CHANGING SOURCES OF INCOME AMONG THE AGED POPULATION

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Abstract

This paper focuses on an explanation for the large shift over the past two decades in the composition of the income of the aged (65+), increasing the role of earned income and reducing the importance of income from their own assets. We find that the pattern of change is consistently reported in all of the major household surveys. The increase in the importance of labor income can be attributed to delayed exit from the labor force by workers at older ages. We attribute the increase in work time to a rise in the proportion of more educated workers who choose to continue working, changes within the pension system that previously encouraged early retirement, and a decline in the availability of retiree health insurance. The increase in work time is concentrated among the highest income groups and those with the most education, suggesting that it is largely voluntary. The fall in asset income can be traced to lower interest rates and a reduced propensity for the aged to convert their wealth to annuities. It does not reflect reduced wealth at older ages. A measure of the annuity equivalent of their wealth holdings suggests that there has been no decline for aged units. We also find only a weak relationship between changes in asset income and the decision to remain in the workforce.

Introduction

Over the past two decades, there has been a major shift in the composition of income received by the elderly (aged 65 and over). The proportion of income derived from their own saving has fallen to less than half the level of 1990, but it has been offset by an equal increase in the share of income derived from continued employment–wage and self-employment income. Meanwhile the proportion of income derived from Social Security, employer pensions and transfers has remained virtually constant (Table 1). What are the major forces behind these developments? Does the fall in the income of the elderly from their own assets follow from widespread reports of reduced retirement saving in prior decades? Does the growing importance of earned income reflect the inadequacy of other retirement resources and a need to stay in the labor force for more years in order to maintain their pre-retirement standard of living? Alternatively, the rise in the labor force participation of older workers could reflect the positive influences of longer life expectancy, reduced rates of morbidity, less onerous jobs, and the increase in incentives to remain in the workforce

The purpose of this study is to explore the change in the composition of aged persons' incomes in greater detail. We begin by comparing the estimates of the income of aged households in three surveys: the Annual Social and Economic Supplement (ASEC) to the Current Population Survey, the Health and Retirement Study (HRS); and the Survey of Consumer Finances (SCF). Each of these surveys has important advantages. The ASEC is the oldest and largest survey of American households and provides a comprehensive measure of incomes on an annual basis that is widely used in research and public discussions. The HRS is limited to older persons (primarily those over age 55), but it has an important panel dimension with follow-up interviews every two years, and it includes a vast array of socio-economic characteristics that can be linked to the changes in income. Finally, the SCF is the preeminent source of information on household wealth–particularly for those at the top of the wealth distribution–and it provides superior information on capital income. The ASEC does not inquire about wealth holdings and the HRS includes few high-wealth households.

The second portion of the analysis uses the micro-data from the surveys to investigate the reasons for the rise in earned incomes and fall of asset incomes of those aged 65 and over. Most of this analysis is based on the HRS because of its ability to relate the changes in income to other individual and household characteristics. The HRS and SCF are both used to trace out the decline

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in asset income and apportion it between changes in wealth and a lower rate of return. Finally, the analysis explores the question of whether the changes in asset income and earnings are correlated across individuals or they are relatively independent developments.

Comparing Measures of Income

The ASEC has long been the most widely used source of information on household income and its distribution, and the survey is used by the Social Security Administration (SSA) to compile a biennial report on the incomes of older Americans.[1] We follow the classifications of money income as used in the SSA report to compute the incomes of aged units with an aged head or spouse by major income source for the survey years of 1998 to 2010. Reported incomes are for the calendar year prior to the survey. The income categories are earnings (wages, self-employment, and farm income), Old Age, Survivors and Disability Insurance (OASDI), pension income (public and private employees), asset income (dividends, interest, and rent), and other transfers. We made corresponding estimates of income by major source for the HRS beginning in 1998.[2] A detailed description of the data construction is provided in Appendix A. In general, both surveys collect the data at an individual level, but no effort is made to divide the asset income between spouses. Thus, the incomes of married couples are combined and reported as a single unit to obtain estimates of total income. Age is based on the individual's age in March of the survey year; and the age of a couple is that of the oldest member.

The levels of per unit income from the HRS and the ASEC and their primary sources are shown in Table 2 for the years corresponding to the latest seven waves of the HRS (1998-2010) and for units aged 65 and over. It is evident that the HRS consistently reports a higher level of overall income, averaging 123 percent of the ASEC over the seven waves. The largest dollar differences are in asset, pension and self-employment incomes. The HRS reports a slightly larger value for the Old- Age, Survivor and Disability Insurance (OASDI) programs, and proportionately larger transfer-type income, but the latter category is small.

An early comparison of the two surveys (Hurd, Juster, and Smith, 2003) pointed to an innovation in the HRS of asking respondents about the income from specific assets immediately

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[1] See *Income of the Population 55 or Older,* available at
http://www.ssa.gov/policy/docs/statcomps/income_pop55/index.html

[2] Prior to 1998, the HRS did not provide separate tabulations of business and asset income, and there was not a complete age distribution of persons over age 65.

upon be asked about the amount of their wealth holdings, whereas the ASEC only asks about the income. However, the difference between the two surveys' estimates of asset income has declined over time and actually turned negative in the 2008 comparison. Prior work (Czajka and Denmead, 2008) suggests that the ASEC fails to capture large portions of the withdrawal of funds from defined-contribution pension plans by limiting the income measure to *regular* payments. The HRS also inquires in more detail about pension income. The most puzzling discrepancy is for self-employment income. The differences are large and they are concentrated at the top of the income distribution. It is difficult to identify the reasons because the two surveys use a much different sequence of questions to determine the income from self employment.[3]

Finally, the magnitude of the income discrepancies does raise a question of whether they reflect differences in the design of the income questionnaire or an over-representation of high-income households in the HRS (Czajka and Denmead, 2008, p. 206). When incomes in the two surveys are arrayed using the quintile breaks of the ASEC, the dollar magnitudes of the discrepancies are highly concentrated in the top fifth of the income distribution, but that pattern is less evident when the discrepancies are reported as a percentage of income. There is no systematic difference between the HRS and the ASEC in the middle three quintiles of the distribution. The HRS does report a higher level of educational attainment, which is known to be highly correlated with income. In 2000, individuals with less than a high school degree or its equivalent represented about 22 percent of the population over 55 in the HRS compared to 25 percent in the ASEC. However, those differences do not seem large enough to account for the higher reported level of income in the HRS. The two surveys indicate very similar trends of improvement in educational attainment.

Despite the differences in levels of aggregate income, the HRS and ASEC show very similar trends with respect to the rise in the share of income of those over age 65 from earnings and the fall in the share of asset income (Figure 1). Between 1998 and 2010, the earnings' share rises by 10 percentage points in the ASEC and 11 percentage points in the HRS. Meanwhile the

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[3] Some of the difference may reflect ambiguities in distinguishing between wage and self- employment income, particularly with respect to income normally reported on 1099 tax forms, but the ASEC makes more of an effort to identify business losses.

asset share falls by 9 percentage points in the ASEC and 11 percentage points in the HRS.[4] In both surveys, the fall in asset income is reflected in a sharp drop in the proportion of individuals reporting asset income and the amounts they report. Thus, the basic pattern of change in the composition of income is true in both surveys.[5]

The distribution of the incomes of the aged (65+) by across income quintiles is shown for both the ASEC and the HRS in Table 3. Both surveys demonstrate the diversity of incomes by source, and the extent to which they have changed over time and for different portions of the income distribution. In the lower half of the income distribution, the aged are almost fully dependent upon Social Security because most have little or no income from earnings, private pensions or own saving. The diversity of income sources is important only for those in the top portions of the income distribution. Surprisingly the largest increase in earned income is also at the very top of the distribution. Since 1990, there have been only modest increases within the bottom three quintiles and an 18-percentage-point increase in the share of income from earnings in the top quintile. Finally, the two surveys are impressively similar in their estimates of the distribution of income by source within the income quintiles.

We also made some comparisons with incomes in the SCF. However, when limited to persons over the age of 65, the SCF is a small sample with only about a 1,000 observations. It also uses a different approach to obtaining information on income in 2004 and later years by explicitly directing respondents to various lines of their income tax returns. Furthermore, as discussed in a following section, the sample explicitly includes many high-wealth families who are likely to be under represented in the ASEC or the HRS. In the three years (1998, 2004, and 2010) with a direct comparison to the HRS, the SCF estimate of total income exceeds that of the HRS by an average of 7 percent and is 30 percent above the ASEC. The various income components also vary substantial from those of the HRS and the ASEC. Many respondents in the ASEC and HRS are likely to report S-corporation income as part of their earned (business) income, whereas it is explicitly classified as asset income in recent versions of the SCF. As the

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[4] Fisher (2007) used data from the Surveys of Consumer Finances (SCF) for 1992 and 2001 to determine the extent to which the fall might be due to unreported income. She concluded that the failure to report asset income has increased over time, but it is limited to relatively small amounts in the lower portion of the income distribution.

[5] We also tabulated the data for those aged 55 to 64. The magnitude of the overall discrepancy between the income measures of the ASEC and HRS is very similar, but it is more variable across the various sources of income and survey waves, and there is less evidence that it is concentrated at the top of the income distribution.

result of these differences, the SCF does not display the same pattern of increased reliance on earned income and fall in the share of asset income.

Labor Market Participation

In recent years, an extensive literature has developed around efforts to explain what is regarded as a surprising fall in the labor force participation rate of adult men and women (Aaronson and others, 2006; Van Zandweghe, 2012). Less attention has been paid to an equally striking rise in the participation rate of older workers. The reversal of the historical pattern of falling rates of labor force participation for older men began in the late-1980s (Burtless and Quinn, 2000) and accelerated in later years. The situation for women is a bit more complex since the participation rate for married women had been rising for several decades. While there is visual evidence in the CPS data of some acceleration of a rise in their participation rate, it is largely limited to women in their 60s and it begins later in the 1990s. Furthermore, the divergence in the trends for the participation rates of the young and the old begins with those individuals in their early 60's: there is little or no evidence of a rising participation rate for those in their 50s. It is also surprising to note that the largest portion of the rise in the participation rate is associated with more persons reporting full-time, not part-time, employment (Leonesio and others, 2010; Gendell, 2008).

While the CPS is the primary source of information on labor force trends, the HRS also includes a considerable number of questions on labor force participation. The HRS has the advantage that information on the labor market decisions can be linked with characteristics of the panel respondents, and their decisions can be followed over time, providing a more dynamic analysis of behavior. As with income, the HRS does not provide a complete representation of the labor force status of all individuals age 65 and over until the 4th wave in 1998. However, the basic questions on labor force status are largely identical across the various waves. We used a variable from the data file compiled by RAND that incorporates seven options for labor force status: (1) employed full-time, (2) employed part-time, (3) unemployed, (4) partly retired, (5) full retired, (6) disabled, and (7) not in the labor force. Respondents who answered affirmatively to options 1-4 were classified as in the labor force.

The comparisons of the participation rates of the HRS and CPS by major age groups and gender are shown in Figure 2. The labor force participation rate is consistently reported at a

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higher level in the HRS because we include those who consider themselves partially retired. Partially-retired is not a recognized category in the CPS and it appears to draw from both those who have a part-time job and indicate they are retired in a separate question, and those who are not currently employed but seeking a part-time job. While both would technically be classified in the CPS labor force as well, the less clearly-defined time horizon in the HRS ("currently" as opposed to "in the past week"), and the separate questions about whether they consider themselves retired and their employment status, could lead to an ambiguity that the CPS lacks. The discrepancy between the two participation rates increases also with age and, in turn, with those identified as partly retired. However, as with the income measures, the two surveys show very similar patterns of trend increase in the participation rates for those over age 60.

Wealth and Capital Income

The increasing importance of earnings in the reported income of the aged has been offset by an equal decline in the shares of capital income. However, there are substantial problems of reporting capital income in the micro-surveys. Approximately two-thirds of the capital income recorded as household income in the national accounts is excluded from the household surveys because households have no knowledge of the income earned in fiduciary accounts, such as pension funds and life insurance. Because of favorable tax treatment, investors also have a preference for receiving capital income as a capital gain rather than interest or dividends. Furthermore, many individuals accumulate retirement savings that they do not convert into an annuity when they retire. Instead, they make phased withdrawals from their savings during their retirement years as needed to support consumption. Large portions of these withdrawals appear to not be reported as income. For all of these reasons, the surveys of asset income are potentially subject to large reporting errors. Finally, one source of capital income missed in most household surveys is the flow of services from owner-occupied homes. Homeownership is higher among the aged than among non-aged adults, so the omission of this income flow is likely to cause a significant understatement of their relative well-being. Wolff and Zacharias (2007) used the SCF's from 1982 to 2000 to convert wealth to an annuitized concept that was conceptually more comparable with non-asset income. They found that their wealth-adjusted income measure indicated a substantial improvement in the well-being of older groups relative to the young compared to the more traditional focus on money income..

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We have experimented with replacing the standard measure of asset income from dividends and interest with the predicted annuity value of the family's net worth (including net home value and defined-contribution pension plans). The HRS includes a measure of net wealth, and by combining it with an estimate of the annuity rate we can distinguish between the effects of changes in wealth and the long-term decline in market rates of interest. The HRS measure of wealth identifies eight asset components: (1) home equity, (2) other real estate, (3) private business/farm, (4) vehicles, (5) transaction accounts, (6) corporate equities, (7) annuities/IRAs, and (8) other savings. All of these assets are defined net of any associated debt. In addition, information is collected on a ninth category of non-collateralized debt.

The quality of the wealth data can be evaluated by equating it with estimates of wealth from the SCF.[6] The SCF is viewed as the pre-eminent source of information on family wealth because it contains a more detailed set of questions about wealth holdings and incorporates an explicit oversampling of high-wealth households. A comparison of wealth (excluding vehicles) as reported for the 1931-41 birth cohort of the HRS and the matching age group from the SCF is shown in Figure 3. In the aggregate, the HRS estimate is only about half that of the SCF, and it indicates a much smaller wealth loss after the onset of the last recession. However, the missing wealth is at the very top of the distribution. When the comparison is restricted to the households below the 95th percentile of the SCF, the two estimates are virtually identical. It is somewhat surprising that the HRS performs so well with such a small number of questions about wealth holdings.[7]

The estimated annuity rate is constructed for each wave of the HRS using a real rate of interest, and life tables for birth cohorts from 1914 to 1954. For the period of 2004-2010, the real interest rate is equal to the 10-year inflation-indexed Treasury bond rate. For earlier years the interest rate is constructed from the nominal Treasury rate and a survey-estimate of the 10-year inflation rate from the Philadelphia Federal Reserve Bank. For each individual or family unit of

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[6] The quality of the SCF data has also been appraised by aligning it with comparable values in the flow of funds accounts (Henriques and Hsu, 2012; Antoiewicz, 2000). With a comparable definition, the SCF actually reports a slightly larger total for household wealth than the flow of funds over the past decade.

[7] The comparison excludes vehicles because of a concern about the comparability between the HRS and the PSID in their treatment of leased vehicles and those supplied by a business. We also made comparisons between the HRS and the SCF using all of the birth cohorts of the HRS, and the results are similar to those for the 1931-41 cohort. See Bosworth and Smart (2009) for a more extensive analysis of the wealth estimates.

the HRS we converted the estimate of total wealth to an annuity beginning at age 65. [8] For married persons we used a male annuity with a two-thirds survival benefit.

Two estimates of annuity income are shown in Figure 3 for the 1998-2010 waves of the HRS. They differ in the breadth of the wealth definition, total financial wealth versus financial wealth plus home equity. We exclude the measure that included vehicles because it had a minimal impact. For comparative purposes, the figure includes the estimates of asset income from the HRS and the CPS. Over the period of 1992 to 2010, the annuity rate fell by more than 25 percent, primarily because of lower market interest rates.[9] However, the increase in wealth values is sufficient to offset the decline in the annuity rate; and the annuity values average about twice the reported receipt of interest and dividend income, and the ratio increases over time. Measured as a share of total income, it fluctuates with asset values, but is largely trend free, eliminating the prior pattern of decline in the importance of asset income. The analysis across quintiles of the income distribution (not shown) also indicates surprisingly that the substitution of an annuity for the reported asset income raises the value by a proportionately larger amount in the lower portions of the income distribution. In all cases, the estimated annuity income is larger than the cash value of dividends and interest, but the magnitude of the adjustment declines with income.

Statistical Analysis

We explore the determinants of the employment-retirement decision of older workers using the panel data of the HRS and focus on the decision of individuals who were observed to be in the labor force in one wave of the survey about whether to remain in the labor force in successive waves. The panel dimension enables us to focus on transitions out of the labor force rather than the more static cross-section evaluation of labor force status. For older workers, the decision to leave the labor force is not easily reversed, and it seems unreasonable to analyze the behavior of workers and the currently retired as if they were subject to similar influences. The basic relationship has a very simple probit specification of

$$(1) \quad Pr(Y_{it} = 1 : X_{it}) = \theta(X_{it}\beta),$$

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[8] The annuity calculations are those embedded in the National Retirement Risk Index calculated at the Center for Retirement Research, Boston College. We are indebted to Anthony Webb for his knowledge and assistance.

[9] The change in life expectance between the 1926 and 1946 birth cohorts reduced the annuity by about 5 percent.

where P_r denotes probability, Θ is the cumulative of a standard normal distribution, Y_{it} is an indicator which equals 1 if the person remains in the labor force in the second period and zero otherwise, X_{it} is a set of time-varying characteristics, and β is a vector of coefficients. It is important to note that the analysis is restricted to those who are in the labor force at the beginning of each transition period. We utilize information from 10 waves of the survey from 1992 through 2010, a time interval that spans most of the observed increase in employment activity of older workers. We examine both the two-year transitions from one wave to the next (a total of 9 transitions), and an additional analysis of those who can be observed over six-year intervals of 1992-98, 1998-2004, and 2004-2010. The longer intervals may suggest different magnitudes of response to different determinants. The initial years of those three intervals correspond to the introduction of new birth cohorts into the HRS, maintaining balance in the sample across age groups.[10]

The prediction model, reported in Table 4, includes indicator variables reflecting each respondent's age, educational attainment, marital status, whether they have a working spouse, and their self-employment status, non-asset income, the annuitized value of their wealth.[11] In addition, we have included several variables from the HRS that are known to be of special importance for the decision of whether to retire. They include indicators of health status, whether they have employer-provided health insurance, retiree health insurance, and the type of private pension coverage. In all cases, values are those reported in the initial wave of the transition interval.

In most dimensions, we observe similar response coefficients for men and women. However, they respond differently to variations in annuity and non-annuity income. A high level of annuity income encourages women to leave the workforce, but has little influence on the decision of men. In contrast, a high of level non-asset income (primarily earnings) increases the probability that men will remain. Furthermore, the tendency for women to remain in the workforce is reduced if they are married, whereas it has little influence on the decision of men. Yet, husbands' and wives' leisure time appear to be complementary at the margin and the spouse's labor force participation appear to have equivalent effects for both.

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[10] We also estimated a version of the model to that restricted the sample to the new entrants in each six-year interval. We don' not report the results in detail because the effects of the restriction were minimal.
[11] Both type of income are expressed in constant prices and we size-adjusted the income of couples and divided it among the two individuals

Changes in educational attainment have had very important effects on labor force participation of older workers for two reasons. First, the participation rates of both men and women differ sharply by level of education, with the participation rate of college graduates over the age of 55 being roughly twice that of those with less than a high school degree. Thus, the shift toward a more educated population has raised the overall rate of labor force participation. Second, the pattern of a rising labor force participation rate is concentrated within the college-educated, while the participation of those with less than a high school degree has fallen or remained unchanged. Given that the college-educated have the highest income, a much greater probability of having a private pension, and larger social security benefits; it seems implausible to associate their pattern of increased work at older ages with economic need. Instead, it is more likely to be reflective of the greater attractiveness of their employment.

Those who report that they enjoy work or are in good health are much more likely to remain in the workforce. We experimented with self-reported measures of stress and physical demands of the job, but found no significant effect. There is also strong evidence in the regressions that employer-provided health care is an important reason for continuing to work, whereas retiree health coverage leads to exit. In both cases, we observe a substantial decline in coverage over the period of analysis. Employer health coverage in the HRS dropped from 65 to 50 percent for men, but stayed at about 50 percent for women. Retiree coverage fell from 44 to 18 percent for men and from 30 to 18 percent for women. However, because they have opposing influences on the decision to remain or leave the labor force, the fall in the two forms of health insurance coverage exerted only a small net effect.

Private pension coverage also has a significant impact in the regressions, but the effect is to induce exit if it is a defined-benefit plan (DB), whereas a defined-contribution plan (DC) leads to an extension of work time. These are similar to the earlier finding by Munnell, Triest, and Jivan (2004) that the two types of retirement plans have sharply differing employment incentives. They point out that defined-benefit plans create strong incentives for early retirement because the benefit is not adjusted for those who delay retirement, and the worker cannot receive the benefit unless they leave the job—there is no middle ground.[12] Defined contribution plans are largely neutral with respect to the timing of retirement. As shown in Figure 5, there has been a large shift in the share of workers away from DB plans to DC plans. In the HRS population, the proportion

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[12] See also the discussion in Samwick (1998) and Friedberg and Webb (2005).

with DB plans fell from 20-25 percent in the early 1990s to about 10 percent by 2010, and the share with DC plans rose from 15 percent to nearly 25 percent. Given the size of the coefficients in the probit regression, this shift in pension coverage has been a substantial factor in accounting for the rise in the labor force participation of older workers.

In recent years there have been a number of changes in the OASDI program and several studies have reported significant effects of those changes on labor supply. The major program changes that affect the age groups included in the HRS are: (1) the increase in the full retirement age from age 65 to 66, (2) elimination of the earnings test in 2000 for those between the full retirement age and 70, and (3) increases in the delayed retirement credit for all of the cohorts. Under the earnings test, benefits are temporarily reduced by a percentage amount for those whose earnings exceed a legislated limit. In contrast, the delayed retirement credit permanently increases the benefit for each month of delay beyond the full retirement age up to age 70. Gustman and Steinmeier (2008) simulated the effects of these institutional changes within a complex behavioral model estimated for the HRS and concluded that the changes had increased the labor force participation of married men age 65-67 by 1.4 to 2.2 percentage points between 1992 and 2004.

Other researchers used simpler models, focused on only a subset of the program changes, or relied on data sets other than the HRS. Song and Manchester (2007) used administrative data from the Social Security Administration to test for the effects on the earning of persons at or above the full retirement age of removal of the earnings test in 2000. Conceptually, the earnings test should be relatively neutral in its effect on labor supply, given that any reductions in benefits under the test are returned in later years. However, many researchers have argued that older workers do not fully understand the details of the law and view the reduction in current benefits as equivalent to a tax. Song and Manchester found a large and highly significant positive effect on earnings and an increase in the labor force participation rate of those aged 65-69 of 1-2 percentage points. Haider and Loughran (2008) used data from a variety of administrative and survey sources to argue that the earnings test has depressed the labor supply of male workers in the affected retirement years and that the effect is largest for younger workers, suggesting that its elimination for those between age 62 and the full-retirement age would raise their employment. Pingle (2006) found that the series of increases in the Delayed Retirement Credit after 1980

increased the employment rate of 65-69 year-old men, based on data from the Survey of Income and Program Participation.

We included several indicators that were designed to capture those program changes. One indicator measured whether the individual reached the full retirement age during the transition interval. We also included the ratio of individuals' wage income to the applicable earning test limit as an indicator of the probability that they would be subject to the benefit reduction. The delayed retirement credit was increased for those between the full retirement age and age 70 in stages from an annual rate of 3 percent for the 1924 birth cohort to 8 percent for those born in 1941-42. We applied the rate of credit appropriate for the birth cohort to each individual prior to age 70. Workers between age 62 and the full-retirement age receive an actuarially-reduced benefit and the magnitude of the penalty increased in line with the full-retirement age for their birth cohort. It rose from 20 percent for those born before 1937 to 25 percent for the 1943-54 birth cohorts. We included the penalty rate for those below the full retirement age. [13]

We had limited success in relating the probability of remaining in the labor force to changes in the parameters of social security. Achievement of the full retirement age had a strongly negative impact on the probability of remaining in the labor force, and a high likelihood of being subject to the earnings test had a significant positive influence. However, we could discern no consistent positive effect of the delayed retirement credit or the penalty for early retirement.

We also estimated some alternative versions of the probit model to examine the stability of the parameters. In particular, while we included shift variables to allow for changes across years of the survey and educational groups, that approach does not allow the marginal coefficients to vary, as was done in the separate estimation of the relationship for men and women. Accordingly, we estimated two versions of the two-year transitions using data for four transitions extending from 1994 to 2002 and from 2002 to 2010. We also estimated separate versions of the three 6-year transitions. While some of the coefficients change relative to those in Table 4, the changes were within the predicted confidence band and suggested no significant

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[13] We employed two versions of the credit and penalty. The first used the indicator until the individual was no longer subject to the provision because they were beyond age 70 or the full-retirement age. This implied that they were forward-looking and would remain in the workforce at younger ages in order to take advantage in the years in which they were age-eligible. The alternative limited the penalty to the ages between 62 and the full retirement age, and the credit to ages between the full retirement age and 70. The results in both cases were not statistically significant.

alteration in the economic interpretation of the model. Similar regressions based on a division of the sample between those with and without a college degree also suggested no significant changes in the parameters of the non-education variables.

Table 5 provides a summary of the contribution of the various indicators to the change in older person's participation in the labor market. It is based on multiplying the marginal effects of the probit equations in Table 4 by the change in the indicator variables between the 1994 and 2010 waves of the HRS.[14] Over the full 16-year interval, we conclude that changes in incomes–both earned incomes and the annuity equivalent of assets– did not have a substantial net effect on the probability of labor force exit. That results both from the relatively small marginal coefficients and the large reported drop in incomes in the aftermath of the financial crisis, which wiped out earlier gains. Instead, the largest influences on decisions to remain in the workforce appear to be related to the shift away from defined-benefit to defined-contribution pension plans, the very large fall in retiree health coverage, and the progressive shift toward a more educated group of older workers. The drop in retiree health insurance from 40 to 18 percent of workers was the largest single factor for men, but it was somewhat less important for women because they started with a lower level of coverage. The magnitude of decline in the proportion of workers with a DB pension and rise in the proportion with a DC pension was nearly identical for men and women, but the marginal effect was greater for men. The rise in unemployment in 2010 has a big effect on men, but it is an extremely cyclical outcome. Other factors, while they were significant in the probit analysis, have not changed greatly over the interval.

Conclusion

This examination of the factors behind the changes in the sources of income received by the aged has basically been reassuring about the implications for their well-being. The increase in their labor force participation appears to be largely the result of desires by the more educated and healthy members to remain in the work force. The increased labor force participation is concentrated among individuals at the top of the earnings distribution and those with the most education. Job satisfaction has actually increased somewhat and the shift in the composition of the private pension system away from defined-benefit plans represents an important reduction in

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[14] The 2010 values of the indicator variables were not included in the probit analysis, which utilized values from the beginning of a transition interval, but we did include them as the most up-to-date measure of the current situation.

the disincentives to remaining in the work force. The major adverse trend has been the sharp fall in the availability of employer-financed retiree health insurance for those who wish to retire before age 65. That is a significant coercive factor boosting labor force participation.

We also find that the apparent fall in the share of income received from assets, or individuals' own savings, is largely the result of lower market interest rates and a reduced propensity to annuitize income. However, those trends are misleading indicators of the trend in economic well-being because they are more than offset by higher wealth holdings among the aged. The wealth data from the HRS suggest that the aged actually experienced a substantial rise in their own resources, presumably the result of the larger capital gains that have accrued to wealth holders in recent decades. A focus on the annuitized value of that wealth also suggests a more favorable situation for those in the middle of the income distribution. Finally, we find little evidence that the differential trends in earned income and asset income are closely related to one another because the micro analysis suggests that the value of wealth or annuitized income has only a weak effect on the decision to remain in the labor force.

Finally, the review necessitated a comparison of incomes, labor force participation, and wealth holding across a range of surveys. That comparison was very reassuring in indicating consistent results across the various surveys.

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Table 1. *Distribution of Aged-Unit Income by Type, 1990, 2000, and 2010*

Year	Earned income	Asset income	OASDI	Pension income	Transfer-type income	Total
1990	18.4	24.5	35.7	18.1	3.3	100.0
2000	23.8	17.4	37.8	17.9	3.1	100.0
2010	31.2	11.3	36.0	18.3	3.2	100.0

Source: ASEC, various years. Units are either single person or couples with at least one person age 65 or older.

Table 2. *Income per Aged Unit, ASEC and HRS, 1998-2010*

Year	Survey	Wage income	Self-employment	Asset income	OASDI	Pension income	Transfer-type income	Total income
1998	HRS	4,151	3,205	6,797	10,541	6,513	1,141	32,348
	ASEC	4,668	943	5,518	10,330	5,056	806	27,321
	Ratio	0.89	3.40	1.23	1.02	1.29	1.42	1.18
2000	HRS	4,640	3,861	7,155	11,148	7,279	1,387	35,469
	ASEC	5,366	1,178	5,717	10,829	5,453	863	29,407
	Ratio	0.86	3.28	1.25	1.03	1.33	1.61	1.21
2002	HRS	5,655	4,416	5,743	12,578	8,033	1,402	37,827
	ASEC	6,307	902	5,069	11,646	5,615	903	30,442
	Ratio	0.90	4.90	1.13	1.08	1.43	1.55	1.24
2004	HRS	6,736	4,359	5,290	13,317	9,891	1,421	41,015
	ASEC	6,975	1,264	4,361	12,195	6,235	895	31,925
	Ratio	0.97	3.45	1.21	1.09	1.59	1.59	1.28
2006	HRS	7,627	7,058	4,835	14,122	9,065	1,506	44,213
	ASEC	8,545	1,477	4,618	12,854	6,463	1,050	35,006
	Ratio	0.89	4.78	1.05	1.10	1.40	1.44	1.26
2008	HRS	9,100	7,972	5,914	14,918	10,116	1,810	49,830
	ASEC	10,201	1,534	6,062	13,709	6,758	1,067	39,330
	Ratio	0.89	5.20	0.98	1.09	1.50	1.70	1.27
2010	HRS	9,540	6,773	4,885	16,565	8,834	1,914	48,511
	ASEC	10,956	1,534	4,488	15,469	7,476	1,253	41,175
	Ratio	0.87	4.41	1.09	1.07	1.18	1.53	1.18

Source: Computed by the authors. Year is to survey year, and the income data are for the prior calendar year. Aged units refer to individuals over age 65 and couples with at least one member over age 65.

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Table 3. *Distribution of Total Income of the Aged by Source and Income Class, ASEC and HRS*

		ASEC					HRS				
	Quintile	Earnings	Asset Income	Social Security	Pensions	Other	Earnings	Asset Income	Social Security	Pensions	Other
1990		18.4	24.5	35.7	18.1	3.3					
	1	0.9	4.2	79.7	3.2	12.0					
	2	3.0	8.4	76.0	7.5	5.1					
	3	7.3	14.9	57.8	16.5	3.5					
	4	12.9	20.9	40.6	22.4	3.1					
	5	27.5	32.7	17.8	19.6	2.4					
2000		22.3	19.4	36.8	18.5	2.9	24.0	20.2	31.4	20.5	3.9
	1	0.3	2.1	83.7	3.1	10.8	1.1	2.3	82.7	3.5	10.4
	2	2.8	5.4	80.1	8.0	3.7	3.6	5.6	77.3	11.1	2.4
	3	7.0	10.1	62.9	16.6	3.5	6.8	9.6	60.8	19.3	3.5
	4	13.7	13.5	45.5	24.4	2.8	12.8	13.7	44.4	25.8	3.3
	5	33.5	27.3	17.6	19.5	2.1	33.1	26.0	16.0	20.8	4.0
2010		30.3	10.9	37.6	18.2	3.0	33.6	10.1	34.1	18.2	3.3
	1	2.3	2.3	83.1	3.4	8.9	2.1	1.9	86.1	2.5	3.1
	2	4.8	3.8	80.6	7.6	3.2	5.4	2.5	80.5	8.6	4.3
	3	9.5	5.8	64.6	17.3	2.8	10.3	4.7	64.2	17.2	3.4
	4	19.4	7.5	44.6	24.9	3.6	17.2	7.7	46.2	24.3	0.7
	5	45.5	15.2	18.5	18.3	2.4	48.1	13.0	17.1	18.0	0.9

Source: Computed by the authors as explained in text. Calculations use common quintile breakpoints from the ASEC. The sample is restricted to individuals and couples where at least one member is age 65 or over.

Table 4. *Probability of Staying In the Labor Force, HRS, 1994-2010*

Independent variable	Two year change		Six year change	
	Men	Women	Men	Women
Total non-asset income	0.142***	-0.007	0.083**	0.010
Calculated annuity income from financial wealth	-0.005	-0.118***	-0.040	-0.249***
Self employed	0.068**	-0.015	0.190***	0.115***
Unemployed	-0.530***	-0.405***	-0.327***	-0.301***
Enjoy working	0.291***	0.298***	0.263***	0.246***
In a couple	0.024	-0.159***	0.069*	-0.168***
Have spouse in labor force	0.144***	0.117***	0.098***	0.073**
High School	0.081***	0.068***	0.137***	0.114***
Some College	0.111***	0.144***	0.180***	0.272***
College	0.280***	0.160***	0.399***	0.292***
Self-reported health "very good" or "good"	0.281***	0.331***	0.336***	0.308***
Employer health coverage	0.137***	0.222***	0.059	0.217***
Retiree health coverage	-0.234***	-0.225***	-0.112***	-0.158***
Defined benefit pension only	-0.275***	-0.062**	-0.397***	-0.213***
Defined contribution pension only	0.088**	0.155***	0.005	0.014
Both DB and DC pensions	-0.131***	-0.024	-0.320***	-0.222***
Reached full retirement age (FRA) during period	-0.076**	-0.144***	-0.216***	-0.112***
Ratio of non-asset income to the earnings test limit	0.002	0.038***	-0.001	0.030***
Wave number (1-9)	-0.003	0.019***	-0.005	0.018**
Indexed age	-0.129***	-0.066***	-0.106***	-0.112***
Indexed age squared	0.002***	0.001***	0.001***	0.002***
Constant	1.438***	0.744***	0.676***	0.415***
Psuedo R^2	0.101	0.090	0.120	0.115
Number of observations	21,948	27,006	8,260	10,309

Notes: Non-asset and annuity income are size and inflation adjusted; the excluded education group is less than a high school degree; and the indexed age is calendar age less 49. We excluded the 1992 wave because of a lack of information about job enjoyment.

Table 5. *Sources of Change in the Probability of Remaining in the Labor Force, 1994-2010*
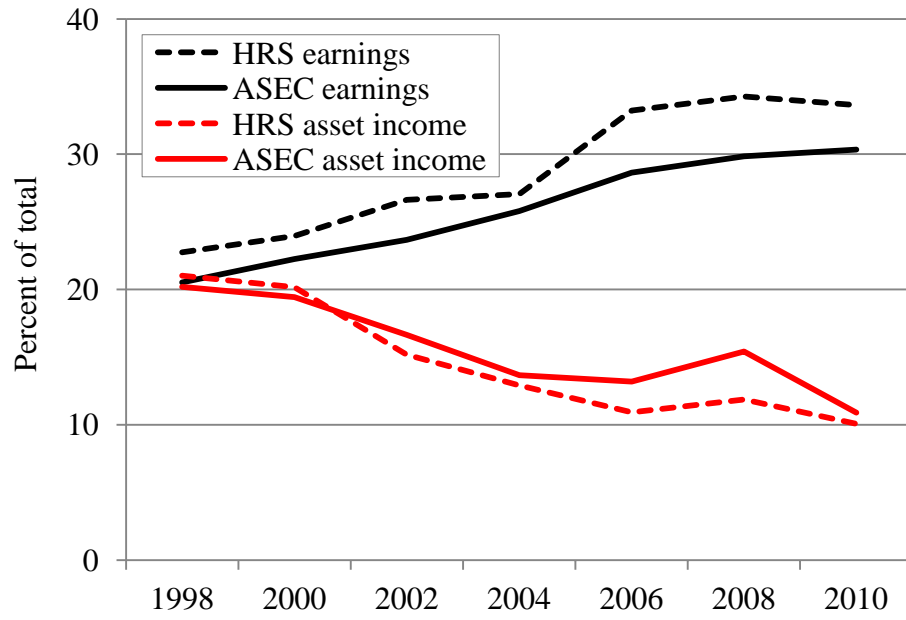
Indicator variable	Men	Women
Total non-asset income, size and inflation adjusted	0.0	0.0
Calculated annuity income from financial wealth	0.0	0.0
Self employed	-0.1	0.0
Unemployed	-1.5	-0.4
Enjoy working	0.4	0.6
In a couple	-0.1	0.0
Have spouse in labor force	-0.3	-0.2
High School	-0.6	-0.7
Some College	0.7	1.1
College	3.4	2.3
Self-reported health "very good" or "good"	-0.8	-0.3
Employer health coverage	-0.3	1.4
Retiree health coverage	5.0	2.2
Defined benefit pension only	3.5	0.8
Defined contribution pension only	0.4	1.0
Both DB and DC pensions	-0.1	-0.1
Reached full retirement age (FRA) during period	-0.6	-1.0
Ratio of income to the earnings test limit	-0.4	-1.3

Source: Computed by the authors as the coefficient in table 4 times the change in the indicator between 1994 and 2010, scaled by 100.
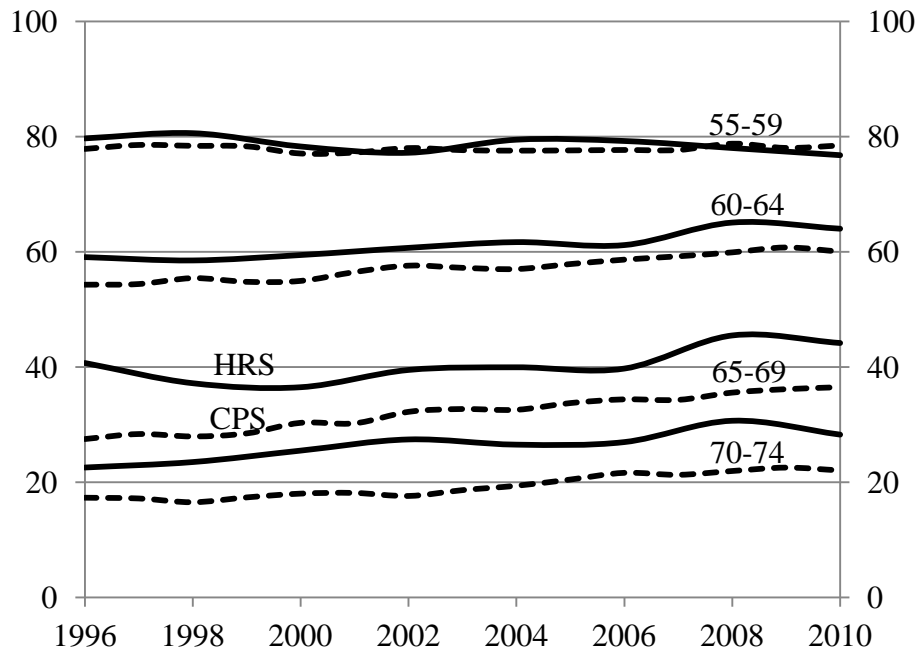
Figure

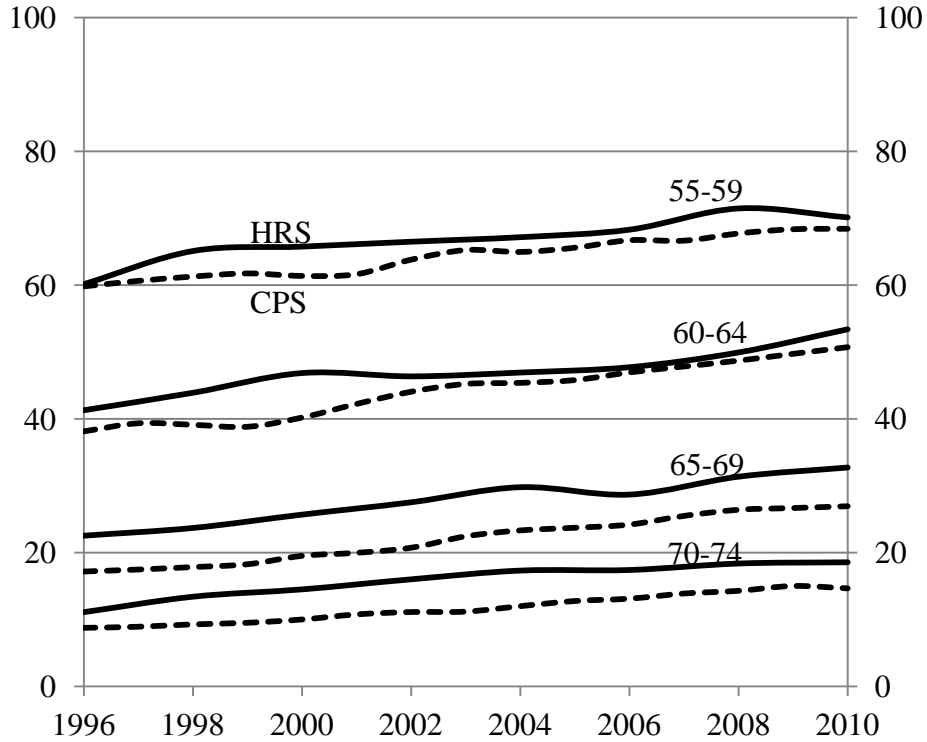1. *Income Shares Attributable to Earnings and Assets, ASEC and HRS, 1998-2010*

Source: Computed by the authors from the data of table 2.

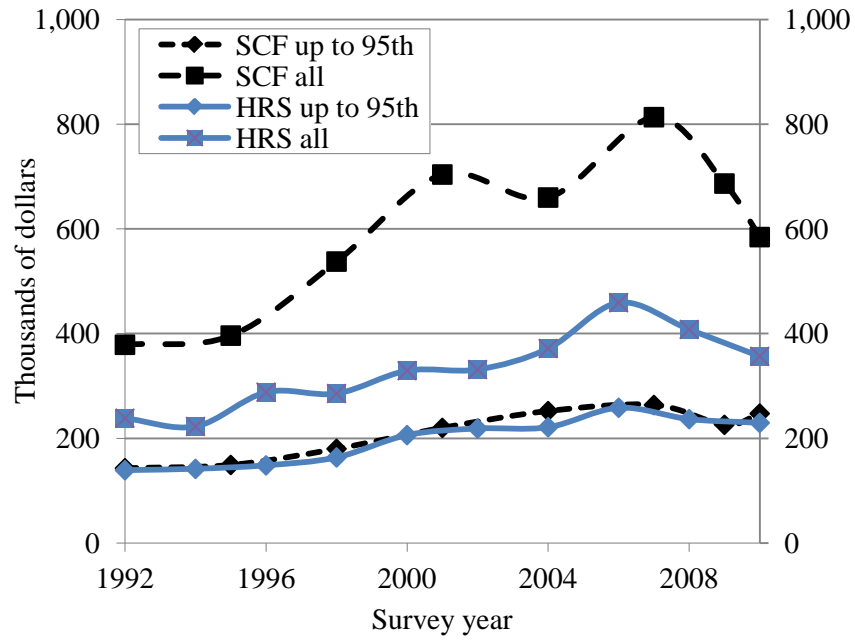Figure 2A. *Comparison of Labor Force Participation, CPS and HRS, Male*

Source: Bureau of Labor Statistics web site, HRS data files, and authors' calculations.

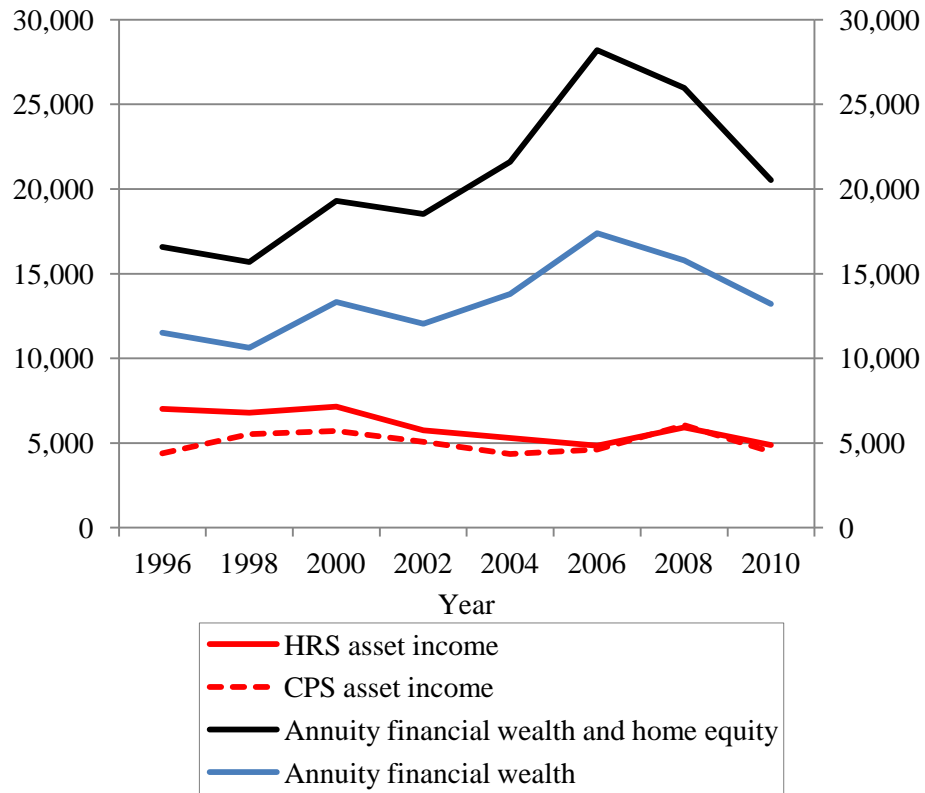Figure 2B. *Comparison of Labor Force Participation, CPS and HRS, Female*

Source: Bureau of Labor Statistics web site, HRS data files, and authors' calculations.

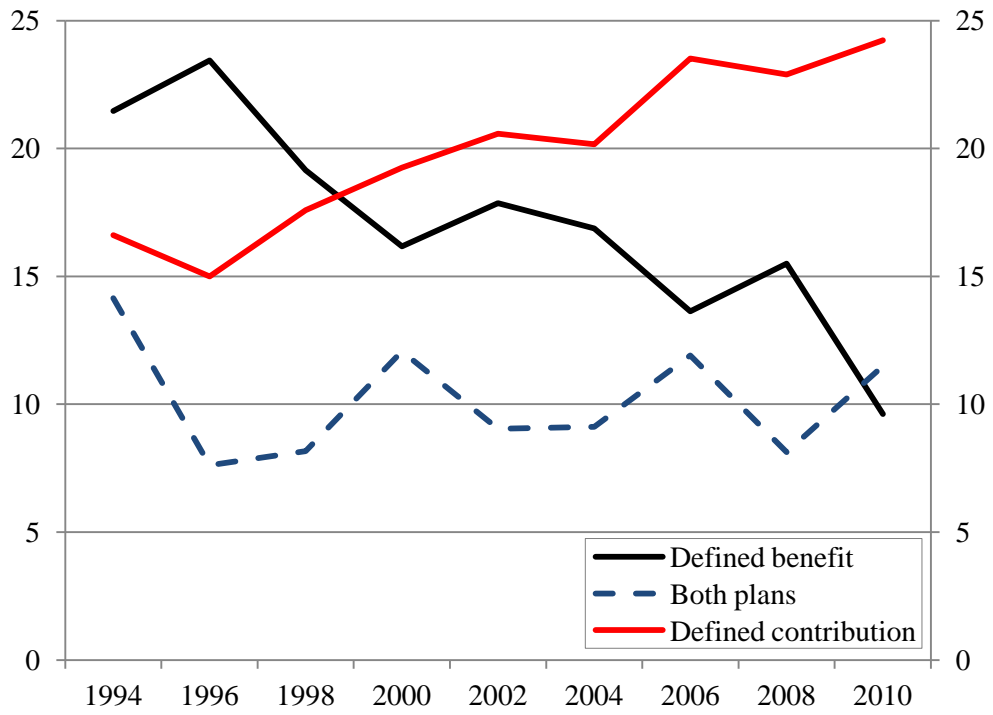Figure 3. *Average Family Wealth in the HRS and SCF, 1992-2010*

Source: Tabulated from micro data files of the *Survey of Consumer Finances* and the *Health and Retirement Study*. In both surveys the sample is restricted to the 1931-41 birth cohorts.

Figure 4. *Nominal and Annuitized Asset Income, HRS, 1996-2010*

Source: Computed by the authors as explained in text.

Figure 5. *Workers with Pension Coverage by Pension Type, HRS, 1994-2010*

Source: Computed by the authors from the *Health and Retirement Study*.

Appendix A. Income Definitions, Survey-Based Measures of Income ASEC, SCF, and HRS

ASEC income components
- Earnings
  - Wages and salaries, farm self employment, nonfarm self employment
    Information is obtained for main job and all other work. Division between wage and self-employment is based on answer to type of job (employed, self-employed, unincorporated)
- Retirement
  - Retirement income, survivor's income and disability income, from the following sources:

    Retirement income sources

    1 .Company or union pension

    2 .Federal government retirement

    3 .US military retirement

    4 .State or local government .retirement

    5 .US railroad retirement

    *6 .**Regular payments** from annuities .or paid insurance policies*

    *7 .**Regular payments** from IRA,.KEOGH, or 401(k) accounts*

    8 .Other sources or don't know

    Survivor's income sources

    01 .Company or union survivor .pension

    02 .Federal government

    03 .Us military retirement .survivor pension

    04 .State or local government .survivor pension

    05 .Us railroad retirement .survivor pension

    06 .Worker's compensation

    07 .Black Lung Survivor Pension

    *08 .**Regular payments** from .or trusts*

    *09 .**Regular payments** from .annuities or paid-up life .insurance*

    10 .Other or don't know

    Disability income sources

    01 .Worker's compensation

    02 .Company or union disability

    03 .Federal government disability

    04 .Us military retirement .disability

    05 .State or local gov't employee .disability

    06 .Us railroad retirement .disability

    07 .Accident or disability .insurance

> *08 .Black Lung miner's disability*
> *09 .State temporary sickness*
> *10 .Other or don't know*

- Social Security
    - o Value of OASDI social security payments, excluding SSI
- Asset
    - o Sum of interest, rent and dividends
- Other
    - o Unemployment, worker's comp, public assistance, other payments people receive *regularly*

SCF income components

Beginning in 2004, respondents were provided with pointers to specific lines of the 1040 tax form. For self-employment income, respondents were directed to lines 12 (schedule C) and 18 (farm). The question on capital income refers to line 17 (schedule E), which includes S corporations. The result was a decline in business income from$650 to $425 billion, between 2001 and 2004, and a jump in capital income from $180 to $430 billion.
All income is before deductions for taxes

Earnings
X5702   In total, what was your (family's) annual income from
        wages and salaries in 2003, before deductions for taxes and
         anything else?
         IRS FORM 1040 LINE NUMBER: 7

X5704   In total, what was your (family's) net annual income from
         a professional practice, business, limited partnership, or
        farm in 2003, before deductions for taxes and anything else?
        IRS FORM 1040 LINE NUMBER: 12,18

Private Retirement/Social Security
X5722   (Including the retirement income you told me about, in/In)
          total, what was your (family's) net income from
         Social Security or other pensions, annuities, or other
         disability or retirement programs in 2003, before
         deductions for taxes and anything else?
         (Please do not include withdrawals from IRAS, 401(k)s and
         other such retirement accounts.)
         IRS FORM 1040 LINE NUMBER: 16a,20a

Asset
X5706   In total, what was your (family's) annual income from
          non-taxable investments such as municipal bonds in 2003,

before deductions for taxes and anything else?
IRS FORM 1040 LINE NUMBER: 8b

X5708   In total, what was your (family's) annual income from
other interest in 2003, before deductions for taxes and
anything else?
IRS FORM 1040 LINE NUMBER: 8a

X5710   In total, what was your (family's) annual income from
dividends in 2003, before deductions for taxes and
anything else? IRS FORM 1040 LINE NUMBER: 9a

X5714   In total, what was your (family's) annual income from
net rent, trusts, or royalties from any other investment or
business in 2003, before deductions for taxes and anything else?
IRS FORM 1040 LINE NUMBER: 17

Other
X5716   In total, what was your (family's) annual income from
unemployment or worker's compensation in 2003, before
deductions for taxes and anything else? IRS FORM 1040 LINE NUMBER: 19

X5718   In total, what was your (family's) annual income from
child support or alimony which you or your family here
received in 2003, before deductions for taxes and anything
else?
IRS FORM 1040 LINE NUMBER: 11

X5724   (Other than the pension account or IRA withdrawals you
told me about earlier in the interview, in/In) total,
what was your (family's) annual income from any other
sources in 2003, before deductions for taxes and anything
else?
IRS FORM 1040 LINE NUMBER: 15a,21

NOTE: In contrast to earlier years of the SCF, the 2004
SCF does not include withdrawals from existing IRA's and
other existing tax deferred pension accounts in "other"
income. To create a measure comparable to that in the
earlier surveys, users should add in the amount of
withdrawals from IRAs and tax-deferred pension accounts to
X5724:

X5720   In total, what was your (family's) annual income from
TANF, food stamps, or other forms of welfare or

assistance such as SSI in 2003, before deductions for
taxes and anything else?

HRS income components

The Rand files include self-employment and business income as part of capital income. Lump-sum payments from IRAs, insurance and pensions are also included as part of other income, whereas the CPS restricts income to regular payments. The self-employment and business incomes were shifted to earnings using the more detailed Fat files from Rand. The other income category was re-computed to exclude lump-sum payments, again to match the CPS. Food stamp income was not included. In the first two years, the Fat files do not separate out lump-sum payments, and we are uncertain about the precise questions that were asked.. Rental income is gross rent before deduction of expenses such as mortgage or tax payments. HRS income for 2003 excludes several CPS income sources including alimony, child support, income from trust funds and royalties and financial assistance from family or friends; however, HRS income exclusions have varied from year to year.

Created variables (with RAND and disaggregated income components from income and wealth file)

Earnings
- Wage/salary income
- Bonuses/overtime
- Pay/commissions/tips
- 2nd job/military reserve

Self employment/business
- Business/farm income
- Self employment income
- trade income

Asset
- Rent
- Dividends
- Bonds
- Cds
- Checking
- Other (no lump sum)

Social security
- Retirement
- Disability

Public
- Government transfers
- Unemployment
- Supplemental social security

Pension
- Income from pension/annuity variable (listed below, no changes)

Original Variables from RAND file

INCOME FROM EARNINGS—INDIVIDUAL LEVEL
For the HRS sample, RwIEARN is the sum of respondent's wage/salary income, bonuses/overtime pay/commissions/tips, 2nd job or military reserve earnings, professional practice or trade income.
We shifted professional income to business.

INCOME FROM EMPLOYER PENSION OR ANNUITY—INDIVIDUAL LEVEL
 From Wave 2 forward, monthly income from up to 2 pensions are asked about individually and monthly income from any additional pensions are reported as a 3rd amount.

INCOME FROM SOCIAL SECURITY DI OR SSI—INDIVIDUAL LEVEL

INCOME FROM SOCIAL SECURITY RETIREMENT—INDIVIDUAL LEVEL

CAPITAL INCOME—HOUSEHOLD LEVEL
HwICAP is the sum of household business or farm income, self-employment earnings, business income, gross rent, dividend and interest income, trust funds or royalties, and other asset income.
We used the more detailed HRS files to extract the business income and self-employment earnings and move them out of capital income to earnings to match the CPS.

OTHER INCOME – PUBLIC
INCOME FROM UNEMPLOYMENT OR WORKER'S COMP—INDIVIDUAL LEVEL

INCOME FROM GOVERNMENT TRANSFERS—INDIVIDUAL LEVEL
RwIGXFR sums the respondent's income from veteran's benefits, welfare, and food stamps.

OTHER INCOME—HOUSEHOLD LEVEL
HwIOTHR sums alimony, other income, and lump sums from insurance, pension, and inheritance.

We extracted the lump-sum elements and moved them out of the definition of current income to match the CPS treatment, which excludes irregular income

Original Variables from Income and Wealth file

Individual earnings (earn)
- Wages/salary
- Tips, bonus, commission
- 2nd job
- Professional practice/trade

Household Capital (asset)
- Business (separated out in file)
- Rental
- Dividend
- Bonds
- Checking/savings interest
- CD income
- Other HH inc #1 (not lump sum, that's in other HH inc #2)
- Self employment (separated out in file)

Employer Pension/Annuity (pension)
- Pension #1
- Pension #2
- Pension #3
- Annuity #1
- Annuity #2
- Annuity #3

Individual income from SSDI or SSI (split)
- SSDI (put in SS)
- SSI (put in public)

Individual income from SSA (SS)
- Social security retirement, survivor's (put in SS)

Individual income from other gov't transfers (public)
- Veteran benefits
- Welfare
- Food stamps

Unemployment or Worker's comp (public)
- Unemployment
- Worker's comp

Other household income
- Other HH inc #2
- Lump sum (taken out in file)

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