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# Managing the Risk of Life

Adeline Delavande and Robert J. Willis

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Adeline Delavande
RAND

Robert J. Willis
University of Michigan

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## Abstract

We analyze the role of individual's and spouse's survival expectations and knowledge about Social Security rules on the expected Social Security claiming age, taking into account the various incentives faced by single and married individuals. We find that single men and women who expect to be long-lived plan on delaying Social Security claiming. When we allow for differential effects of survival on knowledge about Social Security rules, subjective survivals matter only for single women who are knowledgeable about the penalty associated with early claiming. Knowledge is not so important in the decision of single men. The claiming decision of married individuals is more complicated, as they are entitled to spouse's and survivor's benefits. Consistent with the incentives provided by the institution, we find that married men base their expected claiming age on their spouse's survival expectations but not on their own survival. For married women, both own and spouse's subjective survivals influence positively the timing of claiming. Knowledge about Social Security rules affects the expected claiming age of both married men and women.

**Authors' Acknowledgements**

**Introduction**

An individual eligible to receive Social Security (SS) benefits may first claim benefits at age 62 or may delay claiming benefits until a later age. By delaying, the individual receives an increase in future monthly benefits according to an actuarial adjustment designed to make the present value of lifetime benefits constant for a person whose life expectancy is equal to the mean life expectancy of a person of that age. Standard economic theory predicts that individuals decide to delay claiming of their SS benefits if doing so increases their expected lifetime utility. In particular, Life Cycle Models predict that single individuals who expect to be long-lived will delay applying for benefits because they perceive the increase in SS benefits they will receive from claiming later will be financially beneficial. The claiming decision for married individuals is more complicated because spouses are entitled to spouse's and survivor's benefits and can adopt a joint strategy to maximize the total lifetime amount the couple receives from SS.

In recent papers, Delavande, Perry and Willis (2006) and Hurd, Smith and Zissimopoulos (2004) analyze the effect of subjective survival *expectations* on the probability of SS claiming using data from the Health and Retirement Study (HRS). In their empirical results, Hurd, Smith and Zissimopoulos (2004) find a small effect of survival expectations on claiming decisions. By using instrumental variable techniques to correct for potential measurement errors in the survival expectations, Delavande, Perry and Willis (2006) find larger effects. Coile *et al.* (2002) address a similar question and analyze the effect of survival beliefs on the claiming decision of men by using ex-post realized mortality by age 70 to proxy mortality expectations. Because they do not have data on expectations, their strategy relies on the assumption that individuals are able to forecast their own mortality. They find a large and significant effect of vital status at age 70 on delay in claiming after retirement.

Two important aspects of the decision-making process are over-looked in those studies: (1) Individuals will delay claiming when beneficial *only if* they are aware that delaying claiming is associated with larger monthly SS benefits in the future, and (2) Married individuals may take into account the survival of both spouses and the benefits of both spouses when deciding to claim in order to maximize the lifetime SS benefits received by the *couple*, rather than by the individual. In this paper, we analyze the role of individual's and spouse's survival expectations and knowledge about SS rules on the decision to claim SS benefits. Our innovation is to take into

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account the incentives provided by SS to married respondents as well as individual's knowledge about SS rules.

We take advantage of unique data collected in the HRS 2004 that provide information on whether individuals are aware that claiming early reduces benefits: Respondents are asked to estimate their expected benefits if they were to claim at age 62 and at their normal retirement age (NRA). There has been previous work looking at the role of information in financial decision making. For example, several studies have assessed the effects of financial education in the workplace on private savings or contributions to pension funds, yielding some evidence that such information provision activities have beneficial effects (Bernheim and Garrett, 2003; Lusardi, 2004; McCarthy and Turner, 2000). Other work is concerned with what individuals know about their own pension plans and SS benefits and how this knowledge relates to observed behaviors (Mitchell 1988, Gustman and Steinmeier 2001, Chan and Stevens 2004). The conclusion is that misinformation and lack of knowledge seem to be widespread. Importantly, Chan and Stevens (2004) find that better-informed people are more responsive to the retirement incentives provided by their pensions but that lesser-informed respondents are actually responsive to inaccurately perceived incentives.

Using the HRS 2004 data, we find that 46% of respondents report not knowing what their SS benefits might be conditional on various claiming ages, and 14% are not aware that their SS benefits would be reduced if they claim before their NRA. There are important gender, age, education and ethnicity differences in knowledge (and perception of knowledge) about the effect of claiming age on the level of benefits. For example, women are much more likely than men report that they do not know their expected SS benefits conditional on various claiming ages (51% compared to 39% of men).[1] Respondents with more education are more likely to report their expected benefits and to correctly know the effect of claiming age on benefits than respondents with lower education. Black and Hispanic respondents are more likely to report that they do not know what their conditional benefits would be than their counterpart. In addition, the proportion of black respondents reporting an incorrect effect of claiming age is higher than that of non-Blacks (18% versus 13%). The lack of knowledge among underprivileged groups, such as

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[1] This finding is in line with other work indicating that women display much levels of financial literacy (Lusardi and Mitchell, 2007).

respondents without high-school degree or Blacks, is worrisome as they might rely heavily on SS benefits during their retirement.

Our empirical analysis evaluates the effect of survival expectations on the expected claiming age (ECA) reported by respondents in the 2004 HRS. The advantage of using ECA is that it is measured simultaneously with the survival expectations and the knowledge of SS rules, both of which could evolve through time. We find that **single men** and **women** base their claiming decisions on their **survival probabilities**. As predicted by theory, individuals who expect to be long-lived plan on delaying SS claiming. Knowledge about the penalty influences single men and women differently. Women who know that claiming at 62 reduces SS benefits compare to claiming at the NRA –which is the case of 36% of single women – are more likely to expect to delay claiming than women who do not answer the questions about expected SS benefits and than women who do not know about the penalty for early claiming. Moreover, when we allow for differential effects of survival on knowledge, the coefficient associated with subjective survival is statistically significant only for women who **know** about the penalty. For men, knowledge about penalty is not statistically significant when estimating expected claiming age. Moreover, when we allow for differential effects of survival on knowledge, we find that the coefficient of subjective survival is statistically significant for all men who provided their expected SS benefits if they were to claim at age 62 and at NRA, independently of whether they knew about the penalty, but it is not significant for men who did not answer the knowledge question.

The institutional features for couples are likely to influence the claiming decisions of married individuals. In particular, women who tend to be entitled to smaller benefits on their own record and who might live longer than their husband may rely heavily on their husband's benefits. A husband's early claiming will reduce his own benefits and the survivor's benefits of his wife, but *not* the spouse's benefits of his wife. A wife's early claiming for own or spouse's benefits reduces those benefits, but not her survivor's benefits (Munnell and Soto 2005). We find that married respondents are responsive to those institutional features. In particular, **married men** base their expected claiming age on their **spouse's survival** expectations but **not** on their **own** expectations: husbands who expect their wife to be long-lived report a higher ECA. This is consistent with the fact that husbands want to maximize the survivor's benefits that their wife will received, which depends on the husband's claiming age. For **married women**, however,

both **own** and **spouse's** subjective survival has a statistically significant influence on the ECA, and the coefficients are positive and of similar magnitude. The fact that, everything else equal, a married woman whose husband has higher subjective survival expect to claim later is consistent with the fact that she expects to rely on spouse's benefits (or own), rather than survivor's benefits, for a long period. This spousal (or own) benefits are *reduced* when a woman claims early. We also find that women married to an older husband expect to claim earlier. This result is consistent with the fact that those women expect to rely on survivor's benefits for a longer period, which is *not* affect by their claiming age. Those women probably plan to enjoy reduced spouse's or own benefits for a short period before receiving survivor's benefits. If we allow for a differential effect of survival by **knowledge**, we find, like for single women, that the coefficient of own subjective survival is statistically significant only for women who know about the penalty incurred by claiming early. Married men who do not know that claiming early reduces SS benefits expect to claim earlier.

## I.        The data: the Health and Retirement Survey

The HRS is a nationally representative panel survey of persons born in 1953 or earlier, designed to investigate retirement behavior and its implications on the health, social, and economic status of the aging population in the US. Various cohorts were enrolled at different points in time and were interviewed every two years after enrollment. Spouses of age-eligible respondents were also interviewed regardless of age.[2]  The present paper uses respondents from the 2004 wave, which combines the following cohorts: (a) the original HRS cohort of those born in 1931 through 1941 and studied since 1992; (b) the AHEAD cohort of those born between 1890 and 1923 and studied since 1993; (c) the Children of the Depression Age cohort of those born between 1924 and 1930 and (d) the War Babies cohort of those born between 1942 and 1947, both added to the HRS in 1998; and (e) the Early Baby Boomers cohort of those born between 1948 and 1953, who were added in 2004.

### 1.1. Expected Claiming Age in the HRS

The HRS asks respondents who do not receive SS benefits the following questions:

"*Do you expect to receive Social Security benefits at some time in the future?*"

If the answer is "YES" then two more questions follow:

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[2] Source: HRS website at http://hrsonline.isr.umich.edu and St Clair et al, 2006.

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*- "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)*

Note that before 2002, only the financial respondent was asked those questions. The financial respondents would provide answer both for self and for spouse. In 2002 and onward, the question format changed and those questions are now asked to both spouses.

Table 1 presents the mean and percentiles of the ECA in the HRS 2004. Age 62 is the $25^{th}$ percentile and age 65 is the median and $75^{th}$ percentile. Those two ages are also the most common answers: 33.73% of respondents say 62; 39.79% say 65. Item-non response is relatively low. In 2004, 7.8% of the respondents answered "Don't know" and 0.03% refused to answer.

Table 1: Overview of expected claiming age in HRS 2004

| variable | $25^{th}$ perc. | medial | $75^{th}$ perc. | mean | N |
|---|---|---|---|---|---|
| ECA | 62 | 65 | 65 | 64.19225 | 5,680 |

Since ECA will be our dependent variable of interest, it is important to evaluate whether it is a good predictor of actual claiming age. Rohwedder and Kleinjans (2006) report that people update their expectations about claiming age and that ECA are thus more accurate closer to the actual claiming date. Table 2 is taken from Rohwedder and Kleinjans (2006) and shows the fraction of expected claiming ages reported in an earlier wave (t-1, t-2, ...) that lies within about a year of actual receipt. It shows that out of the expectations stated one wave before actual receipt around 82% are within a year of the actual claiming age, while out of those stated two waves before actual claiming 71% of expectations are within a year of the actual event. This suggests that the ECA has a strong predictive power for the actual claiming age.

Table 2: Percentage of respondents realizing expectations about SS claiming age within one year, by number of waves prior to actual receipt (Source: Rohwedder and Kleinjans 2006)

| Number of waves before receiving Social Security benefits | Length of panel, including wave t | | |
|---|---|---|---|
| | 3 waves N=2,699 | 4 waves N=2,569 | 5 waves N=1,624 |
| 1 | 81.6 | 82.4 | 81.9 |
| 2 | 71.7 | 72.4 | 71.2 |
| 3 | | 67.1 | 67.7 |
| 4 | | | 61.2 |

True panel, same financial respondent, only those who gave an expected claiming age in all waves.

**1.2 Survival expectations in the HRS**

The HRS has collected subjective probabilities of survival until a target age since its baseline in 1992 using the following question: "***What is the percent chance that you will live to be age [X] or more?***", where the target age *X* depends on respondents' age at the time of interview. Those questions have been the object of several validation studies focusing on their accuracy. Hurd and McGarry (1995) find that average survival probabilities are very close to those presented in life tables and co-vary with variables such as smoking, drinking, health conditions or education in ways that would be expected from studies of actual mortality. In a more recent paper, Hurd and McGarry (2002) use panel data from HRS and find that respondents modify their probabilities in response to new information such as the onset of a new illness. Still more recently, Gan *et al.* (2005) use a combination of subjective survival questions, actuarial life tables and actual mortality in the HRS data to estimate individual subjective mortality hazards and find that the subjective probabilities play a significant role in accounting for individual heterogeneity in mortality hazards. Other investigators have also made use of the HRS survival data to study the accuracy of mortality beliefs (Smith *et al.*, 2001; Siegel *et al.*, 2003) and the differential beliefs of smokers and non-smokers (Smith *et al.*, 2001).

Our analysis uses extensively respondents' subjective survival probabilities until age 75 (P75). The advantage of using subjective survival responses is that variables determining health and wealth tend to be correlated with mortality expectations, making it difficult in analyses using conventional economic variables to identify effects due to expectations alone. Hurd, Smith and Zissimopoulos (2004) argue that the direct measures of survival expectations contained in the HRS allow for identification of mortality expectations because, despite being correlated with health and wealth, there is much individual variation in expectations which permits identification of the effect of mortality expectations on claiming and retirement behavior.

Figure 1 presents a histogram showing the distribution of P75 for the respondents less than 62 years who answered the ECA questions, whom we are going to use in the empirical analysis. It shows that respondents exhibit substantial heterogeneity in beliefs. The most common answers are 50%, 80% and 100%, and the average belief is 66.2%.

Figure 1: Subjective survival to age 75 for respondents less than 62 who provided an ECA

(N= 4,753)
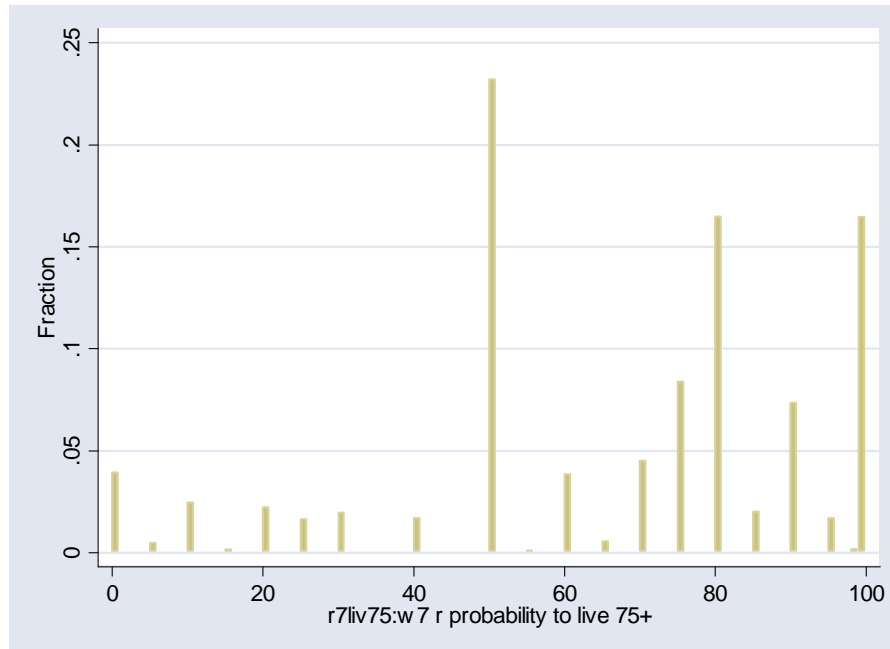


## II. Knowledge of SS rules

Individuals will decide their claiming age based on their life expectancy **only if** they know that claiming early influences future SS benefits. Previous work has studied what individuals know about their own pension plans and SS benefits and how this knowledge relates to observed behaviors. Mitchell (1988) compares workers' self-reports about the characteristics of their pension plans with information obtained from employers and finds that the majority of workers are ill-informed. Gustman and Steinmeier (2001) compare self-reports on expected SS benefits and on pension characteristics in the HRS 1992 with estimates of actual entitlements derived from matched SS records and from employer-provided information, respectively, and conclude that misinformation and lack of knowledge seem to be the norm. Chan and Stevens (2004) provide more evidence on heterogeneity in knowledge about pension plans and SS benefits, as described by HRS data. They find that among the subsample of respondents providing information on expected Social Security benefits, more than three-quarters are reasonably accurate in their expected benefit level. They also show that better-informed people

are more responsive to the retirement incentives provided by their pensions. Importantly, lesser-informed respondents are actually responsive to inaccurately perceived incentives.

In this paper, we take advantage of a new question asked in HRS 2004 allowing us to evaluate whether respondents are aware that early claiming is associated with future reduced benefits. HRS 2004 asks respondents what would be their future SS benefits if they were to claim at 62 and at their Normal Retirement Age (NRA). In particular, respondents less than 62 who reported that they expect to receive SS benefits in the future were asked the following questions:

*If you were to start collecting benefits at age 62, what do you think your Social Security benefits would be in today's dollars?*

*If you were to start collecting benefits at your Social Security normal retirement age, what do you think your Social Security benefits would be in today's dollars?*

In addition, they were asked their expected SS benefits at their reported ECA. Before evaluating respondents' knowledge of SS rules, we present a brief summary of the institutional features (see for example Coile et al., 2002 for a more detailed overview). Individuals are eligible to receive benefits once they have worked 40 quarters. A non-linear formula is applied on past earnings to determine the Primary Insurance Amount (PIA) on which monthly benefits are based. If individuals claim at the NRA, the monthly benefit equals 100% of the PIA.[3] However, individual can first claim workers' benefits at age 62.[4] If they claim between age 62 and their NRA, there is an actuarial *reduction* in the benefit for each month of claiming before their NRA. Thus workers whose NRA equals 65 receive a benefit equal to 80% of the PIA if they claim on their 62nd birthdays, those whose NRA equals 66 receive 75% of the PIA and finally those whose NRA is 67 receive 70% of the PIA (e.g, Munnell and Soto 2005). If they claim after their NRA, there is a delayed retirement *credit*.

Table 3 shows the distribution of expected benefits conditional on claiming at various ages. Remarkably, more than a third of the respondents do not know what their SS benefits might be. The proportion of "Don't know" is similar for all the considered claiming ages. Among those who report their expected SS benefits, we see that the percentiles of distribution of expected benefits conditional on claiming at age 62 are below those of the distribution conditional on

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[3] The NRA is currently increase progressively from 65 to 67.
[4] They are however subject to an earnings test (see Coile et al., 2002).

claiming at NRA, showing that many respondents are aware of the penalty incurred by early claiming. We investigate this knowledge more precisely below.

Table 3: Expected future SS benefits by claiming age

|  | Claim at 62 | Claim at 65 | Claim at ECA |
|---|---|---|---|
| 25$^{th}$ perc. | 600 | 700 | 700 |
| Median | 850 | 1024 | 1000 |
| 75$^{th}$ perc. | 1200 | 1500 | 1400 |
| mean | 916.3466 | 1173.156 | 1130.784 |
| N | 3,336 | 3,738 | 3,660 |
|  |  |  |  |
| Don't know | 37.70% | 34.52% | 34.84% |
| Refuse | 0.65% | 0.71% | 0.76% |

**2.1 Knowledge about whether delaying claiming increases SS benefits**

We use the reported expected SS benefits at various ages to construct a knowledge variable measuring whether the respondent knows that delaying claiming increases future monthly SS benefits. In particular, we make the following classification:

- o *Know* if expected SS benefits at NRA> expected SS benefits at 62
- o *Mistake* if expected SS benefits at NRA<= expected SS benefits at 62
- o *Don't know* if the respondents reported "Don't know/Refuse" for at least one of the expected SS benefits at 62 or NRA.

Table 4 presents the distribution of this measure of knowledge by demographic characteristics. Forty-six percent of respondents report not knowing what their SS benefits might be conditional on various claiming ages, and 14% are not aware that their SS benefits might be reduced if they claim before their NRA. We find important gender, age, education and ethnicity difference in knowledge (and perception of knowledge) of SS rules. For example, in this context, women are much more likely than men to admit that they do not know the answers to a question. We find a gradient by age and education, with respondents having more education and being closer to age 62 being more likely to report their expected benefits and to correctly know the effect of claiming age than respondents with lower education. Black and Hispanic respondents are more likely to report that they do not know what their conditional benefits would be and Black respondents are also more likely to report an incorrect effect of claiming age. We also find

that a very large proportion of respondents who report a high probability of working past age 62 are aware of the role of claiming age on benefits.

Table 4: Knowledge of SS rules by characteristics

|  | Know | Mistake | Don't know |
|---|---|---|---|
| **Gender** | | | |
| Male | 46.26 | 14.78 | 38.96 |
| Female | 35.09 | 13.47 | 51.45 |
| **Education** | | | |
| lt HS | 21.83 | 14.4 | 63.78 |
| HS | 39.3 | 14.89 | 45.81 |
| some college | 41.67 | 15.45 | 42.88 |
| college + | 44.79 | 11.16 | 44.05 |
| **Age categories** | | | |
| lt 50 | 37.18 | 17.58 | 45.24 |
| 50-54 | 41.25 | 14.62 | 44.13 |
| 55-59 | 42.14 | 14.54 | 43.32 |
| 60-62 | 42.24 | 11.97 | 45.80 |
| **Ethnicity (black)** | | | |
| Non-Black | 41.3 | 13.3 | 45.4 |
| Black | 28.26 | 18.00 | 53.74 |
| **Ethnicity (Hispanic)** | | | |
| Non-hispanic | 40.7 | 13.92 | 45.38 |
| hispanic | 28.25 | 14.56 | 57.19 |
| **Probability of working past age 62 (P62)** | | | |
| P62<=30 | 36.36 | 18.75 | 44.89 |
| 30<p62<=80 | 43.94 | 12.83 | 43.23 |
| P62>80 | 50.25 | 8.78 | 40.97 |
| **Total** | 39.42 | 13.98 | 46.6 |

We investigate the association between demographic characteristics and knowledge in a multivariate framework. The first analysis we conduct is a multinomial logit where each of the options are "know" "mistake" and "Don't know." The second analysis is an ordered logit where the latent variable reflects the level of knowledge of the respondents and the ordered variables are (1) "know"; (2) answered the questions but made a mistake; (3) did not answer one of the expected benefits questions.

Table 5 presents the results of the multinomial logit. It shows that, even after controlling for other factors, gender, education, age and ethnicity are all predictors of SS knowledge. In

particular, women, blacks, individuals who are currently working, who have higher earnings and higher subjective probability of working past age 65, are more likely to "not know" than to "know". For those who expect to work past age 65, knowing that claiming early reduces benefits might not be relevant knowledge. Those with more education, who have a pension, an Individual Retirement Account (IRA) and own stock are more likely to know than not. Being black and having a college degree have the largest coefficients in absolute value in the mistake equation, but have opposite sign with college graduates being more likely to know than to make a mistake.[5]

Table 5: Multinomial logit with knowledge of SS rules as dependent variable

|  | Mistake | | Don't know | |
|---|---|---|---|---|
|  | Coef. | P-value | Coef. | P-value |
| female | 0.032 | 0.721 | 0.542 | 0.000 |
| HS | -0.314 | 0.055 | -0.641 | 0.000 |
| some college | -0.306 | 0.067 | -0.723 | 0.000 |
| college + | -0.546 | 0.003 | -0.534 | 0.000 |
| Age | -0.019 | 0.043 | -0.012 | 0.074 |
| Probability of working past 62 | -0.014 | 0.000 | -0.007 | 0.000 |
| Probability of working past 65 | 0.004 | 0.073 | 0.005 | 0.002 |
| married | 0.069 | 0.501 | 0.008 | 0.917 |
| black | 0.53 | 0.000 | 0.381 | 0.000 |
| hispanic | 0.205 | 0.190 | 0.29 | 0.011 |
| 2nd wealth quartile | 0.028 | 0.814 | 0.015 | 0.863 |
| 3rd wealth quartile | 0.032 | 0.804 | 0.083 | 0.366 |
| 4th wealth quartile | -0.017 | 0.916 | -0.019 | 0.867 |
| currently working | -0.202 | 0.742 | 2.473 | 0.000 |
| own stock | -0.149 | 0.198 | -0.132 | 0.098 |
| has pension | -0.19 | 0.065 | -0.157 | 0.033 |
| earnings | 0.00 | 0.515 | 0.00 | 0.037 |
| IRA wealth above median | -0.106 | 0.278 | -0.156 | 0.024 |
| Missing pr. of working past 62 | -1.392 | 0.000 | -0.096 | 0.591 |
| Missing pr. of working past 65 | 0.984 | 0.139 | 2.569 | 0.000 |
| constant | 1.065 | 0.193 | -1.146 | 0.031 |

N= 5,461

Coefficient associated with KNOW are equal to zero

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[5] Note: the indicator variables for missing P62 and P65 are highly significant because it equals one for a very small portion of respondents, most of whom did not provide a correct answer.

Table 6 presents similar results using the ordered logit specification. A positive coefficient is associated with *lower* level of knowledge. It shows similar qualitative results than the logit specification.

Table 6: Ordered logit with knowledge of SS rules as dependent variable

|  | Coef. | P>z |
|---|---|---|
| female | 0.477 | 0.000 |
| HS | -0.52 | 0.000 |
| some college | -0.595 | 0.000 |
| college + | -0.433 | 0.000 |
| Age | -0.01 | 0.102 |
| Probability of working past 62 | -0.006 | 0.000 |
| Probability of working past 67 | 0.004 | 0.002 |
| married | 0.001 | 0.990 |
| black | 0.289 | 0.000 |
| hispanic | 0.245 | 0.011 |
| 2nd wealth quartile | 0.021 | 0.775 |
| 3rd wealth quartile | 0.079 | 0.323 |
| 4th wealth quartile | -0.005 | 0.961 |
| currently working | 2.438 | 0.000 |
| own stock | -0.121 | 0.085 |
| has pension | -0.143 | 0.024 |
| earnings | 0 | 0.078 |
| IRA wealth above median | -0.135 | 0.024 |
| Missing pr. of working past 62 | -0.036 | 0.827 |
| Missing pr. of working past 65 | 2.464 | 0.000 |
| N=5,051 | | |

## 2.2 Knowledge about the range of penalty for early claiming

We can construct a more precise measure of knowledge by looking at the ratio of the expected SS benefits if the respondents claim at 62 with benefits if claim at NRA. Table 7 presents this distribution of implied "penalty" for claiming at 62 rather than at the NRA. The median is 80% and the mean 89.2%. The mean and median are relatively accurate, as, depending on birth year, the actual ratio is between 75 and 80%. However, we see that a large proportion of the respondents have inaccurate perception: the 25th percentile of the penalty is 70% so about 25% of the respondents overestimate the reduction in SS benefits for claiming at 62, while the 75th percentile is 100% so another 25% of the respondents are not aware of the reduction.

Table 7: Distribution of penalty for claiming at 62 rather than at NRA (100*expected benefits at 62/expected benefits at NRA)

| variable | p10 | p25 | p50 | p75 | p90 | mean | N |
|---|---|---|---|---|---|---|---|
| reducSS | 60 | 70 | 80 | 100 | 100 | 89.18 | 2911 |

We use these ratios to construct an additional measure of knowledge, indicating whether the reported ratio is very close to the actual one (namely between 60 and 95%), very far (less than 60% or more than 95%) or whether the respondent does not know. Table 8 presents the distribution of this measure of knowledge by demographic characteristics. Only about a third of the respondents estimate the penalty to be between 60% and 95%. Table 8 shows similar differences in knowledge by gender, age, education and ethnicity than the ones presented in section 2.1.

Table 8: Knowledge of penalty for claiming early by characteristics

| | ratio<60 or >95 | 60<=ratio<=95 | Don't know |
|---|---|---|---|
| **Gender** | | | |
| Male | 20.16 | 40.84 | 39.00 |
| Female | 18.51 | 29.89 | 51.60 |
| **Education** | | | |
| lt HS | 17.24 | 18.79 | 63.98 |
| HS | 21.11 | 32.97 | 45.91 |
| some college | 20.03 | 37.03 | 42.94 |
| college + | 16.69 | 39.14 | 44.17 |
| **Age category** | | | |
| lt 50 | 22.94 | 31.74 | 45.32 |
| 50-54 | 20.84 | 34.98 | 44.18 |
| 55-59 | 19.62 | 37.01 | 43.37 |
| 60-62 | 16.77 | 37.30 | 45.93 |
| **Ethnicity (black)** | | | |
| Non-Black | 18.59 | 35.90 | 45.51 |
| Black | 22.46 | 23.73 | 53.81 |
| **Ethnicity (Hispanic)** | | | |
| Non-hispanic | 19.13 | 35.38 | 45.49 |
| hispanic | 19.30 | 23.51 | 57.19 |
| **Total** | 19.15 | 34.15 | 46.7 |

Table 9 presents a multivariate analysis of this new indicator of knowledge and shows the coefficient of a logit estimation. Again, the results are similar to those presented in table 5.

Table 9: Multinomial logit with knowledge of penalty for claiming early as dependent variable

|  | ratio<60 or >95 | | Don't know | |
|---|---|---|---|---|
|  | Coef. | P-value | Coef. | P-value |
| female | 0.137 | 0.095 | 0.587 | 0.000 |
| HS | -0.149 | 0.343 | -0.606 | 0.000 |
| some college | -0.310 | 0.054 | -0.754 | 0.000 |
| college + | -0.410 | 0.018 | -0.535 | 0.000 |
| Age | -0.019 | 0.036 | -0.014 | 0.052 |
| Probability of working past 62 | -0.011 | 0.000 | -0.007 | 0.000 |
| Probability of working past 67 | 0.006 | 0.005 | 0.006 | 0.000 |
| married | -0.063 | 0.503 | -0.031 | 0.684 |
| black | 0.464 | 0.000 | 0.406 | 0.000 |
| hispanic | 0.267 | 0.069 | 0.329 | 0.006 |
| 2nd wealth quartile | 0.080 | 0.467 | 0.035 | 0.700 |
| 3rd wealth quartile | -0.126 | 0.291 | 0.037 | 0.697 |
| 4th wealth quartile | -0.148 | 0.310 | -0.068 | 0.559 |
| currently working | -0.164 | 0.777 | 2.459 | 0.000 |
| own stock | -0.101 | 0.331 | -0.129 | 0.120 |
| has pension | -0.041 | 0.659 | -0.127 | 0.095 |
| earnings | 0.000 | 0.150 | 0.000 | 0.072 |
| IRA wealth above median | -0.036 | 0.687 | -0.143 | 0.045 |
| Missing pr. of working past 62 | -0.969 | 0.000 | -0.107 | 0.568 |
| Missing pr. of working past 65 | 0.669 | 0.277 | 2.569 | 0.000 |
| constant | 1.167 | 0.130 | -0.923 | 0.099 |
| N=5,448 | | | | |

## III.    The determinants of Expected Claiming Age in HRS 2004

In this section, we evaluate whether survival and our measures of knowledge of SS rules influence ECA. By design, Social Security benefits are intended to be actuarially neutral regardless of when an individual claim between the early claiming age of 62 and the upper limit of age 70.  That is, the level of monthly benefits for a person who delays claiming by a given amount of time is increased sufficiently to make the expected present discounted value of the annuity stream that he or she will receive invariant to the age of retirement.  This design is intended to allow individuals to exercise their preferences for early or late retirement without either increasing or decreasing the cost borne by taxpayers in financing the Social Security system.  The actuarial adjustment of benefits cannot, however, be truly neutral for the entire eligible population (of people with the same earnings histories), if there is individual-level heterogeneity in mortality rates.  Individuals who face mortality rates that are higher than

actuarial rates will, on average, receive lower lifetime benefits than the representative individual who retires at the same age and, conversely, those with low mortality risk will tend to receive high lifetime benefits. Coile *et al*. (2002) use financial calculation and expected utility maximization simulation and find that delaying claiming can be beneficial and yield large gains under various circumstances.

In our empirical analysis, we focus on respondents who are **less than 62** so that all respondents have the same set of answers for their ECA (Mechanically, a 65 year-old who has not claimed SS benefits cannot report an ECA of 62). Since ECA is an ordinal dependent variable, we use an ordered probit model. The independent variables of interested are P75, the subjective survival expectations to age 75 (section 1.2), and the indicator of knowledge measuring whether delaying claiming increases SS benefits (section 2.2). We also interact P75 with the measures of knowledge, as we expect P75 to influence claiming age only for respondents who are aware that claiming early reduces benefits. Finally, we include basic demographic characteristics such as ethnicity, age, education, wealth quartile (we use non-housing financial wealth where the quartiles are defined separately by marital status), self-reported health (excellent, very good, good, fair, poor), earnings, working for pay and characteristics of the job (white collar, physical), the subjective probability of working past age 62 and 65, an indicator of IRA wealth (below or above sample median) and finally the SS wealth quartiles. The SS wealth quartiles are based on the reported expected Social Security benefits elicited from respondents. Note that the expected SS benefit is reported conditional on ECA or differing NRA. To make the measure of Social Security wealth comparable across people, we compute what would have been the respondent's benefits if she had claimed at 65 using the delayed retirement credit and the reduction of benefits provided by the SS Administration for each of the birth years of our respondents.

Due to the different incentives that couples face compared to singles, and given the difference in knowledge by gender, we conduct separate analyses by marital status and sex.

**3.1. Single respondents**

### 3.1.2. Single Women

Figure 2 present a histogram of the dependent variable of interested. There are two spikes at 62 and 65 in the reported expected claiming age. The most common answer for single women is 65

years old. A few respondents report answers less than 60 years old, showing lack of knowledge about SS. About 5% report 60 years old, which is a possible claiming age for widows.

Figure 2: ECA of single women less than 62 years old
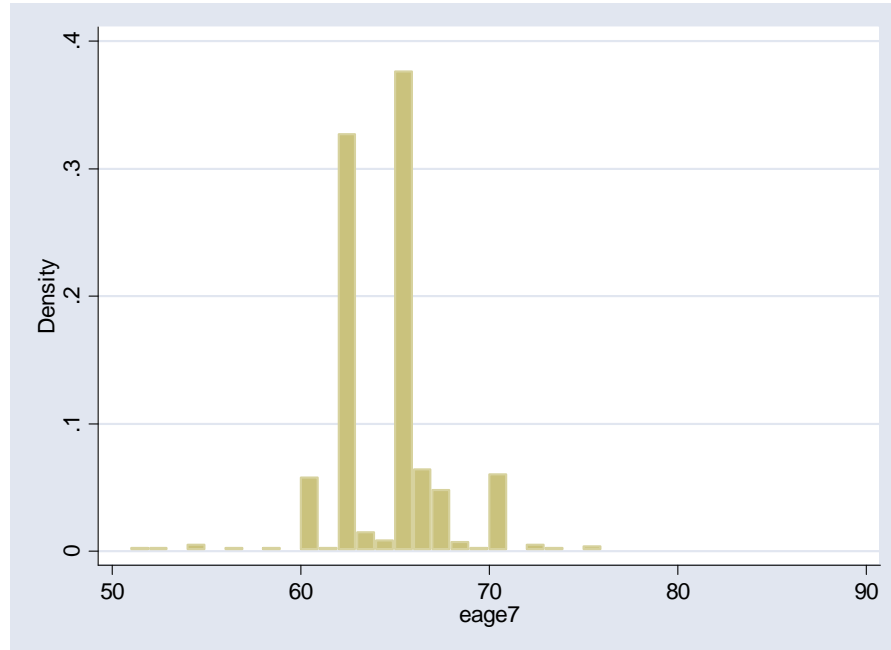


Table 10 presents the results of the ordered probit for single women using ECA as dependent variable. The variables of interest are survival expectations to age 75 (P75) and knowledge. In the first two specifications, we see that P75 has a positive and statistically significant coefficient: single women who expect to live longer report a higher ECA. In the second specification, the knowledge variables are included. Knowledge has a statistically significant effect on ECA: respondents who do not know that claiming at 62 reduces SS and those who did not report their expected claiming age are more likely to expect to claim early. Note that the effect of survival is small. In specification (2), for a white woman who know about the penalty, work in a white collar job, own stock, is in good health, in the second quartile of wealth and SS wealth and average values for continuous variables has a 45% chance of claiming at age 65 if her subjective survival to age 75 is 60%. This probability increases to 46% if her subjective survival is 80%. The effect of knowledge is larger. A woman with average survival (67%) who knows that claiming early reduces benefits has a probability of claiming at age 65 equal to 46%, while this probability drops to 40% if she made a mistake regarding the penalty.

In the third specification, we allow for differential effect of survival on knowledge. As expected, the coefficient of subjective survival is the largest and statistically significant only for women who know about the penalty. So single women clearly make claiming decision based on their knowledge of SS rules.

In all the specifications, the coefficients associated with the other variables are similar. There is no statistically significant effect of current health on the ECA. Work expectations are important predictors of expected claiming age: women who provide higher expectations to work past age 62 and 65 provide a higher ECA. SS wealth influences ECA, with respondents in higher quartiles being more likely to expect to claim earlier. Respondents who own stocks are also more likely to expect to claim earlier than those who do not. We also find that black women are more likely to expect to claim early.

Table 10: Ordered probit for single women (Dependent variable = ECA in 2004)

|  | (1) | (2) | (3) |
|---|---|---|---|
| P75 | 0.004 | 0.005 | |
|  | [0.00]** | [0.00]** | |
| P75 - DK that claiming at 62 reduces SS | | | 0.005 |
|  | | | [0.20] |
| P75 – know that claiming at 62 reduces SS | | | 0.007 |
|  | | | [0.00]** |
| P75 – knowledge question missing | | | 0.003 |
|  | | | [0.12] |
| DKreducSS1==1 - DK that claiming at 62 reduces SS | | -0.374 | -0.2 |
|  | | [0.00]** | [0.51] |
| DKreducSS1==2 - knowledge question missing | | -0.327 | -0.048 |
|  | | [0.00]** | [0.83] |
| Age | -0.008 | -0.006 | -0.006 |
|  | [0.39] | [0.51] | [0.53] |
| Black | -0.203 | -0.191 | -0.182 |
|  | [0.03]* | [0.04]* | [0.05] |
| 2nd wealth quartile | -0.062 | -0.063 | -0.064 |
|  | [0.57] | [0.57] | [0.56] |
| 3rd wealth quartile | 0.06 | 0.059 | 0.063 |
|  | [0.57] | [0.57] | [0.54] |
| 4th wealth quartile | 0.096 | 0.08 | 0.078 |
|  | [0.46] | [0.54] | [0.55] |
| Working for pay | 0.059 | -0.061 | -0.082 |
|  | [0.96] | [0.96] | [0.95] |
| Own stock | -0.233 | -0.23 | -0.227 |
|  | [0.03]* | [0.03]* | [0.03]* |
| White collar job | 0.129 | 0.117 | 0.118 |
|  | [0.22] | [0.26] | [0.26] |

| | | | |
|---|---|---|---|
| Physical job | -0.056 | -0.064 | -0.066 |
| | [0.56] | [0.51] | [0.49] |
| Pension on current job | 0.099 | 0.097 | 0.092 |
| | [0.26] | [0.28] | [0.30] |
| Earnings | 0.000 | 0.000 | 0.000 |
| | [0.19] | [0.18] | [0.16] |
| Self-reported health –very good | 0.117 | 0.108 | 0.11 |
| | [0.30] | [0.34] | [0.33] |
| Self-reported health –good | -0.039 | -0.027 | -0.022 |
| | [0.73] | [0.82] | [0.85] |
| Self-reported health –fair | -0.028 | -0.016 | -0.013 |
| | [0.83] | [0.91] | [0.92] |
| Self-reported health –poor | -0.112 | -0.066 | -0.07 |
| | [0.56] | [0.74] | [0.72] |
| Prob working ft after 62 (P62) | 0.006 | 0.006 | 0.006 |
| | [0.00]** | [0.00]** | [0.00]** |
| Prob working ft after 65 (P65) | 0.009 | 0.009 | 0.009 |
| | [0.00]** | [0.00]** | [0.00]** |
| 2nd SS wealth quartile | -0.157 | -0.199 | -0.209 |
| | [0.19] | [0.10] | [0.08] |
| 3rd SS wealth quartile | -0.478 | -0.528 | -0.542 |
| | [0.00]** | [0.00]** | [0.00]** |
| 4th SS wealth quartile | -0.397 | -0.406 | -0.427 |
| | [0.01]* | [0.01]* | [0.01]** |
| SS wealth missing | -0.43 | -0.297 | -0.305 |
| | [0.00]** | [0.02]* | [0.01]* |
| IRA wealth above median | 0.067 | 0.084 | 0.085 |
| | [0.44] | [0.34] | [0.34] |
| P62 missing | 0.751 | 0.694 | 0.694 |
| | [0.00]** | [0.00]** | [0.00]** |
| P65 missing | 0.035 | -0.077 | -0.084 |
| | [0.96] | [0.91] | [0.90] |
| White collar job missing | 0.275 | 0.294 | 0.293 |
| | [0.57] | [0.55] | [0.55] |
| Physical job missing | -0.72 | -0.704 | -0.72 |
| | [0.51] | [0.52] | [0.51] |
| Observations | 828 | 828 | 828 |

P-value in brackets
* significant at 5% level; ** significant at 1% level

### 3.1.2. Single Men

Figure 3 presents a histogram of the ECA of single men age 62 or less. 62 and 65 are the most common claiming age for those respondents, the mode being 62.

Figure 3: ECA of single men less than 62 years old
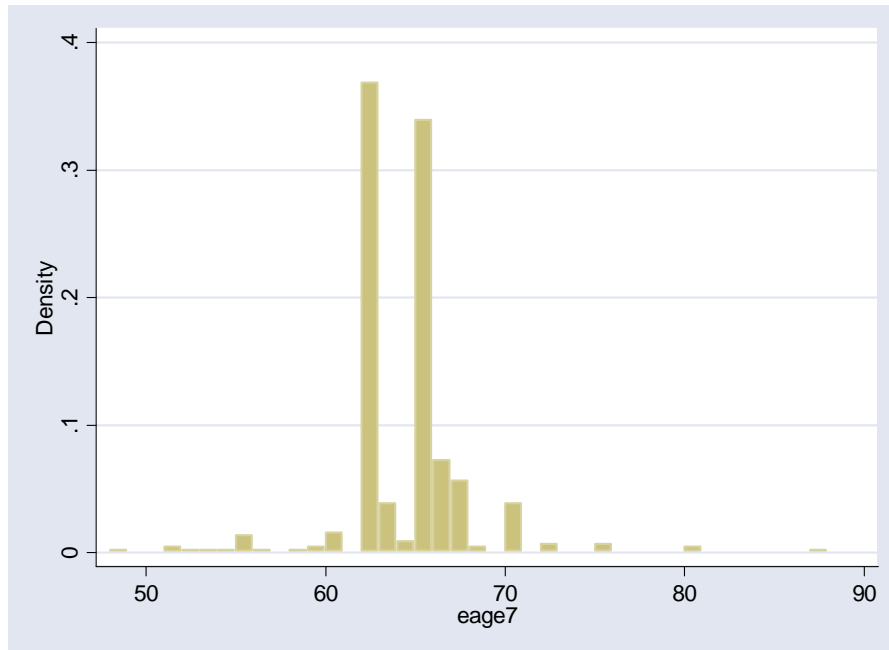


Table 11 presents the results of the ordered probit for single men using ECA as dependent variable. In the first two specifications, subjective survival to age 75 has a positive and statistically significant coefficient (P-value=0.06) so single men who expect to live longer report a higher ECA. In the second specification where we control for indictors of knowledge, we do not find an effect of knowledge about the SS penalty due to early claiming on claiming age. Moreover, when we allow for differential effect of survival on knowledge (specification 3), we find that the coefficient of subjective survival is statistically significant for all men who provided their expected SS benefits if they were to claim at age 62 and at NRA independently of whether they knew about the penalty, but it is not significant for men who did not answer the knowledge question. It seems as if single men act on some rules of thumb saying that they should delay if they expect to be long-lived, without having a precise idea of the SS rules that justify such a choice. Answering the questions eliciting expected benefits may be associated with being aware of the "rule of thumb."

In all the specifications, the coefficients associated with the other variables are similar, but are slightly different than for single women. Reporting a poor or fair health status is associated with an early ECA. A high expectation to work past age 65 is associated with a later

ECA. Being in the highest quartile of Social Security wealth is associated with earlier claiming. We also find that black men are more likely to expect to claim early.

Table 11: Ordered probit for single men (Dependent variable = ECA in 2004)

|  | (1) | (2) | (3) |
|---|---|---|---|
| P75 | 0.004 | 0.004 |  |
|  | [0.06] | [0.06] |  |
| P75 - DK that claiming at 62 reduces SS |  |  | 0.01 |
|  |  |  | [0.03]* |
| P75 – know that claiming at 62 reduces SS |  |  | 0.006 |
|  |  |  | [0.04]* |
| P75 – knowledge question missing |  |  | -0.001 |
|  |  |  | [0.80] |
| DKreducSS1==1 - DK that claiming at 62 reduces SS |  | -0.209 | -0.44 |
|  |  | [0.18] | [0.19] |
| DKreducSS1==2 - knowledge question missing |  | 0.074 | 0.476 |
|  |  | [0.62] | [0.09] |
| Age | 0 | -0.001 | -0.004 |
|  | [0.98] | [0.94] | [0.79] |
| Black | -0.383 | -0.376 | -0.387 |
|  | [0.01]** | [0.01]** | [0.01]** |
| 2nd wealth quartile | -0.217 | -0.243 | -0.278 |
|  | [0.20] | [0.15] | [0.10] |
| 3rd wealth quartile | 0.115 | 0.106 | 0.106 |
|  | [0.44] | [0.48] | [0.48] |
| 4th wealth quartile | -0.276 | -0.298 | -0.295 |
|  | [0.16] | [0.14] | [0.14] |
| Working for pay | 1.479 | 1.445 | 1.441 |
|  | [0.32] | [0.33] | [0.33] |
| Own stock | 0.204 | 0.215 | 0.211 |
|  | [0.18] | [0.16] | [0.17] |
| White collar job | -0.111 | -0.11 | -0.118 |
|  | [0.42] | [0.42] | [0.40] |
| Physical job | -0.074 | -0.069 | -0.084 |
|  | [0.59] | [0.62] | [0.54] |
| Pension on current job | -0.145 | -0.15 | -0.133 |
|  | [0.27] | [0.25] | [0.31] |
| Earnings | 0 | 0 | 0 |
|  | [0.69] | [0.60] | [0.63] |
| Self-reported health –very good | 0.016 | 0.035 | 0.047 |
|  | [0.92] | [0.83] | [0.77] |
| Self-reported health –good | -0.123 | -0.113 | -0.107 |
|  | [0.45] | [0.49] | [0.51] |
| Self-reported health –fair | -0.41 | -0.389 | -0.375 |
|  | [0.03]* | [0.04]* | [0.05]* |

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|  |  |  |  |
| --- | --- | --- | --- |
| Self-reported health –poor | -0.68 | -0.635 | -0.62 |
|  | [0.01]* | [0.02]* | [0.02]* |
| Prob working ft after 62 (P62) | 0.003 | 0.002 | 0.002 |
|  | [0.27] | [0.33] | [0.49] |
| Prob working ft after 65 (P65) | 0.011 | 0.011 | 0.011 |
|  | [0.00]** | [0.00]** | [0.00]** |
| 2nd SS wealth quartile | -0.28 | -0.27 | -0.28 |
|  | [0.14] | [0.16] | [0.15] |
| 3rd SS wealth quartile | -0.342 | -0.357 | -0.39 |
|  | [0.08] | [0.07] | [0.05]* |
| 4th SS wealth quartile | -0.419 | -0.432 | -0.455 |
|  | [0.04]* | [0.04]* | [0.03]* |
| SS wealth missing | 0.011 | -0.088 | -0.13 |
|  | [0.95] | [0.65] | [0.51] |
| IRA wealth above median | 0.197 | 0.194 | 0.191 |
|  | [0.12] | [0.13] | [0.13] |
| P62 missing | 0.328 | 0.316 | 0.285 |
|  | [0.36] | [0.38] | [0.42] |
| P65 missing | -0.023 | -0.041 | 0.019 |
|  | [0.97] | [0.95] | [0.98] |
| White collar job missing | 1.286 | 1.31 | 1.388 |
|  | [0.04]* | [0.04]* | [0.03]* |
| Physical job missing | -0.25 | -0.294 | -0.443 |
|  | [0.83] | [0.80] | [0.70] |
| Observations | 423 | 423 | 423 |

P-value in brackets

* significant at 5% level; ** significant at 1% level

## 3.2. Married Respondents

We now study the claiming age decision of married respondents. Since married individuals are eligible to received benefits based on their spouse's earnings, their incentives are different than the ones of single individuals. The institutional features for couples are as follows (see Munnell and Soto 2005 for additional details). Married individuals are entitled to 3 types of benefits: (i) a benefit based on own earnings record; (ii) a spouse's benefit bases on spouse's record, equal to 50% of the spouse's PIA, if that exceeds benefit from own record and (iii) a survivor's benefit equal to 100% of the spouse's benefit, if that exceeds benefit from own record. So a husband's early claiming will reduce his own benefits and the survivor's benefits of his wife, but *not* the spouse's benefits of his wife. A wife's early claiming for own or spouse's benefits reduces those benefits, but not her survivor's benefits. Her survivor's benefits are

reduced if she claims survivor's benefits before her normal retirement, but not if she claims her own (or spouse's) benefits before her normal retirement age.

Munnell and Soto (2005) highlight the various incentives for couples and show that these incentives depend on the relative amount of the spouses' benefits and on the difference between their life expectancy. They show that if a husband expects to die much before his wife, he should delay claiming because delaying increases the value of the survivor's benefits, which at the couple-level compensates for the years in which he did not enjoy his benefits. So he should take into account the life expectancy of his wife when deciding when to claim, rather than his own. As for the wife, her claiming age will affect both her own benefits and the spouse's benefits she is entitled to, but *not* her survivors' benefits. Thus, if she expects her husband to die much before her, she should claim early to enjoy a reduced amount for a short period of time before receiving survivor's benefits for the longer share of her remaining life. If both spouses have similar life expectancy, they will spend their retirement period together. So depending on the ratio between spouses' earning, they should either both wait for their normal retirement age to maximize the expected value of the couple's benefits; or one of them should claim early while the other delays as much as possible. The latter is beneficial to couples with similar earnings.

To investigate whether married respondents are responsive to these institutional incentives, we will use the same right-hand-side variables as for single respondents, but will also include:

(1) Age difference between spouses

(2) Spouse's survival expectations

(3) Record on which respondent expects to claim SS

(4) Ratio of wife/husband benefits

We review these variables below before including them in our analysis.

- **Age difference between spouses**

For about a third of our sample, spouses have the same age. For the others, men tend to be older than their wives. Figure 4 presents respondent's age minus spouse's age by gender.

Figure 4: Age difference between spouses for respondents who answered ECA

Female             Male
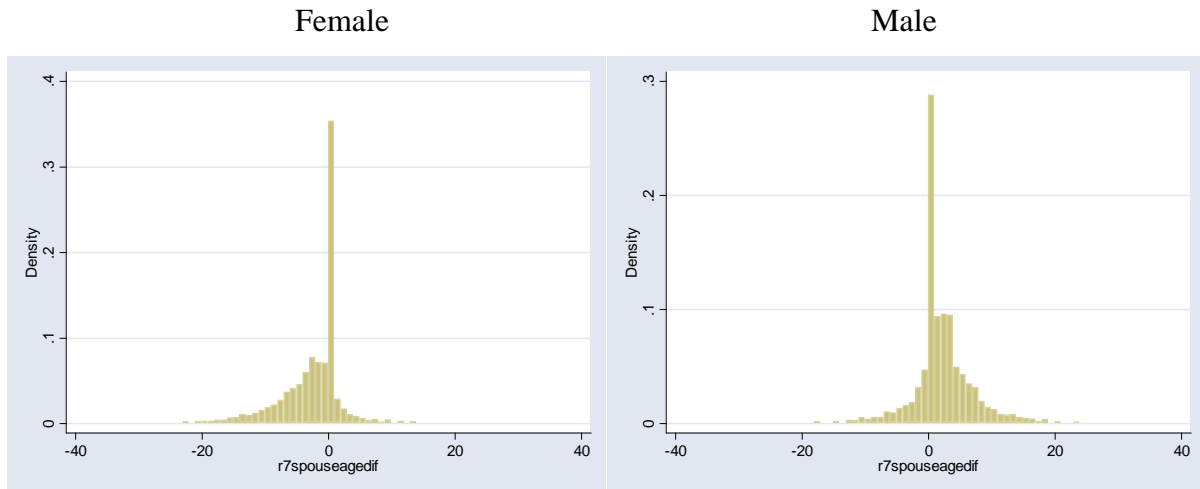
- **Spouse's P75**

We use the spouse's perception of own survival to age 75 as an additional right-hand-side variable. The underlying assumption is that both spouses share the same perception about their survival. The age difference between spouses creates missing spouse's P75 as only respondents less than 65 are asked about P75. Older respondents are asked about other target ages (see table 12).

Table 12: Target ages for the subjective survival probability question in HRS 2004

| Age class of the respondent | Target age |
|---|---|
| Less than 65 | 75&80 |
| 65–69 | 80 |
| 70–74 | 85 |
| 75–79 | 90 |
| 80–84 | 95 |
| 85–89 | 100 |
| 90 or older | None |

As a result of these different target ages, spouse's P75 is missing for about 30% of married women (see table 13).

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Table 13: Missing spouse's P75 by gender

|  | Male | Female |  |
| --- | --- | --- | --- |
| Missing spouse P75 |  |  |  |
| No | 1,404 | 1,537 | 2,941 |
|  | 88.92 | 69.93 | 77.87 |
|  |  |  |  |
| Yes | 175 | 661 | 836 |
|  | 11.08 | 30.07 | 22.13 |
|  |  |  |  |
| Total | 1,579 | 2,198 | 3,777 |
|  | 100 | 100 | 100 |

For women, 88% of those with spouse's P75 missing are married to a husband age 70 or less. These husbands were thus asked the likelihood of living to be age 80 (P80). We take advantage of the fact that respondents who are less than 65 are asked both about P75 and P80 to predict P75 given P80 and controlling for a large set of health and demographic factors. Table 14 presents the linear regression using P75 as dependent variable and P80 as independent variable. We then use the estimated coefficients and the elicited P80 to impute a value for P75 for those husbands less than 70 who were not asked their survival to age 75 but answered P80.[6]

Table 14: Linear regression using spouse's P75 as dependent variable

|  | Coef. | P-value |
| --- | --- | --- |
| P80 | 0.73 | 0.000 |
| Age | 0.064 | 0.107 |
| Self-reported health –very good | -0.478 | 0.462 |
| Self-reported health –good | -1.481 | 0.030 |
| Self-reported health –fair | -4.67 | 0.000 |
| Self-reported health –poor | -9.698 | 0.000 |
| GED | -1.385 | 0.250 |
| HS | 2.607 | 0.001 |
| some college | 2.508 | 0.002 |
| college + | 3.016 | 0.000 |
| female | -0.004 | 0.994 |
| Black | -1.56 | 0.038 |
| Non-white / Non-black | -2.509 | 0.005 |
| 2nd wealth quartile | 0.593 | 0.332 |
| 3rd wealth quartile | 0.678 | 0.284 |
| 4th wealth quartile | 1.143 | 0.108 |
| Constant | 24.13 | 0.000 |
| N=4730 |  |  |
| R2=0.72 |  |  |

---

[6] If the prediction is above 100, we impute 100.

- **Social Security Records**

HRS 2004 asks respondents who report that they expect to get SS in the future whether they expect to get them based on their own work record only, from a current, previous or late spouse's work record only, or both. Table 15 presents the distribution of answers for married respondents less than 62 who report an ECA. Men are much more likely to expect to claim on their own record only. A third of the women expect to claim on both records and 11% on their spouse's record only. For those, spouse's survival might be relevant to their own claiming age decision.

Table 15: Distribution of SS record on which respondents expect to claim by gender

| SS record | Men | Women | Total |
|---|---|---|---|
| R'S OWN RECORD ONLY | 86.7 | 57.01 | 69.84 |
| SPOUSE'S RECORD ONLY | 0.48 | 10.67 | 6.26 |
| BOTH RECORDS | 12.47 | 30.52 | 22.72 |
| DK | 0.36 | 1.76 | 1.16 |
| REFUSE | 0 | 0.05 | 0.03 |
| N | 1,684 | 2,212 | 3,896 |

The underlying assumption for including this variable as independent variable is that deciding when to claim is sequential. Depending on the earnings history of both spouses, a decision-maker decides whether to use her spouse's record. Given this decision, she will decide when to claim. Note that whether we include this variable in the regression or not does not change the other coefficients.

- **Ratio of wife/husband benefits**

Due to the incentives highlighted in Munnell and Soto (2005), we also seek to control for the ratio of wife/husband benefits. We take the ratio of female and male expected benefits if they were to claim at their NRA. If a spouse has already claimed, we use actual benefits rather than expected benefits. Unfortunately, since expected benefits at normal retirement age are frequently missing, the ratio is missing for many respondents (table 16).

Table 16: Distribution of ratio wife-husband SS benefits

| Ratio wife/husband benefits | Percent |
|---|---|
| <50% | 16.56 |
| 50-99% | 11.11 |
| 100% + | 10.11 |
| missing | 62.22 |
| N | 3,896 |

### 3.2.1 Married Women

Figure 4 presents a histogram of ECA for married women age 62 or less. For married women, 62 and 65 are the most common ECA. But, contrarily to single women, 62 is the modal answer. Most of the ECA are between 62 and 70, showing that a large proportion of married women have knowledge about SS rules.

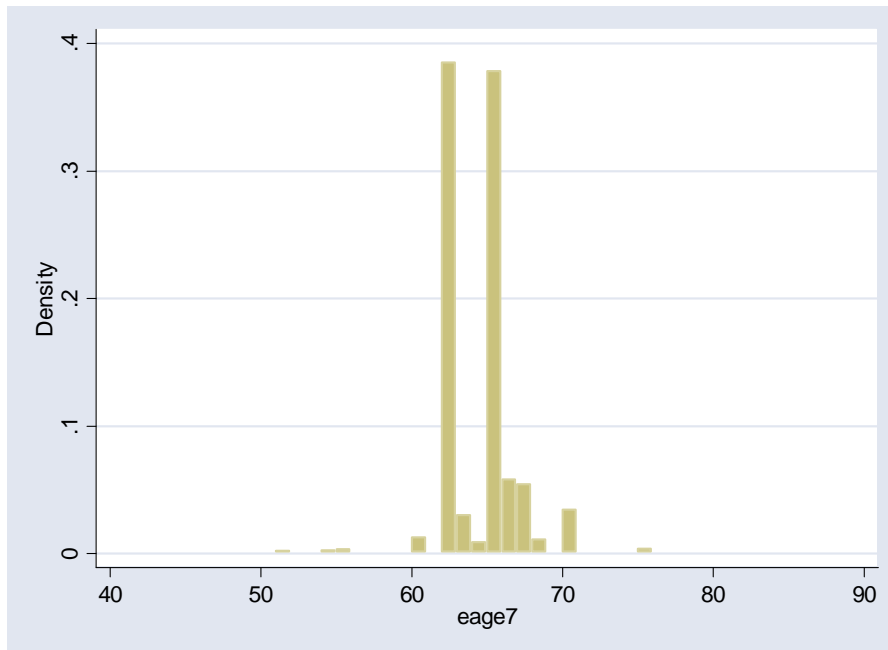Figure 4: ECA of married women less than 62 years old



Table 17 presents the ordered probit results using ECA as dependent variable. Specifications (1), (2) and (3) are the same as for single respondents. In specification (4), we introduce spouse's P75, and in specification (5) we use the imputed P75 for spouses who were

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not asked P75 but answered their P80. The last specification includes P75 interacted with knowledge and spouse's P75. We find that, for all specifications, higher subjective survival to age 75 is associated with delayed claiming and the coefficient is statistically significant. If we allow for a differential effect of survival by knowledge, we find, like for single women, that the coefficient of own subjective survival is statistically significant only for women who know about the penalty incurred by claiming early. Our measures of knowledge are statistically significant in all the specifications: women who have incorrect knowledge or who stated that they did not have the knowledge are more likely to expect to claim early.

We find that both spouse's survival and age difference between spouses are associated with a coefficient that is statistically significantly different from zero. So spouse's P75 does not capture fully respondent's beliefs about her husband's survival. This is likely due to the fact that respondents are not asked directly about their spouse's life expectancy and that we use the husband's beliefs about his own survival rather than the respondents' beliefs about her husband's survival. We find that, everything else equal, married women whose husband has a higher subjective survival expect to claim later. This is consistent with the fact that they expect to rely on spouse's benefits, rather than survivor's benefits, for a long period. Spouse's benefits are reduced with early claiming. Women married to older husband tend to expect to claim earlier. Again, this is consistent with the fact that those expect to rely on survivor's benefits for a longer period, which is not affected by their claiming age, and that is might thus be beneficial to enjoy a reduced benefit as early as possible. Whether we impute for missing spouse's P75 does not change the results.

Married women who expect to claim on both records also expect to claim later. Again, those might count on survivor's benefits and do not want to incur a penalty for claiming early. We do not find a strong effect of the ratio of spouses' earnings, which is likely due to the fact that this variable is missing for many respondents. We just find that women whose ratio is between 50% and 99% are more likely to claim earlier than those for whom the ratio is below 50%, which is consistent with the incentives presented in Munnell and Soto (2005).

Regarding other variables, we see that work expectations are strong predictor of ECA: women who have high expectations to work past age 62 and 65 are more likely to expect to claim later. Similarly, women with higher earnings expect to delay claiming, which is consistent with the fact that an additional year of work might be advantageous for them. Self-reported

health is also a strong predictor, with women who report to be in poor or fair health expecting to claim earlier than those in excellent health. Younger women expect to claim later. Finally, SS wealth influences ECA, with women in the top quartile expecting to claim earlier.

Table 17: Ordered probit for married women (Dependent variable = ECA in 2004)

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **P75** | 0.003 | 0.003 | | 0.003 | 0.003 | |
| | [0.00]** | [0.00]** | | [0.01]** | [0.01]** | |
| **P75- DK that claiming at 62 reduces SS** | | | 0.003 | | | 0.003 |
| | | | [0.25] | | | [0.28] |
| **P75 – know that claiming at 62 reduces SS** | | | 0.004 | | | 0.004 |
| | | | [0.02]* | | | [0.03]* |
| **P75 – knowledge question missing** | | | 0.003 | | | 0.002 |
| | | | [0.06] | | | [0.11] |
| **Spouse's P75** | | | | 0.003 | | 0.003 |
| | | | | [0.01]** | | [0.01]** |
| **Spouse's P75 missing** | | | | 0.1 | | 0.099 |
| | | | | [0.26] | | [0.26] |
| **Spouse's P75 (with imputation)** | | | | | 0.003 | |
| | | | | | [0.01]** | |
| **Spouse's P75 (with imputation)** | | | | | 0.141 | |
| | | | | | [0.12] | |
| DKreducSS1==1 - DK that claiming at 62 reduces SS | | -0.665 | -0.576 | -0.672 | -0.671 | -0.602 |
| | | [0.00]** | [0.01]** | [0.00]** | [0.00]** | [0.00]** |
| **DKreducSS1==2 - knowledge question missing** | | -0.19 | -0.093 | -0.197 | -0.193 | -0.105 |
| | | [0.01]** | [0.56] | [0.01]** | [0.01]* | [0.52] |
| **Expect SS from spouse's record** | | | | 0.106 | 0.108 | 0.107 |
| | | | | [0.22] | [0.22] | [0.22] |
| **Expect SS on both records** | | | | 0.191 | 0.189 | 0.191 |
| | | | | [0.00]** | [0.00]** | [0.00]** |
| **DK which record** | | | | 0.1 | 0.088 | 0.1 |
| | | | | [0.59] | [0.63] | [0.59] |
| ratio wife/husband benefits:50% - 99% | | | | -0.177 | -0.16 | -0.176 |
| | | | | [0.06] | [0.08] | [0.06] |
| ratio wife/husband benefits: more than 100% | | | | 0.009 | 0.022 | 0.009 |
| | | | | [0.93] | [0.83] | [0.93] |
| ratio wife/husband benefits missing | | | | -0.031 | -0.03 | -0.029 |
| | | | | [0.67] | [0.67] | [0.69] |
| Age | -0.03 | -0.032 | -0.032 | -0.029 | -0.031 | -0.029 |
| | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| **Spouses' age difference** | 0.009 | 0.009 | 0.009 | 0.008 | 0.011 | 0.008 |
| | [0.05]* | [0.05]* | [0.05]* | [0.08] | [0.02]* | [0.08] |
| Black | -0.07 | -0.021 | -0.02 | -0.001 | -0.005 | 0 |
| | [0.41] | [0.80] | [0.82] | [0.99] | [0.95] | [1.00] |
| Hispanic | -0.055 | -0.038 | -0.04 | -0.034 | -0.042 | -0.036 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | [0.54] | [0.67] | [0.65] | [0.70] | [0.64] | [0.69] |
| 2nd wealth quartile | -0.073 | -0.066 | -0.065 | -0.069 | -0.067 | -0.068 |
| | [0.28] | [0.33] | [0.34] | [0.31] | [0.32] | [0.32] |
| 3$^{rd}$ wealth quartile | -0.083 | -0.076 | -0.075 | -0.079 | -0.079 | -0.078 |
| | [0.26] | [0.31] | [0.32] | [0.30] | [0.29] | [0.30] |
| 4$^{th}$ wealth quartile | -0.087 | -0.093 | -0.091 | -0.099 | -0.103 | -0.097 |
| | [0.33] | [0.30] | [0.31] | [0.27] | [0.25] | [0.28] |
| Working for pay | 1.709 | 1.642 | 1.691 | 1.808 | 1.786 | 1.852 |
| | [0.07] | [0.09] | [0.08] | [0.06] | [0.06] | [0.06] |
| Own stock | 0.053 | 0.037 | 0.038 | 0.024 | 0.03 | 0.025 |
| | [0.38] | [0.55] | [0.54] | [0.70] | [0.63] | [0.69] |
| White collar job | 0.134 | 0.122 | 0.122 | 0.112 | 0.109 | 0.112 |
| | [0.07] | [0.10] | [0.10] | [0.13] | [0.14] | [0.13] |
| Physical job | -0.004 | -0.01 | -0.01 | -0.022 | -0.02 | -0.022 |
| | [0.95] | [0.88] | [0.88] | [0.74] | [0.76] | [0.75] |
| Pension on current job | -0.085 | -0.09 | -0.089 | -0.075 | -0.075 | -0.075 |
| | [0.16] | [0.14] | [0.14] | [0.22] | [0.22] | [0.22] |
| Earnings | 0 | 0 | 0 | 0 | 0 | 0 |
| | [0.00]** | [0.01]** | [0.01]** | [0.00]** | [0.00]** | [0.00]** |
| Self-reported health –very good | -0.099 | -0.122 | -0.123 | -0.133 | -0.131 | -0.134 |
| | [0.14] | [0.07] | [0.07] | [0.05] | [0.05] | [0.05]* |
| Self-reported health –good | -0.084 | -0.113 | -0.113 | -0.109 | -0.109 | -0.109 |
| | [0.25] | [0.13] | [0.13] | [0.14] | [0.14] | [0.14] |
| Self-reported health –fair | -0.281 | -0.305 | -0.303 | -0.307 | -0.304 | -0.306 |
| | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| Self-reported health –poor | -1.04 | -1.05 | -1.054 | -1.063 | -1.056 | -1.066 |
| | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| Prob working ft after 62 (P62) | 0.008 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| Prob working ft after 65 (P65) | 0.009 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| 2nd SS wealth quartile | -0.061 | -0.08 | -0.081 | -0.055 | -0.059 | -0.056 |
| | [0.43] | [0.30] | [0.29] | [0.49] | [0.45] | [0.48] |
| 3$^{rd}$ SS wealth quartile | -0.38 | -0.391 | -0.395 | -0.355 | -0.36 | -0.358 |
| | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| 4$^{th}$ SS wealth quartile | -0.327 | -0.348 | -0.353 | -0.335 | -0.339 | -0.34 |
| | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| SS wealth missing | -0.106 | -0.108 | -0.111 | -0.118 | -0.119 | -0.12 |
| | [0.10] | [0.17] | [0.16] | [0.14] | [0.14] | [0.13] |
| IRA wealth above median | 0.055 | 0.055 | 0.055 | 0.054 | 0.055 | 0.053 |
| | [0.30] | [0.30] | [0.30] | [0.32] | [0.31] | [0.32] |
| P62 missing | 0.639 | 0.549 | 0.553 | 0.545 | 0.539 | 0.549 |
| | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| P65 missing | 0.85 | 0.875 | 0.885 | 0.971 | 0.976 | 0.982 |
| | [0.05] | [0.05]* | [0.04]* | [0.03]* | [0.03]* | [0.03]* |
| White collar job missing | 0.107 | 0.204 | 0.207 | 0.169 | 0.156 | 0.172 |
| | [0.75] | [0.54] | [0.54] | [0.61] | [0.64] | [0.61] |
| Physical job missing | 0.424 | 0.3 | 0.328 | 0.408 | 0.397 | 0.433 |

| | [0.59] | [0.70] | [0.68] | [0.61] | [0.62] | [0.58] |
|---|---|---|---|---|---|---|
| Observations | 2077 | 2077 | 2077 | 2077 | 2077 | 2077 |

P-values in brackets

* significant at 5% level; ** significant at 1% level

### 3.2.2 Married men

Figure 5 presents a histogram of ECA for married men age 62 or less. About 70% of the respondents report either age 62 or age 65, with both ages being equally likely in the sample. Most of the ECA are between 62 and 70, showing that a large proportion of married men have knowledge about possible claiming ages.

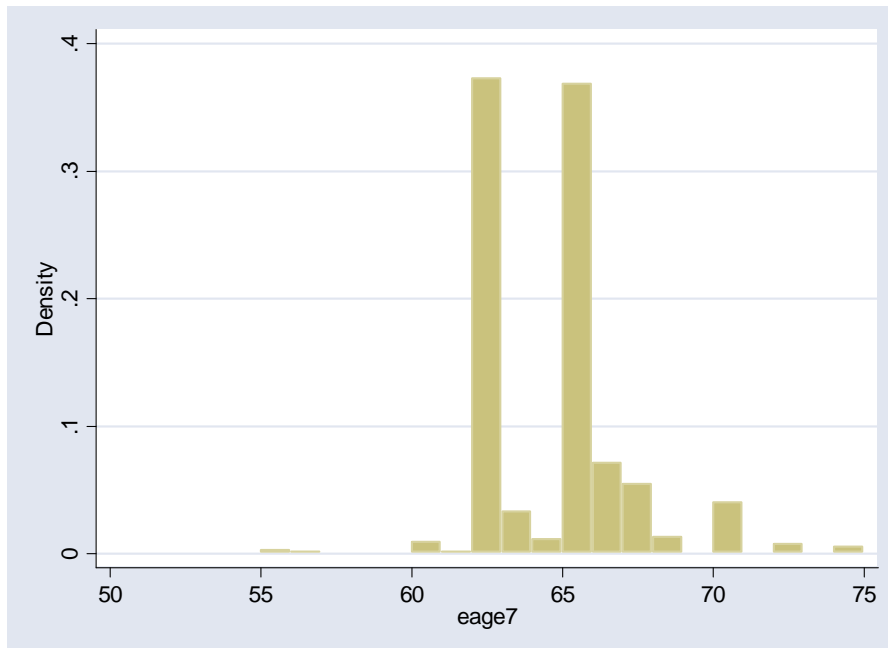Figure 5: ECA of married men less than 62 years old



Table 18 presents the results of the ordered probit using ECA as dependent variable. For all the specifications, we find that own survival has no impact on ECA. However, an important finding is that spouse's survival has a positive and statistically significant coefficient for all the specifications. This is consistent with husbands trying to delay claiming so that their spouses enjoy higher survivor's benefits. Similarly, we find that husbands with younger spouse are more likely expect to delay claiming. The coefficient of age difference between spouses is not statistically significant, though. Whether we use imputed P75 or not does not change the results.

Contrarily to single men, we find that knowledge about SS rules impact the ECA, in particular married men who do not know that claiming early reduces SS benefits expect to claim

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earlier. Like for singles and married women, work expectations are strong predictors of ECA. Financial variables seem more important for men than for women: men in the higher quartiles of wealth and SS wealth expect to claim earlier.

Table 18: Ordered probit for married men (Dependent variable = ECA in 2004)

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **P75** | 0.001 | 0.001 | | 0 | 0 | |
| | [0.52] | [0.62] | | [0.83] | [0.97] | |
| **P75- DK that claiming at 62 reduces SS** | | | -0.001 | | | -0.002 |
| | | | [0.73] | | | [0.50] |
| **P75 – know that claiming at 62 reduces SS** | | | 0.001 | | | 0.001 |
| | | | [0.35] | | | [0.53] |
| **P75 – knowledge question missing** | | | 0 | | | 0 |
| | | | [0.99] | | | [0.83] |
| **Spouse's P75** | | | | 0.003 | | 0.003 |
| | | | | [0.01]* | | [0.01]** |
| **Spouse's P75 missing** | | | | 0.232 | | 0.233 |
| | | | | [0.07] | | [0.07] |
| **Spouse's P75 (with imputation)** | | | | | 0.003 | |
| | | | | | [0.01]* | |
| **Spouse's P75 (with imputation)** | | | | | 0.289 | |
| | | | | | [0.03]* | |
| DKreducSS1==1 - DK that claiming at 62 reduces SS | | -0.367 | -0.224 | | -0.385 | -0.222 |
| | | [0.00]** | [0.26] | | [0.00]** | [0.26] |
| DKreducSS1==2 - knowledge question missing | | -0.049 | 0.045 | | -0.051 | 0.038 |
| | | [0.58] | [0.80] | | [0.58] | [0.83] |
| **Expect SS from spouse's record** | | | | -0.068 | -0.021 | -0.01 |
| | | | | [0.87] | [0.96] | [0.98] |
| **Expect SS on both records** | | | | 0.022 | 0.023 | 0.026 |
| | | | | [0.80] | [0.79] | [0.76] |
| **DK which record** | | | | 0.302 | 0.316 | 0.335 |
| | | | | [0.58] | [0.56] | [0.54] |
| ratio wife/husband benefits:50% - 99% | | | | -0.036 | -0.029 | -0.027 |
| | | | | [0.76] | [0.81] | [0.82] |
| ratio wife/husband benefits: more than 100% | | | | 0.091 | 0.128 | 0.133 |
| | | | | [0.46] | [0.29] | [0.28] |
| ratio wife/husband benefits missing | | | | -0.02 | -0.014 | -0.004 |
| | | | | [0.84] | [0.89] | [0.97] |
| Age | -0.026 | -0.027 | -0.027 | -0.027 | -0.027 | -0.028 |
| | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| **Spouses' age difference** | 0.005 | 0.005 | 0.005 | 0.007 | 0.008 | 0.008 |
| | [0.35] | [0.36] | [0.35] | [0.20] | [0.19] | [0.19] |
| Black | -0.208 | -0.187 | -0.184 | -0.195 | -0.175 | -0.168 |
| | [0.05]* | [0.08] | [0.08] | [0.07] | [0.10] | [0.12] |
| Hispanic | 0.115 | 0.117 | 0.117 | 0.144 | 0.145 | 0.15 |

|  | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
|  | [0.27] | [0.26] | [0.26] | [0.17] | [0.17] | [0.15] |
| 2nd wealth quartile | -0.026 | -0.007 | -0.006 | -0.02 | 0.003 | 0.003 |
|  | [0.75] | [0.94] | [0.94] | [0.81] | [0.97] | [0.97] |
| 3rd wealth quartile | -0.232 | -0.217 | -0.217 | -0.235 | -0.219 | -0.219 |
|  | [0.01]* | [0.02]* | [0.02]* | [0.01]** | [0.02]* | [0.02]* |
| 4th wealth quartile | -0.084 | -0.07 | -0.067 | -0.087 | -0.076 | -0.07 |
|  | [0.45] | [0.53] | [0.55] | [0.44] | [0.50] | [0.53] |
| Working for pay | 1.051 | 1.047 | 1.033 | 1.036 | 1.023 | 0.999 |
|  | [0.07] | [0.07] | [0.07] | [0.07] | [0.08] | [0.08] |
| Own stock | 0.166 | 0.158 | 0.157 | 0.159 | 0.152 | 0.148 |
|  | [0.03]* | [0.04]* | [0.04]* | [0.04]* | [0.04]* | [0.05] |
| White collar job | 0.134 | 0.119 | 0.117 | 0.128 | 0.112 | 0.111 |
|  | [0.07] | [0.11] | [0.12] | [0.08] | [0.13] | [0.14] |
| Physical job | -0.047 | -0.055 | -0.057 | -0.039 | -0.047 | -0.048 |
|  | [0.53] | [0.46] | [0.44] | [0.59] | [0.53] | [0.52] |
| Pension on current job | -0.029 | -0.032 | -0.03 | -0.021 | -0.023 | -0.02 |
|  | [0.66] | [0.64] | [0.66] | [0.75] | [0.73] | [0.77] |
| Earnings | 0 | 0 | 0 | 0 | 0 | 0 |
|  | [0.13] | [0.10] | [0.09] | [0.14] | [0.10] | [0.11] |
| Self-reported health –very good | -0.091 | -0.093 | -0.094 | -0.091 | -0.093 | -0.095 |
|  | [0.26] | [0.26] | [0.25] | [0.26] | [0.26] | [0.25] |
| Self-reported health –good | -0.193 | -0.19 | -0.189 | -0.19 | -0.186 | -0.185 |
|  | [0.02]* | [0.03]* | [0.03]* | [0.03]* | [0.03]* | [0.03]* |
| Self-reported health –fair | -0.204 | -0.188 | -0.196 | -0.208 | -0.192 | -0.199 |
|  | [0.09] | [0.11] | [0.10] | [0.08] | [0.11] | [0.10] |
| Self-reported health –poor | -0.659 | -0.672 | -0.672 | -0.691 | -0.705 | -0.708 |
|  | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| Prob working ft after 62 (P62) | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 |
|  | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| Prob working ft after 65 (P65) | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
|  | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| 2nd SS wealth quartile | -0.056 | -0.089 | -0.091 | -0.047 | -0.076 | -0.079 |
|  | [0.64] | [0.46] | [0.45] | [0.70] | [0.53] | [0.51] |
| 3rd SS wealth quartile | -0.284 | -0.327 | -0.327 | -0.27 | -0.31 | -0.308 |
|  | [0.01]** | [0.00]** | [0.00]** | [0.02]* | [0.01]** | [0.01]** |
| 4th SS wealth quartile | -0.456 | -0.51 | -0.514 | -0.43 | -0.479 | -0.478 |
|  | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| SS wealth missing | -0.166 | -0.225 | -0.225 | -0.138 | -0.194 | -0.191 |
|  | [0.11] | [0.06] | [0.06] | [0.21] | [0.11] | [0.12] |
| IRA wealth above median | 0.093 | 0.087 | 0.085 | 0.086 | 0.081 | 0.077 |
|  | [0.15] | [0.18] | [0.19] | [0.19] | [0.21] | [0.24] |
| P62 missing | 1.28 | 1.252 | 1.252 | 1.296 | 1.27 | 1.268 |
|  | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** | [0.00]** |
| White collar job missing | -0.181 | -0.171 | -0.166 | -0.2 | -0.193 | -0.19 |
|  | [0.67] | [0.69] | [0.70] | [0.64] | [0.65] | [0.66] |
| Physical job missing | 0.191 | 0.19 | 0.167 | 0.172 | 0.157 | 0.135 |
|  | [0.63] | [0.63] | [0.68] | [0.67] | [0.70] | [0.74] |
| Observations | 1418 | 1418 | 1418 | 1418 | 1418 | 1418 |

**Conclusion**

There is substantial heterogeneity in the level of knowledge about SS rules according to demographic characteristics. The lack of knowledge among underprivileged groups, such as respondents without high-school degrees or Blacks, is of concern for the well-being of those groups in retirement, because they might rely heavily on SS benefits in old age.

Our results suggest that individuals are responsive to the incentives provided by the SS rules. Single individuals take into account their survival expectations when deciding when to claim. Married individuals seem to make claiming plans to maximize the total lifetime amount the couple will receive from SS. This suggests that it is important to consider the incentives provided to couples—not just individuals—when evaluating the impact of various SS reforms. Women's claiming decisions are importantly influenced by their level of knowledge. Given the fact that women are less knowledgeable than men, targeting education programs toward women is likely to have an impact on their claiming decisions.

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