Annuities and Retirement Satisfaction[*]

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ABSTRACT

This paper analyzes pre-retirement expectations and post-retirement satisfaction, in particular their association with the degree to which retirees' financial resources are in the form of annuities. Using the 1992-2000 Health and Retirement Study (HRS), we find that most retirees are very satisfied with their overall situation, but the degree of satisfaction varies substantially with retirees' characteristics. In particular, people in better health and with more financial resources tend to be more satisfied. Holding constant the present value of retirement resources and other factors, we find that retirees who can finance more of their consumption in retirement from pension annuities (vs. Social Security benefits and accumulated savings) are more satisfied. Retirees with lifelong annuities also tend to maintain their level of satisfaction during retirement, whereas those without tend to become less satisfied over time. We find the very same patterns with alternative depression-related measures of well-being in retirement. The findings have important implications for the well-being of future American retirees, who are increasingly reliant on DC pension plans rather than traditional DB pensions.

1. INTRODUCTION

The economic position of the elderly has improved dramatically over the past several decades. In 1960, 35 percent of individuals age 65 and older lived below the poverty line; today, only 10 percent are poor (Bureau of the Census, 2000). This impressive gain is the result of a combination of public policy and private initiative. The generosity of Social Security and Medicare was increased steadily, and the 1974 Employee Retirement and Income Security Act (ERISA) promoted private retirement savings.

But while the standard of living of current retirees is unprecedented, the outlook for the next generation is more clouded. The leading edge of the Baby Boom generation is now almost 55 years old, and more workers than ever will be retiring in the next decade. These Baby Boomers will spend more years in retirement than their parents. They retire at a younger age and will live longer. The life expectancy of a 65-year-old today is 82.9, more than four years higher than in 1960 (CDC, 1998). At the same time, they are less likely to enjoy lifelong guaranteed pension benefits. In 1978, 38 percent of American workers were covered by a pension that guaranteed a lifelong benefit, compared to only 21 percent in 1997 (DOL, 2001). Instead, workers more often participate in 401(k) and similar plans (up from 7 percent in 1978 to 25 percent in 1997). If the funds in such plans were invested wisely, they can be substantial but offer no insurance of income security over many years of life in retirement. If the rate of return disappointed, there may not be much to begin with. Almost everyone has Social Security, but its benefits may need to become less generous to cope with its projected

deficit. The most widely discussed reform proposal, personal accounts, would involve a shift similar to what happened with employer-provided pensions.

The changes have been gradual and well-documented. Concerns about the financial security of future retirees have so far been muted by extraordinary stock market gains and corresponding wealth accumulation among Baby Boomers. However, the recent downturn of the economy with its stock market losses and corporate bankruptcies have focused attention on the vulnerability of future retirees to investment risks. Much less discussed—but potentially even more painful—are longevity risks, that is, the risks that ever-longer-living Americans outlive their 401(k) and other savings and end up poor.

This paper studies pre-retirement expectations and post-retirement satisfaction, particularly with respect to the characteristics of retirement resources. Unlike some prior studies, we focus on retirement satisfaction rather than a measure of consumption or income, because it relates more directly to retirees' well-being. In addition to satisfaction in retirement, we explore a battery of questions on short-term and long-term mental health. In the discussion below, we commonly include mental health among the term retirement satisfaction. We are particularly interested in the association between degree of annuitization and retirement satisfaction. Do people prefer being relatively rich at retirement, with a large amount of their own money readily available to be spent as flexibly as they wish? Or would they rather have the comfort of knowing they have a steady income in perpetuity? The answer affords a peek into the well-being of the next generation of retirees.

The remainder of this paper is organized as follows. Section 2 discusses the data underlying the analysis, Section 3 presents the results, and Section 4 concludes. The analysis is purely descriptive, largely relying on simple cross-tabulations to document the

associations in the data. However, the Appendix contains multivariate results to demonstrate that the key relationships continue to hold when controlling for a host of other factors.

2. DATA

The analysis is based on the Health and Retirement Study (HRS). The HRS collects information on financial matters, health, expectations, demographics, participation in the labor force, and many other topics. It began in 1992 with 7,700 households that included someone aged 51 to 61; spouses were also included, regardless of age, for a total of over 12,600 respondents. These persons (barring death or loss of contact) have been re-interviewed every other year since. A companion survey began in 1993 with 6,050 households including someone at least 70 years old. Again, spouses of any age were included, for a total of over 8,200 respondents. Re-interviews were conducted in 1995, 1998, and 2000. In 1998, the two panels were merged and several birth cohorts were added to make the survey representative of the non-institutionalized United States population age 51 and older. Where insightful, this study incorporates information from all cohorts and all waves; at other times, only a subset of the waves or of the respondents (such as retirees only) was used. The 2000 wave of the HRS included almost 20,000 persons.

As of the 2000 wave, the sample is 59 percent female and 41 percent male. It is, according to the respondents themselves, 51 percent "completely retired" and 49 percent not. The sample as a whole is composed predominantly of married people. This is

particularly true of men, however (78 percent, versus 55 percent for women). Women

are much more likely to be widowed (30 percent, versus 9 percent for men).

Income, not surprisingly, varies substantially between the retirees and others. The

median for retirees is about $28,500, while that for those before retirement is about

$54,700.[1] Over 22 percent of the latter top $100,000 in income, while only 6 percent of

the retired do. Wealth, on the other hand, does not vary much between retirees and

others.

3. RESULTS

3.1.   Pre-retirement Expectations

We first consider workers' expectations before retirement. When asked what they

expected would happen to their living standard when they retired, just over half of

workers in their fifties[2] said it would stay about the same (see Table 1). Most of the

remainder (42 percent) thought their standard of living would decline somewhat or a lot,

while only 7 percent thought it would improve. Women were somewhat more

pessimistic than men, and women who used to be married (separated, divorced, or

widowed) particularly so (11 percent thought their living standard would decline a lot;

not shown). The poorest 10 percent of the population (in terms of net wealth) were, as

might be expected, more pessimistic than average. However, a surprising number (19

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[1] All monetary figures throughout this paper are in real dollars of the year 2000.

[2] More precisely, people age 51-61 and their spouses; some of the latter were outside the target age range.

percent) thought their lot would improve, perhaps because of eligibility for government programs such as Social Security, Supplemental Security Income (SSI), and Medicare. Surprisingly, workers with a pension were about as likely as those without one to expect a decline in their living standard.

[Table 1 about here]

Does the reality line up with expectations? While the HRS did not directly ask retirees to compare their standard of living with that of their pre-retirement years, it did ask whether their retirement years have been better, about the same, or not as good as the years just before retirement. Almost half the retirees (48 percent) thought their retirement years better; another third rated (34 percent) them about the same, with only 18 percent stating that their retirement years were not as good. It thus appears that retirees were pleasantly surprised by their standard of living in retirement. Alternatively, standard of living did not enter strongly into judgments of whether their retirement years were "better."

Reality exceeded expectations not only with respect to retirement, but also with respect to health. When 50 to 54 year-olds were asked about the chances that health would limit their work activity during the next 10 years, the average response was 36 percent. However, when persons (including retirees) 10 years older were asked whether they had an impairment or health problem that limited the kind or amount of paid work they could do, only 28 percent responded affirmatively.

3.2. Post-retirement Satisfaction

We explore several measures of satisfaction in retirement. The first is a directly asked question on satisfaction: "*All in all, would you say that your retirement has turned out to be very satisfying, moderately satisfying, or not at all satisfying?*" The second is a compound measure of mental health during the past week, similar to the Center for Epidemologic Studies Depression (CES-D) scale (Radloff, 1977). The CES-D scale is based on 20 self-report questions designed to assess symptoms of depression. The HRS administers an abbreviated version with just nine questions: "*Now think about the past week and the feelings you have experienced. Please tell me if each of the following was true for you much of the time during the past week.*

- *[...] you felt depressed.*

- *You felt that everything you did was an effort.*

- *Your sleep was restless.*

- *You were happy.*

- *You felt lonely.*

- *You enjoyed life.*

- *You felt sad.*

- *You could not get going.*

- *You had a lot of energy.*"[3]

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[3] This item is not among the standard 20 CES-D items, but the HRS administers it in the same manner as the other eight items.

For each item, the answer could be "yes," "no," "don't know," or "refused." We explored each individual item and a composite score. The composite score increments by one for every "yes" on the six items expressing negative feelings and for every "no" on the three positive items (happy, enjoyed life, lot of energy). The composite score ranges from zero (no sign of depression) to nine (strong signs of depression). In the remainder of this paper, we refer to the composite score as the CES-D score.

Consider first how satisfying respondents' retirements have been, without regard to any comparisons. In 2000, fully 59 percent said their retirement had turned out to be "very satisfying," and another 33 percent said it had been moderately satisfying. Only 8 percent stated that their retirement was "not at all" satisfying. Percentages did not vary much between men and women.

Though most people find retirement very satisfying, some are clearly more satisfied than others. What are the main factors responsible for differences in retirement satisfaction?

The most important factors are health and financial resources in retirement, as measured by household income or wealth (see Table 2). People who describe their health as excellent or as very good are much more likely to find retirement very satisfying than those who describe it as fair or poor. Satisfaction also varies substantially with income, as about two-thirds of retirees with household incomes in the $30,000 to $50,000 bracket and 74 percent of those above $50,000 stated they found their retirement very satisfying, compared to only 40 percent of those with incomes below $15,000. The wealth pattern is the same. "Wealth" refers to household net worth, or the value of all assets, including financial assets, housing, and vehicles, minus mortgages and other debts. Over three-

fourths of retirees with net worth above $400,000 found their retirement very satisfying, compared to only 38 percent of retirees with net worth under $50,000.

[Table 2 about here]

Age and marital status are also of some importance. Older retirees are more satisfied than younger ones. (Below we will discuss whether this is an age or a cohort effect.) Married people and those who never married are more satisfied with retirement than those who were once married but now widowed, separated, or divorced.

[Table 3 about here]

Next, we turn to CES-D symptoms of depression (Table 3). Among retirees in the 2000 wave, 28 percent did not report any sign of depression during the week before the interview, 25 percent reported one symptom, 27 percent two or three symptoms, and the remainder reported four or more symptoms. Table 4 shows the fractions of retirees that responded "yes" to the nine component questions. One-in-six retirees stated that they felt depressed for much of the prior week, one-in-three slept restlessly, and one-in-five felt sad much of the prior week. However, 89 percent was happy much of the time and 93 percent enjoyed life.

While women report approximately the same levels of satisfaction with retirement as men, they show more signs of depression than men. Women responded "yes" more often on all six negative items and "no" more often on the three positive items. In particular, they more often stated feeling depressed (19.3 vs. 13.7 percent), lonely (22.2 vs. 14.9 percent), and sad (24.9 vs. 15.3 percent).

[Table 4 about here]

Returning to the composite CES-D score, Table 5 shows the distribution of number of depression symptoms by sex, health status, household income, household net

worth, age, and marital status. We collapsed the 0-9 scale into three items: no symptoms of depression, 1-3 symptoms, and four or more. We find the same patterns as for satisfaction with retirement in Table 2. (The simple correlation between the 3-item retirement satisfaction response and the 9-item CES-D score is -0.40.) Mental health strongly correlates with general self-reported health: more than half of those who stated that their health was excellent reported no symptoms of depression, whereas more than half of those in poor health reported four or more depression symptoms. Individuals with higher incomes or higher net worth report fewer signs of depression. Elderly retirees report more symptoms of depression than younger retirees, except for very young retirees. Married individuals report fewer signs of depression than, in particular, separated, divorced, and widowed retirees.

[Table 5 about here]

3.3.   Post-retirement Satisfaction by Degree of Annuitization

Clearly, financial resources play an important role in predicting post-retirement satisfaction. They may essentially take two forms: annuities and bequeathable wealth. Social Security provides an annuity, private saving builds wealth, and private pensions may provide an annuity, wealth, or both. We now explore how retirement satisfaction correlates with the degree of annuitization of retirement resources.

Not every pension entitles its holder to an annuity. Only so-called "defined benefit" (DB) plans provide a lifelong benefit that is typically based on the number of years worked for the employer and the salary in the last few years before retirement. By contrast, widespread 401(k) plans and other so-called "defined contribution" (DC) plans

do not provide a lifelong benefit. In those plans, workers and their employers contribute funds to accounts that are owned by the workers. Their tax treatment apart, these DC plans are not much different from other savings. So while they do not result in lifelong guaranteed pension benefits, they are available to support retirement spending.

DC pension plans have become increasingly popular and are now the most common source of pension coverage. The fraction of workers covered primarily by a DB pension plan went from 38 percent in 1978 to 21 percent in 1997, whereas the fraction of workers with a DC plan as their primary pension went from 7 to 25 percent (DOL 2001). Workers with DB plans that switch jobs sometimes settle their pension entitlement with a lump sum payment and put the money in an Individual Retirement Account (IRA). IRAs have essentially the same features as DC plans.

Some DC plans allow the beneficiary to convert his or her balance into an annuity upon retirement. Based on surveys of medium and large firms, conducted bi-annually by the Bureau of Labor Statistics, Mitchell (1999) found that only 27 percent of full-time 401(k) participants had this option in 1997, down from 34 percent in 1993. In practice, very few retired workers take the option to annuitize. Hurd, Lillard, and Panis (1998) found that only 4 percent of HRS respondents with a DC plan who left their jobs converted the balance into an annuity. For all practical purposes, DC plans thus do not at present provide a lifelong benefit.

We define two measures of degree of annuitization. Both are ratios with in the denominator expected total retirement resources, that is, bequeathable wealth plus the expected discounted value of income from Social Security and DB pensions. Bequeathable wealth is measured as net worth. We define "Social Security reliance" as the ratio of the expected discounted value of income from Social Security to expected

total retirement resources. It varies between zero (for individuals without Social Security

entitlement) to one (for individuals without any savings or pension entitlement).

Similarly, we define "pension annuity ratio" as the ratio of the expected discounted value

of income from DB pensions to expected total retirement resources.[4] It, too, can vary

between zero and one.

The more people rely on Social Security for financing their consumption in

retirement, the less satisfied they are with retirement (Table 6). This result is largely

found because a high Social Security reliance implies little or no private pension and

private savings. In other words, retirees that rely heavily on Social Security tend to be

poor. This interpretation is confirmed in a multivariate analysis that controls for

household wealth (see the Appendix).

[Table 6 about here]

By contrast, the more people can count on lifelong guaranteed pensions, the more

satisfied they are with their retirement. About half of retirees have no DB pension, that

is, their pension annuity ratio is zero. Of these retirees, 54 percent said they had a very

satisfying retirement. One in four retirees has a pension annuity ratio of 1-25 percent;

among them, 67 percent are very satisfied. Among the remaining one in four retirees,

who can finance more than 25 percent of their consumption in retirement from DB

pensions, 70 percent reported having a very satisfying retirement.

Furthermore, satisfaction among persons with lifelong guaranteed pensions lasts

longer than among those without (see Table 7). Satisfaction among persons without any

DB pension tends to decline the longer they are retired (from 58 percent very satisfied

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[4] Privately purchased lifelong annuities are treated in the same way as lifelong pensions.

shortly after retiring to 47 percent ten years later). The same is not true of persons with

DB pensions; their satisfaction remains approximately constant over the duration of their

retirement. The explanation may be that persons without a DB pension are becoming

increasingly anxious about outliving their savings.

[Table 7 about here]

Table 8 and Table 9 report the same breakdown for depression symptoms. As

before, the same pattern arises as for satisfaction with retirement: the more retirees rely

on Social Security for their consumption, the more signs of depression they report, and

the greater the fraction of consumption that can be financed from pension annuities, the

fewer signs of depression are reported. Also, retirees with a DB pension are better able

to maintain their mental health. While both retirees with and without a DB pension

experience increasing numbers of depression symptoms over time, the rate of increase is

markedly slower for DB pensioners.

[Table 8 about here]

[Table 9 about here]

These results also shed light on the relationship between age and retirement

satisfaction shown in Table 2. There, satisfaction increased with age. In Table 7, it stays

the same or declines with increased retirement duration, which is correlated with age.

(Both tables are based on cross-sectional outcomes from the 2000 HRS.) A potential

explanation is that the age relationship could reflect a cohort effect: The oldest-old, who

lived through the Great Depression, appear to be more content with less than the younger

generation.

One may suspect that the positive relationship between pension annuity ratio and

retirement satisfaction is due to income rather than pension annuity ratio per se. Indeed,

retirees with higher household incomes are more likely to receive a pension and perhaps pension annuity ratio is a proxy for income. Table 10 addresses this issue. Looking down columns, the relationship between income and satisfaction is clear. But the more interesting comparison is within rows. At any income level, retirees with a DB pension are more likely to be very satisfied than those without. Having a DB pension increases satisfaction by about as much as moving one income category up. For example, retirees with total household income between $15,000 and $30,000 and with a DB pension are about as likely to be very satisfied (62.0 percent) as retirees with an income above $50,000 but without the security of a lifelong guaranteed pension income (61.2 percent).

[Table 10 about here]

Table 11 is the depression counterpart of Table 10. It reports the fraction of respondents without any reported depression symptoms by pension annuity ratio and household income. The same pattern emerges, though not as sharp as in earlier comparisons. The appendix contains a multivariate (ordered probit) analysis with controls for income and several other factors. In that model, pension annuity ratio has the expected negative sign and is significant, provided we also control for net worth.

3.4. Post-retirement Satisfaction by Risk Aversion

One further factor of potential interest is respondents' risk aversion. The HRS asked respondents to imagine they were faced with a choice between two jobs: one would guarantee their current family income for life, while the other would have a 50 percent chance of doubling their income for life and a 50 percent chance of cutting it by a third. The expected value of the second alternative was 33 percent higher than the first,

yet three out of four respondents took the safe choice and were thus relatively risk-averse. More of them (61 percent) were very satisfied with their actual retirement than were the more risk-tolerant who took the second choice (51 percent).

The choice offered by the HRS is similar in some respects to a choice available to everyone before retirement: They can put money into an arrangement that will pay an annuity or they can invest it in ways that might make them wealthier during retirement but have the risk of leaving them worse off. That choice involves two sources of uncertainty: rate of return on accumulated savings and remaining length of life. Even if the savings build to greater wealth than with an annuity, the saver can come out worse off. He or she may live so long that the savings are exhausted before death.

3.5.   Post-retirement Satisfaction by Indicators of Long-Term Planning

Satisfaction with retirement is higher among retirees who have engaged or are currently engaged in some sort of financial planning activity (see Table 12). The purchase of insurance against long-term care is one such activity. In the 2000 data, 10 percent of respondents, generally over age 50, had long-term care insurance coverage. Those with such insurance reported substantially greater satisfaction in retirement than those without. This may well have been fueled by anxiety about large medical expenses: 1993 and 1995 respondents age 70 or older with long-term care insurance were somewhat less likely to predict exhaustion of savings during the next five years due to medical expenses than those without (28 percent vs. 32 percent).

[Table 12 about here]

Approximately one in every four respondents to the 1992 and 2000 surveys reported having attended a meeting on retirement or retirement planning. A greater percentage of those who had attended a meeting reported having a very satisfying retirement. About one of every seven respondents age 70 or older to the 1993 and 1995 waves had a financial advisor. Here again, those with an advisor were more satisfied in 1998 or 2000 than those without.

People with higher incomes are more likely to engage in long-term planning. As with pension annuity ratio, one may thus suspect that our planning measures (long-term care insurance, retirement planning, and financial advisor) reflect income differences and that their correlation with retirement satisfaction is purely due to income. This is not the case. Table 13 shows the relationship between retirement satisfaction and retirement meeting attendance for various levels of household income.

[Table 13 about here]

As before, the interesting comparison is within the rows. For any income level, there is an 11 to 13 percent increase in the likelihood of high satisfaction with retirement if a person has attended a planning or other type of retirement meeting. For someone in the $15,000 to $30,000 bracket, for example, that gain (to 68 percent) is enough to make him more satisfied with retirement than someone in the next higher income category who did not attend such a meeting (at 63 percent). The results for having purchased long-term care insurance and having a financial advisor hold up similarly within income category.

4. CONCLUSION AND POLICY RECOMMENDATIONS

This paper documents how Americans experience retirement. We started with some measures of pre-retirement expectations and showed that retirement tends to be somewhat rosier than expected. Indeed, the majority of respondents reported being very satisfied in retirement. However, satisfaction in retirement varies widely across individuals, mostly in predictable ways. The most influential determinants of satisfaction are health status and financial resources as measured by net worth or household income. Older retirees tend to enjoy greater satisfaction. This appears to be a cohort effect: Perhaps as a result of having lived through the Great Depression, the oldest-old are more content with less resources.

The key results of this study concern the importance of pension annuitization, that is, the extent to which retirees can finance their consumption with lifelong guaranteed pensions (as opposed to accumulated savings). Those with greater pension annuitization were found to be substantially more satisfied in retirement. They also maintained their satisfaction throughout retirement, whereas retirees without lifelong pensions became somewhat less satisfied over the years. The guaranteed pension benefits may reduce anxiety about the risks of outliving one's savings and ending up in poverty.

We considered another measure of well-being in retirement, namely self-reported symptoms of depression. The very same patterns as with retirement satisfaction emerged. In particular, those with greater pension annuitization reported fewer symptoms of depression.

These findings have direct implications for the retirees of tomorrow. Over the past two decades, there has been a trend away from DB pensions that pay a guaranteed benefit for life toward DC pensions in which workers accumulate savings in an account, such as 401(k) plans. Much has been said about the investment risks that 401(k) participants must bear, much less about their longevity risks, that is, the risks of living to a very old age and ending up in poverty. This study holds a lesson pertaining to those longevity risks. The future will see fewer retirees with guaranteed lifelong incomes and more retirees with (often substantial) savings; the increasing lack of lifelong income guarantees may well drag down overall future retiree satisfaction.

Should we, then, adopt policies that encourage DB and discourage DC pensions? Not necessarily. DC pensions have a very desirable "portability" feature, that is, they may be preserved after job separation. By contrast, DB benefits are typically fixed in nominal terms after leaving one's job and their accumulation path makes it particularly costly to leave a job toward the end of one's career. This study highlights the importance of the lifelong income guarantee offered by DB pensions. This guarantee may also be obtained by converting a DC plan balance (or any other form of accumulated savings) into a lifelong guaranteed monthly payment (i.e., an annuity). Upon retirement, about one-in-four 401(k) participants already have such an option, and for many, the security that a conversion brings will enhance their satisfaction and mental health for many years to come. However, very few retirees with a DC plan, only about 4 percent, chose to annuitize. This argues for policies that encourage annuitization. Analogously, if private accounts are introduced in the Social Security program, we expect real benefits among retirees from mandatory annuitization upon retirement.

Another novel—though perhaps not surprising—finding is greater satisfaction among individuals who had engaged in long-term planning by attending a retirement planning meeting or by purchasing an insurance policy for long-term care. While the results were robust to controls for income and many other factors, it may be the case that survey respondents who engaged in long-term planning activities are prudent types that prepared themselves for retirement in more ways than we looked at. In other words, it need not be the planning that caused the higher satisfaction. With that caveat, the findings of our study support a beneficial role of workplace meetings on retirement planning and other forms of financial education.

5. REFERENCES

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APPENDIX

Most results in the main text on the correlates of satisfaction and mental health in retirement were derived from simple cross-tabulations, with an occasional extension to demonstrate that, for example, the relationship between pension annuity ratio and satisfaction holds even within subgroups with similar levels of income. One may be concerned that cross-tabulations produce results that may be due not to the variable under study but to omitted variables that are correlated with it. For example, health is correlated with income; to what extent is the greater satisfaction in retirement among higher income groups due to their good health rather than high income?

Table 14 shows estimation results of an ordered probit model of retirement satisfaction. We present specifications that control for household income, household net worth, and both. The results were robust to a variety of alternative specifications. The relationship between Social Security reliance and retirement satisfaction is not significant or significantly negative. In other words, if anything, the higher the fraction of sustainable consumption that is financed from Social Security benefits, the lower is retirement satisfaction. Put differently, the low satisfaction found among retirees with high Social Security reliance is at least in part due to their low wealth and/or low income from other sources, rather than to Social Security reliance itself. The opposite holds for pension reliance: the higher the fraction of sustainable consumption that is financed from lifelong guaranteed pension benefits, the greater is retirement satisfaction.

[Table 14 about here]

The other covariates in the table are consistent with their corresponding univariate pattern. Household income and wealth are both positively correlated with satisfaction; health is positively correlated with satisfaction. There is no net difference in satisfaction between men and women. Individuals whose marriage was disrupted by separation, divorce, or widowhood reported lower levels of satisfaction than lifelong bachelors and married people. Satisfaction increases with age, even controlling for other factors.

[Table 15 about here]

Table 15 shows the results of similar ordered probit analyses with the number of depression symptom as outcome. Higher outcomes are now indicative of lower mental health. Indeed, most parameters have the opposite sign of their counterparts in Table 14. The univariate results of the main text continue to hold. In particular, the net relation between pension annuity ratio and number of depression symptoms is negative.

Not shown is that the multivariate analysis also verified the earlier finding that risk-averse persons were more satisfied with their retirement than the risk-tolerant. Surprisingly, however, some other expected relationships involving risk aversion did not show up. First, while one might expect the risk-averse to choose jobs that promise lifelong pensions, their pension security (pension annuity ratio) was not greater than that of the risk-tolerant. Second, while both risk aversion and pension security correlated positively with greater satisfaction in retirement, their interaction was insignificant. In other words, the risk-averse did not derive more satisfaction in retirement from income guarantees than the risk-tolerant. One might also expect that individuals with longer-than-average expected life spans would appreciate lifelong guaranteed pensions more than others, so that the interaction between survival chances and pension annuity ratio should be significant. Respondents were asked to assess their own chances of living to

age 85. Those reporting higher survival chances (controlling for age) also reported

greater satisfaction, but there was no disproportionate difference for retirees with high

levels of lifelong pension security.

Table 1. Expectations of Postretirement Living Standard by Gender, Wealth, and Pension Entitlement

	Percent stating that, compared to their current living standard, their living standard after retirement will…				
	Improve a lot	Improve	Stay the same	Decline somewhat	Decline a lot
Total	1.3	6.1	50.5	35.8	6.4
By gender:					
Female	1.1	5.2	48.2	37.4	8.3
Male	1.5	7.0	52.8	34.2	4.5
By wealth:					
Top 10 percent	0.8	4.6	68.7	23.5	2.4
Bottom 10 percent	4.2	15.0	42.8	27.4	10.6
By pension entitlement:					
Yes	5.1	9.1	51.2	38.2	4.6
No	1.7	7.2	49.6	33.0	8.5

Note: columns sum to 100 percent.

Table 2. Retirement Satisfaction by Demographic and Socioeconomic Characteristics

	Not at all satisfied	Moderately satisfied	Very satisfied
Total	8.3	32.9	58.9
By sex:			
Female	7.8	33.7	58.5
Male	8.8	31.9	59.3
By health:			
Excellent	2.7	14.3	82.9
Very good	1.5	22.2	76.3
Good	4.6	33.8	61.5
Fair	10.2	42.8	47.1
Poor	27.2	41.5	31.4
By household income:			
0-14999	14.3	45.5	40.1
15K-30K	7.7	34.7	57.6
30K-50K	5.8	27.0	67.2
>=50K	4.0	22.3	73.7
By household wealth:			
0-49999	16.8	45.1	38.1
50K-150K	8.7	37.0	54.3
150K-400K	4.5	28.1	67.4
>=400K	2.6	20.7	76.7
By age:			
<60	19.8	36.2	44.1
60-64	11.6	32.1	56.3
65-74	7.5	32.0	60.5
75-84	5.7	33.8	60.6
85+	5.1	31.8	63.0
By marital status:			
Never married	8.7	34.9	56.4
Married	7.5	30.2	62.3
Separated/divorced	17.6	39.8	42.6
Widowed	6.7	36.4	57.0

Note: columns sum to 100 percent.

Table 3. Distribution of CES-D Depression Symptoms

(Unweighted counts and weighted percents)

CES-D	Frequency	Percent	Cumulative
0	2007	27.89	27.89
1	1802	25.07	52.96
2	1120	15.57	68.52
3	797	11.15	79.67
4	511	7.05	86.72
5	357	4.96	91.68
6	241	3.36	95.04
7	182	2.49	97.53
8	125	1.68	99.21
9	56	0.79	100.00
Total	7198	100.00	

Table 4. Percent Responding Affirmatively to Depression Symptom Questions

	Women	Men	Total
Felt depressed	19.3	13.7	16.6
Everything was an effort	24.4	22.5	23.5
Sleep was restless	36.5	30.6	33.7
Were happy	88.2	89.7	88.9
Felt lonely	22.2	14.9	18.7
Enjoyed life	92.6	93.4	93.0
Felt sad	24.9	15.3	20.3
Could not get going	26.1	21.1	23.7
Had a lot of energy	51.0	56.7	53.7

Table 5. Depression Symptoms by Demographic and Socioeconomic Characteristics

| | Number of depression symptoms | | |
	0	1-3	4+
Total	27.9	51.8	20.3
By sex:			
Female	25.5	50.7	23.8
Male	30.5	52.9	16.5
By health:			
Excellent	51.8	42.4	5.8
Very good	41.3	50.5	8.2
Good	25.5	58.4	16.1
Fair	12.7	54.5	32.8
Poor	4.4	38.5	57.1
By household income:			
0-14999	16.3	50.1	33.6
15K-30K	24.2	53.7	22.1
30K-50K	32.5	52.0	15.5
>=50K	36.8	50.6	12.6
By household wealth:			
0-49999	15.8	51.0	33.2
50K-150K	22.4	54.2	23.4
150K-400K	31.4	52.8	15.9
>=400K	37.7	48.9	13.5
By age:			
<60	26.1	47.0	26.9
60-64	30.8	51.2	18.0
65-74	31.1	51.0	17.9
75-84	24.6	53.8	21.5
85+	17.9	54.6	27.5
By marital status:			
Never married	24.8	58.4	16.9
Married	31.7	51.9	16.5
Separated/divorced	23.0	51.1	26.0
Widowed	20.2	51.1	28.8

Note: columns sum to 100 percent.

Table 6. Retirement Satisfaction by Degree of Annuitization

	Not at all satisfied	Moderately satisfied	Very satisfied
By Social Security reliance:			
0-25%	5.7	26.4	67.9
26-50%	5.6	32.2	62.2
51-100%	13.1	43.0	43.9
By pension annuity ratio:			
No pension	10.6	35.1	54.3
1-25%	4.4	28.9	66.7
26-100%	3.5	27.0	69.5

Note: columns sum to 100 percent.

Table 7. Retirement Satisfaction by DB Pension Receipt and Retirement Duration

	Not at all satisfied	Moderately satisfied	Very satisfied
With a DB pension:			
0-1 years retired	5.6	30.5	64.0
2-4 years retired	4.1	27.3	68.6
5-10 years retired	5.3	28.5	66.2
10+ years retired	5.4	27.3	67.3
Without a DB pension:			
0-1 years retired	10.9	31.4	57.7
2-4 years retired	13.5	32.3	54.2
5-10 years retired	11.7	36.3	52.0
10+ years retired	14.6	38.6	46.9

Note: columns sum to 100 percent.

Table 8. Depression Symptoms by Degree of Annuitization

	Number of depression symptoms		
	0	1-3	4+
By Social Security reliance:			
0-25%	31.7	51.1	17.3
26-50%	28.1	52.7	19.1
51-100%	18.3	52.0	29.7
By pension annuity ratio:			
No pension	25.9	50.3	23.8
1-25%	27.2	53.6	19.2
26-100%	32.1	52.6	15.3

Note: columns sum to 100 percent.

Table 9. Depression Symptoms by DB Pension Receipt and Retirement Duration

	Number of depression symptoms		
	0	1-3	4+
With a DB pension:			
0-1 years retired	33.9	53.2	12.8
2-4 years retired	33.3	53.2	13.5
5-10 years retired	33.4	52.1	14.5
10+ years retired	30.3	52.7	17.0
Without a DB pension:			
0-1 years retired	33.3	47.0	19.7
2-4 years retired	28.6	49.9	21.5
5-10 years retired	28.4	47.2	24.4
10+ years retired	24.1	48.0	28.0

Note: columns sum to 100 percent.

Table 10. Relationship Between Retirement Satisfaction and Pension Annuity Ratio, by Income Category

| Household income | Percent very satisfied | | |
	Zero pension annuity ratio	Medium pension annuity ratio (1-25%)	High pension annuity ratio (26-100%)
Under $15,000	39.2	50.8	50.4
$15,000–$30,000	54.5	62.0	62.4
$30,000–$50,000	61.2	70.4	72.1
$50,000 or more	70.2	78.4	75.6

Table 11. Relationship Between Depression Symptoms and Pension Annuity Ratio, by Income Category

| Household income | Percent with zero depression symptoms | | |
	Zero pension annuity ratio	Medium pension annuity ratio (1-25%)	High pension annuity ratio (26-100%)
Under $15,000	16.4	14.5	18.8
$15,000–$30,000	24.8	23.4	23.8
$30,000–$50,000	30.7	32.3	34.5
$50,000 or more	36.7	34.2	38.4

Table 12. Retirement Satisfaction by Indicators of Long-Term Planning

	Not at all satisfied	Moderately satisfied	Very satisfied
By long-term care insurance			
No	8.7	33.8	57.5
Yes	3.6	25.7	70.7
By having attended a retirement meeting			
No	10.3	34.6	55.2
Yes	3.3	25.6	71.1
By having a financial advisor			
No	6.1	34.4	59.5
Yes	2.7	26.6	70.8
Note: columns sum to 100 percent.			

Table 13. Relationship Between Retirement Satisfaction and Attending a Retirement Meeting, by Income Category

	Percentage very satisfied	
Household income	Attended a retirement meeting	Did not attend
$50,000 or more	79.6	71.9
$30,000–$50,000	70.2	62.8
$15,000–$30,000	67.9	54.2
Under $15,000	42.5	38.1

Table 14. Ordered Probit Model Estimates of Retirement Satisfaction
(1=not at all satisfied, 2=moderately satisfied, 3=very satisfied)

	(1)	(2)	(3)
Social Security Reliance	-0.4002 ***	-0.0881	-0.0895
	(0.0584)	(0.0691)	(0.0691)
Pension Annuity Ratio	0.3704 ***	0.6323 ***	0.5311 ***
	(0.0700)	(0.0710)	(0.0738)
Ln(household income)	0.1800 ***		0.1090 ***
	(0.0193)		(0.0219)
Ln(household wealth)		0.1181 ***	0.0950 ***
		(0.0102)	(0.0112)
Health (1=excellent, 5=poor)	-0.3522 ***	-0.3393 ***	-0.3339 ***
	(0.0125)	(0.0127)	(0.0127)
Male	-0.0353	-0.0268	-0.0303
	(0.0300)	(0.0301)	(0.0301)
Separated or divorced	-0.2188 ***	-0.2280 ***	-0.1749 ***
	(0.0537)	(0.0533)	(0.0544)
Widowed	-0.0787 *	-0.1097 ***	-0.0545
	(0.0404)	(0.0389)	(0.0405)
Never married	0.1305	0.1109	0.1757 *
	(0.0955)	(0.0941)	(0.0951)
Age	0.0213 ***	0.0192 ***	0.0197 ***
	(0.0018)	(0.0018)	(0.0018)
Threshold 1	0.5386 **	0.0968	0.9898 ***
	(0.2466)	(0.1820)	(0.2576)
Threshold 2	1.8962 ***	1.4634 ***	2.3589 ***
	(0.2474)	(0.1832)	(0.2584)
Pseudo-R2	0.1079	0.1113	0.1123

Standard errors in parentheses.
Significance: '*'=10%, '**'=5%, '***'=1%

Table 15. Ordered Probit Model Estimates of Depression Symptoms
(Number of symptoms ranges from zero to nine.)

	(1)	(2)	(3)
Social Security Reliance	0.1112 **	-0.0739	-0.0741
	(0.0538)	(0.0652)	(0.0652)
Pension Annuity Ratio	-0.1075 *	-0.2333 ***	-0.2067 ***
	(0.0620)	(0.0627)	(0.0650)
Ln(household income)	-0.0710 ***		-0.0292
	(0.0175)		(0.0195)
Ln(household wealth)		-0.0613 ***	-0.0547 ***
		(0.0098)	(0.0109)
Health (1=excellent, 5=poor)	0.4399 ***	0.4316 ***	0.4300 ***
	(0.0115)	(0.0116)	(0.0117)
Male	-0.1593 ***	-0.1615 ***	-0.1606 ***
	(0.0264)	(0.0264)	(0.0264)
Separated or divorced	0.1736 ***	0.1629 ***	0.1489 ***
	(0.0453)	(0.0449)	(0.0458)
Widowed	0.2566 ***	0.2575 ***	0.2433 ***
	(0.0348)	(0.0335)	(0.0349)
Never married	0.0411	0.0365	0.0208
	(0.0808)	(0.0800)	(0.0809)
Age	-0.0001	0.0010	0.0008
	(0.0016)	(0.0016)	(0.0016)
Threshold 1	-0.1219	-0.1412	-0.3770
	(0.2245)	(0.1705)	(0.2307)
Threshold 2	0.6346 ***	0.6166 ***	0.3809 *
	(0.2247)	(0.1708)	(0.2309)
Threshold 3	1.1136 ***	1.0968 ***	0.8612 ***
	(0.2247)	(0.1708)	(0.2308)
Threshold 4	1.5236 ***	1.5077 ***	1.2722 ***
	(0.2246)	(0.1709)	(0.2308)
Threshold 5	1.8553 ***	1.8401 ***	1.6047 ***
	(0.2250)	(0.1712)	(0.2311)
Threshold 6	2.1679 ***	2.1536 ***	1.9182 ***
	(0.2248)	(0.1709)	(0.2309)
Threshold 7	2.4693 ***	2.4561 ***	2.2208 ***
	(0.2249)	(0.1707)	(0.2309)
Threshold 8	2.8267 ***	2.8153 ***	2.5798 ***
	(0.2255)	(0.1722)	(0.2316)
Threshold 9	3.3323 ***	3.3207 ***	3.0854 ***
	(0.2274)	(0.1783)	(0.2341)
Pseudo-R2	0.0680	0.0689	0.0689

Standard errors in parentheses.
Significance: '*'=10%, '**'=5%, '***'=1%