Retirement and Wealth

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This paper presents a reduced form analysis of retirement and wealth accumulation for members of the Health and Retirement Study (HRS), a longitudinal survey of a nationally representative sample of the population who was 51 to 61 years old in 1992. It raises a number of issues that are of importance to understanding the joint determination of retirement and saving, how social security and pension incentives affect retirement and saving behavior, and the effects of current and proposed social security policies on retirement and additional saving. Our major findings follow.

1. *A Simple Model with Heterogeneity in Leisure Predicts That Early Retirees Save More.*

    In a simple life cycle model, where the principal heterogeneity is in preferences for leisure, those who intend to retire early would be found to accumulate more wealth, enabling them to support themselves through a longer retirement. Moreover, those characteristics that encourage earlier retirement are also predicted to encourage saving.

2. *If Preference for Leisure and Time Preference Are Correlated, Retirement and Saving May Be Uncorrelated.*

    In a model, with heterogeneity in both leisure and time preference, the simple relation between retirement and saving is broken. It is plausible to argue for a positive correlation between time preference and leisure preference. In this case, early retirees would not necessarily save more. Moreover, retirement outcomes may not be systematically influenced by the same measures that are associated with early retirement.

3. *The Health and Retirement Study Is Ideal for Analyzing How Retirement Is Related to Social Security and Pensions, and for Studying the Relation Between Retirement and Wealth.*

    Our analysis uses linked pension and social security data together with respondent records from the Health and Retirement Study. Earnings histories for work through 1991 have been obtained from the Social Security Administration, for respondents who signed permission forms allowing their earnings records to be used. Detailed descriptions of pension plan provisions have been obtained from the employers of respondents who indicated they were covered by a pension on present or past jobs. Detailed information on wealth based on bracketed data is also available.

4. *Estimates of Reduced Form Retirement and Wealth Equations Suggest that Retirement and Saving Behavior Are Not Systematically Influenced by the Same Factors.*

    We estimate reduced form retirement and wealth equations, examine the patterns among the coefficients of the exogenous variables, and the correlation of the residuals. Coefficients for the

independent variables do not exhibit the same pattern of signs in each equation. Although some of the factors inducing early retirement also induce higher wealth, in many cases the coefficients do not have comparable effects in the retirement and wealth equations. Moreover, the unobservables from the retirement and wealth equations are only weakly correlated.

5. *Premium Value Is Useful For Measuring Future Rewards from Social Security and Pensions.*

We measure incentives created by social security and pensions by three variables: the accrual in benefits from postponing retirement at the start of the two-year period of observation, the accrual at the end of the period, and by the *premium* value. The *premium* is defined as the difference between the value of the potential future benefits, including spikes in benefit accrual at early and normal retirement ages, and the value assuming the basic accrual continues into the same future periods. The *premium* value is positive in a defined benefit plan with a sharp spike in the accrual profile at early retirement age, but has no value for a defined contribution plan with benefits that accrue evenly each period.

Yearly pension and social security accruals each average around 6-8% of current earnings, but the variation in pension accruals is almost twice as great as for social security accruals. This is important because if the estimated effects are the same, the differential impact of the accruals on retirement behavior is related to the variance of the accruals and not necessarily to the mean. When averaged across the whole population, the premium is actually higher for social security than for pensions, at 18% vs. 11%, but again the variation in premium values for pensions is somewhat greater than for social security. If we just look at respondents with positive premium values, both the mean and variation of the pension premium values is much higher than for the social security premium values.

6. *Premium Values Significantly Affect Retirement Probabilities.*

The combined results shown in the last column of Table 6 suggest that moving from an accrual value which is one standard deviation below the mean to one which is one standard deviation above the mean changes retirement by around 3 percentage points, or by roughly one-quarter. A similar variation in the premium value would also change retirement by 2-3 percentage points.

7. Pension Premia Are More Variable and Thus Have Larger Effects on Retirement than Do Social Security Premia.

Table 6 below shows the effects of social security and pension benefit accruals on retirement. The effects of increments in social security and pension premia are similar. However, the higher variation in premium values for pensions means that the overall effect of pension premium values on retirement is somewhat larger than the effect of social security premium values.

8. Claiming Behavior Suggests Major Problems for Estimates of the Effects of Social Security Incentives on Retirement.

Social security incentives are often measured by the increment in the value of benefits associated with deferred retirement. The increment in the value of benefits depends, however, on when benefits are claimed. Table 7 shows that those in the HRS who retire completely are claiming their benefits too early to be maximizing the expected value of these benefits. Yet measures of social security benefit accrual often include in their measure of the gain to deferring retirement the increase in benefits from deferred claiming. On the one hand, early retirees are seen not to defer benefit acceptance despite the actuarial advantage. On the other hand, later retirees are said to defer their retirement in order to gain the advantage of deferring benefit acceptance. This interpretation may be correct, or potential retirees may not be valuing the effects of deferred claiming from postponed retirement on future social security benefits.

Evidence that benefit claiming is being driven by liquidity constraints, and not by the reward to postponing benefit receipt, can be seen in the first two rows of Table 8. Among those who are retired, those with a higher ratio of nonpension, nonsocial security wealth to social security wealth, are significantly less likely to have accepted benefits. Moreover, among those who have fully retired, those with the strongest incentive to postpone benefit receipt, as measured by a higher social security premium, are most likely to accept benefits. Nevertheless, with the overwhelming majority of those who have retired claiming benefits, these regressions appear to distinguish behavior only among a minority of retirees who are on the margin of claiming benefits, and not to tell a clear and consistent story about what is motivating the overwhelming majority of retirees to claim their benefits earlier than optimal.

9. Other Evidence is Inconsistent with Using a Simple Retirement Equation to Estimate the Relation of Social Security to Retirement.

Previous studies suggest it may be necessary to modify assumptions about perfectly operating capital markets, full-information and understanding of the Social Security System by all covered workers, equal valuation of own and spouse benefits, and other key assumptions typically made in modeling retirement and saving behavior (see, for example, Gustman and Steinmeier (1999b). There also are related puzzles. Pensions do not bear a simple relation to nonpension saving, as they would if pensions were treated simply as a tax favored retirement saving device (Gustman and Steinmeier, 1999a). Rather, although some of those with pensions reduce their nonpension saving, they reduce nonpension saving by much less than the value of their pension.

10. Care Is Required in Measuring Retirement.

In our estimates we use a new definition of retirement status based both on objective hours worked and on subjective self reports of retirement status. As seen in Table 2, by themselves, retirement measures based either on self reports or on objective hours have problems. Hours measures have problems with individuals who reduce work effort while still being above 35 hours and with individuals who have always worked less than 35 hours. Self reports appear to be unreliable both in cases where the individuals have jobs, yet say they are completely retired, and where individuals do not have jobs, yet claim to be not retired. The hybrid measure of retirement that we use should ameliorate these deficiencies.

11. In Ignoring Partial Retirement, Single Retirement Equations May Obscure the Relation of Social Security to Retirement Outcomes.

Findings explaining how social security incentives affect retirement outcomes depend on how retirement is defined, how partial retirees are classified, and how these incentives affect both full retirement and partial retirement. If retirement is defined as having left the long term job, those who partially retire are included among retirees. The effects of social security and pension incentives should then be related both to flows into complete and into partial retirement. If retirement is defined as having left the labor force entirely, the group of retirees includes those who leave partial retirement jobs as well as those who leave long term positions. A complete analysis of the effects of social security on retirement also requires analysis of flows from full time work into partial retirement, from full time work and partial retirement into full retirement,

as well as flows in other directions among these states. (For a discussion of retirement flows in the HRS, see Gustman and Steinmeier, 2000.)

12. *To Project the Effects of Changing Social Security Incentives on Retirement, Models Should Incorporate Many Heretofore Unmeasured Aspects of Behavior.*

Retirement models must incorporate features that explain many dimensions of behavior. Why do most retirees accept benefits immediately upon retiring even though actuarially it is not in their interest to do so? Why do those with pensions not reduce their savings by the value of their pensions? Why do so many respondents seem to be poorly informed about their retirement plans? Why are retirement and savings decisions not influenced symmetrically by the same factors? To incorporate these dimensions of behavior, it will be necessary to include in retirement models parameters representing unmeasured time preference, leisure preference, liquidity constraints, indicators of imperfect information, and allowance for differential evaluation of own and spouse benefits, among other complications.

13. *Our Reduced Form Analysis Suggests That Extensive Sensitivity Analysis, and More Detailed Structural Modeling, Are Required Before Present Retirement Models Are Used to Project Retirement and Saving Responses to Changes in Social Security Policy.*

The implications of these findings are disturbing for public policy analysis. The evidence suggests that most of the retirement and saving equations that have been estimated in the literature are of questionable value for predicting the effects of policy changes. The coefficients estimated in retirement and savings equations not only capture the effects of social security and pensions on the reward to continued work, but also incorporate the correlation between unmeasured aspects of behavior and tastes. Any policy change that disturbs these underlying correlations will result in changes in parameter values. Given the evidence of the importance of these unmeasured determinants of retirement and saving, available models that purport to predict retirement and saving outcomes that would result from changes in policy, such as a change in the social security early retirement date, are likely to make misleading predictions.

References

Gustman, Alan L. and Thomas L. Steinmeier.   1999a . "Effects of Pensions on Savings: Analysis with Data From the Health and Retirement Study". In *Carnegie-Rochester Conference Series on Public Policy*, Volume 50 (July, 1999b), pp. 271-326.

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Table 2

Objective vs. Self Reported Retirement

(Figures are percentages of total)

Self Reported Retirement Status

Usual Hours per Week	Not Retired at All	Partially Retired	Completely Retired	Total
More than 35	47.6%	2.9%	0.4%	50.9%
1-35	3.9	3.4	0.8	8.0
0	5.5	3.2	32.4	41.1
Total	57.0	9.5	33.6	100.0

Table 3
Accruals and Premium Values
for Pensions and Social Security

(Accruals and Premium Value s are Expressed
as Percentages of the Current Earnings)

	Mean	Standard Deviation	Percent Nonzero
Accruals at the Start of the Period			
Pension	8.5%	27.6%	42.7%
Social Security	6.1	11.4	78.0
Combined	14.6	29.8	85.2
Accruals at the End of the Period			
Pension	6.6	23.1	43.9
Social Security	5.6	10.8	80.0
Combined	12.2	25.4	86.6
Premium Values			
Pension	$10.6K	$46.1K	$14.2K
Social Security	17.9	38.4	61.3
Combined	22.2	57.1	50.9
Premium Values (for Respondents with Nonzero Values)			
Pension	74.8	100.9	
Social Security	29.2	45.6	
Combined	43.7	74.0	

Table 6

Comparison of Pension and Social Security Effects
in the Retirement Probit

(t-statistics in parentheses)

	Pension	Social Security	Combined
Initial Accrual / Annual Earnings	0.0402	-0.0077	0.0348
	(3.59)	(-0.22)	(3.29)
Final Accrual / Annual Earnings	-0.0679	-0.0378	-0.0656
	(-3.42)	(-0.88)	(-3.63)
Premium Value / Annual Earnings	-0.0202	-0.0242	-0.0216
	(-2.17)	(-2.11)	(-2.85)
Log Likelihood		-3073.38	-3074.94

Table 7
Social Security Benefit Acceptance

	Age			
	62	63	64	65
Actual Benefit Acceptance Rates By Current Retirement Status				
Not Retired	11.5%	22.5%	20.4%	42.1%
Partially Retired	65.3	77.4	79.8	89.8
Completely Retired	69.5	83.8	88.7	91.8
Percentage of Actual Acceptors for Whom Acceptance Was Optimal				
Not Retired	3.9%	9.1%	9.1%	36.3%
Partially Retire d	13.2	23.9	23.1	63.8
Completely Retired	16.6	29.0	37.7	65.7
Percentage Who Should Delay Benefit Acceptance				
Married Males	91.9%	91.0%	87.2%	38.1%
Single Males	93.6	0	0	0
Married Females	55.9	51.1	44.4	40.5
Single Females	83.8	83.3	60.2	0
Average Present Value of Delay Among Those Who Would Gain From Delay (Dollars)				
Married Males	$7,991	$5,496	$2,684	$1,806
Single Males	293	-	-	-
Married Females	7,786	7,260	7,161	7,220
Single Females	1,778	654	92	-

1. Social Security receipt refers to the previous year in 1992, the previous month in 1994, and current receipt in 1996 and 1998.
2. Social Security receipt excludes respondents who currently or previously received SSDI disability or SSI before age 65.

Table 8: Probits for Social Security Acceptance by Retirement Status

	Completely Retired		Partly Retired		Not Retired	
	Coefficient	t	Coefficient	t	Coefficient	t
Liquidity constraint[a]	-0.0492	-2.91	-0.0708	-1.74	0.0136	0.40
Social security premium[b]	0.0110	6.26	0.0050	1.55	-0.0030	-0.88
Age						
63	0.1052	8.33	0.0760	2.67	0.1461	4.67
64	0.1330	10.26	0.1297	4.29	0.1628	4.21
65	0.1699	12.78	0.1658	5.33	0.3972	7.69
66	0.1649	11.27	0.1777	5.42	0.6266	9.27
67	0.1468	7.14	0.1760	3.32	0.6207	5.42
Female	-0.0048	-0.32	0.0133	0.33	0.0395	1.16
Married	-0.0179	-1.12	-0.0725	-1.50	-0.1184	-2.56
Age difference	-0.0014	-0.98	-0.0036	-1.19	-0.0002	-0.07
Race						
Black	-0.0940	-5.32	-0.0821	-1.95	-0.0623	-1.94
Hispanic	-0.1101	-4.86	-0.1296	-2.01	-0.1303	-3.22
Fair or poor health	-0.0374	-2.89	-0.0090	-0.24	0.1380	3.93
Not available	-0.1979	-0.96				
Education						
Less than high school	0.0059	0.40	-0.0256	-0.69	0.0625	1.94
Some college	0.0005	0.03	-0.0996	-2.63	-0.0437	-1.42
Undergraduate degree	-0.0690	-2.72	-0.1519	-3.15	-0.0508	-1.26
Graduate work	-0.1367	-4.94	-0.1779	-3.71	-0.1310	-3.76
Children	-0.0154	-0.71	0.2268	3.16	0.0837	1.83
Not available	0.0256	0.23				
Planning horizon						
Next year	-0.0126	-0.97	0.0291	1.00	0.0906	3.20
More than ten years	-0.0166	-0.75	-0.0275	-0.59	0.0796	1.63
Not available	-0.0119	-0.46	-0.1266	-1.58	0.0718	1.16
Word recall (# of words)	0.0061	2.62	0.0074	1.52	-0.0047	-0.99
Not available	-0.0049	-0.17	0.0646	1.07	-0.0382	-0.67
Share of lifetime household earnings	0.0671	4.15	0.0157	0.23	-0.2573	-4.51

[a] The liquidity constraint measure is the ratio of non-pension, non-social security wealth to social security wealth.
[b] The social security premium is measured in 1000's of dollars.