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DO LONGEVITY EXPECTATIONS INFLUENCE RETIREMENT PLANS?

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Introduction

Life expectancy at 65 has increased by about four years since 1980, and this rise in longevity has sharply increased the time spent in retirement.[1] With Social Security and employer pension plans replacing a smaller share of earnings for retirement at any given age, working longer has become increasingly essential to secure an adequate income in retirement.[2] What remains unclear is whether individuals push back their planned retirement age in response to longer expected lifetimes.

This *brief,* based on a recent study, explores the relationship between workers' expectations about how long they will live – their subjective life expectancy – and their retirement plans.[3] The first section reviews the literature on the relationship between subjective life expectancy and retirement behavior. The second section presents the distribution of longevity expectations among a nationally representative sample of older U.S. workers. The third section presents the relationship between these expectations and workers' retirement *plans*. The fourth section examines how longevity expectations affect *actual* retirement behavior. The final section concludes that subjective life expectancy has a substantial and statistically significant effect on retirement plans. Actual retirement behavior also increases with subjective life expectancy, but the relationship is somewhat weaker and the estimates are less precisely measured. These results are consistent with the hypothesis that while workers who expect to live relatively long *plan* on retiring later, actual retirement behavior is complicated by unanticipated shocks.

Subjective Life Expectancy and Retirement

Researchers have examined the effect of how long an individual expects to live on their retirement behavior and report mixed results. One study found that subjective life expectancy only affected those most pessimistic about how long they would live, with such workers, not surprisingly, tending to retire earlier.[4] Another study found pessimistic workers more likely to claim Social Security at age 62, the earliest age one can claim.[5] Two other studies, however, found subjective life expectancy had little effect on the probability that an individual would be working at any given age.[6]

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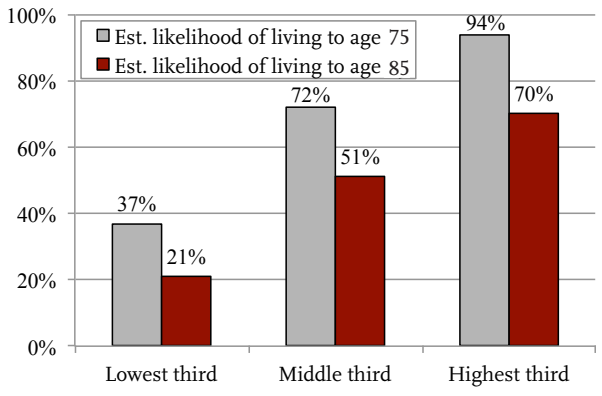
This study builds on the literature by examining the effect of subjective life expectancy on both *planned* and *actual* retirement behavior. Since actual retirement behavior is affected by shocks – health problems, layoffs, the need to care for a loved one, or financial gains or losses – the effect of subjective life expectancy should be better reflected in a worker's retirement plans, not in how circumstances play out.

Accuracy and Variance in Subjective Life Expectancy

The data source for the analysis is the *Health and Retirement Study* (HRS), a survey administered to a panel of older workers and retirees every two years. The HRS asks respondents to estimate their probability of living to ages 75 and 85. The analysis used the responses to these questions for workers age 50 to 61 as indicators of their subjective life expectancy (SLE).[7]

Workers in the sample, on average, estimated that they had a 68-percent chance of living to age 75 and a 47-percent chance of living to age 85. These average estimates are quite similar to "objective" life expectancy (OLE) estimates derived from actuarial life tables: based on their age, sex, and birth year, 70 percent of the workers in the sample are expected to live to age 75 and 42 percent to age 85. Thus, the average SLE estimate was just 2 percentage points below the age-75 OLE estimate and 5 percentage points above the age-85 OLE estimate.

Figure 1. Worker Estimates of Their Likelihood of Living to Ages 75 and 85, by SLE Tercile



Source: Khan, Rutledge, and Wu (2014).

Workers' estimates of their chances of living to the target ages varied widely. Perhaps due to health concerns or family history, the third of respondents with the lowest SLE estimates thought they had only a 37-percent chance, on average, of living to age 75 and only a 21-percent chance of living to age 85. The third of respondents with the highest SLE estimates, by contrast, thought they had a 94-percent chance of living to age 75 and a 70-percent chance of reaching age 85 (see Figure 1).

SLE and Retirement Plans

The first part of the analysis examines the effect of a worker's longevity expectations on his retirement plans. Retirement plans were measured using three HRS questions. The first question is when the respondent plans to retire. The most frequent responses are ages 62 and 65, though other ages are also common.[8] The other two questions are the respondent's estimate of his probability of working full-time at ages 62 and 65. On average, 48 percent expect to work full-time at age 62 and 28 percent at age 65.[9]

The task is to use a regression equation to estimate the relationship between a worker's retirement plans and his longevity expectations, controlling for a large set of factors that previous studies have found affected these plans. These control variables include personal, family, and employment characteristics, pension and health insurance coverage, and health status. So, the basic equation is:

Retirement plans = f(SLE, control variables)

But certain adjustments are needed to refine this approach. The first issue is that differences in workers' SLEs may be due to differences in longevity based on the age at which they are interviewed, their gender, and the ongoing rise in life expectancy. For instance, a 62-year-old is likely to have a more accurate view of his probability of reaching age 75 than a 51-year-old; women live longer than men; and younger cohorts generally live longer than older cohorts. To address these concerns, each worker's SLE is standardized by focusing on the difference between the worker's estimate of his chances of living to age 75 (or 85) and the actuarial objective life expectancy estimate for all individuals with the same age, sex, and birth year.[10] With this adjustment, the equation becomes:

Retirement plans = f((SLE-OLE), control variables)

Even with the standardized measure, though, a concern is that the correlation between life expectancy and retirement plans may be driven by an unobserved third factor, such as optimism about life in general, not just optimism about longevity. Moreover, other researchers have found that SLE responses are bunched at focal points, with many respondents estimating their chances of living to a particular age as 0, 50, or 100 percent, rather than points in between. Some respondents also report a higher probability of living to 85 than 75.[11]

Addressing these issues requires identifying an instrumental variable and then adopting a two-state-least-squares process. Introducing an instrumental variable, which is correlated with the independent variable of interest but otherwise unrelated to the dependent variable, offers a way to test whether the relationship between the independent and dependent variables is causal rather than merely a correlation. The first stage involves regressing workers' standardized life expectancy on all of the control variables in the model and the instrumental variables. The set of instrumental variables used in the first stage is based on the experience of the respondent's parents: an indicator for whether each parent is alive, the parents' current ages if still living and their age at death if not. The behavioral economics literature suggests that a worker may use his parents' mortality experience as a guide in estimating his own mortality. So parents' mortality should be correlated with SLE, but should be unrelated to retirement outcomes except through SLE.[12] The equation for the first stage is:

(SLE-OLE) = f(parents alive, parents' current ages, parents' ages at death, control variables)

In the second stage, the predicted value of workers' standardized life expectancy from the first stage is entered into the equation that relates retirement plans to life expectancy, as follows:

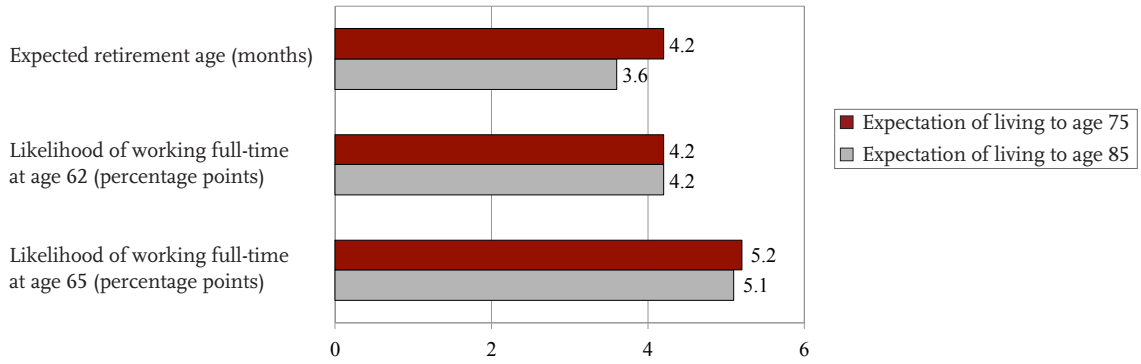
$$\text{Retirement plans} = f(\widehat{(SLE\text{-}OLE)}, \text{control variables})$$

The resulting analysis found a statistically significant relationship between how long workers expect to live and when they expect to retire and how long they expect to work full-time. Figure 2 shows the effect of a swing from the median worker longevity expectations to the average of the highest third. Such an increase in SLE raises a worker's expected retirement age by 4 months; it increases expectations of working full-time at age 62 and age 65 by 4-5 percentage points. These effects are substantial, and all results are statistically significant.

SLE and Actual Retirement Behavior

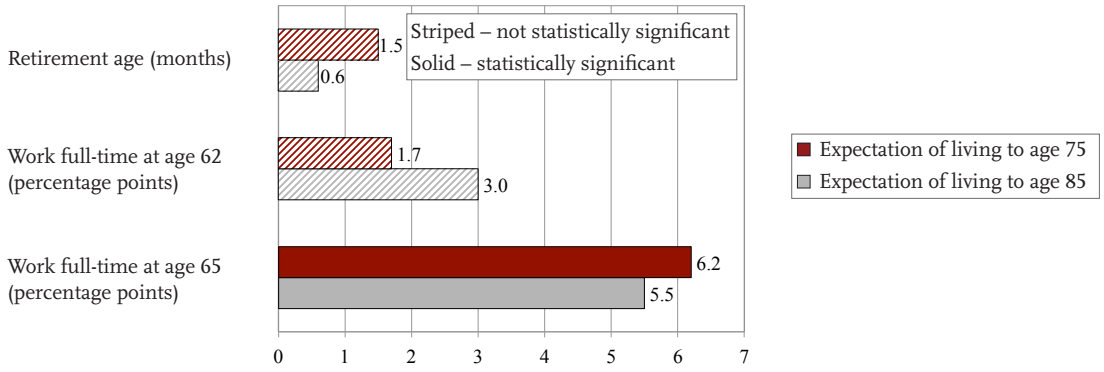
The next step (which also relies on the instrumental variable approach) is to examine the relationship between worker expectations about how long they will live and their actual retirement behavior, using data from HRS respondents with an observable retirement date or observable work status at ages 62 and 65.[13]

Figure 2. Estimated Effect of Swing From Median to Highest Tercile of Longevity Expectations on Work and Retirement Expectations



Source: Khan, Rutledge, and Wu (2014).

Figure 3. Estimated Effect of Swing From Median to Highest Tercile of Longevity Expectations on Actual Retirement Behavior



Source: Khan, Rutledge, and Wu (2014).

The results show the relationship between a worker's standardized SLE and his actual retirement age and actually working full-time at 62 to be positive, but smaller in magnitude than the estimates for expected retirement behavior and not statistically significant (Figure 3).[14] Expectations about living to age 75 and 85, however, had a strong positive and statistically significant effect on the probability of working full-time at age 65.

Conclusion

Workers who think they have excellent chances of living to ages 75 and 85 expect to work longer and retire later than workers who think their chances are poor. Subjective life expectancy also affects actual retirement behavior, though to a lesser degree than retirement expectations. These results are consistent with the notion that while workers who expect to live longer plan to retire later, actual retirement plans are influenced by unexpected shocks.

Endnotes

1 U.S. Social Security Administration (2012); and authors' calculations from U.S. Census Bureau, *Current Population Survey*, 1980 and 2013.

2 Munnell and Sass (2008).

3 Khan, Rutledge, and Wu (2014).

4 Hurd, Smith, and Zissimopoulos (2004).

5 Delavande, Perry, and Willis (2006).

6 Hamermesh (1984) and Bloom et al. (2006).

7 For details about the sample, see Khan, Rutledge, and Wu (2014).

8 The study excluded the 4.5 percent of respondents who refused to answer or did not have a plan and the 6.8 percent who reported that they will never retire.

9 The average expected retirement age is 63, but only 48 percent expect to work full-time at age 62; this finding indicates that a portion of those not expecting to work full-time at age 62 expect to work part-time and, thus, do not consider themselves retired.

10 A value greater than zero indicates that the individual thinks that he has a higher probability of living to the given age than the actuarial estimate for his peer group. We also estimate results that use the SLE by itself, and the results are very consistent.

11 Hurd and McGarry (1995); Hurd, McFadden, and Gan (1998); Bassett and Lumsdaine (2001); and Bloom et al. (2006).

12 Hurd and McGarry (1995) document that parents' mortality and SLE are positively correlated. This instrument is also used by Bloom et al. (2006). The first-stage regression indicates that these instruments are appropriately used, but the reduced-form results are qualitatively similar. The analysis also controlled for whether respondents take care of their parents, and the results are largely unaffected.

13 The expected retirement results using just this selected sample are consistent with the results shown in Figure 2.

14 Although the coefficients for actual retirement behavior are not statistically significantly different from zero, we cannot reject the null hypothesis that the estimates in the actual retirement regressions are statistically significantly different from those from the expected retirement regressions. The failure to reject the null of equivalence between the expected and actual estimates means that our finding is consistent with Benitez-Silva and Dwyer (2005), which finds that retirement expectations and actual retirement behavior are closely linked.

References

Bassett, William F. and Robin L. Lumsdaine. 2001. "Probability Limits: Are Subjective Assessments Adequately Accurate?" *Journal of Human Resources* 36(2): 327-63.

Benitez-Silva, Hugo and Debra S. Dwyer. 2005. "The Rationality of Retirement Expectations and the Role of New Information." *Review of Economics and Statistics* 87(3): 587-592.

Bloom, David E., David Canning, Michael Moore, and Younghwan Song. 2006. "The Effect of Subjective Survival Probabilities on Retirement and Wealth in the United States." Working Paper 12688. Cambridge, MA: National Bureau of Economic Research.

Delavande, Adeline, Michael Perry, and Robert Willis. 2006. "Probabilistic Thinking and Early Social Security Claiming." Working Paper 129. Ann Arbor, MI: University of Michigan Retirement Research Center.

Hamermesh, Daniel S. 1984. "Life-Cycle Effects on Consumption and Retirement." *Journal of Labor Economics* 2(3): 353-370.

Hurd, Michael D., James P. Smith, and Julie M. Zissimopoulos. 2004. "The Effects of Subjective Survival on Retirement and Social Security Claiming." *Journal of Applied Econometrics* 19(6): 761-775.

Hurd, Michael D., Daniel McFadden, and Li Gan. 1998. "Subjective Survival Curves and Life Cycle Behavior." In David Wise (ed.), *Inquiries in the Economics of Aging*. Chicago: University of Chicago Press.

Hurd, Michael D. and Kathleen McGarry. 1995. "Evaluation of the Subjective Probabilities of Survival." *Journal of Human Resources* 30: S268-92.

Khan, Mashfiqur R., Matthew S. Rutledge, and April Yanyuan Wu. 2014. "How Do Subjective Longevity Expectations Influence Retirement Plans?" Working Paper 2014-1. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Munnell, Alicia H. and Steven A. Sass. 2008. *Working Longer: The Solution to the Retirement Income Challenge*. Washington, DC: Brookings Institution Press.

U.S. Social Security Administration. 2012. *The 2012 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. Washington, DC: Government Printing Office.

U.S. Census Bureau. *Current Population Survey*, 1980 and 2013. Washington, DC.

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