

The Impact of Misperceptions about Social Security on Saving and Well-Being

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Abstract

Earlier research suggests that many people in their fifties and early sixties are not well informed about their Social Security benefit entitlements in old age. This paper investigates the effect of deviations between predicted and realized Social Security benefits on several measures of well-being in retirement, such as the change in consumption expenditures at retirement, a self-assessed measure of how retirement years compare to the years before retirement, and whether the retired individual is worried about having enough income to get by. The analysis is based upon US data from the Health and Retirement Study, following individuals over a long time period from their fifties into retirement. We find that people who over estimated their Social Security benefits are worse off according to several measures of well being in retirement. This relationship seems to be more pronounced for respondents who claimed benefits earlier than anticipated than for those who were misinformed.

1. Introduction

How much people need to save for retirement depends to a large extent on the amount of retirement income they will receive, both from Social Security and in the form of employer provided pensions. Therefore, successful retirement planning requires that individuals form expectations about their retirement income and adjust their saving behavior accordingly. Failure to do so will result in sub-optimal outcomes in that a household will save too much, or save too little, depending on whether it over or under estimated retirement income. In this paper we study how individuals' expectations about future Social Security benefits compare to their subsequently received Social Security benefits and whether deviations are associated with systematic variation in well being in retirement. Social Security is the most important source of income for about 65% of the elderly population. If an individual approaches retirement with biased expectations about Social Security, this will have consequences for the living standard that the person will be able to maintain in retirement. Using longitudinal data from the Health and Retirement Study (HRS) we investigate whether the observed deviations between expected and realized Social Security benefits are associated with measures of well-being in retirement, such as a self-assessed evaluation of how post-retirement years compare to pre-retirement years, whether retired respondents are worried about having enough income to get by, and whether the household experienced unusually large drops in spending at retirement.

Individuals' realized Social Security benefits differ from their expectations as a result of two main mechanisms: (i) the person lacks sufficient information and could either be positively or negatively surprised when finding out what retirement income turns out to be; or (ii) the person experiences an unforeseen event or "shock," such as a health event, job loss, or another change that affects the person's earnings or retirement plans and therewith the person's realized Social Security benefits, usually resulting in a negative surprise. Several prior studies suggest that both mechanisms are likely to be important. For example, Gustman and Steinmeier (2001, 2003) and Mitchell (1988) document workers' lack of knowledge about their Social Security and pension benefits. As to health Hurd and Rohwedder (2003) document that poor health is an important reason for retirement for about 20 percent of retirees. Irrespective of the underlying cause of the deviations between expected and realized Social Security benefits, the

consequences for the individual are the same: the person experiences an unexpected shortfall (or, possibly, excess) in retirement resources with direct implications for well being in retirement.

This paper is related to two strands of literature. First, it contributes to the work on the adequacy of saving for retirement. Several papers have documented and investigated the large variation of wealth holdings at retirement observed in the population (e.g., Bernheim, Skinner and Weinberg, 2001; Scholz, Seshadri and Khitatrakun, 2004; Engen, Gale and Ucello, 1999). One aspect that none of these studies explores is that some of the observed variation in wealth may be due to heterogeneity in individuals' expectations, in particular expectations about retirement income that would lead otherwise similar individuals or households to save at a different rate. In this paper we pursue this line of thought and study to what extent this heterogeneity in expectations about retirement income leads to variation in retirement outcomes; as such the paper investigates a possible mechanism for the observed variation in retirement saving.

The second strand of related literature is on the 'Retirement-Consumption Puzzle' where some studies interpret the observed drop in spending at retirement as evidence that individuals are forced to reduce spending either due to a lower than expected actual level of resources available to them in retirement (Banks, Blundell and Tanner, 1998), or due to lack of forward-looking behavior (Bernheim et al., 2001). Several more recent studies have contributed to this topic (Ameriks, Caplin and Leahy, 2002; Aguiar and Hurst, 2005a & 2005b). A couple of studies consider observations on expectations in this context: For example, Haider and Stephens (2004) address the issue of the effect of unexpected retirement in the HRS on food spending by asking whether the decline could be explained by the difference between expected and actual retirement. Controlling for the difference between them, they find that the decline in food spending is reduced by about one third, still leaving an unexplained reduction. Hurd and Rohwedder (2003, 2006) study expectations and realizations about changes in spending at retirement and find little evidence that individuals were surprised about the drops in spending at retirement they experienced. Moreover, investigating the distribution of changes in spending at retirement, the authors find that drops in spending are not a population-wide

phenomenon - the drop in the mean of observed consumption changes is driven by large drops among a little less than 20 percent of the retirees. One identifiable group with unusually large drops in spending are those for whom poor health was an important reason for retirement, suggesting that earlier than expected retirement leads to a reduction in lifetime resources and therewith to a downward adjustment of consumption. In this paper we investigate another mechanism leading to unusually large drops (or changes more generally) in spending at retirement: if individuals over or under estimate their retirement income and find out about it at the time of retirement, i.e., when they receive their first Social Security and/or pension income, these individuals will need to make adjustments to their spending and saving behavior. The early papers on the retirement-consumption puzzle (Banks, Blundell and Tanner, 1998; and Bernheim, Skinner and Weinberg, 2001) already pointed at the possible relevance of this mechanism, but could not address it directly due to data limitations.

We study expectations and realizations of Social Security income, the form of retirement income that is almost universal in the population. The HRS has collected this information every wave since its inception in 1992. Rohwedder and Kleinjans (2004) show that individuals' response behavior and their expectations vary in a systematic manner with eligibility, time distance from claiming Social Security, and uncertainty (among other things). They point out that analyzing these data in a dynamic framework, exploiting the panel nature of the data, leads to different conclusions compared to prior studies (e.g., Gustman and Steinmeier, 1999) that relied on cross-sectional analysis. Rohwedder and Kleinjans find that immediately before retirement about thirty percent of the population say that they do not know what their Social Security benefits will be. Among those who report expected benefit amounts immediately before retirement, about fifty percent have fairly accurate expectations about their Social Security benefits – their estimates deviate less than ten percent from the amount they receive in the next wave. However, the remaining 50 percent are a reason for concern, in particular the 25 percent who over estimate their benefits by 10 percent or more. This is also the group that is most relevant to policy makers, forming an important fraction of the population that may have under saved for retirement.

While Rohwedder and Kleinjans (2004) focus on the expectations of Social Security income in the Health and Retirement Study (HRS) and comparing them to realizations after retirement, this paper goes one step further and related the deviations between expected and realized amounts to retirement outcomes. In an economic model in which individuals maximize expected utility over the remaining lifetime, a person who is surprised by the level of realized retirement income after leaving the labor force will have to adjust consumption to the new (then known) level of economic resources. To find out whether there is any evidence that people indeed adjust consumption expenditure to gaps between expected and realized retirement income, we deviations between individuals' expected and realized Social Security benefits to recollected changes in total spending at retirement.

For this purpose we link the HRS core data to the spending data collected in the Consumption and Activities Mail Survey, waves I and II – supplements to the HRS fielded in 2001 and 2003. This provides direct evidence on whether there are groups in the population who are surprised by their low income in retirement and as a consequence were forced to reduce spending. In addition, we investigate whether misperceptions about Social Security have an impact on subjective measures of well being in retirement. Individuals who have substantially over or under estimated their Social Security benefits and find out about this once they claim will be worse or better off than anticipated, and this may impact their subjective well being, as measured by *“how did retirement years turn out? (better, worse, or about the same);* and whether the retired individual is *“worried about having enough income to get by.”* To shed light on the extent to which deviations between expected and subsequently received Social Security benefits result from earlier than expected retirement or lower earnings due to poor health, we also relate deviations to whether poor health was an important reason for retirement.

We find evidence that people who over estimated their Social Security benefits are worse off according to several measures of well being in retirement. They tend to have larger negative consumption expenditure changes at retirement than those who under estimated or correctly estimated their benefits. Once retired, they have more worries about how to get by with the resources they have. They also more often report

that retirement years turned out worse than expected. In multivariate analyses, these conclusions remain valid, although significance levels are often low.

2. Data

The Health and Retirement Study (HRS) is a large-scale biennial panel survey of individuals born in 1947 and before. It collects data from four broad domains covering labor market activity, economic status, health, and family connections. The original HRS cohort included individuals born between 1931-1941 and their spouses. At the baseline interview in 1992, the HRS surveyed 12,652 individuals in 7,702 households, representative of the non-institutionalized population in the United States. In 1998 the survey was merged with the Study of Assets and Health Dynamics among the Oldest Old (AHEAD) and new cohorts were added. As a result HRS 2002 interviewed close to 20,000 individuals in about 13,000 households. For most of our analysis, we use the initial HRS cohort as well as the adjacent cohorts called “Warbabies” and “CODA”, born in the years 1942-1947 and 1924-1930, respectively, which were added to the HRS in 1998.¹

2.1 Social Security benefits: currently received and expected

For Social Security benefits the questionnaire sequence is arranged as follows: The financial respondent of the household is asked whether anybody (self or partner) currently receives benefits from Social Security. If so, the survey elicits who receives these benefits and asks about the amounts. If the financial respondent does not currently receive Social Security benefits the next question is:

“Do you expect to receive Social Security benefits at some time in the future?”

If the answer is “YES” then two more questions follow:

- *“At what age do you expect to start collecting these benefits?”* (___ AGE)
- *“If you start collecting Social Security benefits then, about how much do you expect the payments to be in today’s dollars?”* (___ AMOUNT)

¹ We use the RAND HRS data, version D, a user-friendly version of the HRS data prepared by the RAND Corporation funded by Social Security, with additional support from the National Institute on Aging.

If the spouse does not currently receive any benefits from Social Security the financial respondent answers the same sequence of questions regarding the spouse's expected future benefit receipt. In this case we attach the information about the spouse's situation to the spouse's own respondent-level record in order to have all the individual characteristics of the spouse readily accessible, while keeping track of who provided the information.

In 2002, several changes occurred. While the question about current Social Security receipt is, as before, answered by financial respondents for themselves as well as their spouses, financial respondent and spouse individually answer the questions about their own Social Security expectations. The skip pattern has also been slightly changed. Those for whom the financial respondent gave a "refuse" or "don't know" to the question about current receipt of Social Security benefits are not asked the expectation questions. This, however, only affects 50 individuals. In addition, those who did not give an expected claiming age were not asked the expected amount at that age. The format for item non-response on the amounts has also changed: in the waves from 1992 to 2000 there was no follow-up if the respondent did not give a value; in 2002 unfolding brackets were introduced.

For the analyses in this paper we use data from HRS waves 1 through 7, covering the period from 1992 to 2004. On the basis of the variables from this section of the survey instrument we study patterns over time in individual expectations and relate them to their real outcome equivalent, that is, the reported benefit amount when the respondent is first observed receiving it. The motivation for choosing these self-reported amounts as the benchmark rather than a calculated amount based on Social Security records is twofold. First, Social Security records are not available for all respondents.² Second, the Social Security records available for HRS respondents contain only information up to 1991.³ Therefore, we adopt the alternative approach of using observations on individuals' actually received Social Security benefits as observed in a later wave of the HRS. Individuals who have just claimed Social Security benefits have just gone through

² Social Security records are available for about 75% of all 1992 working respondents (66% of the entire sample); see Mitchell, Olson, and Steinmeier, 2000.

³ This is likely to change soon, because new permissions have been obtained from respondents and SSA will provide additional years of administrative earnings records and benefit receipts for HRS respondents. These were not yet available at the time of conducting this research.

what is likely the most intensive interaction of their life with the Social Security benefits system; this interaction is bound to positively impact the accuracy of their reports. Survey experience lends further support to this approach as respondent reports of regularly received amounts, like earnings or Social Security checks, have proven to be quite accurate. Hurd, Juster and Smith (2003) show for currently received Social Security benefits that the self-reports in the HRS are very accurate, and significantly more accurate than in the Current Population Survey. Second, using observations on actual receipts we do not have to rely on assumptions about future employment and earnings to obtain a measure of actual entitlements.

The guiding principle of the empirical analysis is to consider the first available self-report on received Social Security benefits as the most accurate observation available for each respondent. We then align the observations with reference to the date of first receipt of Social Security benefits, which ensures that comparisons are made across individuals with about the same distance from the date of first benefit receipt.

The resulting sample could potentially be not population representative as a result of right-censoring, that is not all HRS respondents have claimed Social Security benefits during the survey period. However, by 2004, the last wave of available data, this is not such an important problem anymore, because the vast majority of the HRS cohort has claimed Social Security benefits and the group who has not yet claimed consists mostly of younger spouses.⁴ To alleviate any remaining concerns we can compare sample statistics to outside data sources. Rohwedder and Kleinjans (2004) who employ the same strategy find that HRS observations on received Social Security benefits constructed in this way compare very closely to Social Security statistics. Here we also compare the distribution of the ages at which we observe respondents first claim Social Security in the HRS with the distribution published in Social Security statistics.⁵ Figure 1 shows the cumulative distributions of Social Security claiming ages for men, both as measured in the HRS and as

⁴ Only 650 out 9,825 original age-eligible individuals remain in the pool of those who have not yet claimed Social Security benefits.

⁵ The HRS interview queries respondents who report receiving Social Security benefits for the first time about the month and year when s/he started receiving these benefits. This allows us to obtain a more precise timing over and beyond the information in which HRS wave the individual is first observed receiving Social Security benefits.

published by Social Security; Figure 2 shows the cumulative distributions for women. The one measured in the HRS is closely comparable to that resulting from SSA statistics. The main differences around age 62 and 65 are due to a classification error in HRS regarding the exact age where some who are classified as 63 were actually still age 62 when starting to receive Social Security benefits. This slight shift can happen at any age, but shows most prominently at 62 and 63 in Figures 1 and 2, because of the large fraction of the population claiming at these particular ages.

2.2 Spending Change at Retirement

Observations on spending change at retirement come from the Consumption and Activities Mail Survey (CAMS). A random sample of 5,000 HRS households (38.2 percent of all households interviewed in HRS 2000) was asked to participate in CAMS. The questionnaires for CAMS wave 1 were sent out in October 2001.⁶ In married or partnered households it was sent to one of the spouses, chosen at random. There were 3,866 responses in the CAMS wave 1, which corresponds to a total response rate of 77.3 percent.

In October, 2003, CAMS wave 2 was sent to the same households. The structure of the questionnaire was almost the same so as to facilitate panel analysis. The response rate in CAMS wave 2 was 78.3 percent.⁷

CAMS has three main topics: Part A is about activities or uses of time; Part B collects data on spending, including anticipations and realizations about changes in spending at retirement; and Part C asks information about marital status and labor force participation.⁸

The main variable of interest in our analysis is recollected spending change at retirement which comes from the following question sequence in the CAMS questionnaire:⁹

⁶ See Hurd and Rohwedder (2005) for a more extensive description of CAMS.

⁷ Response rates are lower bounds in that they are not adjusted for mortality or undeliverable questionnaires.

⁸ In wave 1 of CAMS section C included in addition questions about prescription drug usage.

⁹ The CAMS questionnaires for wave 1 and 2 are accessible online at <http://hrsonline.isr.umich.edu/meta/2001/cams/qnaire/cams01abc.pdf> for CAMS wave 1 and <http://hrsonline.isr.umich.edu/meta/2003/cams/qnaire/cams2003.pdf> for CAMS wave 2.

Excerpt from the CAMS Questionnaire:¹⁰

We would like to understand more about spending in retirement. Are you retired?

_____ Yes → **Complete BOX A**

No → **Complete BOX B**

BOX A – Retired:	BOX B – Not Retired:
<p>a. How did your TOTAL spending change with retirement? _____ Stayed the same → Go to c _____ Increased _____ Decreased</p>	<p>d. How do you expect your TOTAL spending to change with retirement? _____ Stay the same → Go to f _____ Increase _____ Decrease</p>
<p>b. By how much? _____ %</p>	<p>e. By how much? _____ %</p>
<p>c. For the items below, check (✓) whether the spending increased, decreased or stayed the same in retirement:</p>	<p>f. For the items below, check (✓) whether you expect spending to increase, decrease or stay the same in retirement:</p>

Retirement is self-reported by the addressee of the CAMS questionnaire. For those individuals who state that they are retired we derive the percentage change in total that they report to have experienced at retirement, that is we combine the answers to B38a and B38b, and link the responses to the expectations and realizations of Social Security benefits for the same respondents who answered this section in CAMS. For those respondents, where we do not observe this measure in CAMS wave 1, we use the measure from CAMS wave 2 if available.

2.3 Subjective Measures of Well-being in Retirement

These measures come from the HRS core survey where they are collected in the employment section. We use the responses to the following questions:

“Thinking about your retirement years compared to the years just before you retired, would you say the retirement years have been better, about the same, or not as good?”¹¹

¹⁰ Question B38 in CAMS wave 1; question B44 in CAMS wave 2.

and

“I’m going to read you a list of reasons why some people retire. Please tell me whether, for you, these were very important reasons for retirement, moderately important, somewhat important, or not important at all. [...] Poor health.”¹²

These two questions are not asked every wave; they are only asked the first time a respondent reports to be partly or fully retired (as opposed to working). In case of partly retired the question is asked again in the subsequent wave until the respondent says to be fully retired. Once fully retired the question is not asked again.

Another variable we use is obtained from the answers to the following attitudinal question, asked when the individual is completely retired:

“Now for things that some people say are bad about retirement. Please tell me if, during your retirement, they have bothered you a lot, somewhat, a little, or not at all. [...] Not having enough income to get by.”

Each of these three measures should capture signs of distress that might result from negative surprises about retirement income.

3. Results

We first show descriptive statistics, looking at the association of deviations between expected and realized Social Security benefits with variables that capture retirement outcomes. Second, we analyze regression models explaining retirement outcomes from the deviation between expected and realized benefits and a set of other control variables such as education and wealth.

¹¹ Question G137 in HRS 2000.

¹² Question B138a in HRS 2000.

Table 1 presents the fraction of respondents who report “don’t know” when asked for the expected benefit amount. Respondents are categorized by their “time distance to first receipt.” Thus an observation in 1992 of a respondent who starts receiving benefits in 1997 is categorized as 3 waves prior to claiming, since 1998, 3 waves after 1992, will be the first wave when this person is observed as receiving benefits. The fraction “don’t know” declines considerably as respondents approach the time they will claim Social Security. This is because the uncertainty about events that affect the individual’s benefit reduces as the distance to retirement shortens. Rohwedder and Kleinjans (2004) provide evidence that individuals who face more uncertainty (e.g., a higher subjective probability of job loss, a higher risk of health shock, or more uncertainty about the timing of retirement) are more likely to report that they do not know how much their Social Security benefit will be. In addition, the relevance of knowing more precisely how much Social Security benefits will be increases the closer respondents get to actually claiming these benefits.¹³ On the other hand, if people were perfectly forward looking (also with respect to any uncertain related events) and information were free of cost, their savings for retirement would already depend on expected benefits long before they retire, and everyone should be informed about their benefit levels.

Now focusing on those who reported expected benefit amounts we want to find how accurate these reported expectations are. We compare expected benefits just before claiming with received benefits just after claiming, i.e. we find the first HRS wave when the individual is observed receiving Social Security benefits and compare those benefits to the expected benefits reported in the wave immediately before. The deviation is defined as the received amount minus the expected amount in the previous wave, so that a positive number implies that the individual underestimated future benefits, and a negative number implies that the individual overestimated future benefits. Table 2 shows

¹³ Note that in most HRS waves respondents were only asked for their point estimates of future Social Security benefits, without any follow-up in case of non-response. Several years before claiming benefits respondents may be more willing to give ranges in which they think their Social Security benefits will fall rather than a point estimate, because they also know that the exact amount still depends on a number of factors. Indeed, when unfolding brackets for item non-response on expected Social Security benefits were introduced in 2002, many initial non-respondents appeared to be willing to answer the bracket questions, so that complete item non-response fell dramatically (about 12 percent for members of the original HRS cohort who were in their 60s in 2002).

summary statistics of the deviations. In the first column the deviations are expressed in absolute dollar amounts. At the mean and at the median, expected and subsequently received amounts are about the same. At the 10th and 90th percentile the deviations amount to about (plus or minus) three thousand dollars. Whether this is a big number or a small number for the individual depends on the size of the individual's benefits. It may therefore be more interesting to look at percent deviations.

Column 2 of Table 2 presents summary statistics of the percent deviations computed at the individual level (deviation between received and expected benefit divided by received benefit). The expected amount of the median person is spot-on, in the sense that it is within 0.5 percent of the subsequently received benefit. At the mean we observe overestimation of future benefits of about seven percent. Considering further points on the distribution of the percent deviations, for example the 25th and 75th percentiles, we find that for fifty percent of the population (those between the 25th and 75th percentile) expected benefits lie within 11 percent of their subsequently received benefits. For this part of the population expectations seem to be reasonably accurate. However, for the other half of the population, expectations appear not to be accurate *ex post*: 25 percent of the population overestimate their benefits by 10 percent or more; and another 25 percent underestimate their benefits by 12 percent or more. One might be particularly concerned about the former group: these are respondents who overestimate their benefits and therefore may well have under saved. Note that underestimation is not necessarily a sign of lack of knowledge or planning as this group includes people who retired earlier than anticipated, possibly due to a health shock or other unanticipated events. Nevertheless, the concern that they have not accumulated enough wealth to maintain their living standard in retirement (given their new situation) remains.

Table 3 shows the same summary statistics, but includes in the sample those respondents who did not expect any Social Security benefits in the future (see description of question sequence in section 2.1). For this table we treat these responses as continuous reports of zero dollars in future Social Security benefits. Compared to Table 2 this adds observations only on one side of the distribution, i.e., all these respondents underestimated their benefits. As expected, this makes the distribution of deviations shift

to the right compared to Table 2. It is likely that measurement error is more important among this additional sample than in the rest of the population, because some respondents may have interpreted the question as asking about future Social Security benefits on their own record, which some may have denied, but then received Social Security benefits on a current or former spouse's record later on. While we cannot assess how important a problem this is, this type of measurement error is not random. In subsequent tables we therefore exclude those who said that they did not expect future Social Security benefits.¹⁴

To the extent that individuals are surprised about their Social Security benefits at retirement, they ought to adjust their spending patterns in ways that differ systematically from the rest of the population. There are a number of reasons why spending might change in retirement even in the absence of such surprises (Miniaci, Monfardini and Weber, 2003; Hurd and Rohwedder, 2003 and 2006): work-related expenses cease, households may use the additional time on their hands to increase home production (gardening, home-cooked meals etc.), and some may engage in leisure activities that require additional expenses, such as travel. In the context of our analysis we are interested in whether there is systematic variation in the changes in spending at retirement as a function of whether and to what extent respondents over or under estimated their Social Security benefits. Respondents who over (under) estimated their benefits will find out when they first start claiming. They will adjust their expectations on future income downward (upward) and will accordingly update their consumption plans in the same direction.

We present the descriptive evidence in two ways. First, Table 4 shows a cross tabulation of categories of spending change at retirement and within these, the mean percent deviation of expected (at t-1) from realized Social Security benefits; second we show in Tables 5 and 6 average spending changes at retirement as a function of whether the individual over or underestimated future Social Security benefits immediately before claiming benefits.

¹⁴ Only in the final tables in which we present the results from estimations we include this sample and assign a specific categorical variable.

Table 4 is based upon a rather small number of respondents – only those who are included in the HRS Consumption mail out survey in 2001 and 2003 who retired.¹⁵ Still, it quite clearly suggests a relation between over estimation of Social Security benefits and reducing consumption at retirement. Respondents whose consumption fell by 30% or more on average over estimated Social Security benefits by almost 7% per year. On the other hand, for example, those whose consumption did not fall after retirement on average estimated their Social Security benefits almost correctly.

Table 5 looks at the same relationship, but from a different angle. It classifies the sample by whether respondents over or underestimated their future Social Security benefits, and computes the average spending change at retirement for each of these two groups separately. We find a slightly higher drop in spending at the mean for those who overestimated (-12.9 percent) compared to those who under estimated (10.9 percent).

For some respondents, retirement lies several years in the past and the question about how spending changed at the time may be hard to answer due to difficulties of recalling the information. Table 6 presents the evidence from Table 5, but restricts the sample to those who claimed Social Security benefits within 3 years of the observation on spending change at retirement. This further reduces the number of observations, to 488 respondents. Still, it shows a clearer difference: those who *over* estimated their Social Security benefits reduced spending at retirement by about 13.3 percent, on average; and those who *under* estimated benefits on average reduced spending at retirement by about 9.9 percent.

Table 7 shows percent deviations by categories of whether somebody, once he or she has started claiming, reports to be worried about having enough income to get by (in retirement). There is a clear association between the two variables. Those who are worried a lot about not having enough income to get by are also the respondents who tend to have had negative surprises, suggesting that they over estimated their benefits and have not built up enough retirement wealth to enjoy their retirement without financial concerns.

¹⁵ For some respondents retirement lies several years in the past; see Table 6 for a sub-sample of more recent retirees.

Table 8 classifies respondents by how retirement years compare to the years just before retirement. We find that those who report that their retirement years are not as good as pre-retirement years also had larger deviations between expected and realized Social Security benefits. They more often have tended to over estimate their resources in retirement, and the lower than expect income may imply that their economic well being in retirement is disappointing in that they had to adjust their standard of living downward.

Table 9 looks at whether poor health was an important reason for retirement. Again we find a clear gradient: respondents with a negative health shock that forced them to retire earlier than expected often received lower Social Security benefits than they anticipated. This is in line with the fact that early retirement leads to early claiming, and early claiming reduces the level of Social Security benefits.

To analyze whether the relation between over or under estimation of Social Security benefits and the consumption change at retirement sustains when third factors are controlled for, we estimated an ordered logit model that has as its left hand variable a categorical variable for the consumption change. Four categories are distinguished: a drop larger than 30% (1), a drop of less than 30% (2), no change (3), and any increase of consumption at retirement (4). We estimated several specifications. The sample for estimation (N=912) includes respondents who said that they do not know how much they will get from Social Security at t-1, as well as those who said that they did not expect any benefits. The set of covariates includes either the absolute deviation or the percent deviation between expected and realized benefits as one of the explanatory variables, depending on the specification; an index for not knowing the future benefit level, as well as interactions of this with education categories. The benchmark education level is less than high school.

Not all that surprisingly, sample size poses difficulties in obtaining sufficiently precise estimates that are significant at conventional levels. Nevertheless, all specifications yield estimates for our main variable of interest of the expected sign. Table 10 shows the specification where the deviations between expected and subsequently received benefits are expressed in absolute terms (thousand dollars). We

find an effect of the deviation between expected and realized benefits that is significant at the two-sided 10% level and has the expected sign – those who over estimated their benefits (negative deviation) have the largest chance of a negative consumption drop, and those who under estimated their benefits have a better chance of a positive consumption change at retirement. The magnitude of the effect is expressed in terms of an odds ratio, and its estimate is almost 1.05. The interpretation is as follows. Suppose we know that respondents are in one of two adjacent categories, say a spending change of less than –30% and a spending change between –30% and 0. The odds ratio then implies that a deviation that is one unit or one thousand dollars per year higher (i.e., less over estimation or higher under estimation) makes it about 5% more likely that the respondent is in the higher of two categories, i.e., in the category between –30 and 0. This seems a fairly sizeable effect, given that most under and over estimates are in the order of at least this magnitude (see Table 2, 25th and 75th percentile in column 1) and given that the average benefit is about 10 thousand dollars a year.

Low educated respondents who don't know their expected benefits, have better consumption changes at retirement than similar respondents who predict their social benefits exactly (deviation=0). It is not clear why. Again, this effect is significant at the 10% level. The interaction terms of education categories with “don't know expected benefit amount” show odds ratios substantially below 1, which means that the same does not apply to the higher education levels.

Households with female financial respondents have larger negative consumption changes than households with a male financial respondent, and the difference is significant at the two-sided 5% level. This seems to deserve further research, it is not immediately clear how to explain this.¹⁶ We also included a categorical variable to

¹⁶ Note that the financial respondent reports the expected benefit for the spouse in waves 1 through 6. To the extent that the spouse of the financial respondent qualifies for Social Security benefits on the earnings record of the financial respondent the reports maybe more accurate than if the spouse had to report him or herself. On the other hand, if the spouse qualifies on his or her own record the survey design is such that the financial respondent reports on earnings records and benefits of somebody else. Therefore, interpretation of the finding that female financial respondents have larger negative consumption changes than households with a male financial respondent is not straightforward.

distinguish respondents who said prior to receiving Social Security that they did not expect any benefits, but this group does not show any significant difference.

In Table 11 we present the specification that expresses the deviations between expected and subsequently received Social Security benefits as a percent of the benefits ultimately received. This specification has the advantage that it relates the size of the deviation to the size of the actually received benefit at the individual level and as such captures whether the deviation is important relative to the benefit amount. Again, the parameter of primary interest shows the expected sign: an increase in the percent deviation of 100 percent (e.g. moving from an expectation exactly equal to the realization to an underestimation of 100 percent) increases the chances of having a consumption increase (or less of a drop) by 25 percent. Even though the estimate is not significant at conventional levels (p -value = 0.169) it is robust to various alternative specifications. The estimated effects of other covariates in Table 11 show the same signs and magnitudes as the specification in Table 10 and hence have the same interpretation.

Finally, we would also like to know whether the effect of primary interest differs depending on whether the deviation between expected and later received benefits is due to lack of information or whether it is due to shocks that lead to earlier than anticipated retirement and claiming of benefits. This distinction matters because if lack of information plays an important role, policies to improve individuals' knowledge about their Social Security entitlements might be called for. If, however, adverse stochastic events like a health shock were the main driving force generating the deviations between expected and later received Social Security benefits, the policy implications would be quite different: such a finding would underline the importance of Social Security income for some of those early claimers and the potentially aggravating effects if eligibility for earliest receipt of Social Security were to be increased. To shed light into this issue we estimated the same ordered logit model separately for those whose expected claiming age coincides with the actual age at which they start claiming, and for those who claimed earlier than they anticipated, shown in Tables 12 and 13, respectively. The main result is that the estimated effect of the deviations between expected and subsequently received benefits becomes economically and statistically insignificant when estimated over those

who claimed benefits at the anticipated time, while the effect becomes considerably larger when estimated only over those who claimed early: an increase from zero deviation to a 100 percent deviation (i.e., under estimation of benefits by 100 percent) now raises the likelihood of a consumption increase at retirement by about 35 percent. Despite the substantial reduction in sample size the p-value on this estimate is about the same as in the regression over the entire sample in Table 11. Apparently for the sample of early claimers the deviations are sizeable and their relationship to consumption changes are strong enough to yield effects of the same significance level as in the estimation over the full sample; whereas for those who claimed at the expected time the effects are not distinguishable from observation error, at least not with such a small sample.

4. Conclusions

There persists a considerable amount of controversy in the economics literature as to how to explain the large variation in wealth holdings at retirement. One aspect that has been difficult to assess in empirical studies is the role of expectations regarding future retirement income and how it influences saving behavior. In this paper we investigated the effect of deviations between predicted and realized Social Security benefits on several measures of well-being in retirement, such as the change in consumption expenditures at retirement, a self-assessed measure of how retirement years compare to the years before retirement, and whether the individual is worried about having enough income to get by in retirement. Using longitudinal data from the Health and Retirement Study, we found clear evidence that people who over estimated their Social Security benefits are worse off according to several measures of well being in retirement. They tend to have larger negative consumption expenditure changes at retirement than those who under estimated or correctly estimated their benefits. Once retired, they have more worries about how to get by with the resources they have. They also more often report that retirement years turned out worse than expected. In multivariate analyses, these conclusions remain valid, although significance levels are sometimes low. This relationship seems to be more pronounced for respondents who claimed benefits earlier than anticipated than for respondents who were simply misinformed.

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Figure 1: Cumulative Distribution of Social Security Claiming Ages - Men

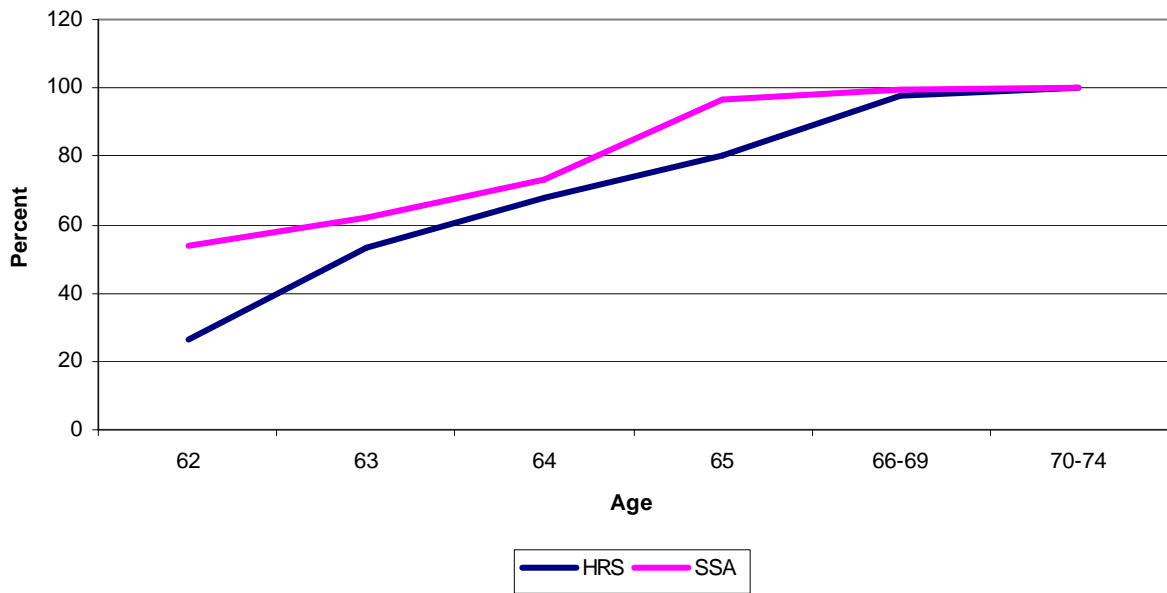
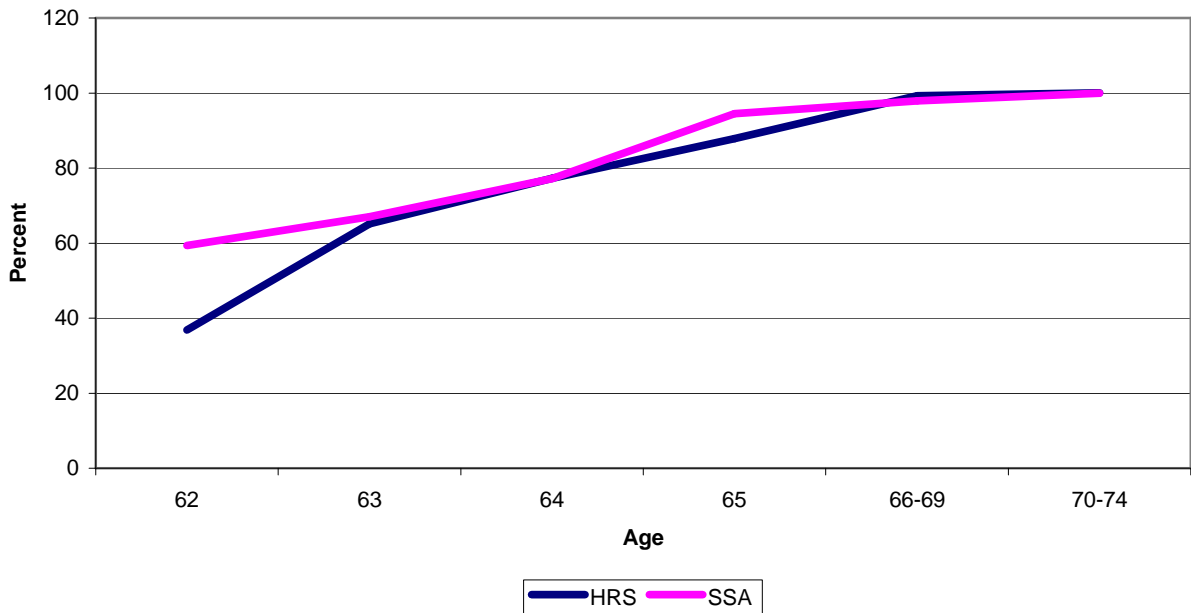


Figure 2: Cumulative Distribution of Social Security Claiming Ages - Women



Source: Authors' calculations on HRS data and Social Security Annual Supplement, 2005 (<http://www.ssa.gov/policy/docs/statcomps/supplement/2005/6b.html>).

Table 1. Percent of “Don’t know” responses and continuous responses on expected Social Security benefits, by distance from first receipt

Number of waves prior to claiming	<i>N</i>	Don’t know amount	Reports expected amount	All
1	6,483	27.1	72.9	100.0
2	5,844	34.7	65.3	100.0
3	4,844	39.2	60.8	100.0
4	3,808	42.1	57.9	100.0
5	2,636	49.7	50.3	100.0

Authors’ calculations. Counting as continuous reporters those who report that they do not expect any future Social Security benefits (see description of question sequence in Section 2 for details). We interpret these as expecting zero dollar in Social Security benefits

Table 2. Deviations between received and expected Social Security benefits among those who expected future benefits

	Thousand dollars (2004 \$)	Percent
Mean	0.13	-7.3
Percentile		
10 th	-2.76	-34.6
25 th	-0.86	-10.2
50 th	0.04	0.6
75 th	1.20	11.9
90 th	3.27	30.0
<i>N</i>	4,013	4,013

Source: Authors' calculations. Excludes those who do not expect any future benefits from Social Security at the wave preceding first receipt of Social Security income.

Table 3. Deviations between received and expected Social Security benefits, including those who did not expect future benefits

	Thousand dollars (2004 \$)	Percent
Mean	0.59	-0.3
Percentile		
10 th	-2.55	-32.0
25 th	-0.76	-8.6
50 th	0.14	1.6
75 th	1.62	15.7
90 th	4.73	52.1
<i>N</i>	4,295	4,295

Source: Authors' calculations.

Table 4. Percent deviations of expected from received Social Security benefits, by categories of recollected spending change

Recollected spending change	Mean	N
Drop by 30% or more	-6.8	144
Drop by less than 30%	-6.3	139
no change	-1.8	326
increase	-0.9	57
All	-3.7	666

Source: Authors' calculations.

Table 5. Recollected Percent Change in Spending at Retirement, by whether the respondent over or underestimated Social Security benefits at t-1.

Deviation	Recollected spending change	
	Mean [percent]	N
Overestimate (received < expected)	-12.2	311
Underestimate (received > expected)	-10.9	355
All	-11.5	666

Source: Authors' calculations.

Table 6. Recollected Percent Change in Spending at Retirement, by whether the respondent over or underestimated Social Security benefits at t-1. Restricting sample to spending change being observed within 3 years of first Social Security benefit receipt

Deviation	Recollected spending change	
	Mean [percent]	N
Overestimate (received <= expected)	-13.3	213
Underestimate (received >= expected)	-9.9	275
All	-11.4	488

Source: Authors' calculations.

Table 7. Percent deviations of expected from received Social Security benefits, by categories of worry about having enough income to get by in retirement

How worried about having enough income to get by in retirement	Percent Deviation	
	Mean	N
A lot	-11.9	541
Somewhat	-4.0	518
A little	-4.1	337
Not at all	-6.1	999
All	-6.7	2,395

Source: Authors' calculations.

Table 8. Percent deviations of expected from received Social Security benefits, by categories of how retirement years compare to pre-retirement years

How retirement years compare to years before retirement	Percent Deviation	
	Mean	N
Better	-5.2	973
About the same	-5.3	531
Not as good	-14.7	236
All	-6.5	2,395

Source: Authors' calculations.

Table 9. Percent deviations of expected from received Social Security benefits, by categories of how important poor health was as a reason for retirement

Importance of poor health as a reason for retirement	Percent Deviation	
	Mean	N
Very important	-11.0	347
Moderately important	-5.8	140
Somewhat important	-2.8	142
Not at all important	-5.8	1,526
All	-6.5	2,155

Source: Authors' calculations.

Table 10. Ordered logistic regression for categories of spending change at retirement, deviations of expected from received Social Security benefits entered in levels

Covariates	Odds Ratio	P> z
received SS benefits minus expected SS benefits	1.048	0.083
Education –less than HS	(ref)	--
high school	0.969	0.879
some college	0.739	0.190
college or more	1.037	0.885
Don't know expected benefit (DDK)	1.656	0.092
DDK * high school	0.571	0.132
DDK * some college	0.465	0.105
DDK * college or more	0.230	0.006
Expects no SS benefits at t-1	0.697	0.310
Financial respondent at t-1	0.827	0.234
Female	0.740	0.024
Hispanic	0.669	0.142
Married/partnered at t-1	1.179	0.289
Wealth tertile – lowest	(ref)	--
second	0.923	0.634
highest	1.776	0.001

Other included covariates: Missing flag for missing information on Social Security benefit information due to skip patterns. N = 912.

Table 11. Ordered logistic regression for categories of spending change at retirement, deviations of expected from received Social Security benefits expressed in percent of received benefits

Covariates	Odds Ratio	P> z
Percent deviation ((received minus expected SS benefits)/received SS benefits)	1.246	0.169
Education –less than HS	(ref)	--
high school	0.954	0.821
some college	0.730	0.172
college or more	1.007	0.979
Don't know expected benefit (DDK)	1.604	0.114
DDK * high school	0.582	0.146
DDK * some college	0.472	0.111
DDK * college or more	0.238	0.008
Expects no SS benefits at t-1	0.772	0.451
Financial respondent at t-1	0.824	0.225
Female	0.737	0.022
Hispanic	0.690	0.174
Married at t-1	1.178	0.292
Wealth tertile – lowest	(ref)	--
second	0.928	0.656
highest	1.776	0.001

Other included covariates: Missing flag for missing information on Social Security benefit information due to other reasons than items non-response. N = 912.

Table 12. Ordered logistic regression for categories of spending change at retirement, deviations of expected from received Social Security benefits expressed in percent of received benefits, sub-sample: claimed benefits at expected time

Covariates	Odds Ratio	P> z
Percent deviation ((received minus expected SS benefits)/received SS benefits)	1.052	0.846
Education –less than HS	(ref)	--
high school	0.914	0.758
some college	0.514	0.038
college or more	0.901	0.765
Don't know expected benefit (DDK)	1.310	0.527
DDK * high school	0.542	0.255
DDK * some college	0.843	0.798
DDK * college or more	0.275	0.097
Financial respondent at t-1	1.143	0.544
Female	0.913	0.619
Hispanic	0.657	0.348
Married at t-1	1.478	0.078
Wealth tertile – lowest	(ref)	--
second	0.889	0.624
highest	2.125	0.002

Other included covariates: Missing flag for missing information on Social Security benefit information due to other reasons than items non-response. N = 469.

Table 13. Ordered logistic regression for categories of spending change at retirement, deviations of expected from received Social Security benefits expressed in percent of received benefits, sub-sample: claimed benefits earlier than expected

Covariates	Odds Ratio	P> z
Percent deviation ((received minus expected SS benefits)/received SS benefits)	1.342	0.163
Education –less than HS	(ref)	--
high school	1.068	0.833
some college	1.025	0.942
college or more	1.189	0.646
Don't know expected benefit (DDK)	2.089	0.088
DDK * high school	0.547	0.253
DDK * some college	0.286	0.064
DDK * college or more	0.186	0.026
Expects no SS benefits at t-1	0.694	0.346
Financial respondent at t-1	0.535	0.270
Female	0.565	0.011
Hispanic	0.660	0.004
Married at t-1	0.900	0.234
Wealth tertile – lowest	(ref)	--
second	0.943	0.804
highest	1.418	0.157

Other included covariates: Missing flag for missing information on Social Security benefit information due to other reasons than items non-response. N = 443.