

Saving Shortfalls and Continued Work: Some Initial Results

Olivia S. Mitchell
University of Pennsylvania

Andrew Au
University of Pennsylvania

John W.R. Phillips
National Institute on Aging

Prepared for the Sixth Annual Conference of Retirement Research Consortium
“The Future of Social Security”
August 12-13, 2004
Washington, DC

The research reported herein was performed pursuant to a grant from the U.S. Social Security Administration. The opinions and conclusions are solely those of the author and should not be construed as representing the opinions or policy of the Social Security Administration or any agency of the Federal Government or the Retirement Research Consortium.

Saving Shortfalls and Continued Work: Some Initial Results

Andrew Au, Olivia S. Mitchell, and John W.R. Phillips

August 2004

Abstract

Earlier research has suggested that many older Americans have not saved enough to maintain consumption levels in old age. Using the Health and Retirement Study, a nationally representative panel survey of people age 51-61 in 1992, we have determined how much more households would need to save in order to preserve consumption levels after retirement, based on reasonable projections about asset growth. We show that the median American household on the verge of retirement would need to save an additional and large fraction of annual earnings to preserve pre-retirement consumption if it wished to retire at age 62; postponing retirement to age 65 implies additional required saving would be half as large. Next, we evaluate the links between derived saving shortfall measures and continued work at older ages. For nonmarried persons in particular, larger shortfalls of retirement wealth are associated with continued work at both ages 62 and 65.

Andrew Au

3620 Locust Walk, St. 3000 SH-DH
Department of Insurance & Risk Management
Wharton School, University of Pennsylvania
Philadelphia PA 19104-6302
aau@wharton.upenn.edu

Olivia S. Mitchell (corresponding author)

3620 Locust Walk, St. 3000 SH-DH
Department of Insurance & Risk Management
Wharton School, University of Pennsylvania
Philadelphia PA 19104-6302
mitchelo@wharton.upenn.edu

John W. R. Phillips

National Institute on Aging
Gateway Building, Suite 533
7201 Wisconsin Avenue
Bethesda, MD 20892-9205
phillipj@nia.nih.gov

*Au is a doctoral candidate in the Insurance and Risk Management Department at the Wharton School, University of Pennsylvania. Mitchell is a Research Associate of the NBER; International Foundation of Employee Benefit Plans Professor of Insurance and Risk Management; and Executive Director of the Pension Research Council and Director of the Boettner Center at the Wharton School, University of Pennsylvania. Phillips is an economist at the National Institute on Aging. This paper was presented at the August 2004 meeting of the Retirement Research Consortium in Washington, DC. Preliminary results – do not cite without permission from the authors. The authors retain full responsibility for all views contained herein. © 2004 Au, Mitchell, and Phillips.

Saving Shortfalls and Continued Work: Some Initial Results

Andrew Au, Olivia S. Mitchell, and John W.R. Phillips

This paper describes some preliminary results from our research on the consequences of retirement saving shortfalls, using a nationally representative sample of American households on the verge of retirement. We begin by assessing the claim that Americans undersave for retirement using the Health and Retirement Study, a datafile on Americans between the ages of 51 and 61 in 1992 (and their spouses regardless of age). This panel dataset contains exceptionally complete information on household wealth linked to administrative records on earnings and benefits from Social Security, including information on *financial wealth*, or business and financial assets (such as stocks, bonds, and bank accounts less outstanding debt), IRA and Keogh Accounts, and miscellaneous other financial assets; *net home equity*, which is the market value of owner-occupied housing minus the value of the mortgage debt; and *retirement wealth*, which is represented by the cumulative value of expected social security retirement and survivor benefits along with company pension benefits. With these data, we can project and evaluate household retirement wealth, which we then compare to the level of retirement assets needed to smooth real consumption levels over the retirement period. Saving shortfalls are defined as the additional amount of annual earnings that would have to be saved to achieve consumption smoothing by the age of retirement. Finally we relate these shortfall measures to a number of behavioral outcomes of interest.

Background

Much has been written in the economics literature about the determinants of household wealth accumulation; particularly germane to our topic is the issue of whether households save

adequately for their own retirement.¹ The retirement wealth adequacy issue is of particular interest at present, given the rapidly aging workforce in most developed nations, and the reality that most national Social Security systems are unsustainable under current law.

There are various benchmarks against which household wealth levels might be compared to determine retirement saving adequacy. One approach uses a structural model of lifecycle utility maximization to assess saving shortfalls. For example, Bernheim (1992) used dynamic programming to solve for optimal asset accumulation patterns, and his study concluded that households age 35-45 were accumulating assets at only one-third the rate of what was needed. Overall, he found saving shortfalls averaged 9-19 percent per year. Other research in the literature reached more optimistic conclusions. Sabelhaus and Manchester (1995) found that baby boomers were accumulating more savings than their parents, though their consumption patterns appeared to be similar. Engen et al. (2004) relied on a life cycle model but reported lower saving shortfalls for older households than Bernheim (1992). A recent and quite sophisticated paper by Scholz et al. (2003) includes additional sources of uncertainty including medical costs. This last study did report some saving shortfalls, though the bottom line was that most American households had adequate retirement assets. The literature comes to somewhat disparate conclusions regarding the shortfalls issue for a variety of reasons, including the fact that each study uses different earnings benchmarks as the “baseline” for consumption-smoothing. Studies which use *lifetime* earnings tend to find better adequacy rates than do studies that focus on *pre-retirement earnings*. Which is the most appropriate level is, of course, unclear on *a priori* grounds.

¹ Older studies in this vein include Kotlikoff et al. (1982); Bernheim (1988); and many others reviewed in Lumsdaine and Mitchell (1999). A spate of recent studies include work by Banks et al. (1998); Engen and Gale (1999); Engen et al. (2004); Hurd and Rohwedder (2003); Moore and Mitchell (2000); Mitchell and Moore (1998); and Scholz et al. (2003).

A different approach is adopted by Mitchell and Moore (1998) and Moore and Mitchell (2000; hereafter MM), which we follow here. This methodology builds on a financial planning approach which relies on a “replacement rate” target and extends it to incorporate consumption-smoothing consistent with a life cycle model. Some financial advisers propose that a household with assets sufficient to can generate lifetime annual income worth 75% of pre-retirement pay would be deemed to have sufficient retirement assets.² By contrast, MM solve for the replacement rate endogenously, which flows from the view that forward-looking households seek to maintain equal real, after-tax, after-saving, levels of consumption pre- and post-retirement. In that framework, the target replacement rate is determined as a function of household earnings and current wealth, as well as demographic information. The approach selects an initial replacement rate target and then solves for the target wealth level needed to finance this goal, allowing for differential taxation prior to retirement and during retirement. If household assets would be projected to fall short relative to target assets, the method derives the shortfall, which is equal to the additional fraction of earnings that would have to be saved, to reach the consumption-smoothing goal. This new rate is then used to compute a new replacement rate: if the saving rate is unfeasibly high, the replacement rate is lowered; conversely, the prescribed replacement rate is increased if the saving rate proves below that required for consumption, taxes, and saving to sum to pre-retirement income. The process is repeated until the prescribed saving and replacement rates converge. MM’s results showed that the median US household on the verge of retirement would need to save substantially more in order to retire at 62, a rate that is approximately halved if retirement could be delayed to age 65. The evidence also indicated that saving shortfalls declined as assets rose but high earners had substantial

² Alternative computations adjust retirement consumption to exclude work-related expenses and to account for differential taxation of workers versus retirees (for a good discussion see McGill et al. 2004).

undersaving. In what follows, we relate these shortfalls to observed retirement behaviors in the HRS to evaluate their association.³

Methods

Like most empirical research on older workers, we use the Health and Retirement Study (HRS) respondents first interviewed in 1992 at age 51-61 (along with spouses of any age); additional surveys have been administered every two years thereafter.⁴ In the HRS, retirement assets may be divided into three categories: financial wealth, which includes business assets, financial assets (such as stocks, bonds, and bank accounts less outstanding debt), dedicated retirement assets including IRA and Keogh Accounts, and miscellaneous other financial assets; net home equity for homeowners equals the market value of owner-occupied housing less outstanding mortgage debt; and retirement wealth, equal to the actuarial present value of future social security retirement and survivor benefits and retirement pension benefits.⁵ To derive the shortfall measures, we use this asset information to derive two values: a household's projected shortfall for retirement at 62, and also at age 65.⁶ In analysis below, we express shortfalls as percentage measures: that is, they refer to the additional fraction of pre-tax earnings that each

³ Our research is therefore similar in spirit to previous work (Bernheim 1988) which relied on the older Retirement History Survey (RHS) but did not use shortfall measures as we have done here.

⁴ The present study uses all waves from 1992-2002; the 2004 data are not yet publicly available. Many of our analysis variables come from the Rand HRS, a user-friendly version of the HRS produced by the Rand Corporation with financial support from the National Institute on Aging and the Social Security Administration and technical support from the HRS staff at the Institute for Social Research. For more information, see <http://hrsonline.isr.umich.edu/data/index.html>.

⁵ For detail on how these values are derived using linked data on company pensions and Social Security administrative records, see Gustman et al. (1999). The entire value of home equity is included in these measures, though we recognize that there is some controversy about whether the entire home asset should be counted. For instance Venti and Wise (2001) find that income-poor but house-rich older families are more likely to reduce equity when they move, while house-poor but income-rich households tend to increase housing equity.

⁶ Both measures are computed here using pre-retirement pay as the benchmark; future research will examine other definitions.

household would have to save prior to retirement to smooth consumption over the remaining lifetime.⁷

The next issue to which we turn is an examination of how these saving shortfalls might influence subsequent work and retirement behavior. Of course there are many measures of retirement and work at older ages (c.f. Lumsdaine and Mitchell 1999; Gustman et al., 1995; Gustman and Steinmeier 2000). Here we explore two work-related outcomes: whether the respondent was working for pay at age 62, and whether the person was working for pay at age 65.⁸ We select the first analysis sample so all respondents are at least age 62 in 2002, the last year of publicly available HRS data; for the second outcome, we include in the sample only those who attain at least age 65 by 2002. In this way we avoid incomplete spells due to sample censoring.

The specific estimating equations we evaluate take the following general form:

$$Prob(Work|a) = f [Shortfall, X_1, X_2],$$

where $Prob(Work|a)$ is defined as the probability of working at age a , according to whether the individual (i) reported himself as working at the time of the survey, or (ii) having positive earnings in the year prior to the survey. The explanatory variables in X_1 are all measured at baseline (the first year of the survey, 1992) and include the household's computed shortfall (assuming retirement occurred at either age 62 or age 65). In addition, we hold constant the usual controls for socioeconomic differences including the respondent's and spouse's educational attainment, marital status, number of children, race/ethnicity, and health (all measured at baseline). The vector X_2 adds some less conventional and very interesting variables, including an

⁷ These computations take into account the household's tax status and life expectancy as of retirement age, using appropriate annuity factors and tax schedules in place at the time of the initial baseline; see Moore and Mitchell (2000).

⁸ In future analysis we plan to examine other retirement outcomes.

indicator of the respondent's reported financial planning horizon, a baseline indicator of the respondent's expectation of consumption declines in retirement, and indicators of health and marital shocks (experienced a change in health, or became a widow/er since the baseline interview).

Findings

There is considerable dispersion in shortfalls for both nonmarried and married households, as indicated in Table 1. The first panel indicates saving rates required to smooth consumption, given separately for married and nonmarried households and arrayed by wealth quintile. (Values of baseline wealth quintiles are given in \$2003, where values include net financial wealth, net home equity, and retirement wealth.) The results show that the median married household on the verge of retirement – around age 56 – would need to save 17% more of its current earnings to smooth consumption if retirement were to take place at age 62; the shortfall is reduced by 40 percent if retirement were postponed to age 65. For nonmarried households, the median shortfall saving rate for age-62 retirement is an even more dismal 24% of earnings, but the gap can be halved by delaying retirement to age 65.⁹ Not surprisingly, the distribution of shortfalls is uneven: the top wealth quintile already has enough to finance smooth consumption, and the poorest quintile has the largest shortfalls. The second panel arrays shortfalls by median household earnings, and here the medians are similar: married couples would need to save 17% more per year if they intended to retire at age 62, but only about half that much for retirement at age 65; nonmarried respondents have higher needs. It is also of interest to note that low earners actually have negative shortfalls, indicating that their combined

⁹ These shortfall figures are somewhat higher than those reported in MM (2000) due to fact that here we use a slightly older sample (age 52+) in order to ensure that there is no age-based censoring of the dependent variables used below.

assets and retirement benefits are already sufficient to consumption-smooth; by contrast, higher earners tend to have higher shortfalls.

Table 1: Shortfalls by Quintile

Next we turn to an examination of the association between estimated shortfalls and the probability of working at two points, age 62 and 65. Here the dependent variable is set to 1 if (Y_1) he reported himself as working at the time of the survey or (Y_2) he had positive earnings in the year prior to the survey (else 0). Each dependent variable is measured at the time the respondent was age 62 (or 65); the sample size, accordingly, depends on how many respondents were of the proper age for the measure in question. Using multivariate Probit, we relate these qualitative outcomes to the household's computed shortfall (for retirement at either age 62 or age 65), and in some cases, the change in the shortfall if retirement were delayed to age 65. In addition to the shortfall variables, we control for socioeconomic respondent educational attainment, marital status, number of children, race/ethnicity, and health (all measured at the 1992 baseline); in the case of married couples, all spouse variables are also included. The vector X_2 adds indicators of the respondent's reported financial planning horizon, a baseline indicator of the respondent's expectation of consumption declines in retirement, and indicators of health and marital shocks (experienced a change in health, or became a widow/er since the baseline interview); for couples, the equivalent spouse variables are controlled for as well.

Results in the left panel of Table 2 focus on nonmarried individuals, where we see that in all cases larger saving shortfalls are positively and statistically significantly associated with work at both age 62 and 65. In addition, this group is more likely to continue working at older ages if, by doing so, they close more of the shortfall gap. Both findings are consistent with the hypothesis that older workers can and do respond by working additional years if retirement

assets are insufficient. Results for married respondents appear on the right of the table, where the findings suggest that shortfalls are less predictive of the probability of work at both 62 and 65 (though the impact is positive when statistically significant). The effects of other variables are also interesting: as a rule, more educated respondents are more likely to work at older ages, as are those who experienced divorce or widowhood. Poor health, as measured by having any ADL limitations, reduces the probability of working, while single women and those who anticipate living longer are more likely to work, holding other things constant. Additional controls do not alter the estimated signs of key shortfall variables, including respondent expectations of a fall of consumption in retirement; planning horizon; and health and marital shocks.

Table 2 here

Conclusions and Future Research

We have explored links between retirement saving shortfalls and work at older ages using the Health and Retirement Study, a nationally representative survey of older Americans on the verge of retirement. The results show that the median older households is predicted to be unable to maintain levels of pre-retirement consumption into retirement without additional saving, though delaying retirement by only three years would cut the saving burden by roughly half. The distribution of saving shortfalls is also heterogeneous across the population, such that those with the highest earnings categories are also those with the largest shortfalls. Next, we link measured shortfalls to the likelihood of working at older ages. Here the evidence indicates that households facing the most substantial saving needs also tend to work longer, particular for nonmarried persons, and the estimates are robust to controls on a host of other factors. Among married couples, having a shortfall is positive but less likely to be statistically significant. One reason

may be that two earners can each work a bit more, or consume a bit less, whereas nonmarried persons must bear the burden of the entire shortfall alone.

Though the current literature is, to some degree, divided on the extent of saving adequacy among near-retirees, our results suggest that individuals do respond rationally to saving shortfalls by extending their work lives and reducing the period they will spend in retirement. In future research we intend to derive and analyze additional measures of retirement saving shortfalls which are based on lifetime earnings as well as pre-retirement pay. It would also be informative to allow for differences in respondent knowledge regarding their anticipated retirement benefits (cf Gustman and Steinmeir, 2001a and b). Finally, we intend to explore the sensitivity of other measures of continued work at older ages as well.

References

- Banks, James, Richard Blundell, and Sarah Tanner. 1998. "Is There a Retirement Savings Puzzle?" *AER* September (4): 769-788.
- Bernheim, B. Douglas, 1992. *Is the Baby Boom Generation Preparing Adequately for Retirement? Technical Report*, Princeton, N.J., Merrill Lynch.
- Bernheim, B. Douglas. 1989. "The Timing of Retirement: A Comparison of Expectations and Realizations". In David A. Wise, editor. *The Economics of Aging*. Chicago: University of Chicago Press for National Bureau of Economic Research. Pp. 335-355.
- Gustman, Alan L., Olivia S. Mitchell, and Thomas L. Steinmeier. 1995. "Retirement Measures in the Health and Retirement Study." *Journal of Human Resources*, Vol. 30, Suppl, pp. S57-83.
- Gustman, Alan L., Olivia S. Mitchell, Andrew A. Samwick, and Thomas L. Steinmeier. 1999. "Pension and Social Security Wealth in the Health and Retirement Study". In J. Smith and R. Willis, editors. *Wealth, Work and Health, Innovations in Measurement in the Social Sciences*. Ann Arbor: University of Michigan Press, pp. 150-207.
- Gustman, Alan L. and Thomas L. Steinmeier, 2001a. "Imperfect Knowledge, Retirement and Behavior". NBER Working Paper 8406.
- Gustman, Alan L. and Thomas L. Steinmeier 2000. "Retirement Outcomes in the Health and Retirement Study". *Social Security Bulletin, Perspectives*, 2000, volume 64, No. 4.
- Gustman, Alan L. and Thomas L. Steinmeier 2001b. "What People Don't Know About Their Pensions and Social Security". In William G. Gale, John B. Shoven and Mark J. Warshawsky, editors, *Public Policies and Private Pensions*. Washington, D.C.: Brookings Institution, forthcoming.
- Engen, Eric, and William Gale. 1999. "The Adequacy of Retirement Saving." *Brookings Papers on Economic Activity* 2:65-165.
- Engen, Eric, William Gale, and Cori Ucello. 2004. "Lifetime Earnings, Social Security Benefits, and the Adequacy of Retirement Wealth Accumulation." CRR WP 2004-10. April.
- Hurd, Michael and Susann Rohwedder. 2003. "The Retirement-Consumption Puzzle: Anticipated and Actual Declines in Spending at Retirement." NBER WP 9586.
- Kotlikoff, Lawrence, Avia Spivak, and L. Summers. 1982. "The Adequacy of Savings." *AER* December 72(5): 1065-1069.
- Lumsdaine, Robin and Olivia S. Mitchell. 1999. "New Developments in the Economics of Retirement". In *Handbook of Labor Economics*. Eds. Orley Ashenfelter and David Card. Amsterdam: North Holland: 3261-3308.
- McGill, Dan M., Kyle N. Brown, John J. Haley, and Sylvester J. Schieber, 2004. *Fundamentals of Private Pensions*, 8th edition. Oxford: Oxford University Press.
- Mitchell, Olivia S., James Moore, and John Phillips. 2000. "Explaining Retirement Saving Shortfalls". In *Forecasting Retirement Needs and Retirement Wealth*. Eds. O.S. Mitchell, B. Hammond, & A. Rappaport. Philadelphia, PA: Univ. of Pennsylvania Press: 139-166.
- Mitchell, Olivia S. and James Moore. 1998. "Can Americans Afford to Retire? New Evidence on Retirement Saving Adequacy". *Journal of Risk and Insurance*, 65 (3) December: 371-400.
- Moore, James and Olivia S. Mitchell. 2000. "Projected Retirement Wealth and Saving Adequacy". In *Forecasting Retirement Needs and Retirement Wealth*. Eds. O.S. Mitchell, B. Hammond, and A. Rappaport. Philadelphia, PA: Univ. of Pennsylvania Press: 68-94.

- Sabelhaus, John, and Joyce Manchester. 1995. "Baby Boomers and Their Parents: How Does Their Economic Well-Being Compare in Middle Age?" *Journal of Human Resources* 30(4):791-806.
- Scholz, John Karl, Ananth Seshadri, and Surachai Khitatrakun. 2003. "Are Americans Saving Optimally for Retirement?" University of Wisconsin Dept. of Economics Working Paper.
- Venti, Steven F. and David A. Wise. 2001. "Aging and Housing Equity: Another Look" NBER Working Paper No. 8608.

Table 1: Saving Shortfalls by Wealth and Income Quintiles (\$2003, wtd)

BY WEALTH QUINTILE				BY EARNINGS QUINTILE			
Wealth Quintile	Median Household Wealth	Median Saving Rate to Age 62 (%)	Median Saving Rate to Age 65 (%)	Earnings Quintile	Median Household Earnings	Median Saving Rate to Age 62 (%)	Median Saving Rate to Age 65 (%)
Married				Married			
1	\$207,432	31	22	1	\$12,066	-60	-67
2	\$369,398	22	13	2	\$31,475	8	-1
3	\$539,739	17	10	3	\$49,049	17	9
4	\$813,367	7	0	4	\$68,197	18	10
5	\$1,431,411	-14	-22	5	\$108,459	20	13
Nonmarried				Nonmarried			
1	\$64,433	38	27	1	\$5,246	-19	-29
2	\$119,593	33	21	2	\$15,738	23	10
3	\$207,249	24	10	3	\$24,918	28	14
4	\$357,575	10	-4	4	\$35,410	19	4
5	\$696,247	-6	-25	5	\$59,016	14	-2
<i>Total</i>	\$506,668	14	5	<i>Total</i>	\$45,902	14	5

Source: Authors' computations from the HRS.

Table 2: Factors Associated with the Probability of Working at Age 62 and 65 (Probit marginal effects given)

	Nonmarried								Married							
	w62pay	w62pay	w62earn	w62earn	w65pay	w65pay	w65earn	w65earn	w62pay	w62pay	w62earn	w62earn	w65pay	w65pay	w65earn	w65earn
save62	0.00006**	0.00003**	0.00005**	0.00002**					-0.00006	0.00008	0.00006	0.00072**				
	0	0	0	0					0.00004	0.00013	0.00004	0.00017				
save65					0.00005**	0.00045**	0.00005**	0.00002**					-0.00001	-0.00011	0.00009	0.00037*
					0	0	0	0					0.00003	0.0001	0.00005	0.00015
savediff	0.00018**	0.00060**	0.00004**	0.00037**	0.00028**	0.00236**	-0.00014**	0.00039**	0.00169	0.00478	-0.00027	0.00480**	-0.00004	-0.00067	-0.00022	0.00268
	0.00001	0.00002	0	0.00001	0.00001	0.00003	0.00001	0.00001	0.00095	0.00288	0.00034	0.00166	0.00027	0.00203	0.00031	0.00168
rlths	-0.05751**	-0.06450**	-0.12262**	-0.11807**	-0.04566**	-0.06520**	-0.08188**	-0.06529**	-0.0139	-0.00697	-0.04493	-0.08490**	-0.01196	-0.02288	-0.07663**	-0.11283**
	0.00094	0.00104	0.00076	0.00086	0.0009	0.00095	0.00072	0.00085	0.02953	0.03674	0.02614	0.0326	0.03011	0.03424	0.02305	0.02789
rbaplus	0.05855**	0.05446**	0.00382**	0.00787**	0.01337**	-0.01643**	-0.02118**	-0.02287**	0.08600**	0.07939**	0.04013	0.00393	0.08358**	0.05895*	-0.00749	-0.05241*
	0.00073	0.00082	0.00066	0.00074	0.00075	0.00082	0.00065	0.00074	0.02255	0.02814	0.02091	0.02636	0.0235	0.02704	0.02015	0.0257
revdivorce	0.03714**	0.04323**	0.08442**	0.10671**	0.02576**	0.03684**	0.01277**	0.01066**	0.02495	-0.00296	-0.02178	-0.02895	-0.00335	0.0055	-0.01618	-0.02899
	0.00076	0.00083	0.00065	0.00073	0.00078	0.00084	0.00066	0.00075	0.02885	0.03583	0.02793	0.03715	0.02911	0.03403	0.02515	0.03338
revwidow	0.02079**	0.00072	0.01679**	0.01011**	0.05881**	0.04859**	-0.04478**	-0.04604**	-0.08106	-0.08411	-0.0991	-0.19542**	-0.11060*	-0.14804**	-0.09226*	-0.18383**
	0.00084	0.00093	0.00073	0.00083	0.00087	0.00094	0.00073	0.00083	0.06126	0.0736	0.05167	0.06506	0.05253	0.04658	0.04336	0.03916
h1child	0.00843**	0.02368**	-0.00098**	0.00974**	-0.00435**	0.00475**	0.01110**	0.02403**	0.00642	0.01113	0.00794	0.01147	0.01324*	0.01655*	0.00366	0.00972
	0.00019	0.00021	0.00016	0.00018	0.00019	0.00021	0.00015	0.00019	0.00549	0.00673	0.00502	0.00638	0.00557	0.00652	0.00496	0.00656
rblack	0.00455**	-0.00987**	0.04063**	0.05133**	0.00154	-0.01816**	0.01427**	0.00132	0.02113	0.14017	-0.02459	0.1372	-0.08844	-0.11154	-0.03598	0.13562
	0.00088	0.00096	0.00076	0.00083	0.00091	0.00093	0.00078	0.00087	0.08923	0.08468	0.09736	0.08612	0.11557	0.08928	0.08288	0.11215
rhispanic	0.06043**	0.08746**	-0.02340**	-0.10041**	-0.00557**	0.02207**	-0.03964**	-0.13499**	-0.0926	-0.0863	0.00931	0.02072	-0.12615*	-0.08684	-0.00772	-0.01769
	0.00142	0.00158	0.00122	0.00143	0.0016	0.00189	0.00119	0.00126	0.06771	0.08631	0.06062	0.0755	0.05129	0.0675	0.05552	0.0674
radlany	-0.06431**	-0.00435**	-0.17572**	-0.17341**	-0.11918**	-0.08846**	-0.14630**	-0.19113**	-0.0843	-0.05693	-0.10303**	-0.07138	-0.0697	-0.02408	-0.06825	-0.10185*
	0.00146	0.00161	0.00105	0.00131	0.00118	0.0014	0.00092	0.00106	0.0488	0.06014	0.03997	0.0536	0.04588	0.05773	0.03639	0.04747
r1liv75	0.00061**	0.00060**	0.00041**	0.00019**	0.00050**	0.00039**	0.00034**	0.00002	0.00100**	0.00107*	0.00021	0.0005	0.00109**	0.00082	-0.0002	-0.00046
	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00036	0.00044	0.00033	0.00042	0.00037	0.00044	0.00031	0.0004
rfemale	0.13852**	0.18037**	0.12146**	0.14940**	0.07260**	0.11346**	0.05116**	0.06322**	-0.07745**	-0.08086**	-0.0323	-0.03385	-0.08807**	-0.09159**	-0.05369**	-0.05470**
	0.00072	0.0008	0.00061	0.00069	0.00071	0.00075	0.00061	0.00069	0.0193	0.0246	0.01823	0.02394	0.01934	0.02305	0.0169	0.02176
lretcon		0.01580**		0.00478**		-0.03422**		-0.00803**		0.05910*		0.02173		0.03913		0.01337
		0.00072		0.00065		0.00071		0.00066		0.02518		0.02498		0.025		0.02438
rplanlong		0.06362**		0.03206**		0.04526**		0.00833**		-0.0378		-0.00614		-0.03804		-0.01133
		0.00075		0.00068		0.00077		0.00069		0.02501		0.02447		0.02406		0.02283
hlwsh#		-0.25515**		-0.29836**		-0.16902**		-0.37384**		-0.19709**		-0.19483**		-0.17439**		-0.25174**
		0.00093		0.0008		0.00073		0.00053		0.03258		0.03136		0.02302		0.02095
widsh#		-0.38579**		-0.15686**		-0.04712**		-0.08869**		0.02854		0.01905		0.04312		-0.0598
		0.00529		0.00498		0.00515		0.00529		0.07723		0.07917		0.07396		0.07759
N	943	798	1298	1055	784	666	1182	955	2897	1981	3579	2276	2417	1638	3264	2058

Standard errors in parentheses; * significant at 5%; ** significant at 1%

Source: Authors' computations from the HRS. All data wtd.

Variable Definitions

Variable Type	Variable Name	Description
Dep. Vars.	nopay	age of R at the beginning of the wave when first reports "no work for pay"
	noearn	age of R at the beginning of the calendar year in which no earnings reported
	w62nopay	==1 if R still working at age 62 according to "nopay" definition of retirement
	w62noearn	==1 if R still working at age 62 according to "noearn" definition of retirement
	w65nopay	==1 if R still working at age 65 according to "nopay" definition of retirement
	w65noearn	==1 if R still working at age 65 according to "noearn" definition of retirement
Shortfalls	save62	(saving rate to age 62)*100
	save65	(saving rate to age 65)*100
	savediff	=(save62)-(save65)
SES	rlths	==1 if R has < high school education
	rbaplus	==1 if R has some college or +
	revdivorce	==1 if R ever divorced
	revwidow	==1 if R ever widowed
	h1child	N children in household W1
	rblack	==1 if R Black
	rhispanic	==1 if R Hispanic
	rfemale	==1 if R female
Health	radlany	==1 if R reports trouble with ≥ 1 ADL W1
	r1liv75	R subjective probability of living to age 75 W1
Planning	lretcon	==1 if R expects a decrease in living standards after retirement
	rplanlong	==1 if R has a long (> 5 yrs) planning horizon W1
"Shock" Vars.	hlwsh#	==1 if R did not report health as work limiting factor in W1 but did report in some later wave pre-retirement
	widsh#	==1 if R widowed between wave 1 and the wave that retirement was first noted

Notes:

In married regressions, equivalent variables used for spouse with 's' in place of 'r'. (e.g. radlany for respondent, sadlany for spouse).
 Source: Authors' computations from HRS.

SUMMARY STATISTICS						
	Variable	Obs	Mean	Std. Dev.	Min	Max
Dep. Vars.	w62pay	4333	0.61	0.49	0	1
	w62earn	5676	0.54	0.50	0	1
	w65pay	3611	0.29	0.45	0	1
	w65earn	5205	0.33	0.47	0	1
Shortfalls	save62	7126	-106.91	1496.59	-75235.51	75.524
	save65	7126	-118.05	1576.15	-84077.06	61.413
	savediff	7126	11.15	136.70	-1905.621	8841.555
S.E.S.	rlths	7126	0.21	0.40	0	1
	rbaplus	7126	0.40	0.49	0	1
	revdivorce	7126	0.31	0.46	0	1
	revwidow	7126	0.08	0.27	0	1
	h1child	7126	3.21	2.00	0	19
	rblack	7126	0.09	0.29	0	1
	rhispanic	7126	0.06	0.23	0	1
	rfemale	7126	0.50	0.50	0	1
Health	radlany	7126	0.07	0.26	0	1
	r1liv75	6628	65.52	28.53	0	100
Planning	lretcon	5348	0.43	0.50	0	1
	rplanlong	7126	0.37	0.48	0	1
Shocks	hlwsh1	7126	0.11	0.32	0	1
	hlwsh2	7126	0.13	0.34	0	1
	widsh1	7126	0.01	0.12	0	1
	widsh2	7126	0.02	0.13	0	1

Source: Authors' computations from the HRS. All data wtd.