WORKING PAPER

The Distributional Effects of Raising the Social Security Retirement Age and Partially Indexing Benefits

by Edward Wolff and Howard Chernick

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EXECUTIVE SUMMARY

Social Security is the largest single item in the federal budget. Although its political popularity has kept it from being a main target of budget cuts to date, there is no guarantee that it will remain immune from cuts in the future. This paper analyzes the impact on different income groups of two methods that have been proposed for cutting Social Security: raising the normal retirement age and reducing the annual cost-of-living adjustment (COLA) below the rate of inflation. The paper finds that both proposals would be regressive; in other words, they would take proportionally more money from low-income households than from high-income households.

The main reason that these cuts in Social Security benefits will be regressive is that the current benefit system is progressive: lower-income households get a better return for each dollar paid in Social Security taxes than do higher-income households. As a result, Social Security benefits make up a larger portion of lifetime income for poorer households than for high-income households. For example, for households in which the head of household is between the ages of 34 and 44, benefits are 5.9% of lifetime earnings for those with less than $25,000 of income, compared to 3.6% for those with incomes above $75,000. Therefore, if benefits are subject to an across-the-board cut of some form (e.g., raising the retirement age or reducing annual COLAs), the cuts are felt disproportionately by those at the bottom end of the income distribution.

In the case of an immediate increase in the normal retirement age to 67 (it is already scheduled to rise to 67 by 2027), the reduction in benefits as a percentage of lifetime income would be greatest for low-income households headed by an individual age 55-64. The present discounted value (the value in today's dollars) of the lost benefits for these households would be $19,000 on average, or 1.2% of their lifetime earnings. For every age group, the percentage reduction in lifetime income is significantly larger for low-income households than for high-income households. For example, in the case of households headed by an individual under 35, the loss expressed as a share of lifetime earning is more than 40% greater for low-income households than for high-income households. These figures actually understate the regressiveness of raising the normal retirement age, since they do not incorporate the impact of longer life expectancies enjoyed by upper-income households. If the differences in life expectancy by income were included, then raising the normal retirement age would be even more regressive.

The change in the COLA analyzed in this study was a 1% reduction in the annual cost-of-living adjustment. When measured as a share of lifetime earnings, this policy has the largest impact on the low-income elderly. For example, the present value of the lost benefits for households headed by an individual over 65 with annual incomes of less than $25,000 would be $34,000, or 2.1% of their lifetime income. By comparison, high-income households headed by an individual in this age group would lose only 1.6% of their incomes. This policy would also have the perverse effect of making people poorer as they got older, since the purchasing power of their Social Security benefits would decline at the rate of 1% per year. This would significantly worsen the problem of poverty among older women, who are already the most economically vulnerable group.

In carrying through this analysis, it was assumed that the current consumer price index (CPI) accurately measures the rate of inflation, so that the policy change involves a 1% reduction in the real value of Social Security benefits. If the CPI overstates inflation (as some policy makers and economists assert), then Social Security benefits would, by implication, make up an even larger share of the lifetime income of poorer households, since earlier-year earnings would be lower and benefits would be higher. If this is the case, then the impact of cuts in benefits would be even more regressive.

INTRODUCTION

Entitlement programs have been the fastest-growing item in the federal budget, and political pressure has been building to curtail such growth. The largest of the entitlement programs is Social Security, formally the Old Age, Survivors, and Disability Insurance program (OASDI). Demographic trends imply that fiscal pressure on the Social Security system will increase substantially once the baby boom generation begins to retire. Between 1990 and 2030, the ratio of retirees to covered workers is expected to rise from 26.6 retirees for every 100 workers to 42.7 per 100 workers. Even with the enactment of the 1983 increase in the payroll tax, OASDI is expected to begin running ever-wider annual deficits after the year 2015 (Board of Trustees, OASDI). While this program has been viewed by most politicians as politically sacrosanct, increasing fiscal pressures may eventually lead to reductions in Social Security benefits.

This paper considers the impact of two possible options for reducing outlays—an immediate increase in the normal retirement age from 65 to 67, and partial (as opposed to full) indexation of benefits to the rate of inflation. The 1983 amendments to the Social Security Act include a gradual increase in the normal retirement age to 67 by the year 2027. The rationale for this change is that life expectancy has increased substantially since the inception of the Social Security program. Therefore, the expected length of the period over which benefits are received has grown, and the ratio of average years of benefits to average years of payroll tax contributions has increased. One of the options considered by the National Commission on Entitlement Reform was to accelerate the increase in the normal retirement age for Social Security.

Another option under discussion as a way of curtailing the growth of Social Security outlays is to reduce the rate of indexing of benefits. A rationale that has been put forth is that the consumer price index (CPI) overstates the increase in the cost of living. If this criticism is accurate, then use of the CPI to index benefits would mean that, for current retirees, benefit levels are actually increasing in real terms over the course of the retirement period. On the other hand, if the CPI provides an unbiased estimate of changes in the cost of living, then partial indexing will lead to a reduction in the real incomes of Social Security recipients.

To analyze the effect of changes in the indexing formula, this study adopts the approach of reducing benefit levels by 1% in real terms in each year after 1989. The initial benefit level is determined as under current law, with wages in each of the years prior to turning 60 adjusted by the rate of growth of nominal wages. This approach implies that the CPI does not overstate changes in the cost of living. Thus, for those elderly who are primarily dependent on Social Security income, partial indexing means surviving on annual income that is continually falling in real terms. As discussed below, the alternative interpretation of partial indexing—that it simply prevents real benefits from rising over time—carries with it the implication that real earnings have grown more rapidly over time than previously assumed, and therefore that Social Security benefits are a far higher fraction of total lifetime earnings.

The focus throughout the report is on the potential distributional effects of changes in Social

Security. (We consider only the Old Age and Survivor's component of Social Security, not the Disability Insurance program.) The analytical perspective is primarily that of the lifetime incidence of changes in Social Security benefit levels. Social Security provides a stream of benefits over the retirement period. Using a methodology developed by Wolff (1992, 1993) we construct synthetic lifetime earnings profiles, based on a 1989 sample of the U.S. population, and use these profiles to estimate the present discounted value of Social Security benefits and contributions. The long-run distributional effect of changes in the program is measured by comparing the present discounted value of lifetime benefits under various alternatives.

Changes in the retirement age will decrease Social Security wealth primarily by decreasing the benefit period. To assess distributional impacts, we compare the change in benefits to lifetime earnings. The lifetime income approach is important because changes in the retirement age could have potentially significant effects on the well being of people with low lifetime incomes. People in their sixties whose ability to work is constrained by poor health or by a lack of labor-market opportunities could be particularly affected by an increase in the retirement age. As discussed by Quinn et al. (1990), people with low education and skill levels are more likely to confront reduced labor-market opportunities as they age. This is precisely the group with the lowest lifetime earnings prospects. Raising the retirement age may therefore have the greatest impact on those who are poor over their lifetimes.

Similarly, it has been argued that any reduction in indexing of benefits will cause an immediate and substantial increase in poverty among the elderly. In this paper we assess the longer-run distributional implications of changes in indexing rules.

The paper is organized as follows. The first section describes how Social Security benefits are calculated under current law. The second section discusses two methodological issues—specifically, the selection of a single retirement age and the calculation of net transfers—that are key to the results. The third section, as a preamble to the general discussion of the distributional effects of the policy changes, looks at the effect of raising the retirement age on those currently about to retire. Finally, the fourth section presents the findings. The main body of the paper is followed by a technical appendix describing our methodology for estimating lifetime incidence.

I. THE SOCIAL SECURITY BENEFIT FORMULA UNDER CURRENT LAW

Old Age and Survivor Benefits under Social Security depend on the amount of earnings over the working person's lifetime. All earnings upon which a worker paid payroll taxes (covered earnings) up until age 60 are indexed to reflect past inflation and growth in real wages. The indexing factor for a particular year is the ratio of the average national wage in the year the worker turns 60 to the average national wage in that year. For example, for a worker turning 65 in 1995, the indexing factor for 1951 is 7.5122 (the average national wage in 1990—the year the worker turned 60—divided by the average national wage in 1951), while the index for 1961 is 5.1454. Covered earnings in 1951 are multiplied by 7.5122, and covered earnings in 1961 are multiplied by 5.1454. Wages from age 60 to age 65 are unindexed. The average indexed monthly earnings (AIME) is calculated by multiplying the highest 35 years of indexed earnings by 12 and dividing by 420. The monthly benefit paid to someone who retires at the normal retirement age of 65, known as the primary insurance amount (PIA), is calculated as a percentage of the AIME. The higher the AIME, the lower is this percentage. For workers turning 65 in 1995, the PIA is 90% of the AIME below $387, plus 32% of the AIME between $387 and $2,333, plus 15% of the AIME above $2,333. The amounts $387 and $2,333 are referred to as the "bend points" in the Social Security formula. Beginning at age 62, the PIA is increased annually by a cost-of-living index based on changes in the consumer price index. To keep the PIA the same fraction of the AIME over time, the bend points are also increased annually, using the same wage index as that used to adjust previous wages. The hypothetical average worker retiring at age 65 in 1995 would be eligible for a monthly benefit (PIA) of about $866.

A spouse of any insured worker, upon reaching the age of 65, is entitled to receive a benefit equal to 50% of the worker's benefit. If the spouse has his or her own earnings, then the spouse gets his or her own PIA or the spousal benefits, whichever is higher. If the insured worker dies, the spouse gets 100% of the worker's PIA. Surviving dependent children 18 or under are also eligible for benefits equal to 75% of a deceased parent's PIA. Workers who retire before 65 receive a reduced benefit, while those who retire later get a delayed retirement credit.

II. METHODOLOGICAL ISSUES

The Selection of a Retirement Age

We simulate a policy of raising the retirement age to 67 while retaining the early retirement option at 62. Under the 1983 amendments, the penalty for retiring at age 62 will eventually increase from 20% of the maximum benefit to 30%. In our analysis, we assume that this provision would be part of any increase in the normal retirement age, and that the adjustment continues to be actuarially fair.

We assume that all workers retire at the normal retirement age, 65 under current law or 67 under our policy simulation. This assumption does not accurately represent the labor-force behavior of those 55-64. For many years there has been a steady decline in labor-force participation among men age 55 and over. The modal retirement age is now 62, and in 1992 only 55% of men between the ages of 60 and 64 were in the labor force.[1]

Theoretically, the effect on lifetime benefits of a delay in the normal retirement age is equivalent to a reduction in annual benefit levels. For example, among married couples whose household head was between age 45 and 54 in 1989, the expected period of receipt of Social Security benefits for males is 11 years. A delay in the normal retirement age of two years would thus reduce the average period of full benefit receipt by about 18%. However, since higher-income people tend to live longer, the lifetime decrease in benefit levels is greater at lower-income levels and smaller at higher-income levels.

One study finds that among males age 41-45, life expectancy is 5.4% lower than average for those with wages equal to 45% of the median but 10.2% higher at two times the median wage (Duggan et al. 1993). With this adjustment, the expected length of benefit receipt under current law for men age 45-54 would drop from 10 years to about 8.7 years for those with low incomes (couples with family incomes under $25,000), but increase from 11 to 13.6 years for those with high incomes (couples with family incomes of $75,000 or more). Raising the retirement age from 65 to 67 would thus lead to a 23% decrease in the period of benefit receipt for the low-income male (2/8.7), but only a 15% drop for the high-income male.

Theoretically, raising the retirement age should have the same impact on retirement behavior as reducing benefit levels. Both policies cause a reduction in wealth, the effect of which is to buy less leisure or, in other words, delay retirement. However, most studies suggest that the effect on the timing of retirement would not be great. For example, Fields and Mitchell (1987) estimate that raising the normal retirement age by 36 months, to 68, while holding early retirement at 62 would raise the average retirement age by only 1.6 months.

For those who retire at age 62 (the earliest age at which benefits can be received), the reduction under current law is equal to 20% of the PIA to which the worker would be entitled if he or she retired at age 65. If this reduction is actuarially fair, the expected value of future benefits will be the same for a person who retires at 62 as for a person who retires at age 65. The same principle applies to a 67 retirement age. Thus, as long as the reduction in benefits under early retirement is actuarially fair, our estimates of the change in Social Security benefits will not be affected by the fact that the actual retirement age is unlikely to rise very much.

In terms of taxes paid into the Social Security system, our assumption that all workers retire at age 65 (or 67 if the retirement age is changed) implies an overestimate of lifetime contributions for those who have retired or will retire before the age of 65 (or 67) and an underestimate for those with earnings after 65 (or 67). In 1992, only 54.7% of males age 60-64 and 36.5% of females age 60-64 were in the labor force, as opposed to less than a quarter of those 65-69. Hence, we overestimate contributions for at least half the population and underestimate contributions for less than a quarter.

Comparison of Our Estimates of Net Transfers to Other Methodologies

The simulations assume a real interest rate of 2% and a growth rate of real earnings of 1% per year after 1989. Lifetime earnings and Social Security benefits are calculated under the assumption that each worker works full time in every year from the end of school until age 64, or 66 if the retirement age is raised to 67. In calculating lifetime earnings, average hours worked per week after 1993 are assumed to remain at the 1993 average level of 34.5 hours.

Before discussing the benefit results in detail, it is useful to compare our estimates to the estimates of Steuerle-Bakija (1994). Their study examines the net return (the difference between benefits received and contributions paid) for cohorts of hypothetical earners. **Table 1** shows our estimates of the present discounted value of lifetime benefits, contributions, and net transfers under current law for different types of families and different age groups. The fourth column shows the net transfer as a percentage of lifetime earnings.

The results show that, for all those over 65 in 1989, lifetime benefits exceed lifetime contributions. As a fraction of lifetime earnings, the highest net transfer (benefits minus contributions) is for single females over 65: for this group, the net transfer is 11.6% of lifetime earnings. This result reflects the low level of lifetime earnings for single females and the progressivity of the benefit schedule. Using a methodology similar to that used in this study, Wolff (1993) found that for current retirees the ratio of net transfers to benefits was 0.85 in 1969 and 0.66 in 1983. This compares to a 0.60 ratio of net transfers to benefits from this study for 1989.

Table 1 confirms the well-known pattern that current retirees are more favorably treated by Social Security than are future retirees. Except for single females, all families and individuals under 65 will pay more into Social Security than they will receive in benefits, while for all those over 65 the value of benefits exceeds contributions. It might seem surprising that even for couples age 55-64 contributions will exceed benefits. However, the results in this table are based on a model in which both spouses have earnings (see appendix). Hence, we do not consider the case of one-earner couples, for whom the benefits are likely to exceed contributions, at least for those above age 55. In a second model (also described in the appendix), we assume that spouses with zero earnings in 1989 have zero earnings throughout their working lives. In the latter model, which in effect averages two-earner and single-earner couples, benefits are very close to contributions for couples age 55-64.

TABLE 1
Lifetime Benefits, Contributions, and Net Transfers Under Current Law, by Age and Family Type
(Thousands of Dollars)

Family Type	Contributions*	Benefits*	Net Transfer**	Net Transfer as a Percent of Lifetime Earnings***
Married Couples				
Under 35	$197	$96	$-101	-4.8%
35-44	231	116	-115	-4.1
45-54	222	131	-91	-3.1
55-64	195	160	-35	-1.1
Over 65	137	304	167	5.1
Single (Male)				
Under 35	$130	$54	$-76	-5.1%
35-44	149	72	-77	-4.0
45-54	135	77	-58	-2.8
55-64	110	100	-10	-0.5
Over 65	76	185	109	5.3
Single (Female)				
Under 35	$69	$64	$-5	-0.8%
35-44	86	75	-11	-1.3
45-54	79	81	2	0.2
55-64	74	95	21	2.1
Over 65	49	161	112	11.6

* Present value of contributions and benefits in 1989. Assumes a 2% discount rate and a 1% rate of growth of real earnings after 1989. Assumes that both spouses in the married-couples group have earnings.

** Net transfer defined as benefits minus contributions.

*** These numbers may wrongly be taken to suggest that future generations will be poorer on average. (For example, the $-76,000 net transfer for males under 35 is listed as 5.1% of lifetime income, implying a lifetime income of $1,490,000. By comparison, the $-77,000 net transfer for males age 35-44 is calculated as 4% of lifetime income, implying a lifetime income of $1,975,000.) This difference is entirely an artifact of the discounting procedure. The discounting is being carried forward from 1989. While real wages are projected to grow by 1% each year, they are being discounted at a 2% annual rate. This means that the discounted value of the wage falls by 1% for each year beyond 1989. This leads the discounted earnings of younger generations to be lower, even though the real value of their wages will be higher than that of earlier generations.

Our results indicate a greater negative transfer for most families than do the Steuerle-Bajika projections. For example, for married couples where the husband is age 55-64, we show contributions equal to 7.5% of lifetime earnings and benefits equal to 4.4% of lifetime earnings. By contrast, for hypothetical two-earner married couples whose head of household was 60 in 1990, Steuerle-Bajika show contributions of about 9% of lifetime earnings but benefits that range from 12.1% to 8.6% of earnings. These differences persist even when we discount all benefits and contributions to age 65, as do Steuerle-Bajika, and calculate all results in 1993 dollars.

The difference in results stems primarily from two sources: our use of an actual sample of the population as opposed to Steuerle-Bajika's use of hypothetical wage earners, and from differences in actuarial assumptions. To illustrate the role of sample composition, we can compare AIMEs and PIAs for two-earner married couples whose head of household was 60 in 1990. Correcting for differences in discounting and inflation, we estimate an average AIME for husbands in the age group 55-65 that is 45% higher than Steuerle-Bajika's hypothetical AIME of $1,772. Nonetheless, the ratio of AIME to PIA for males is the same for Steuerle-Bajika and for this study. For wives in this group our average AIME is $1,620. Steuerle-Bajika assume that the average working couple combines a middle-wage earner and a low-wage earner. Therefore, they assign an AIME for the spouse of only $797. Thus, our AIME for females is more than twice as large as Steuerle-Bajika's. However, the progressivity of the formula comes into play in calculating the PIAs for females, since our average PIA is only 1.56 times that of Steuerle-Bajika. Adding together the PIAs of husbands and wives, our average benefits will therefore be a smaller fraction of earnings for couples than Steuerle-Bajika's.

The second difference that lowers our benefit-to-lifetime earnings calculation relative to Steuerle-Bajika is that Steuerle-Bajika assume that both spouses are the same age, while we use the actual age of the husband and wife. For couples whose head of household is age 55-64, the husband's average age is 59.2 years and the wife's is 55.7. This difference reduces our calculated benefit levels in two ways: by decreasing the period of benefit receipt, and by discounting the spouse's benefits more heavily than the head of household's. The conditional life expectancy for a female at age 55.7 is 26.2 years, while the conditional life expectancy for a female at age 59.2 is 23.6 years. This means that the expected length of benefit receipt for spouses at age 55.7 is 16.9 years (55.7 + 26.2 - 65), while for spouses at age 59.2 the expected length of benefit receipt is 17.8 (59.2 + 23.6 - 65). This is an almost 5% increase in the average length of benefit receipt. Since Steuerle-Bajika discount all values to age 65, the difference in age also implies that the younger wife's benefits would be discounted down by about 6%, if one calculated the present discounted value of family benefits when the high earner turned 65. Putting these two factors together, the greater age of the men in our sample of married couples leads to more than 10% lower benefits for the spouse in our sample than in the Steuerle-Bajika sample.

Because we assign different, lower expectancies to black males than to whites (Steuerle-Bajika use overall life expectancies), racial differences in the proportions in different groups will also cause our results to diverge. Thus, the proportion of single males who are black is greater than the proportion of blacks in other family types. Among single males, 28% of the population was black, Hispanic, or other, and this group had benefits that were 10% lower than for whites, relative to lifetime earnings.

Our use of conditional life expectancies, in comparison to the survivor approach of Steuerle-Bajika, lowers our estimates of benefits relative to contributions. Since the conditional life expectancy at any age is great enough that on average individuals of that age will reach age 65, our model assigns a full working lifetime of contributions to all individuals. This is similar to the Steuerle-Bajika approach, which assumes that all individuals survive to age 65. On the other hand, the conditional life expectancy declines more slowly than the increase in calender age for the subsample of any cohort that survives to any given age. Thus, the older the individual in our sample the greater the number of years of benefit receipt. By contrast, Steuerle-Bajika use a survivor approach, which adjusts both benefits and contributions for the probability of death before age 65. This means that younger cohorts will have longer average periods of benefit receipt than older cohorts, due to the overall increase in life expectancy of later cohorts. Thus, relative to the survivor approach, the conditional life expectancy approach leads to higher contributions for all individuals but lower estimated benefit levels for younger cohorts in the sample. As a result, the net transfer under Social Security will be tilted more toward current retirees under our approach than under Steuerle-Bajika's.

The following example illustrates the magnitude of the difference between the cohort survivor analysis of Steuerle-Bajika and the conditional life expectancy approach. Steuerle-Bajika calculate that for two-earner married couples age 60 in 1990, the average net transfer (benefits minus contributions) under Social Security is equal to 3.8% of lifetime earnings, while for two-earner married couples age 50 in 1990 the net transfer is 2.3% of lifetime earnings. In contrast, we calculate a net transfer of -1.1% for couples age 55-64 in 1989 and -3.1% for couples 45-54 in that year. Thus, the net transfer rises much more rapidly with age in our model than in Steuerle-Bajika's.

III. DISTRIBUTIONAL EFFECTS OF AN IMMEDIATE INCREASE IN THE RETIREMENT AGE

If the retirement age were increased to 67 immediately, the effect on persons who are currently age 62-67 would be different than the effect on younger people, since the latter might be able to adjust their labor-supply and savings behavior. The impact on those about to retire will depend on the alternative income sources available to them.

In examining the distributional impact of an immediate increase in the retirement age, we want first to consider the economic and demographic circumstances of families who would be most directly affected—those in the 60-67 age range. We draw on published data from the Current Population Survey (CPS), which samples about 60,000 households, and the Survey of Income and Program Participation (SIPP), which samples 20,000 households. Various reports using these data sources provide information about income, assets, and pension coverage. (The particular age breakdowns available are not always uniform across the various published reports.)

Social Security is extremely important for the low-income elderly: the Congressional Budget Office (1994) estimates that it makes up 28% of the income of those 65 and over. Among Social Security recipients with 1990 incomes below $20,000, benefits were equal to half or more of total income.

In 1991 there were 10.5 million people age 60-64 and 10.0 million age 65-69. Of those 60-64, 10.3% had family income below the poverty line. Poverty rates are closely related to labor-force participation. Among those who worked year round at full-time jobs in 1989, poverty rates were 2.1% for workers 55-64, slightly lower than the 2.4% rate for all such workers. Among married couples age 60-64, about 30% had both husband and wife out of the labor force, while about the same percentage (28.5%) had both spouses in the labor force. Among those couples with neither spouse working, 14.4% were in poverty in 1989; by contrast, the rate was 3.0% among families in the labor force. Even among those working full time, a substantial group of 55-64-year-olds had low annual earnings, and the poverty rate for this group was about 10% in 1989.[2] For blacks working full time but with low annual earnings, the poverty rate for 55-64-year-olds was 30%. As a rough indication of the role of deteriorating health on the ability to earn income as people age, 21.9% of those age 55-64 reported a work disability in 1990, compared to 9.2% of all persons age 16-64.

The distributional impact of raising the retirement age will depend on other sources of income available to families as they approach retirement age. According to the SIPP data (Eller 1991), the median net worth for the 12.5 million households age 55-64 was $83,000 in 1991. Excluding home equity, it was $26,000. For those age 65-69, median net worth, excluding home equity, was $33,000. Thus, half of the 19 million households in the age range who would be most affected by raising the retirement age had fungible wealth of $33,000 or less in 1991. Among the 4 million households age 55-69 in the lowest quintile of the household income distribution (income levels of $12,800 or less), median fungible wealth was only about $2,000. For blacks in the lowest quintile, median fungible wealth was zero.

Wealth data from the Survey of Consumer Finances (SCF) show slightly higher median levels of wealth, but the basic results for low-income groups are similar to the SIPP data (Wolff 1994). Median net worth for SIPP households with heads of household age 55-64 was $80,000 in 1988, as compared to $91,300 in the 1989 SCF (Poterba et al. 1994). In contrast to the median data, the 1989 SCF data indicated a mean net worth for married couples age 55-69 of about $500,000. This difference between mean and median wealth reflects the high degree of concentration of wealth, and the fact that the Survey of Consumer Finances includes a special sample of high-income people.

In terms of pension coverage, data from the SIPP show that about 15% of persons age 60-64 received pension benefits in 1986 (Short and Nelson 1987). For those age 65-69, the proportion was 31.5%. Of those receiving pensions, pension income was equal to about 25% of household income, while Social Security made up slightly less than 20%. Recalling that about a third of couples age 60-64 had both spouses out of the labor force in 1990, the pension recipiency data suggest that somewhat less than half of retirees below age 64 had pension benefits. Among wage and salary workers age 60-64, more than two-thirds were covered by a pension, but only 53.2% of this group were vested in a pension plan. Between 1979 and 1989, the proportion of all workers covered by private employer pension plans declined across all earnings groups (Acs and Steuerle, forthcoming).

Putting the income, wealth, and pension-entitlement information together suggests that a significant fraction of those who are close to the normal retirement age of 65 have both low incomes and little wealth or pension income upon which to draw. This group would appear to be at significant risk if the retirement age were raised.

IV. COMPARING BENEFIT LEVELS UNDER CURRENT LAW, DELAYED RETIREMENT, AND PARTIAL INDEXING

Table 2 compares benefits under current law to each of the two alternatives—raising the retirement age to 67 and indexing benefits at one percentage point less than the rate of inflation. Households are classified by age and income group within age bracket. Benefits are presented as a percentage of lifetime earnings. The calculations show that the two policy simulations have very different impacts. For workers under 65, raising the normal retirement age by two years would decrease benefits as a fraction of lifetime earnings by more than twice as much as partial indexing at inflation minus 1%.

TABLE 2
Social Security Benefits as a Percentage of Lifetime Earnings,* by Age and Income Group

Age of Household Head and Income Group**	No. of Households by Age Group, and No. in Income Range as Percent of Age Group	Normal Retirement at 65, Full Indexing (Current Law)	Normal Retirement at 67, Full Indexing	Normal Retirement at 65, Partial Indexing***
Under 35	24.7 million	5.0%	3.7%	4.6%
Under $24,999	54.3%	5.6	4.2	5.3
$25,000-$74,999	41.3	4.6	3.4	4.3
$75,000 and Over	4.4	4.1	3.1	3.8
35-44	21.8 million	4.5%	3.4%	4.1%
Under $24,999	24.8%	5.9	4.6	5.5
$25,000-$74,999	60.6	4.5	3.4	4.1
$75,000 and Over	14.7	3.6	2.7	3.3
45-54	13.3 million	4.8%	3.8%	4.3%
Under $24,999	29.3%	6.2	4.9	5.4
$25,000-$74,999	54.1	5.0	3.4	4.4
$75,000 and Over	16.5	3.6	2.9	3.2
55-64	13.2 million	5.5%	4.4%	4.5%
Under $24,999	43.9%	6.8	5.5	6.0
$25,000-$74,999	43.2	5.4	4.3	4.4
$75,000 and Over	13.6	3.9	3.1	3.0
65 and Over	20.2 million	10.7%	9.0%	8.7%
Under $24,999	73.3%	13.1	11.1	11.0
$25,000-$74,999	21.8	8.3	7.0	6.4
$75,000 and Over	5.4	6.0	5.0	4.4

* Based on 2% real discount rate, 1% growth rate for earnings after 1989.
** 1989 family income.
*** Benefits indexed at the CPI minus one percentage point.

However, while the tables allow us to compare the two policies in terms of relative impact on different groups, they do not directly indicate how the *same* level of benefit cutbacks accomplished through these two routes would affect each group.

Under current law, within each age group benefits are progressive with respect to annual income. In other words, they represent a higher fraction of income for those with low incomes than for those with high incomes. This result reflects the fact that the principal insurance amount is a smaller fraction of benefits for high earners than low earners, and that, for high-income individuals, a greater fraction of total earnings will be above the maximum wage and thus have no effect on benefit levels.

Progressivity in benefit levels is especially pronounced among current retirees, those 65 and over. Under current law (column 2), benefits are more than twice as high as a fraction of lifetime earnings for those under $25,000 than for those with incomes above $75,000. Almost three out of four elderly had incomes below this level in 1989, a level equivalent to about $30,500 in current dollars. Thus, the lifetime perspective reinforces the importance of Social Security as an income source for most elderly people.

Raising the Retirement Age

Table 2 shows that if the retirement age were raised to 67, expected benefits for current workers would fall by amounts ranging from 1.3% of lifetime earnings for those under 35 to 1% of lifetime earnings for those age 45-54. Since in these calculations all workers retire at the normal retirement age, workers work for two more years under this scenario, and lifetime earnings increase. For families whose household head is age 55-64, the increase is 3.2%. Tables 3-6 show in greater detail the impact of raising the retirement age. **Table 3** shows the dollar change in the present discounted value of benefits and the change in benefits as a percentage of both current benefits and lifetime earnings. Households are grouped by age and income class and by family type and age group. Overall, current workers would experience a 21% reduction in lifetime benefits, equal to 1% of lifetime earnings. While the dollar reduction in benefits increases with age, in percentage terms the reduction declines with age. Workers under 35 would face a 24% reduction in the value of benefits, while those age 55-64 would face a 17% reduction. The greater percentage loss among younger workers reflects the fact that, in computing present values in the calender year 1989, benefits received later in the retirement period are discounted relatively more heavily for younger workers than for older workers.

Within each age group, the percentage reduction in benefits tends to be slightly smaller for low-income households than for higher-income households. However, the difference across income classes is not very great, and again does not take account of lower life expectancies for low-income households. By contrast, as a percentage of lifetime earnings, raising the retirement age has a regressive impact: the reduction is greatest for low-income households and smallest for high-income households. Thus, for the approximately 40% of current-worker households with incomes below

TABLE 3
Change in Social Security Benefits, Normal Retirement Age Raised to 67, by Age and Income Group and by Family Status and Age*

Age and Income Group	Dollar Change (in Thousands)	Change as Percent of Benefits	Change as Percent of Lifetime Earnings
Under 65	$-21	-21%	-1.0%
Under $24,999	-14	-17	-1.3
$25,000-$74,999	-23	-21	-0.9
$75,000 and Over	-30	-21	-0.8
Under 35	$-19	-24%	-1.2%
Under $24,999	-15	-23	-1.3
$25,000-$74,999	-23	-24	-1.1
$75,000 and Over	-28	-23	-0.9
35-44	$-21	-21%	-0.9%
Under $24,999	-15	-19	-1.1
$25,000-$74,999	-23	-22	-1.0
$75,000 and Over	-29	-22	-0.8
45-54	$-23	-20%	-1.0%
Under $24,999	-17	-19	-1.2
$25,000-$74,999	-23	-20	-1.0
$75,000 and Over	-30	-21	-0.7
55-64	$-23	-17%	-0.9%
Under $24,999	-19	-17	-1.2
$25,000-$74,999	-25	-17	-0.9
$75,000 and Over	-29	-17	-0.7
65 and Over	$-29	-13%	-1.3%
Under $24,999	-26	-12	-1.6
$25,000-$74,999	-36	-13	-1.1
$75,000 and Over	-37	-14	-0.8
Married Couples			
Under 35	$-24	-25%	-0.9%
35-44	-25	-22	-0.9
45-54	-27	-21	-0.9
55-64	-29	-18	-0.9
65+	-40	-13	-1.2
Single Males			
Under 35	$-15	-27%	-0.1%
35-44	-16	-22	-0.8
45-54	-16	-21	-0.8
55-64	-17	-17	-0.9
65+	-23	-12	-0.1
Single Females			
Under 35	$-11	-17%	-1.7%
35-44	-12	-16	-1.4
45-54	-12	-15	-1.4
55-64	-13	-14	-1.3
65+	-18	-11	-1.9

* Assumes a 2% discount rate and a 1% growth rate in earnings after 1989. Assumes that all recipients retire at the normal retirement age.

$25,000, the reduction would equal 1.3% of lifetime earnings, as opposed to 0.8% of lifetime earnings for those with incomes above $75,000.

Of all the groups, elderly households with incomes below $25,000—almost three-quarters of all elderly—would experience the greatest reduction in benefits relative to lifetime earnings. We emphasize, however, that this is a purely hypothetical result since it is applied retroactively to all elderly, even those who are currently over 67. The reduction for low-income elderly would equal 1.6% of lifetime earnings. This regressive distributional pattern reflects the progressive nature of the Social Security benefit formula and the fact that Social Security benefits are such an important part of total income for the elderly poor.

Tables 4 through 6 array households by alternative measures of economic well-being. In Table 4 and 5 households are divided into quintiles of lifetime earnings. The tables are divided into two panels, the upper one for households under 65 and the lower one for households 65 and over. Table 4 shows the percentage cuts in benefits; Table 5 shows the cut in benefits as a fraction of lifetime earnings. As discussed in the appendix, the measure of lifetime earnings is a potential measure, reflecting the education and demographic characteristics of the household but ignoring the actual level of earnings in the sample year. Rather than grouping people by age and income, the lifetime measure groups households of different ages who may have substantially different current income levels but similar earnings capacities over the life cycle.

Table 4 groups households by family type and lifetime income quintile; it shows the percentage change in benefits under each of the two scenarios. Quintiles are defined separately for those under 65 and over 65, but not for family type within an age group. Hence, the blank spaces under the lowest quintile for married couples mean that no married couple falls in the lowest lifetime earnings quintile of all households under 65. Among couples, raising the retirement age to 67 would lead to a greater percentage reduction among low (lifetime) income couples than among high-income couples. For example, the second quintile would face a 27.4% reduction in lifetime benefits, while the two highest quintiles would face reductions of 20.5%. This pattern stems from the fact that, among couples, lower-lifetime-income households tend to be younger and more heavily minority. Allthough the unconditional life expectancy rises with each cohort, the conditional life expectancy is lower for younger cohorts. Thus, the correlation between lifetime income and age means that, for low-lifetime-income couples, the two-year reduction in benefits is a greater proportion of the total benefit period than for high-income couples.

For singles, the reduction in benefits under a 67 retirement rule shows the opposite pattern of that for couples: percentage reductions are smaller for low (lifetime) income singles than for high-income singles, because the low-lifetime-income quintiles are more heavily female, and females have longer life expectancies than males.

Table 5, which groups households by lifetime income only, shows the reduction in benefits as a percentage of lifetime income. The results show that the impact of raising the retirement age is most pronounced for the lowest-lifetime-earnings quintile. Among the nonelderly, the decrease in benefits

TABLE 4
Social Security Benefits by Quintile of Lifetime Earnings, Current Law, Retirement at Age 67, and Partial Indexing*

Quintile of Lifetime Earnings	Current Law (in Thousands)	Normal Retirement at 67 (in Thousands)	Percent Reduction in Benefits	Partial Indexing (in Thousands)	Percent Reduction in Benefits
Under 65					
Married Couples	121	95	-21.4%	106	-12.4%
Lowest**					
Second	62	45	-27.4	57	-8.7
Third	102	79	-22.4	92	-9.9
Fourth	131	104	-20.6	113	-13.4
Highest	153	122	-20.4	132	-14.0
Singles	74	60	-18.0	69	-6.2%
Lowest	63	53	-17.0	59	-6.4
Second	78	63	-18.6	73	-6.2
Third	103	86	-16.5	96	-6.4
Fourth	80	61	-23.3	76	-4.6
Highest	97	78	-20.2	92	-5.1
65 and Over					
Married Couples	304	264	-13.1	219	-27.9%
Lowest	261	226	-13.3	130	-50.2
Second**					
Third	294	259	-12.1	211	-28.4
Fourth	288	250	-13.2	215	-25.3
Highest	325	282	-13.3	228	-29.7
Singles	166	147	-11.3	160	-3.1
Lowest	149	133	-10.8	145	-2.6
Second	173	153	-11.4	167	-3.2
Third	189	166	-12.0	181	-4.1
Fourth	194	169	-12.5	187	-3.2
Highest	192	167	-13.0	186	-3.5

* Based on a 2% discount rate, a 1% growth rate in earnings after 1989, and retirement at normal retirement age.
** No households in the sample fell into this category.

is equal to 1.7% of lifetime earnings for the lowest quintile, compared to a 1.2% reduction for quintiles 2-5. The reason for this pattern is that households with low-lifetime-earnings levels receive the highest benefit levels relative to lifetime earnings. Hence, even though low-income singles face smaller percentage reductions in benefits than do high-income singles, cutting benefits by reducing the number of years of benefit payout would still have the largest impact on low-income households. The impact for those above the first quintile is proportional to lifetime earnings. This last result

TABLE 5
Social Security Benefits by Quintile of Lifetime Earnings, Current Law, Retirement at Age 67, and Partial Indexing*
(Percent of Lifetime Earnings)

Quintile of Lifetime Earnings	Current Law	Normal Retirement at 67	Change Under Raised Retirement Age	Partial Indexing	Change Under Partial Indexing
Under 65					
Lowest	9.4%	7.7%	-1.7%	8.8%	-0.6%
Second	6.0	4.8	-1.2	5.5	-0.5
Third	5.6	4.3	-1.3	5.1	-0.5
Fourth	5.2	4.0	-1.2	4.5	-0.7
Highest	3.4	2.6	-1.2	2.9	-0.5
Over 65					
Lowest	20.6%	17.7%	-2.9%	19.8%	-0.8%
Second	15.4	13.2	-2.2	14.8	-0.6
Third	13.4	11.3	-2.1	10.6	-2.8
Fourth	11.8	9.9	-1.9	8.9	-2.9
Highest	6.7	5.6	-1.0	4.6	-2.1

* Assumes a 2% discount rate and a 1% growth rate in earnings after 1989. Assumes that all recipients retire at the normal retirement age.

suggests that the greater percentage reduction in benefits for high-income singles is enough to offset the fact the any given cut in benefits will be regressive.

Table 6, which groups households by age and wealth class, shows the impact of raising the retirement age relative to lifetime earnings. Wealth levels provide an indication of both current economic well-being and access to resources in the period preceding the sample year. In this analysis we control for age, since at least up until retirement (and even beyond retirement for many families) fungible wealth tends to increase with age. The distributional results are similar to the annual income analysis in Table 3, with benefits declining by the greatest amount relative to lifetime income for low-wealth households.

Overall, these calculations show that raising the retirement age by two years would decrease by 21% the present discounted value of expected lifetime Social Security benefits for current workers. This cut represents a decline of 1% of lifetime earnings, and it would have by far the greatest impact on those at the botton of the economic ladder, whether measured by current income, lifetime income, or current wealth levels.

TABLE 6
Social Security Benefits by Age and Wealth Class, Current Law, Normal Retirement at Age 67, and Partial Indexing*
(Benefits as a Percentage of Lifetime Earnings)

Age and Wealth Class	Current Law	Normal Retirement Age 67	Change Under Raised Retirement Age	Partial Indexing	Change Under Partial Indexing
Under 65	4.9%	3.7%	-1.2%	4.3%	-0.6%
Under $25,000	6.0	4.7	-1.3	5.5	-0.5
25,000-149,999	4.6	3.5	-1.1	4.1	-0.3
150,000 or More	3.5	2.7	-0.8	3.0	-0.5
Under 35					
Under $25,000	5.6%	4.3%	-1.3%	5.3%	-0.3%
25,000-149,999	4.5	3.5	-1.0	4.2	-0.3
150,000 or More	4.9	3.8	-1.1	4.7	-0.2
35-44					
Under $25,000	5.9%	4.8%	-1.1%	5.5%	-0.4
25,000-149,999	4.3	3.4	-0.9	3.9	-0.4
150,000 or More	3.4	2.7	-0.7	3.1	-0.3
45-54				4.3%	
Under $25,000	6.2%	5.0%	-0.8%	5.4	-0.8%
25,000-149,999	4.7	3.8	-0.9	4.2	-0.5
150,000 or More	3.4	2.7	-0.7	2.8	-0.6
55-64					
Under $25,000	6.8%	5.6%	-1.2%	6.0%	-0.8%
25,000-149,999	5.0	4.1	-0.9	4.1	-0.9
150,000 or More	3.6	3.0	-0.7	2.8	-0.8
65 and Over					
Under $25,000	13.1%	11.5%	-1.6%	11.0%	-1.9%
25,000-149,999	8.0	6.9	-1.1	6.1	-1.9
150,000 or More	5.3	4.6	-0.7	4.0	-1.3

* Assumes a 2% discount rate and a 1% growth rate in earnings after 1989. Assumes that all recipients retire at the normal retirement age.

Partially Indexing Benefits

While an immediate increase in the normal retirement age will mainly affect future retirees, partial indexing will reduce benefit levels for both current and future retirees. Under our simulation, those over 65 would experience a reduction in benefits of 1% per year for every year of benefit receipt after 1989. The lifetime incidence of partial indexing will depend both on the expected number of years of benefit receipt and on the importance of Social Security income relative to other sources of income. Annual incidence will depend only on the relative importance of Social Security in the total income package.

In terms of annual incidence, partial indexing is extremely regressive.[3] The biggest income problem among the elderly is the high rate of poverty for elderly widows. Poverty rates are three to four times higher among unmarried than among married women, and most elderly women experience a substantial decrease in income and in Social Security benefits when they are widowed.[4] In any given year, the across-the-board reduction in Social Security income implied by partial indexing would have a disproportionate impact on those who are already the most vulnerable in terms of current income. Since older women with low annual incomes are also likely to have low levels of assets, current income is probably the key measure of economic well-being for this group.

A number of analysts have discussed proposals for reallocating the stream of Social Security benefits from couples to widows so that older women would be less at risk of falling into poverty (Burkhauser and Smeeding 1994; Sandell and Iams 1995) However, partial indexation would shift the Social Security benefit stream in the opposite direction from these proposals because, under partial indexing, the longer the years of benefit receipt the greater the reduction in benefits.

Table 7 shows the impact of partial indexing by age and income class. Lifetime benefits would be reduced by 10.7% for current workers, compared to 21% if the retirement age were raised by two years. For those over 65, partial indexing would reduce benefits by 18.6%.

The difference in the age pattern of incidence of raising the retirement age versus partial indexing reflects the difference in the impact on future benefits of discounting. Raising the retirement age concentrates the entire loss of benefits in the initial years of the retirement period. Since benefits in future retirement years are more heavily discounted than benefits in the initial years, raising the age of retirement has a relatively greater impact on current workers. By contrast, partial indexing backloads the cost of Social Security benefit reductions over the retirement period. Moreover, the younger the cohort, the greater the relative impact of raising the retirement age compared to partial indexing.

When households are grouped by age and current income class, as in Table 7, the percentage reduction in lifetime benefits is smaller the lower the income level (column 2), since the lower income levels have a higher proportion of black males, with lower life expectancies. However, because benefits are a higher fraction of lifetime earnings for low-income households, the cuts as a fraction of lifetime earnings are approximately proportional by current income class (column 3).

With income measured on an annual basis, the percentage reduction in lifetime benefit levels for those 65 and over is smaller for lower-income elderly than for those with higher incomes. However, the cuts are regressive as a fraction of lifetime earnings. As shown in the "65 and over" rows of Table 7, elderly households with incomes below $25,000 would face a 15.8% cut in benefits, while those with incomes over $75,000 would face a 25.6% cut. By contrast, the cut would be 2.1% of lifetime earnings for those with incomes below $25,000 and 1.6% for those with incomes above $75,000. This regressivity again reflects the relatively greater importance of Social Security benefits among the low-income elderly.

TABLE 7
Change in Social Security Benefits Under Partial Indexing, by Age and Income*

Age and Income Group**	Dollar Change (in Thousands)	Change as Percent of Benefits	Change as Percent of Lifetime Earnings
Under 65	-11	-10.7%	-0.6%
Under $24,999	-7	-8.7	-0.5
$25,000-$74,999	-12	-10.8	-0.5
$75,000 and Over	-19	-13.3	-0.5
Under 35	-6	-6.7%	-0.4%
Under $24,999	-4	-6.2	-0.4
$25,000-$74,999	-7	-7.3	-0.3
$75,000 and Over	-9	-7.3	-0.3
35-44	-5	-8.8%	-0.4%
Under $24,999	-10	-6.3	-0.4
$25,000-$74,999	-11	-9.5	-0.4
$75,000 and Over	-14	-8.4	-0.3
45-54	-11	-12.2%	-0.5%
Under $24,999	-13	-12.5	-0.8
$25,000-$74,999	-19	-11.1	-0.6
$75,000 and Over	-23	-13.0	-0.4
55-64	-13	-17.2%	-1.0%
Under $24,999	-13	-11.7	-0.8
$25,000-$74,999	-26	-17.8	-1.0
$75,000 and Over	-38	-22.7	-0.9
65 and Over	-43	-18.6%	-2.0%
Under $24,999	-34	-15.8	-2.1
$25,000-$74,999	-64	-23.4	-1.9
$75,000 and Over	-70	-25.6	-1.6
Married Couples			
Under 35	-9	-7.3%	-0.4%
35-44	-11	-9.6	-0.3
45-54	-17	-13.4	-0.6
55-64	-33	-20.6	-1.0
65+	-85	-27.9	-2.6
Single Males			
Under 35	-2	-4.2%	-0.1%
35-44	-3	-4.6	-0.2
45-54	-3	-5.0	-0.1
55-64	-6	-6.1	-0.3
65+	-5	-2.6	-0.2
Single Females			
Under 35	-4	-6.2%	-0.6
35-44	-5	-6.6	-0.6
45-54	-6	-7.1	-0.7
55-64	-8	-7.6	-0.8
65+	-5	-3.2	-0.5

* Based on a 2% discount rate and a 1% growth rate in earnings after 1989. Assumes that Social Security benefit levels are indexed to the inflation rate minus one percentage point.
** Income is in 1989 dollars.

As shown in column 5 of Table 4, for those under 65 the cut in benefits under partial indexing is progressive, ranging from 8.7% of benefits for couples in the lowest lifetime earnings quintile to 14% for the highest quintile. Among singles, the pattern is mildly regressive, with percentage cuts above 6% for the lowest three quintiles and about 4.8% for the two highest. These incidence patterns are the opposite of the results for raising the retirement age (column 3), reflecting the differential effect of longevity. Partial indexing imposes greater lifetime reductions on those who live longer, while raising the retirement age imposes greater reductions on those with shorter periods of expected benefit receipt.

Among the elderly, the percentage reduction in benefits is nine times greater for couples than for singles. This difference reflects the substantial difference in the average age of the two groups, with elderly couples much younger than elderly singles. The differences in benefit reduction by lifetime income class among the elderly are small, except for the small number of couples who fall in the lowest lifetime earnings quintile of all elderly.

Table 5, column 5 shows the reduction in benefits under partial indexing as a fraction of lifetime earnings. The results indicate that partial indexing is approximately proportional for those under 65 but progressive for those over 65. The progressive impact of cuts as a fraction of lifetime earnings for the elderly follows directly from the result in Table 4. Since couples have much higher lifetime earnings than singles, the larger percentage reduction in benefits for couples than singles implies greater cuts relative to lifetime earnings for higher-income elderly.

The third measure of ability to pay is wealth, or household net worth, which is defined as the value of all household assets, including home equity and the cash surrender value of pensions, minus any debts. Table 6 shows the incidence of the two policies, with households grouped by age and wealth class. As the last column of Table 6 shows, the results for partial indexing are basically proportional by wealth class. Focusing on the elderly, the impact is 1.9% of lifetime income for most households. Only the highest 1% of households in terms of wealth levels would face smaller cuts.

Grouping households by current income produces a more regressive incidence pattern than grouping them by lifetime income partly because the elderly are not evenly distributed among the current income categories used in this paper. As shown in the first column of Table 2, almost 75% of elderly households had 1989 income levels below $25,000. There is undoubtedly a substantial range of impact among this very large group. More fundamentally, however, the relationship between family type and current income is weaker than the assumed relationship between lifetime earnings and family type, because our lifetime-earnings estimates are based on the demographic characteristics of families at one point in time. While a single elderly female is treated as always having been single, in fact she may have been married earlier. If this were the case, there would undoubtedly have been greater family earnings, and perhaps greater asset accumulation than had she remained single throughout her working life. Thus, for many elderly, particularly those over 69, annual income levels and assets may provide a closer approximation to lifetime income than our hypothetical calculation of lifetime earnings.

Summarizing these findings, the distributional impact of partial indexing is proportional for current workers. For retirees, the impact is regressive against current income, proportional by wealth class, and progressive when households are ranked by lifetime earnings. By contrast, the impact of raising the retirement age is regressive for current workers, whether ability to pay is measured in terms of current income, lifetime earnings, or wealth.

Caveats

Differential mortality rates by race. Unless offset by other factors, differences in life expectancy by race imply differential rates of return. Nonwhites under 65 will have a net rate of return to Social Security equal to -4.6% of lifetime earnings, compared to -1.1% for whites and Asians. When we control for income level, this differential persists. It should be noted, however, that the lower return to Social Security received by blacks is offset to some extent by greater receipt of survivor benefits and by higher rates of participation in the disability program.

The lower life expectancy of blacks means that raising the retirement age will have a greater negative impact on blacks than on whites, while partial indexing will have a smaller effect. We estimate that for households under 65, an increase in the retirement age to 67 would lower lifetime benefits for whites and Asians by 19.3%, or 0.9% of lifetime earnings; for nonwhites, benefits would be cut by 25.7%, or 1.2% of lifetime earnings. By contrast, partial indexing lowers benefits for whites by 10.9%, or 0.5% of lifetime earnings; for nonwhites, the cut is 8.6% of benefits, or 0.4% of lifetime earnings.

Methodology for constructing lifetime earnings estimates. As discussed in the appendix, we also used reported household earnings to calculate lifetime earnings for each household. Though not based on the actual earnings record of the worker, this method is referred to as "actual" lifetime earnings. We use this terminology to distinguish it from the results in the main body of the paper, which are based on a potential lifetime earnings measure. While the average change in benefit levels does not differ greatly when we use "actual" rather than potential lifetime earnings, the distributional impact of raising the retirement age or partial indexing becomes more regressive. Under a 67 retirement age, the reduction in benefits as a percent of "actual" lifetime earnings for incomes less than $25,000 is more than twice as great as the reduction for those earning $75,000 or more (1.4% versus 0.6%), as compared to 1.3% and 0.8% when we use potential lifetime earnings. An equally regressive pattern would occur under partial indexing.

Reducing benefits, by either raising the retirement age or partial indexing, is more regressive using actual than potential lifetime earnings because benefits are distributed more progressively under the actual method. For high-income families, benefits are a smaller fraction of lifetime income under the actual method than under the potential method, but they are a larger fraction of income for lower-income families. For families with income levels above $75,000, benefits are estimated to be 3.1% of potential lifetime earnings, as compared to 2.8% of actual lifetime earnings. For families with incomes below $25,000, benefits are almost a percentage point higher using actual earnings.

The distributional pattern of percentage cuts does not vary under the two methods. However, the more progressive the benefits of a program, the greater is the regressive impact of any pattern of percentage cuts, including equal percentage cuts across income levels. Benefits are more progressively distributed under actual than potential lifetime earnings because the income distribution is more unequal. Because high earners are more likely to be above the regression line of potential earnings, while low earners are more likely to be below the line, the potential approach compresses the lifetime income distribution. Given the progressivity in the PIA calculation, the greater dispersion of lifetime earnings means relatively lower benefits for high-income families and higher benefits for low-income families.

The true configuration of lifetime earnings lies somewhere between the actual and potential lifetime earnings. Hence, the distributional impact of the policies investigated here is likely to be somewhere between the results presented in the tables and the above discussion.

Projected rate of growth of earnings. Both contributions and benefits are sensitive to the projected rate of growth of real earnings. but benefits increase at a faster rate than contributions. Hence, the transfer ratio—defined as benefits minus contributions, divided by benefits—rises with the assumed rate of growth. Using 1983 data, Wolff (1993) found that, for those under 65, the ratio of transfers (benefits minus contributions) to benefits was -0.45 at an assumed annual rate of growth of 1%, but it rose to 0.21 with a rate of growth of 3%. In this study we find that benefits for married couples under 65 are 33% higher if we use a 1% annual rate of growth, as opposed to the actual rate of growth of -0.17% from 1967 to 1993. By contrast, contributions rise by only 9%. The reason for the greater elasticity of benefits than contributions is that higher projected wage growth affects contributions only in the future. By contrast, higher wage growth affects the wage index used to determine the AIME. Since the wage index is applied to all earnings up to the age of 60, earnings in all past years in a worker's earnings history are in effect leveraged up by the increase in future earnings.

CONCLUSION

Proposals to reform Social Security by cutting benefits need to be scrupulously examined to assess their impact on the economically vulnerable members of society. In this study, we have compared lifetime benefits under current law to benefits under two proposals: increasing the normal retirement age from 65 to 67 and only partially indexing benefits to the rate of inflation. Our major findings are as follows:

- Lifetime benefits as a fraction of lifetime earnings are progressive; that is, they are a higher proportion of lifetime earnings for those with low levels of resources than for those with high levels of resources. This result holds whether resources are measured by annual income, lifetime earnings, or wealth. For households under 65, benefits as a fraction of lifetime earnings are 62% higher for incomes under $25,000 than for incomes above $75,000. Among the elderly, the ratio is more than 100%.

- Raising the normal retirement age by two years would decrease by 21% the present discounted value of expected lifetime Social Security benefits for current workers. This represents a decline of 1% of lifetime earnings, and the hardest hit would be those at the bottom of the economic ladder. By annual income level, the cut in benefits under a raised retirement age would be 63% higher for incomes under $25,000 than for incomes above $75,000, measured as a share of lifetime income. The impact of raising the retirement age is regressive for current workers, whether ability to pay is measured in terms of current income, lifetime earnings, or wealth.

- Partial indexing is highly regressive in its annual impact. It would exacerbate the problem of poverty among the very old, reinforcing the current system's allocation of Social Security benefits to the time of least need—at the time of retirement—and away from the period of greatest need—close to the end of life. The lifetime distributional impact of partial indexing is proportional for current workers. For retirees, the impact is regressive against current income, proportional by wealth class, and progressive when households are ranked by lifetime earnings. This progressivity results from the fact that in our model the elderly with low lifetime earnings are mostly older single women, with fewer years of benefit recipiency remaining than elderly couples. Although the immediate impact of any cut in benefits would be most harmful for this group, the cumulative decline in benefits would be smaller, simply because this group has escaped partial indexing for most of the retirement period. It should be noted that proportionality does not imply equal levels of sacrifice across income levels: a given reduction in benefits relative to lifetime earnings will impose greater hardship on the poor than on the affluent.

APPENDIX: METHODOLOGY FOR COMPUTING LIFETIME INCIDENCE

Our data base is the 1989 Survey of Consumer Finances. This data set consists of a random sample of 2,800 households drawn from the civilian, noninstitutionalized population. The random sample is supplemented by 500 observations from high-income households. While the sample size is much smaller than the Current Population Survey (CPS), detailed information on current wealth holdings and pension status make the SCF more suited to the construction of lifetime income estimates than would be possible from the CPS. Because we analyze Social Security from a lifetime wealth perspective, the asset information provided by the SCF will be useful as a comparative standard.

Choice of discount rate. The general approach to analyzing the long-run equity of the Social Security system is to compare the amount paid in contributions over the worker's lifetime to the amount received in retirement benefits. Since both components represent streams of dollars over time, to allow comparison the streams must be adjusted for inflation and discounted, i.e., converted to a present value. The present value of a dollar of benefits received t years from now is the amount which, if lent out for t years, would yield a dollar. The value is equal to $1/(1+r)^t$. Symmetrically, the present value of a dollar of contributions paid t years ago is equal to $(1+r)^t$. A worker who retires at age 65 may make contributions into the system from age 21 onward, i.e., for as long as 44 years. For those who reached age 65 in 1990, life expectancy in 1990 was 15 years for men and 19 years for women. Given the lengths of time involved, this means that the values of t in the formula get very high, and the results will be quite sensitive to the discount rate.

The higher the discount rate chosen, the larger the ratio of contributions relative to benefit levels. A higher discount rate increases the present value of previous contributions because the interest earned on those contributions increases. However, the present value of a given level of future benefits falls with a higher discount rate because those benefits are discounted more heavily. Raising the retirement age will accentuate this discount rate effect because it increases the contribution period and pushes the benefit recipiency period further into the future.

In our simulations, our base discount rate is 2%. We also used 3.64%—the average annual real interest rate on Aaa corporate bonds from 1967 to 1993—and 1%. Steuerle and Bakija (1994) used 2%, which they argue is the appropriate rate to reflect the risk-free nature of the Social Security benefit and the favorable tax treatment. The 1% rate is approximately the real annual interest rate on one-year Treasury bills over this same period.

Social Security is funded on a pay-as-you-go basis. However, the discount rate can still be thought of as the opportunity cost of the funds "invested" in the system by current contributors, i.e., the alternative rate of return that could be earned on those funds. We would like our results to be independent of variations in the rate of inflation; hence, we use a real discount rate. The rate should also reflect the risk-free nature of the return on Social Security contributions and the favorable federal and state income tax treatment of Social Security benefits.[5]

In computing the present value of benefits, we are computing the value of an annuity, which is a guaranteed stream of payments for as long as one lives. In principal the appropriate criterion for choosing a discount rate is to determine the rate of return on a comparable asset. Though the private market for annuities has been growing rapidly, it is still small in magnitude. The limited extent of the private annuities market results in part from the high cost of such annuities, implying a low rate of return. Gentry and Milano (1994) report that the return on variable annuities is about 1.0 to 1.5 percentage points lower than mutual funds with similar assets. Friedman and Warshawsky (1990) find that difference in yield between annuities and alternative assets is even greater. These differences result from high administrative expenses and from adverse selection. Adverse selection will occur because people who expect to live longer are more likely to purchase annuities. This increases the price of annuities and reduces the size of the market. Since Social Security provides a compulsory annuity, it is not subject to the adverse selection problem. It also has relatively low administrative expenses. For these reasons, it would not be appropriate to choose a discount rate based, for example, on the rate of return on stocks.

A second consideration in selecting a discount rate relates to the general equilibrium nature of the problem. When we use the corporate bond rate as the discount rate, we are implicitly saying that if contributions were invested in corporate bonds or stocks, they would earn the observed rate of return. While this is certainly true for a single investor, it is probably not the case if all contributors were allowed to invest in alternative assets. Because the Social Security system is so large, a shift from pay-as-you-go, with any surplus invested in government bonds, to the equivalent of a defined contribution plan, with individual savings accounts and investment allowed in corporate bonds or stocks, would probably have the effect of decreasing the rate of return on these assets relative to government securities.[6]

Construction of lifetime earnings. To simulate contributions and Social Security benefits, we need to estimate each worker's lifetime earnings profile. One way to do this is to consider hypothetical workers at different earnings levels and assume that all earnings grow at the same rate, equal to the assumed average rate of wage growth in the economy. This is the approach used in Steuerle and Bakija (1994). Such an approach ignores the fact that earnings typically do not grow at the same rate over a worker's lifetime. An enormous literature, based on the theory of human capital, has shown that the pattern of earnings growth over time is convex, and varies substantially depending on race, sex, and education level (Mincer 1974). If payroll tax rates were constant, then the time path of earnings would be irrelevant in determining contributions. However, tax rates have increased substantially since the beginning of the Social Security program. Therefore, if earnings growth for some groups tends to be concentrated in more recent periods, their total contributions would be understated by assigning a uniform growth rate.

The constant wage growth assumption also ignores changes in the distribution of wages in the 1980s. While the wage distribution remained relatively constant for many decades, the 1980s witnessed a rather sharp increase in wage inequality. If this trend is short-lived, and reverses itself in the 1990s, then it is appropriate to ignore its implications for future social benefits. However, if the increase in inequality proves to be more permanent, than it could have a significant impact on the actual distribution of Social Security benefits between low-, medium-, and high-wage earners. Our analysis is based on the 1989 distribution of earnings and as such reflects the proportions of earners at different wage levels at that time.

The value of future benefits is heavily dependent on the future assumed growth in real earnings, since benefits are determined by adjusting past wages by the increase in average wages in the economy. In our simulations, we assume that real earnings will increase at 1.0% per year after 1993. This is the intermediate growth rate projected by the Social Security Administraton. We make this assumption despite the fact that real wage growth in the economy from 1967 to 1997 was negative, equaling -0.17% per year (*Economic Report of the President* 1995, Table B-42).

Our approach to the lifetime earnings issue is to use a cross-section sample of the U.S. population to construct synthetic estimates of lifetime earnings. We begin by estimating the relationship between earnings and experience, using variations across individuals to fit the regression line. Experience is defined as age minus education minus five. In the earnings equation we regress the log of annual earnings on experience, experience squared, and the log of annual hours worked. We estimate separate equations for three demographic groups—white males, nonwhite males, and females—and five education levels. The education categories are 1-11 years, 12 years, 13-15 years, 16 years, and more than 16 years. In our classification by race, we group Asians with whites, and all others, including Hispanics, as nonwhites.

We then use these cross-section estimates to predict individual earnings growth over time. This methodology assumes that for any given individual the difference in earnings from one year to the next is the same as the difference in earnings between individuals with the same characteristics but who differ only in their age. This raises the question of how to treat an individual's observed earnings in 1988 in constructing the lifetime profile of earnings.

We use two different approaches. The first ignores actual earnings and work status. Instead we assume that all people are "on the regression line," i.e., have exactly the earnings in any year that would be predicted by their earnings equation if they were to work the average number of hours worked by all earners in the economy in that year (H). Empirically, predicted earnings for individual i at experience level A_i+t are given by

$$E_i^*(t) = \hat{b}_0+\hat{b}_1 (X_i+t)+\hat{b}_2(X_i+t)^2+\hat{b}_3(\overline{H}) \qquad (1)$$

where X_i+t is experience level in year t (defined as age at t minus education minus 5), and the $\hat{b}$'s are the estimated regression coefficients. This method ignores differences in earnings that are not associated with observable characteristics such as race, gender, and education level. It also ignores transitory fluctuations in earnings due to such factors as unemployment or time spent out of the labor force, illness, or unusually high levels of overtime pay. By using average hours worked, the earnings concept is akin to a measure of potential earnings. Implicitly, it assumes that all time spent not working reflects the voluntary choice of leisure. This approach imposes the maximum degree of smoothing on predicted lifetime income, thus tending to reduce the inequality of lifetime earnings. We will refer to this measure as potential lifetime earnings.[7]

The opposite extreme from the potential earnings approach is to assume that, conditional on the age-earnings relationship for that type of individual, current earnings are a perfect predictor of lifetime earnings. In this approach, the earnings function for individual i is adjusted so that it passes through observed earnings in 1988. Thus, if a person's earnings are below the regression line in 1988, then their lifetime earnings will be below the average level of lifetime earnings for similar people. In effect, this approach assumes that the transitory component of current earnings is zero. Empirically, predicted earnings for individual i at age A_i+t are given by

$$E_i^*(t) = [\hat{b}_0+\hat{b}_1(X_i+t)+\hat{b}_2(X_i+t)^2+\hat{b}_3(\overline{H})]\cdot E_i/\hat{E}_i \qquad (2)$$

In (2) E_i is actual earnings of person i in time period t=0 —1989 in our sample—while $\hat{E}_i$ is predicted earnings in that year. Though in both cases we are constructing a synthetic profile of wages, to distinguish the two methods we will refer to the second method as actual lifetime earnings.

"Actual" lifetime earnings are lower than potential earnings at all age levels. The difference is greatest for the youngest and oldest workers. For married couples age 55-64, "actual" lifetime earnings are only 44% of potential lifetime earnings, as compared to 89% at age 35-44. The large difference between the two measures for older workers reflects primarily the fact that the "actual" average for this age group includes a large number of zeros, reflecting the drop in hours of work and labor force participation with age. The difference between potential and actual lifetime earnings is particularly pronounced for single males age 55-64.

In comparison to the unobserved true variance across families of lifetime earnings, the potential approach tends to reduce the variance while the "actual" approach increases it. The true lifetime earnings profile lies somewhere in between the profiles predicted by our two methods. As we show, the difference in variance has a significant effect on our estimates of the distributional impact of Social Security.

Under either method for obtaining E_i^*, accumulated earnings (AE) from the start of the working life to retirement are then estimated on the basis of the real growth in average earnings and the real discount rate. Since the earnings function is estimated for 1989, future earnings are equal to predicted earnings, as obtained from the age earnings equation, multiplied by the expected real growth rate in average wages in the economy. Future earnings are then discounted back to 1989. The backward process is exactly analogous, with past earnings reduced by the average growth in real wages and then discounted up to the present. Algebraically, this means that earnings in the future year y are multiplied by $1/(1+\delta)^y$, while earnings in the past year y are multiplied by $(1+\delta)^y$, where δ is the discount rate.

The equation for accumulated earnings to the present is:

$$AE_i = \sum_{t=-t_0}^{0} E_i^*(t) \cdot K_y, \qquad (3)$$

where K_y is the sum of the discount rate minus the real growth in average earnings in year y. It is defined as

$$K_y = \prod_{j=y}^{y_c} (1+\delta_j - k_j) \qquad (4)$$

which gives the present value of earnings in year y. To obtain lifetime earnings, we add to AE the present discounted value of expected future earnings until retirement.

We use the lifetime earnings concept to calculate lifetime contributions and lifetime benefits. Contributions in each year are obtained by multiplying predicted earnings by the appropriate tax rate, which is the sum of the employee plus employer share. In this we follow the conventional assumption that the employer share of the payroll tax is fully borne by the worker in the form of lower net wages. If predicted earnings are above the maximum for the wage base, then the rates are applied to the maximum earnings.

Benefits are computed in the same way that they would actually be determined under the Social Security rules. Predicted earnings in each year up to the age of 60 are multiplied by the appropriate wage index for that year, and the top 35 years of earnings are used to compute the average indexed monthly earnings (AIME). From the AIME we then determine the primary insurance amount (PIA) for each worker, taking into account the "bend points" at which the percentage of the AIME changes. The bend points are adjusted to reflect the projected rate of change in wages. The present discounted value of benefits is the discounted sum of annual benefits, held constant in real terms, for the remaining years of expected life. We assign the median life expectancy to every adult, conditional on having reached the age reported in the sample. Life expectancy is assumed to vary by gender and by race (U.S. Bureau of the Census 1994, Table 117).

For married couples we simulate lifetime earnings for both the head of household and the spouse. The family benefit is set equal to the sum of each spouse's PIA or one-and-a-half times the higher earner's PIA, whichever is greater. After the death of one of the spouses, the benefit reverts to either the survivor's PIA or the spouse's PIA. The level and distribution of benefits is conditional on the assumption that the existing family composition remains the same throughout the working life of both spouses.

ENDNOTES

1. See Quinn et al. (1990, 17), and U.S. Bureau of Labor Statistics 1993.

2. Low annual earnings are defined by the Census Bureau as earnings below the poverty level for a family of four (U.S. Bureau of the Census 1992) .

3. Partial indexing has been justified as an appropriate correction for a supposed bias in the CPI that leads to an overstatement of the true increase in the cost of living. If this overstatement exists, then, depending on the actual degree of bias in the CPI, partial indexing would prevent an increase in real purchasing power over time, relative to the initial value of benefits, as opposed to actually decreasing real income. However, adopting this view of indexing also has implications for the stream of lifetime earnings and the value of Social Security benefits relative to lifetime earnings. In particular, it would raise the value of recent earnings relative to earnings in the distant past. However, because the wage index for these earnings would be larger, the AIME would not decrease. Since total lifetime earnings would be lower while the Social Security benefit remains the same, Social Security benefits would represent a larger share of lifetime earnings.

4. Bound et al. (1991) found that widowhood decreased family income by about two-fifths and living standards by about a fifth from 1968 to 1984.

5. In 1995 only 23% of beneficiaries will pay taxes on some portion of their Social Security benefits. This percentage increases slowly over time, implying that the favorable tax treatment of Social Security will continue well into the next century.

6. Of course, the general equilibrium argument might also be applied to the private annuity discussion above. If individuals were allowed to invest their Social Security contributions, the market for private annuities might expand and the price of such annuities fall.

7. This is the approach used by Fullerton and Rogers (1993) in their study of lifetime tax burdens. It is also similar to the earnings-capacity approach in Haveman and Buron (1993).

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