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Abstract

In 1995, the Social Security Administration started sending out the annual Social Security Statement. It contains information about the worker's estimated benefits at the ages 62, 65, and 70. We use this unique natural experiment to analyze the retirement and claiming decision making. First, we find that, despite the previous availability of information, the Statement has a significant impact on workers' knowledge about their benefits. These findings are consistent with a model where workers need to gather costly information in order to improve their retirement decision. Second, we use this exogenous variation in knowledge to analyze the optimality of workers' decisions. We do not find an overall improvement in workers' retirement behavior, but there are some changes among particular groups. Workers aged 62 and 65 become less sensitive to Social Security Incentives. Age 62 and 65 are the two ages at which the retirement benefits are reported in the Statement, which suggests that some workers may use them as focal points. Additionally, we find evidence that before the Statement was introduced uninformed workers, who are more likely to be low–educated and black, made, on average, worse retirement decisions, and that workers with a dependent spouse usually disregarded their own spouse's benefits in their calculations. The information contained in the Statement appears to have helped both groups, though with the important exception of black workers.

Keywords: social security statements, retirement expectations, retirement behavior, social security incentives

JEL classification codes: H55, J26

1 Introduction

Social Security is the largest expenditure program in the United States. The 70-year-old system provides more than half of the income for two thirds of the elderly population. For 34 percent of them, Social Security benefits represent 90 percent of their income (*Fast Facts & Figures About Social Security* 2004). Due to demographic changes, the Social Security system faces a fiscal imbalance and is in urgent need of reform. This is clearly acknowledged by the Social Security Administration (SSA) in the Statement that is sent yearly to all workers:

> "Your estimated benefits are based on current law. Congress has made changes to the law in the past and can do so at any time. The law governing benefit amounts may change because, by 2042, the payroll taxes collected will be enough to pay only about 73 percent of scheduled benefits."

While reforms are necessary, the nature of these reforms is a subject of controversy. In order to evaluate different proposals, it is critical to understand how people make their retirement decisions.

Standard economic theory assumes that agents base their retirement decisions on forward-looking variables, such as the present discounted value of the agents' Social Security benefits (the income effect) and its changes due to working an additional year (the substitution effect). Hurd (1990) and Krueger and Meyer (2002) provide a comprehensive survey of studies that have tried to measure these effects.

The income effect due to an increase in the present discounted value of Social Security benefits, called the Social Security wealth (SSW) should induce early retirement. Numerous empirical studies have found this effect. There is no consensus, however, on the size of the effect, in other words on how much of the trend towards lower labor force participation is attributable to the expanding Social Security system and how much to changes in preferences for leisure. The main empirical issue is that Social Security is a federal program, and thus any cross-sectional variation in benefits arises from cross-sectional variation in

life-time earnings, marital status, and number of dependents, and all these factors may, as well, have independent effects on labor supply decisions (Krueger and Meyer 2002).[1]

Postponing retirement by one year can generate considerable changes in SSW (the SSW accrual). Positive accruals generate an incentive to work, though the size of this effect, the substitution effect, has been disputed as well. There are two pronounced retirement rate spikes: at the early retirement age (ERA) and at the normal retirement age (NRA). Around 60 percent of people claim their Social Security benefits at the age of 62, and among those who do not claim before age 65, 80 percent claim at age 65. Some factors can partially explain this clustering: large disutility from work and/or a large discount rate (ERA spike) and discontinuities in the adjustment rates (NRA spike). However, as pointed out by Panis, Hurd, Loughran, Zissimopoulos, Haider and St.Clair (2002) and Lumsdaine, Stock and Wise (1996), most structural models are unable to account for the size of these spikes. One plausible explanation for the existence of spikes is provided by Phelan and Rust (1997), who attribute part of the 62-spike to liquidity constraints and part of the 65-spike to lock-in effects due to Medicare when workers lack alternative health insurance in retirement.

Their explanation is at odds, however, with the evidence from the 1961 change in the early retirement age from 65 to 62. While the ERA has changed suddenly, the spike in retirement has moved very slowly (over 30 years, Burtless 1999). Based on this evidence, Axtell and Epstein (1999) suggest that spikes may not be entirely the product of rational decision making but resemble some herd behavior. Additional support for a behavioral explanation of the spikes is provided by the recent increase in the NRA suggested by the 1983 Greenspan Commission. Mastrobuoni (2006) shows that the entire 65-spike at which the workers claim their Social Security benefits moved together with NRA. This contradicts the Medicare explanation as the Medicare eligibility at age 65 remained unchanged.[2]

[1]Krueger and Pischke (1992) try to overcome this problem using "double-indexing" for the "notch-generation," a generation that faced sudden great reductions in SSW. The authors note that labor force participation continued falling during this time, casting doubt on previously estimated income effects.

[2]The Social Security Statement contains the advice that, "even if you do not retire at age 65, be sure to contact Social Security three months before your 65th birthday to enroll in Medicare."

Economic models of retirement implicitly assume that workers know their future benefits as a function of their retirement age and are able to compare future streams of benefits. Empirical evidence, however, suggests that these are strong assumptions. When asked, only around 50 percent provide an estimate of their expected Social Security benefits (Bernheim and Levin 1989, Gustman and Steinmeier 2001).[3] Gustman and Steinmeier show that less than 30 percent of respondents are able to estimate their future benefits to within about $1,500 per year. Moreover, Lusardi and Mitchell (2006) show that financial illiteracy is widespread among older Americans. Only half of the age 50+ respondents can correctly answer two simple questions regarding interest compounding and inflation. Is it then reasonable to assume those same respondents are able to compute their retirement incentives, which typically involve relatively complex calculations?

Despite very little knowledge about retirement incentives, the fact that people seem to respond to incentives when making their retirement decisions has been called by Chan and Stevens (2003) an "important empirical puzzle in the retirement literature."

Gustman and Steinmeier try to test the robustness of retirement models when a measure of knowledge about benefits is added to the retirement regression. They find that knowledge does not affect workers' responsiveness to incentives. Chan and Stevens go one step further and analyze how the interaction of knowledge and accruals affects workers' decisions. The authors find that the responsiveness to pension incentives is entirely driven by the 20 percent of workers who perceive them correctly.[4] The validity of using measures of knowledge in the regressions, however, is questionable as knowledge is endogenous: workers gather information when they approach their expected retirement age.

[3]In our data that focuses on workers aged 55 and above the 2/3 of workers are able to provide an estimate.

[4]They do not find any link between knowledge and Social Security incentives, which they consider a result of data limitations. The first limitation is that they can measure if workers correctly perceive their Social Security benefits, but not if they correctly perceive their Social Security accruals. The second limitation is that the match between the Health and Retirement Survey and the administrative records is available only up to the 1992 survey year, and is likely to introduce measurement error in the benefit calculations for the subsequent years.

We make use of a unique natural experiment to shed light on these issues: In 1995, the Social Security Administration started sending out the annual Social Security Statement. The Statement is a concise, easy-to-read personal record of past earnings and a summary of the estimated benefits for the worker and his or her family as a function of his or her retirement age. The Statement has been sent out in phases, starting with workers who were 60 years and older. In later years it has been sent according to the following (year,age) combinations: (1996, 58+), (1997, 53+), (1998, 47+), (1999, 44+), (2000, 25+).

The introduction of the Statement provides an exogenous source of variation in the information about Social Security benefits. This change is used to analyze workers' retirement and claiming decisions. First, we model how workers gather information about their Social Security benefits. The empirical evidence is consistent with a model of retirement where information is costly. The Statement allows us to look at the effect of moving from a system in which information is freely available, but the worker has to show some initiative and either call the SSA or learn the Social Security benefit rules to know about the Social Security incentives he or she faces, to a system where the cost of gathering information is basically zero. We show that these two systems produce significantly different levels of knowledge.[5] We identify workers who know little or nothing about their future Social Security benefits before they receive the Statement and find that they benefit the most from the information contained in the Statement. We find that, for these workers, the effect of the Statement on knowledge is strong even when they are close to their retirement date. Respondents from the Health and Retirement survey are less likely to say that they don't know their benefits and their expected benefits are closer to the actual benefits that they end up getting in later waves. Uninformed workers, though, are a very selective sample of the population. In order to value the information, workers need to be able to use the

[5]Duflo and Saez (2003) is similar in spirit to our analysis in that it also deals with the endogeneity problem of information. The authors use a randomized experiment to study the role of information in the employees' decisions to enroll in a Tax Deferred Account retirement plan. They conclude that "the important decision about how much to save for retirement can be affected by small shocks such as a very small financial reward and/or the influence of peers, and thus does not seem to be the consequence of an elaborate decision process."

information and need to be free to choose their retirement age. It is known that workers who face health problems or are liquidity constraints tend to retire as soon as possible. Consistent with this, we find that wealthier and healthier workers are significantly more likely to get informed. A more puzzling finding is that even after controlling for labor market experience, occupation, wealth, and health, black workers and workers with low levels of education are significantly less likely to know their benefits. One possible explanation for this persistent gap is that these workers are also more likely to be financially illiterate (Lusardi and Mitchell 2006).

Later, we measure how the additional information about Social Security incentives affects retirement and claiming behavior. We look at changes in workers' expectations about their claiming age, and we find only limited evidence that receiving the first Statement generally induces some workers to update their expectations.

Then, we use the exogenous variation in information to test whether retirement and claiming decisions become more sensitive to Social Security incentives. Workers who are not well informed before receiving the Statement, namely blacks and low educated workers, are also the ones for whom Social Security accruals play the smallest role in claiming decisions. But this is not necessarily inconsistent with the theory, because those workers are also more likely to be liquidity constraint and in bad health.

The introduction of the Statement, instead, generates mixed results. Low educated workers show a small and insignificant increase in the responsiveness to the Social Security incentives, but black workers show a large and significant reduction. This finding and two other findings are puzzling, namely that: 1) workers whose spouse is eligible to receive dependent benefits become more likely to take these additional benefits into consideration when deciding about retirement (this may be due to the lack of information about the existence of spouse's and survivor's benefits, an additional information contained in the Statement); 2) workers aged 62 and 65 become less sensitive to Social Security Incentives (age 62 and 65 are the two ages at which the retirement benefits are reported in the statement. This is puzzling and suggests that some people retiring at 62 and 65 make this decision based on simple rules of thumb and not Social Security incentives).

Summing up, it seems that for some groups, namely low–educated workers the lack of knowledge is the product of a maximization process, while for others, mostly blacks, lack of knowledge is more difficult to be justified.

2 Data

We use the Health and Retirement Survey (HRS) to evaluate how the Statement affects workers' knowledge about their future benefits, and to evaluate what determines whether workers are informed even before receiving the Statement. Later we use the Survey of Income and Program Participation (SIPP) to evaluate the effect of the Statement on retirement decisions.

The HRS is a longitudinal, biennial, nationally representative survey of older Americans. We use waves 1 to 6 (1992–2002), and restrict the analysis to workers older than age 55 who are not receiving Social Security disability benefits. We also use a special module added to the 2004 survey to analyze financial literacy. To measure the actual effect on retirement decisions, we use the 1990, 1991, 1993, and 1996 SIPP surveys matched with information on benefit receipt and earnings histories from the Social Security Administration's administrative records. Since workers who reach the early retirement age of 62 after the 1983 Social Security amendments face conceptually similar benefit rules and since Statements were introduced in 1995, we restrict our analysis to workers born after 1922. Seventy percent of married women are eligible for spousal benefits that exceed their own benefits; therefore, when analyzing retirement behavior, we focus the analysis on male workers. The main advantage of using the SIPP data is that information on earnings is available up to 2003; that is, the data cover the period after the introduction of the Statement. In the HRS, on the other hand, only the first wave (1992) is matched to administrative records. While it would be possible to use the survey information for the years after 1992, it is only available every two years. Another main advantage of the SIPP over the HRS is that the sample size is five times larger, which allows us to better control for observed heterogeneity.

After restricting the sample to male workers born between 1922 and 1940, the SIPP data contain around 14,000 observations. Since we cannot control for health status workers who at any time claim for disability benefits are excluded from the sample.[6] Workers are matched with their spouses' information. Two percent of male workers have expected benefits that are smaller than half of the benefits of their spouse. These workers are excluded from the analysis since they are better off by claiming for their spouses' benefits, and are unlikely to respond to changes in their own SSW.

Using cross-sectional information from the SIPP data, we construct a panel that ranges from age 55 to either age 72 or the year 2003. Since information from the SIPP survey is used for both years before and years after the survey, there is a potential measurement error problem. While the error is likely to be small for characteristics that change little over time (gender, marital status, education, wealth), there are time-varying factors that have been shown to influence retirement decisions. There are two important factors that are time-varying, but that we cannot control for: health status and private pensions. Previous studies have found that the elasticity of retirement with respect to Social Security incentives is robust to the exclusion of both health status (Panis, Hurd, Loughran, Zissimopoulos, Haider and St.Clair 2002) and private pensions (Coile and Gruber 2001). Nevertheless, we control for whether the worker is covered or receives a private pension, and whether he has health insurance. Table 13 in the Appendix shows the summary statistics for the main SIPP sample used later in the regressions.

3 The Social Security Statement

The introduction of the Statements was phased in starting in 1995. The SSA was required to mail the annual Statement—then named the Personal Earnings and Benefit Estimate Statement—to all workers age 60 and older.[7] Younger workers have been added to the recipient list in subsequent years, and since 2000 almost all workers not claiming benefits

[6] Some further deletions are made mostly for reasons of miscellaneous data inconsistencies.

[7] In the Appendix we provide a sample of the Social Security Statement. Earlier versions of the Statement can be found in reports by the GAO, although they changed little over time.

receive the Statement. Workers usually receive their Statement one month before their birthdays.[8] In fact, this seems to be a good timing since 65 percent of all workers claim immediately after their birthdays (15 percent of the claims occur in January and the remaining workers tend to claim uniformly across the year).

The main purpose of the Statement is to inform the public about benefits under SSA programs, to aid in financial planning, and to ensure the worker's earnings records are complete and accurate. The Statement contains expected Social Security benefits at the early (62), the normal (usually 65, though increasing since 2003), and the late (70) retirement age as well as the worker's entire earnings history. The Statement also informs workers about spouse's benefits, survivors' benefits, and disability benefits. The Statement does not report the SSW. Later, we evaluate how this additional information affects workers' retirement behavior assuming that workers are able to compute their SSW.

Beside the Government Accountability Office (GAO) that has tried to evaluate their understandability, economists have not paid much attention to the introduction of the Statements.[9] This has prompted Jackson (2005) to conclude that: "Given the importance of Social Security benefits to so many Americans, it is surprising how little academic attention has been given to the content and implications of Social Security benefits" and "..., what is clear is that the Social Security Statement is one of the most important communication that the federal government sends out to the general public each year, and as such the document deserves much more attention from public official and academic writers than it has received to date."

According to the GAO reports the overall public reaction to receiving an unsolicited Statement has been favorable. The reports cite a nationally representative survey in which (as predicted by Bernheim, 1987) "the majority of the respondents indicated they were glad to receive their Statements and 95 percent of them said the information provided was helpful to their families." The April 2005 report finds that 66 percent of workers

[8] In 2000 the SSA started sending the Statement three months before the worker's birthday.

[9] See GAO/T-HEHS-96-210, GAO/HEHS-97-19, GAO/HEHS-98-228, GAO/T-HEHS-00-101, GAO-05-192 on www.gao.gov

remember receiving a Statement (unfortunately they do not provide this number by age groups), and that 90 percent of those who remember receiving a Statement say that they remember the amount of estimated Social Security benefits. The results of a Gallup survey, undertaken at the request of the SSA, revealed that individuals who had received a Statement had a significantly increased basic understanding of Social Security, and an increased understanding of some important basic features of Social Security: the amount of Social Security benefits depends on how much people earned; Social Security pays benefits to workers who become disabled; Social Security provides benefits to dependents of workers who die.[10] According to the 2004 Retirement Confidence Survey, 80 percent of workers use retirement benefit Statements (not necessarily only Social Security Statements) and 20 percent find them the most helpful tool in retirement and claiming decision making (Helman and Paladino 2004). Jackson analyzes the content of the Social Security Statement, and reports how because of various cognitive biases workers may misinterpret the value of their benefits. He then suggests that including the present discounted value of Social Security benefits may facilitate the comparison with other sources of income and minimize labor market distortions.

4 Workers' knowledge about their benefits and the Statement

In all six available waves of the HRS (1992–2002), workers are asked about their expected retirement age and their expected Social Security benefits. Upon receiving the Statement, workers should be less likely to answer that they do not know the benefit amount they expect to receive once they retire. Also, for workers who provide an estimate, we expect the forecast error, that is the difference between the expected Social Security benefits and the actual benefits, to be smaller.[11]

[10] See http://www.ssa.gov/pressoffice/Statementfact.html.

[11] Because of the panel structure of the survey, we can compare these expectations with the reported actual benefits received in later waves. Although later on in the analysis we focus on male workers, here, in order to gain precision, we use both the male and the female samples. Using only the male sample does not substantially alter any of the results.

It is important to note that workers have always had the option to ask the SSA to compute their expected benefits (it would usually take 4 to 6 weeks to receive an estimate). According to the HRS around 50 percent of the respondents contacts the SSA by age 62. Given the complexity of the benefit formula this it isn't too surprising. The Statement is likely to provide new information mainly to those who have not contacted the SSA. We can think of them as the treatment group that actually receives a treatment. Since receiving a Statement influences the probability of contacting the SSA, we need to correct for this endogeneity if we want to measure the effect of Statement on those workers who wouldn't have contacted the SSA.[12] Fortunately it is possible to correct for this endogeneity bias using pre–Statement information on who contacted the SSA.

Because of this selection the group that contacts the SSA is not a random sample, and so it is useful to formalize what influences the decision to contact the SSA.

4.1 Modeling the optimal time for getting informed

A worker will acquire new information about his retirement benefits when, based on his prior $f(b)$ over the whole distribution of his retirement benefits (which are function of the retirement age $b = (b_{62}, ..., b_{70})$) he believes that the expected gains of information outweigh the cost of information. Retirement affects utility through its consequences on consumption and leisure. Defining the retirement decision as $R \in \{0, 1\}$, it's optimal to gather information when

$$\int max_R U[R(b)]f(b)db - max_R \int U[R(b)]f(b)db > c. \tag{1}$$

Intuitively information matters when better knowledge about the benefits can influence the retirement decision, in other words, when variation in benefit patterns generate variations in utility $U[R(b)]$. If, for example, the prior is such that the worker strongly believes that it is optimal to retire as soon as possible, it might not be optimal for him

[12]The 1992 and 1994 waves of the HRS contain information about whether the respondent contacted the SSA to calculate his benefits (in the 2000 wave only a subset of around 200 people were asked this question). The exact formulation of the question is: Have you ever had the Social Security Administration calculate what your Social Security retirement benefit will be?"

to collect additional information. Factors that can generate such a boundary solution are high discount rates, high disutility from work (health issues), high mortality, and low risk aversion. Notice that we are implicitly assuming that workers are able to evaluate their retirement incentives (complicated functions of their benefits). Financially illiterate workers, unable to compute those incentives, might also choose not to get informed.

The main effect of the Statement is to considerably reduces c, which should help workers to make better retirement choices. But if workers select into the unknowledgeable state changes in retirement behavior are expected to be lower than in a situation where knowledge were randomly assigned. Before analyzing the effect of the Statement it is therefore important to analyze the selection issue.

Column (1) in Table 1 shows that, apart from age (multiplied by 1/2 for a reason that will be clear shortly), the two strongest predictors for contacting the SSA are the level of education and race. Both, having less than a high school degree and being black, reduce the probability of contacting the SSA by around 15 percentage points. Consistent with the theory wealthier workers, therefore workers that are less likely to be liquidity constraint, are more likely to contact the SSA (column 2). The effects are very large. Compared to workers that are in the first wealth quartile, workers with wealth above the median are 15 percentage points more likely to contact the SSA. Healthy workers are, compared to workers in fair and poor health, more likely to contact the SSA. Health and wealth do also capture around 30 percent of the differences that in the first column were attributed to race and education.

In column (3) we additionally control for the subjective life–expectancy and for labor market experience.[13] While more experienced workers are significantly more likely to contact the SSA, the coefficient on the subjective life-expectancy is not significant. Since the SSA's actuarial adjustments for postponing retirement are based on the average life-expectancy workers with a low subjective life–expectancy should be less likely to get informed if they know that they should follow the simple rule of retiring and claiming

[13]The subjective life–expectancy is measured as the self-reported probability of surviving age 75 divided by the implied probability from the Vital Statistics life tables that someone of the respondent's age and gender will live to be 75.

the benefits as soon as possible. On the other hand, workers with a high life–expectancy should do the opposite, claim as late as possible (70). Checking for non-linearities does reveal that workers in the first and the last quartile of the distribution of subjective life–expectancy are less likely to get informed, but the effects are not significant.[14]

Around 35 percent of workers age 65 receive a private pension. The incentives of getting informed might differ by whether workers receive a pension or participate in a defined benefit or defined contribution plan, both because pension change the liquidity constraint and because pensions change the overall retirement incentives. When we control for these factors, we indeed find that workers who already receive a pension are significantly more likely to have contacted the SSA.[15] Participating in a pension plan does not significantly change the probability of contacting the SSA, even when we focus on those who do not yet receive a pension income. Do to data limitation we were unable to test whether the relative importance of pension benefits to Social Security benefits matters. Controlling for private pensions does not reduce the effects of race and education.

In column (5) we control for the respondents financial planning time horizon, information available from the HRS's first wave (no information on pensions). How far in advance workers are planning is certainly related to their time preference. Consistent with this we find that the longer the planning time horizon the more likely it is workers contact the SSA. It is important to notice that even after controlling for health, wealth, mortality, and proxies of time preference workers without a high school degree and black workers are 10 percentage points less likely to contact the SSA. In the last column we additionally control for occupation fixed effects. While this reduces by another 30 percent the differences across levels of education, the coefficient on race drops by only 1 percentage point.

Summing up, workers who didn't contact the SSA before the introduction of the Statement tend to be younger, with lower levels of education, single, black, in poor health, poor, with fewer labor market experience, and less likely to plan many years in advance.

[14]Results available upon request.

[15]The sample size is lower because the information on whether the respondent receives a pension isn't available in the first wave.

Table 1: Linear probability model of contacting the SSA.

		(1)	(2)	(3)	(4)	(5)	(6)
$age \times 1/2$		8.32	8.06	7.55	7.08	7.97	8.22
		(0.54)**	(0.54)**	(0.57)**	(0.85)**	(0.78)**	(0.81)**
Female		-1.54	-1.09	2.86	8.28	1.35	0.52
		(1.49)	(1.47)	(1.73)	(2.43)**	(2.29)	(2.64)
Below high school		-14.87	-10.53	-9.03	-9.31	-8.98	-6.26
		(1.71)**	(1.75)**	(1.88)**	(2.74)**	(2.36)**	(2.52)*
Some college		6.02	5.18	4.90	5.68	3.25	0.87
		(2.11)**	(2.09)*	(2.15)*	(2.87)*	(2.78)	(2.91)
College		10.29	7.26	8.20	9.09	7.44	5.17
		(2.14)**	(2.20)**	(2.26)**	(2.99)**	(2.80)**	(3.32)
Single		-7.55	-3.14	-4.20	-7.03	-4.15	-2.89
		(1.61)**	(1.67)	(1.78)*	(2.38)**	(2.32)	(2.39)
Black		-13.87	-10.60	-10.31	-13.24	-10.06	-9.16
		(1.74)**	(1.75)**	(1.93)**	(2.75)**	(2.37)**	(2.49)**
Self–r. health:	very good		-0.63	-1.32	-1.02	-0.83	-1.05
			(1.87)	(1.92)	(2.80)	(2.61)	(2.69)
	good		-1.42	-2.17	1.07	-2.56	-2.17
			(1.93)	(2.00)	(2.92)	(2.67)	(2.74)
	fair		-5.05	-4.11	-2.50	-3.89	-3.90
			(2.29)*	(2.51)	(3.95)	(3.43)	(3.55)
	poor		-6.66	-5.11	-2.00	-8.13	-9.23
			(2.94)*	(3.60)	(8.09)	(5.03)	(5.13)
Wealth percentiles:	25-50		6.48	5.61	8.84	4.25	3.69
			(1.79)**	(1.94)**	(2.93)**	(2.59)	(2.71)
	50-75		15.70	14.56	13.75	12.38	11.43
			(2.04)**	(2.17)**	(3.14)**	(2.89)**	(3.02)**
	75-100		16.72	15.64	11.62	16.63	16.39
			(2.34)**	(2.48)**	(3.39)**	(3.29)**	(3.44)**
Subjective P_{75}				-2.40	0.44	-5.10	-4.64
				(1.92)	(2.87)	(2.56)*	(2.65)
Experience				0.43	0.48	0.35	0.32
				(0.07)**	(0.12)**	(0.09)**	(0.10)**
Pension on current job					2.38		
					(2.63)		
Defined benefit plan					1.11		
					(2.77)		
Receives a pension					12.42		
					(3.51)**		
Financial time horizon	few months					-11.17	-10.32
						(3.92)**	(4.02)*
	year					-7.24	-6.67
						(4.25)	(4.39)
	few years					-7.78	-6.89
						(3.59)*	(3.69)
	5-10 years					-5.26	-4.96
						(3.68)	(3.77)
Occupation dummies			no	no	no	no	yes
Observations		5466	5466	4990	2018	2346	2190
R-squared		0.12	0.14	0.14	0.14	0.16	0.18

Notes: Clustered (by individual) standard errors in parentheses. *Sample:* HRS 1992-1994, age 55-65. The excluded categories are workers with a high school (HS) degree, in excellent health, with net wealth in the first quartile, and a financial time horizon of more than 10 years. The subjective probability of surviving until age 75, P_{75}, is divided by the implied probability from the Vital Statistics life tables that someone of the respondent's age and gender will live to be 75.

Next we show that these workers are more likely to improve their knowledge about their benefits upon receiving a Statement, which is consistent with the idea that information is costly.

4.2 The effect of the Statement on workers' knowledge about retirement benefits

Column (1) in Table 2 shows the effect of the Statement on the probability of reporting Social Security benefits,[16] estimated using a linear probability model. We control for age, age squared, year, gender, level of education, marital status, race, and labor market experience (number of years with positive earnings). When we control for a quadratic term of age and a linear term for years the introduction of the Statement reduces the probability of not reporting an estimate by 5 percentage points. Controlling for age and year fixed effects (column 2) doesn't alter the effects. This 16 percent drop in the probability of being uniformed can be interpreted as an average treatment effect. Being black and not having a high school degree are both very strong predictors for not knowing the future amount of the benefits. Controlling for health and wealth does not alter this results, and the reason is that controlling for age and time the introduction of the Statement tends to be orthogonal to the other variables.

In order to evaluate the effect of the Statement on workers who didn't contact the SSA before receiving the Statement we need to control for the fact that some workers would have shown an improvement even without the Statement (they would have contacted the SSA). Define the event "contacting SSA" as $C \in \{0,1\}$ and "not being able to provide an estimate" as $N \in \{0,1\}$. We need to estimate the improvement in $\Pr(N=1)$ that would have happened independently of the Statement $T \in \{0,1\}$: $\Pr(N_t = 1|C_{t-2} = 0, T = 0) - \Pr(N_{t-2} = 1|C_{t-2} = 0, T = 0)$. Having in mind that we are always conditioning on $T = 0$, by the law of total probability: $\Pr(N_t = 1|C_{t-2} = 0) = \Pr(N_t = 1|C_t = 0)\Pr(C_t = 0|C_{t-2} = 0) + \Pr(N_t = 1|C_t = 1)\Pr(C_t = 1|C_{t-2} = 0)$. One way to estimate

[16]The dependent variable is equal to one when workers respond that they "don't know" their Social Security benefits. The very few workers who refuse to respond are not included in the regressions.

Table 2: Linear probability (in percent) model of being unable to provide a benefit estimate.

	(1)	(2)	(3)	(4)	(5)	(6)
	Does not report and expected Social Security benefit amount					
Post–Statement	-5.37	-5.21	-5.13	0.28	-2.14	-2.18
	(1.26)**	(1.93)**	(1.93)**	(1.51)	(2.17)	(2.17)
No SSA contact				29.79	30.08	29.59
				(1.65)**	(1.65)**	(1.65)**
Post× no SSA c.				-10.51	-10.90	-11.10
				(1.86)**	(1.86)**	(1.86)**
Female	4.69	4.66	4.72	6.52	6.62	6.88
	(1.08)**	(1.08)**	(1.08)**	(1.30)**	(1.31)**	(1.30)**
Below high school	9.43	9.48	7.61	7.84	7.86	6.52
	(1.37)**	(1.37)**	(1.39)**	(1.62)**	(1.62)**	(1.64)**
Some college	-1.81	-1.80	-1.48	-0.01	0.05	0.22
	(1.28)	(1.28)	(1.28)	(1.49)	(1.49)	(1.50)
College	-1.74	-1.78	-0.70	1.39	1.39	1.96
	(1.30)	(1.30)	(1.33)	(1.50)	(1.50)	(1.52)
Single	3.93	3.89	2.66	2.37	2.26	1.14
	(1.03)**	(1.02)**	(1.05)*	(1.27)	(1.27)	(1.33)
Black	10.43	10.38	8.94	5.91	5.85	4.97
	(1.39)**	(1.40)**	(1.42)**	(1.68)**	(1.68)**	(1.71)**
Wealth	no	no	yes	no	no	yes
Health	no	no	yes	no	no	yes
Age effects	no	yes	yes	no	yes	yes
Year effects	no	yes	yes	no	yes	yes
Observations	14493	14493	14493	10237	10237	10237
R-squared	0.06	0.06	0.07	0.11	0.11	0.11

Notes: The non-numbered column reports the sample means. The excluded educational category is high school. Clustered (by individual) standard errors in parentheses; Bootstrapping (using 200 rep.) the standard errors by individual to account for both clustering, and also for the variation due to the first-step estimation of the probabilities of misclassification of contacting the SSA has negligible effects on the standard errors (results available upon request). * significant at 5 percent; ** significant at 1 percent. *Sample:* HRS 1992-2002, age 55-65.

$\Pr(C_t = 1|C_{t-2} = 0)$ is to use the cross–sectional information using age as a measure of time. Our estimate of $\Pr(C_t = 1|C_{t-2} = 0)$ is going to be equal to the coefficient on age$\times 1/2$ from Table 1. Age is multiplied by $1/2$ in order to estimate the probability over a 2-year period (the HRS is biennial). When we control for sex, education, race and marital status the estimate is 0.0832 with a standard deviation of 0.0054.

Although we don't know $\Pr(N_t = 1|C_t = 1) = E(N_t|C_t = 1)$ and $\Pr(N_t = 1|C_t = 0) = E(N_t|C_t = 0)$ for the years after 1994, we can estimate these probabilities using data from the 1992 and 1994 waves assuming that the probability of contacting SSA and the effects from contacting SSA wouldn't have changed over time. Given these assumptions the overstatement of the effect of the Statement for workers who didn't contact SSA is approximately equal to 2.4 percentage points (30 percent) when using data up to 1996: $[E(N_{t-2}|C_{t-2} = 1) - E(N_{t-2}|C_{t-2} = 0)]P(C_t = 1|C_{t-2} = 0) = 0.30 \times 0.08$.

A similar conclusion is reached when, in order to use the whole data, we estimate a regression model with known probabilities of misclassification of the variable C. Defining C^* as the true event and C as the misclassified one, the true effect of the Statement for group x is proportional to the misclassified one

$$\begin{aligned}
&[E\left(N|C = 0, T = x\right) - E\left(N|C = 1, T = x\right)] \\
&= [E(N|C^* = 0, T = x) - E(N|C^* = 1, T = x)] \\
&\qquad \times \Pr\left(C^* = 0|C = 0\right), \quad x = 0, 1
\end{aligned}$$

where the factor of proportionality is the probability of correctly classifying $1 - C$. Controlling for other X's, it can be shown that the estimated true effect of the Statement is equal to $\widehat{\beta}_{11}$ in the following linear model:[17]

[17]In order to control for the variation that is due to the first step, we can either use a modified version of Murphy and Topel (1985)'s two-step estimator that accounts for the panel structure (dependence over time), or we can simply bootstrap clusters of individuals and than run the first and second step. Since doing so has negligible effects on the standard errors (mainly due to the precision of the estimate of $\Pr(C_t = 1|C_{t-2} = 0, X)$), the analysis is carried out conditional on the estimate from the first stage.

$$N = \beta_{00} + \beta_{01}(1-C)\Pr(C^*=0|C=0,X) + \beta_{10}T_1$$
$$+\beta_{11}(1-C)\Pr(C^*=0|C=0,X)T_1 + X'\gamma + \epsilon. \quad (2)$$

This is the specification used from column (4) on, where we interact the probability of not having contacted the SSA and the post–Statement variable. This way we measure the treatment effect on the treated, and indeed the entire effect of the Statement is concentrated among those who never contacted the SSA (66 percent of the sample). Column (4) shows that not having contacted the SSA increases the initial probability of not reporting an estimate in the pre–Statement period by 30 percentage points, a very large effect. Notice also that this additional variable captures half of the effect of being black and reduces the differences due to the level of education. This means that blacks and workers with low levels of education are not only less likely to contact SSA in order to get informed, but are also less likely to get informed using other channels.

For those that don't contact the SSA, the Statement reduces the probability of not reporting an estimate by 10 percentage points, approximately one third of the initial difference. Columns (5) and (6) show that controlling for age and year fixed effects and for health and wealth does not change the estimated effects of the Statement.[18]

The effect on knowledge could be different at different ages, and thus could have very different effects on retirement behavior. The effect could be concentrated among younger workers, this way having only the effect of anticipating the information, with a small potential of changing retirement behavior. In order to capture how the Statement can differently affect different age groups, the first column in Table 3 reports for each age the fraction of workers who have contacted the SSA. Since almost all workers claim by age 65, the table is truncated at age 64. Most workers contact the SSA when they are close to retirement. Around 30 percent call in their 50s, while an additional 20 percent call when they approach the early retirement age.

[18]The results are not different when, disregarding an endogeneity problem, we also control for the time left from the expected retirement date (results available upon request).

Table 3: Linear probability (in percent) model of not being able to provide a Social Security benefits estimate by age.

	Contacted	Contacted SSA			Did not contact SSA		
Age	SSA	Pre-SSS	Pre-Post	Pre-Post	Pre-SSS	Pre-Post	Pre-Post
55	0.23	23.54	-3.43	-8.11	47.77	-7.33	-9.57
		(2.84)**	(6.24)	(6.29)	(2.40)**	(6.65)	(6.67)
56	0.27	18.97	3.74	1.96	52.06	-7.25	-8.13
		(2.62)**	(5.13)	(5.11)	(2.53)**	(4.92)	(4.86)
57	0.25	20.53	1.90	-0.22	49.13	-5.91	-6.45
		(2.92)**	(4.74)	(4.74)	(2.56)**	(4.30)	(4.20)
58	0.36	22.00	-3.60	-3.87	53.30	-7.14	-7.66
		(3.39)**	(4.08)	(4.16)	(3.71)**	(4.45)	(4.46)
59	0.34	19.71	0.95	1.94	57.46	-16.08	-15.89
		(3.41)**	(4.10)	(4.15)	(3.68)**	(4.34)**	(4.33)**
60	0.37	15.22	-0.65	-0.56	57.82	-15.57	-16.06
		(3.06)**	(3.55)	(3.77)	(4.08)**	(4.65)**	(4.85)**
61	0.47	10.00	4.89	6.12	57.50	-22.17	-20.91
		(2.31)**	(2.87)	(3.17)	(4.52)**	(4.99)**	(5.02)**
62	0.55	12.15	-1.78	-0.39	56.34	-24.01	-23.21
		(3.16)**	(3.76)	(4.01)	(5.90)**	(6.53)**	(6.78)**
63	0.59	11.43	0.98	0.99	54.05	-20.86	-20.95
		(3.81)**	(4.57)	(4.67)	(8.21)**	(8.87)*	(8.85)*
64	0.64	14.29	-0.69	-5.09	33.33	2.59	-4.28
		(9.37)	(9.80)	(9.50)	(15.75)*	(16.28)	(16.24)
Other Xs			no	yes		no	yes

Notes: The first column reports the fraction contacting the SSA. "Pre" columns report the fraction of workers who do not provide an estimate during the Pre–Statement period. Pre–Post columns report changes in the probability of providing a benefit estimate. Fractions are computed separately for workers who contacted (first three columns) and those who didn't contact the SSA (last three columns). Clustered (by individual) standard errors in parentheses. Bootstrapping (using 200 rep.) the standard errors by individual to account for both clustering, and for the variation due to the first-step estimation of the probabilities of misclassification of contacting the SSA has negligible effects on the significance level (results available upon request). * significant at 5 percent; ** significant at 1 percent. *Sample:* HRS 1992-2002, age 55-64.

In the remaining columns of Table 3, we analyze how at different ages the probability of reporting a benefit estimate changes upon receiving a Statement.[19] The sample is split into those who did and those who didn't contact the SSA (using again a model with misclassification and known probabilities of misclassification). Among those who contacted the SSA there is a clear reduction in the probability of not reporting an estimate as we approach the early retirement age. There is no such pattern for those who didn't contact the SSA in the pre–Statement period. In the post–Statement period, there is a clear improvement around the early retirement age. The effect of the introduction of the Statement can be seen by looking at the $Pre - Post$ columns. There are 2 $Pre - Post$ columns, the first does not control for other regressors (gender, education, experience, and veteran status), the other does. Among those who contacted the SSA the differences are not significantly different from zero. On the other hand, among workers who didn't contact the SSA, the Statement reduced the fraction by around 10 percentage points up to age 58 and 20 percentage points afterwards. In relative terms, the effect around the early retirement age is to reduce the fraction of workers that are unable to provide a benefit estimate by almost one half.[20] After age 58 the differences are significant at the 1 percent level (except at age 64 where the sample size is also very small).

The Statement has a significantly larger impact at ages close to the early retirement age. It generates little additional information for workers who are far from retiring.

Up until now we haven't considered the possibility that a worker's knowledge about the benefits may be positively influenced when someone else in the household receives a Statement. The HRS allows us to analyze how worker's knowledge changes when the spouse receives a Statement. In Table 4 we compute the probability of being unable to provide an estimate by the worker's own Statement status and the spouse's Statement

[19]We performed a similar analysis using instead of age the expected number of remaining years from retirement, and the results were very similar.

[20]The effect at even earlier ages are small. Workers in their 40s and early 50s are only 3-6 percentage points more likely to provide an estimate as a consequence of receiving the Statement (results available upon request). This cast some doubt on the utility of sending the Statements to young workers that seem to show little interest for them. The estimated cost of sending each Statement is about 56 cents. Given that around 136 million Statements are sent out every year, the total cost is approximately $75 million. More than half of this amount could be saved by sending Statements to older workers only.

status, separately by gender and by whether the worker contacted the SSA. For those workers who contacted the SSA there are no changes due to their own or the spouse's Statement. Among workers who didn't contact the SSA, the effect of the own Statement (vertical comparison) tends to be larger among men than among women, while the effect of the spouse's Statement is around 2 percentage points for men and at least 5 times as large for women.[21] This is consistent with the Social Security rules about dependent spouse benefits: A spouse receives the highest amount between her own benefits and one half of the worker's benefits. Since the majority of women are better off claiming through their husband's account, the husbands' Statements tend to carry more information.

Table 4: Spillover effects on the probability (in percent) of not being able to provide a Social Security benefits estimate by age.

	Spouse's Statement period							
	Did not contact SSA				Contacted SSA			
	Women		Men		Women		Men	
Own Statement	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Pre	58.4	49.1	45.7	43.5	26.2	24.1	15.2	12.9
	(1.3)	(2.6)	(1.3)	(4.5)	(1.7)	(3.7)	(1.1)	(4.3)
	[1354]	[375]	[1440]	[124]	[699]	[137]	[1076]	[62]
Post	64.5	40.9	32.8	29.7	17.6	20.7	13.1	12.8
	(8.7)	(1.0)	(2.7)	(1.0)	(9.5)	(1.3)	(2.5)	(0.9)
	[31]	[2361]	[311]	[2109]	[17]	[1025]	[176]	[1246]

Notes: Sample: HRS 1992-2002, age 55-64. Standard errors in parentheses and sample size in squared brackets.

Once we established that the Statement reduces the probability that workers are unable to provide an estimate of their future benefits, we can analyze whether those who provide an estimate improved their forecasts. Figure 1 shows the density of the forecast error (the difference between the expected and the actual benefits) for those workers who did and didn't contact the SSA.[22] [23] Errors seem to be approximately distributed sym-

[21] Notice that the value of 64.5 that corresponds to the case where the female worker received a Statement but her younger spouse didn't is due to the limited sample size imprecisely estimated.

[22] Benefits are expressed in 2003 dollars using the CPI. We take into account that actual Social Security benefits refer to the year before the interview. Results using the relative forecast error are similar.

[23] Note that to highlight the distributional differences we truncated the distribution of the error at ±$1000 (3 percent of the sample).

metrically around zero, which suggests that, on average, there is no prediction bias. In the pre-Statement period (solid line) the variability of the errors for workers who didn't contact the SSA is much larger than for those who contacted the SSA; this difference seems to disappear once the Statement is introduced (dashed line). As before, this change in the distribution of the error term is likely to be upward biased by the fact that some workers would have contacted the SSA in the absence of the Statement. Substituting workers who didn't contact the SSA with workers who contacted the SSA with probability equal to the probability of contacting the SSA over a two-year period,[24] and plotting the corresponding pre-Statement density allow us to judge the expected improvement that is not attributable to the Statement (dotted line).

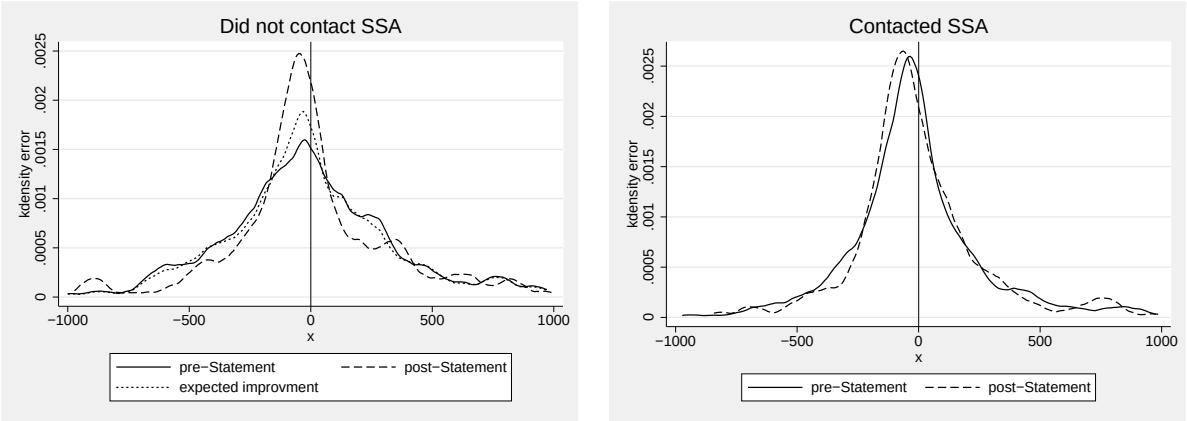

Figure 1: Monthly forecast error. Epanechnikov kernel estimate using a $35 bandwidth. *Sample:* HRS 1992-1996, age 55-65.

In Table 5, we test whether the distributional differences in Figure 1 are significant. For workers who didn't contact the SSA we use the pre–Statement density that controls for the expected improvements (dashed line). Most of the improvement seems to lie within one standard deviation from the mean, which is why we test if the ratio of the pre–Statement to the post–Statement variance is larger than one, truncating the error at ±$1000, ±$500, and ±$300.[25] The p-value of this one-sided test for those who didn't

[24]These graphs use only information up to 1996 and therefore the probability is simply equal to 8 percent.

[25]The reason to use truncated values is that variances are highly sensitive to outliers. Without truncation the variance of the error is even larger in the pre–Statement period. In the HRS, respondents can report weekly, monthly, biyearly, and yearly values. The big discrepancies seem to be due to the few observations with measurement errors in the variable that reports this "frequency" variable.

contact the SSA is equal to 10 percent for the $1000 truncation but quickly drops to being significant as we concentrate the analysis to errors that are closer to the median. For those who contacted the SSA we can reject the hypothesis that the variance decreased after the introduction of the Statement. It is worth noting that although the variance of the forecast error decreased for those who were previously uninformed, similarly to what we observed before for the probability of reporting an estimate, their post Statement errors are still larger compared to the other group.

Table 5: Variance ratio test

	Did not contact SSA			Contacted SSA		
	Standard Dev.		p-value	Standard Dev.		p-value
	Pre-SSS	Post-SSS	Pre/Post	Pre-SSS	Post-SSS	Pre/Post
Forecast error truncated at:						
$\|e\| < \$1000$	342.67	324.81	0.109	270.73	265.15	0.299
	[781]	[416]		[1350]	[449]	
$\|e\| < \$500$	225.89	204.28	0.016	189.13	181.00	0.141
	[661]	[364]		[1240]	[415]	
$\|e\| < \$300$	158.53	131.35	0.000	132.36	128.97	0.278
	[527]	[299]		[1072]	[366]	

Notes: Standard deviation of the errors and p-value of a variance ratio test with null-hypothesis $H_0 : V_{pre}/V_{post} < 1$. Estimates control for the improvement in the standard deviation of the forecast error that is independent of the Statement by using the dashed line version of Figure 1 for the pre-Statement period. Since variances are highly sensitive to outliers we test the null using three truncated versions of the forecast error. Numbers of observations in square brackets. *Sample:* HRS 1992-1996, age 55-65.

The above analysis suggests that thanks to the Statement some workers became more knowledgeable about their Social Security benefits. The workers for whom we observe an improvement didn't contact the SSA before. The profile of those workers is consistent with the idea that information is costly. Controlling for various factors we are able to reduce educational gaps by around one half and racial gaps by around one third. While the remaining differences could be due to different preferences over leisure, another possible reason might be financial illiteracy.[26] Lusardi and Mitchell (2006) show that black workers and workers with low levels of education are significantly less likely to respond correctly to simple questions about compound interest, inflation, and portfolio management.

The important lesson is that the free availability of information is not sufficient to

[26] Another explanation may be that some workers prefer to procrastinate (O'Donoghue and Rabin 1999).

get informed. Obtaining information seems to be costly and prevents workers who think that information to be less valuable to become knowledgeable. Stimulating workers by directly providing them with information reduces that cost and has the predictable effect of improving workers' knowledge. In the next section, we test whether and how the new information affected workers' retirement decisions.

5 The effect of the Statement on retirement and Social Security benefit claiming decisions

The additional information provided by the Statement can influence workers' behavior in many ways. There may be a "surprise" effect: workers who overestimated their expected Social Security benefits should react by working and saving more, while those who underestimated their benefits should do the opposite. Although changes in labor supply may also happen at the intensive level (hours), we focus on changes at the extensive level (participation). Since forecast errors are approximately symmetrically distributed around zero, these changes may go in both directions. Also, as over time the age at which workers received their first Statement decreases, we should expect these "surprise" effects to weaken. In addition, even if the decision of becoming informed is the sole product of a maximization process with costly information, at the margin the Statement should strengthen the link between Social Security incentives and retirement.

Because of liquidity constraints and the earnings test (ET), the retirement decision is strongly related to the claiming decision. According to the HRS data, half of the time the monthly self-reported retirement date and the monthly self-reported claiming date are not more than 12 months apart from each other. When the difference between the two dates is larger than one year, the difference is mainly due to early retirement. Among those who retire at or after age 62, 75 percent claim and retire within a year. Since the administrative records do not have information about self-reported retirement status, for those workers who show positive earnings in the previous year, we measure retirement based on claiming Social Security benefits. Alternatively, we could define retirement based

on some given changes in earnings.

There is very little analysis of the claiming decision for those workers who have already retired and therefore face a financial decision. The decision to postpone claiming is equivalent to the decision to purchase additional annuities. Coile, Diamond, Gruber and Jousten (2002) show that for some male workers, typically those who are married and face long "joint" life expectancies, delaying claiming of Social Security benefits after age 62 can generate substantial gains, and that these gains may actually be 10 or more times greater when risk aversion is taken into account.

Before moving to the analysis, we need to mention the other major Social Security reforms that happen around the time of the introduction of the Statement. The most important reform is the 2000 earnings test removal for workers above the normal retirement age (usually 65). Earnings of Social Security beneficiaries above the earnings test threshold, up to their benefit amount, are taxed away at a 50 percent rate between age 62 and 65, and, before 2000, at a 33 percent rate between 65 and 69. Although the earnings tax is only that high for myopic workers, the reason being that benefits that are taxed away increase future benefits at an almost actuarially fair rate through the so-called recomputation, workers are sensitive to the tax. The removal had the effect of increasing the fraction of workers who claim their Social Security benefits at the normal retirement age, the age at which the tax was removed (Mastrobuoni 2006).

The other two reforms changed the benefit formula and will be included in our benefit calculations. In response to an earlier "crisis" in Social Security financing two decades ago, the US Congress implemented both a reduction in the Normal Retirement Age (NRA) of two months per year for cohorts born in 1938 and afterward, and, staring in 1986, an increase in the delayed retirement credit (DRC),[27] that is the actuarial adjustment to the benefits when retirement is postponed beyond the normal retirement age. The DRC has been increased by half a percent every other year from its original 3 percent. It is going to reach its final value of 8 percent for workers born in 1943 or later.

[27]See Mastrobuoni (2005).

5.1 The effect of the Statement on workers' expected claiming behavior

Before looking at the actual retirement and claiming behavior, we can analyze whether at the time workers received the Statements they change when they expect to retire.[28]

We should expect workers to be more likely to change their expectations when they receive their first Statement, and less likely afterwards. Using the panel structure of the HRS, we estimate the effect of the Statement on the probability that the expected claiming age stays constant.[29] All regressions include age fixed effects, levels of education, marital status and race. We also control for a linear time trend and for the 2000 earnings test removal. In Table 6, we report the marginal effects of the Statement on the probability of keeping the same expected claiming age. The first column allows for just a one-time effect, which is small and not significantly different from zero. Column (2) shows that those who did not contact the SSA are significantly more likely to change their expected claiming age.[30] The estimates in both of these columns are contaminated by the fact that the first Statement should have the opposite effect than subsequent Statements. In column (3), we include an indicator variable equal to one when the person already received a Statement in the previous wave. The coefficient has a positive sign, meaning that receiving a second Statement increases the probability of maintaining the same expected age, though the effect is only significant at the 10 percent level. In column (4), we interact both Statement effects with the "No SSA contact" dummy. Both, the effect of the first Statement and the effect of additional Statements is not significantly different for the two groups.

Workers may not pay attention to the first Statement they receive, so there is a potential measurement error problem. This may explain why the effects are generally small and not significant. This measurement error problem is less salient when analyzing

[28] See Chan and Stevens (2004), who estimate a model of expected retirement.

[29] We tried to replicate the same analysis with respect to the expected retirement age, though only a few workers are asked about their expected retirement date, and so the sample size was too small to estimate any effect.

[30] We control for the fact that contacting SSA is endogenous by estimating the model using the probabilities of misclassification in same manner as when we dealt with the probability of providing a benefit estimate.

Table 6: Marginal effects (in percent) on the probability of keeping the same expected age of claiming.

	P(same expected claiming age)			
	(1)	(2)	(3)	(4)
Post-statement	-2.10	-4.14	-1.88	-3.66
	(2.39)	(3.05)	(2.41)	(3.15)
No SSA contact		-4.68		-4.81
		(2.30)*		(2.30)*
Post-st.× No SSA cont.		-0.23		0.03
		(2.98)		(3.27)
Additional statements			4.42	4.17
			(2.45)	(3.30)
Additional st.× No SSA cont.				-0.25
				(3.85)
Post-ET removal	-3.54	-6.16	-5.02	-7.02
	(2.66)	(2.97)*	(2.78)	(3.02)*
Year	-0.19	0.64	-0.63	0.14
	(0.63)	(0.72)	(0.690)	(0.80)
Observations	5961	5022	5961	5022
R-squared	0.02	0.03	0.02	0.03
Mean	66.72	67.58	66.72	67.58

Notes: The marginal effects are estimated using a linear probability model. We additionally control for age, age squared, education, marital status, race, and veteran status. Clustered (by individuals) standard errors in parentheses; * significant at 5 percent; ** significant at 1 percent. *Sample:* HRS 1992-2002, age 55-65.

actual retirement behavior. Each Statement should have the effect of improving workers response to retirement incentives.

5.2 Social Security incentives

In order to analyze whether workers became more responsive to Social Security incentives, we need to forecast earnings and compute future benefits as a function of the retirement age. Below we briefly review the main provisions of the benefit formula and the assumptions needed to compute the SSW.

In order to compute Social Security benefits $B_t(a)$ for each retirement age we need to forecast earnings. To best approximate the information contained in the Statement we use the same assumptions the SSA uses in calculating the benefits for the Social Security Statement. The Statement assumes that if the worker doesn't retire he is likely to earn the same amount he earned last year (or the year before if last year's earnings are zero). In other words, real earnings are assumed to follow a random walk, so that the previous year's earnings are the best predictor for future earnings. This assumption is not very different from Coile and Gruber (2001), who assume that real earnings are expected to grow by one percent. Every year, benefits are then computed as a function of age (from age 55 to 70) and as a function of the retirement age (from the worker's actual age to age 70). The benefit rules are held constant, and it is assumed that promised benefits are going to be paid. Workers who retire before age 62 are assumed to claim at age 62.

We do not model the spouse's retirement decision, and we assume that the spouse claims at the earliest possible age.[31] A spouse is defined as "independent" when her own benefits at age 62 are larger than 50 percent of her husband's benefits at age 62. In this case her SSW is not added to her husbands SSW but enters the regression independently.

Benefits are a function of the weighted average of the highest 35 years of average wage-indexed earnings, called the AIME. Since workers tend to have lower earnings at the beginning of their career than at the end working an additional year normally increases future benefits even at age 62, which generates an additional incentive to work (Blinder,

[31]Most of the times it is age 62, which also represents the median claiming age

Gordon and Wise 1981). However, between age 55 and 61 the increase in Social Security benefits is modest. Its median ranges between 1 percent and 2 percent, and the 75th percentile between 1 percent and 4 percent (Table 7). Starting at age 62 instead, the increase is substantial. An 8 percent actuarial adjustment has to be added to the median 1 percent increase that is due to current earnings. The 75th percentile reaches almost 10 percent. Looking at benefits only doesn't take into account that working an additional year means that benefits are not collected in that year, and that Social Security taxes are paid on the additional earnings up to the maximum taxable threshold. Whether workers think that future benefits make up for this loss depends on the number of years that they, and possibly their spouses, expect to collect benefits. It also depends on their discount rate. In other words, it depends on changes in the expected present discounted value of the Social Security benefits net of contributions. The SSW is a function of time t and retirement age a:

$$SSW_t(a) = PDV_t(B(a)) = \sum_{t=s}^{T} \beta^{t-s} p_t(s) B_t(a) \tag{3}$$

Following the literature we use a real discount rate of 3 percent ($\beta = 1.03$).[32] $B_t(a)$'s are expressed in 2003 dollars using the CPI, and the conditional probabilities of survival, $p_t(s)$, are based on the SSA's cohort-specific life tables.[33] Since we lack precise information on dependent children, the benefits include dependent benefits and survivors' benefits, related only to the spouse. In that case $p_t(s)$ is a column vector where the entries are: the probability that only the worker survives, the probability that only his wife survives, and the probability that both survive. $B_t(a)$ is a row vector containing the worker's

[32]There is some evidence that discount rates may actually be larger than 3 percent (Samwick 1998). On the other hand, Blinder et al. (1981) argue that in the absence of borrowing constraints it is more appropriate to use a real interest rate instead, which can be assumed to be very low (they use 1 percent). We follow the mainstream literature and use a 3 percent discount rate, though the reduced form model estimated controlling for age seems to be robust to the use of different discount rates. The reason is that controlling for age the effect of the accrual is mostly identified by the accrual's cross-sectional variation within age, while the use of different discount rates generates mainly large differences across age.

[33]The life tables are prepared by the Office of the Chief Actuary in the Social Security Administration. Projected death rates and life tables are based on Alternative II forecasts for the 1998 Trustees report (taken from the Berkeley Mortality Database). To compute total Social Security benefits (including spouse's benefits and survivors' benefits) when using the tables we are implicitly assuming that the couple's individual mortalities are independent.

own benefits, the survivors's benefits, and the sum of the worker's own benefits and the dependent spouse's benefits.

The Social Security accrual is the expected gain in SSW from waiting an additional year before retiring,

$$ACC_t(a) = SSW_t(a+1) - SSW_t(a), \tag{4}$$

while the peak-value (PV) (Coile and Gruber 2001) is the difference between the maximum SSW and the current SSW,

$$PV_t(a) = \max_x SSW_t(x) - SSW_t(a). \tag{5}$$

Retirement decisions based on PV's and ACC's differ whenever ACC's are not monotonic relative to the retirement age.

An additional complication comes from Social Security payroll taxes and income taxes. We also compute the accrual net of Social Security taxes, $tW_t(a)$, assuming, like in Diamond and Gruber (1998), that workers bear the entire payroll tax, t ($t = 12.4$ percent since 1990). Since we do not observe income we do not attempt to try to simulate income taxes, though in the regressions the different tax treatment of Social Security benefits should in part be absorbed by the coefficient on earnings.[34]

In Table 7 we show the median (and some 75th percentiles) of the expected growth rates in Social Security benefits and SSW for male workers at different ages. There is significant heterogeneity in expected increases in benefits from postponing retirement. This heterogeneity is mainly due to eligibility criteria to different types of benefits (i.e., dependent spouse's benefits), to differences in earnings histories, and to differences in current earnings. Men who evaluate the future streams of Social Security benefits taking only their own benefits into consideration (either because they have no dependents, or

[34]If a beneficiary files a federal tax return as "an individual," ("a couple") and the combined income is between \$25,000 and \$34,000 (\$32,000 and \$44,000) in 2004, he or she pays taxes on 50 percent of the Social Security benefits. If the combined income is more than \$34,000 (\$44,000), up to 85 percent of the Social Security benefits are subject to income tax.

because their spouses are better off by claiming their own benefits) generally face negative or null increases in SSW from additional work.

Table 7: Median expected growth rates of Social Security benefits and social security wealth as a function of age.

	$\frac{B(t+1)}{B(t)} - 1$	$SSW(t+1)/SSW(t) - 1$					
		Own Benefits		Own+Dependent spouse			
		Median		Median		75th percentile	
		Pre-tax	After-tax	Pre-tax	After-tax	Pre-tax	After-tax
55	2.0%	2.0%	-1.4%	2.0%	-0.5%	3.6%	0.2%
56	1.8	1.8	-1.4	1.8	-0.6	3.1	0.0
57	1.3	1.3	-1.6	1.3	-0.9	2.3	0.0
58	1.1	1.1	-1.6	1.1	-1.0	1.9	0.0
59	1.0	1.0	-1.6	1.0	-1.0	1.6	0.0
60	0.8	0.8	-1.5	0.8	-0.9	1.4	0.0
61	0.6	0.6	-1.3	0.6	-0.9	1.2	0.0
62	8.9	1.0	-0.6	2.2	0.5	4.2	2.8
63	8.0	0.0	-1.1	1.1	-0.2	3.3	2.1
64	7.3	-0.9	-1.6	0.3	-0.9	2.5	1.2
65	5.1	-3.3	-4.3	-2.2	-3.0	-0.7	-1.6
66	4.7	-3.8	-4.7	-2.9	-3.5	-1.5	-2.2
67	4.3	-4.6	-5.2	-3.6	-4.0	-2.3	-2.9
68	4.0	-5.1	-5.6	-4.2	-4.5	-3.0	-3.4
69	3.8	-5.6	-6.0	-4.8	-5.0	-3.6	-3.8

Notes: The After-tax columns represent the changes in SSW net of Social Security payroll taxes, assuming that workers carry the whole tax burden. *Sample:* SIPP linked to administrative data.

5.3 The effect of the Statement on claiming and retirement behavior

Next we look at the difference between the pre–Statement and the post–Statement claiming hazards, and we do it separately for workers who retired before age 62 (they face only a financial decision) and for workers who are working at age 62.[35] The hazard is defined as the probability of claiming within a year, conditional on not having claimed before. Figure 2 shows that among the working sample 50 percent claim at the early retirement

[35]A person is assumed to be working when his forecasted earnings are different from zero. This represent an almost absorbing state. Among workers aged 62 to 69 only 3.6 percent experiences positive earnings after having zero forecasted earnings, with average earnings of $6745.

age. There is also a pronounced spike at age 65. There seem to be some differences between the pre and the post–Statement period, mainly after age 64, though part of these differences could be due to the earnings test removal (Song and Manchester 2005).

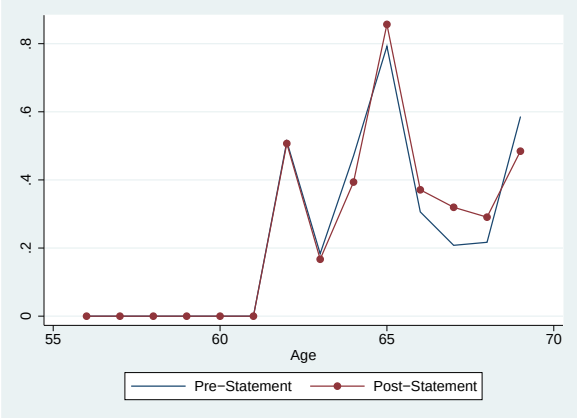

Figure 2: Claiming hazards for the working sample

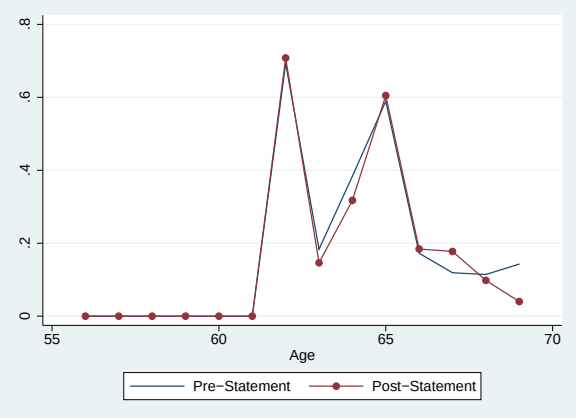

Figure 3: Claiming hazards for the retired sample

The hazard rates for the sample of workers who are already retired show a different pattern. More than 70 percent of them claim immediately at age 62, while the spike at 65 reaches 60 percent. Overall, the Statement seems to haven't changed the 62 and 65 hazards, and to have slightly decreased the 63 and 64 hazards. While there are some changes in the hazard rates we are not controlling for many factors that may generate these differences. More importantly, these differences do not tell us anything about optimality. Even if there were no differences in the hazards, it could still be possible that with the Statement workers sort themselves in a more optimal way across retirement/claiming ages.

In order to be able to define optimality we need to introduce a simple theoretical framework. For clarity of exposition assume there are only two periods. Worker i can either work ($R_i = 0$) earning y_i and retire the next period or, retire immediately ($R_i = 1$) and receive reduced benefits today (b_{i1}). $k_i > 1$ measures his disutility from work. The worker chooses the retirement date that maximizes his utility:

$$V_i = \max_{R_i} y_i \left(1 - R_i\right) + k_i b_{i1} R_i + k_i b_{i2} \left(1 + a \left(1 - R_i\right)\right). \tag{6}$$

It is optimal to retire immediately when

$$OV_i = y_i + k_i b_{i2} (1 + a) - k_i (b_{i1} + b_{i2}) = y_i + k_i ACC_i \leq 0, \tag{7}$$

where $ACC_i = b_{i2} (1 + a) - (b_{i1} + b_{i2})$ represents the Social Security accrual. This expression tells us that the worker should retire whenever his Option Value (OV) is either zero or negative. Notice that the disutility from work (k_i) is individual-specific.

This simplified model has been used extensively in the retirement literature. Coile and Gruber (n.d.) estimate a probit reduced form model of retirement that incorporates forward-looking Social Security incentives. Their concept is based on the Option Value model of Stock and Wise (1990), a model that resembles a dynamic programming model although it introduces some important simplifications. As we saw in Table 7, accruals tend to be decreasing with age *except* between ages 61 and 62. Since workers may be forward-looking and incorporate future accruals in their retirement decisions Coile and Gruber (n.d.) and numerous papers that follow their approach use the peak value as the main measure of Social Security incentives. All of these papers use reduced form PV probits, and assume a constant coefficient on the PV.[36]

Since the Social Security Statement is sent to workers depending on time and age, it is extremely important to properly control for these two variables. For this reason we use a random coefficient linear probability model, though very similar results are obtained when using a proportional hazard model where the effects of the ACC are allowed to vary by age and socioeconomic characteristics (McCall 1994).

Unlike most of the previous literature, we will define retirement almost entirely based on the claiming status. The main reason is that while claiming Social Security benefits is well-defined, there is no variable that measures precisely the retirement date. We may say that a person is retired if we observe a large drop in her earnings. This is, however, a noisy measure of retirement, and it is not obvious that it is better than the one based on claiming Social Security benefits. The third reason is that defining retirement based on

[36]Gustman and Steinmeier (1986), instead, assume that the heterogeneity in k_i depends on health, age, and year of birth.

benefit receipt restricts the analysis to people above age 62. Above age 62 accruals are monotonically decreasing, which allows us to focus on the accruals instead of using the PVs. When monotonic, accruals are a better measure of incentives than PVs. The reason is that two workers with the same PV may face very different incentives if the first has his peak in SSW in one year and the second has his peak in 5 years. Our model is

$$R_i = k_i ACC_i + \beta' \tilde{x}_i + \epsilon_i, \tag{8}$$

where $\tilde{x}_i$ denotes the other regressor, including the forecasted earnings (y_i). We generally set $\tilde{x_i} = x_i - \bar{x}$ for continuous variables and exclude the median when dealing with categorical variables.

First, we assume that k_i is constant across people and independent of the Statement $T \in \{0, 1\}$, while later we allow k_i to vary:

$$k_i = \alpha_0 + \alpha_1 T_i + \gamma_0' \tilde{z}_i + \gamma_1' \tilde{z}_i T_i + \nu_i. \tag{9}$$

α_0 is the effect of the accrual for the "baseline" worker in the pre–Statement period.

Substituting k_i into Eq. (8) we get,

$$R_i = [\alpha_0 + \alpha_1 T_i + \gamma_0' \tilde{z}_i + \gamma_1' \tilde{z}_i T_i] ACC_i + \beta' \tilde{x}_i + u_i, \tag{10}$$

where $u_i = \epsilon_i + \nu_i ACC_i$. In this setup, α_1 represents the difference between the post– and the pre–Statement period in the marginal effect of a unit ($100,000) increase in the accrual on the probability of retirement for the baseline case:

$$\alpha_1 = \frac{\partial P\left(R=1\right)}{\partial ACC}\Big|_{\tilde{z}=0, T_i=1} - \frac{\partial P\left(R=1\right)}{\partial ACC}\Big|_{\tilde{z}=0, T_i=0}. \tag{11}$$

To ease the interpretation of the regression coefficients all z's are dichotomous variables.

In such a case

$$\alpha_1 + \gamma_1 = \frac{\partial P\left(R=1\right)}{\partial ACC}|_{\tilde{z}=1,T_i=1} - \frac{\partial P\left(R=1\right)}{\partial ACC}|_{\tilde{z}=1,T_i=0} \tag{12}$$

represents the $Post-Pre$ effect for a worker with $z=1$. It follows that γ_1 is equal to Eq. 12 minus Eq. 11 and represents the difference of $Post-Pre$ effects between workers with characteristics $\tilde{z}=1$ and workers with baseline characteristics, a difference-in-difference.

To relax the assumption that workers retire and claim at the same time, we perform the regression for the entire sample first, and then separately for those who work, and for those who are retired. Later, since the results based on the whole sample are not significantly different from those of the working sample, we show only the latter.

In order to control for changes in claiming behavior that may be due to the earnings test removal, we include a post-ET removal dummy, both in X and in Z.[37] We also control for the average ET tax.[38] The higher the average tax, the higher the incentive for a worker who claims his benefits to start earning less or stop working altogether. Table 13 in the Appendix shows the summary statistics for the sample used in the regressions.

All regressions control for the worker's own SSW, his spouse's SSW, retirement status of his spouse, earnings (potential), age dummies, year, year squared, post–Statement dummy, a post-earnings test removal dummy, level of education, marital status, AIME at age 55, real estate property wealth, health insurance, difference in age relative to his spouse, SIPP panel dummies, children in the household, pension information, veteran status, experience, and experience squared.

It is likely that the same factors that determine fixed costs or fixed opportunities from work also affect the disutility from work, k_i.[39] And, even more importantly, it

[37]When we restrict the analysis only to the period before the ET was removed (1984–1999) the results tend to be of similar size though less significant.

[38]The average ET tax is $t_{ET} = min(benefits, (earnings - ETthreshold) \times marginaltax)/benefits$. When earnings are below the ET threshold, the marginal tax and the average tax are zero. Table 13 in the Appendix shows that the average tax is 0.60, while the average marginal tax is 0.34. Special rules apply the first year a worker claims his benefits. Under these rules, a worker can use a monthly test amount. If he claims and retires during the year, he can get a full Social Security check for any whole month he is retired, regardless of his yearly earnings. Since we do not have information on monthly earnings we cannot control for this case, which is why the average tax may be measured with some error.

[39]The weight put on leisure is also likely to depend on complementarities relative to other consumption

is very likely that the previously observed heterogeneity in the level of knowledge of Social Security benefits affects the observed k_i through some sort of individual-specific measurement error. If we observe the true accrual ACC, but workers base their decisions on their perceived and mismeasured accrual $\widehat{ACC}$, the estimated effect will be downward biased (relative to workers' actual intentions). The bias will be higher the higher the variance of measurement error $Var(\widehat{ACC} - ACC)$.

Column (1) of Table 8 shows the results, based on the entire sample, when we estimate Eq. (8) assuming that k_i is constant. Including a post–Statement dummy, we allow the Statement to have an effect on the hazard rate, but not through the accrual.

The coefficient on the accrual tells us that a $1,000 increase in the accrual decreases the hazard rate of claiming Social Security benefits by 0.74 percentage points.[40]

The coefficient on the SSW means that a $10,000 increase in SSW increases the probability of claiming by 0.9 percentage points. Notice that male workers are twice as responsive to their own SSW than to their spouse's SSW. The disutility from work is simply the ratio between the coefficient on the accrual and the coefficient on potential earnings for the working sample, and is equal to $0.74/0.51 = 1.45$, meaning that in retirement workers value consumption 45 percent more. When the spouse is already retired, workers are 4 percentage points more likely to retire. Restricting the analysis to the people who work (who represent 5/6th of the sample), the results are not very different.

As we saw in Figures 2, for the working sample there are no significant changes in the hazard rate between the pre– and the post–Statement period. The ET removal has a large effect. In columns (1) and (2) we do not control for the average ET tax (computed using the forecasted earnings), which is why the coefficient on the post–ET removal dummy is quite large and significant. In column (4) we add the average ET tax to the regression. This captures most but not all the effect that was measured by the post–ET dummy. The coefficient on that dummy drops from 0.21 to 0.06, showing that a complete removal of the ET has an effect that cannot be entirely explained by changes in the average tax.[41]

goods.

[40] Panis et al. (2002) estimate a similar regression based on the HRS, though they use a probit and the PV and find a marginal effect of 0.7 percent.

[41] We also tried to include the marginal tax, though, as expected given the discrete nature of the

Table 8: Linear probability model of claiming Social Security benefits.

in $100k	(1) ALL	(2) WORKING	(3) RETIRED	(4) WORKING
ACC	-0.74	-0.60	0.36	-0.54
	(0.08)**	(0.09)**	(0.28)	(0.09)**
Forecasted earnings	-0.51	-0.58		-0.26
	(0.01)**	(0.02)**		(0.03)**
SSW	0.09	0.07	0.01	0.06
	(0.01)**	(0.01)**	(0.02)	(0.01)**
Spouse's SSW	0.04	0.03	0.03	0.03
	(0.01)**	(0.01)**	(0.02)	(0.01)**
Post–ET removal	0.17	0.21	0.04	0.06
	(0.02)**	(0.02)**	(0.04)	(0.02)**
Post–Statement	-0.00	0.01	-0.06	0.01
	(0.01)	(0.01)	(0.03)*	(0.01)
Retired Spouse	0.04	0.04	0.03	0.04
	(0.01)**	(0.01)**	(0.02)	(0.01)**
Average ET tax				-0.22
				(0.01)**
Observations	29178	24694	4484	24694
R-squared	0.21	0.22	0.28	0.23

Notes: ACC and SSW are expressed in real 2003 dollars. All regressions control for age dummies, year, year squared, level of education, marital status, AIME at age 55, real estate property wealth, health insurance, difference in age relative to the spouse, SIPP panel dummies, children in the household, pension dummy, veteran status, experience, and experience squared. The baseline worker Clustered (by individual) standard errors in parentheses; * significant at 5 percent; ** significant at 1 percent. *Sample:* SIPP linked to administrative data.

Adding the average ET tax also reduces (in absolute values) both the effect of the accrual (from -0.60 to -0.54) and the effect of earnings (from -0.58 to -0.26).

For the retired sample, where the claiming decision is purely financial almost all effects are not significantly different from zero. The only effect that is significant is the one related to the post–Statement dummy. Those who face only a financial decision are 6 percentage points more likely to postpone claiming after receiving the Statement. This is a large effect, and represents in relative terms a 12 percent drop.

Next, we estimate Eq. 10, allowing for heterogeneity in k_i. Table 9 shows only the coefficients related to the accruals. The coefficients on earnings and SSW are not shown since they are almost identical to those seen in Table 8. The first row reports the result for the "baseline" worker. This worker is 62, married, white, has a dependent spouse, a high school degree, is not a veteran, and has no private pension.

We again divide the sample into those who work and those who are retired. For each of these groups, the first columns show the baseline effect (α_0), the post–Statement effect for the baseline worker (α_1) and the post–ET removal effect (θ). The remaining effects in the first columns are the estimated γ_0s. The second columns show the $Post - Pre$ effects, the estimated γ_1s.

We start by analyzing the working sample. First, it is important to notice that there is a considerable amount of heterogeneity in the responsiveness to the accruals. The effect at age 62 is more than twice as large as the overall effect we saw before, while, at least in the pre–Statement period, at other ages the effects tend to be significantly smaller. Between age 65 and 67, the effects are not different from zero. The main explanation for this is sample selection. At age 62, those who continue working do so because they face significantly larger accruals. This difference gets smaller as those with small accruals drop out the sample once they claim. Since the population gets more homogenous, accruals lose their predictive power for retirement behavior.

There is no improvement in the responsiveness to ACCs of the baseline worker (aged 62) due to the Social Security Statement. Moreover, there is a slight worsening: the

claiming decision, controlling for the average tax the effect of the marginal tax is close to zero.

coefficient of 0.41 has the interpretation that a baseline worker, aged 62, etc., shows a $0.41/1.22 = 0.33$ drop in the marginal effect of the accrual on the hazard rate.

There are differential effects relative to age. When compared to individuals at age 62, there is a significant improvement in the effect of accruals on claiming behavior at ages 63 and 64. Before the introduction of the Statement, at age 64, where almost 15 percent of worker claim, the marginal effect was $-1.22 + 0.63 = -0.59$. With the introduction of the Statement the responsiveness increases in absolute values by $0.55 - 0.41 = 0.14$. There are no significant improvements at later ages, but, since few workers claim after age 65, it is difficult to interpret these results.

It is interesting that people seem to behave less optimally at the two peak ages, 62 and 65, while the rest of the population improved their decisions after the Statement was sent out. One explanation for this may lie in the information contained in the Statement. Remember that the Statement informs workers about their future Social Security benefits if they retire at ages 62, or 65, or 70, which may have induced some workers to focus more on these ages than accruals would predict. This result seems to support the view that some workers use age 62 and age 65 as focal points for their retirement decision without paying too much attention to the Social Security incentives.

An interesting result is that in the pre–Statement period workers with a dependent spouse show smaller responsiveness to accruals than single workers. Since married workers are more likely to have contacted the SSA, this effect is somehow puzzling. In fact, married workers with an independent spouse are the most responsive group with respect to Social Security incentives. Their coefficient is almost twice as large compared to those with a dependent spouse, and this difference is highly significant. This is evidence that many married workers didn't, prior to the Statement, take spouses' benefits (and survivors' benefits!) into account. The Statement informs workers about family benefits. In fact, quite surprisingly, the Statement appears to have eliminated the gap between workers with and without a dependent spouse.

Let us now turn to those variables that were good predictors of contacting the SSA for a benefit estimate. There seems to be a small, but not significant, reduction in

Table 9: Random coefficient linear model of claiming.

	WORKING		RETIRED	
		$Post - Pre$		$Post - Pre$
ACC (Baseline)	-1.22		0.63	
	(0.22)**		(0.78)	
ACC×				
Post–Statement	0.41		0.43	
	(0.29)		(1.19)	
Post–ET removal	-0.82		0.04	
	(0.47)		(1.40)	
Year	0.02	0.01	0.03	-0.11
	(0.02)	(0.04)	(0.08)	(0.12)
Black	0.17	0.82	-0.27	-0.41
	(0.27)	(0.39)*	(0.64)	(1.13)
Single	-0.55	0.91	1.88	0.64
	(0.35)	(0.51)	(1.45)	(1.76)
Independent spouse	-1.13	1.17	2.61	-1.18
	(0.31)**	(0.39)**	(1.00)**	(1.33)
Below high school	-0.05	-0.26	0.50	-0.10
	(0.19)	(0.27)	(0.54)	(0.88)
Some college	-0.13	0.14	0.42	-0.05
	(0.18)	(0.23)	(0.61)	(0.85)
College	-0.39	0.16	-1.13	0.13
	(0.12)**	(0.15)	(0.45)*	(0.64)
Veteran	0.07	-0.18	0.69	-1.33
	(0.12)	(0.14)	(0.47)	(0.62)*
Pension	0.65	-0.68	0.21	0.32
	(0.15)**	(0.19)**	(0.62)	(0.90)
Missing pension info.	-0.09	0.11	-0.72	1.76
	(0.15)	(0.19)	(0.73)	(1.02)
Age 63	1.09	-0.33	-0.99	-0.29
	(0.13)**	(0.14)*	(0.78)	(0.94)
Age 64	0.63	-0.55	0.58	-0.81
	(0.19)**	(0.22)*	(1.22)	(1.50)
Age 65	1.38	0.07	-1.71	0.31
	(0.30)**	(0.52)	(1.18)	(1.65)
Age 66	1.55	0.12	-1.52	0.81
	(0.63)*	(0.85)	(1.98)	(2.17)
Age 67	1.34	-1.66	0.62	1.05
	(0.66)*	(0.89)	(1.96)	(1.91)
Age 68	1.03	-1.18	-1.33	1.18
	(0.70)	(0.93)	(1.88)	(1.84)
Age 69	0.39	0.03	-1.79	2.75
	(1.33)	(1.18)	(2.08)	(2.13)
Observations	24694		4484	
R-squared	0.23		0.29	

Notes: Additional controls as in Table 8. Clustered (by individuals) standard errors in parentheses, * significant at 5 percent; ** significant at 1 percent.
Sample: SIPP linked to administrative data.

the differences across levels of education. Consistent with the fact that knowledge was positively correlated with education, the responsiveness to Social Security incentives is also increasing with education in the pre–Statement period. Workers with college education have, compared to workers with high school degrees, coefficients that are in absolute value 39 percentage points larger. These differences get smaller in the post–Statement period, as we would expect given that the Statement is more likely to affect those with lower levels of education.

Compared to the baseline, there is no improvement, but rather a worsening in responsiveness for blacks. While showing no improvements can be consistent with the behavior predicted by a model with costly information (as long as the additional information doesn't move workers away from their boundary solutions), a worsening in the responsiveness represents a puzzle. The worsening is due to the fact that after receiving the Statement blacks are more likely to claim and retire at the age of 62. This is clearly shown in Table 5.3 where we measure the unexplained change in the distribution of the retirement age due to the Statement. This is accomplished by adding the interaction of age dummies, race dummies, and a post–Statement dummy in the retirement equation used for the results shown in Table 8. The first column shows the result for the whole working sample, while subsequent columns restrict the sample to few years before and after the introduction of the Statement. The significance of the unexplained jump in the hazard for black workers at the age of 62 is robust to this regression discontinuity approach.

Another result is related to the information we have about private pensions. The positive coefficient on pension variables may capture the fact that for this group we are likely to mismeasure the actual accrual. The fact that the coefficient on the pension has almost no effect (0.65-0.68) in the post–Statement period may be due to changes in pension plans. There has been a dramatic transition from defined benefit plans to defined contribution plans (Munnell, Cahill and Jivan 2003), which makes it less likely for Social Security accruals to be contaminated by pension accruals in the post–Statement period.

Let us turn now to the retired sample. Here the estimated effects are quite noisy.

Table 10: Unexplained Statement–effects on the hazards, by race

Post-Pre Statement	WORKING			
Control Group:	ALL	5 year	4 years	3 years
Age 62, white	0.01	0.02	0.03	0.03
	(0.01)	(0.02)	(0.02)	(0.02)
Age 62, black	**0.10**	**0.11**	**0.13**	**0.14**
	(0.03)**	**(0.05)***	**(0.05)***	**(0.06)***
Age 63, white	0.01	0.03	0.04	0.06
	(0.01)	(0.02)	(0.02)	(0.03)*
Age 63, black	0.05	0.08	0.09	0.15
	(0.04)	(0.06)	(0.07)	(0.08)
Age 64, white	-0.06	-0.03	-0.01	0.00
	(0.02)**	(0.02)	(0.03)	(0.03)
Age 64, black	-0.03	-0.02	0.03	0.07
	(0.06)	(0.08)	(0.09)	(0.11)
Age 65, white	-0.05	-0.09	-0.05	-0.03
	(0.03)*	(0.03)**	(0.03)	(0.04)
Age 65, black	0.04	-0.03	-0.05	-0.06
	(0.07)	(0.10)	(0.12)	(0.12)
Observations	24694	13293	10526	7819

Notes: All regressions control for age dummies, year, level of education, marital status, AIME at age 55, real estate property wealth, health insurance, difference in age relative to the spouse, SIPP panel dummies, children in the household, pension dummy, veteran status, experience, and experience squared. The baseline worker Clustered (by individual) standard errors in parentheses; * significant at 5 percent; ** significant at 1 percent. *Sample:* SIPP linked to administrative data.

This is due to the sample size, but also to the fact that there is no more variation in accruals due to earnings. Also, for the retired sample the standard deviation of the accruals is almost half as large as in the working sample (see Table 13 in the Appendix), which generates noisier regression estimates. The $Post - Pre$ effects are generally not significant, probably because those who face only a financial decision are more likely to have already gathered the information contained in the Statement. Nevertheless, there are some interesting results. The most striking result is that at age 62 the effect has the wrong sign and is not different from zero. The reason for this is that most workers who retire prior to age 62 claim as soon as possible, irrespective of Social Security incentives. At later ages, when those who claim as soon as possible are not in the sample anymore, the marginal effects of the accruals tend to be bigger than for the working sample. At 63, for example, the estimated coefficient is $0.63 - 0.99 = -0.36$ for a retired person, while it is only $-1.22 - 1.09 = -0.13$ for a working person. Few retired workers claim after 63, which translates into large standard errors at later ages.

The difference between high school graduates and college graduates is now even larger when compared to the difference for the working sample. Another difference between the working sample and the retired sample is related to the differential effects by marital status. While workers with a dependent spouse used to be less responsive to the accrual, among those who already retired the effect for singles and for those with an independent spouse is larger. For the retired sample, there is no variation in accruals due to current earnings, and since we control for the SSW and the AIME, the only variation that is left is due to changes over time in the actuarial adjustments, changes in the normal retirement age, and changes in the probabilities of survival. Although we control for the age difference between husband and wife, the probabilities of survival generate a considerable variation in the accruals, though only for workers with a dependent spouse. This may explain why retired workers who are either single or have an independent spouse show effects that are large and with the wrong sign.

6 Conclusions

There is empirical evidence that a worker's retirement decision responds to forward-looking retirement incentives. These incentives depend on current and future earnings, and on retirement benefits. Social Security benefits, which represent the most important source of retirement income, are a complicated function lifetime earnings. It is generally assumed that workers know their benefits and are able to compute their retirement incentives.

In order to understand whether this is a reasonable assumption we analyze workers' knowledge. Contacting the SSA represents the single most important channel through which workers learn about their future benefits. We model the probability of contacting the SSA and find evidence that is consistent with the existence of considerable costs of collecting (and processing) information about Social Security benefits: Workers who, for various reasons (health, liquidity, etc.), face simple retirement decisions are less likely to contact the SSA. Additional evidence confirming this result comes from the 1995 introduction of the Social Security Statements. These Statements, which contain an estimate of the worker's benefits if he retires at age 62, 65, and 70, generate an exogenous variation in the cost of obtaining information. Upon receiving a Statement workers are more likely to be able to provide a benefit estimate and their benefit estimate tends to be more precise. Controlling for the endogeneity of the decision to contact the SSA, we find that the whole improvement is concentrated among those workers who don't contact the SSA. We also find evidence of spillovers. Consistent with the importance of spouse benefits for women, female workers improve their knowledge when their husband receives a Statement, but not viceversa.

Then we turn to study how this additional information affects workers' retirement behavior. Given that the Statement reduces the cost of information the model predicts that workers who were at the margin of getting informed make better retirement decisions. We measure optimality based on the correlation between the retirement decision and the Social Security incentives. The empirical model is flexible enough to allow us to measure

the sensitivity to Social Security incentives for subgroups of workers. We find that in the pre-Statement period better-informed workers respond more strongly to Social Security accruals. Although the introduction of the Statement doesn't improve the overall responsiveness to the retirement incentives, there is significant heterogeneity across age, marital status, and race. Unpredictably, upon receiving a Statement black workers are more likely to retire and claim as soon as possible. This has the effect of lowering their responsiveness to the retirement incentives. Compared to workers with a dependent spouse and workers who are single, workers with a dependent spouse seem to become more likely to take their spouse life–expectancy into account when computing their Social Security incentives.

Upon receiving a Statement workers who retire at the age of 62 or 65 become less sensitive to Social Security incentives. This is puzzling and suggests that some workers may follow simpler retirement rules and use 62 and 65 as focal points. This finding has important implications for the construction of the Statement. Providing forecasted benefits at all 9 possible claiming ages may improve the decision making for workers retiring at 62 and 65. Also, the Statement provides workers with information about their benefits, but it does not calculate a worker's SSW. If this weakens the beneficial effect of the Statement, a possible addition to the Statement could be a table that assists workers in calculating their SSW. Since the SSA cannot possibly use individual–specific mortality rates, one easy way to circumvent this problem would be to construct a table that contains "suggested" retirement ages as a function of a worker's own and his spouse's life–expectancy.

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A Summary statistics

In Table 11, we report how these incentives have changed over time from 1984 to 2002 for a 62-year-old male worker. Quite surprisingly, over the last 20 years, earnings of 62-year-old male worker didn't grow in real terms and were quite low during the early 1990s. The AIME (expressed in yearly terms), on the other hand, has steadily increased over time, suggesting that most of the real growth in earnings happened at younger ages. The SSW is increasing over time as well. Starting in the mid–1990s, relative accruals and relative peak values show an increase.

Table 11: Earnings and Social Security incentives at age 62

Year	Earnings	AIME	$B_{t+1}/B_t - 1$	SSW	ACC/SSW	PV/SSW
1984	26.7	28.4	9.48%	181.1	2.89%	6.79%
1985	25.8	28.6	9.43	184.9	2.81	6.41
1986	25.8	29.5	9.39	191.6	2.79	6.29
1987	26.6	29.6	9.37	194.8	2.84	6.59
1988	24.8	29.7	9.43	195.0	2.83	6.51
1989	25.0	30.1	9.37	198.2	2.83	6.72
1990	25.6	30.7	9.34	200.1	2.77	6.32
1991	23.1	30.2	9.28	195.2	2.71	6.31
1992	22.9	31.3	9.20	200.6	2.67	6.17
1993	23.3	31.3	9.18	197.9	2.54	6.20
1994	22.4	31.8	9.12	203.7	2.54	6.26
1995	21.5	31.3	9.18	193.9	2.45	6.30
1996	22.4	32.9	9.19	205.7	2.59	6.74
1997	24.8	33.2	9.19	205.8	2.59	6.92
1998	24.3	35.4	9.12	215.6	2.54	6.74
1999	27.0	37.9	9.15	231.8	2.69	7.37
2000	26.6	36.9	9.32	223.1	2.72	7.28
2001	24.8	39.2	9.33	229.4	2.69	6.72
2002	24.1	39.6	9.46	227.9	2.80	6.92

Notes: Social security wealth (SSW), accruals (ACC) and peak values (PV) include spouse's benefits. Values are in $1,000. *Sample:* SIPP linked to administrative data.

At age 62, there are two trends that neutralize each other. The first trend, which increases accruals and especially peak values, is due to the increase in life expectancy and the increase in the delayed retirement credit (DRC), the actuarial increase beyond the

normal retirement age.[42] The DRC was 3 percent for the 1922–1924 birth cohorts, and has been scheduled to reach 8 percent for workers born in 1943 or later cohorts (increasing by 0.5 percentage points every two years). The other trend, the increase in the AIME, tends to reduce the accruals. The reason is that the weight of current earnings in the benefit formula is decreasing over time. This can be seen by looking at the trend in the growth rate of benefits, and is especially pronounced among younger workers. Table 12 reports the Social Security incentives for a 55-year old worker. It is assumed that workers who retire before age 62 claim as soon as they can, meaning at age 62. The expected average growth rates of Social Security benefits in 1995 are less than half of those in 1977. Since mortality improvements are mostly concentrated at old ages, this reduction shows up in the peak values as well. At age 55, the peak value has been decreasing over time, and this may be responsible for some early withdrawals from the labor force.

[42]The increase in the DRC has an effect on the PV when the peak lies beyond age 65, which with our 3 percent discount rate happens 25 percent of the time.

Table 12: Earnings and Social Security incentives at age 55

Year	Earnings	AIME	$B_{t+1}/B_t - 1$	SSW	ACC/SSW	PV/SSW
1977	35.6	23.8	3.48%	122.5	3.48%	23.34%
1978	34.8	23.8	3.42	124.6	3.42	22.56
1979	37.0	22.4	3.29	118.2	3.29	23.84
1980	35.4	21.4	3.39	115.0	3.39	23.68
1981	34.3	21.6	3.25	115.6	3.25	22.59
1982	34.2	22.1	3.00	119.3	3.00	22.13
1983	36.5	24.2	2.76	131.0	2.76	20.74
1984	36.7	24.0	2.64	127.3	2.64	20.94
1985	36.9	25.3	2.52	132.4	2.52	19.53
1986	36.7	26.3	2.08	135.7	2.08	17.58
1987	35.5	26.3	1.96	139.0	1.96	18.11
1988	36.0	26.4	1.87	135.5	1.87	17.99
1989	37.6	28.3	1.80	145.0	1.80	17.91
1990	35.7	28.1	1.71	141.5	1.71	17.22
1991	37.1	29.2	1.63	144.9	1.63	16.68
1992	37.5	30.5	1.49	152.7	1.49	16.67
1993	34.9	29.5	1.52	145.5	1.52	16.82
1994	36.7	31.6	1.42	151.2	1.42	15.61
1995	35.0	30.3	1.47	142.2	1.47	15.97

Notes: Social security wealth (SSW), accruals (ACC) and peak values (PV) include spouse's benefits. Values are in $1,000. *Sample:* SIPP linked to administrative data.

Table 13: Summary statistics for the whole SIPP sample (1977–2003)

	WORKING SAMPLE, N=24694				*RETIRED SAMPLE, N=4484*			
	Mean	SD	Min	Max	Mean	SD	Min	Max
P(R=1)	0.44	0.50	0.00	1.00	0.51	0.50	0.00	1.00
ACC ($100k)	0.05	0.07	-0.16	0.26	0.01	0.04	-0.14	0.18
Forecasted earn.($100k)	0.40	0.23	0.00	0.85	0.00	0.00	0.00	0.00
Average ET tax	0.70	0.40	0.00	1.00	0.00	0.00	0.00	0.00
Marginal ET tax	0.41	0.18	0.00	0.50	0.00	0.00	0.00	0.00
SSW ($100k)	2.32	0.98	0.07	5.35	1.41	0.87	0.06	4.77
Spouse SSW ($100k)	0.34	0.55	0.00	2.46	0.32	0.51	0.00	2.53
AIME ($100k)	0.27	0.10	0.00	0.50	0.18	0.12	0.00	0.50
Prop. Wealth ($1m)	0.23	0.65	-7.50	8.00	0.22	0.63	-4.91	6.16
Health Insurance	0.89	0.31	0.00	1.00	0.74	0.44	0.00	1.00
Age difference	-3.19	4.60	-30.00	10.00	-2.81	4.77	-30.00	10.00
SIPP panel 2	0.14	0.35	0.00	1.00	0.14	0.35	0.00	1.00
SIPP panel 3	0.19	0.39	0.00	1.00	0.19	0.39	0.00	1.00
SIPP panel 4	0.18	0.39	0.00	1.00	0.16	0.37	0.00	1.00
SIPP panel 5	0.29	0.45	0.00	1.00	0.28	0.45	0.00	1.00
Children	0.13	0.33	0.00	1.00	0.12	0.32	0.00	1.00
Year	1994	5.41	1984	2003	1994	5.28	1984	2003
Post–ET removal	0.04	0.19	0.00	1.00	0.06	0.24	0.00	1.00
Post–Statement	0.44	0.50	0.00	1.00	0.46	0.50	0.00	1.00
Black	0.07	0.25	0.00	1.00	0.13	0.33	0.00	1.00
Single	0.16	0.37	0.00	1.00	0.29	0.45	0.00	1.00
Retired spouse	0.23	0.42	0.00	1.00	0.22	0.41	0.00	1.00
Below high school	0.14	0.34	0.00	1.00	0.17	0.37	0.00	1.00
Some college	0.13	0.33	0.00	1.00	0.13	0.34	0.00	1.00
College	0.32	0.47	0.00	1.00	0.27	0.45	0.00	1.00
Veteran	0.61	0.49	0.00	1.00	0.66	0.47	0.00	1.00
Experience	38.56	7.48	9.00	52.00	26.45	9.31	9.00	48.00
Age	63.04	1.28	62.00	69.00	63.12	1.62	62.00	69.00
Independent spouse	0.30	0.46	0.00	1.00	0.34	0.47	0.00	1.00
Pension	0.48	0.50	0.00	1.00	0.49	0.50	0.00	1.00
Missing pen. Info	0.34	0.47	0.00	1.00	0.31	0.46	0.00	1.00

Figure 4: The Social Security Statement

Your Estimated Benefits

To qualify for benefits, you earn "credits" through your work– up to four each year. This year, for example, you earn one credit for each $900 of wages or self-employment income. When you've earned $3,600, you've earned your four credits for the year. Most people need 40 credits, earned over their working lifetime, to receive retirement benefits. For disability and survivors benefits, young people need fewer credits to be eligible.

We checked your records to see whether you have earned enough credits to qualify for benefits. If you haven't earned enough yet to qualify for any type of benefit, we can't give you a benefit estimate now. If you continue to work, we'll give you an estimate when you do qualify.

What we assumed– If you have enough work credits, we estimated your benefit amounts using your average earnings over your working lifetime. For 2004 and later (up to retirement age), we assumed you'll continue to work and make about the same as you did in 2002 or 2003. We also included credits we assumed you earned last year and this year.

We can't provide your actual benefit amount until you apply for benefits. **And that amount may differ from the estimates stated below because:**
(1) Your earnings may increase or decrease in the future.
(2) Your estimated benefits are based on current law. **The law governing benefit amounts may change.***
(3) Your benefit amount may be affected by **military service, railroad employment or pensions earned through work on which you did not pay Social Security tax. Visit *www.socialsecurity.gov/mystatement* to see whether your Social Security benefit amount will be affected.**

Generally, estimates for older workers are more accurate than those for younger workers because they're based on a longer earnings history with fewer uncertainties such as earnings fluctuations and future law changes.

These estimates are in today's dollars. After you start receiving benefits, they will be adjusted for cost-of-living increases.

▼ *Retirement

You have earned enough credits to qualify for benefits. At your current earnings rate, if you stop working and start receiving benefits..

At age 62, your payment would be about...	$882 a month
If you continue working until...	
your full retirement age (67 years), your payment would be about...	$1,278 a month
age 70, your payment would be about...	$1,594 a month

▼ *Disability

You have earned enough credits to qualify for benefits. If you became disabled right now,

Your payment would be about...	$1,169 a month

▼ *Family

If you get retirement or disability benefits, your spouse and children also may qualify for benefits.

▼ *Survivors

You have earned enough credits for your family to receive survivors benefits. If you die this year, certain members of your family **may** qualify for the following benefits.

Your child...	$911 a month
Your spouse who is caring for your child...	$911 a month
Your spouse, if benefits start at full retirement age...	$1,215 a month
Total family benefits cannot be more than...	$2,233 a month

Your spouse or minor child may be eligible for a special one-time death benefit of $255.

▼ Medicare

You have enough credits to qualify for Medicare at age 65. Even if you do not retire at age 65, be sure to contact Social Security three months before your 65th birthday to enroll in Medicare.

*** Your estimated benefits are based on current law. Congress has made changes to the law in the past and can do so at any time. The law governing benefit amounts may change because, by 2042, the payroll taxes collected will be enough to pay only about 73 percent of scheduled benefits.**

We based your benefit estimates on these facts:

Your name...	Wanda Worker
Your date of birth...	May 5, 1963
Your estimated taxable earnings per year after 2003...	$35,051
Your Social Security number (only the last four digits are shown to help prevent identity theft)...	XXX-XX-2004

Help Us Keep Your Earnings Record Accurate

You, your employer and Social Security share responsibility for the accuracy of your earnings record. Since you began working, we recorded your reported earnings under your name and Social Security number. We have updated your record each time your employer (or you, if you're self-employed) reported your earnings.

Remember, it's your earnings, not the amount of taxes you paid or the number of credits you've earned, that determine your benefit amount. When we figure that amount, we base it on your average earnings over your lifetime. If our records are wrong, you may not receive all the benefits to which you're entitled.

- **Review this chart carefully** using your own records to make sure our information is correct and that we've recorded each year you worked. You are the only person who can look at the earnings chart and know whether it is complete and correct.

  Some or all of your earnings from **last year** may not be shown on your *Statement*. It could be that we still were processing last year's earnings reports when your *Statement* was prepared. Your complete earnings for last year will be shown on next year's *Statement*. **Note:** If you worked for more than one employer during any year, or if you had both earnings and self-employment income, we combined your earnings for the year.

- **There's a limit on the amount of earnings on which you pay Social Security taxes each year.** The limit increases yearly. Earnings above the limit will not appear on your earnings chart as Social Security earnings. (For Medicare taxes, the maximum earnings amount began rising in 1991. Since 1994, **all** of your earnings are taxed for Medicare.)

- **Call us right away** at **1–800–772–1213** (7 a.m.–7 p.m. your local time) if any earnings for years **before last year** are shown incorrectly. If possible, have your W-2 or tax return for those years available. (If you live outside the U.S., follow the directions at the bottom of page 4.)

Your Earnings Record at a Glance

Years You Worked	Your Taxed Social Security Earnings	Your Taxed Medicare Earnings
1979	474	474
1980	1,123	1,123
1981	1,983	1,983
1982	3,293	3,293
1983	4,461	4,461
1984	5,600	5,600
1985	6,950	6,950
1986	8,813	8,813
1987	10,941	10,941
1988	12,803	12,803
1989	14,520	14,520
1990	16,308	16,308
1991	17,920	17,920
1992	19,655	19,655
1993	20,534	20,534
1994	21,730	21,730
1995	23,155	23,155
1996	24,838	24,838
1997	26,806	26,806
1998	28,720	28,720
1999	30,824	30,824
2000	33,060	33,060
2001	34,237	34,237
2002	35,051	35,051
2003	Not yet recorded	

Did you know... Social Security is more than just a retirement program? It's here to help you when you need it most.

You and your family may be eligible for valuable benefits:

- When you die, your family may be eligible to receive survivors benefits.
- Social Security may help you if you become disabled – even at a young age.
- It is possible for a young person who has worked and paid Social Security taxes in as few as two years to become eligible for disability benefits.

Social Security credits you earn move with you from job to job throughout your career.

Total Social Security and Medicare taxes paid over your working career through the last year reported on the chart above:

Estimated taxes paid for Social Security:		Estimated taxes paid for Medicare:	
You paid:	$24,723	You paid:	$5,820
Your employers paid:	$24,723	Your employers paid:	$5,820

Note: You currently pay 6.2 percent of your salary, up to $87,900, in Social Security taxes and 1.45 percent in Medicare taxes on your entire salary. Your employer also pays 6.2 percent in Social Security taxes and 1.45 percent in Medicare taxes for you. If you are self-employed, you pay the combined employee and employer amount of 12.4 percent in Social Security taxes and 2.9 percent in Medicare taxes on your net earnings.

Some Facts About Social Security

About Social Security and Medicare...

Social Security pays retirement, disability, family and survivors benefits. Medicare, a separate program run by the Centers for Medicare and Medicaid Services, helps pay for inpatient hospital care, nursing care, doctors' fees, and other medical services and supplies to people age 65 and older, or to people who have been receiving Social Security disability benefits for two years or more. Your Social Security covered earnings qualify you for both programs.

Here are some facts about Social Security's benefits:

▼ **Retirement**– If you were born before 1938, your full retirement age is 65. Because of a 1983 change in the law, the full retirement age will increase gradually to 67 for people born in 1960 and later.

Some people retire before their full retirement age. You can retire as early as age 62 and take your benefits at a reduced rate. If you continue working after your full retirement age, you can receive higher benefits because of additional earnings and special credits for delayed retirement.

▼ **Disability**– If you become disabled before full retirement age, you can receive disability benefits after six months if you have:

- enough credits from earnings (depending on your age, you must have earned six to 20 of your credits in the three to 10 years before you became disabled); and
- a physical or mental impairment that is expected to prevent you from doing "substantial" work for a year or more, *or* result in death.

▼ **Family**– If you're eligible for disability or retirement benefits, your current or divorced spouse, minor children, or adult children disabled before age 22 also may receive benefits. Each may qualify for up to about 50 percent of your benefit amount. The total amount depends on how many family members qualify.

▼ **Survivors**– When you die, certain members of your family may be eligible for benefits:

- your spouse age 60 or older (50 or older if disabled, or any age if caring for your children younger than age 16); and
- your children if unmarried and younger than age 18, still in school and younger than 19 years old, or adult children disabled before age 22.

If you are divorced, your ex-spouse could be eligible for a widow's or widower's benefit on your record when you die.

Receive benefits and still work...

You can continue to work and still get retirement or survivors benefits. If you're younger than your full retirement age, there are limits on how much you can earn without affecting your benefit amount. The limits change each year. When you apply for benefits, we'll tell you what the limits are at that time and whether work would affect your monthly benefits. When you reach full retirement age, the earnings limits no longer apply.

Before you decide to retire...

Think about your benefits for the long term. Everyone's situation is different. For example, be sure to consider the advantages and disadvantages of early retirement. If you choose to receive benefits before you reach full retirement age, your benefits will be permanently reduced. However, you'll receive benefits for a longer period of time.

To help you decide when is the best time for you to retire, we offer a free booklet, *Social Security—Retirement Benefits* (Publication No. 05-10035), that provides specific information about retirement. You can calculate future retirement benefits on our website at *www.socialsecurity.gov* by using the *Social Security Benefit Calculators*. There are other free publications that you may find helpful, including:

▼ *Understanding The Benefits* (No. 05-10024)– a general explanation of all Social Security benefits;

▼ *How Your Retirement Benefit Is Figured* (No. 05-10070)– an explanation of how you can calculate your benefit;

▼ *The Windfall Elimination Provision* (No. 05-10045)– how it affects your retirement or disability benefits;

▼ *Government Pension Offset* (No. 05-10007)– explanation of a law that affects spouse's or widow(er)'s benefits; and

▼ *When Someone Misuses Your Number* (No. 05-10064)– what to do if you're a victim of identity theft.

We also have other leaflets and fact sheets with information about specific topics such as military service, self-employment or foreign employment. You can request Social Security publications at *www.socialsecurity.gov* or by calling us at **1–800–772–1213**.

If you need more information—Visit *www.socialsecurity.gov/mystatement* on the Internet, contact any Social Security office, call **1–800–772–1213** or write to Social Security Administration, Office of Earnings Operations, P.O. Box 33026, Baltimore, MD 21290-3026. If you're deaf or hard of hearing, call TTY 1-800-325-0778. If you have questions about your personal information, you must provide your complete Social Security number. If your address is incorrect on this *Statement*, ask the Internal Revenue Service to send you a Form 8822. We don't keep your address if you're not receiving Social Security benefits.

Para solicitar una *Declaración* en español, llame al 1-800-772-1213.