing effect on the distribution of "augmented wealth" (defined as the sum of marketable wealth and retirement wealth), pension wealth had a disequalizing effect. The sum of Social Security and pension wealth has, on net, an equalizing effect on the distribution of augmented wealth. Wolff

(1988) examined the implications of including both Social Security and pension wealth for estimating the life-cycle model of savings; Wolff (1992) addressed the methodological issues in estimating both Social Security and pension wealth; Wolff (1993a, 1993b) extended the estimates of Social Security and pension wealth to the 1962 SFCC and the 1983 SCF; and Chernick and Wolff (1996) examined the levels of Social Security benefits and Social Security wealth on the basis of the 1989 SCF by age group, lifetime earnings quintile, and family structure. Wolff (2002a) re-examined the distributional effects of retirement wealth based on the SCF from 1983 to 1998 and found that Social Security continued to have a mitigating distributional effect. With respect to defined contribution wealth, though, Wolff (2003) found that the rise in defined contribution wealth has led to greater wealth inequality.

Work on the effects of Social Security and pension wealth on the overall distribution of wealth was also conducted by Arthur Kennickell and Annika Sunden (1999), who based their study on the 1989 and 1992 SCF. They found a net equalizing effect from the inclusion of these two forms of retirement wealth in calculating total household wealth. Interestingly, they found that there is a negative effect of both defined benefit plan coverage and Social Security wealth on non-pension net worth, but that the effects of defined contribution plans, such as 401(k) plans, are insignificant.

Several papers have used the Health and Retirement Survey (HRS). Alan Gustman, Olivia Mitchell, Andrew Samwick, and Thomas Steinmeier (1997) found that, in 1992 among households in the HRS, pensions, Social Security, and health insurance accounted for half of the wealth for those age 51-61; for 60 percent of total wealth for those in wealth percentiles 45- 55; and for 48 percent of wealth for those in wealth percentiles 90-95. In a follow-up study focusing on the role of pensions in forming retirement wealth, Gustman and Steinmeier (1998) used data from the HRS to examine the composition and distribution of total wealth for a group of 51- to 61-year-olds. They found that pension coverage was widespread, covering two-thirds of households and accounting for one-quarter of accumulated wealth on average. Social Security benefits accounted for another quarter of total wealth. They also found that the ratio of wealth (excluding pensions) to lifetime earnings was the same for those individuals with

pensions and for those without, which they interpreted as evidence that pensions cause very limited displacement of other forms of wealth.

Several studies have documented changes in pension coverage in the United States, particularly the decline in defined benefit pension coverage among workers over the last two decades. Laurence Kotlikoff and Daniel Smith (1983), in one of the most comprehensive treatments of pension coverage, showed that the proportion of U.S. private wage-and-salary workers covered by pensions more than doubled between 1950 and 1979. David Bloom and Richard Freeman (1992), using Current Population Surveys (CPS) for 1979 and 1988, were among the first to call attention to the decline in defined benefit pension coverage. They reported that the percentage of all workers age 25-64 covered by these plans fell from 63 percent to 57 percent over this period. Among male workers in this age group the share dropped from 70 percent to 61 percent, while among females it remained constant, at 53 percent. Among studies by William Even and David Macpherson (1994a, 1994b, 1994c, and 1994d), the 1994c study showed a particularly pronounced drop in defined benefit pension coverage among workers with low levels of education; the 1994d study showed a convergence in pension coverage rates among female and male workers between 1979 and 1998.

A related topic of interest is whether defined contribution plans have substituted for defined benefit plans. Leslie Popke (1999), using employer data (5500 filings) for 1992, found that, indeed, 401(k) and other defined contribution plans have substituted for terminated defined benefit plans and that the offering of a defined contribution plan raises the chance of a termination in defined benefit coverage. On the other hand, James Poterba, Steven Venti, and David Wise (1998), using HRS data for 1993, found that the growth of 401(k) plans did not substitute for other forms of household wealth and, in fact, raised household net worth relative to what it would have been without these plans.

Several studies have looked at the overall economic status of the elderly. Michael Hurd (1994) showed that the mean income of households age 65 and over increased sharply between 1970 and 1975 but only moderately from 1975 to 1987. As a fraction of the overall mean household income, average elderly income rose from 54 percent in 1970 to 61 percent in 1975 and then to only 63 percent by 1987. James Smith (1997), using 1994 HRS data, found that median financial wealth among white households age 70 and

over was only \$15,600; for white households age 51-61 it was \$23,400; and for black and Hispanic households in the two age groups it was zero. Venti and Wise (1998), using HRS data for 1992, estimated a high degree of wealth dispersion among persons age 51-61, even after controlling for lifetime earnings.

A Department of Labor report issued in 2000 found that a large proportion of workers, especially low-wage, part-time, and minority workers, were not covered by private pensions. The coverage rate of all private-sector wage-and-salary workers was 44 percent in 1997. The low coverage for part-time, temporary, and low-wage workers appeared to be ascribable to the proliferation of 401(k) plans and the frequent requirement for employee contributions to such plans. The report also found important racial differences, with 47 percent of white workers participating but only 27 percent of Hispanics. Another important distinction was union membership, with 70 percent of unionized workers covered by a pension plan but only 41 percent of non-unionized workers. Moreover, pension participation was found to be highly correlated with wages. While only 6 percent of workers earnings less than \$200 per week were involved in a pension plan, 76 percent of workers earning more than \$1,000 per week participated.

Retirement Income Adequacy. Calculations of retirement income adequacy typically relate retirement consumption to pre-retirement consumption in three possible ways. First, a household may be considered adequately prepared for retirement if it can maintain a similar real level of consumption as during its working years. Usually, 80 percent of pre-retirement income is thus considered adequate since the income needs of retirees are likely to be lower than those of workers (Aon, 2001). Households no longer need to save for retirement, taxes are lower, work related expenses disappear, the family size of retirees is smaller than that of workers, and households eventually pay off their debt (McGill et al., 1996). Second, retirement income adequacy may be defined as a constant nominal level of consumption during retirement as during working years. This means that consumption needs are expected to decline during retirement over time, but in a somewhat arbitrary fashion. Third, real consumption may decline if the marginal utility of consumption is held constant and uncertainty about income and life expectancy are introduced (Engen et al., 1999). As households must consider an uncertain future, their

marginal utility of certain consumption today is higher than the marginal utility of uncertain consumption in the future.

A number of studies have analyzed retirement savings adequacy, with differing results. For instance, Gustman and Steinmeier (1998) found, using the Health and Retirement Survey (HRS) that the average household could replace 60 percent of pre-retirement income in real terms, and 86 percent of pre-retirement income in nominal terms. The finding for the nominal replacement ratio led the authors to conclude that households on average were adequately prepared for retirement. Engen et al. (1999) found, using the Survey of Income and Program Participation (SIPP) and the Survey of Consumer Finance (SCF) estimated that 40-50 percent of households fell short of what they needed for adequate retirement income. But as their calculations are based on a stochastic model, only 50 percent of households should be expected to meet the target retirement savings. The average replacement ratio for the median income quintile household calculated by Engen et al. (1999) is still 72 percent, leading the authors to conclude that households are close to being adequately prepared for retirement. In an updated study, Engen et al. (2002) found that the upswing in stock prices from 1995 to 1998 did not substantially alter their earlier findings on retirement income. This suggests that much of the increase in retirement wealth was concentrated among households who were already adequately prepared for retirement. Further, Haveman et al. (2003) using Social Security's New Beneficiary Data System (NBDS) found that retired beneficiaries had a median replacement ratio of about 80 percent, and that only 30 percent of households had a replacement ratio of less than 70 percent in 1982.

By contrast, several studies concluded that households were inadequately prepared for retirement. For instance, Moore and Mitchell (2000) found, using the 1992 HRS, that the median wealth household would have to save an additional 16 percent annually of earnings if it were to retire at age 62 and an additional 7 percent annually for retirement at age 65 to finance an adequate real replacement ratio. Their estimate of a savings rate of 7.3 percent for households wishing to retire at age 65 was three times as much as what households actually saved (Moore and Mitchell, 1997). This meant that households had on average between 75 percent and 88 percent - depending on marital status - of what it needed when retiring at 65 in 1992 (Mitchell and Moore, 1998).

Similarly, Bernheim (1993) calculated that on average baby boomer households were only saving at 34 percent of their target savings rate. Also, Gustman and Steinmeier's (1999) figures show that, based on real replacement ratios, the average household had 28 percent less than adequate retirement savings. Lastly, Wolff (2002b) concluded that 61 percent of households could not replace 75 percent of their pre-retirement income in retirement based on data from 1998, up from 56 percent of households in 1989.

One issue to consider, though, is what a shortfall relative to adequate savings means. In some cases, a shortfall will still allow households to finance most of their expected consumption. Engen et al. (1999) point out that the households used in Moore and Mitchell (1997) could still finance more than 90 percent of the consumption prescribed by their model with no additional savings. Similarly, Haveman et al.'s (2003) study shows that about 20 percent of households have a replacement ratio between 70 percent and 80 percent. That is, one fifth of households have more than 90 percent, but less than 100 percent, of what is generally assumed for retirement income adequacy – 80 percent of pre-retirement earnings.

As wealth is unequally distributed, there may be a large share of households for which the shortfalls are larger. Engen et al. (1999) calculated that households in the 75 percent percentile - the closest income percentile for *average* (not median) income - had 121 percent to 172 percent of what they needed for retirement. For the median household, the same ratios ranged from 47 percent to 124 percent. Thus, the median household reached only 62 percent of the preparedness of the average household in 1992. Moreover, Wolff (2002a) documented that the gap between average wealth and median wealth to income ratios increased further by 1998. Following the unequal distribution of wealth, a large share of households is likely to experience retirement consumption shortfalls¹. Gustman and Steinmeier (1999) found that households in the bottom quartile had nominal replacement ratios of 50 percent and real replacement rates of 33 percent, compared to nominal replacements of 121 percent and real replacement rates of 81 percent for the top quartile. Also, Wolff (2002b) found that 16 percent of households could replace less than

¹ Shortfalls in retirement savings vary with household demographics. Mitchell et al. (2000) and Engen et al. (1999) found that black and Hispanic married households experienced a larger shortfall in retirement income adequacy than whites, and that less education resulted in a worsening of retirement income adequacy. Mitchell and Moore (1998) also found that single households were less adequately prepared than married ones.

25 percent of their pre-retirement income and that 43 percent of households could replace less than half of their pre-retirement income during retirement in 1998². Lastly, Haveman et al. (2003) found that single men were more likely to be inadequately prepared than single women, who were in turn less likely than married couples to be adequately prepared for retirement.

To make ends meet in retirement, when facing an income shortfall, households will have to curtail their retirement consumption. In fact, one of the distinguishing features between studies that conclude that households are adequately prepared for retirement and those that do not is the consumption pattern in retirement. For instance, Engen et al. (1999) and Gustman and Steinmeier (1999) conclude that households are adequately prepared for retirement based on the fact that real retirement consumption declines with age in their models. Similarly, Haveman et al. (2003) base their conclusions on the assumption of declining consumption in retirement, albeit at a slower pace than Gustman and Steinmeier (1999).

In the past few years, a number of studies have looked at the changes of retirement income adequacy over time. Wolff (2002b) was the first study to systematically look at changes in retirement income adequacy over time. This study found that the share of households between the ages of 47 and 64 that could replace less than 75 percent of their current income in retirement rose from 56.1 percent in 1989 to 61.2 percent in 1998. In comparison, in their follow-up study to Engen et al. (1999), the authors found that retirement income adequacy by their stochastic definition had changed little from 1995 to 1998 (Engen et al., 2002). Lastly, Smith (2003) found using data from the Panel Study of Income Dynamics (PSID) and the Current Population Survey (CPS) that median after-tax income replacement ratios in retirement showed an increasing trend, particularly since the early 1990s.

III. Data Sources and Accounting Framework

² In comparing these figures with findings of other studies, e.g. Haveman et al. (2003), it needs to be kept in mind that, for instance, Haveman et al. (2003) only considered Social Security earnings for their replacement ratio calculations, thus understating the level of household income. Also, Wolff (2002) considered wealth of households nearing retirement, whereas Haveman et al. (2003) considered wealth for those who were retired. Obviously households can increase their savings before entering retirement and occasionally while in retirement.

The principal data sources used for this study are the 1983, 1989, and 2001 Survey of Consumer Finances (SCF) conducted by the Federal Reserve Board. Each survey consists of a core representative sample combined with a high-income supplement.³ The SCF provides considerable detail on both pension plans and Social Security contributions. The SCF also gives detailed information on expected pension and Social Security benefits for both husband and wife. For 1983, the Federal Reserve Board also made its own calculations of the wealth equivalent value of both expected pension benefits and Social Security benefits. I use these estimates in this paper. However, this has not been done for other years.⁴

The basic wealth concept used here is marketable wealth (or net worth), which is defined as the current value of all marketable or fungible assets less the current value of debts. Total assets are the sum of: (1) the gross value of owner-occupied housing; (2) other real estate owned by the household; (3) cash and demand deposits; (4) time and savings deposits, certificates of deposit, and money market accounts; (5) government bonds, corporate bonds, foreign bonds, and other financial securities; (6) the cash surrender value of life insurance plans; (7) the current market value of Defined Contribution pension plans, including IRAs, Keogh, and 401(k) plans; (8) corporate stock and mutual funds; (9) net equity in unincorporated businesses; and (10) equity in trust funds. Total liabilities are the sum of: (1) mortgage debt, (2) consumer debt, including auto loans, and (3) other debt. I use the symbol NW to refer to standard net worth. It should be stressed that the standard definition of net worth includes the market value of DC pension plans. (We shall return to this point later on in the paper).⁵

³ See, for example, Kennickell and Woodburn (1992), Kennickell, McManus, and Woodburn (1996), and Kennickell and Woodburn (1999) for details on the construction of the weights used in the SCF files.

⁴ The underlying data are not available for the 1983 SCF to re-do these estimates in exactly the same form as for 1989 and 2001, though I try to follow their method as much as possible for these two years (see below and the Appendix). The difference in methodology may introduce compatibility problems between the 1983 estimates and those of the other two years. Moreover, pension and social security wealth imputations in the 1983 data are rather limited for households under the age of 46. Partly for this reason, I focus mainly on age group 46 to 64. Estimates for all households in 1983 have to be interpreted cautiously, though I do show alternative estimates where I adjust the 1989 and 2001 samples to match the coverage of the 1983 sample (see below).

⁵ Only assets that can be readily converted to cash (that is, “fungible” ones) are included. As a result, consumer durables, such as automobiles, televisions, furniture, household appliances, and the like, are

A word should be said on why I use the SCF instead of the newer Health and Retirement Survey (HRS), which has much more complete data on earnings histories and has employer-provided information on individual DB pension plans of each employee covered by these plans. There are three reasons. First, the SCF provides much better data on the assets and liabilities that constitute marketable net worth. Second, the SCF data date from 1983, whereas the HRS data start in 1992. Since the most important transformation of the pension system occurred beginning in the late 1980s, the SCF data allow us to better track this change over the transition period. Third, the age coverage of the HRS is limited whereas the SCF covers the whole population.

The imputation of both pension and Social Security wealth involves a large number of steps, which is summarized below. Greater details can be found in the Appendix.

A. Pension Wealth: For retirees (r) the procedure is straightforward. Let PB be the pension benefit currently being received by the retiree. The SCF questionnaire indicates how many pension plans each spouse is involved in and what the expected (or current) pension benefit is. The SCF questionnaire also indicates whether the pension benefits remain fixed in nominal terms over time for a particular beneficiary or is indexed for inflation. In the case of the former, the (gross) Defined Benefit pension wealth is given by:

$$(1) \quad DB_r = \int_0 PB(1 - m_t)e^{-\delta t} dt$$

where m_t is the mortality rate at time t conditional on age, gender, and race;⁶ δ the discount rate which is set at 5 percent (2 percent when PB is indexed for inflation), and the integration runs from the person's current age to age 109.⁷

Among current workers (w) the procedure is somewhat more complex. The SCF provides detailed information on pension coverage among current workers, including the

excluded here since these items are not easily marketed or their resale value typically far understates the value of their consumption services to the household.

⁶ The mortality rate data are from the U.S. Bureau of the Census, *Statistical Abstract of the United States, 1985, 1991, and 2003*, Washington, D.C., U.S. Government Printing Office.

⁷ I also used as alternatives real discount rates of 1.5, 2.5, and 3.0 percent. The results of the analysis are not materially altered (and not shown in the paper).

type of plan, the expected benefit at retirement or the formula used to determine the benefit amount (for example, a fixed percentage of the average of the last five year's earnings), the expected retirement age when the benefits are effective, the likely retirement age of the worker, and vesting requirements. Information is provided not only for the current job (or jobs) of each spouse but for up to five past jobs as well. On the basis of the information provided in the SCF and on projected future earnings (see the Appendix for details), future expected pension benefits (EPB_w) are then projected to the year of retirement or the first year of eligibility for the pension. Then the present value of pension wealth for current workers (w) is given by:

$$(2) \quad DB_w = \int_{LR} EPB(1 - m_t)e^{-\delta t} dt$$

where RA is the expected age of retirement and $LR = A - RA$ is the number of years to retirement. As above, and the integration runs from the expected age of retirement to age 109.⁸

It should be noted that the calculations of DB pension wealth for current workers are based on employee response, including his or her stated expected age of retirement (see Appendix D), . *not* on employer-provided pension plans. A couple of studies have looked at the reliability of employee-provided estimates of pension wealth by comparing self-reported pension benefits with estimates based on provider data. Using, data from the 1992 wave of the HRS, both Gustman and Steinmeier (1999) and Johnson, Sambamoorthi, and Crystal (2000) found that individual reports of pension benefits varied widely from those based on provider information. However, the latter also calculated that the median values of DB plans from the two sources were quite close (about a 6 percent difference).

B. Social Security Wealth: For current Social Security beneficiaries (r), the procedure is again straightforward. Let SSB be the Social Security benefit currently being received by the retiree. Again, the SCF provides information for both husband and wife.

⁸ Technically speaking, the mortality rate m_t associated with the year of retirement is the probability of surviving from the current age to the age of retirement. The discount rate is again set at 5 percent (2 percent if PB is indexed).

Since Social Security benefits are indexed for inflation, (gross) Social Security wealth is given by:

$$(3) \quad SSW_r = \int_0 SSB(1 - m_t)e^{-\delta t} dt$$

where it is assumed that the current social security rules remain in effect indefinitely.⁹

The imputation of Social Security wealth among current workers is based on the worker's projected earnings history estimated by regression equation (see the Appendix for details). The steps are briefly as follows, First, coverage is assigned based on whether the individual expects to receive Social Security benefits and on whether the individual was salaried or self-employed. Second, on the basis of the person's earnings history, the person's Average Indexed Monthly Earnings (AIME) is computed. Third, on the basis of existing rules, the person's Primary Insurance Amount (PIA) is derived from AIME.

Then,

$$(4) \quad SSW_w = \int_{LR} PIA(1 - m_t)e^{-\delta^* t} dt .$$

As with pension wealth, the integration runs from the expected age of retirement to age 109.¹⁰

Here, too, it should be noted that estimates of Social Security wealth are based on reported earnings at a single point in time. These estimates are likely to be inferior to those based on longitudinal work histories of individual workers (see, for example, Smith, Toder, and Iams, 2001, whose estimates are based on actual Social Security work histories.) In fact, actual work histories do show much more variance in earnings over time than one based on a human capital earnings function projection. Moreover, they also show many periods of work disruption that I cannot adequately capture here. However, I do have some *retrospective* information on work history provided by the respondent (see Appendix D for details). In particular, each individual is asked to provide data on the

⁹ Separate imputations are performed for husband and wife and an adjustment in the Social Security benefit is made for the surviving spouse. See the Appendix for details. The discount rate is again set at 2 percent.

¹⁰ As with pension wealth, the mortality rate m_t associated with the year of retirement is the probability of surviving from the current age to the age of retirement and the discount rate is set at 2 percent.

total number of years worked full-time since age 18, the number of years worked part-time since age 18, and the expected age of retirement (both from full-time and part-time work). On the basis of this information, it is possible to approximate the total number of full-time and part-time years worked over the individual's lifetime and use these figures in the estimate of the individual's AIME.

Nonetheless, since my estimates of SSW assume a continuous work life, I am likely to be overstating the value of SSW for many workers. This is likely to bias upward my estimates of mean and median SSW, as well as a downward bias in the variability of Social Security wealth. It may also lead to an understatement of the correlation between net worth and SSW. For all three reasons, this estimation procedure will likely lead to an *over-estimate* of the degree to which SSW equalizes total wealth inequality.

C. Employer Contributions to Defined Contribution Plans. So far I have treated Defined Benefit and Defined Contribution pension wealth as well as SSW as comparable concepts. However, there are important differences in their estimation. Most notably, the calculation of DB wealth is estimated on the basis of the future stream of pension benefits on the assumption that the employee remains at his or her firm of employment until the person's expected retirement date. The computation of SSW is also based on the assumption that the worker remains at work until the person's expected retirement date. On the other hand, the Defined Contribution valuation is based on the current market value of DC plans.

There are two ways of putting DB (and SSW) and Defined Contribution wealth (DC) on an "equal footing." First, one can compute DB and SSW on a "separation value" basis, assuming that the worker stopped working as of the year of the survey, say 2001. It is possible to do this for SSW by computing the SS benefits that would be received if the worker stopped working in 2001. For DB, we can roughly do this for responses that indicate DB benefits as a percentage of last year's salary by using current earnings (as opposed to projected earnings) to calculate the expected DB benefit. However, most respondents simply indicate what they expect their DB benefit to be at year of retirement. Since we do not know the actual formula used, it is *impossible* to compute the expected benefit on the basis of current earnings. Moreover, in the case of the 1983 SCF, we do not

have the underlying data to perform the necessary calculations for the separation value of SSW or DB wealth.¹¹

The second (and *only* feasible technique with the data at hand) is to project forward the employer contribution to DC plans, like 401(k)s (see Part E of the Appendix). If we assume, as in the case of DB pensions, that workers remain at their company until retirement and that the terms of their DC contract with their employer stays the same, then it is possible to do this. In most cases, the employer contribution is a fixed percentage of the employee's salary. On the basis of the estimated human capital earnings functions for each worker, it is possible to calculate the annual stream of future employer contributions to the DC plan until retirement (which I call DC2).¹² The addition of DC2 to household wealth puts the treatment of DC pension wealth roughly on a par with that of DB pension wealth since both represent future additions to household wealth from the *employer*.¹³

The SCF questionnaire indicates how many DC pension plans each spouse has (up to three per spouse).¹⁴ Information on the employer contribution to DC pensions

¹¹ This comparison might actually overstate the case. Some future DB entitlements are based on past jobs (as opposed to current jobs), which, of course, do not require any additional work time with the company to secure future DB benefits. However, the portion of future DB benefits that accrue from past jobs is relatively small – I estimate only 9.65 percent of total DB benefits in 2001.

¹² Moreover, the 1983 data do not present a problem, since DC wealth was a trivial amount, so that we can again safely ignore this in the wealth comparison between 1983 on the one hand and 1989 and 2001 on the other hand.

¹³ If, indeed, *employee* contributions to DC plans are a net addition to household savings, then this treatment might understate the contribution of DC plans to future household wealth. However, as noted above in Section 2, the evidence on this issue is mixed. Moreover, if both the *employee* and *employer* contributions to DC plans substitute for other forms of saving, then DC* may actually overstate the net addition to wealth from the DC plans.

DC2 and PW also differ in terms of the risk associated with future benefits. The benefit levels in DB plans are already set by the terms of the plans, and DB wealth depends mainly on future tenure in the company and future earnings. If the employee leaves the firm, the employee is still entitled to the benefits accumulated up to the point of departure. The establishment of the Pension Benefit Guarantee Corporation in 1974 does, at least, insure the pension benefits (up to a fixed amount) in the event of the bankruptcy of a company. However, there is still a risk that a company's DB plan may end, which is not trivial in light of the recent terminations of DB plans in my private businesses. In comparison, DC2 depends not only on future tenure with the firm and future earnings but also on future employee and employer contributions and future rates of return. There is no statutory guarantee that a DC plan will be maintained over time. Termination with a company ends future employer contributions into the DC plan. All in all, DB benefits are very likely less risky than DC benefits.

¹⁴ The SCF records DC plans only for the main job of each respondent. No information on DC plans is

plans is recorded in two ways. First, in some cases, the contribution is given as a flat dollar amount. Though it is not indicated in the survey data whether the dollar contribution is indexed to inflation over time, I assume that it is indexed to the CPI, which seems the more likely arrangement.¹⁵ Let EMPAMT be the dollar amount of the employer contribution to the DC plan. Then, the present value of the stream of future employer contributions, DC2_a, is given by:

$$(5) \quad DC2_a = \int_0^{LR} EMPAMT (1 - m_t) e^{-\delta t} dt$$

where m_t is the mortality rate at time t conditional on age, gender, and race; and the discount rate δ is set at 2 percent.¹⁶ The integration runs from the current year to LR, where RA is the expected age of retirement and $LR = A - RA$ is the number of years to retirement.

Second, in most cases, the employer contribution is given as a percent of earnings. If we assume that the proportion, EMPPER, is fixed over time, then DC2_b, is given by:

$$(6) \quad DC2_b = \int_0^{LR} EMPPER \cdot E^*_t (1 - m_t) e^{-\delta t} dt$$

where E^*_t is the predicted earnings of the worker at time t in constant dollars (see Appendix C for details).

Estimates will be provided for the following components of household wealth:

$$(7) \quad DC = DC1 + DC2$$

where DC1 is the current market value of households' Defined Contribution accounts.

$$(8) \quad NW = NWX + DC$$

where NWX is marketable household wealth excluding DC and NW corresponds to marketable wealth or net worth. Total pension wealth PW is given by:

provided for secondary employment. This does not appear to be a significant problem because in 2001, 99.4 percent of the total labor earnings of the head and 98.8 percent of that of the spouse came from the person's primary job.

¹⁵ This will, if anything, bias upward the estimated employer contribution to the DC pension plan

¹⁶ This calculation assumes that the real rate of return on DC assets equals the discount rate δ . It should also be noted that past employer contributions to DC plans are already included in the current market value of DC wealth.

$$(9) \quad PW = DB + DC$$

Retirement wealth RW is then given as the sum of pension and social security wealth:

$$(10) \quad RW = PW + SSW$$

Finally, augmented household wealth, AW, is given by

$$(11) \quad AW = NWX + RW$$

IV. Time Trends in Standard Measures of Net Worth

Table 1 documents a robust growth in wealth during the 1990s. After rising by 7 percent between 1983 and 1989, real median wealth among all households was 16 percent greater in 2001 than in 1989.¹⁷ As a result, median wealth grew slightly faster between 1989 and 2001, 1.32 percent per year, than between 1983 and 1989, at 1.13 percent per year. Mean net worth was 65 percent higher in 2001 than in 1983 and 44 percent larger than in 1989. Mean wealth grew quite a bit faster between 1989 and 2001, at 3.02 percent per year, than from 1983 to 1989, at 2.27 percent per year. Moreover, mean wealth grew almost three times as fast as the median, suggesting widening inequality of wealth over these years.

The robust performance of median net worth over the 1990s contrasts sharply to trends in median income. Median household income, based on the SCF data, after gaining 3.0 percent between 1983 and 1989, grew by 9.2 percent from 1989 to 2001 – slower than median net worth in both periods. The net change over the whole period was 12.5 percent. In contrast, mean income rose by 8 percent from 1983 to 1989 and by another 26 percent from 1989 to 2001, for a total change of 36 percent.¹⁸

The wealth picture changes as households grow older (table 2). For one, average wealth was substantially higher for older households, peaking just before retirement. Households between the ages of 56 and 64 had on average \$711,300 in total wealth in 2001, more than twice the average for the population at large. The growth in mean net

¹⁷ The CPI-U is used as the deflator for both income and wealth.

¹⁸ The Current Population Survey (CPS) data show somewhat different time trends, with median income rising by 11 percent between 1983 and 1989 and then only 2.3 percent from 1989 to 2001, and mean income growing by 16 and 12 percent, respectively.

worth over the 1983-2001 period was a little lower than average for age groups 47-55 and 65 and over and a little greater for age group 56-64, while the growth in median net worth was almost twice the overall rate for the former two age groups and below par for age group 56-64. The growth in mean income, on the other hand, was above average for age groups 47-55 and 56-64 and below average for elderly households, while median income growth was above average for age groups 47-55 and 65 and over and below average for age group 56-64. These differences may reflect growing inequality for age group 56-64 and falling inequality for the younger and older age groups over the period.

The average wealth to income ratio increased from 5.0 to 5.6 – a more than 10% gain – over this period for all households. In comparison, the wealth to income ratio for households nearing retirement, those between the ages of 55 and 64, grew by 13% from 7.2 to 8.1. In other words, older households had higher wealth to income levels and increased those more than the population at larger.

V Retirement and Augmented Wealth

The only form of retirement wealth that is almost universally held is Social Security wealth (see table 3). By 2001, 97.5 percent of households between the ages of 56 and 64 were covered by Social Security, up from 91.9 percent in 1983. Similarly, 98.2 percent of households between 47 and 55 were covered by Social Security, up from 92.4 percent in 1983. There was an even larger increase in the share of elderly *households* (not individuals) covered by social security, from 77.5 to 92.9 percent. These trends reflect the increasing coverage of the social security system in terms of industries and occupations.

In comparison, private pension coverage continues to show large holes that are only very slowly being filled. For instance, the share of households between 47 and 55 with a DC or DB plan was 75 percent, compared to 98 percent with social security coverage, while among age group 56 to 64 the pension coverage rate was 78 percent, compared to 98 percent for social security. However, pension coverage among age group 47-55 rose from 69.4 percent in 1983 to 75.0 percent in 2001. Further, households between 56 and 64 saw larger increases in pension coverage during the same period, as their share with DC or DB plan increased from 70.8 to 78.2 percent. The increase in overall pension coverage came about from the very rapid expansion of the DC system.

Among age group 56-64, for example, DC coverage ballooned from 9 to 59 percent over these 18 years. In contrast, DB coverage fell rather rapidly as well.

Among the elderly, pension coverage actually declined by 4.3 percentage points over the period, from 66.9 to 62.6 percent. This reflects the contraction of the Defined Benefit pension system over these years.

Because of the aging of different cohorts during our observation period, these data seems to suggest that older cohorts had more coverage than younger cohorts. As baby boomers are moving into the 56 to 64 year old category, they may bump up coverage for this age group. If this is correct, the figures also suggest that coverage for those between 56 and 64 will eventually stabilize, similar to the trend in coverage ratios for households between 47 and 55.

In 2001, 98 percent of all households in the pre-retirement age groups (47 to 64) had some form of retirement wealth, while among the elderly the figure was 96 percent. The share covered by some form of retirement wealth was up by 2.4 percentage points for age group 47-55 from 1983 to 2001, about the same in the two years for age group 56-64, but down by 1.9 percentage points among elderly households, because of the contraction of the DB system.

From 1983 to 2001, different forms of wealth have shown different increases (see table 4). With respect to retirement wealth, Social Security wealth took up the largest share in 1983, accounting for 59 percent of the retirement wealth of age group 47-55 and 61 percent of age group 56-64. (Among elderly households, the figure was 70.3 percent.) However, by 2001, pension wealth was the larger component, comprising 53.4 percent of retirement wealth for households between 47 and 55 and 50.7 percent for households between 56 and 64. (Among the elderly, the share was only 41.9 percent.) In terms of growth rates, mean PW more than doubled over the 1983-2001 period for age group 47-55 and almost doubled for age group 56-64, while mean SSW gained 36 percent and 14 percent, respectively.¹⁹

¹⁹ Both mean and median SSW declined slightly from 1983 to 1989. This change mainly reflects the increase in the normal retirement age for social security benefits which came into effect in the early 1980s. The age at full social security benefits advances from 65 and 2 months for those born in 1938 to 67 for those born in 1960 or later.

These divergent trends may reflect a sharper decline in DB plan wealth for older cohorts than for younger cohorts. In fact, total DB plan wealth declined for both groups, those between the ages of 47 and 55 and those between the ages of 56 and 64. However, while the younger group saw its DB pension plan wealth decline by 8.3 percent, it declined almost four times faster for the older group, at 29.9 percent. The faster drop for older households appears to be a result of the fact that younger households had less DB wealth to begin with. Thus, the trends in DB wealth by age group mirror the fact that the share of the population with DB plans has been shrinking for decades.

Consequently, DC plan wealth follows Social Security as a distant second source of retirement wealth for all age groups, replacing DB plans. In 2001, 33.5 percent of retirement wealth for households between 47 and 55 came from DC plans compared to 19.9 percent from DB plans. Similarly, for households between 56 and 64, DC plan wealth constituted 32.3 percent of retirement wealth, whereas DB wealth amounted to 18.4 percent. Lastly, 2001 was the first time that households 65 and over had more DC wealth than DB wealth, \$53,600 compared to \$52,100.

The wealth distribution differs across retirement wealth categories. This means that separate groups of households will rely on different forms of retirement wealth to varying degrees. Specifically, Social Security wealth was more equally distributed than other forms of retirement wealth. The average Social Security wealth for households between the ages of 47 and 55 was \$169,600 in 2001, or 5.5 percent higher than the median Social Security wealth for this age group. Similarly, Social Security wealth for households between the ages of 56 and 64 equaled \$207,100 in 2001, or 2 percent more than the median Social Security wealth for this age group. In comparison, average private pension wealth for the younger group was almost three times the median private pension wealth, and the average pension wealth for households between 56 and 64 was a bit more than three times the median pension wealth (table 9). Hence, the wealth distribution reflects the less than universal coverage of private pension plans as well as a more unequal distribution of private pension wealth.

Mean retirement wealth also grew robustly over the years 1983 to 2001, advancing by 71 percent for age group 47-55 and 41 percent for age group 56-64. Median retirement wealth also increased strongly for age group 47-55, by 36 percent over the

1983-2001 period, but was up by only 6.1 percent for age group 56 to 64. Indeed, among elderly households, median retirement wealth actually fell by 3.4 percent over the period (mean RW rose by 20 percent).

Results are similar for total (augmented) household wealth. Over the years 1983 to 2001, mean AW gained 40 percent for age group 47-55, 43 percent for age group 56-64, and 30 percent for elderly households. Median AW for age group 47-55 was also up, by 20 percent, though not as strongly as mean AW. In contrast, age group 56 to 64 saw a meager 5.1 percent gain in AW over the period, and the elderly a modest 13 percent increase. Thus, most of the gains in augmented wealth accrued to richer households, particularly for age groups 56 to 64 and 65 and over.

When concentrating on middle class households, those in the middle three quintiles, the importance of Social Security becomes even more apparent (table 5). For middle class families between the ages of 47 and 55, Social Security wealth comprised 55.0 percent of retirement wealth, as compared to 46.6 percent for all households in this age group. Since 1989, it declined as a share of retirement wealth by 2.8 percentage points, much less than the 4.9 percentage point decline for all households in the age group. Likewise, for middle class household nearing retirement, Social Security wealth played a much larger role than for all households in the age group, with a share of 59.3 percent in 2001 compared to a 49.3 percent share for all households of those ages. In addition, the importance of Social Security wealth increased by 4.2 percentage points for middle class families nearing retirement from 1989 to 2001, whereas it declined for all household in the age bracket. the population overall. These figures underscore the continued and even growing importance of Social Security in preparing middle class families for retirement.

Both pension wealth and social security wealth grew robustly for middle income families nearing retirement. As a result, mean retirement wealth gained 47 percent for age group 47 to 64 between 1989 and 2001, about the same as for all households in the age group, and augmented wealth was up by 38 percent, just slightly lower for all households in the age bracket.

A. Retirement Wealth by Race

As the distribution of retirement wealth has become more unequal, the question is whether certain demographic groups are more likely than others to have seen below or above average increases in retirement wealth and retirement income adequacy. We analyze retirement wealth and retirement income adequacy by two demographic characteristics: race and family status.

Despite improvements, minority households (defined here as African-Americans and Hispanics)²⁰ still had considerably less wealth accumulated than non-minority households as they approached retirement in 2001, although the gap appears to narrow as households grow older. For households between the ages of 47 and 55, the mean retirement wealth of non-Hispanic whites was almost two and a half times larger than for minorities (table 6). For households 56 to 64, the ratio of average wealth is 2.26 and for households 65 and older it is 1.67. The ratios of median retirement wealth are very similar.

Differences are even more extreme for net worth. In the age group 47 to 55, whites had 5.3 the net worth of non-whites. In the older age groups, the ratio was 5.4 and 5.0, respectively (table 7). Differences are less pronounced for total (augmented) wealth. The ratio of average total (augmented) wealth of non-Hispanics whites to the average wealth of minorities in 2001 was 3.6 for households between the ages of 47 and 55, 3.4 for households between 56 and 64, and 3.0 for households 65 and older (table 7). These results once again highlight the equalizing effect of Social Security. In fact, in 2001, the ratio of mean SSW between the two groups was (only) 2.0 for ages 47-55, 1.8 for ages 56-64, and a mere 1.4 among the elderly.

Also, while the distribution of retirement wealth appears to be similar for whites and minority households, total wealth appears to more unequally distributed among white households than among minority households. The ratio of average to median retirement wealth of white households was 1.4, 1.5, and 1.5 for our three age groups, respectively (table 6). The comparable ratios for minority households were 1.5, 1.5, and 1.5. In comparison, the ratios of average to median total wealth for white households were 2.1,

²⁰ Because of small sample sizes, I have combined these two groups. Moreover, I have excluded the group “Asians and other races” for the same reason.

2.2, and 2.1. The respective ratios for minority households were 1.9, 1.7, and 1.9 (table 7).

Minority households – African-American or Hispanic – made no progress in closing the large gap with respect to white households in terms of retirement wealth or total wealth. In fact, the gaps widened between 1983 and 2001. While mean RW gained 84 percent for whites in age group 47-55, it advanced by only 11 percent for minorities in that age group (table 6). For age group 56-64, the corresponding growth rates are 45 percent and -7 percent, respectively, while among the elderly, the figures are 21 and 9 percent, respectively. Similar trends are apparent for median retirement wealth, with the exception of elderly households among whom gains made by minorities outpaced those of whites. Among the non-elderly, there was a huge gap in the growth rates of mean pension wealth between the two races. The ratio of mean PW between minorities and whites slipped from 0.71 to 0.35 over this period among age group 47-55 and from 0.63 to 0.35 among age group 56-64. The switchover from the traditional DB system to the newer DC pension system hurt minorities much more than white households.

As a result of the growing cleavage in retirement wealth, the gap in augmented wealth also widened over the period. This was the case despite the fact that the (large) net worth gap actually narrowed somewhat over the 1983-2001 period (from 5.5 to 5.3 for ages 47-55, from 6.2 to 5.4 for ages 56-64, and from 5.2 to 5.0 among the elderly). The ratio of mean augmented wealth grew from 2.74 to 3.62 for the youngest age group, from 2.64 to 3.38 for the next older group, and from 2.83 to 3.01 among the elderly (table 7).

B. Retirement Wealth by Marital Status. Another important demographic distinction is based on marital status. We analyze levels and trends of retirement wealth and total wealth for married couples, single females and single males. Our results show that married couples have substantially more retirement wealth and total wealth than single households, and that single male headed households had more wealth than single female headed households in 2001. Further, our analysis also shows that single women fell further behind single men and married couples from 1983 to 2001. I do find that single women in age groups 56 to 64 and 65 and over did catch up to their counterparts in terms of Social Security wealth but not single women in age group 47 to 55.

Total accumulated wealth still differed widely by marital status in 2001. Single women typically had less than single men, who had less than married couples. Single women only had between 28 and 35 percent of the mean retirement wealth that couples had in 2001 (table 8) and between 29 and 35 percent of their median retirement wealth. Single women had between 51 and 68 percent of the mean retirement wealth that men in the same age groups had (and between 56 and 72 percent of their median retirement wealth). Further, the ratio of mean retirement wealth for single men to that of married couples in 2001 was 55.5 percent, 52.2 percent, and 54.4 percent in the three age groups, respectively.

Single women were somewhat better off relative to married couples in terms of social security than in terms of pensions. In 2001, single women held between 36 and 41 percent of the social security wealth of married couples and between only 18 and 31 percent of the pension wealth of couples. On the other hand, single males in age group 47 to 55 had 59 percent of the pension wealth of married couples in 2001, compared to 51 percent of their social security wealth, whereas single males in age group 56-64 had 57 percent of the SSW of married couples compared to 47 percent of their PW, and elderly single males held 58 percent of the SSW of elderly married couples versus 50 percent of their PW.

Single women were at about the same level relative to married couples in terms of net worth and total augmented wealth as in terms of retirement wealth (table 9). In 2001, the ratio of mean AW between the two groups varied between 26 and 31 percent, compared to a range of 23 to 30 percent for net worth and a range of 28 to 35 percent for RW. The ratio of median AW was 25 percent for the youngest age group, 35 percent for the middle age group, and 30 percent among the elderly. The ratio of mean AW between single males and married couples in 2001 varied between 45 to 64 percent, while the ratio of median AW ranged from 45 to 52 percent. Single men had approximately the same level of total wealth per person as married couples. However, single women had approximately one half to two thirds of what their married or male counterparts had in terms of total wealth per capita.

Single women not only had less wealth than their counterparts in 2001, they also generally fell further behind over the period from 1983 to 2001. With respect to average

retirement wealth, single men saw by far the largest gains from 1983 to 2001, whereas women saw much smaller gains than either single men or married couples in all age groups. The same pattern held for median retirement wealth. Single women did, however, make substantial gains relative to married couples in terms of mean social security wealth in all three age groups.

With respect to mean and median augmented wealth, single men saw the largest gains for all age groups, followed by married couples and the single women. The ratio of median AW between single females and married couples plunged from 35 to 25 percent between 1983 and 2001 for age group 47-55, fell slightly from 36 to 35 percent for the middle age group, and dropped sharply among the elderly from 41 to 30 percent. Indeed, median AW actually declined in absolute terms for single females of all three age groups.

VI Retirement Income Adequacy

We now turn to the primary topic of the paper, changes in retirement income adequacy. Retirement income is based on four components: (i) standard wealth holdings, (ii) DC pension holdings, (iii) DB pensions, and (iv) social security. Standard net worth excluding DC pensions (NWX) is first projected forward to year of retirement using a 3 percent real rate of return. This rate was chosen because it is approximately the average real rate of return on the average household portfolio from 1960 to 2000 (see Wolff, Zacharias and Caner, 2003, for details). Projected wealth at retirement is then converted into an annual annuity flow, based on life expectancy by race and gender. However, I depart from the standard approach to annuity estimation by taking into account the differences among households in the portfolio composition of wealth. The lifetime annuity is computed as the sum of annuity flows generated by individual asset components. The amount calculated is such that (i) it is the same for all remaining years of the younger spouse's life and (ii) it brings wealth down to zero at the end of the expected lifetime.²¹ The rates of return used in the calculation are the long-term (1960–2000) total real rates of return that are inclusive of the incomes generated by the assets.²²

²¹ I use life expectancy estimates differentiated by race, sex and age. (U.S. Bureau of the Census, 2002, Table 93.)

²² See Wolff, Zacharias, and Caner (2003) for more details. It should be noted that I am using net worth

The second component, DC pensions, is treated in exactly the same way as NWX. For the third component, I use either the respondent's estimates of his (or her) annual pension benefit at retirement or my estimated value (see Section 3 above). The fourth component, annual social security benefits, is based on my estimated value of PIA (see Section 3 above).

I then measure retirement adequacy in three ways. The first is the annual projected retirement income. The second is the percentage of households whose projected retirement income is greater than twice the poverty threshold.²³ The third is the income replacement rate. This is based on projected retirement income and projected income up to the year of retirement. For the latter, I use a 2.045 percent annual growth rate of real income, an estimate based on the growth of real income for age group 47 to 64 over the period 1983 to 2001. Because the underlying data in the 1983 SCF do not permit an estimate of either social security or DB benefits at retirement, I show results only for 1989 and 2001.

The mean retirement income for all households in age group 47 to 64 in 2001 is estimated to be \$74,800 (in 2001 dollars). This compares to the actual mean income of this group in 2001 of \$91,500. In 2001, 59.4 percent of total retirement income is projected to come from this group's net worth, down from 64.8 percent in 1989; 23.3 percent from pensions, up from 16.5 percent in 1989; and the remaining 17.3 from social security, down slightly from 18.6 percent in 1989. The biggest change is the portion from DC pensions, which is estimated to grow by 11.0 percentage points, from 5.4 to 16.4 percent of total retirement income.

Projected retirement income is also estimated to have grown very strongly between 1989 and 2001 (table 10). Among all households in age group 47 to 64, expected mean retirement income increased by 38 percent, for age group 47-55 by 31 percent and for age group 56-64 by 48 percent. The highest growth rates are estimated for ages 53 to 61 (from 64 to 67 percent over the period). The biggest growth is in DC pensions, more

including houses in computing the annuity flow here and treating the net equity in homes as an asset value like stocks or bonds.

²³ I assume that the family's marital status remains unchanged over time.

than tripling in real terms between 1989 and 2001, while annual benefits from DB plans is expected to decline by 13 percent in absolute terms.

Because of the widening racial gap in both retirement wealth and total augmented wealth, minorities are expected to fall behind non-Hispanic whites in retirement income - a 14 percent increase between 1989 and 2001 versus a 45 percent gain. By 2001, the mean retirement income of minorities is expected to be *about one fourth* that of white households. (This compares to an actual income ratio among 47-64 year olds between the two groups of 42 percent in 2001.) In fact, the ratio of minority to white retirement income is projected to fall from 0.329 in 1989 to 0.259 in 2001. Minorities will obtain a much higher share of their retirement income from social security – 30.5 versus 15.6 percent in 2001 – and a higher share from pensions – 0.318 versus 0.266 -- and a correspondingly much smaller share from standard wealth holdings – 0.377 versus 0.578.

Despite the fact that the retirement wealth and total augmented wealth of single females declined relative to married couples between 1989 and 2001, their actual retirement prospects showed a slight relative improvement. Their expected retirement income gained 53 percent between 1989 and 2001, compared to a 47 percent increase for married couples (and a 57 percent increase for single males). Still, in 2001, the mean expected retirement income of single females was only 29.4 percent that of married couples, though up from 28.3 percent in 1989. Single females in 2001 will obtain a higher percent of their retirement income from social security than married couples—20.1 versus 15.7 percent – but a lower fraction from pensions – 21.7 versus 27.1 percent.

In 2001, 29.7 percent of households in age group 47 to 64 were projected to have retirement income less than twice the poverty line for their family size (table 11). The percentage was smaller for older age groups, falling from 34.7 percent for ages 47 to 49 to 21.0 percent for ages 59 to 61 (though 32.0 percent for ages 62 to 64). Only 23.2 percent of white households fell below twice the poverty standard, compared to *over half* (56.6 percent) of minorities. Differences were also marked by marital status, with only 16.2 percent of married couples compared to 60.2 percent of single females falling below twice the poverty line.

All groups saw a reduction in the share with expected retirement income less than twice the poverty line between 1989 and 2001. Overall, there was a 7.3 percentage point

decline. Percentage points decline were greater for older households (particularly age group 59 to 61) and smaller for younger ones (particularly age groups 47-49 and 50-52). Minority households experienced a much greater decline than white households – 11.6 versus 4.7 percentage points. Single males also saw a large decline – 19.5 percentage points – especially compared to married couples (6.0 percentage point decline) and single females (6.3 percentage point decline). All groups saw a bigger reduction in the share with expected retirement income less than twice the poverty line from increases in net worth alone than from increases in the sum of net worth and retirement income. In 2001, for example, over 60 percent of married couples and 55 percent of white households could exceed twice the poverty threshold from their standard wealth holdings alone.

Changes in the share of households with expected retirement income that was less than one half of projected income at retirement were much smaller than changes in the share that would fall short of twice the poverty standard. The reason is that the former is a relative standard whereas the latter is an absolute standard. Changes in the replacement rate reflect changes in both expected retirement income and pre-retirement income itself (which is projected to grow at about 2 percent per year).

In 2001, only 28.1 percent of all households in age group 47 to 64 are expected to have replacement rates under 50 percent (table 12). The share falls with age, from 35.8 percent for age group 47-49 to 19.7 percent for age group 62-64. Despite the higher pre-retirement income of white households, the share with replacement rates under half was 25.4 percent in 2001, compared to 40.0 percent for minorities. However, the share of minority households between the ages of 56 and 64 that could replace less than 50 percent of their pre-retirement income declined by 12.4 percentage points from 41.5 percent in 1989 to 29.0 percent in 2001. At the same time, the share of white households that could replace less than 50 percent actually increased slightly – from 17.8 percent to 19.2 percent. Even with this improvement for African-Americans and the deterioration for whites, whites were 50 percent more likely to have at least 50 percent of their pre-retirement income in retirement.

Likewise, despite the lower pre-retirement income of single females, the share with a replacement rate under 50 percent was much higher for single females, 39.0 percent, than for married couples, 24.1 percent. Still, single women saw the largest

improvements in retirement income adequacy, at least if a replacement standard is used. The share of women between the ages of 47 and 64 who were unable to replace at least half of their pre-retirement income in retirement declined by 4.8 percentage points from 1989 to 2001, compared to a decline of 2.4 percentage points for married couples and an increase of 3.9 percentage points for single men (Table 22). These results are largely driven by the developments in the age group of women between the ages of 56 and 64.

However, our figures also show one of the shortcomings in using replacement ratios to measure retirement income adequacy. In particular, the retirement income adequacy of women improved more than that of their counter parts, not because their savings grew faster, but because of less widespread income gains. One indication of that is that the share of women that could expect to have retirement wealth less than twice the poverty line declined more slowly than for single men. For women between the ages of 47 and 64, the share that could expect to have retirement income less than twice the poverty line declined by 6.3 percentage points, almost identical to the 6.0 percentage point decline for married couples, and less than one third that of single men.

VII. Conclusion

Retirement income adequacy has gained in importance over the decades as the share of the population nearing retirement has grown. The starting point for retirement income adequacy is an assessment of how much wealth households have accumulated by the time they are about to retire.

The analysis here focuses on the wealth accumulation of households nearing retirement, between the ages of 47 and 64. The data show that still many households have to rely solely on Social Security for their retirement income. More than 20 percent of all households nearing retirement had no private pension plans in 2001.

Also, retirement wealth is very unevenly distributed. Whites and married couples and men had substantially larger wealth accumulations than their respective counter parts. However, expected retirement income grew robustly from 1989 to 2001 (by 38 percent in real terms) and the share with expected retirement income less than twice the poverty line fell by over 7 percentage points. The percentage point decline was even greater (11.6) for

minority households. Changes in the share with replacement rates under 50 percent were much smaller (a reflection of expected rising real incomes as well).

Still, the data include a sobering note with respect to retirement income adequacy. Assuming that a replacement ratio of 75 percent of pre-retirement income is a threshold for retirement income adequacy, about half of all households in age range 47 to 64 as of 2001 will likely miss this target (see table 13). Among single females, the corresponding figure is 59 percent. Moreover, the gap in expected retirement income between minorities and whites widened considerably between 1989 and 2001, with racial ratio of expected retirement income falling from 0.329 in 1989 to 0.259 in 2001. Indeed, the expected retirement income of minorities will be only about one fourth that of whites, compared to a 42 percent ratio of average incomes in 2001. This much larger gap in retirement income reflects both the much larger gap in net worth holdings as well as the gap in pension wealth.

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Appendix: Estimation of Pension and Social Security Wealth

I follow the methodology (with a few modifications indicated below for subsequent years) laid out in the 1983 Survey of Consumer Finances codebook. This allows consistency with the estimates of both pension and social security wealth already provided in the 1983 Survey of Consumer Finances. The computations of retirement wealth in 1983 were performed only for individuals age 40 and over and followed the following steps:

A. Pension Wealth

Total gross pension wealth consists of two main components.²⁴

1. (Gross) Present value of pensions from past jobs: The sum of the present value of past job pensions for head and spouse.
2. Gross present value of pensions from current jobs: The sum of the gross present value of current job non-thrift benefits for head and spouse. Expectations data are used for calculations.

The procedure is as follows. Pension coverage is first ascertained for current jobs. There are five possible categories: (1) covered and vested, anticipates benefits; (2) covered but not vested yet, anticipates benefits; (3) covered but not vested yet, does not anticipate benefits; (4) not covered, anticipates will be. Age when expected to be covered is ascertained; and (5) not covered, never will be.

For those who are covered by a pension plan or expect coverage, the person is asked how many distinct pensions plans he or she is covered by. For each plan, the age at which the pension benefits are expected to be given is then asked.

The actual expected annual retirement benefit is then determined by the following steps. First, the age at which the respondent will be vested in each plan is determined. Second, the age at which the respondent could retire with full benefits is ascertained. Third, the respondent was asked the nature of the formula used to determine the retirement benefits. There are six possibilities: (1) retirement formula based on age; (2) retirement formula based on years of service.; (3) retirement formula based on meeting both age and years of service criteria; (4) retirement formula based on the sum or age and years of service; (5) retirement formula based on meeting either age or years of service criteria; and (6) other combinations or formulas.

Fourth, the age at which the respondent could retire with some benefits was asked. The same six choices of the formula used was then given. Fifth, the age at which the respondent expected benefits to start was then asked.

Sixth, the expected retirement benefit was computed depending on the type of formula. This consists of three possibilities. (1) the annual pay in the final year of the job

²⁴ A third though minor component is also provided: pensions from other non-specified sources.

was computed. This variable, used in pension benefit calculations, is computed by projecting current pay to the year respondents say he/she will leave the job or retire. Wage growth is assumed to have three components: (i) occupation specific (adjusted for age) taken from the slopes in the CPS log-wage regressions (for high-income observations this is assumed to be zero); (ii) a Social Security Plan II-B assumption of 1.5% annual economy wide real wage growth; and (iii) a Social Security Plan II-B assumption of 4.0% inflation.

(2) In some cases, the respondent reported expected retirement benefits. This variable is the expected dollar retirement benefits in the first year of eligibility as answered by the respondent. For some observations the dollar amount was reported directly, but for others it was computed by multiplying reported benefits as a percentage times the calculated projected final wage. The variable is given as an annual amount except when a lump sum is expected (in which case the lump sum amount is given).

(3) In some cases, the respondent reported expected retirement benefits as a percent of final pay. This variable is the expected retirement benefits in the first year of eligibility as answered by the respondent, expressed as a percent of their projected wages in their final year of work. For some observations the percent was reported directly, but for others it was computed by dividing the reported dollar benefit by the calculated projected final wage.

Seventh, on the basis of the responses above, the present value of pension benefits from each current and past plan applicable to both head and spouse was then computed. This variable is measured assuming an annual (or lump sum) pension benefit as given above, starting in the year of first benefits. Benefits for that and each succeeding year are adjusted for the probability of death and are discounted back to 1983. Sex-based Social Security mortality tables are used to compute the probabilities of death (standard for each year). These are capped at 109 years. Spousal survival benefits are assumed to be opted for 75 percent the time and are randomly assigned when appropriate. Spousal survival benefits are also adjusted for death probabilities. Benefits are discounted at the 1983 long-term U.S. government bond rate of 10.85 percent.

Eighth, pension wealth was also computed for those individuals currently receiving pension benefits from past jobs. This was based on the following responses: (1) number of years receiving benefits and (2) amount of pension benefit pay received in 1982. For pensions already being received, the nominal value of the pension is assumed to be fixed, and is indexed to the year it started by the actual price changes observed as measured by the CPI. The present value of pension benefits from each job is then measured assuming an annual pension benefit as given starting in the year of first benefits (or 1983). Benefits for that and each succeeding year (adjusted for probability of receipt) are discounted back to 1983. Sex-based Social Security mortality tables are used to compute the probabilities of dying each year and/or living to receive any benefits. These are capped at 109 years. Spousal survival benefits are assumed to be opted for 75 percent of the time and are randomly assigned when appropriate. Spouse mortality tables are also

used. Benefits are discounted at the 1983 long-term U.S. Government bond rate of 10.85 percent.

B. Social Security Wealth

The gross present value of social security benefits is defined as: The sum of the gross present value of Social Security benefits for head and spouse. Social Security formula and current receipts used for calculations.

Among current Social Security benefit recipients, the steps are as follows: First, it was determined the kind of Social Security benefit received. The possibilities are: (1) retirement; (2) disability; (3) both retirement and disability; and (4) other kind.

Second, the respondent was asked the number of years receiving Social Security benefits. Third, both head and spouse were asked the amount received in 1982.

Among future recipients, the steps are as follows. First, both head and spouse were asked to report the age at which they expected to receive Social Security benefits (zero if he or she does not expect benefits). Second, the age at which Social Security benefits were expected to start was asked. Third, the number of years until the start of Social Security benefits was determined. Fourth, the respondent was asked the total number of years on Social Security jobs to current date. If this was not answered, then an estimate of Social Security coverage was used, summing over current and the three possible past jobs. Fifth, an estimate of future years on Social Security jobs was computed from retirement years indicated by head and spouse.

Sixth, data on number of years on Social Security jobs, wage rates for each known job, estimates of retirement dates, and dates of starting benefits were used as inputs to Social Security formulas to compute benefits. Seventh, estimates of Social Security benefits were provided. A calculated value was based on current job wage. All persons were assumed to work continuously until their stated age of full-time retirement, and then part-time until their stated age of final retirement. All persons were assumed to retire no later than 72 or age + 1 if currently over 72. Persons not currently working and over 50 were assumed not to work again. Wages were calculated by projecting current wages by the same method used to calculate final wages. Wage growth was assumed to have three components: (1) occupation specific (adjusted for age) taken from the slopes in the CPS log-wage spline regressions; (2) a Social Security plan II-B assumption of 1.5 percent annual economy wide real wage growth; and (3) a Social Security plan II-B assumption of 4.0 percent inflation. Part-time years (if currently working full-time) were assigned wages equal to 1/2 the projected full-time wages or the maximum amount allowable for full benefit receipt allowed by Social Security, whichever was smaller.

Eighth, the Social Security AIME (Average Indexed Monthly Earnings) used as the basis of computing the Social Security benefit base. The variable is the average covered Social Security earnings per month (including zeros) for all years from 1951 or age 22 (which ever is later) to age 60. These are indexed by a Social Security wage index to the year respondent is 60. Years after 60 can be substituted at nominal value. The five

lowest years are dropped before an average AIME is computed. These procedures are mimicked using the SCF data on job earnings and future retirement plans to estimate an AIME value. Past and current job wages are projected back (and forward) to estimate earnings for each known year of work. These projections assume within-occupation real wage adjustments as taken from the CPS regressions (see past/current job), and economy-wide productivity growth and inflation as occurred or is projected to occur under the Social Security plan II-B. Other years of unknown jobs are filled in with terms from the closest known job to fill in the total number of Social Security covered years. Wages are then capped at the actual or projected Social Security maximum and minimum coverage amounts. The AIME was then computed using actual or projected Social Security wage indices. The variable is currently estimated for all persons projected to have future Social Security benefits.

Ninth, the Social Security PIA (Primary Insurance Amount) on an annual basis is the basis of the calculation of Social Security benefits. It is computed from the AIME. In 1982 the monthly PIA was computed as 90 percent of the first \$254 of AIME plus 32 percent of the next \$1274 plus 15 percent of the amount above. Calculations here take account of legislatively planned changes in this formula. The PIA is currently computed for all non-receivers projected to have future Social Security benefits.

Tenth, the present value of Social Security benefits is then computed assuming an annual benefit as given by the PIA estimate and starting in the year of first benefits (or 1983). Benefits for that and each succeeding year (adjusted for probability of receipt) are discounted back to 1983. Sex-based Social Security mortality tables are used to compute the probabilities of dying each year and/or living to receive any benefits. These are capped at 109 years. Benefits are discounted at the 1983 long-term U.S. Government bond rate of 10.85 percent.

Eleventh, spousal benefits are also assumed at 50 percent of the primary benefit if a spouse is present. However, this variable will be zero if no spousal benefits are expected (such as when the individual's own benefits are larger than their spousal benefits). The age at which spousal benefits begin is estimated. Spouse mortality tables are also used for these calculations. The age at which widows benefits first could be drawn is also estimated. It is an estimate of the age at which the individual could start to receive Social Security widows benefits upon the death of their spouse. This variable will be zero if widows benefits could never be drawn. An adjustment is also made if it appeared that the recipient's benefits had been reduced because of work. Benefits are discounted at the 1983 long-term U.S. Government bond rate of 10.85 percent.

C. Modifications for years after 1983

A few changes were made in the procedures for computing both pension and social security wealth. First, the regression equations used to compute future earnings was modified as follows:

Human capital earnings functions are estimated by gender, race, and schooling level. In particular, the sample is divided into 16 groups by the following characteristics: (i) white and Asian versus African-American and Hispanic; (ii) male and female; and (iii) less than 12 years of schooling, 12 years of

schooling, 13 to 15 years of schooling, and 16 or more years. For each group, an earnings equation is estimated as follows:

$$\text{Log}(E_i) = b_0 + b_1 \text{Log}(H_i) + b_2 X_i + b_3 X_i^2 + b_4 SE_i + \sum_j b_j \text{OCCUP}_{ij} + b_{10} \text{MAR}_i + b_{11} \text{AS}_i + \varepsilon_i,$$

where log is the natural logarithm; E_i is the current earnings of individual I ; H_i is annual hours worked in the current year; X_i is years of experience at current age (estimated as age minus years of schooling minus 5); SE_i is a dummy variable indicating whether the person is self-employed or working for someone else, OCCUP is a set of five dummy variables indicating occupation of employment ((a) professional and managerial; (b) technical, sales, or administrative support; (c) service; (d) craft, and (e) other blue-collar, with farming the omitted category); MAR is a dummy variable indicating whether the person is married or not married; AS is a dummy variable indicating whether the person is Asian or not (used only for regressions on the first racial category); and ε is a stochastic error term. Future earnings are projected on the basis of the regression coefficients.²⁵

Second, the ten-year treasury bond rate prevailing for each individual year (1989, 1992, 1995, and 1998) was used as the discount factor.

Third, I have used mortality rates by age, gender, and race instead of by age and gender alone in the computation of the present value of both pensions and social security wealth.

Fourth, for consistency with 1983, I have continued to employ the Social Security Plan II-B assumption of 1.5 percent annual economy wide real wage growth, even though this seems too high in comparison with the actual post-1973 growth in annual earnings (which has averaged about 0.2 percent per year). I have also used the Social Security Plan II-B assumption of 4.0 percent annual inflation, even though this seems too high.

D. Questions on Work History

Following is a sample of questions on work history drawn from the 1989 SCF codebook that is used to calculate the earnings profile of both head and spouse and to calculate the AIME for each:

1. Including any periods of self-employment, the military, and your current job, since you were 18, how many years have you worked full-time for all or most of the year?
2. Not counting your current job, have you ever had a full-time job that lasted for three years or more?
3. I want to know about the longest such job you had. Did you work for someone else, were you self-employed, or what?
4. When did you start working at that job?
5. When did you stop working at that job?

²⁵ This implicitly assumes that deviations from the regression line in the current year are a result of a transitory component to current income only. This procedure follows the conventions of the 1983 SCF codebook. It should also be noted that the 1983 estimates were based on detailed occupational codes, whereas those for 1989 and 2001 use only the five occupational categories. This difference may introduce some inconsistencies in the estimates between 1983 and the two later years..

6. Since you were 18, have there been years when you only worked part-time for all or most of the year?
7. About how many years in total did you work part-time for all or most of the year?
8. Thinking now of the future, when do you expect to stop working full-time?
9. Do you expect to work part-time after that?
10. When do you expect to stop working altogether?

E. Questions on DC plans.

1. Does your employer make contributions to this [Defined Contribution] plan? Does the business make contributions to this plan?
2. What percent of pay or amount of money per month or year does your employer currently contribute?

Table 1: Mean and median household wealth and income, 1983, 1989, and 2001
(in thousands of 2001 dollars)

	1983	1989	2001	Percentage change		
				1983-89	1989-2001	1983-2001
Net worth						
1. Median	59.3	63.5	73.5	7.0	15.8	23.9
2. Mean	231.0	264.6	380.1	14.6	43.7	64.6
Income						
1. Median	34.7	35.7	39.0	3.0	9.2	12.5
2. Mean	49.5	53.3	67.2	7.8	26.2	36.0

Source: Author's computations from the 1983, 1989, and 2001 Survey of Consumer Finances.

Table 2: Household net worth and income by age class, 1983, 1989, and 2001
(in thousands of 2001 dollars)

	1983	1989	2001	Percentage change		
				1983-89	1989-01	1983-01
<u>Ages 47-55</u>						
1. Mean net worth (NW)	342.6	399.4	524.1	16.6	31.2	53.0
2. Median net worth (NW)	89.9	140.1	127.0	55.8	-9.4	41.2
3. Mean income	64.3	77.6	94.0	20.7	21.1	46.2
4. Median income	44.5	50.0	55.0	12.5	10.0	23.7
<u>Ages 56-64</u>						
1. Mean net worth (NW)	404.0	415.9	711.3	3.0	71.0	76.1
2. Median net worth (NW)	133.1	125.2	156.4	-5.9	25.0	17.5
3. Mean income	62.3	57.9	87.5	-7.0	51.1	40.6
4. Median income	38.8	35.7	44.0	-8.0	23.2	13.4
<u>Ages 65 and over</u>						
1. Mean net worth (NW)	372.7	387.8	557.6	4.1	43.8	49.6
2. Median net worth (NW)	101.9	109.4	150.8	7.3	37.8	47.9
3. Mean income	36.8	37.4	46.1	1.7	23.3	25.4
4. Median income	19.3	20.6	24.0	6.6	16.7	24.4

Source: Authors' computations from the 1983, 1989, and 2001 Survey of Consumer Finances.

Note: Households are classified by the age of the head of household.

Table 3: Percentage of households with retirement wealth by age class, 1983, 1989, and 2001 (in percentage points)

	1983	1989	2001	Percentage-point change		
				1983-89	1989-01	1983-01
<u>Ages 47-55</u>						
1. DC pensions	14.5	33.6	64.4	19.1	30.8	49.9
2. DB pension wealth	67.9	55.1	42.7	-12.8	-12.5	-25.2
3. Pension wealth (PW)	69.4	68.7	75.0	-0.7	6.3	5.6
4. Social Security wealth (SSW)	92.4	97.7	98.2	5.2	0.6	5.8
5. Retirement wealth (RW)	95.9	97.6	98.3	1.7	0.7	2.4
<u>Ages 56-64</u>						
1. DC pensions	9.3	22.7	59.4	13.4	36.7	50.1
2. DB pension wealth	69.9	58.6	49.3	-11.3	-9.3	-20.6
3. Pension wealth (PW)	70.8	66.3	78.2	-4.4	11.9	7.4
4. Social Security wealth (SSW)	91.9	94.7	97.5	2.8	2.8	5.6
5. Retirement wealth (RW)	98.1	96.5	97.9	-1.6	1.4	-0.3
<u>Ages 65 and over</u>						
1. DC pensions	2.1	1.3	35.0	-0.8	33.7	32.9
2. DB pension wealth	66.2	51.3	46.5	-14.9	-4.7	-19.6
3. Pension wealth (PW)	66.9	51.8	62.6	-15.1	10.8	-4.3
4. Social Security wealth (SSW)	77.5	86.1	92.9	8.6	6.8	15.4
5. Retirement wealth (RW)	97.3	90.2	95.5	-7.2	5.3	-1.9

Source: Authors' computations from the 1983, 1989, and 2001 Survey of Consumer Finances.

Note: Households are classified by the age of the head of household. Key:

Pension Wealth PW = DB + DC

Retirement Wealth RW = PW+SSW.

Table 4: Mean retirement and augmented wealth by age class, 1983, 1989, and 2001
(in thousands of 2001 dollars)

	1983	1989	2001	Percentage change		
				1983-89	1989-01	1983-01
<u>Ages 47-55</u>						
1. DC pensions	9.3	40.7	122.0	336.7	199.7	1208.8
2. DB pension wealth	78.8	69.7	72.3	-11.5	3.7	-8.3
3. Pension wealth (PW)	88.2	110.4	194.3	25.3	75.9	120.4
4. Social Security wealth (SSW)	124.4	117.5	169.6	-5.6	44.3	36.3
5. Retirement wealth (RW)	212.6	227.9	363.9	7.2	59.6	71.2
6. Augmented wealth (AW)	545.9	586.7	766.0	7.5	30.6	40.3
<u>Memo</u>						
6. Median pension wealth (PW)	33.0	37.9	70.2	14.8	85.1	112.5
7. Median Social Security wealth (SSW)	129.3	125.0	160.7	-3.3	28.6	24.3
8. Median retirement wealth (RW)	177.1	170.0	240.8	-4.0	41.6	36.0
9. Median augmented wealth (AW)	295.3	310.9	355.4	5.3	14.3	20.3
<u>Ages 56-64</u>						
1. DC pensions	6.7	16.4	135.5	144.5	725.5	1918.7
2. DB pension wealth	110.2	102.6	77.3	-7.0	-24.7	-29.9
3. Pension wealth (PW)	116.9	119.0	212.8	1.7	78.8	81.9
4. Social Security wealth (SSW)	181.0	172.4	207.1	-4.7	20.1	14.4
5. Retirement wealth (RW)	297.9	291.4	419.9	-2.2	44.1	40.9
6. Augmented wealth (AW)	695.2	690.9	995.7	-0.6	44.1	43.2
<u>Memo</u>						
6. Median pension wealth (PW)	55.4	48.4	68.4	-12.5	41.2	23.5
7. Median Social Security wealth (SSW)	194.8	182.8	203.6	-6.1	11.4	4.6
8. Median retirement wealth (RW)	263.7	248.0	279.9	-6.0	12.8	6.1
9. Median augmented wealth (AW)	440.8	455.0	463.3	3.2	1.8	5.1
<u>Ages 65 and over</u>						
1. DC pensions	1.8	1.9	53.6	6.6	2654.3	2837.2
2. DB pension wealth	60.5	70.4	52.1	16.3	-26.0	-14.0
3. Pension wealth (PW)	62.3	72.3	105.6	16.1	46.1	69.5
4. Social Security wealth (SSW)	147.3	139.5	146.6	-5.3	5.1	-0.4
5. Retirement wealth (RW)	209.6	211.8	252.3	1.1	19.1	20.4
6. Augmented wealth (AW)	580.4	597.7	756.3	3.0	26.5	30.3
<u>Memo</u>						
6. Median pension wealth (PW)	34.8	14.5	10.7	-58.4	-26.1	-69.3
7. Median Social Security wealth (SSW)		124.9	127.0	21233.1	1.7	21590.9
8. Median retirement wealth (RW)	177.4	167.9	171.4	-5.4	2.1	-3.4
9. Median augmented wealth (AW)	312.1	313.2	352.6	0.3	12.6	13.0

Source: Authors' computations from the 1983, 1989, and 2001 SCF.

Note: Households are classified by the age of the head of household. Key:

Pension Wealth PW = DB + DC

Retirement Wealth RW = PW+SSW.

Augmented Wealth AW = NWX+RW.

**Table 5: Mean income and wealth, middle three income quintiles,
1989 and 2001**
(in thousands of 2001 dollars)

	1989	2001	Percent change 1989-2001
<u>Ages 47-55</u>			
1. Mean income	50.7	56.6	11.6
2. Mean net worth (NW)	191.3	234.0	22.3
3. Mean pension wealth (PW)	84.3	134.0	58.8
4. Mean Social Security wealth (SSW)	115.6	164.1	42.0
5. Mean retirement wealth (RW)	199.9	298.0	49.1
6. Mean augmented wealth (AW)	391.2	532.1	36.0
<u>Ages 56-64</u>			
1. Mean income	37.4	46.7	25.0
2. Mean net worth (NW)	208.5	288.4	38.3
3. Mean pension wealth (PW)	106.7	143.0	34.0
4. Mean Social Security wealth (SSW)	131.0	208.6	59.2
5. Mean retirement wealth (RW)	237.8	351.6	47.9
6. Mean augmented wealth (AW)	446.3	640.0	43.4
<u>B. Ages 47-64</u>			
1. Mean income	44.7	52.7	18.0
2. Mean net worth (NW)	199.1	255.5	28.3
3. Mean pension wealth (PW)	94.5	137.5	45.6
4. Mean Social Security wealth (SSW)	122.6	181.6	48.2
5. Mean retirement wealth (RW)	217.0	319.1	47.1
6. Mean augmented wealth (AW)	416.1	574.6	38.1

Source: Authors' computations from the 1983 and 2001 SCF.

Note: Households are classified by the age of the head of household.

Key:

Pension Wealth PW = DB + DC

Retirement Wealth RW = PW+SSW.

Augmented Wealth AW = NWX+RW.

Table 6. Retirement Wealth by Race/Ethnicity and Age Class, 1983, 1989, and 2001
(In thousands, 2001 dollars)

Category	Mean Value			Percentage Change		
	1983	1989	2001	1983-1989	1989-01	1983-01
<u>A. Non-Hispanic White</u>						
<u>Ages 47-55</u>						
Mean Pension Wealth (PW)	94.0	126.6	225.9	34.6	78.4	140.2
Mean Social Security Wealth (SSW)	132.4	130.9	191.5	-1.2	46.3	44.6
Mean Retirement Wealth (RW)	226.5	257.5	417.4	13.7	62.1	84.3
Median Retirement Wealth (RW)	188.3	175.5	289.5	-6.8	65.0	53.7
<u>Ages 56-64</u>						
Mean Pension Wealth (PW)	125.7	142.0	234.8	12.9	65.3	86.7
Mean Social Security Wealth (SSW)	189.2	183.6	222.9	-3.0	21.4	17.8
Mean Retirement Wealth (RW)	314.9	325.6	457.7	3.4	40.6	45.3
Median Retirement Wealth (RW)	279.2	271.7	313.3	-2.7	15.3	12.2
<u>Ages 65 and over</u>						
Mean Pension Wealth (PW)	67.2	75.6	114.2	12.5	51.0	69.9
Mean Social Security Wealth (SSW)	152.3	142.6	152.1	-6.4	6.6	-0.2
Mean Retirement Wealth (RW)	219.5	218.2	266.2	-0.6	22.0	21.3
Median Retirement Wealth (RW)	195.4	186.3	181.9	-4.7	-2.4	-6.9
<u>B. African-American or Hispanic</u>						
<u>Ages 47-55</u>						
Mean Pension Wealth (PW)	66.9	63.3	79.4	-5.4	25.5	18.7
Mean Social Security Wealth (SSW)	89.7	80.8	93.9	-9.9	16.2	4.7
Mean Retirement Wealth (RW)	156.6	144.1	173.3	-8.0	20.3	10.7
Median Retirement Wealth (RW)	109.8	106.1	118.8	-3.4	12.0	8.2
<u>Ages 56-64</u>						
Mean Pension Wealth (PW)	79.1	76.4	81.2	-3.4	6.2	2.6
Mean Social Security Wealth (SSW)	139.5	130.8	121.5	-6.2	-7.0	-12.9
Mean Retirement Wealth (RW)	218.6	179.1	202.7	-18.1	13.2	-7.3
Median Retirement Wealth (RW)	163.7	141.4	135.4	-13.6	-4.3	-17.3
<u>Ages 65 and over</u>						
Mean Pension Wealth (PW)	34.5	28.7	48.6	-16.8	69.2	40.8
Mean Social Security Wealth (SSW)	111.2	104.1	111.1	-6.4	6.7	-0.1
Mean Retirement Wealth (RW)	145.8	104.1	159.7	-28.6	53.4	9.6
Median Retirement Wealth (RW)	105.5	91.9	107.9	-12.9	17.4	2.3

Source: author's computations from the 1983, 1989, and 2001 SCF.

Households are classified by the age of the head of household. Asians and other races are excluded from the table because of small sample sizes. Key

Retirement Wealth RW = PW+SSW.

Table 7. Income and Wealth by Race/Ethnicity and Age Class, 1983, 1989, and 2001
(In thousands, 2001 dollars)

Category	Mean Value			Percentage Change		
	1983	1989	2001	1983-1989	1989-2001	1983-2001
<u>A. Non-Hispanic White</u>						
<u>Ages 47-55</u>						
Mean Income	69.9	87.8	107.9	25.6	22.9	54.3
Mean Net Worth (NW)	404.9	464.4	631.6	14.7	36.0	56.0
Mean Augmented Wealth (AW)	620.7	671.5	905.9	8.2	34.9	45.9
Median Augmented Wealth (AW)	341.4	344.0	435.8	0.8	26.7	27.6
<u>Ages 56-64</u>						
Mean Income	68.7	67.9	97.5	-1.3	43.7	41.9
Mean Net Worth (NW)	461.2	508.5	825.5	10.3	62.4	79.0
Mean Augmented Wealth (AW)	768.6	814.0	1128.0	5.9	38.6	46.8
Median Augmented Wealth (AW)	483.9	486.2	524.1	0.5	7.8	8.3
<u>Ages 65 and over</u>						
Mean Income	40.0	42.1	48.8	5.1	15.9	21.9
Mean Net Worth (NW)	418.4	460.4	622.3	10.0	35.2	48.7
Mean Augmented Wealth (AW)	636.0	676.3	827.8	6.3	22.4	30.1
Median Augmented Wealth (AW)	362.1	365.5	390.1	1.0	6.7	7.8
<u>B. African-American or Hispanic</u>						
<u>Ages 47-55</u>						
Mean Income	39.6	35.2	46.9	-11.1	33.2	18.4
Mean Net Worth (NW)	74.1	91.2	118.2	23.1	29.7	59.7
Mean Augmented Wealth (AW)	226.5	226.1	250.0	-0.2	10.5	10.3
Median Augmented Wealth (AW)	160.3	137.1	128.4	-14.5	-6.4	-19.9
<u>Ages 56-64</u>						
Mean Income	28.2	25.6	38.7	-9.4	51.2	37.0
Mean Net Worth (NW)	74.9	110.8	153.5	47.9	38.5	104.9
Mean Augmented Wealth (AW)	291.2	285.9	334.0	-1.8	16.8	14.7
Median Augmented Wealth (AW)	211.7	190.4	194.6	-10.0	2.2	-8.1
<u>Ages 65 and over</u>						
Mean Income	16.1	15.3	26.9	-5.1	75.6	66.6
Mean Net Worth (NW)	79.9	50.3	124.8	-37.1	148.2	56.1
Mean Augmented Wealth (AW)	224.2	154.4	275.0	-31.1	78.1	22.7
Median Augmented Wealth (AW)	131.3	137.2	148.3	4.5	8.1	13.0

Source: author's computations from the 1983, 1989, and 2001 SCF..

Households are classified by the age of the head of household. Asians and other races are excluded from the table because of small sample sizes. Key

Augmented Wealth AW = NWX+RW.

Table 8. Retirement Wealth by Family Status and Age Class, 1983, 1989, and 2001
(In thousands, 2001 dollars)

Category	Mean Value			Percentage Change		
	1983	1989	2001	1983-1989	1989-01	1983-01
<u>A. Married Couple</u>						
<u>Ages 47-55</u>						
Mean Pension Wealth (PW)	99.5	138.6	264.3	39.2	90.7	165.6
Mean Social Security Wealth (SSW)	161.1	158.7	225.0	-1.5	41.8	39.6
Mean Retirement Wealth (RW)	260.7	297.3	489.3	14.0	64.6	87.7
Median Retirement Wealth (RW)	217.3	231.7	350.0	6.6	73.7	61.1
<u>Ages 56-64</u>						
Mean Pension Wealth (PW)	139.0	159.1	280.3	14.5	76.2	101.7
Mean Social Security Wealth (SSW)	235.7	225.8	259.3	-4.2	14.8	10.0
Mean Retirement Wealth (RW)	374.6	384.9	539.6	2.7	40.2	44.0
Median Retirement Wealth (RW)	330.7	315.2	370.1	-4.7	17.4	11.9
<u>Ages 65 and over</u>						
Mean Pension Wealth (PW)	65.3	118.1	163.1	80.9	38.1	149.9
Mean Social Security Wealth (SSW)	232.6	220.5	199.3	-5.2	-9.6	-14.3
Mean Retirement Wealth (RW)	297.9	338.6	362.4	13.7	7.0	21.6
Median Retirement Wealth (RW)	281.3	277.3	275.1	-1.4	-0.8	-2.2
<u>B. Single Male</u>						
<u>Ages 47-55</u>						
Mean Pension Wealth (PW)	47.7	56.8	156.5	19.2	175.4	228.4
Mean Social Security Wealth (SSW)	62.4	70.4	114.9	12.9	63.2	84.2
Mean Retirement Wealth (RW)	110.1	127.3	271.5	15.6	113.3	146.7
Median Retirement Wealth (RW)	65.9	76.3	182.3	15.8	138.8	176.6
<u>Ages 56-64</u>						
Mean Pension Wealth (PW)	47.9	61.1	132.7	27.6	117.3	177.1
Mean Social Security Wealth (SSW)	89.1	93.3	148.8	4.7	59.6	67.0
Mean Retirement Wealth (RW)	137.0	154.3	281.5	12.7	82.4	105.5
Median Retirement Wealth (RW)	117.8	124.0	200.4	5.3	61.6	70.2
<u>Ages 65 and over</u>						
Mean Pension Wealth (PW)	39.4	51.1	80.8	29.8	58.1	105.2
Mean Social Security Wealth (SSW)	74.9	80.5	116.1	7.4	44.2	55.0
Mean Retirement Wealth (RW)	114.3	131.6	196.9	15.1	49.6	72.3
Median Retirement Wealth (RW)	102.0	107.5	131.4	5.3	22.3	28.8
<u>C. Single Female</u>						
<u>Ages 47-55</u>						
Mean Pension Wealth (PW)	69.2	53.3	59.0	-23.0	10.8	-14.7
Mean Social Security Wealth (SSW)	49.3	61.0	80.1	23.8	31.4	62.7
Mean Retirement Wealth (RW)	118.4	114.2	139.1	-3.5	21.8	17.5
Median Retirement Wealth (RW)	84.0	81.9	102.6	-2.5	25.3	22.1
<u>Ages 56-64</u>						
Mean Pension Wealth (PW)	77.1	59.4	84.8	-23.0	42.7	9.9
Mean Social Security Wealth (SSW)	72.4	79.2	106.0	9.4	33.9	46.5
Mean Retirement Wealth (RW)	149.5	138.6	190.8	-7.3	37.6	27.6
Median Retirement Wealth (RW)	124.6	122.6	129.8	-1.6	5.9	4.2
<u>Ages 65 and over</u>						
Mean Pension Wealth (PW)	60.1	29.7	29.0	-50.5	-2.5	-51.8

Mean Social Security Wealth (SSW)	58.4	60.1	79.7	3.0	32.6	36.5
Mean Retirement Wealth (RW)	118.5	89.8	108.7	-24.2	21.0	-8.3
Median Retirement Wealth (RW)	98.5	84.7	94.1	-14.0	11.0	-4.5

Source: author's computations from the 1983, 1989, and 2001 SCF. Households are classified by the age of the head. Key:

Retirement Wealth $RW = PW + SSW$.

Table 9. Income and Wealth by Family Status and Age Class, 1983, 1989, 1998, and 2001
(In thousands, 2001 dollars)

Category	Mean Value			Percentage Change		
	1983	1989	2001	1983-1989	1989-01	1983-01
<u>A. Married Couple</u>						
<u>Ages 47-55</u>						
Mean Income	79.0	98.1	117.9	24.3	20.1	49.3
Mean Net Worth (NW)	452.1	527.4	722.7	16.7	37.0	59.9
Mean Augmented Wealth (AW)	700.8	772.8	1042.6	10.3	34.9	48.8
Median Augmented Wealth (AW)	398.7	423.3	529.8	6.2	25.1	32.9
<u>Ages 56-64</u>						
Mean Income	79.4	77.0	117.0	-3.0	52.0	47.4
Mean Net Worth (NW)	534.9	568.1	968.0	6.2	70.4	81.0
Mean Augmented Wealth (AW)	900.1	932.0	1322.0	3.5	41.8	46.9
Median Augmented Wealth (AW)	568.3	561.4	591.6	-1.2	5.4	4.1
<u>Ages 65 and over</u>						
Mean Income	53.4	57.1	62.9	7.0	10.2	17.9
Mean Net Worth (NW)	556.0	641.5	811.1	15.4	26.4	45.9
Mean Augmented Wealth (AW)	850.4	976.3	1088.8	14.8	11.5	28.0
Median Augmented Wealth (AW)	460.6	479.4	542.9	4.1	13.3	17.9
<u>B. Single Male</u>						
<u>Ages 47-55</u>						
Mean Income	35.1	63.6	95.0	80.9	49.4	170.2
Mean Net Worth (NW)	170.7	258.8	306.1	51.6	18.3	79.4
Mean Augmented Wealth (AW)	276.8	365.5	488.6	32.0	33.7	76.5
Median Augmented Wealth (AW)	92.6	115.3	237.4	24.6	105.9	156.5
<u>Ages 56-64</u>						
Mean Income	36.1	36.3	46.7	0.5	28.5	29.1
Mean Net Worth (NW)	202.7	207.4	381.5	2.3	83.9	88.2
Mean Augmented Wealth (AW)	339.7	355.7	595.9	4.7	67.6	75.4
Median Augmented Wealth (AW)	214.8	222.7	288.5	3.7	29.5	34.3
<u>Ages 65 and over</u>						
Mean Income	27.8	23.4	45.5	-15.8	94.6	63.8
Mean Net Worth (NW)	211.2	177.5	528.5	-16.0	197.8	150.3
Mean Augmented Wealth (AW)	325.5	309.1	692.1	-5.0	123.9	112.6
Median Augmented Wealth (AW)	135.5	153.1	283.4	12.9	85.2	109.1
<u>C. Single Female</u>						
<u>Ages 47-55</u>						
Mean Income	35.2	27.1	38.1	-23.0	40.6	8.3
Mean Net Worth (NW)	116.0	102.9	219.2	-11.2	112.9	89.0
Mean Augmented Wealth (AW)	230.3	199.6	322.7	-13.4	61.7	40.1
Median Augmented Wealth (AW)	138.6	120.7	129.6	-12.9	7.3	-6.5
<u>Ages 56-64</u>						
Mean Income	28.0	26.4	35.7	-5.8	35.1	27.3
Mean Net Worth (NW)	141.6	183.8	241.5	29.8	31.4	70.5
Mean Augmented Wealth (AW)	289.4	310.8	386.0	7.4	24.2	33.4
Median Augmented Wealth (AW)	206.6	202.8	204.5	-1.8	0.8	-1.0
<u>Ages 65 and over</u>						
Mean Income	19.3	20.2	20.9	5.0	3.5	8.6

Mean Net Worth (NW)	181.8	172.7	185.8	-5.0	7.5	2.2
Mean Augmented Wealth (AW)	300.2	262.1	279.5	-12.7	6.6	-6.9
Median Augmented Wealth (AW)	188.3	177.0	163.0	-6.0	-7.9	-13.4

Source: author's computations from the 1983, 1989, and 2001 SCF. Households are classified by the age of the head. Key:

Augmented Wealth $AW = NWX + RW$.

Table 10. Expected Mean Retirement Income Based on Wealth Holdings and Expected Retirement Benefits, 1989 and 2001

(In thousands, 2001 dollars)

Category	Mean Retirement Income by Source, 1989						Mean Retirement Income by Source, 2001						% Change by Source, 1989-01					
	NWX	PW	(i) DC	(ii) DB	SSW	Total	NWX	PW	(i) DC	(ii) DB	SSW	Total	NWX	PW	DC	DB	SSW	Total
All Ages 47-64	35.1	8.9	2.9	6.0	10.1	54.1	44.4	17.4	12.3	5.2	12.9	74.8	27	95	316	-13	28	38
Age: 47-55	37.8	9.3	4.4	4.9	8.2	55.3	42.6	18.0	13.0	5.1	11.9	72.5	13	93	192	4	44	31
Age: 56-64	32.2	8.5	1.4	7.2	12.1	52.8	47.2	16.6	11.2	5.4	14.5	78.3	47	94	720	-25	20	48
Age: 47-49	35.5	10.2	6.2	4.0	7.2	52.9	34.8	14.9	11.4	3.5	10.3	60.1	-2	46	85	-14	44	13
Age: 50-52	41.4	10.8	5.7	5.1	8.2	60.5	45.5	17.2	12.1	5.1	11.8	74.4	10	59	113	-1	43	23
Age: 53-55	36.5	7.4	2.1	5.3	8.0	51.9	49.6	22.9	15.8	7.1	13.9	86.4	36	209	645	34	75	67
Age: 56-58	30.5	6.8	2.0	4.9	7.9	45.3	45.4	16.8	11.8	5.1	13.4	75.6	49	146	494	5	69	67
Age: 59-61	37.1	8.5	1.3	7.2	8.4	54.0	54.8	18.2	12.4	5.8	15.6	88.6	48	114	863	-19	85	64
Age: 62-64	29.3	10.0	0.9	9.1	9.7	49.0	41.1	14.5	9.1	5.4	14.8	70.4	40	45	896	-41	52	44
A. By Race/Ethnicity^a																		
1. Non-Hispanic white																		
All Ages 47-64	41.7	10.5	3.6	6.9	11.0	63.1	53.0	24.4	14.2	10.2	14.3	91.7	27	131	289	48	31	45
Age: 47-55	43.7	10.8	5.5	5.3	9.2	63.7	51.7	26.1	15.2	11.0	13.4	91.3	18	141	175	106	46	43
Age: 56-64	39.5	10.2	1.7	8.5	12.9	62.5	54.8	21.8	12.8	9.0	15.6	92.2	39	114	663	6	21	47
2. African-American or Hispanic																		
All Ages 47-64	8.4	5.0	0.6	4.4	7.3	20.8	8.9	7.5	3.7	3.9	7.2	23.7	7	49	475	-12	-2	14
Age: 47-55	8.6	4.7	0.9	3.8	5.7	19.0	8.0	8.5	4.6	4.0	6.6	23.1	-7	80	385	4	16	22
Age: 56-64	8.2	5.4	0.3	5.1	9.2	22.7	10.9	5.6	1.9	3.7	8.5	25.0	34	3	504	-27	-7	10
B. By Family Status																		
1. Married couple																		
All Ages 47-64	47.4	11.6	3.9	7.7	13.3	72.3	60.8	28.8	16.8	12.0	16.7	106.4	28	148	333	55	26	47
Age: 47-55	50.2	11.7	5.7	6.1	11.1	73.1	58.5	30.9	17.9	13.0	15.8	105.2	17	163	216	114	42	44
Age: 56-64	44.1	11.4	1.8	9.7	15.8	71.3	64.1	25.8	15.3	10.5	18.1	108.1	46	126	765	9	15	52
2. Single male																		
All Ages 47-64	19.9	4.5	1.2	3.3	5.9	30.3	24.0	14.6	8.2	6.5	8.9	47.5	20	225	597	94	51	57
Age: 47-55	25.4	4.7	2.2	2.5	4.9	35.1	22.9	17.1	9.6	7.5	8.0	48.1	-10	264	342	197	63	37

Age: 56-64	16.4	4.4	0.5	3.8	6.5	27.3	25.9	10.2	5.6	4.6	10.4	46.5	58	132	950	20	60	70
3.Single female																		
All Ages 47-64	11.3	4.3	1.4	2.9	4.9	20.5	18.2	6.8	3.8	3.0	6.3	31.3	62	57	173	2	28	53
Age: 47-55	8.7	4.4	1.9	2.5	4.3	17.3	19.6	6.2	3.8	2.4	5.6	31.4	126	41	101	-4	31	81
Age: 56-64	13.9	4.2	0.9	3.3	5.5	23.6	15.8	7.7	3.9	3.9	7.4	31.0	14	83	327	17	34	31

Source: author's computations from the 1989 and 2001 SCF. Households are classified by the age of the head of household. Net worth and DC pensions are projected forward to year of retirement using a three percent real rate of return. Projected retirement income is then based on an annuity calculation. Key:
Pension Wealth $PW = DB + DC$
a. Asian and other races are excluded from the table because of small sample sizes.

Table 11. Percent of Households with Expected Retirement Income Less Than Twice the Poverty Line, 1989 and 2001

	From Marketable Wealth (NWX) Holdings Only			From Marketable Wealth and Expected Retirement Benefits		
	1989	2001	Change 1989-2001	1989	2001	Change 1989-2001
<u>All Ages 47-64</u>	75.3	50.3	-24.9	37.0	29.7	-7.3
Age: 47-55	75.9	52.2	-23.7	33.1	31.5	-1.6
Age: 56-64	74.6	47.5	-27.1	41.2	27.0	-14.2
Age: 47-49	78.5	56.1	-22.5	36.5	34.7	-1.8
Age: 50-52	76.6	54.8	-21.8	32.3	32.0	-0.3
Age: 53-55	73.3	44.6	-28.7	31.2	26.9	-4.2
Age: 56-58	82.1	45.3	-36.9	45.7	28.2	-17.6
Age: 59-61	72.6	42.6	-30.0	43.0	21.0	-22.0
Age: 62-64	70.1	55.9	-14.3	35.7	32.0	-3.7
<u>A. By Race/Ethnicity^a</u>						
<u>1. Non-Hispanic white</u>						
All Ages 47-64	70.4	44.6	-25.8	27.9	23.2	-4.7
Age: 47-55	71.8	45.7	-26.1	24.8	23.9	-0.9
Age: 56-64	68.8	43.0	-25.8	31.2	22.1	-9.0
<u>2. African-American or Hispanic</u>						
All Ages 47-64	94.9	76.2	-18.6	68.2	56.6	-11.6
Age: 47-55	95.6	76.6	-19.1	65.1	59.0	-6.0
Age: 56-64	94.0	75.5	-18.5	71.6	51.8	-19.8
<u>B. By Family Status</u>						
<u>1. Married couple</u>						
All Ages 47-64	70.3	39.4	-30.8	22.3	16.2	-6.0
Age: 47-55	71.3	39.1	-32.1	19.0	15.1	-3.9
Age: 56-64	69.1	39.9	-29.2	26.3	17.8	-8.4
<u>2. Single male</u>						
All Ages 47-64	82.6	59.9	-22.7	52.8	33.3	-19.5
Age: 47-55	79.8	61.0	-18.8	47.6	36.5	-11.1
Age: 56-64	84.3	58.0	-26.3	56.1	27.5	-28.5
<u>3. Single female</u>						
All Ages 47-64	84.5	70.4	-14.1	66.5	60.2	-6.3
Age: 47-55	87.0	76.2	-10.9	66.1	66.0	-0.1
Age: 56-64	82.0	61.1	-20.9	66.9	50.9	-16.0

Source: author's computations from the 1989 and 2001 SCF. Households are classified by the age of the head. Net worth and DC pensions are projected forward to year of retirement using a three percent real rate of return. Projected retirement income is then based on an annuity calculation.

a. Asian and other races are excluded from the table because of small sample sizes.

Table 12. Percent of Households with Expected Replacement Income Less Than One Half Of Projected Income at Retirement, 1989 and 2001

	From Marketable Wealth (NWX) Holdings Only			From Marketable Wealth and Expected Retirement Benefits		
	1989	2001	Change 1989-2001	1989	2001	Change 1989-2001
<u>All Ages 47-64</u>	80.3	77.9	-2.4	30.5	28.1	-2.3
Age: 47-55	83.3	82.6	-0.7	37.4	32.7	-4.6
Age: 56-64	77.1	70.7	-6.3	23.1	21.1	-2.0
Age: 47-49	83.3	83.0	-0.3	43.7	35.8	-7.9
Age: 50-52	85.4	85.5	0.2	40.0	35.0	-4.9
Age: 53-55	81.5	79.2	-2.4	30.5	26.5	-4.0
Age: 56-58	86.2	74.7	-11.5	26.5	24.8	-1.6
Age: 59-61	73.5	65.9	-7.6	28.9	18.1	-10.9
Age: 62-64	72.5	70.8	-1.7	15.1	19.7	4.6
<u>A. By Race/Ethnicity^a</u>						
<u>1. Non-Hispanic white</u>						
All Ages 47-64	77.0	74.6	-2.4	27.3	25.4	-2.0
Age: 47-55	81.2	79.8	-1.3	36.2	29.6	-6.6
Age: 56-64	72.6	67.1	-5.6	17.8	19.2	1.3
<u>2. African-American or Hispanic</u>						
All Ages 47-64	91.5	92.9	1.4	42.1	40.0	-2.1
Age: 47-55	91.4	95.1	3.7	42.6	45.5	2.9
Age: 56-64	91.5	88.6	-2.9	41.5	29.0	-12.4
<u>B. By Family Status</u>						
<u>1. Married couple</u>						
All Ages 47-64	80.5	76.4	-4.1	26.5	24.1	-2.4
Age: 47-55	84.0	81.5	-2.5	34.2	27.6	-6.6
Age: 56-64	76.3	69.1	-7.2	17.4	19.3	1.8
<u>2. Single male</u>						
All Ages 47-64	76.6	80.4	3.9	22.6	26.5	3.9
Age: 47-55	74.4	82.0	7.6	27.0	33.8	6.9
Age: 56-64	78.0	77.7	-0.2	19.8	13.4	-6.4
<u>3. Single female</u>						
All Ages 47-64	81.4	79.8	-1.6	43.8	39.0	-4.8
Age: 47-55	84.5	85.5	0.9	49.7	43.9	-5.8
Age: 56-64	78.2	70.5	-7.7	37.9	31.1	-6.8

Source: author's computations from the 1989 and 2001 SCF. Households are classified by the age of the head. Net worth and DC pensions are projected forward to year of retirement using a three percent real rate of return. Projected retirement income is then based on an annuity calculation.

a. Asian and other races are excluded from the table because of small sample sizes.

Table 13. Distribution of Households in Age Group 47-64 by Expected Replacement Rates, Based on Wealth Holdings and Expected Pension and Social Security Benefits, 1989 and 2001 (in percentage points)

	<u>Income Replacement Rates, 1989</u>				<u>Income Replacement Rates, 2001</u>			
	<25%	<50%	<75%	<100%	<25%	<50%	<75%	<100%
All Ages 47-64	8.1	30.5	56.8	72.5	5.4	28.1	52.2	67.5
Age: 47-55	8.6	37.4	62.8	77.7	7.0	32.7	57.5	71.6
Age: 56-64	7.6	23.1	50.4	67.0	3.0	21.1	44.1	61.2
1. Non-Hispanic white	5.6	27.3	53.7	70.1	4.0	25.4	49.8	66.3
2. African-American or Hispanic	8.9	42.1	54.2	68.5	6.9	40.0	52.2	65.6
3. Married couple	3.7	26.5	56.2	73.8	3.1	24.1	50.7	65.7
4. Single male	6.2	22.6	51.1	63.1	6.2	26.5	47.6	67.3
5. Single female	20.0	43.8	60.9	73.6	10.6	39.0	58.9	72.0

Source: author's computations from the 1989 and 2001 SCF. Households are classified by the age of the head. Net worth and DC pensions are projected forward to year of retirement using a three percent real rate of return. Projected retirement income is then based on an annuity calculation.
a. Asian and other races are excluded from the table because of small sample sizes.