Social Security's Treatment of Postwar Americans:

How Bad Can It Get?

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Abstract

As currently legislated, the U.S. Social Security System represents a bad deal for postwar Americans. Of every dollar postwar Americans have earned or will earn over their lifetimes, over 5 cents will be lost to the Old Age Survivor Insurance System (OASI) in the form of payroll taxes paid in excess of benefits received. This lifetime net tax rate can also be understood by comparing the rate of return postwar contributors receive from OASI and the return they can earn on the market. The OASI return -- 1.86 percent -- is less than half the return currently being paid on inflation-indexed long-term government bonds, and the OASI return is much riskier. Of course, Social Security is an insurance as well as a net tax system. But, viewed as an insurance company, the insurance OASI sells (or, rather, forces households to buy) is no bargain. The load charged averages 66 cents per dollar of premium.

These findings, developed in an extensive micro simulation study by Caldwell, et al. (1999), assume that current law can be maintained through time. But Social Security faces a staggering long-term funding problem. Meeting the system's promised benefit payments on an ongoing basis requires raising the OASDI 10.8 tax rate immediately and permanently by two fifths!

How bad can Social Security's treatment of postwar Americans get once adjustments are made to "save" the system? This paper examines that question using the machinery developed in Caldwell, et al. Specifically, it considers Social Security's treatment of postwar Americans under alternative tax increases and benefit cuts that would help bring the system's finances into present value balance. The alternatives include immediate tax increases, eliminating the ceiling on taxable payroll, immediate and sustained benefit cuts, increasing the system's normal retirement ages beyond those currently legislated, switching from wage to price indexing in calculating benefits, and limiting the price indexation of benefits. The choice among these and other alternatives has important consequences for which postwar generations and which members of those generations will be forced to pay for the system's long-term financing problems.

I. Introduction

As currently legislated, the U.S. Social Security System represents a bad deal for postwar Americans. Of every dollar postwar Americans have earned or will earn over their lifetimes, over 5 cents will be lost to the Old Age Survivor Insurance System (OASI) in the form of payroll taxes paid in excess of benefits received. OASI's five percent lifetime net tax rate can also be described in terms of the internal rate of return it delivers to contributors. This rate -- 1.86 percent -- is less than half the rate currently being paid on inflation-indexed long-term government bonds, which are much safer. Of course, Social Security is an insurance as well as a net tax system. But viewed as an insurance company, the insurance OASI sells (or rather forces households to buy) is no bargain. The load charged averages 66 cents per dollar of premium.

The bad deal that Social Security offers postwar Americans is, of course, payback for the great deal it offered and still offers prewar Americans. These generations got in at the beginning of the Social Security chain letter, and received very generous benefits compared with their tax contributions to the system. That postwar Americans are receiving less than a market rate of return on their contributions is not news. What is news is the precise degree to which postwar Americans are being hurt by the system. Understanding their treatment necessitates an actuarial approach because Social Security's benefit pay-out depends on the vagaries of longevity, fertility, marital arrangements, and lifetime earnings. Capturing the full range of these outcomes requires longitudinal data that follows individuals from their initial encounters with the OASI system through the end of their lives. Actual data of this kind are not available, but simulated data are available. The data used here are from CORSIM, an extensive micro simulation model developed by Steven Caldwell and his colleagues at Cornell University (see Caldwell, 1996 and Caldwell and Morrison, 1997).

Caldwell et al. (1999) married CORSIM's simulated data to a highly detailed Social Security benefit estimator developed by Economic Security Planning, Inc. as part of its financial planning software package, ESPlanner. The resulting study, which produced a range of findings, including those mentioned above, adopted one major counterfactual assumption—that Social

Security would be able to deliver on its benefit promises without raising its rate of taxation. Unfortunately, this assumption is a far cry from reality. Instead, Social Security faces a staggering long-term funding problem. According to the system's own actuaries, meeting promised benefit payments on an ongoing basis requires raising the OASDI 10.8 tax rate immediately and permanently by two fifths!

This paper uses the machinery developed in Caldwell et al. (1999) to study how bad Social Security's treatment of postwar Americans would be under alternative tax increases and benefit cuts that help bring the system's finances into present value balance. The alternatives include immediate tax increases, eliminating the ceiling on taxable payroll, immediate and sustained benefit cuts, increasing the system's normal retirement ages beyond those currently legislated, switching from wage to price indexing in calculating benefits, and limiting the price indexation of benefits. The choice among these and other alternatives has important consequences for which postwar generations and which members of those generations pay for the system's long-term funding shortfall.

The paper proceeds in Section II with a brief literature review. Section III describes CORSIM and ESPlanner's Social Security Benefit Estimator.[1] Section IV reviews the findings of Caldwell, et. al.(1999). Section V describes ten alternative tax increases and benefit reductions that would improve the system's present value finances. Section VI shows the distribution of the additional burden that these policies impose both across postwar cohorts and across different demographic groups within each postwar cohort. This section also reports the contribution that each policy option makes to shoring up the system's finances.

II. Some Relevant Literature

A number of past studies have examined Social Security's treatment of its participants by focusing on stylized cases -- particular types of married couples and single individuals who differ

[1]This section draws heavily on Caldwell, et. al.'s (1999) description of CORSIM and ESPLanner's benefit calculator.

by age of birth, sex, race, and lifetime earning and who all live for the same number of years. These studies include Nichols and Schreitmueller (1978), Pellechio and Goodfellow (1983), Myers and Schobel (1993), Hurd and Shoven (1985), Boskin, Kotlikoff, Puffert, and Shoven (1987), Steuerle and Bakija (1994), and Diamond and Gruber (1997).

Steuerle and Bakija's study is fairly representative of the past literature and may be the best known prior study. It considers three alternative lifetime wage patterns: low, average, and high, where "low" refers to 45 percent of the average value of Social Security-covered earnings, "average" refers to the average value of Social Security-covered earnings, and "high" refers to the value of the maximum taxable level of Social Security-covered earnings. For each cohort reaching age 65 between 1940 and 2050, Steuerle and Bakija calculate the lifetime net benefits from Social Security for singles and married couples for alternative sets of these three lifetime wage patterns. For example, they consider married couples in which both spouses have low earnings, one spouse has low earnings and the other average earnings, and one spouse has average earnings and the other high earnings. Steuerle and Bakija use their assumed earnings trajectories to compute retirement, dependent, and survivor benefits. In the case of survivor benefits, the authors consider all possible truncations of the earnings trajectories resulting from all possible alternative dates of early death, although not from any other sources. Each of the various state-contingent benefits is actuarially discounted to form a lifetime net benefit.

Steuerle and Bakija's findings generally accord with those of previous studies: It shows that today's and tomorrow's workers will fare much worse under Social Security than current and past retirees; that men are being disadvantaged relative to women; and that single individuals and two-earner couples face higher net taxes than do single-earner couples. The authors also claim that "for most of Social Security's history, the system has been regressive within generations. That is, within a given cohort of retirees, net transfers have been inversely related to need: people

with the highest lifetime incomes have tended to receive the largest absolute transfers above and beyond what they contributed."[2]

Like our paper, Coronado, Fullerton, and Glass (1999) represents a different approach—namely, considering the dispersion of all potential outcomes. But unlike our paper, Coronado, Fullerton, and Glass examine actual data (from the Panel Study of Income Dynamics), rather than synthetic data. Their paper represents a real step forward in determining exactly how postwar Americans are being treated. Although their focus is on post-retirement benefits and they don't include as much detail in their calculation of OASI benefits, Coronado, et. al.'s (1999) findings are broadly consistent with those presented here and in Caldwell, et. al. (1999).

III. CORSIM and ESPlanner's Social Security Benefit Calculator

As mentioned, we use two tools in our analysis CORSIM—a dynamic micro simulation model—and ESPlanner's Social Security benefit calculator to calculate OASI lifetime net taxes (taxes paid less benefits received) for baby boomers and their children.

CORSIM

CORSIM begins in 1960 with the representative sample of Americans surveyed in the 1960 U.S. Census Public-Use Microdata Sample. This data set is a one-in-one-thousand sample, i.e., one of every thousand Americans alive in 1960 is included. The Census survey provides much, but not all, the information needed as baseline data. The remaining information is imputed

[2]Steuerle and Bakija's study pays careful attention to detail and provides an impressive and extensive array of calculations. Yet, it raises five concerns. First, in considering only uninterrupted earnings histories, the study omits a potentially very important source of intra- and intergenerational heterogeneity in lifetime Social Security net benefits. Second, in assuming fixed lifetime marital status, the study ignores the role of divorce and remarriage in altering Social Security net benefits. Third, in assuming that receipt of Social Security retirement benefits starts at worker's ages of normal retirement, the study ignores benefit reductions for age, delayed retirement credits, benefit recomputation, and the earnings test -- all of which can materially affect Social Security's lifetime net benefits. Fourth, the study uses an extremely low real interest rate, just 2 percent, in discounting future net benefits. And fifth, in failing to consider workers who earn above the taxable maximum, the study fails to capture an important regressive element of the system -- the fact that for very high income single individuals and couples, Social Security's net lifetime taxation is a smaller fraction of lifetime earnings than it is for Steuerle and Bakija's "high" earners.

to the 1960 sample from a variety of sources. CORSIM "grows" the 1960 sample demographically and economically in one-year intervals through the year 2100. Demographic growth refers to birth, death, and immigration, entry into the marriage market, family formation, family dissolution, and the attainment of schooling. Economic growth refers to working or not working, choosing annual weeks worked, and determining weekly labor earnings.[3]

As detailed in Caldwell et al. (1996), these and other CORSIM processes are determined by over one thousand distinct equations, hundreds of rule-based algorithms, and over five thousand parameters. Data used to estimate and test the separate equation-based modules were drawn from large national Microdata files, including High School and Beyond (HSB), the National Longitudinal Survey (NLS), the National Longitudinal Survey of youth (NLS-Y), the Panel Study of Income Dynamics (PSID), the National Longitudinal Mortality Study (NLMS), the Survey of Consumer Finances (SCF), and the U.S. Census Public Use Microdata Sample (PUMS). Data used to construct the rule-based modules and to compute alignment factors are drawn from another six files plus miscellaneous sources.

CORSIM's alignment procedures ensure that the model's in-part deterministic and in-part stochastic modules are benchmarked to historical aggregates. These aggregates are typically group specific, such as the average earnings of white females ages 19 to 25 who are married with children in the home and working part time. Benchmarking is performed by calculating group-specific alignment factors which are applied within each group to the values of the sample member's predicted continuous variable (such as earnings) and probabilities (such as the chance of divorcing). These adjustment factors are then used in a second pass of the model through the population.[4]

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[3]CORSIM's other economic processes include consumption expenditures, saving, federal, state, and local income and property taxation, individual asset holdings, inheritance, and disability.

[4]For example, if the model generates fewer (more) than the expected number births in a given period, the fertility probabilities for women of childbearing age in the period are scaled upward (downward). One can scale continuous variables in a simple linear fashion or by using more complex non-linear methods (see, for example, Johnson (1996) and Neufeld (1996a, 1996b).

Our CORSIM data was produced by running CORSIM from 1960 through 2100. From this master sample, we selected a) all never married males and females born between 1945 and 2000 who lived to at least age 15, b) all males born between 1945 and 2000 who married women born between 1945 and 2010 and lived to at least age 15, and c) all females born between 1945 and 2000 who married males born between 1945 and 2000 who lived to at least age 15. Selecting the sample in this manner omits a) males born between 1945 and 2000 who married females born either before 1945 or after 2010 and b) females born between 1945 and 2000 who married males born either before 1945 or after 2000. Thus, at the early end of the sample we lose some males who married older women and some women who married older men. At the late end of the sample we lose some males who married very much younger women and some females who married younger men.

Whatever bias this selection process introduces should be absent for cohorts born in the central years of our sample. For these cohorts, we are presumably omitting very few, if any, observations. Take, those born in 1965. The males born in 1965, who are left out of the sample, are those who either married women 20 or more years older than themselves or married women 45 or more years younger than themselves. Those females born in 1965 who are omitted from the sample either married males 20 or more years older than themselves or married males 35 or more years younger than themselves.

Sample Size

Table 1 decomposes the number of observations by birth cohort, lifetime earnings quintile, sex, race, and education. The total number of sample observations is 68,688 individuals. The observations are almost equally divided among men and women. They are also fairly evenly distributed across our 11 cohorts defined over 5 years of birth (6 years for the youngest cohort). For convenience, we refer in the text to each of the cohorts by their oldest members' year of birth. Those Cohort 45 refers to those born between 1945 and 1949, Cohort 50 refers to those born

between 1950 and 1954, etc., up through Cohort 90, which refers to six, rather than five, separate birth cohorts, specifically, those born in the years 1995 through 2000.

Sixteen percent of the observations are non-white, and 41 percent have one or more years of college education. These percentages increase for successive cohorts. Eleven percent of Cohort 45 is non-white, compared with 21 percent of Cohort 95. Thirty-one percent of Cohort 45 observations have at least one year of college education, compared with 46 percent of observations in Cohort 95.

The table sorts observations into three lifetime earnings quintiles: the lowest 20 percent of lifetime earners, the middle 20 percent of lifetime earners, and the top 20 percent of lifetime earners. Lifetime earnings is defined as the present value of an individual's annual earnings from age 18 through the end of his or her life discounted at a 5 percent real interest rate. The lifetime earnings quintiles are defined with respect to the overall distribution of lifetime earnings. *This quintile definition holds even when we consider results for specific demographic groups.* Thus, when we refer to the non-college educated in the highest quintile of the lifetime earnings distribution we do not mean the 20 percent highest earners among those without a college education, but rather those non-college educated who end up being among the top 20 percent of *all* lifetime earners. As one would expect and as Table 1 shows, 29 percent of all female observations fall in the lowest lifetime earnings quintile compared to only 12 percent in the highest quintile. Similar remarks apply to the distribution of observations for the non-white and non-college-educated groups.

Longevity

Since Social Security pays its benefits in the form of annuities, how long one lives is a critical factor in determining how much one benefits from the system. Table 2 reports average ages of death by cohort and demographic group. As one would expect, later-born cohorts live longer, females outlive males, whites outlive non-whites, and those with a college education outlive those without. The average age of death for the first five cohorts is 79.5 compared with

81.1 for the last five. Across the entire sample, females outlive males by 6.3 years, but this gap in longevity narrows somewhat between the earliest and latest cohorts. The longevity gaps between whites and non-whites of about 2 years and between the college educated and non-college educated of about 1.5 years are fairly stable over time.

There is also a clear correlation between lifetime earnings and average length of life. Part of this correlation runs from earnings to lifespan; i.e., the mortality probabilities used in the CORSIM model are smaller the higher is the level of earnings. But part runs from lifespan to earnings: Those with shorter lifetimes have fewer years during which to work and may, for that reason, have lower lifetime earnings. Across all cohorts, the difference in longevity between those in the bottom and those in the top quintiles is 1.2 years. However, if one looks within male and female subpopulations, these differences are much larger. Compare, for example, highest- and lowest-quintile life expectancies for men who are in Cohort 85. The difference is 7.1 years. For females in the same cohort, the gap is 2.8 years between the top and bottom quintiles.[5]

Longevity differences between the college-educated and non-college-educated are worth noting. As mentioned, there is a significant college—non-college difference in average longevity. But given the level of education, there is very little difference in life expectancies across lifetime income quintiles. Indeed, college graduates in the lowest quintile of the lifetime earnings distribution have a higher life expectancy than do non-college graduates in the top quintile. Thus, education appears to trump income in explaining longevity.

Lifetime Earnings

[5] Note that the male and female Cohort 85 gaps in life expectancies between lowest and highest quintiles is smaller than the corresponding gap for male and female observations combined. The reason is that in forming the overall life expectancies, low quintile males and high quintile females receive relatively little weight because there are relatively few of them. This weighting pattern makes the average life expectancy of all those in the lowest quintile closer to that of females in that quintile and makes the average life expectancy of all those in the highest quintile closer to that of males in that quintile. Since, other things equal, males have lower life expectancies than do females, this weighting pattern reduces the size of the top-bottom quintile gap relative to the gaps of either sex calculated separately.

Table 3 shows the huge gulf that separates high and low earners with respect to the present value of lifetime earnings. For Cohort 45, average lifetime earnings in the top quintile are 33 times those in the bottom quintile. For Cohort 95, the corresponding factor is 39. The table also shows that postwar males have much higher average lifetime earnings than do postwar females. In Cohort 85 for example, females average $398,300 in lifetime earnings compared with $731,800 for males. This over-$300,000 differential is much larger than the white—non-white and college—non-college educated differentials in Cohort 85. Indeed, in this cohort, the white—non-white differential is less than $100,000 and the college—non-college differential is less than $200,000. In combination, these differentials can be very sizeable, although their interactions are not necessarily positive. Take white, college-educated males in Cohort 85 and non-white, non-college educated females in the same cohort. The lifetime earnings difference, which is in excess of $500,000, is, nonetheless, smaller than the sum of the separate male-female, white—non-white, and college-educated—non-college-educated differentials.

Although lifetime earnings are higher in general for men than for women, for whites than for non-whites, and for the college-educated than for the non-college-educated, these differences don't necessarily extend to within quintile comparisons. For example, the lowest quintile males have lower lifetime earnings than the lowest quintile females.

Another prominent feature of Table 3 is the growth over time in lifetime earnings measured in 1998 dollars. This reflects historic as well as projected growth in real wages. As a comparison of results for different members of Cohorts 1945-49 and 1995-00 makes clear, lifetime earnings of successive generations are growing much more rapidly for women than for men, and somewhat more rapidly for whites than for non whites and for the college-educated than for the non-college-educated.

ESPLanner's Social Security Benefit Calculator (SSBC)

ESPlanner's OASI benefit calculator calculates retirement, spousal, widow(er), mother, father, children, and divorcee benefits as well as OASI taxes. It does so taking into account

Social Security's earnings test, family benefit maximums, actuarial reductions and increases, benefit re-computations, eligibility rules, the ceiling on taxable earnings, and legislated changes in normal retirement ages. Although the benefit calculator considers the OASI system in great detail, it leaves out the DI portion of Social Security. It also ignores the taxation of Social Security benefits under federal and state income taxes. Both of these omissions lead to an understatement of Social Security's redistribution from the lifetime rich to the lifetime poor.

Calculation of OASI benefits is extremely complex. The Social Security Handbook describing the rules governing these benefits runs over 500 pages. Even so, on many key points, the Handbook is incomplete and misleading. This assessment is shared by Social Security's senior actuaries who were consulted in developing SSBC. Their assistance, which proved invaluable, came in the form of both extensive discussions and the transmittal of numerous documents detailing various aspects of Social Security's benefit formulae. The Social Security actuaries also introduced us to their ANYPIA program, which calculates primary insurance amounts (PIAs). Unfortunately, ANYPIA considers only one person at a time and does not permit the calculation of multiple, inter-dependent benefits of household members. Consequently, ANYPIA did not provide an alternative to developing SSBC, although we have used it, where possible, to check SSBC's accuracy. We refer readers to Caldwell et al. (1998) for a detailed discussion of SSBC's calculation of each type of benefit.

IV. OASI's Treatment of Postwar Americans Assuming No Tax Hikes or Benefit Cuts

Tables 4 through 6 summarize a number of the findings in Caldwell et al. (1999) about Social Security's treatment of current generations assuming no future change in Social Security tax and benefit provisions. Table 4 reports cohort-specific OASI lifetime net tax rates for the lowest, middle, and highest lifetime earnings quintiles and for different demographic groups. These tax rates are calculated by dividing a) the sum of lifetime net taxes of all individuals in a given cell by b) the sum of those individuals' lifetime earnings. These lifetime variables are present values (discounted at a real rate of 5 percent) measured in 1998 dollars and calculated as of the

year the individual is age 18. The taxes and benefits used in forming the lifetime net tax rate are all OASI taxes paid by cell members *plus* those paid by their employers and all OASI benefits received by cell members. Thus, a spousal benefit paid to a husband is counted as his benefit notwithstanding the fact that the benefit is based on his wife's earnings record.

Table 5 reports cohort-specific OASI internal rates of return again broken down by lifetime earnings quintiles. The cell-specific internal rates of return were determined by finding the discount rate that equated the present value of the tax payments of *all* cell observations to the present value of the benefit receipts of *all* cell observations.

Table 6 shows cell-specific OASI equivalent wealth tax rates. These tax rates are calculated by 1) present valuing to age 65 (accumulating to age 65 or, as appropriate, discounting to age 65) all lifetime OASI taxes paid by all cell members, 2) doing the same for all lifetime OASI benefits received by all cell members, and 3) forming the number 1 minus the ratio of the collective within-cell lifetime benefits to the collective within-cell lifetime taxes. Again, a 5 percent rate of discount is used in finding present values. If the lifetime benefits of cell members equals their lifetime taxes, the implicit OASI wealth tax rate equals zero. If lifetime benefits of cell members are zero, the implicit wealth tax rate is 100 percent.

The reason we refer to this tax rate as an implicit wealth tax is that the accumulated-to-age-65 lifetime tax payments of cell members would be the extra net wealth they would have at age 65 if 1) there were no OASI program, 2) all OASI payroll tax contributions saved and invested by cell members as a group and 3) these savings earned a real rate of return of 5 percent.[6] If the OASI wealth tax rate is .66, this means that Social Security has, in effect, taxed away two-thirds of that net wealth when the surviving cell members reach age 65. Another way to think about OASI is that it represents an insurance policy. From this perspective, the contributions are insurance premiums and the implicit wealth tax is the load charged by the OASI insurance company. A wealth tax rate of .66 translates into a load of 66 cents per dollar of premium.

[6] We take a 5 percent real rate of return as a reasonable approximation to available market rates of return, comprising of a risk free rate of 3.5 percent and a risk premium of 1.5 percent.

Since we are pooling together the outcomes of all cell observations in forming the cell entries in Tables 4 through 6 as well as subsequent tables, we are making actuarial calculations. Individuals who die young and receive benefits for only a few years are pooled with those who die old and receive benefits for many years. Individuals who parent multiple children and, if they die when the children are young, endow their children with child survivor benefits and their spouses with mother/father benefits, are pooled with those who have no children and, therefore, generate no such benefits. Individuals who are married for 10 or more years and, because they have the right constellation of earnings and death dates vis-a-vis their spouses, provide their spouses with spousal and survivor benefits, are pooled with both a) individuals who marry, but get divorced before 10 years and, consequently disqualify their former spouses for such benefits[7] and b) individuals who never married, etc.[8]

Lifetime Net Tax Rates Under the Existing System

Table 4 documents several key features of the current OASI system. First, with the exception of Cohort 50, lifetime net tax rates exceed 5 percent for all postwar cohorts. Second, there is no clear cohort time trend; i.e., younger cohorts are not, under current law, generally facing higher lifetime net tax rates than older cohorts. Third, lifetime net tax rates are negative for members of all cohorts who fall within the lowest 20 percent of their cohort's lifetime earnings distribution. And fourth, the lifetime net tax rates of the middle class (the middle or third quintile of the lifetime earnings distribution) exceed those of the rich (the highest quintile of the lifetime earnings distribution).

[7]Since surviving spouses are eligible for survivor benefits provided they have been married for 9 or more months, we refer here only to the case of marriages of less than 10 years that end in divorce in which a spouse dies after the couple has divorced.

[8] Note that we allocate benefits to recipients rather than to the individuals whose earnings records generated the benefits. Hence, load factors are likely to be understated for those demographic groups who receive sizable benefits based on the earnings of individuals belonging to some other demographic group. Women, for example, have lower earnings and live longer than men, on average and, therefore, receive spousal and survivor benefits based on their husbands' earnings histories. The opposite would be true for men. Hence, in drawing conclusions about the size of load factors, it may be appropriate to focus on average wealth tax rates across all groups.

Thus the current OASI system represents an overall bad deal for postwar Americans when viewed from an actuarial perspective. One might expect the deal to be getting worse over time given that the OASI tax rate has risen over time. However, life expectancy has increased and work expectancy has decreased. So younger cohort members are receiving benefits for more years and paying taxes for fewer years than are older cohorts.

The OASI program significantly hurts Americans as a group, but it also significantly helps poor postwar Americans. Take, for example, members of Cohort 80 in the lowest lifetime earnings quintile. OASI is, in effect, handing them 4.8 cents on balance for every dollar they earn. Although the system is highly progressive at the bottom of the lifetime earnings distribution, it is somewhat regressive at the top. This reflects the ceiling on covered earnings that limits the payroll tax contributions of the rich as well as the benefits the rich receive. Although the rich are facing somewhat lower rates of lifetime net OASI contributions than the middle class, they are still paying, in absolute terms, much more than the middle class. To see this, multiply, for example, Table 4's 5.3 percent lifetime net tax rate for the highest quintile in Cohort 80 by $1,671,700 -- Cohort 80's average lifetime earnings. The resulting $88,600 is over five times the corresponding absolute net tax of $15,372 paid, on average, by members of Cohort 80's middle quintile.

Table 4 breaks down the lifetime net tax rates by demographic group. Men pay about 1 percent more of their lifetime earnings to OASI in net taxes than do women. The higher male net tax rates obtain even within the same lifetime earnings quintiles. Indeed, the poorest one fifth of males in each cohort all face positive lifetime net tax rates, whereas the poorest one fifth of women in each cohort all face negative lifetime net tax rates. These results reflect males' shorter life expectancies and less frequent receipt of OASI dependent and survivor benefits. Non-whites, because of their shorter life expectancies, face slightly higher (about a third of a percentage point) lifetime OASI net tax rates than do whites. This is true within as well as across lifetime earnings quintiles. College-educated workers face somewhat lower (about three fifths of a percentage point) lifetime OASI net tax rates than non college-educated workers. This difference is

particularly pronounced among college-educated and non college-educated observations in the first quintile.

Internal Rates of Return Paid by the Existing System

Table 5 indicates that postwar cohorts, as a group, are receiving a roughly 2 percent rate of return on their OASI contributions. Relative to the close to 4 percent safe rate of return currently available on inflation-indexed long-term government Treasury bonds, 2 percent is quite low, particularly given the fact that future OASI tax payments and benefit receipts are highly uncertain. Indeed, the non-idiosyncratic component of these tax payments and benefit receipts is closely linked to overall labor productivity growth (see Baxter and King, this volume). And since labor productivity growth is highly correlated with the economy's performance, which, in turn, is highly correlated with the performance of the stock market, the stock market's real rate of return may be a reasonable rate to compare with the 2 percent being paid Social Security. The average real return on the stock market since 1926 is 7.7 percent – a very far cry from 2 percent!

While postwar Americans are, as a group, receiving a quite low rate of return from the system, the poorest among them are earning a very respectable return -- roughly 6 percent. The counterpart of this much better deal for the poor is a much worse deal for those in the top quintile. Their rate of return is below 1 percent. In addition to this large difference between rates of return for the rich and the poor, there is a large difference in rates of return between men and women. The differences between male and female internal rates of return are smaller at higher quintiles. In the case of Cohort 70 for example, the difference is 2.6 percentage points in the lowest quintile versus 0.8 percentage points for the highest quintile. This may reflect the fact that a larger fraction of women in the lower lifetime earnings quintiles have longer spells of non-participation in the labor market. Hence, women in these quintiles may collect benefits based on their spouses' earnings records with greater frequency than do men—making their benefits larger relative to their earnings. In contrast, women in higher lifetime earnings quintiles mostly collect benefits based on their own earnings records. Their internal rates are, nevertheless, larger than

those of men because women collect survivor benefits based on the spouses' higher earnings records and because they possess greater longevity.

The differences between male and female internal rates of return are smaller for later cohorts. For Cohort 95, for example, the difference in the lowest quintile is only 1.4 percentage points. In the highest quintile, it is only 0.5 percentage points. The decline in the difference for later cohorts may reflect the increase over time in women's labor force participation—leading to fewer women collecting benefits based on the spouse's earnings records. Interestingly and unlike the lifetime net tax measure, the rate of return criterion suggests that non-whites fare just as well as whites and that the non-college-educated fair just as well as the college educated.

Implicit Wealth Taxes Levied by the Current System

Table 6 shows the point made above, that roughly two-thirds of every dollar paid by postwar Americans to the OASI system represents a pure tax. The implicit tax rate is close to 8 cents on the dollar for top earners. For low earners, the system not only pays back in full each dollar paid in. It also provides about 45 cents on the dollar as a subsidy. Not all poor individuals receive a subsidy, however. None of the poorest fifth of males in the 11 cohorts can expect to get back more than they pay in; instead they can expect to lose about 27 cents on the dollar. Poor women, on the other hand, can anticipate receiving 1.67 cents per dollar paid in (a subsidy of 67 cents). OASI's implicit wealth tax rates are also higher for non-whites than whites and for the college-educated than the non-college-educated.

V. Alternative Policies to Shore-Up Social Security's Finances

This section examines 10 potential policy reforms that would help shore-up Social Security's long-term finances. To set the stage for their analysis, we first point out that the system's present value budget imbalance is very much larger than is generally understood or being publicly acknowledged by the system's trustees.

Social Security's Financial Dilemma

How large is the total present value imbalance of the OASI system? If we discount all future taxes and benefits at a 3 percent real rate, we arrive at a present value imbalance of $8.1 trillion.[9] This figure represents the difference between a) the present value of all future benefit payments and b) the sum of the present value of future payroll tax revenue plus the current OASI trust fund.[10]

The immediate and permanent tax hike required to generate $8.1 trillion more in present value and, thus, eliminate the OASI budget imbalance is 4 percentage points or 38 percent of the post-2000 OASI tax rate of 10.6 percent.[11] This requisite 38 percent tax hike is over twice the required rate increase reported in the 1999 Trustee's Report of the Social Security Administration. The discrepancy between the tax hike that is needed and the one the Trustees say is needed is easily explained. Unlike our calculation, the Trustees Report uses a truncated projection horizon -- 75 years -- which ignores the enormous deficits forecast in years 76 and thereafter.

One might think that looking our 75 years is far enough, but with each passing year, another "out-year" is added to the current 75-year projection horizon. And, if these out-years involve large deficits, the current 75-year present value imbalance will worsen. This is precisely what has been happening since 1983, when the Greenspan Commission "saved" Social Security. Indeed, about one third of the current 75-year long-term imbalance in Social Security's finances reflects the fact that since 1983, 16 years of very large deficits have been added to the 75-year

[9] While we follow the actuaries in using a 3 percent real discount rate in assessing the present value budget impact of alternative policies, a 3 percent discount rate seems far too low for the individual money's worth calculations we do in forming lifetime net tax rates and implicit OASI wealth taxes. Why? Because future OASI taxes and benefits are highly uncertain and, from an individual perspective, should be discounted for their risk. One could argue that the actuaries should also risk adjust their discount rate in assessing the system's long-term finances.

[10] In forming the present values, we use SSA's most recent projections of payroll tax revenue and OASI benefits. We take average annual growth rates of OASI taxes and benefits during the final 20 years of the 75-year projections and grow the year-75 taxes and benefits through the year 2300. Discounting the difference between taxes and benefits at a real discount rate of 3 percent per year, adding the current value of the OASI trust fund, and making an adjustment for the post 2300 imbalance, yields the total present value imbalance reported in the text.

[11] In a telephone conservation, Social Security's Deputy Chief Actuary, Steven Goss, indicated that he also finds a 38 percent present value imbalance, although his calculations include the DI system. According to Goss, the tax hike required to balance the OASDI system in present value would be 4.7 percentage points.

projection horizon. Another third of the 75-year imbalance that has arisen since 1983 reflects mistakes the actuaries made in their forecasting techniques. The final third reflects overly optimistic assumptions the actuaries made about the growth of taxable payroll, take-up rates of disability benefits, and demographics.

The size of the tax hike (38 percent) needed to produce present value balance, not just over the next 75 years, but over the entire long-run, is even more remarkable given that it was calculated using the relatively optimistic "intermediate" demographic and economic assumptions. There are two assumptions, in the intermediate set, that seem particularly sanguine. One is that improvements in longevity will slow down over the next several decades compared with the rate of such improvements observed over the past 20 years. Indeed, if one believes the intermediate longevity forecast, it will take the U.S. until the middle of the next century to achieve the current Japanese life expectancy. The other assumption is real wage growth. Here the actuaries assume a growth rate that is over twice that observed, on average, over the past quarter century.

Under more pessimistic, but arguably more realistic assumptions, a more-than-6-percentage-point (close to a 50 percent) immediate and permanent payroll tax hike is needed to ensure that the present value of all future OASDI taxes plus the combined OASDI trust funds equal the present value of all future OASDI benefits. If such tax hikes are not enacted in the short term, even larger tax hikes will be required in the long term. Alternatively, Social Security benefits will have to be dramatically reduced.

Alternative OASI Reforms

The first two of the ten policies considered here were also examined in Caldwell, et. al. (1999). These are an immediate and permanent 38 percent increase in the OASI payroll tax rate and an immediate and permanent 25 percent cut in all OASI benefits. The benefit cut policy generates roughly the same amount of saving in present value as the tax hike. Our third policy is entitled "Accelerated Increase in the NRA." This policy raises the normal retirement age by 6 months per year after the year 2000 until the normal retirement age is raised to 70 by the year

2010.[12] Policy 4 uses the CPI, rather than the OASI nominal wage index, to index average monthly covered earnings in forming recipients' Average Indexed Monthly Earnings (AIME). Unlike the OASI nominal wage index, which reflects both inflation and improvements in labor productivity, the CPI index reflects only inflation. Hence, in placing past earnings on an equal footing with current earnings, CPI indexing provides a credit against inflation during the interim years, but none for productivity growth. Because productivity growth is generally positive, this method reduces progressively the contribution of earnings that accrued earlier during a workers lifetime and results in a lower AIME. A lower AIME, in turn, yields a lower Primary Insurance Amount (PIA)—the retirement benefit that the worker would receive if he or she begins to collect at the applicable normal retirement age (NRA). Note that this policy does not alter the scheduled growth in the bend-points used in calculating workers' PIAs from their AIMEs.[13]

Our fifth policy maintains the current formula for calculating initial benefits, but once these benefits commence, they increase over time, not by the CPI, but by the CPI minus one percent. Policy 6 is called "Stabilize Real Per Capita Benefits." This policy calculates retirees' primary insurance amounts as prescribed by current law, but then reduces these amounts by post-year-2000 growth in labor productivity. This growth reduction factor means that real OASI benefit levels do not keep pace with economy-wide increases in labor productivity and real wages. Policy 7 maintains the current benefit formula in all respects except one: it grows the bend points used in the calculating PIAs according to inflation rather than according to the growth in the OASI wage index. Consequently, as real wages grow, successive generations of retirees will find themselves experiencing real "bracket creep," meaning that an ever larger percentage of retirees will have their benefits computed using the less progressive parts of the benefit formula.

[12] Those achieving age 65 during the year 2001 are assigned a normal retirement age (NRA) of 65 years and 6 months; those achieving age 65 during the year 2002 are assigned NRA=66, and so on, until the NRA reaches 70.

[13] The PIA equals 90 percent of the first X dollars of AIME plus 32 percent of the AIME exceeding X dollars but less than Y dollars plus 15 percent of the AIME in excess of Y dollars. The nominal values X and Y (the bend-points) are announced each year by the Social Security Administration and are scheduled to increase at the rate of growth of average wages lagged by two years. For example, the bend points for 1999 are obtained by multiplying the corresponding 1979 bend- point amounts by the ratio between the national average wage index for 1997 ($27,426) and that for 1977 ($9,779.44). These results are then rounded to the nearest dollar.

Policy 8 eliminates the ceiling on taxable earnings, but does not alter the method of determining benefits. So earnings that are above what would otherwise be the ceiling will be included by OASI in the calculation of benefits. Policy 9 is equivalent to policy 8 except for this last feature – it collects taxes without any earnings ceiling, but calculates benefits based on the existing earnings ceiling provisions that apply to the future as well as the present. The final policy, 10, increases the years used in computing covered workers' AIME from 35 to 40 years.

Impact of the Alternative Policies on OASI's Unfunded Liability to Postwar Americans

As mentioned, policies 1 and 2 (the 38 percent immediate and permanent hike in the OASDI tax rate and the 25 percent immediate and permanent benefit cut) both suffice, under the Social Security actuaries' intermediate assumptions, to bring the system's finances into present value balance when its future net cash flows are discounted at a 3 percent real rate of return; i.e., both policies generate approximately $8 trillion more in net taxes when measured in present value. These additional net taxes would be paid not just by postwar Americans, but also by other Americans either alive now or expected to be born in the future.

Table 7 shows how these two policies as well as our other eight would affect the net taxes (taxes minus benefits) that postwar Americans will pay, measured in present value. The first row of this table indicates that, under current policy, postwar Americans' future benefits exceed their future taxes by about $1.2 trillion; i.e., the present value of postwar Americans' future net taxes is negative. This is hardly surprising given that the baby boom generation is nearing retirement.

Although OASI's $1.2 trillion unfunded net OASI liability to postwar Americans is large, it represents less than 15 percent of the total $8.1 trillion present value budget gap identified above. Thus, the overwhelming majority of OASI's present value imbalance consists not in obligations to postwar Americans, but in obligations to the Americans born before 1945—most of whom are now retired.

As Table 7 indicates, all ten of the policies reduce the system's liability to postwar Americans. Indeed, eight of the ten policies wipe out the liability entirely; of these, six transform

postwar Americans' net tax payments into a major implicit asset of the system by making their future benefits far smaller in present value than their future taxes. Take policy 1 – the 38 percent tax hike. This policy reduces the unfunded net OASI liability to postwar Americans by over $4 trillion! A more direct way of saying this is that this policy forces postwar Americans to resolve, on their own, almost 50 percent of the system's current long-term fiscal imbalance. The same can be said of policies 2, 6, and 9.

Lifetime Net Tax Rates Under Alternative Policies

Tables 8 through 10 show the impact on lifetime net tax rates of our 10 different methods of dealing with OASI's long-term funding shortfall. These tables present results for all members of Cohorts 45, 70, and 95, cross-classified by lowest, middle, and highest quintiles of lifetime earnings. They also consider three different real discount rates -- our benchmark rate of 5 percent, a high rate of 7 percent and a low rate of 3 percent. The Appendix to this paper, which is posted at http://econ.bu.edu/faculty/kotlikoff as well as the http://www.NBER.org, shows results broken down by demographic subgroup.

Look first at the 5 percent discount rate results for policies 1 and 2 in Table 8. Implementing either policy would raise the lifetime net tax rates of all postwar generations. But the two policies have quite different intergenerational incidence. The tax hike hits later generations much harder than it does earlier ones. The benefit cut affects all generations roughly the same. Consider Cohorts 45 and 96. The tax hike policy raises Cohort 45's lifetime net tax rate from 5.3 percent to just 5.7 percent, but it raises Cohort 95's lifetime net tax rate from 5.4 to 8.4 percent. In contrast, the benefit cut policy leaves Cohort 45's and 95's lifetime net tax rates at 6.0 percent and 6.1 percent, respectively. Clearly, earlier generations fare better under the tax hike because they have limited remaining labor earnings that are subject to the higher payroll tax rate. In the case of the benefit cut, all generations are similarly hurt because none has yet begun to receive Social Security retirement benefits, which is the lion's share of OASI benefits.

Both of these policies are tougher on the lifetime poor than on the lifetime rich in terms of their impact on lifetime net tax rates. For those in the lowest quintile in Cohort 95, a 38 percent tax hike means losing close to 4 cents more per dollar earned to the system.[14] For their contemporaries in the highest quintile, the policy means losing only 2.6 percent more per dollar earned. Under the benefit cut policy, these differences are much more striking. The poorest one fifth of Cohort 95 lose 3.3 percent of their lifetime incomes, whereas the richest fifth lose only 0.4 percent. Finally, it's worth noting that for the bottom quintile in Cohort 95, both the tax hike and benefit cut policies transform OASI from a net subsidy into a net tax.

How do policies 3 through 10 compare with policies 1 and 2? In terms of their impact on lifetime net tax rates, the answer is that they fall between policies 1 and 2. Several points are, however, worth stressing. First, policy 3 (the accelerated increase in NRA) hurts older cohorts more than younger cohorts. For example, the overall increase in the lifetime net tax rate for Cohort 45 is 0.6 whereas it is only 0.4 for Cohort 95. This occurs because current rules already incorporate an increase in the NRA.[15] The acceleration of the increase in NRA hits those about to retire in the near future particularly hard. For example, those reaching age 65 in 2010 would have a normal retirement age of 66 under current rules, but 70 under policy 3. In contrast, the NRA of those reaching age 65 after 2022 will increase from 67 under current rules to 70 under policy 3.

Second, policies 6, 7, 8, and 9 ("Stabilize Real Per Capita Benefits," "Eliminate Earnings Ceiling," and "Eliminate Earnings Ceiling without Benefit Change") hurt younger cohorts much more than older ones. Policy 6 eliminates the real growth in benefits under the current system associated with economy-wide productivity growth. Hence, later retiring generations, whose benefits would otherwise be higher than of those retiring earlier, lose the most from this policy. As mentioned earlier, policy 7 imposes bracket creep: slower growth in nominal bend point values exposes a greater fraction of each person's AIME to the relatively progressive regions of the PIA

[14] This percentage point increase precisely equals that required for eliminating the OASI imbalance.
[15] Under current rules, the NRA is scheduled to increase from 65 for those who will achieve age 65 in 2002 or earlier to 66 for those who will achieve age 65 between the years 2007 and 2019. Thereafter, the NRA will increase from 66 for those achieving age 65 before the year 2020 to 67 for those achieving age 65 in 2025.

formula. Under policy 8, the incremental lifetime earnings subject to payroll taxes are much larger for younger than for older generations because a greater fraction of the former generations' working lifetimes lies the future. However, because of the progressive benefit formula, younger generations' benefits do not keep pace with the increase in their lifetime payroll taxes. The effect is even more pronounced when benefits are held constant under policy 9.

Third, policy 6 (and, to a lesser extent, policy 7) is extremely tough on poor members of young cohorts. For the bottom quintile of Cohort 95, policy 6 transforms OASI's 2.9 percent of lifetime earnings net subsidy into a 6.8 percent net tax and leaves this quintile with a higher net tax rate than the top quintile! Note that this policy has a much bigger impact than does policy 4 – "CPI Indexing of Covered Earnings" – on the lifetime net tax rates of poor members of young cohorts. The same can be said of middle and upper-income young cohort members. The reason is that policy 6 directly eliminates all growth in benefits due to overall real wage growth, whereas policy 4 works by reducing the AIME. For those at the upper range of the distribution of lifetime earnings, a 1 percent reduction in the AIME translates into only a 0.15 percent reduction in benefits under policy 4. Policy 7 – "Freeze Bend Points in Real Terms" – is particularly damaging to the lifetime poor because it pushes them into lower marginal benefit brackets.

Fourth, policy 9—raising the earnings ceiling without concomitant benefit increases (without permitting the higher covered earnings to be including in the calculation of AIME)—is particularly grievous on young cohort members in the highest lifetime earnings quintile. As can be verified in the bottom panel of Table 8, policy 9 raises the lifetime net tax rate of Cohort 95's top 20 percent of lifetime earners by 3.3 percentage points. In contrast, the poorest members of this cohort experience no change in their lifetime net tax rates.[16]

Fifth, policy 10 – "Increase Computation Years from 35 to 40 – leaves unchanged the lifetime net tax rates of the top earning quintiles, whereas it raises those of the lowest and middle

[16] In the case of policy 8, the lowest quintiles in all cohorts experience declines in their lifetime net tax rate. The explanation is that many of the observations in these quintiles receive benefits based on their spouse's earnings record and these benefits go up when all of their spouses' earnings are included in the calculation of dependent and survivor benefits, not simply their spouses' earnings up to the covered earnings ceiling.

quintiles. The lowest quintile in each cohort is especially hard hit. The reason is that members of this quintile have many years in their earnings histories during which they don't work. Including those years in calculating AIME lowers their AIMEs and, thus, their benefit levels.

The Sensitivity of the Results to the Choice of Discount Rates

Tables 9 and 10 repeat the analysis of Table 8, but assume discount rates of 3 and 7 percent, respectively. Comparing the same policy across the three tables indicates that the level of lifetime net tax rates is highly sensitive to the choice of discount rates. For example, under current law and assuming a 3 percent discount rate, the lifetime net tax rate of the lowest lifetime earnings quintile in Cohort 70 is –17.9 percent. Assuming a 5 percent discount rate, it is –3.4 percent, and assuming a 7 percent discount rate, it is 3.4 percent. Hence, a 400 basis point swing in the choice of the discount rate transforms the OASI system from a huge net subsidy to the poor to a small net tax. The same experiment – moving from a 3 percent to a 7 percent discount rate raises the current-rules lifetime net tax rate of the middle quintile from .8 percent to 7.8 percent – a very dramatic increase.

In contrast, for the highest quintile in Cohort 70, the absolute increase in the lifetime net tax rate (in moving from a 3 to a 7 percent discount rate) is only 2.5 percentage points. One reason for this difference is that the lifetime poor have shorter workspans. This makes the denominators of the lifetime net tax rates of the poor less sensitive to the discount rate than the numerators, which makes the net tax rate itself more sensitive. A second reason is that the lifetime poor are paying relatively little in OASI taxes, compared to the benefits they receive. This means that changes in the discount rate change the present value of benefits by substantially more than they do the present value of taxes. This point becomes crystal clear when one considers the case in which taxes equal benefits on an annual basis. In this case, the lifetime net tax rate is zero regardless of the discount rate.

Given the substantial sensitivity of the calculated lifetime OASI net tax rates to the assumed discount rate, it's worth pondering which discount rate is most appropriate to use in this

context. The answer depends on one's view of the risk of OASI taxes and transfers. If one views these flows as no more risky than, say, the repayment of government debt, the appropriate discount rate would be the real return offered by inflation-indexed treasury bonds. If, one the other hand, these flows are not only risky, but they fluctuate in line with the stock market, then the expected return on the stock market would be the appropriate benchmark. In the former case, a real discount rate of between 3 and 4 percent would be justified. In the later case, a rate around 7 percent should be chosen.

As Baxter and King (1999) have recently pointed out, the method of wage-indexing social security benefits and the positive correlation between real wage growth and the stock market, suggests that both social security taxes and benefits move with the stock market. On the other hand, there are ample examples of changes in social security benefit rules that have not coincided with stock market fluctuations. How these political risks would affect the appropriate rate at which to discount social security benefits is a subject on which we are currently doing research.

Lifetime Net Tax Rates of Demographic Groups Under Alternative Policies

The male and female results, based on the benchmark 5 percent discount rate, are displayed in Appendix Tables 1 and 2. These tables show the same general patterns across policy alternatives as Table 8. Males and females would generally rank the policy alternatives in the same way, provided they were in the same earnings quintile within the same cohort. Take Cohort 95. For middle-income males in this group, the tax hike policy produces the highest net tax rate – 9.8 percent. For the bottom quintile males, policy 6 – "Stabilize Real Per Capital Benefits" is the worst, leaving this group facing a 7.9 percent lifetime net tax rate—a full 1.3 percentage points higher than the corresponding rate facing those in the top quintile of this cohort. And for the top quintile of males, eliminating the earnings ceiling with no benefit change is the worst alternative, producing an 8.7 percent lifetime net tax rate. Middle quintile and bottom quintile females are both harmed the most by policy 6, but in the case of middle quintile females, the tax hike policy is

almost as bad. And like the top quintile males, the top quintile females find policy 9 the worst overall.

Whites and non-whites within the same cohort and quintile would also rank the policy changes the same. This is also the case for the college- and non college-educated. As Appendix Tables 3 through 6 confirm, the really adverse policies for Cohort 45 members, regardless of their race or education, are policy 2 (immediate benefit cut) and policy 1 (accelerated increase in NRA). For those in the middle quintile of Cohort 95, policies 1 (tax hike) and 6 (stabilization of real per capita benefits) are the worst policies independent of race and education. If, on the other hand, one doesn't control for quintile, it's clear that certain policies that are worse for the rich are better for non-whites than whites and for the non-college-educated than for the college-educated because the former groups are over-represented in the lower quintiles. Policy 9—eliminating the earnings ceiling without altering benefit calculations—is an example. For Cohort 95, this policy would lower the non-white/white and non college-educated/college-educated lifetime net tax rate differentials from 0.7 to 0.1 and from 0.8 to –0.5 percent, respectively.

Appendix Tables 7 and 8 show the impact of the proposed reforms on college-educated, white males, on the one hand, and non-college-educate, non-white females on the other. Again, how individual members of these groups fare is primarily a matter of their cohort, their quintile, and the policy selected. But if one fails to consider quintile position, policies 8 and 9 are particularly detrimental to white, college-educated males relative to non-white, non college-educated females.

Internal Rates of Return Under Alternative Policies

Table 11 considers how the ten policies alter internal rates of return. With the exception of the benefit cut and accelerated increase in normal retirement age policies, the reforms produce rather small changes in overall internal rates of return for Cohort 45. But for Cohort 95, the story is quite different. Six of the ten policies reduce the overall internal rate of return by 0.5 or more

percentage points. Policy 6, which stabilizes real benefits, produces a negative 2.3 percent rate of return. This is to be expected given that the policy cuts initial benefits based on a compound productivity growth factor.

Higher earners in all three cohorts experience the sharpest reductions in internal rates of return. In Cohort 95, four of the ten policies reduce the internal rates of return of those in the top quintile by 0.9 percentage points or more. Policy 6 lowers the internal rate of return of those in the top quintile in Cohort 95 from 0.6 percent to –3.8 percent! Of the ten policies, 8 leave top quintile earners in Cohort 95 with negative to very close to zero rates of return.

While all ten policies substantially lower rates of return earned by the lifetime rich, only policy 6 dramatically reduces the rate of return earned by the lifetime poor and only in the case of Cohort 95. Take, as an example, the tax hike policy. For the bottom quintile in Cohort 95, the internal rate or return declines from 5.7 percent to 4.8 percent. Although this may seem small, its also consistent with Table 7's finding that the policy raises this group's lifetime net tax rate by 3.8 percentage points—not a small amount. The point that must be kept in mind, then, is the standard one about the power of compound interest; in this context, it means that small differences in internal rates of return can translate into very large differences in lifetime net tax rates.

As expected, policy 9 -- eliminating the earnings ceiling without changing benefits -- significantly reduces the internal rates of return for those in the highest quintile, especially for later-born cohorts. The patterns shown in Table 11 are reproduced to varying degrees in Appendix Tables 9 through 16, which break down the policy effects on internal rates of return by demographic subgroup. Policy 3 — the accelerated increase in NRA — impacts older men more than older women, but the same is not true for younger men versus younger women. For example, (not controlling for quintile) the internal rate of return falls by 0.9 percentage points for

men but only by 0.5 percentage points for women in Cohort 45. In contrast, the corresponding changes are 0.6 percentage points for men and 0.5 percentage points for women in Cohort 95. This result may arise because the longevity difference between men and women is greater for Cohort 45 than for Cohort 95. As a result, postponing the normal retirement age affects men more than women in the older cohort, but this effect is not as pronounced for younger men versus women. Appendix Tables 9 through 16 reveal no other significant differences across demographic groups with respect to the manner in which internal rates of return respond to particular policy changes.

Implicit Wealth Tax Rates Under Alternative Policies

Table 12 shows how OASI implicit wealth taxes, calculated at a 5 percent discount rate, would be altered by the ten policies. Each policy would raise implicit tax rates for all postwar cohorts, but for the oldest cohorts, the effects would be small. In the case of Cohort 45, the current rules implicit tax rate is 66.3 percent. Policy 2 – the explicit benefit cut – produces the largest increase in this tax rate, but the increase is only to 74.8 percent. For Cohort 95, the implicit tax rate under current law is 65.8 percent. Policy 6 generates the biggest increase in this tax rate – to 91.5 percent; policy 2 generates the second biggest increase – to 75.2 percent.

The increases in implicit wealth tax rates are more dramatic for the bottom quintile of Cohort 95. This quintile faces a negative current rules tax rate equal to –28.9 percent, meaning the government is returning in benefits 1.289 cents per dollar paid in taxes. Policies 1, 2, and 6 reverse the sign of this group's implicit tax rate. Indeed, policy 6 raises the tax rate all the way to 67.1 percent. For the top quintile in Cohort 95, six of the policies generate implicit wealth tax rates in excess of 80 percent; policy 6 imposes an implicit tax rate of 94.4 percent. Appendix

Tables 17 through 24 provide demographic breakdowns of these results. As in the case of lifetime net tax rates and internal rates of return, the basic patterns of policy impacts experienced by the overall samples in each cohort carry over to the demographic subgroups.

Tables 13 and 14 consider how the implicit wealth tax rates would differ when calculated based on either a 3 percent or a 7 percent real discount rate. The answer is enormously. Under current rules, the lowest quintile of Cohort 70 faces a negative 175 percent implicit tax rate when the discount rate is 3 percent and a 33.5 percent implicit tax rate when the discount rate is 7 percent. For middle quintile members of Cohort 70, 77 cents of every dollar contributed to OASI is a tax if one accepts a 7 percent discount rate; only 9 cents of every dollar is a tax if one does the calculation with a 3 percent discount rate.

Benefit Reductions of Retirees by Quintiles of Average Social Security Benefits

Our final set of tables, Table 15 and Appendix Tables 25 through 32, show how the various policies alter the average OASI benefits received by a subset of observations in Cohorts 45, 70, and 90 — namely, those who receive benefits for at least one year after reaching age 62. In these tables, rather than classify observations within the three cohorts on the basis of lifetime earnings quintiles, we sort the observations based on quintiles of average OASI benefits received after reaching age 62. Before sorting the observations, we calculate for each observation the average amount of benefits received (in 1998 dollars) over just the years in which the observation is age 62 or older and actually receives benefits. Since roughly 40 percent of retired American households appear to be living almost exclusively from Social Security benefits, the lowest quintile of Social Security benefit recipients represents individuals for whom Social Security income is critically important.

Under current rules, average benefits are generally higher in constant 1998 dollars for later retiring cohorts—reflecting the projected growth in benefits due to real wage growth. This statement is not true for those in the lowest quintile of average benefits, presumably because this cohort (and others close to it) will bear the brunt of the increase in the NRA already scheduled to occur during the first two decades of the next century.

Among the 10 policies considered here, policies 1 and 9 do not affect OASI benefits at all. Policy 2 generates precisely what it's supposed to: a 25 percent benefit cut across all cohorts and quintiles. Policy 3 — the accelerated increase in NRA — reduces benefits by less than policy 2 across all cohorts and quintiles. It hurts earlier born generations by more because, given the increase in NRA already scheduled under current rules, policy 3 exposes these cohorts to a larger increase in NRA compared to later born generations. Although in dollar terms policy 3 hurts those in the highest quintiles the most, it reduces the benefits of the benefit-poor by more in percentage terms. For Cohort 95 for example, it reduces the average benefit by $921—a 19 percent reduction—at the lowest quintile and by $3338—a 12 percent reduction—at the highest quintile of average benefits.

Policy 4—CPI indexing of Covered Earnings—exhibits a similar pattern across quintiles as policy 2. In percentage terms, it harms the benefit-poor by more than the benefit-rich. In this case, however, the reason is that a marginal reduction in the AIME of better-off individuals does not translate into a proportional reduction in their benefits because they face lower marginal PIA rates. Policy 5—Indexing benefits by CPI minus 1 percent—yields the most uniform percentage reduction in average benefits across all cohorts and quintiles—of about 11 percent. At 75 percent, policy 6—Stabilizing Real Per Capita Benefits—generates very large benefit reduction

for Cohort 95. The reduction is a sizable 40 percent for Cohort 70 and is only 11 percent for the oldest cohort. The percentage reductions for the respective cohorts are uniform across quintiles.

As expected, policy 7 generates a larger percentage benefit reduction for the youngest cohort—about 20 percent overall. As mentioned earlier, this occurs because the bracket-creep effect is most severe for later born generations. Policy 8 leads to an *increase* in future benefits for the middle and highest quintiles of all cohorts but this effect is strongest in percentage terms for members of the highest quintile of Cohort 70. Their average annual benefit (conditional on receiving a benefit) increases by more than $7,000 — an increase of 35 percent over that under current rules. Finally, policy 10 — increasing Computation Years from 35 to 40 — leads to fairly modest reductions in average benefits across all cohorts and quintiles. Tables 36 through 43 report reductions in average benefits by demographic group. The benefit reductions in these tables are similar to those in table 35.

VI. Summary and Conclusion

This paper uses CORSIM, a dynamic microsimulation model developed by Steven Caldwell and his colleagues, and Economic Security Planner's detailed Social Security benefit calculator to study how potential reform of Social Security's Old Age Survivors Insurance (OASI) program would affect postwar Americans. We consider ten alternative reforms including a major and immediate increase in the OASI tax rate, a major and immediate cut in benefits, an accelerated increase in the age of normal retirement, two alternative methods of moving from wage-indexed to price-index benefits, and the elimination of the ceiling on taxable payroll. We present results for different postwar cohorts and different lifetime earnings groups within those

cohorts and decomposed these results by sex, race, and education. We also demonstrate the sensitivity of certain of our results to the choice of real discount rate.

Our measures of the impacts of reform are four: how the reforms alter OASI lifetime net tax rates, internal rates of return, implicit wealth tax rates, and average benefit levels received by retirees. Regardless of which measure we examine, the message of our paper is clear: reforms to the OASI system of the type needed to bring the system's finances into present value balance are likely to greatly worsen OASI's treatment of postwar Americans. Although sex, race, and education play a role in determining current and prospective OASI treatment of postwar Americans, the primary determinant of this treatment is an individual's cohort and position in the distribution of lifetime earnings.

The youngest postwar generations have the most to worry about in this regard since tax increases will affect them over their entire working careers and benefit cuts will be fully phased in when they retire. Under current law, today's newborns are slated to surrender 5 cents of every dollar earned to the OASI system in taxes paid net of benefits received. That lifetime net tax rate could rise as high as 8 percent under some of the reforms being contemplated by Social Security's actuaries. For the poorest members of today's newborn generation, a number of the reforms would transform the system from a net subsidy to a net tax. And for the richest members of today's newborn generations, some of the reforms translate into large negative internal rates of return on contributions and implicit wealth taxes of close to 100 percent.

To conclude, none of the reforms that the OASI system is likely to adopt will be pleasant. But some reforms are more even handed than are others with respect to their distribution of additional fiscal burdens both across and within generations. Microsimulation analysis of the kind presented here can help policymakers better sugarcoat what will inevitably be a bitter pill.

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Table 1: Number of Observations by Average Benefit Quintiles

	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All
Birth Cohort			All				White				Non-White	
1945-49	826	826	827	4131	747	723	761	3702	79	103	66	429
1950-54	996	996	996	4980	883	862	887	4372	113	134	109	608
1955-59	1174	1174	1176	5872	1028	1020	1073	5200	146	154	103	672
1960-64	1063	1063	1064	5316	920	926	949	4637	143	137	115	679
1965-69	970	970	972	4852	843	811	864	4142	127	159	108	710
1970-74	945	945	945	4725	801	781	810	3971	144	164	135	754
1975-79	927	927	928	4636	772	780	772	3840	155	147	156	796
1980-84	1055	1055	1057	5277	864	885	896	4398	191	170	161	879
1985-89	1122	1122	1125	5613	915	944	952	4664	207	178	173	949
1990-94	1141	1141	1145	5709	893	949	986	4634	248	192	159	1075
1995-00	1260	1260	1264	6304	970	997	1072	5027	290	263	192	1277
Birth Cohort			Men				College				Non-College	
1945-49	222	410	545	1951	197	216	360	1282	629	610	467	2849
1950-54	302	426	636	2295	273	295	447	1680	723	701	549	3300
1955-59	382	504	735	2725	306	416	515	2040	868	758	661	3832
1960-64	341	425	646	2422	296	366	526	1992	767	697	538	3324
1965-69	340	427	601	2281	316	388	477	1924	654	582	495	2928
1970-74	329	398	584	2224	342	414	514	2085	603	531	431	2640
1975-79	301	401	543	2143	329	416	512	2080	598	511	416	2556
1980-84	353	494	665	2527	395	483	614	2467	660	572	443	2810
1985-89	355	481	714	2580	426	495	652	2601	696	627	473	3012
1990-94	361	490	731	2665	416	542	641	2600	725	599	504	3109
1995-00	397	555	839	3051	442	604	747	2938	818	656	517	3366
Birth Cohort			Women				Men, White, College				Women, Non-White, Non-College	
1945-49	604	416	282	2180	51	97	238	616	41	34	10	161
1950-54	694	570	360	2685	80	118	290	780	60	50	29	240
1955-59	792	670	441	3147	82	165	303	889	62	61	25	253
1960-64	722	638	418	2894	79	112	297	809	67	56	29	244
1965-69	630	543	371	2571	78	137	276	763	44	57	26	231
1970-74	616	547	361	2501	102	130	283	831	52	49	26	222
1975-79	626	526	385	2493	83	132	269	803	53	45	43	247
1980-84	702	561	392	2750	95	186	339	999	58	63	35	263
1985-89	767	641	411	3033	101	187	379	1060	77	53	47	290
1990-94	780	651	414	3044	96	194	381	1038	99	54	42	343
1995-00	863	705	425	3253	85	202	463	1209	129	76	48	402

Source: Author's calculations.

Table 2: Average Age of Death by Average Benefit Quintiles

	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All
Birth Cohort			All				White				Non-White	
1945-49	81.1	83.3	83.3	83.0	81.2	83.4	83.2	83.0	80.5	82.8	84.5	83.1
1950-54	81.5	83.6	83.6	82.9	81.7	83.7	83.6	83.0	80.2	83.3	83.7	82.3
1955-59	81.9	84.4	84.1	83.5	81.8	84.5	84.0	83.4	82.6	84.3	84.9	83.8
1960-64	81.6	84.3	84.8	83.6	81.8	84.4	84.7	83.7	79.9	83.7	85.5	83.2
1965-69	82.6	84.4	85.0	84.1	82.5	84.4	84.9	84.1	82.8	84.5	85.9	84.3
1970-74	82.3	85.0	84.9	84.2	82.3	85.2	84.7	84.3	82.5	84.1	86.2	84.0
1975-79	83.0	85.9	85.6	84.6	83.1	85.7	85.7	84.5	83.0	87.1	85.3	84.7
1980-84	83.4	85.0	85.5	84.6	83.7	85.0	85.4	84.6	82.0	85.3	86.0	84.6
1985-89	82.9	85.9	85.8	84.9	83.0	85.8	85.8	84.9	82.6	86.1	85.7	84.7
1990-94	83.2	85.5	85.5	84.6	83.3	85.4	85.5	84.6	82.9	85.6	86.0	84.3
1995-00	83.0	84.5	83.7	83.8	83.0	84.9	83.8	83.9	83.0	83.3	83.3	83.5
Birth Cohort			Men				College				Non-College	
1945-49	77.7	81.1	81.6	80.9	82.2	83.6	83.7	83.9	80.8	83.2	83.0	82.6
1950-54	77.6	80.9	81.6	80.7	81.7	84.1	83.8	83.4	81.4	83.5	83.4	82.6
1955-59	79.0	82.2	82.3	81.3	82.4	84.2	84.8	84.0	81.7	84.5	83.5	83.2
1960-64	79.0	82.3	82.9	81.6	81.3	84.8	85.5	84.5	81.6	84.0	84.1	83.1
1965-69	79.8	82.5	83.3	82.0	82.6	84.2	85.6	84.6	82.6	84.5	84.5	83.8
1970-74	79.7	82.9	83.4	82.1	83.3	86.1	84.7	84.7	81.8	84.2	85.1	83.8
1975-79	80.0	83.8	83.6	82.5	83.7	86.7	86.3	85.5	82.7	85.2	84.8	83.9
1980-84	80.3	82.8	83.8	82.4	83.3	85.7	85.9	84.9	83.4	84.5	84.9	84.3
1985-89	79.4	84.1	84.2	82.9	83.6	86.2	85.9	85.4	82.5	85.5	85.6	84.4
1990-94	81.1	82.8	84.0	82.7	83.4	85.8	85.7	84.9	83.1	85.1	85.3	84.2
1995-00	81.1	82.7	82.6	82.2	83.4	84.8	83.9	84.2	82.8	84.3	83.4	83.4
Birth Cohort			Women				Men, White, College				Women, Non-White, Non-College	
1945-49	82.4	85.5	86.5	84.8	78.6	81.6	81.6	81.6	80.0	88.1	82.7	83.3
1950-54	83.2	85.7	87.2	84.8	77.3	81.0	81.4	81.0	80.7	83.2	85.7	82.5
1955-59	83.3	86.1	87.1	85.4	79.8	82.1	82.6	82.0	85.6	85.0	86.5	85.3
1960-64	82.8	85.7	87.7	85.4	79.1	83.5	83.3	82.7	80.8	83.6	87.8	83.0
1965-69	84.0	85.9	87.8	85.9	79.6	82.5	83.6	82.5	85.3	84.2	89.0	85.9
1970-74	83.8	86.6	87.3	86.1	80.5	84.6	83.1	82.4	86.2	83.4	88.2	85.4
1975-79	84.5	87.5	88.4	86.4	80.1	84.9	84.5	83.4	83.2	87.1	87.3	85.4
1980-84	84.9	87.0	88.4	86.6	81.5	82.9	84.3	82.8	82.9	85.0	86.7	85.7
1985-89	84.5	87.2	88.4	86.6	79.9	84.2	84.6	83.5	83.3	86.5	85.6	85.4
1990-94	84.2	87.5	88.3	86.2	81.6	83.2	84.3	83.1	83.1	87.6	89.8	85.4
1995-00	83.9	86.0	85.9	85.3	81.3	83.8	83.2	82.8	83.7	86.0	84.1	84.5

Source: Author's calculations.

Table 3: Average Present Values Earnings by Average Benefit Quintiles (r=5%; thousands of 1998 dollars)

	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All
Birth Cohort	All				White				Non-White			
1945-49	103.2	295.3	1053.5	421.0	101.0	290.9	1060.2	425.2	123.5	326.3	975.7	385.0
1950-54	110.1	287.9	1056.2	419.0	107.7	288.0	1063.1	421.2	128.9	287.3	1000.4	403.3
1955-59	101.4	293.9	1252.9	463.3	102.3	296.4	1258.8	472.5	94.8	277.5	1191.0	392.6
1960-64	88.5	272.6	1441.5	495.8	90.8	268.3	1426.3	497.2	73.9	301.8	1566.9	485.9
1965-69	100.5	301.8	1403.6	501.4	104.4	299.8	1403.9	511.6	75.3	312.3	1401.2	441.8
1970-74	93.7	294.3	1466.5	512.4	92.5	293.3	1452.9	514.2	100.5	299.0	1548.2	503.2
1975-79	96.1	299.7	1487.1	525.6	97.5	306.2	1523.2	536.0	89.1	265.4	1308.4	475.0
1980-84	97.4	321.7	1659.4	575.6	95.8	320.5	1712.0	591.6	104.3	327.5	1366.9	495.6
1985-89	103.5	357.7	1727.4	597.0	105.2	353.9	1772.0	611.4	95.8	377.6	1482.2	525.9
1990-94	112.1	336.1	1720.2	598.0	112.7	329.9	1717.0	614.4	109.8	366.8	1740.1	527.3
1995-00	115.4	380.0	1804.4	643.1	117.2	375.6	1810.5	664.7	109.4	396.7	1770.5	558.0
Birth Cohort	Men				College				Non-College			
1945-49	162.9	355.9	1187.3	596.2	132.9	299.9	1148.8	544.7	93.8	293.7	980.0	365.4
1950-54	182.2	334.8	1185.4	578.0	139.8	281.0	1168.6	522.8	98.9	290.9	964.7	366.1
1955-59	140.4	343.6	1386.2	616.8	107.4	301.1	1382.6	565.3	99.3	290.0	1151.7	409.1
1960-64	114.6	310.3	1601.1	662.5	103.9	271.5	1584.2	633.3	82.5	273.1	1302.0	413.4
1965-69	148.2	330.4	1531.4	653.5	120.5	319.3	1498.1	597.8	90.9	290.2	1312.5	438.1
1970-74	126.4	334.0	1548.5	650.4	118.6	294.1	1564.6	615.7	79.6	294.5	1349.4	430.9
1975-79	140.3	344.0	1640.0	681.4	102.7	296.8	1542.5	615.0	92.5	302.1	1418.9	452.8
1980-84	132.9	352.4	1746.2	733.8	107.7	322.9	1762.2	686.4	91.2	320.6	1516.9	478.2
1985-89	136.8	390.9	1870.9	795.6	120.0	359.3	1769.4	700.2	93.4	356.4	1669.6	507.8
1990-94	155.5	366.2	1807.4	775.2	122.2	334.8	1855.9	716.0	106.3	337.2	1547.5	499.3
1995-00	158.3	408.0	1859.9	819.8	119.5	389.4	1941.9	780.4	113.1	371.5	1605.8	523.1
Birth Cohort	Women				Men, White, College				Women, Non-White, Non-College			
1945-49	81.2	235.6	794.8	264.2	230.9	360.8	1315.6	775.8	101.2	276.9	940.4	261.7
1950-54	78.8	252.9	827.9	283.1	228.5	338.4	1302.7	730.0	90.5	239.8	861.5	295.4
1955-59	82.6	256.6	1030.7	330.4	164.3	356.6	1561.2	779.7	85.5	255.7	1074.0	303.0
1960-64	76.2	247.4	1194.9	356.2	128.2	304.6	1747.1	872.3	70.1	277.9	1016.6	307.5
1965-69	74.8	279.4	1196.6	366.4	249.0	349.6	1675.9	854.2	55.4	290.2	1142.6	330.9
1970-74	76.3	265.5	1333.8	389.7	162.3	325.3	1648.7	797.3	87.8	282.2	1284.8	342.5
1975-79	74.8	265.9	1271.4	391.6	158.3	358.8	1760.6	851.7	79.5	261.5	1178.0	392.3
1980-84	79.5	294.6	1512.1	430.2	170.9	359.4	1863.3	904.5	97.4	309.3	909.6	363.0
1985-89	88.0	332.8	1478.2	428.0	186.5	408.3	1974.0	977.8	88.5	300.7	1289.0	420.9
1990-94	92.0	313.4	1566.2	442.8	206.1	352.0	1911.7	970.0	89.8	360.8	1415.0	411.0
1995-00	95.6	358.0	1694.9	477.3	174.5	418.6	1991.8	1054.4	82.9	368.1	1688.3	433.8

Source: Author's calculations.

Table 4: Lifetime Net Tax Rates (r=5%; current rules) by Average Benefit Quintiles (percent)

	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All
Birth Cohort		All				White				Non-White		
1945-49	3.9	5.7	4.7	5.0	3.9	5.7	4.7	5.0	3.9	5.9	4.8	5.2
1950-54	2.1	4.2	4.7	4.5	1.9	4.2	4.7	4.5	3.1	4.7	5.1	5.0
1955-59	2.3	4.8	4.8	4.8	2.5	4.7	4.8	4.8	1.0	4.9	5.1	5.0
1960-64	3.3	5.3	4.7	5.0	3.3	5.2	4.7	5.0	3.2	5.9	4.3	4.9
1965-69	2.8	5.5	5.2	5.3	2.9	5.4	5.2	5.3	2.3	6.2	5.3	5.6
1970-74	2.9	5.2	5.0	5.2	2.8	5.1	5.1	5.2	3.4	5.7	4.8	5.1
1975-79	2.7	5.1	5.1	5.2	2.7	5.1	5.0	5.2	3.0	5.0	5.7	5.6
1980-84	2.8	5.4	5.0	5.2	2.6	5.3	4.9	5.1	3.3	5.6	5.7	5.8
1985-89	2.7	4.7	4.8	4.9	2.7	4.6	4.7	4.8	2.9	5.3	5.2	5.3
1990-94	2.6	5.1	5.0	5.1	2.4	5.0	5.0	5.1	3.5	5.5	4.9	5.3
1995-00	2.1	5.3	5.0	5.1	2.0	5.1	4.9	5.0	2.6	6.1	5.6	5.6
Birth Cohort		Men				College				Non-College		
1945-49	4.4	6.4	5.0	5.5	4.0	5.1	4.5	4.7	3.8	5.9	4.9	5.2
1950-54	2.9	5.6	4.9	5.2	1.7	4.1	4.3	4.2	2.3	4.3	5.1	4.7
1955-59	3.0	5.7	5.0	5.4	2.4	4.6	4.4	4.6	2.3	4.9	5.3	5.0
1960-64	3.7	6.4	4.8	5.3	4.1	5.0	4.2	4.5	2.9	5.5	5.2	5.4
1965-69	3.0	6.4	5.4	5.7	3.0	5.5	4.8	5.0	2.7	5.5	5.6	5.6
1970-74	3.1	5.9	5.5	5.7	3.3	5.1	4.8	5.0	2.5	5.4	5.4	5.4
1975-79	3.4	6.0	5.4	5.7	2.8	4.8	5.0	5.1	2.7	5.3	5.4	5.4
1980-84	3.3	6.1	5.3	5.7	2.7	5.4	4.8	5.0	2.8	5.4	5.4	5.4
1985-89	3.4	5.2	4.9	5.2	3.2	4.7	4.6	4.8	2.3	4.7	5.0	5.0
1990-94	2.8	5.9	5.1	5.5	2.2	5.1	4.6	4.9	2.9	5.2	5.5	5.4
1995-00	1.9	6.0	5.1	5.4	2.2	5.2	4.7	4.9	2.1	5.4	5.6	5.5
Birth Cohort		Women				Men, White, College				Women, Non-White, Non-College		
1945-49	3.5	4.6	3.9	4.0	4.2	6.5	4.7	5.2	4.6	5.2	3.8	4.6
1950-54	1.2	2.9	4.1	3.4	2.1	5.4	4.4	4.7	3.2	3.2	4.8	4.2
1955-59	1.8	3.9	4.5	4.0	2.5	5.3	4.5	4.9	-.6	4.3	5.7	4.7
1960-64	3.0	4.4	4.4	4.4	3.5	5.8	4.4	4.8	2.1	6.0	5.9	5.7
1965-69	2.6	4.7	4.8	4.7	2.6	6.1	4.9	5.2	-.6	6.2	5.8	5.5
1970-74	2.7	4.6	4.3	4.4	2.9	5.6	5.2	5.5	2.9	5.1	4.8	4.8
1975-79	2.2	4.2	4.6	4.5	3.2	5.7	5.0	5.3	3.0	5.0	5.1	5.0
1980-84	2.3	4.6	4.3	4.4	3.1	6.1	5.0	5.4	3.5	5.4	6.6	5.8
1985-89	2.2	4.3	4.5	4.4	3.5	4.5	4.7	5.0	1.7	5.1	5.3	5.1
1990-94	2.5	4.4	4.6	4.6	1.8	5.9	4.9	5.2	3.6	4.4	5.4	5.1
1995-00	2.3	4.8	4.9	4.7	1.1	5.5	4.6	5.0	2.0	5.5	5.6	5.2

Source: Author's calculations.

Table 5: Internal Rates of Return (current rules) by Average Benefit Quintiles (percent)

	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All
Birth Cohort			All				White				Non-White	
1945-49	3.5	2.6	1.4	2.3	3.5	2.7	1.4	2.3	3.1	2.4	1.6	2.3
1950-54	4.0	3.1	1.5	2.4	4.1	3.1	1.5	2.4	3.4	2.9	1.5	2.3
1955-59	4.0	2.9	1.3	2.2	3.9	2.9	1.2	2.2	4.6	2.9	1.3	2.3
1960-64	3.7	2.9	1.2	2.1	3.7	2.9	1.2	2.1	3.9	2.5	1.3	2.1
1965-69	3.8	2.7	1.2	2.1	3.8	2.8	1.2	2.0	4.2	2.5	1.2	2.1
1970-74	3.9	2.9	1.2	2.1	3.9	3.0	1.2	2.1	3.6	2.7	1.4	2.1
1975-79	4.0	3.0	1.3	2.2	4.0	3.0	1.3	2.1	3.9	3.2	1.3	2.2
1980-84	4.0	2.9	1.3	2.1	4.1	2.9	1.2	2.1	3.7	2.8	1.4	2.1
1985-89	4.0	3.0	1.4	2.3	4.0	3.1	1.4	2.3	4.0	2.8	1.5	2.3
1990-94	4.0	3.1	1.4	2.2	4.1	3.1	1.4	2.3	3.7	2.8	1.4	2.2
1995-00	4.2	2.9	1.2	2.2	4.2	3.0	1.3	2.2	4.1	2.5	.8	2.0
Birth Cohort			Men				College				Non-College	
1945-49	2.2	1.8	.9	1.4	3.3	2.8	1.4	2.1	3.6	2.6	1.4	2.3
1950-54	2.7	2.1	.9	1.5	4.0	3.2	1.5	2.3	4.0	3.0	1.5	2.5
1955-59	3.1	2.1	.7	1.4	4.0	2.9	1.3	2.1	4.0	2.9	1.2	2.2
1960-64	3.0	2.1	.7	1.3	3.3	3.0	1.3	2.1	3.9	2.8	1.1	2.1
1965-69	3.1	2.1	.7	1.3	3.6	2.7	1.3	2.0	4.0	2.8	1.1	2.1
1970-74	3.2	2.3	.7	1.3	3.5	3.1	1.2	2.0	4.1	2.8	1.2	2.2
1975-79	3.1	2.3	.8	1.4	3.9	3.2	1.4	2.1	4.0	2.9	1.2	2.2
1980-84	3.3	2.3	.8	1.4	4.0	2.9	1.3	2.0	4.0	2.9	1.2	2.2
1985-89	3.1	2.5	1.0	1.6	3.7	3.1	1.4	2.2	4.2	3.0	1.3	2.3
1990-94	3.4	2.5	1.1	1.7	4.1	3.1	1.4	2.2	3.9	3.0	1.4	2.3
1995-00	3.9	2.4	1.0	1.6	4.2	2.9	1.3	2.1	4.2	2.9	1.2	2.2
Birth Cohort			Women				Men, White, College				Women, Non-White, Non-College	
1945-49	3.9	3.4	2.6	3.3	1.8	1.8	.8	1.2	3.1	3.0	1.8	2.9
1950-54	4.6	3.8	2.5	3.4	2.7	2.2	.9	1.4	3.7	3.5	2.0	2.9
1955-59	4.4	3.5	2.1	3.1	3.2	2.1	.7	1.3	5.2	3.2	1.4	2.8
1960-64	4.0	3.4	2.0	2.9	2.8	2.3	.7	1.2	4.3	2.6	1.5	2.4
1965-69	4.2	3.2	1.9	2.9	2.4	2.1	.7	1.2	5.2	2.6	1.6	2.6
1970-74	4.2	3.4	2.0	2.9	2.9	2.5	.6	1.2	4.0	2.8	1.8	2.7
1975-79	4.4	3.5	2.0	2.9	2.9	2.5	.9	1.4	4.1	3.2	1.8	2.6
1980-84	4.3	3.4	2.0	2.9	3.1	2.3	.8	1.3	3.8	2.9	1.7	2.6
1985-89	4.3	3.4	2.0	3.0	2.5	2.7	1.0	1.5	4.4	3.1	1.6	2.6
1990-94	4.2	3.5	1.9	2.9	3.6	2.6	1.1	1.5	3.9	3.2	1.8	2.6
1995-00	4.3	3.3	1.5	2.8	4.2	2.5	1.2	1.6	4.4	3.0	.9	2.5

Source: Author's calculations.

Table 6: Wealth Tax Rates (r=5%; current rules) by Average Benefit Quintiles (percent)

	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All	Lowest	Middle	Highest	All
Birth Cohort			All				White				Non-White	
1945-49	43.8	58.2	69.7	61.9	43.1	57.7	69.9	62.0	49.6	61.8	67.5	60.9
1950-54	30.2	49.3	68.6	58.7	27.9	48.9	68.5	58.4	44.8	51.8	69.4	60.6
1955-59	30.4	52.2	71.8	62.0	32.3	52.3	71.9	62.2	14.6	51.6	71.1	59.6
1960-64	37.5	53.6	73.1	64.1	38.1	52.8	73.2	64.1	33.2	58.4	72.5	63.9
1965-69	34.7	55.9	73.8	64.6	35.9	55.3	73.8	64.8	25.0	58.9	73.8	63.6
1970-74	34.0	53.1	73.4	64.1	33.0	52.4	73.5	64.1	38.9	56.5	72.4	63.9
1975-79	31.8	51.1	72.8	63.6	31.7	51.7	72.9	63.7	31.9	47.8	72.6	63.2
1980-84	30.7	53.3	73.2	63.9	29.1	53.1	73.4	64.0	37.4	54.5	72.3	63.7
1985-89	31.3	51.3	72.1	62.5	31.2	50.5	72.4	62.5	31.5	54.9	70.7	62.1
1990-94	31.0	50.6	71.1	62.0	28.9	49.7	71.0	62.0	38.0	54.8	71.5	62.2
1995-00	25.6	52.8	71.8	62.5	24.5	51.3	71.1	62.1	29.2	57.8	75.3	63.8
Birth Cohort			Men				College				Non-College	
1945-49	61.9	66.5	74.1	70.4	49.3	55.8	70.0	63.6	41.6	59.0	69.5	60.9
1950-54	54.0	61.5	73.0	68.1	30.8	47.8	68.5	60.1	29.9	50.0	68.7	57.9
1955-59	46.5	61.4	75.3	69.8	31.8	52.2	71.3	63.2	29.9	52.2	72.3	61.2
1960-64	49.0	62.2	76.5	71.0	46.8	52.2	72.3	64.6	33.1	54.3	73.9	63.7
1965-69	47.6	62.9	76.8	71.2	40.3	57.5	73.2	65.4	31.5	54.8	74.3	64.0
1970-74	45.0	60.5	76.7	70.7	42.2	51.3	73.5	65.3	27.9	54.5	73.3	62.9
1975-79	47.6	59.6	76.5	70.2	33.1	48.9	72.4	64.3	31.0	52.9	73.3	62.9
1980-84	43.9	59.8	76.1	70.1	31.8	53.3	73.2	65.4	30.0	53.3	73.3	62.3
1985-89	46.2	57.0	74.7	68.9	38.2	51.0	71.8	63.7	26.1	51.6	72.6	61.1
1990-94	41.7	57.7	73.0	67.6	28.8	49.9	71.1	63.3	32.2	51.3	71.1	60.8
1995-00	31.2	58.2	72.5	67.0	26.8	52.5	71.3	63.4	25.0	53.0	72.5	61.3
Birth Cohort			Women				Men, White, College				Women, Non-White, Non-College	
1945-49	34.5	46.3	57.1	46.0	67.1	66.6	74.6	71.9	49.7	51.7	62.3	51.0
1950-54	14.7	35.8	58.1	43.0	52.0	60.5	72.7	68.7	36.6	38.4	64.5	50.7
1955-59	20.5	42.8	64.5	49.8	45.3	61.1	75.3	70.7	-9.2	46.3	70.7	52.9
1960-64	31.2	46.0	66.3	54.1	51.4	59.0	76.1	71.6	22.6	56.4	69.0	59.2
1965-69	26.1	49.0	67.5	54.8	58.6	63.2	76.6	72.4	-5.3	57.6	70.6	56.6
1970-74	27.1	46.4	66.5	54.3	49.9	56.9	77.1	72.0	30.6	53.5	68.3	55.4
1975-79	21.6	42.6	66.2	54.0	50.1	58.2	75.7	70.8	29.0	47.0	67.7	56.7
1980-84	22.6	46.4	67.1	54.3	47.5	60.3	76.2	71.4	36.6	51.7	67.5	57.2
1985-89	23.2	46.3	66.6	53.1	55.0	54.7	74.7	69.8	18.8	49.0	69.4	57.0
1990-94	25.3	44.3	67.1	53.9	37.3	56.0	73.0	68.8	34.5	48.3	68.0	56.9
1995-00	23.0	47.8	70.2	55.4	22.1	55.9	71.0	67.0	19.4	52.1	74.9	58.6

Source: Author's calculations.

Table 7: Change in Social Security's Net Liability to Postwar Generations

	Policy	Present Value Imbalance	Change From Current Rules
	Current Rules	1172.9	
1	38% Tax Hike Beginning in 2000	-2874.0	-4046.9
2	25% Benefit Cut Beginning in 2000	-2004.3	-3177.2
3	Accelerated Increase in NRA	-1089.7	-2262.5
4	CPI Indexing of Covered Earnings	145.9	-1026.9
5	Index Benefits by CPI minus 1%	-231.0	-1403.9
6	Stabilize Real Per Capita Benefits	-3312.7	-4485.6
7	Freeze Bend Points in Real Terms	-194.9	-1367.7
8	Eliminate Taxable Earnings Ceiling	-1048.5	-2221.4
9	Eliminate Taxable Ceiling w/o Changing Benefits	-2276.7	-3449.6
10	Increase computation years from 35 to 40	737.9	-435.0

Source: Authors' calculations.

Table 8: The Impact of Potential OASI Reforms on Lifetime Net Tax Rates
All Observations (r=5%)

Quintile of Average Benefits:	Lowest	Middle	Highest	All
		Birth Cohort 1945-49		
1 Current Rules	-4.2	6.1	5.0	5.3
2 38% Tax Hike Beginning in Year 2000	-3.9	6.4	5.3	5.7
3 25% Benefit Cut Beginning in Year 2000	-.2	7.1	5.4	6.0
4 Acclerated Increase in NRA	-1.7	6.9	5.4	5.9
5 CPI Indexing of Covered Earnings	-3.0	6.4	5.1	5.6
6 Indexing Benefits by CPI Minus 1%	-2.5	6.5	5.1	5.6
7 Stabilize Real Per Capita Benefits	-2.3	6.6	5.2	5.7
8 Freeze Bend Points in Real Terms	-3.8	6.3	5.0	5.4
9 Eliminate Earnings Ceiling	-4.4	6.1	5.3	5.5
10 Eliminate Earnings Ceiling w/o Benefit Change	-4.2	6.1	5.4	5.6
11 Increase Computation Years from 35 to 40	-3.5	6.3	5.0	5.4
		Birth Cohort 1970-74		
1 Current Rules	-3.4	5.7	5.3	5.4
2 38% Tax Hike Beginning in Year 2000	-1.1	8.4	7.1	7.6
3 25% Benefit Cut Beginning in Year 2000	.0	6.9	5.7	6.1
4 Acclerated Increase in NRA	-1.6	6.5	5.6	5.9
5 CPI Indexing of Covered Earnings	-2.2	6.1	5.4	5.6
6 Indexing Benefits by CPI Minus 1%	-1.9	6.2	5.4	5.7
7 Stabilize Real Per Capita Benefits	1.9	7.5	5.9	6.5
8 Freeze Bend Points in Real Terms	-2.2	6.3	5.5	5.8
9 Eliminate Earnings Ceiling	-4.1	5.7	7.7	6.9
10 Eliminate Earnings Ceiling w/o Benefit Change	-3.4	5.7	8.2	7.3
11 Increase Computation Years from 35 to 40	-2.6	5.9	5.3	5.5
		Birth Cohort 1995-00		
1 Current Rules	-2.9	5.5	5.4	5.4
2 38% Tax Hike Beginning in Year 2000	.9	9.3	8.0	8.4
3 25% Benefit Cut Beginning in Year 2000	.4	6.7	5.8	6.1
4 Acclerated Increase in NRA	-1.3	6.2	5.6	5.8
5 CPI Indexing of Covered Earnings	-1.7	5.9	5.5	5.6
6 Indexing Benefits by CPI Minus 1%	-1.5	5.9	5.5	5.6
7 Stabilize Real Per Capita Benefits	6.8	9.0	6.6	7.5
8 Freeze Bend Points in Real Terms	-.9	6.4	5.7	5.9
9 Eliminate Earnings Ceiling	-3.3	5.5	8.2	7.1
10 Eliminate Earnings Ceiling w/o Benefit Change	-2.9	5.5	8.7	7.5
11 Increase Computation Years from 35 to 40	-2.2	5.7	5.4	5.5

Source: Author's calculations.

Table 9: The Impact of Potential OASI Reforms on Lifetime Net Tax Rates
All Observations (r=7%)

Quintile of Average Benefits:	Lowest	Middle	Highest	All
		Birth Cohort 1945-49		
1 Current Rules	4.7	8.4	5.9	6.9
2 38% Tax Hike Beginning in Year 2000	5.0	8.6	6.1	7.1
3 25% Benefit Cut Beginning in Year 2000	6.5	8.9	6.0	7.2
4 Acclerated Increase in NRA	5.9	8.8	6.0	7.2
5 CPI Indexing of Covered Earnings	5.2	8.6	5.9	7.0
6 Indexing Benefits by CPI Minus 1%	5.4	8.6	5.9	7.0
7 Stabilize Real Per Capita Benefits	5.6	8.7	5.9	7.0
8 Freeze Bend Points in Real Terms	4.9	8.5	5.9	6.9
9 Eliminate Earnings Ceiling	4.6	8.4	6.1	7.0
10 Eliminate Earnings Ceiling w/o Benefit Change	4.7	8.4	6.1	7.0
11 Increase Computation Years from 35 to 40	5.0	8.5	5.9	6.9
		Birth Cohort 1970-74		
1 Current Rules	3.4	8.1	6.2	6.9
2 38% Tax Hike Beginning in Year 2000	5.6	10.5	7.9	8.8
3 25% Benefit Cut Beginning in Year 2000	5.1	8.7	6.4	7.2
4 Acclerated Increase in NRA	4.3	8.5	6.3	7.1
5 CPI Indexing of Covered Earnings	4.0	8.3	6.2	7.0
6 Indexing Benefits by CPI Minus 1%	4.1	8.3	6.3	7.0
7 Stabilize Real Per Capita Benefits	6.1	9.0	6.5	7.4
8 Freeze Bend Points in Real Terms	4.0	8.4	6.3	7.0
9 Eliminate Earnings Ceiling	3.1	8.1	8.6	8.4
10 Eliminate Earnings Ceiling w/o Benefit Change	3.4	8.1	8.8	8.5
11 Increase Computation Years from 35 to 40	3.8	8.2	6.2	6.9
		Birth Cohort 1995-00		
1 Current Rules	3.7	7.8	6.3	6.9
2 38% Tax Hike Beginning in Year 2000	7.5	11.7	9.0	10.0
3 25% Benefit Cut Beginning in Year 2000	5.3	8.4	6.5	7.2
4 Acclerated Increase in NRA	4.5	8.2	6.4	7.1
5 CPI Indexing of Covered Earnings	4.3	8.0	6.4	7.0
6 Indexing Benefits by CPI Minus 1%	4.3	8.0	6.4	7.0
7 Stabilize Real Per Capita Benefits	8.5	9.6	6.9	7.9
8 Freeze Bend Points in Real Terms	4.7	8.3	6.5	7.2
9 Eliminate Earnings Ceiling	3.5	7.8	9.2	8.7
10 Eliminate Earnings Ceiling w/o Benefit Change	3.7	7.9	9.5	8.8
11 Increase Computation Years from 35 to 40	4.1	7.9	6.3	6.9

Source: Author's calculations.

Table 10: The Impact of Potential OASI Reforms on Lifetime Net Tax Rates
All Observations (r=3%)

Quintile of Average Benefits:	Lowest	Middle	Highest	All
		Birth Cohort 1945-49		
1 Current Rules	-23.0	1.9	3.3	2.5
2 38% Tax Hike Beginning in Year 2000	-22.5	2.4	3.8	3.0
3 25% Benefit Cut Beginning in Year 2000	-14.3	3.9	4.1	3.9
4 Acclerated Increase in NRA	-17.8	3.5	4.1	3.6
5 CPI Indexing of Covered Earnings	-20.3	2.5	3.5	2.9
6 Indexing Benefits by CPI Minus 1%	-18.8	2.7	3.7	3.1
7 Stabilize Real Per Capita Benefits	-18.9	2.8	3.7	3.1
8 Freeze Bend Points in Real Terms	-21.9	2.1	3.5	2.7
9 Eliminate Earnings Ceiling	-23.4	1.9	3.7	2.7
10 Eliminate Earnings Ceiling w/o Benefit Change	-23.0	1.9	4.0	2.9
11 Increase Computation Years from 35 to 40	-21.4	2.2	3.4	2.7
		Birth Cohort 1970-74		
1 Current Rules	-17.9	.9	3.7	2.7
2 38% Tax Hike Beginning in Year 2000	-15.5	3.9	5.6	5.0
3 25% Benefit Cut Beginning in Year 2000	-10.8	3.3	4.4	4.0
4 Acclerated Increase in NRA	-14.4	2.5	4.2	3.5
5 CPI Indexing of Covered Earnings	-15.3	1.7	3.9	3.1
6 Indexing Benefits by CPI Minus 1%	-14.4	2.0	4.0	3.3
7 Stabilize Real Per Capita Benefits	-7.0	4.7	4.8	4.7
8 Freeze Bend Points in Real Terms	-15.4	2.0	4.1	3.3
9 Eliminate Earnings Ceiling	-19.4	.8	5.9	4.0
10 Eliminate Earnings Ceiling w/o Benefit Change	-17.9	.9	6.8	4.7
11 Increase Computation Years from 35 to 40	-16.3	1.3	3.7	2.8
		Birth Cohort 1995-00		
1 Current Rules	-17.4	.8	3.7	2.5
2 38% Tax Hike Beginning in Year 2000	-13.5	4.6	6.3	5.5
3 25% Benefit Cut Beginning in Year 2000	-10.5	3.2	4.5	3.9
4 Acclerated Increase in NRA	-14.0	2.1	4.2	3.4
5 CPI Indexing of Covered Earnings	-14.8	1.5	3.9	3.0
6 Indexing Benefits by CPI Minus 1%	-14.1	1.7	4.0	3.1
7 Stabilize Real Per Capita Benefits	3.1	7.9	6.0	6.6
8 Freeze Bend Points in Real Terms	-13.1	2.5	4.4	3.6
9 Eliminate Earnings Ceiling	-18.3	.7	6.2	4.1
10 Eliminate Earnings Ceiling w/o Benefit Change	-17.4	.8	7.2	4.7
11 Increase Computation Years from 35 to 40	-15.9	1.1	3.8	2.7

Source: Author's calculations.

Table 11: The Impact of Potential OASI Reforms on Internal Rates of Return
All Observations

Quintile of Average Benefits:	Lowest	Middle	Highest	All
		Birth Cohort 1945-49		
1 Current Rules	3.5	2.6	1.4	2.3
2 38% Tax Hike Beginning in Year 2000	3.4	2.4	1.1	2.0
3 25% Benefit Cut Beginning in Year 2000	2.8	2.0	.5	1.4
4 Acclerated Increase in NRA	2.6	1.9	1.2	1.6
5 CPI Indexing of Covered Earnings	3.3	2.4	1.3	2.0
6 Indexing Benefits by CPI Minus 1%	3.5	2.4	.8	1.9
7 Stabilize Real Per Capita Benefits	3.2	2.4	1.0	1.9
8 Freeze Bend Points in Real Terms	3.4	2.6	1.3	2.2
9 Eliminate Earnings Ceiling	3.5	2.6	1.3	2.2
10 Eliminate Earnings Ceiling w/o Benefit Change	3.5	2.6	1.0	2.1
11 Increase Computation Years from 35 to 40	3.4	2.5	1.3	2.2
		Birth Cohort 1970-74		
1 Current Rules	3.9	2.9	1.2	2.1
2 38% Tax Hike Beginning in Year 2000	3.2	2.2	.4	1.3
3 25% Benefit Cut Beginning in Year 2000	3.2	2.1	.3	1.3
4 Acclerated Increase in NRA	3.2	2.2	.9	1.6
5 CPI Indexing of Covered Earnings	3.6	2.6	1.0	1.9
6 Indexing Benefits by CPI Minus 1%	4.0	2.6	.6	1.7
7 Stabilize Real Per Capita Benefits	2.7	1.5	-.3	.7
8 Freeze Bend Points in Real Terms	3.7	2.6	.8	1.7
9 Eliminate Earnings Ceiling	3.9	2.9	.7	1.7
10 Eliminate Earnings Ceiling w/o Benefit Change	3.9	2.9	-.2	1.4
11 Increase Computation Years from 35 to 40	3.7	2.8	1.1	2.0
		Birth Cohort 1995-00		
1 Current Rules	4.2	2.9	1.2	2.2
2 38% Tax Hike Beginning in Year 2000	3.3	2.0	.2	1.2
3 25% Benefit Cut Beginning in Year 2000	3.4	2.1	.3	1.3
4 Acclerated Increase in NRA	3.5	2.3	1.0	1.7
5 CPI Indexing of Covered Earnings	3.9	2.6	1.0	1.9
6 Indexing Benefits by CPI Minus 1%	4.1	2.6	.8	1.8
7 Stabilize Real Per Capita Benefits	.3	-1.2	-3.0	-2.1
8 Freeze Bend Points in Real Terms	3.6	2.3	.5	1.5
9 Eliminate Earnings Ceiling	4.1	2.9	.6	1.7
10 Eliminate Earnings Ceiling w/o Benefit Change	4.2	2.9	-.3	1.4
11 Increase Computation Years from 35 to 40	4.0	2.8	1.1	2.1

Source: Author's calculations.

Table 12: The Impact of Potential OASI Reforms on Implicit Wealth Tax Rates
All Observations (r=5%)

Quintile of Average Benefits:	Lowest	Middle	Highest	All
		Birth Cohort 1945-49		
1 Current Rules	-35.3	61.5	75.6	66.3
2 38% Tax Hike Beginning in Year 2000	-31.6	62.7	76.7	67.6
3 25% Benefit Cut Beginning in Year 2000	-1.5	71.4	81.7	74.8
4 Acclerated Increase in NRA	-14.1	69.4	81.6	73.6
5 CPI Indexing of Covered Earnings	-24.8	64.6	77.1	68.8
6 Indexing Benefits by CPI Minus 1%	-20.9	65.3	77.9	69.6
7 Stabilize Real Per Capita Benefits	-19.4	66.1	78.5	70.3
8 Freeze Bend Points in Real Terms	-31.3	62.8	76.7	67.5
9 Eliminate Earnings Ceiling	-37.1	61.3	75.3	66.3
10 Eliminate Earnings Ceiling w/o Benefit Change	-35.3	61.5	77.1	67.3
11 Increase Computation Years from 35 to 40	-29.0	63.0	76.3	67.5
		Birth Cohort 1970-74		
1 Current Rules	-33.7	55.6	78.2	67.5
2 38% Tax Hike Beginning in Year 2000	-8.8	64.8	82.8	74.3
3 25% Benefit Cut Beginning in Year 2000	-.1	67.0	83.7	75.8
4 Acclerated Increase in NRA	-16.0	63.1	82.2	73.1
5 CPI Indexing of Covered Earnings	-21.6	59.4	79.6	70.2
6 Indexing Benefits by CPI Minus 1%	-18.9	60.1	80.4	70.9
7 Stabilize Real Per Capita Benefits	18.3	73.3	86.8	80.4
8 Freeze Bend Points in Real Terms	-21.9	60.9	81.2	71.6
9 Eliminate Earnings Ceiling	-39.8	55.1	79.7	70.1
10 Eliminate Earnings Ceiling w/o Benefit Change	-33.6	55.7	84.7	73.6
11 Increase Computation Years from 35 to 40	-25.9	57.3	78.6	68.7
		Birth Cohort 1995-00		
1 Current Rules	-28.9	53.8	77.5	65.8
2 38% Tax Hike Beginning in Year 2000	6.5	66.5	83.7	75.2
3 25% Benefit Cut Beginning in Year 2000	3.6	65.7	83.1	74.5
4 Acclerated Increase in NRA	-12.5	60.8	81.1	71.1
5 CPI Indexing of Covered Earnings	-16.6	57.7	78.9	68.6
6 Indexing Benefits by CPI Minus 1%	-15.2	58.1	79.7	69.2
7 Stabilize Real Per Capita Benefits	67.1	88.8	94.4	91.5
8 Freeze Bend Points in Real Terms	-8.8	62.6	82.4	72.9
9 Eliminate Earnings Ceiling	-32.7	53.6	79.9	69.5
10 Eliminate Earnings Ceiling w/o Benefit Change	-28.8	53.9	84.8	72.8
11 Increase Computation Years from 35 to 40	-21.5	55.6	77.9	67.0

Source: Author's calculations.

Table 13: The Impact of Potential OASI Reforms on Implicit Wealth Tax Rates
All Observations (r=7%)

Quintile of Average Benefits:	Lowest	Middle	Highest	All
		Birth Cohort 1945-49		
1 Current Rules	38.7	82.2	88.2	83.8
2 38% Tax Hike Beginning in Year 2000	40.1	82.6	88.5	84.2
3 25% Benefit Cut Beginning in Year 2000	53.8	86.8	91.2	87.9
4 Acclerated Increase in NRA	49.2	86.0	91.1	87.4
5 CPI Indexing of Covered Earnings	43.4	83.7	88.9	85.0
6 Indexing Benefits by CPI Minus 1%	44.5	83.8	89.2	85.2
7 Stabilize Real Per Capita Benefits	45.9	84.4	89.6	85.7
8 Freeze Bend Points in Real Terms	40.5	82.8	88.7	84.4
9 Eliminate Earnings Ceiling	38.0	82.2	87.8	83.6
10 Eliminate Earnings Ceiling w/o Benefit Change	38.7	82.2	88.7	84.1
11 Increase Computation Years from 35 to 40	41.7	82.9	88.5	84.4
		Birth Cohort 1970-74		
1 Current Rules	33.5	78.6	89.4	84.2
2 38% Tax Hike Beginning in Year 2000	45.2	82.7	91.5	87.3
3 25% Benefit Cut Beginning in Year 2000	50.2	84.1	92.1	88.2
4 Acclerated Increase in NRA	42.6	82.3	91.4	87.0
5 CPI Indexing of Covered Earnings	39.3	80.4	90.1	85.5
6 Indexing Benefits by CPI Minus 1%	40.0	80.6	90.4	85.7
7 Stabilize Real Per Capita Benefits	59.4	87.2	93.6	90.5
8 Freeze Bend Points in Real Terms	39.3	81.2	90.9	86.2
9 Eliminate Earnings Ceiling	30.7	78.3	89.8	85.2
10 Eliminate Earnings Ceiling w/o Benefit Change	33.5	78.7	92.3	86.9
11 Increase Computation Years from 35 to 40	37.7	79.4	89.7	84.8
		Birth Cohort 1995-00		
1 Current Rules	36.4	77.1	89.0	83.2
2 38% Tax Hike Beginning in Year 2000	53.9	83.4	92.0	87.8
3 25% Benefit Cut Beginning in Year 2000	52.4	83.1	91.8	87.5
4 Acclerated Increase in NRA	44.7	80.6	90.8	85.8
5 CPI Indexing of Covered Earnings	42.3	79.1	89.7	84.6
6 Indexing Benefits by CPI Minus 1%	42.5	79.1	90.0	84.7
7 Stabilize Real Per Capita Benefits	83.8	94.5	97.3	95.9
8 Freeze Bend Points in Real Terms	46.3	81.5	91.4	86.7
9 Eliminate Earnings Ceiling	34.5	77.0	89.9	84.8
10 Eliminate Earnings Ceiling w/o Benefit Change	36.4	77.2	92.4	86.4
11 Increase Computation Years from 35 to 40	40.2	78.1	89.2	83.8

Source: Author's calculations.

Table 14: The Impact of Potential OASI Reforms on Implicit Wealth Tax Rates
All Observations (r=3%)

Quintile of Average Benefits:	Lowest	Middle	Highest	All
		Birth Cohort 1945-49		
1 Current Rules	-196.1	19.2	50.9	30.9
2 38% Tax Hike Beginning in Year 2000	-185.0	22.9	54.2	34.9
3 25% Benefit Cut Beginning in Year 2000	-121.8	39.9	63.3	48.4
4 Acclerated Increase in NRA	-152.3	35.3	62.8	45.6
5 CPI Indexing of Covered Earnings	-173.0	25.7	53.8	36.1
6 Indexing Benefits by CPI Minus 1%	-160.6	28.0	56.1	38.4
7 Stabilize Real Per Capita Benefits	-161.2	28.8	56.7	39.1
8 Freeze Bend Points in Real Terms	-187.3	21.9	53.1	33.4
9 Eliminate Earnings Ceiling	-200.2	18.9	51.9	32.0
10 Eliminate Earnings Ceiling w/o Benefit Change	-196.1	19.3	55.5	34.1
11 Increase Computation Years from 35 to 40	-182.6	22.3	52.3	33.5
		Birth Cohort 1970-74		
1 Current Rules	-175.0	8.9	55.6	33.7
2 38% Tax Hike Beginning in Year 2000	-122.1	29.1	65.7	48.6
3 25% Benefit Cut Beginning in Year 2000	-105.9	32.1	66.8	50.5
4 Acclerated Increase in NRA	-140.8	23.8	63.5	44.7
5 CPI Indexing of Covered Earnings	-149.4	16.5	58.4	39.1
6 Indexing Benefits by CPI Minus 1%	-140.5	19.1	60.6	41.2
7 Stabilize Real Per Capita Benefits	-68.2	45.1	73.1	59.8
8 Freeze Bend Points in Real Terms	-150.8	19.6	61.7	42.0
9 Eliminate Earnings Ceiling	-189.6	7.9	60.1	40.3
10 Eliminate Earnings Ceiling w/o Benefit Change	-175.0	9.0	70.0	47.3
11 Increase Computation Years from 35 to 40	-159.4	12.3	56.5	36.0
		Birth Cohort 1995-00		
1 Current Rules	-170.9	7.5	54.7	31.4
2 38% Tax Hike Beginning in Year 2000	-96.4	32.9	67.2	50.2
3 25% Benefit Cut Beginning in Year 2000	-102.8	31.1	66.1	48.8
4 Acclerated Increase in NRA	-137.6	21.1	62.1	41.9
5 CPI Indexing of Covered Earnings	-145.2	15.1	57.5	36.9
6 Indexing Benefits by CPI Minus 1%	-138.8	17.0	59.6	38.7
7 Stabilize Real Per Capita Benefits	30.5	77.4	88.7	83.0
8 Freeze Bend Points in Real Terms	-128.8	24.9	64.6	45.6
9 Eliminate Earnings Ceiling	-179.5	6.8	60.5	39.7
10 Eliminate Earnings Ceiling w/o Benefit Change	-170.7	7.8	70.1	46.3
11 Increase Computation Years from 35 to 40	-155.9	11.1	55.6	33.7

Source: Author's calculations.

Table 15: The Impact of Potential OASI Reforms on Average Benefits
All Observations

Quintile of Average Benefits:	Lowest	Middle	Highest	All
			Birth Cohort 1945-49	
1 Current Rules	3814.	8612.	17203.	9614.
2 38% Tax Hike Beginning in Year 2000	3814.	8612.	17203.	9614.
3 25% Benefit Cut Beginning in Year 2000	2863.	6518.	12968.	7267.
4 Acclerated Increase in NRA	2871.	6881.	13695.	7620.
5 CPI Indexing of Covered Earnings	3450.	7883.	16243.	8931.
6 Indexing Benefits by CPI Minus 1%	3438.	7680.	15401.	8589.
7 Stabilize Real Per Capita Benefits	3374.	7644.	15241.	8532.
8 Freeze Bend Points in Real Terms	3695.	8364.	16494.	9271.
9 Eliminate Earnings Ceiling	3814.	8651.	18735.	9949.
10 Eliminate Earnings Ceiling w/o Benefit Change	3814.	8612.	17203.	9614.
11 Increase Computation Years from 35 to 40	3599.	8279.	16742.	9274.
			Birth Cohort 1970-74	
1 Current Rules	3757.	9313.	20305.	10757.
2 38% Tax Hike Beginning in Year 2000	3757.	9313.	20305.	10757.
3 25% Benefit Cut Beginning in Year 2000	2830.	7054.	15264.	8108.
4 Acclerated Increase in NRA	3048.	7781.	17203.	9008.
5 CPI Indexing of Covered Earnings	3284.	8505.	19112.	9928.
6 Indexing Benefits by CPI Minus 1%	3363.	8239.	18013.	9537.
7 Stabilize Real Per Capita Benefits	2287.	5760.	12415.	6601.
8 Freeze Bend Points in Real Terms	3410.	8354.	17602.	9445.
9 Eliminate Earnings Ceiling	3757.	9410.	27425.	12254.
10 Eliminate Earnings Ceiling w/o Benefit Change	3757.	9313.	20305.	10757.
11 Increase Computation Years from 35 to 40	3511.	8949.	19973.	10421.
			Birth Cohort 1995-00	
1 Current Rules	4919.	12212.	26868.	14143.
2 38% Tax Hike Beginning in Year 2000	4919.	12212.	26868.	14143.
3 25% Benefit Cut Beginning in Year 2000	3688.	9258.	20188.	10643.
4 Acclerated Increase in NRA	3998.	10336.	23530.	12040.
5 CPI Indexing of Covered Earnings	4317.	11172.	25204.	13049.
6 Indexing Benefits by CPI Minus 1%	4401.	10847.	24034.	12610.
7 Stabilize Real Per Capita Benefits	1216.	3143.	6903.	3606.
8 Freeze Bend Points in Real Terms	4078.	10108.	21246.	11275.
9 Eliminate Earnings Ceiling	4921.	12355.	35777.	16028.
10 Eliminate Earnings Ceiling w/o Benefit Change	4919.	12212.	26868.	14143.
11 Increase Computation Years from 35 to 40	4602.	11742.	26378.	13696.

Source: Author's calculations.