When People Who Have Stopped Working Should Take Social Security Retirement

Albert Kinderman and William P. Jennings

A new generation of retirees will receive full Social Security retirement benefits at age 66. Those who have left the workforce have the choice of collecting benefits early. The paper considers the range of choices faced by decision-makers and offers an alternative approach to the financial planning question of when to begin taking Social Security benefits, identifying the incremental increases from waiting. With consideration of various discount rates, life expectancy, and the complexity of the Social Security rules, for many, but not all, waiting until age 66 will yield a larger present value of the stream of expected future benefits.

Key Words: retirement, social security

Introduction

Social Security retirement benefits are a major part of the retirement income of most Americans. Participants born between January 2, 1943 and January 1, 1955 have a full retirement age (FRA) of 66 but are eligible to begin receiving retirement benefits at age 62, four years before their FRA. If a participant begins retirement benefits before FRA, there is a reduction in benefits based on the number of months before FRA. This paper examines the economic aspects of the decision to take retirement benefits early.

The median age of final separation from the labor force is approximately 62 (Gendell, 2001), indicating that about half of all U.S. workers have retired by age 62 and face the choice of when to begin Social Security benefits. This paper focuses on the individual who has already stopped working and is trying to decide when the best time is to begin taking Social Security benefits.[a] From an economic perspective, the personal decision made by each participant will depend on assumed cost of living adjustments in the retirement benefits, the individual's life expectancy, the personal need or preference for income before FRA, and the discount rate used to evaluate future benefits.

Whereas many people do select either age 62 or FRA, this paper more carefully considers the full range of choices faced by decision-makers. As will be shown, although the largest present value choice is sometimes age 62 and sometimes age 66, the largest present value choice may be at an age between 62 and 66 depending on actuarial factors and inflation and interest rate assumptions. This paper, by examining the economic aspects of taking early benefits in some detail, provides a more careful examination of the issues determining when to begin taking benefits. It also identifies a quirk of the Social Security program that encourages participants not to begin taking benefits at age 63. In addition, to help decision-makers and their financial advisors in addressing the issue of when to begin taking benefits, this paper considers the incremental increase in payments from waiting, unlike the typical approach of considering how much lower the benefits will be if one takes retirement benefits early. The analysis of these issues flows fundamentally from comparisons of the values of streams of benefits beginning at different ages.

Literature

There are several ways to look at the value of the stream of benefits. Some authors have looked at the nominal income and computed the breakeven point, the age at which the

Albert Kinderman, Professor Emeritus, California State University, Northridge, Department of Systems and Operations Management, Northridge, CA 91330, albert.kinderman@csun.edu, (818) 677-2470

William P. Jennings, Professor of Finance, California State University, Northridge, Department of Finance, Real Estate, and Insurance, Northridge, CA 91330, william.jennings@csun.edu, (818) 677-2459

total of the smaller benefits beginning at an earlier age are surpassed by the total of the larger benefits beginning at a later age (Edelman, 2004; Muksian, 2004). This approach has also been taken in the popular press. One reason for using such a method is simplicity: one does not need to consider mortality tables and discount rates. Orman (1999) used a modified version of the breakeven point. She looked at two streams, one starting at age 62 and one at 65 (the FRA at the time of her writing), and subtracted the benefit starting at 62 from both streams from age 65 on (this is the common part of the two streams). She computed the amount one would collect between ages 62 and 65 and asked how long it would take to save an equal amount starting at age 65, saving just the excess of the benefit at 65 over the one starting at 62. "The answer [was] 12 years (not including any interest that money could have earned). By taking Social Security at 62, you have received this money in 3 years, not 12." Other simple arguments made for choosing the age for retirement were often heuristic at best: "There is very little chance I will die between 62 and 66, so I should wait to get the larger benefit" or "I am not likely to live beyond the breakeven point, so I should take my benefits as early as possible" or "If I take my benefits early, I can save them until FRA, and with both the interest and the savings, I will be ahead." These arguments ignore the real possibility of death before age 66 and the possibility of living past the breakeven point. The Vanguard Group (2005) emphasized health in its advice to clients: "In general, the longer you live beyond the average life expectancy for someone your age, the more it pays to put off taking Social Security benefits. Conversely, the shorter your life, the more it pays to start taking benefits as soon as possible."

More sophisticated analyses are based on mortality tables and/or present values to reflect the actual income stream from beginning to end and the current value of that stream at the time the decision is first faced at age 62. The complication is that the result is sensitive to the mortality table chosen and the discount rate used to find the present values of the income stream. For example, Walsh (2002) used "a mortality table that life insurers might use for the purchase of immediate annuities," the A2000 MGM set back 2 years, that is a merged gender mortality table with a life expectancy of about 26 years for a person age 62. Because this is a table used by insurers to sell annuities, it has greater life expectancy than other tables so that the company will be collecting a higher premium than

otherwise might be charged. Walsh used a 7.2%[b] after tax earnings rate and found that starting Social Security at age 65 ½ (the FRA at the time he conducted his study) was preferable to starting at age 62, the gain being less than 1% per year of waiting. Walsh pointed out that a higher discount rate favored earlier retirement. Other work in both the academic and popular press focused primarily on the question of whether people should start taking Social Security benefits at age 62 or at their FRA (Rose & Larimore, 2001; Walsh, 2003). The Center for Retirement Research (2005) considered how the Social Security benefit structure encouraged women, and especially married women, to take benefits early. Silbiger (2005) emphasized that those who work part time between ages 62 and 66 should wait to receive benefits.

Social Security Retirement Benefits[c]

Before analyzing the economic aspects of the decision of when to begin taking Social Security benefits, it is necessary to explain how the benefits are calculated and how they change from age 62 to FRA. The Social Security system pays benefits to retirees, spouses, children, survivors, the disabled, and the aged and administers both Supplemental Security Income (SSI) and Medicare. The *Old Age* portion of OASDI (Old Age, Survivors, and Disability Insurance) is what is commonly referred to as *Social Security*, the benefits paid to retired workers. The retirement benefit that is paid to a retired worker is based on several factors. The Primary Insurance Amount (PIA) is the amount that the worker is entitled to at FRA. The PIA is based on the Average Indexed Monthly Earnings (AIME) of the worker. The retirement benefit to be paid is based on the PIA and the age of the worker at retirement.

The AIME is intended to represent the average level of earnings for the lifetime of the worker in current dollars of the year that the worker turns 60. The AIME is calculated based on the annual earnings (up to the maximum taxed and credited Social Security wages) of the worker in each year from 1951 to the present. For each year prior to the year that the worker turns 61, the worker's earnings are indexed based on the ratio of the average monthly earnings in the year the worker turns 60 to the average monthly earnings of U.S. workers in the given year. For example, Michael turned 62 in 2005 and the average earnings in the year that he turned 60 (2003) were $34,064.95. If Michael earned the maximum Social Security wages of $4,800 when he was 20 years old in 1963, when the average

earnings in the U.S. were $4,396.64, his indexed wages for 1963 would be $4,800 times the ratio of $34,064.95 to $4,396.64 or $37,190.16. Wages earned in the year that the worker turns 61 and later are not indexed, but the actual wages up to the Social Security maximum are used in the subsequent calculation. To compute the AIME, the highest 35 years[d] of indexed and non-indexed wages after 1950 are averaged and then converted to a monthly figure and rounded down to the nearest dollar. If Michael had earned the maximum taxable and credited wages every year from 1958 (the year he turned 15) to 2004, the 35 years used to calculate the AIME would have been 1966, 1968, 1969, and the 32 years from 1973 through 2004.[e] His AIME (assuming no earnings in 2005) would be $6,137.

Once the AIME is calculated, the PIA is calculated. For retirement benefits, the PIA is first computed in the year that the worker turns 62. The PIA is progressive in the sense of the progressive income tax: those with lower average incomes receive a greater proportion of their average incomes as benefits, and those with higher average incomes receive a smaller proportion. The PIA is computed by taking 90% of the AIME up to the first *bend point*, 32% of the AIME between the first and second bend points, and 15% of the AIME above the second bend point. This value is rounded down to the nearest dime. Figure 1 shows how the PIA changes as the AIME increases. The bend points are where the line segments join and the slopes change. In 2005, the two bend points were $627 and $3,779. James, for example, with an AIME of $627, would have a PIA of $564.30, and Mary, with an AIME of $3,779, would have a PIA of $564.30 plus 32% of the difference of between $3,779 and $627, for a total of $1,572.94, rounded to $1,572.90. As a result, James, with the AIME of $627, has a replacement rate of 90%, and Mary, with the AIME of $3,779, has a replacement rate of 41.6%. For Michael, with maximum earnings and an AIME for 2005 of $6,137 (assuming no wages in 2005), the PIA is $1,942.60 and the replacement rate is 31.1%. The PIA may be recomputed if additional earnings change the AIME of the worker, but the bend points[f] used will be those in place in the year that the worker turned 62.

Once the PIA is computed in the year that the worker turns 62, it is adjusted each year by a cost of living adjustment (COLA). When the PIA is first computed in the year that the worker attains age 62, it is considered as if it were computed in January of that year. COLAs are computed by looking at the change in consumer prices between the third

Figure 1. The Bend Points (how the PIA depends on the AIME)
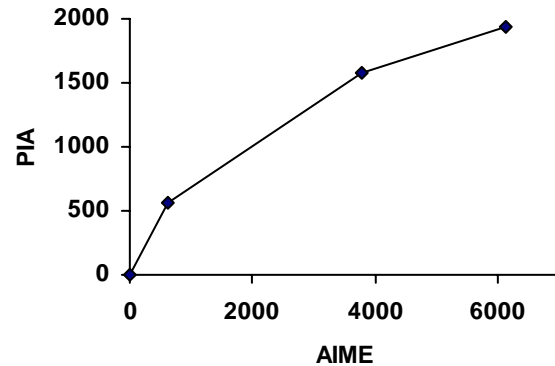
quarter of the previous year and the third quarter of the current year. The COLA is announced in November and is applied to the benefit for the month of December, first payable in the month of January (the COLA for January 2006 was 4.1%). Each time the PIA is adjusted, the amount is rounded down to the nearest dime.

Finally, the retirement benefit amount is computed. At FRA, the retirement benefit is the PIA rounded down to the nearest dollar. For a worker turning 62 in 2005, the amount will not be determined until the year of FRA, 2009, when all of the COLAs are applied. For example, Patricia, born February 15, 1943, had an AIME of $5,293 and a PIA of $1,800.00 in 2005. With the 4.1% COLA for 2006 and assuming COLAs of 3% for the three years from 2007 to 2009, her PIA will go from $1,800.00 to $2,047.50 at FRA. This assumes there are no additional earnings or that such earnings are small enough not to affect the AIME. Patricia's retirement benefit at age 66 would thus be $2,047.00 a month (the PIA rounded down to the nearest dollar).

Early Retirement
If a worker takes the retirement benefit early, a preliminary benefit is computed based on a reduction of the PIA that depends on the number of months before FRA that the benefits begin. The preliminary benefit is then rounded down to the nearest dollar to get the benefit to be paid. With FRA at 66, benefits are reduced by 5/9 of 1% for the first 36 months prior to FRA. This produces a total reduction of 20% for someone retiring at age 63 when the FRA is 66. There is an additional reduction of 5/12 of 1% for each reduction month over 36. Thus, if someone begins benefits at age 62 in 2005, 48 months before the FRA of

66, the reduction is 20% plus an additional 5%, for a total reduction of 25%. Table 1 shows the fraction and percentage of PIA that is paid as a benefit at early retirement.[g]

Table 1. Reduced Benefits for Early Retirement

Age	Months early	Benefit fraction	Benefit percent
62 and 1 month	47	181 / 240	75.42%
63	36	192 / 240	80.00%
64	24	208 / 240	86.67%
65	12	224 / 240	93.33%
66	0	240 / 240	100.00%

The Benefit of Waiting

If a worker elects to receive benefits 47 months before FRA, the monthly benefit will be only 181/240 (75.42%) of the PIA. Similarly, if a worker elects to receive benefits 36 months, 24 months, or 12 months before FRA, the monthly benefit will be 192/240 (80%) of the PIA, 208/240 (86.67%) of the PIA, or 224/240 (93.33%) of the PIA, respectively. To properly judge the effect of waiting an additional year, a worker should look at how much the monthly benefit will increase by waiting. Table 2 shows the effect on Patricia's monthly benefit of waiting.

Table 2. Patricia's Reduced Benefit

Age	Months early	Benefit	Gain from waiting 1 more year
62 and 1 month	47	$1357	6.12%
63	36	$1440	8.33%
64	24	$1560	7.69%
65	12	$1680	7.14%
66	0	$1800	

In general, waiting from age 62 and one month to age 63 produces an increase in the benefit fraction from 181/240 to 192/240 shown in Table 1, or 6.08% (because of the rounding down to whole dollars of Patricia's benefit, her gain of 6.12% shown in Table 2 is slightly larger). The gain from waiting from age 63 to 64 is 8.33%, from age 64 to 65 is 7.69%, and from age 65 to 66 is 7.14%. Note that the smallest gain is for waiting from age 62 to 63,[h] and the largest gain is for waiting from age 63 to 64. This suggests that there may not be a good reason to wait from age 62 to 63; if retirees do, they should give careful consideration to waiting until age 64 to reap the 8.33% increase in benefits. Of course, because these increases do not reflect the reduced remaining years of life of the worker, they are not a measure of the actual increase in present value but only a measure of the increase in annual payments to be paid throughout the worker's life. Although most Social Security recipients and analysts believe the marginal benefits for each additional year of waiting are both actuarially fair and approximately equal, they are neither. As shown above, the marginal benefit of waiting is lowest from age 62 to 63 and highest from age 63 to 64, and the benefit of waiting from age 64 to 65 is slightly greater than the benefit of waiting from age 65 to 66. This pattern is not actuarially determined for the average recipient but is a result of the particular rules of the Social Security system.

Methods

Although we made a series of computations using several different life (mortality) tables, the results reported used the table for persons born in 1950 as reported in *Life Tables for the United States Social Security Area 1900-2100* (Social Security Administration [SSA], 2002), published by the Social Security Administration (SSA) as part of series of actuarial studies. The additional years of expected life at age 62 in this table were about 19.1 years for a man and 22.5 years for a woman.

As mentioned, the present value of a stream of benefits is sensitive to the choice of a discount rate. We considered the effects of using different discount rates, but for most people we recommended using a safe discount rate such as one offered by a laddered series of treasury bonds.

The Spreadsheet

We began by constructing a spreadsheet that included the following elements:

The probability of death between birthdays for men and women, beginning at ages 62, 63, 64, 65, and 66.

Inputs for birth date, COLA, tax rate, percent of Social Security benefits that are taxable[i], and discount rate.

For each birth date,
- The month of FRA.

- The first month of the calendar year that the worker was eligible for payments at age 62 and at subsequent birthdays.
- The number of reduction months from FRA if benefits begin as early as possible.
- The number of payments before the COLA in the year that the worker is age 62 and in subsequent years.
- The number of payments between birthdays at age 62 and in subsequent years.

For each beginning age, 62 to 66,
- For each year of life[j] up to age 119, the beginning of year PIA and end of year (after COLA) PIA.
- The monthly nominal benefits pre- and post-COLA.
- The monthly after-tax benefits pre- and post-COLA.
- The annual after-tax benefits.
- The half-year after-tax benefits (used in the year of death).
- The present value of annual after-tax benefits.
- The present value of the total stream of after-tax

benefits to year end.
- The present value of the half-year after-tax benefits.
- The present value of the total stream of after-tax benefits to mid-year.
- The expected present value at ages 62 to the beginning age of the stream of after-tax benefits until death.

To clarify this last item, we had the expected present value at age 62 of the stream beginning at age 62; the expected present value at age 62 and 63 of the stream beginning at age 63; and so on, up to the expected present value at ages 62, 63, 64, 65, and 66 of the stream beginning at age 66. The results contained all of these expected present values, arranged by age of comparison, e.g., at age 62, and we compared the expected present value of starting benefits at ages 62, 63, 64, 65, or 66. Figure 2 shows the output for someone like Patricia, with a PIA of $1,800. With the given birthday, a 3% COLA, a marginal tax rate of 25%, 85% of benefits being taxable, and a discount rate of 5%, there is a slight advantage for a man age 62 waiting until age 65 to receive his benefits, whereas Patricia should wait until age 66 to begin benefits. Note that the greatest

Figure 2. A Sample Output

Social Security Retirement Benefits payable at age 62 and later based on Actuarial Study No. 116 of the SSA, for persons born in 1950 (SSA, 2002).

Birth month	2
Birth day	15

Assumptions: all values (COLAs, tax rates, etc.) are constant for the lifetime of the worker.

PIA at 62 (monthly)	$1,800
COLA	3.00%
Tax rate on benefits	25%
% of benefits taxable	85%
Discount rate	5.00%

Expected Present Value of Lifetime Benefits at age		Starting Benefits at Age				
		62	63	64	65	66
Male	62	$198,296.68	$198,260.47	$200,927.09	$201,980.37	$201,932.34
Female	62	$226,070.73	$227,692.34	$232,707.50	$236,016.53	$238,183.45
Male	63		$211,042.62	$213,881.16	$215,002.35	$214,951.22
Female	63		$241,207.79	$246,520.64	$250,026.08	$252,321.63
Male	64			$228,002.78	$229,198.00	$229,143.49
Female	64			$261,398.70	$265,115.71	$267,549.80
Male	65				$244,736.18	$244,677.98
Female	65				$281,413.29	$283,997.01

increase in present value comes from waiting from age 63 to 64 for both men and women, and that for a man, the present value of benefits beginning at age 62 is greater than the present value of benefits starting at age 63.

Waiting to Decide Doesn't Affect the Decision to Start at a Later Age
The advantage of starting benefits at any age did not depend on the age that the present value was calculated. Using Patricia and the values in Table 2, at age 62 the present value of starting benefits at age 66 was 2.35% higher than the present value of starting benefits at age 64. If Patricia waited until age 64 to make the same comparison, the present value of starting benefits at age 66 also had a 2.35% advantage. This result follows immediately if we think of computing the present value of two streams beginning in the future as consisting of two steps: first compute the present value of the streams as of the earliest starting date and then discount those two present values back to the present. The stream that has the greater value as of the earliest starting date has the greater present value today.

Some of the Calculations
(This section gives some details about the formulas in the spreadsheet and is not necessary for understanding the rest of the paper.) The survival tables used gave the probability of death in a given year. The probability of surviving for that year was thus 1 – P(death). Given a starting age, e.g. 62, the probability of surviving until a later age was the product of the probability of surviving each of the intervening years. For example, the probability of surviving from age 62 to age 66 was

P(survive from 62 to 66) = P(survive 62 to 63)
P(survive 63 to 64) P(survive 64 to 65)
P(survive 65 to 66)

From the survival probabilities starting at a particular age, we found the probability of death at a particular age. For example, the probability that someone who was 62 will die at age 65 was the difference

P(death at 65) = P(survive from 62 to 65) –
P(survive from 62 to 66)

These probabilities were computed up to death at age 119 for each of the starting ages 62 to 66.

The calculation of benefits in the spreadsheet followed the rules of the SSA. Starting with the PIA calculated at age 62, subsequent PIAs were determined by applying the COLAs and rounding down to the nearest dime. For early retirement, the fractional benefit was determined from the PIA and rounded down to the nearest dollar to get the monthly benefit for each year.

Because the COLA is first paid in January, the numbers of checks pre and post COLA were needed to determine the amount received between two birthdays. Also, a recipient must have been at least 62 for the whole month to earn a benefit. This affected how many checks were paid the first year if someone retired at age 62. (Social Security treats a person as having attained an age the day before the actual birthday, so someone born on the 2nd of March will be eligible for a March benefit at age 62 payable in April. Someone born on the 3rd or later will not be eligible at age 62 until April, but will be eligible for full benefits at FRA in March at age 66.)

For the period between birthdays, the present value of the after tax benefits was computed. These were totaled to find the present value of the stream of benefits up to any given age. For example, for a starting age of 62, we found the present value of all benefits received up to age 63, 64, 65, etc. The actual value of the stream received depended on the year of death. Using the probabilities of death in future years, we found the expected present value of the stream.

Because someone will die approximately half way between one birthday and the next on average, a minor adjustment was made in the present value to the year of death before the expected present value was computed. Another adjustment in the present value was made to account for a delay of approximately one month in receiving a given benefit (the actual payment dates, the second, third, and fourth Wednesday of the month, are approximately one month after the numerical day of birth).

Results
Using the life table for persons born in 1950 published by the SSA, we computed the expected present values of the streams of benefits for various combinations of the inputs. Table 3 shows the expected present values of benefit streams for someone like Patricia, born on February 15 with a PIA of $1,800 at age 62, a marginal tax rate of 25%, and 85% of Social Security benefits taxable. The table included values for men and women assuming nominal

discount rates of 5%, 6%, and 7% and COLAs of 2%, 3%, and 4%. We used various combinations of nominal discount rates and COLAs rather than a single real discount rate to fully capture the range of financial alternatives and personal preferences for earlier consumption of different people. Our use of the Social Security life expectancy tables lead to earlier election of benefits than alternative life expectancy tables, such as the one used by Walsh (2002). These alternative life expectancy tables assumed longer life expectancies and thereby increased the relative value of waiting longer to begin taking benefits. It is also important to note that the results were independent of the PIA because all the benefits and the present values were determined by multiplication of various factors (reduction factors, COLAs, discount rates, etc.). For example, if the PIA was $900 instead of $1,800, all the values in the table would be halved, but the decision of when to elect benefits would not be affected.

Male vs. Female
It is well known that, on average, women live longer than men. There are three consequences of a woman's longer life. First, at every combination of discount rate and COLA in Table 3, the expected present value of the benefit stream was greater for women than for men (a consequence of the greater life expectancy). Second, the best age for a female to begin benefits was the same age as the male or later. In fact, the female should have waited longer than the male except in two circumstances: when the discount rate was high and the COLA was low (both should retire at 62) and when the discount rate was low and the COLA was high (both should retire at 66). Third, waiting from 62 and one month to 66 yielded a greater

Table 3. Expected Present Values of Benefit Streams When the PIA is $1,800 for Varying Discount Rates and COLAs (the largest present value for each example is in bold and italics)

	Discount rate	COLA	Best age	62	63	64	65	66
M	5%	2%	62	*179,379.09*	178,367.37	179,367.09	179,063.81	177,766.94
F	5%	2%	66	202,119.58	202,294.59	205,364.32	206,876.23	*207,343.47*
M	6%	2%	62	*163,046.54*	160,944.88	160,868.25	159,476.62	157,273.04
F	6%	2%	65	181,836.65	180,845.81	182,327.45	*182,406.30*	181,626.37
M	7%	2%	62	*149,078.01*	146,193.08	145,080.36	142,798.02	139,867.97
F	7%	2%	62	*164,736.26*	162,772.00	162,942.16	161,857.81	160,081.75
M	5%	3%	65	198,296.68	198,260.47	200,927.09	*201,980.37*	201,932.34
F	5%	3%	66	226,070.73	227,692.34	232,707.50	236,016.53	*238,183.45*
M	6%	3%	64	179,240.46	178,111.40	*179,299.84*	179,031.72	177,850.81
F	6%	3%	66	202,028.62	202,254.42	205,352.38	206,903.87	*207,505.31*
M	7%	3%	62	*163,037.47*	160,988.15	160,945.73	159,596.83	157,505.01
F	7%	3%	65	181,896.16	180,962.97	182,484.38	*182,612.22*	181,961.79
M	5%	4%	66	220,334.35	221,612.83	226,060.69	228,760.85	*230,208.14*
F	5%	4%	66	254,437.46	257,756.47	265,111.00	270,622.75	*274,851.15*
M	6%	4%	66	197,993.88	197,981.17	200,663.74	201,758.39	*201,799.74*
F	6%	4%	66	225,780.11	227,424.43	232,456.89	235,809.48	*238,081.11*
M	7%	4%	64	179,110.91	178,016.12	*179,234.04*	179,017.05	177,925.87
F	7%	4%	66	201,947.63	202,209.41	205,341.29	206,949.30	*207,656.44*

gain (or smaller loss) for the woman than the man under all the circumstances considered.

Cost of Living Adjustment
The larger the cost of living adjustment (holding the discount rate constant), the larger nominal and discounted future benefits were. For both men and women, a higher COLA increased the expected present value of the stream of benefits and increased the best age to begin taking benefits. For women, Table 3 shows the best age increasing from age 65 to 66 to 66 as the COLA went from 2% to 3% to 4% when the discount rate was 6% and from age 62 to 65 to 66 when the discount rate is 7% (the best age was 66 for all COLAs when the discount rate was 5%). For a man, with a discount rate of 5%, the best age went from age 62 to 65 to 66; with a discount rate of 6%, the best age went from age 62 to 64 to 66; and with a discount rate of 7%, the best age went from age 62 to 62 to 64 as the COLA went from 2% to 3% to 4%.

Discount Rate
Along with life expectancy, the discount rate used to evaluate a lifetime stream of benefits was one of the two most important factors in determining whether to begin benefits at age 62 or later. For both men and women, a higher discount rate produced a lower expected present value of the stream of benefits. Because future benefits were discounted more heavily with a higher discount rate, the best age for beginning benefits was lower (holding the COLA constant). Table 3 shows that with a COLA of 3%, a male's best starting age went from age 65 to 64 to 62 when the discount rate increased from 5% to 6% to 7%. A small change in the discount rate produced a large change in the expected present value of the benefit stream. For example, with a PIA at age 62 of $1,800, a COLA of 3%, and a discount rate of 5%, Table 3 (and Figure 2) shows that a male has a $3,683.69 advantage (in present value) in waiting until age 65 to begin benefits over starting at age 62 and one month, but with a discount rate of 6%, the advantage switched to starting at age 62 and one month, which is $208.74 better than starting at age 65. A change of 1% in the discount rate changed the difference between the present value of benefits starting at age 62 and one month and starting at age 65 by almost $3,900.

The Reduction Factor
As mentioned earlier, the reduction factors used by Social Security produced the following relative gains from waiting an additional year to begin benefits: 6.08% from

age 62 and one month to 63, 8.33% from age 63 to 64, 7.69% from age 64 to 65, and 7.14% from age 65 to 66. This was independent of any COLA. One quick inference was that it was rarely advantageous to begin benefits at age 63, because the extra year of waiting until age 64 gave such a large return. Looking at Table 3, there was no combination for which 63 was the best age to begin benefits.[k] With a 5% discount rate and a 2% COLA (the first two rows of the table), the expected present value of the stream of benefits for a man computed at age 62 was lower if benefits began at age 63 than if they began at any other age except 66. For a woman under the same circumstances, beginning benefits at age 63 raised the expected present value by $175 over starting at age 62 and one month, and waiting until age 64 increased the expected present value by over $3,000. Waiting longer increased the expected present values for a woman, but by smaller amounts.[l]

Life Expectancy
The decision to take benefits early should be strongly influenced by the life expectancy of the worker. While the simple device of taking sex into account shows that men should take early benefits in more circumstances than women, sex is just the first element of estimating how long the worker will live. The worse the current health of the worker and the shorter the expected lifetime, the more advantageous early benefits will be. On the other hand, one of the risks of taking early benefits is that the worker will live longer than expected. For many, the worst thing that can happen financially in retirement is to live a very long life on an income that is too low to support an adequate lifestyle. Even if your expected life is not that long, there is still a risk that you may live well past the age at which you expected to die. Delaying benefits is a form of insurance against that risk: by delaying benefits until FRA, you may give up some lifetime income if you die early, but you will help protect yourself against living too long.

Conclusion and Implications
The financial decision facing retirees of when to begin taking Social Security benefits is surprisingly complex and involves consideration of actuarial factors (including personal health), personal financial need, expected future inflation, expected future interest rates, tax considerations, and the Social Security rules. Depending on the value of these factors, the largest present value of the Social Security income stream may begin at age 62, age 66, or

ages in between. Age 63 is often an undesirable age to begin taking benefits. The usual observations, such as people with a long life expectancy generally benefit by waiting until FRA, remain true.

We believe many decision-makers and their financial advisors may be aided by framing the decision of when to begin taking benefits in the context of "how much more will I receive in benefits by waiting another year." The reduction factors used by Social Security yield different incremental gains from waiting an additional year to begin benefits: 6.08% from age 62 and one month to 63, 8.33% from age 63 to 64, 7.69% from age 64 to 65, and 7.14% from age 65 to 66. Framing the issue in the manner of "how much more will I receive in benefits by waiting another year" allows people and their financial advisors to more easily compare the percentage gain of waiting with the percentage gain in other financial investments during the waiting period. We believe this approach will encourage people to consider their Social Security benefits as part of their overall investment portfolio, with all of its crucial risk and return tradeoffs. Looking forward rather than looking backward provides a context in which the decision-maker can more easily compare the percentage gain of waiting to take Social Security benefits to the percentage gain on financial investments that may be used to pay for expenses incurred during waiting.

For many decision-makers, knowing how much more they can expect in benefits by waiting one more year will improve their ability to understand the economic choices they face and, thereby, help them to make better decisions. Because Social Security is a major resource for funding retirement for most people, we generally recommend that all who can afford to should wait. Although some combinations of discount rates and COLAs point to taking benefits earlier, there is no guarantee that those circumstances will prevail over the long term. Most importantly, the possibility of outliving one's benefits argues for delaying benefits as insurance against an extra long life.

References

Center for Retirement Research. (2005, October). *Why do women claim Social Security benefits so early?* (Issue Brief No. 35). Chestnut Hill, MA: Munnell, A., & Soto, M.

Edelman, R. (2004). *The truth about money* (3rd ed.). New York: HarperBusiness.

Gendell, M. (2001). Retirement age declines again in the 1990s. *Monthly Labor Review, 124*(10).

Muksian, R. (2004). The effect of retirement under Social Security at age 62. *Journal of Financial Planning*, *17*, 64-71.

Orman, S. (1999). *You've earned it, don't lose it* (Rev. ed.) New York: Newmarket Press.

Rose, C., & Larimore, K. (2001). Social Security benefit considerations in early retirement. *Journal of Financial Planning, 14*, 116-120.

Silbiger, S. (2005). *Retire early? Make the smart choices.* New York: HarperCollins.

Social Security Administration. (2002). *Life tables for the United States Social Security area 1900-2100* (Actuarial Study No. 116). Baltimore, MD: Bell, F. C., & Miller, M. L. Retrieved from http://www.socialsecurity.gov/OACT/NOTES/as116/as116_IV.html

Social Security Administration. (2003). *Compilation of the Social Security laws*. Retrieved from http://www.ssa.gov/OP_Home/ssact/comp-ssa.htm

Social Security Administration. (2004). *Program operations manual system (POMS).* Retrieved from http://policy.ssa.gov/poms.nsf/aboutpoms

The Vanguard Group. (2005). *Understanding your Social Security benefits.* Valley Forge, PA: The Vanguard Group, Inc. Retrieved from http://flagship2.vanguard.com/VGApp/hnw/content/PlanEdu/Retirement/PEdInRetOVContent.jsp

Walsh, T. (2002, July). *Electing normal retirement Social Security benefits versus electing early retirement Social Security benefits* (working paper). TIAA-CREF Institute. Retrieved from http://www.tiaa-crefinstitute.org/research/papers/070102.html

Walsh, T. (2003, July). *Spousal and survivor elections of normal versus early retirement benefits* (working paper). TIAA-CREF Institute. Retrieved from http://www.tiaa-crefinstitute.org/research/papers/070102b.html

Endnotes

[a] We do not consider the decision of when to stop working which is often confused with the decision of when to begin benefits. Generally, it pays financially to continue working.

[b] Walsh converts the Social Security benefits to constant dollars, using a COLA of 3%. His discount rate on the

constant dollars was 4.2%, consistent with a 7.2% rate on nominal dollars.

[c] Information about social security is available from the Social Security Administration website, http:// www.ssa.gov, particularly from the Compilation of the Social Security Laws (SSA, 2003) and the Program Operations Manual System (POMS) (SSA, 2004), the primary manual of policy and procedure for field offices. Both are linked from the Social Security Program Rules Home Page http://www.ssa.gov/regulations/.

[d] The AIME is calculated in the year the worker attains age 62 using the 35 highest preceding years. At the end of the year, the AIME is recomputed if the wages in the year of initial computation are then part of the highest 35. The resulting new PIA is effective in January of the new year.

[e] The year 1967 and the years from 1970 through 1972 are not included because, although the maximum credited earnings was the same in 1967 as in 1966 ($6,600) and the maximum in the years 1970 and 1971 was the same as in 1968 and 1969 ($7,800), the average earnings were higher than in the earlier years, resulting in lower maximum indexed earnings. Although the maximum credited earnings in 1972 were increased from 1971, the resulting maximum indexed earnings were not higher than those of 1966, 1968, or 1969.

[f] Although the percentages 90%, 32%, and 15% do not change from year to year, the bend points are adjusted every year based on changes in the average earnings of workers. The ratio of the average wage in the year two years before the given year to the average wage in 1977 is multiplied by the bend points for 1979 ($180 and $1,085) rounded to the nearest dollar. In 2003 the average wage was $34,064.95, and the average wage in 1977 was $9,779.44. The ratio of $34,064.95 to $9,779.44 was multiplied by $180 and $1,085 to get $627.00 and $3,779.40, which were rounded off to the nearest dollar to get the bend points for 2005.

[g] Social Security requires a worker to be 62 for a full calendar month before benefits can be paid; the first benefit month for most workers is the month after the month they turn 62. Reduced benefits are computed using fractions, not decimals.

[h] This is also true for someone whose maximum reduction is 48 months and for whom the gain in waiting from age 62 to 63 is 6.67%.

[i] The amount of benefits that are taxable depends on the worker's other income from pensions and investments. The maximum taxable amount is 85% of the social security benefit. Because we are assuming that the worker has sufficient other income to live from age 62 to 66 without social security benefits, we use the maximum amount and tax 85% of the benefits as ordinary income.

[j] Social Security benefits are adjusted by the COLA on a calendar year, but we are considering age based years. For most birth dates, the COLA occurs in the middle of the year between one birthday and the next.

[k] There are situations in which beginning benefits at age 63 is best. For example, with a low COLA and a high discount rate, the best age to retire is as early as possible. If a worker is already age 63 when employment ends, beginning benefits at 63 may be preferable to waiting. Also, if a worker's health or financial need changes at age 63, the highest present value decision may be to begin benefits at age 63.

[l] We have not considered the effects of delaying benefits until after FRA. The delayed retirement credit is equivalent to 8% a year up to a maximum of 32% (four years) for those born in the years under consideration. Using a forward looking perspective, the gain of waiting from one more year after age 66 is 8%, two more years is 7.41%, three more years is 6.90%, and four more years is 6.45%. Healthy women may wish to delay until age 67, but generally not much longer.