The Distribution of Retirement Leisure

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Abstract

Retirement age is often used as a proxy for retirement leisure, but if retirement is correlated with mortality this may be misleading. Using data from the Health and Retirement Study and an ordered SUR Tobit model, we analyze the determinants of retirement and death age to see who consumes retirement leisure. We find that men, Hispanics, white collar workers, people in good health, and workers with defined contribution pensions or high defined benefit accruals consume less retirement leisure. We also find a variety of factors that significantly influence retirement independently but do not affect retirement leisure, resulting in misleading predictions.

Recent discussions concerning public and private pension plans and their rules have turned the institution of retirement into a highly contentious political and economic issue. One of the primary controversies turns on the perceived lack of sustainability of traditional defined benefit (DB) pension plans. An often-cited argument against DB pensions is that individuals are retiring earlier and thus are spending a greater amount of time in retirement leisure collecting benefits—too much time from the point of view of those responsible for underfunded plans. While earlier retirement is one event potentially leading to more retirement leisure, what the argument ignores is that retirement leisure has two determinants that may be correlated: retirement age and death age. Ignoring one side of the retirement leisure determination may lead to misleading or even wholly inaccurate conclusions about who is consuming retirement leisure.

For example, research has shown that individuals who experience a major health shock retire earlier. If there is a positive correlation between retirement

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and death ages, and those individuals also die earlier, as could be expected, the earlier retirement ages may not translate into increased consumption of retirement leisure. The individual may even experience decreased retirement leisure if the mortality effect is strong enough. The opposite would occur if retirement and death are negatively correlated. If wealthier individuals retire earlier due to greater personal resources but also die later—both results that could be expected from existing research—an analysis based solely on retirement age would underestimate the true consumption of retirement leisure. The correlation between the two end points of retirement leisure leads to a flawed view of the retirement leisure distribution and necessitates a complete analysis in order to accurately guide retirement policy.

Background and Literature

Although the distribution of retirement leisure has obvious implications for retirement policy, not to mention general quality of life analyses, virtually no research has been done on the topic. To the best of our knowledge the only study to explicitly examine the distribution of some type of retirement leisure by Ghilarducci and Neuman (2004). The authors examine early retirement leisure—leisure before the age of sixty-five—and find that men and women without defined contribution (DC) pensions, with greater personal assets, and in poor health consume more early retirement leisure. In addition, the authors find that men with DB plans consume more early retirement leisure and that marriage has a negative effect on early retirement leisure for men and a positive effect for women. The study is noteworthy in that it brings the topic of retirement leisure to the forefront of analysis and provides some guidance about what factors may influence retirement leisure. However, because the authors examine only early retirement leisure, the correlations between retirement and mortality may not have had time to become evident, meaning that most of the variation in early retirement leisure was likely driven by retirement ages alone and may not be comparable to an analysis of total retirement leisure.

Studies examining retirement and mortality separately can also guide our analysis, however, because potentially any factor influencing retirement or mortality independently could have an impact on retirement leisure. In terms of retirement, significant effects have been shown from various wealth measures such as housing value, financial wealth, and pension value (Coile 2003; Dwyer and Mitchell 1999); pension accruals (Chan and Stevens 2004; Coile 2003; Dwyer and Mitchell 1999; Kerkhofs, Lindeboom, and Theeuwes 1999); and various health measures such as self-reports of health status, individual chronic condition reports from physicians, and measures of functional ability (Dwyer and Mitchell 1999; Kerkhofs et al. 1999). For mortality significant

effects have been documented from basic demographic characteristics such as age, sex, race, education, and smoking behavior (Bond, Krueger, Rogers, and Hummer 2003; Hurd, McFadden, and Merrill 1999); income and wealth (Bond et al. 2003; Hurd et al. 1999; Snyder and Evans 2002); both self-reported and objective measures of health (Hurd et al. 1999; Idler and Benyamini 1997; Mossey and Shapiro 1982); and subjective life expectancy (Hurd and McGarry 1997; Hurd et al. 1999).

Model and Data

While the task of estimating the distribution of retirement leisure seems straightforward, a variety of statistical complications arise when it is actually attempted. Using observed retirement leisure does not take advantage of information in cases where the individual has not yet retired or died. Even worse, using only those individuals who have observed retirement and death ages limits the sample to the least healthy portion of the population that has actually died by the time of observation, likely biasing the conclusions. Using two separate Tobit equations also does not lead to accurate results if the error terms of the retirement and death age equations are correlated as we postulate. Finally, while it is possible to retire before dying, it is difficult to retire after dying. This natural ordering of the two events in question precludes use of a nested Tobit or a standard Seemingly Unrelated Regression (SUR) Tobit. To accommodate all of these statistical issues we develop and estimate an ordered SUR Tobit model, which takes advantage of all information available and accurately identifies consumption of retirement leisure.

We apply our model to a sample from the Health and Retirement Study (HRS), a longitudinal data set conducted biannually from 1992 to 2004. The HRS collects detailed data on demographic, financial, health, and labor force characteristics, making it an ideal data set for our analysis. We select our sample from a subset of the HRS born between the years of 1931 and 1935 and that were interviewed in the initial wave of the survey in 1992. By limiting our sample to those individuals who worked ten or more years in their lifetimes and to those individuals without missing values, we end up with a final sample of 3,367 men and women. We present the means and standard errors for our included variables in Table 1.

Results

We present the results from the ordered SUR model in Table 2. The coefficients and standard errors from the retirement age equation of the model are presented in the first two columns of Table 2, while the same information from the death age equation is presented in columns three and four. The final column presents the combined effect of the two determinants

TABLE 1

Summary Statistics of HRS Data Sample

Variables	Mean	Standard Error
Dependent		
Retirement Age (N = 2,775)	59.27	0.1093
Death Age (N = 470)	65.13	0.1396
Demographic		
Age	58.97	0.0245
Coupled	0.75	0.0075
Female	0.48	0.0086
Nonwhite	0.20	0.0069
Hispanic	0.07	0.0044
Education (in Years)	12.12	0.0550
Health Insurance	0.80	0.0068
Blue Collar High Skilled	0.26	0.0076
White Collar High Skilled	0.29	0.0078
White Collar Other	0.24	0.0074
Goods Producing Industry	0.26	0.0075
Midwest	0.25	0.0075
South	0.41	0.0085
West	0.15	0.0062
Health Status and Health Behavior		
Good Health	0.78	0.0072
Ever Smoke	0.65	0.0082
Smoke Now	0.25	0.0075
Arthritis	0.38	0.0083
Cancer	0.06	0.0040
Diabetes	0.11	0.0053
High Blood Pressure	0.38	0.0084
Heart Problem	0.13	0.0057
Lung Disease	0.06	0.0042
Psychiatric Problem	0.06	0.0042
Stroke	0.02	0.0027
Sum of Activities of Daily Living Measures	0.08	0.0067
Sum of Large Muscle Measures	0.63	0.0180
Sum of Mobility Measures	0.55	0.0186
Relative Probability of Living to 75	0.94	0.0075
Wealth and Pension		
Value of IRA	22,992	1,150
Net Financial Wealth	53,699	2,823
Net Housing Value	65,457	1,292
DC Plan	0.31 0.	0080
Value of DC Plan	11,323	840
DB Plan	0.48	0.0086
Value of DB Plan from Past Jobs	21,600	1,296
Accrual of DB Plan from Age 62 to 65	–157.01	150.37
Accrual of DB Plan from Early to Normal Age	10,980	743

on retirement leisure and is calculated by adding the negative of the retirement age coefficient (early retirement implies more retirement leisure) to the death age coefficient.

Although the primary contribution of the ordered SUR Tobit model is the joint retirement leisure estimation in column five, the individual equation results in columns one and three are comparable to existing research and can provide support for the validity of the model. Overall we find that our individual equation results match our expectations from prior research. Outside of demographic information, those in worse health retire significantly earlier as evidenced by a variety of different measures, as do individuals with greater personal wealth and who have lower DB pension accrual rates. There are not as many significant results for our mortality equation, but once again the coefficients match expectations, as women live over a year longer and those with various chronic health conditions such as cancer or diabetes die earlier. The individuals in our sample appear to behave similarly to those in other studies, and thus our analysis should be able to uncover common, potentially misleading retirement leisure predictions.

Examining retirement leisure jointly, we do find a number of factors that significantly affect the quantity of retirement leisure consumed. Being a woman leads to greater retirement leisure consumption both due to significantly earlier retirement and later death. While examining only retirement age does correctly identify that women consume significantly more retirement leisure, the magnitude is greatly underestimated by not adding the effect of later mortality. We find a number of other significant coefficients that also would have been correctly identified by examining only one side of the retirement leisure determination. These variables are significant in only one of the two equations, with the significant coefficient driving a significant joint effect as well. Individuals who are Hispanic, in good health, or have a DC pension consume over a year less retirement leisure due to later retirement ages with no offsetting effect from mortality. Particularly interesting is the result from the good health rating, as this variable induces later retirement without the expected boost in mortality. Arguments for raising retirement ages based on the fact that individuals are healthier at older ages and thus will live longer may not be valid and may result in decreasing the well-being of this group of retirees. Greater accrual rates from additional work and lesser DB value from prior jobs also significantly reduce retirement leisure by delaying retirement, but the effects are quite small. Having a stroke leads to over two and a half years more retirement leisure caused primarily by early retirement. While the early retirement behavior is expected given that less healthy people retire earlier, the fact that having a stroke does not affect mortality is somewhat unexpected.

One variable that deserves particular attention is the self-reported probability of living to age seventy-five relative to the life table probability conditioned on age and sex. A value of one for the variable implies that the individual is as optimistic about living to age seventy-five as the life tables suggest he/she should be, while a value less/greater than one implies that the individual is less/more optimistic about living to age seventy-five than average. We include the life expectancy variable along with its square to test what Ghilarducci and Neuman (2004) term the "compensation hypothesis": that individuals may attempt to compensate for lower than average expected retirement leisure consumption due to low life expectancy by retiring earlier. The results do not support the compensation hypothesis because those individuals with average relative life expectancy consume over ten months less retirement leisure due primarily to later retirement. At low levels of relative life expectancy, individuals still consume over nine months less leisure due once again to primarily later retirement and not earlier death. If compensating for less expected retirement leisure is even a goal, individuals do not seem to be able to do so effectively.

The above results are interesting from the perspective of pension and quality of life research, but from an estimation strategy the results are somewhat unsurprising. Retiring significantly earlier and dying significantly later should lead to joint significance, while joint significance resulting from one significant individual coefficient essentially supports the argument for looking at only one determinant at a time. What is more interesting are those results that would be missed if only one side of the retirement leisure determination is examined. For example, individuals whose longest tenure position is in a low-skill, white collar occupation consume a year less retirement leisure than their counterparts in low-skill, blue collar occupations, even though neither of the individual equation coefficients is significant at the 5 percent level. Failing to take the correlation between the two events into consideration would completely miss the significant effect.

Some of the jointly insignificant coefficients deserve special attention as well. Individuals with arthritis both retire and die significantly earlier, with the joint effect for arthritic individuals being insignificant. Similarly, individuals with psychiatric problems and more financial wealth retire significantly earlier with no effect on mortality, but they do not consume significantly different amounts of retirement leisure. On the other hand, individuals with cancer, diabetes, or mobility problems die significantly earlier with no effect on retirement age, but they do not consume significantly less retirement leisure. Not only would the true net effect on leisure be missed in these situations, but the results from examining only one equation would lead to misleading results and badly designed public policy. Examining only the effect

TABLE 2

Retirement and Death Age Results with Net Effect on Retirement Leisure

	Retirement Age		Death Age		Leisure
Variable	Coef.	S.E.	Coef.	S.E.	Net Effect
Demographics					
Age	–0.544	7.082	–7.801	7.611	–7.257
Age Squared	0.008	0.060	0.074	0.064	0.066
Coupled	–0.562**	0.252	0.125	0.253	0.687*
Female	–0.481**	0.245	1.124***	0.263	1.605***
Nonwhite	–0.372	0.274	–0.220	0.273	0.152
Hispanic	1.310***	0.431	0.042	0.457	–1.268**
Education (in Years)	–0.060	0.041	–0.011	0.040	0.049
Health Insurance	–0.171	0.277	0.146	0.272	0.317
Blue Collar High Skilled	0.116	0.336	0.067	0.326	–0.049
White Collar High Skilled	1.034***	0.346	0.062	0.362	–0.972*
White Collar Other	0.617*	0.327	–0.326	0.336	–0.943**
Goods Producing Industry	0.424	0.262	0.226	0.264	–0.198
Midwest	0.079	0.309	0.040	0.332	–0.039
South	0.149	0.286	0.237	0.305	0.088
West	–0.456	0.349	0.257	0.382	0.713

Health Status and Health Behavior					
Good Health	1.219***	0.312	–0.134	0.289	–1.353***
Ever Smoke	–0.221	0.238	0.140	0.293	0.361
Smoke Now	–0.145	0.262	–0.469*	0.247	–0.324
Arthritis	–0.538**	0.220	–0.466**	0.226	0.072
Cancer	–0.666	0.433	–1.402***	0.356	–0.736
Diabetes	–0.371	0.328	–0.564**	0.265	–0.193
High Blood Pressure	0.006	0.216	–0.182	0.225	–0.188
Heart Problem	–0.290	0.310	–0.153	0.266	0.137
Lung Disease	–0.130	0.419	–0.460	0.312	–0.330
Psychiatric Problem	–0.943**	0.417	–0.528	0.366	0.415
Stroke	–2.119***	0.653	0.488	0.419	2.607***
Activities of Daily Living Measure	–0.536*	0.284	–0.225	0.220	0.311
Large Muscle Measure	–0.535***	0.129	0.143	0.118	0.678***
Mobility Measure	–0.249*	0.130	–0.222**	0.106	0.027
Relative Probability of Living to 75	1.746**	0.840	–0.456	0.761	–2.202*
Relative Probability of Living to 75^2	–0.978**	0.469	0.409	0.441	1.387**
Wealth and Pension					
Value of IRA ($10k)	–0.011	0.017	–0.017	0.019	–0.006
Net Financial Wealth ($10k)	–0.017***	0.006	–0.004	0.007	0.013
Net Housing Value ($10k)	–0.021	0.015	–0.012	0.019	0.009
DC Plan	1.387***	0.240	0.261	0.266	–1.126***
Value of DC Plan ($10k)	0.006	0.022	–0.046**	0.022	–0.052*
DB Plan	0.040	0.239	–0.418*	0.250	–0.458
DB Value Past Jobs ($10k)	–0.120***	0.014	0.015	0.017	0.135***
DB Accrual from Age 62 to 65 ($10k)	0.297**	0.118	–0.229*	0.126	–0.526***
DB Accrual Early to Normal Age ($10k)	0.102***	0.025	0.001	0.031	–0.101**

Note: *** indicates significant at .01 level, ** indicates significant at .05 level, and * indicates significant at the .10 level.

on retirement age would suggest that those individuals with arthritis, psychiatric problems, or more financial wealth consumed more retirement leisure and thus would not be made worse off than the average individual by policies delaying their retirement. However, knowing that the net effect on retirement leisure is zero shows that delaying retirement for these groups would unambiguously make them worse off by reducing their retirement leisure consumption to below average levels.

Implications for Pension Policy

A common argument for delaying retirement ages is that people are retiring earlier and are thus consuming more retirement leisure. If this assumption is true, taking away retirement leisure from groups who are consuming above average levels of leisure already may be a socially less costly way to alleviate funding problems for DB pension plans. However, correlations between retirement and death age determinants lead to flawed conclusions from analyses based on only one determinant of retirement leisure. We find that a variety of factors significantly influence retirement leisure without affecting retirement individually, and a variety of factors have no effect on retirement leisure despite influencing retirement ages. Based on our analysis we find that policies designed to raise retirement ages will adversely affect those individuals who already consume less retirement leisure, namely men, Hispanics, low-skill white collar workers, people in good health, and DC pension holders, to name a few. More importantly, policies delaying retirement will also harm those who appear to be consuming more retirement leisure due to earlier retirements but in actuality are not. Primarily among this group are those with various health conditions such as arthritis and psychiatric problems, as well as those with high levels of financial wealth.

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