DOCUMENTED BRIEFING

RAND

Social Security

Equity, Adequacy, Reforms

Constantijn W. A. Panis, Lee A. Lillard

Labor and Population

The research described in this report was supported by a grant from the National Institute on Aging.

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PREFACE

Social Security is the largest income maintenance program in the United States. It affects all of us, young and old, rich and poor. In 1994, the Bipartisan Commission on Entitlement and Tax Reform warned of an explosion in spending on Social Security when the baby-boom generation retires. Unless reforms are enacted, the Social Security trust funds will be depleted by the year 2029. This calamity would force either severe benefit cuts for retirees or a massive payroll tax increase for workers.

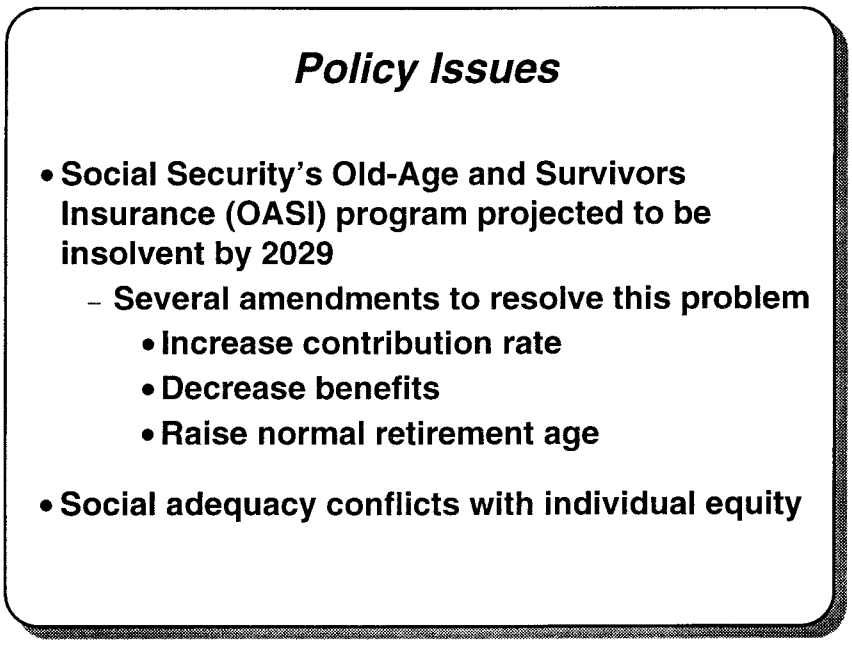
A number of reform proposals are currently being debated to avert this crisis. This briefing illustrates, first, how the current Social Security system differentially benefits socioeconomic groups in the United States, and, second, how these groups will be affected by increasing the payroll tax, reducing benefits, and raising the retirement age. The briefing was initially presented to the RAND Board of Trustees at its April 1996 meeting.

Constantijn Panis and Lee Lillard are economists in RAND's Labor and Population Program. The research upon which this briefing is based was funded by the National Institute on Aging. The preparation of this briefing and its conversion into this document was funded by the RAND Center for the Study of Aging, of which Lillard is the director.

Social Security: Equity, Adequacy, Reforms

Our Social Security system is built on two pillars: individual equity and social adequacy. The equity principle aims to provide every worker with a fair rate of return on his or her Social Security contributions; the adequacy principle attempts to reduce poverty among the elderly by providing more benefits to those retirees who need them the most. This study looks at socioeconomic differences in the returns that Americans earn on their Social Security contributions to yield insight into the trade-off between equity and adequacy under the current system. In addition, we show how this trade-off will change as a result of a number of reform amendments that are currently being hotly debated in Washington, D.C.

The study looks at only one component of the Social Security system, the Old-Age and Survivors Insurance program. This program accounts for about 88 percent of Social Security payments. Disability Insurance is not considered, so if I say "Social Security," I mean the Old Age and Survivors Insurance component only, which provides benefits to retired workers, their spouses and widows.



Old-Age and Survivors Insurance is the largest income maintenance program in the United States, with total outlays of $284 billion in 1994. The program is currently running a surplus of about $50 billion annually, but this will change as the baby-boom generation gets close to retirement. By the year 2013, total outlays are projected to exceed total income, and the Social Security Administration expects that the Trust Fund will be depleted by 2029. After that, unless changes are made to the system, the program will not be able to make benefit payments to which retirees are entitled.

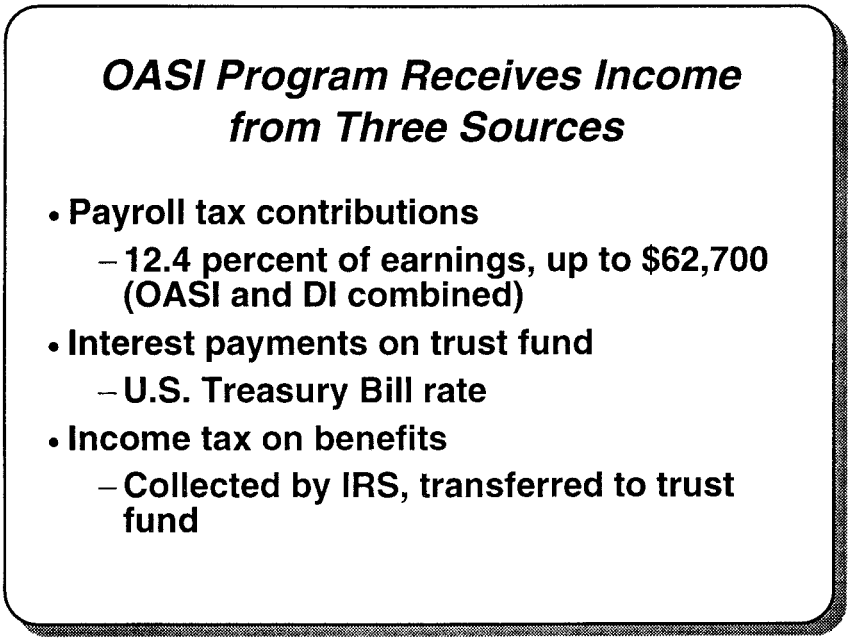
A number of proposals are under consideration to ensure the long-range solvency of the Social Security system. Most of these amendments involve some combination of an increase in the contribution rate (payroll tax), a reduction of benefits, and raising the normal retirement age.

Before evaluating these reforms, it is good to have a picture of the extent to which the current system redistributes income among groups in the United States, in other words, of the trade-offs between social adequacy and individual equity under the current system. This study shows, first, that substantial differences exist in the rates of return that socioeconomic groups earn on their Social Security contributions, leading to large implicit dollar transfers between groups. Second, we evaluate several amendments and show which socioeconomic groups will be affected the most.

Outline

- **Background**
- **Comparing rates of return across socioeconomic groups**
- **Comparing intracohort transfers**
- **Simulating effects of proposed amendments**

First let me give you some background on the current rules of the Old-Age and Survivors Insurance program. Then we'll turn to a comparison of the rates of return that socioeconomic groups may expect to earn, and translate those into implicit dollar transfers between groups. After that, I'll show you the differential impacts of the proposed amendments on socioeconomic groups.



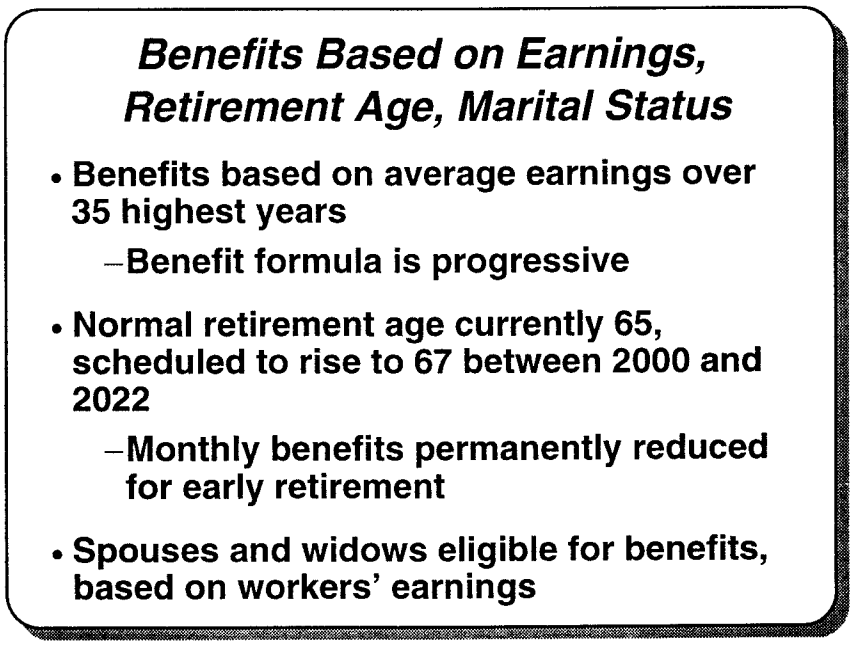
Here are some salient program features that are relevant for this study.

The Old-Age and Survivors Insurance program receives income from three sources.

By far the largest source is from payroll tax contributions. Currently, the employee and the employer each pay 6.2 percent of the worker's earnings up to $62,700 per year, for a combined total of 12.4 percent. These payments are divided between the Old-Age and Survivors and the Disability Insurance programs. These payroll taxes amount to about 90 percent of total income for the Old-Age and Survivors Insurance program.

Second, the OASI Trust Fund is invested in special-issue Treasury securities which bear interest equal to the T-Bill rate. The interest payments add up to 8.4 percent of total income.

Third, a portion of benefits—as much as 85 percent—may be subject to Federal income tax. The tax revenues are transferred into the trust fund, representing 1.6 percent of its total income.



The vast majority of outlays are benefit payments.

The monthly benefit of a retired worker is based on his average earnings over the 35 highest-earning years of his working career. For very low incomes, the benefit is equal to 90 percent of average earnings, but as average income rises, a smaller and smaller portion of it is replaced by benefits. In other words, the benefit formula is progressive.

The normal retirement age is currently age 65, but already enacted by law is a gradual rise, starting in the year 2000 and reaching age 67 by 2022.

Workers may elect to retire as early as age 62, in which case their benefits are permanently reduced. Alternatively, workers may postpone retirement to as late as age 70, in which case their benefits are permanently increased.

Then finally, in addition to a retired worker, his or her spouse or widow may also claim benefits. A spouse is entitled to 50 percent of the worker's benefit; the widowhood benefit is equal to 100 percent of the deceased worker's benefit. Spouses and widows thus have a choice: they may claim benefits in their own right, based on their own earnings history, or they may opt to choose benefits in their capacity of spouse or widow.

Methodology

- **Model mortality rates**
  - **Standard: by age, sex, race, birth cohort**
  - **RAND: also by income, marital status**
- **Calculate real rates of return and intracohort transfers**
- **Simulate effects of proposed amendments**

Let me tell you about our methodology for evaluating both the current system and the likely impact of amendments.

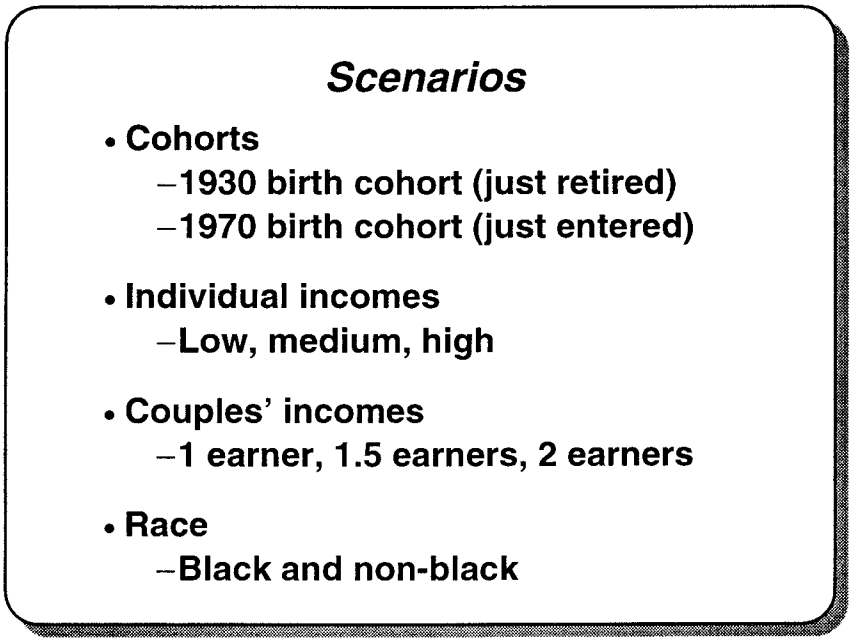
First, how long you live determines how long you receive benefits. Some people die before they retire, so they do not get anything. Others live to a very old age, so they will benefit a lot from the system. In order to determine how socioeconomic groups, on average, fare under the system, we need a model of mortality rates.

The traditional approach has been to use vital statistics to calculate mortality rates by age, sex, race, and sometimes birth cohort. For example, it is well known that women live longer, on average, than men, which may imply that women benefit more from the Social Security system than men.

We extend this standard approach to account for a very robust finding in the literature, namely that mortality rates also differ by income and marital status. Married people, in particular married men, tend to live longer, as do higher-income individuals, and we will see that a proper account of these differences in longevity has important implications for how various groups fare under the Social Security system.

Using these mortality rates, we then calculate real rates of return that socioeconomic groups earn on their Social Security contributions. These rates of return equalize what you pay in and what you get out; they differ across groups because of the rules of the system and because of differences in longevity, not because of alternative investment schemes. In addition, we show the dollar transfers between groups that the differences in rates of return translate into. This is all done for the cohort that just retired, in 1995.

We then turn to various amendments that are currently under consideration, and show how they will change the extent to which some groups benefit more than others.



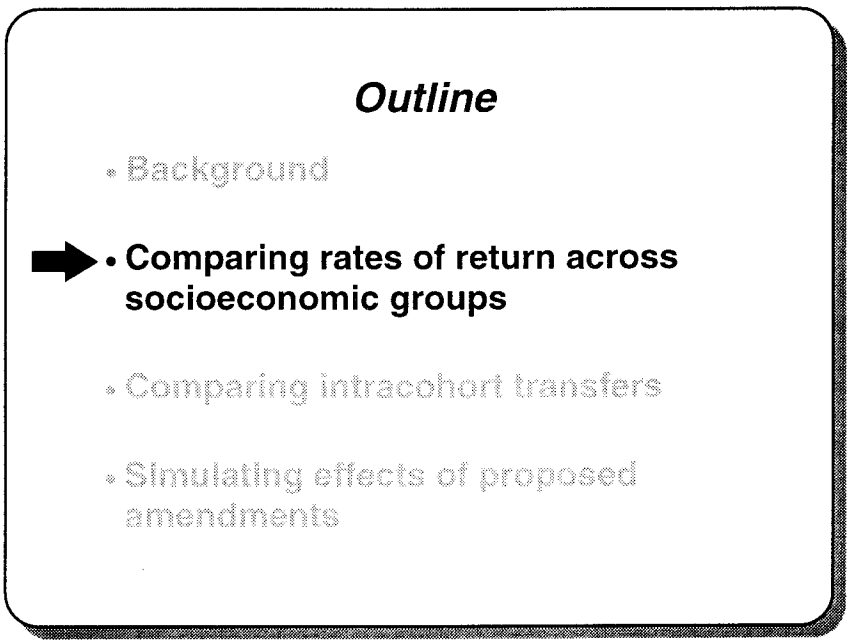
We distinguish between the following socioeconomic groups.

To determine differentials in the returns among socioeconomic groups under the current system, we look at the cohort that was born in 1930, and thus retired in 1995. When we get to the reforms, we will compare this to the 1970 birth cohort that entered the system just last year, in 1995. This cohort will feel the full impact of any amendment. If the system is to be in long-range balance, then their contributions must be equal to their benefits, in present value.

We distinguish three income levels. At the low end, we look at workers who earned minimum wage throughout their career; this is currently about $8,800 per year. The medium-income workers are assumed to have earned the average wage, which was a little under $24,000 in 1994. High-income earners, finally, are assumed to have earned at least the maximum wage for Social Security purposes, which is currently $62,700 per year.

For married couples, we consider three labor force participation scenarios. The first is a one-earner couple, in which the husband works full-time for forty years and the wife does not have any earnings. The second is a 1.5-earner couple, where the wife has earnings equal to 50 percent of her husband's. This may be because of part-time work or intermittent work, because of wages that are lower than those of her husband, or any combination thereof. The third scenario is that of a two-earner couple, in which both the husband and the wife work full-time.

Finally, we distinguish between blacks and non-blacks. For convenience, I shall say "whites" when referring to "non-blacks."



Now we turn to a comparison of rates of return for the cohort that just retired in 1995.

Reasons for Differences in Rate of Return

- **Progressivity in benefit formula**
- **Taxation of benefits**
  - **–Income tax liability on up to 85 percent of benefits**
- **Spousal and widowhood provisions**
- **Differential mortality rates**
  - **–Sex, race**
  - **–Household income, marital status**

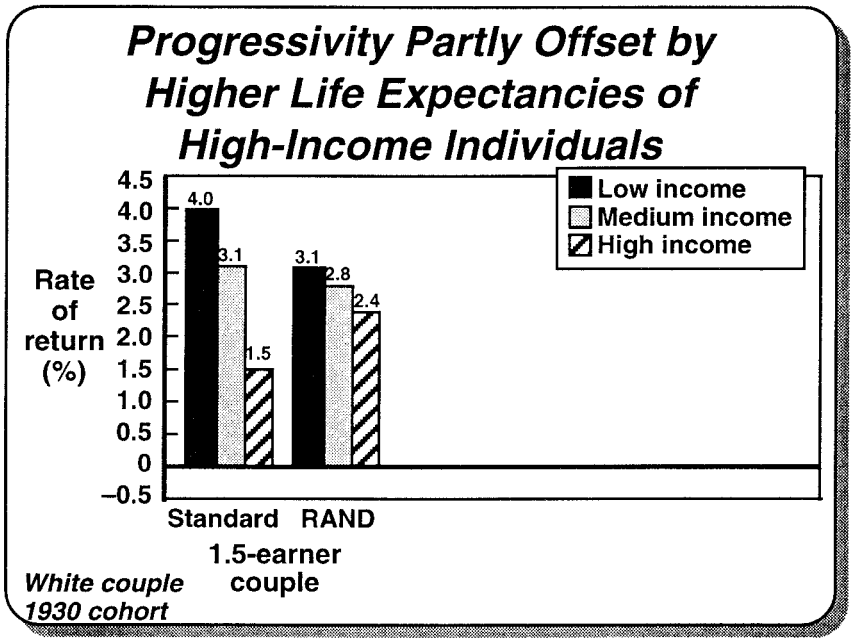
Although the same Social Security rules apply to everyone, there are a number of reasons that not all groups in the United States benefit equally from the Social Security system. Keep these reasons in mind for interpreting the differences among groups.

First, the benefit formula is progressive, so that higher earnings translate into a less-than-proportional increase in benefits. This may imply that the rate of return that low-income groups earn is higher than that of higher-income groups.

Second, as much as 85 percent of the benefit is taxable in households with incomes above certain thresholds, again reducing the rate of return for the higher incomes.

Third, spouses and widows may claim benefits on the basis of a worker's earnings, which is beneficial to married individuals only.

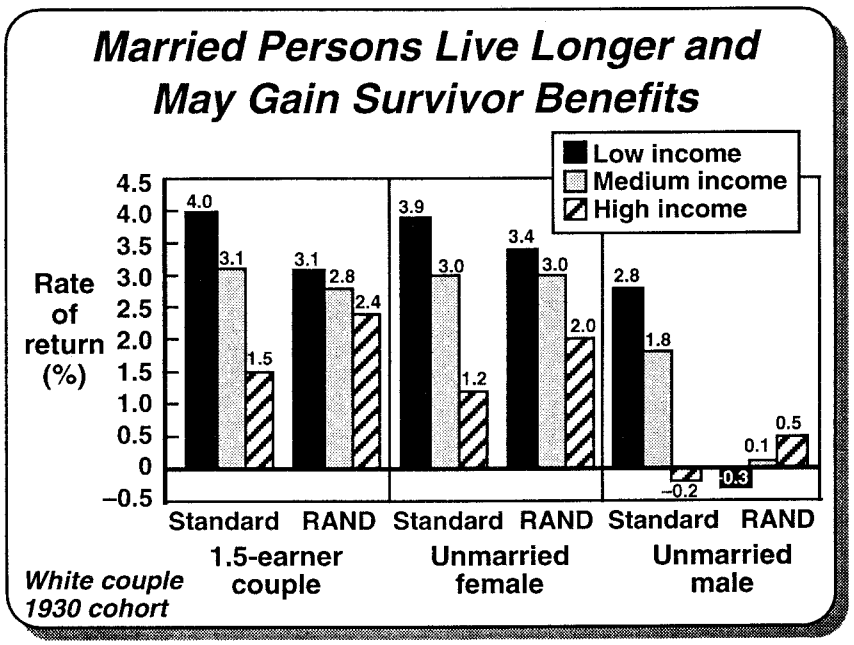
And finally, women live longer than men, whites longer than blacks, higher incomes longer than lower incomes, and married people longer than unmarried people, thereby leading to longer average periods over which they enjoy Social Security benefits.



Here, then, is our first result. This slide shows real rates of return for a white, 1.5-earner couple that just recently retired, at low, medium, and high wage levels. We've picked this type of couple because it is somewhat representative of the typical worker; I'll show you other scenarios in a minute.

The standard approach indicates that the rate of return for the higher incomes is far lower than for lower incomes. A low-income couple may expect a rate of return of 4.0 percent, compared with only 1.5 percent for high-income couples. This difference is entirely due to the progressivity of the benefit formula and the taxation of part of the benefits for higher incomes.

However, once we account for the fact that higher-income individuals live longer than lower-income individuals, we find that the differences are much smaller, namely only about a third of those given by standard models of mortality.



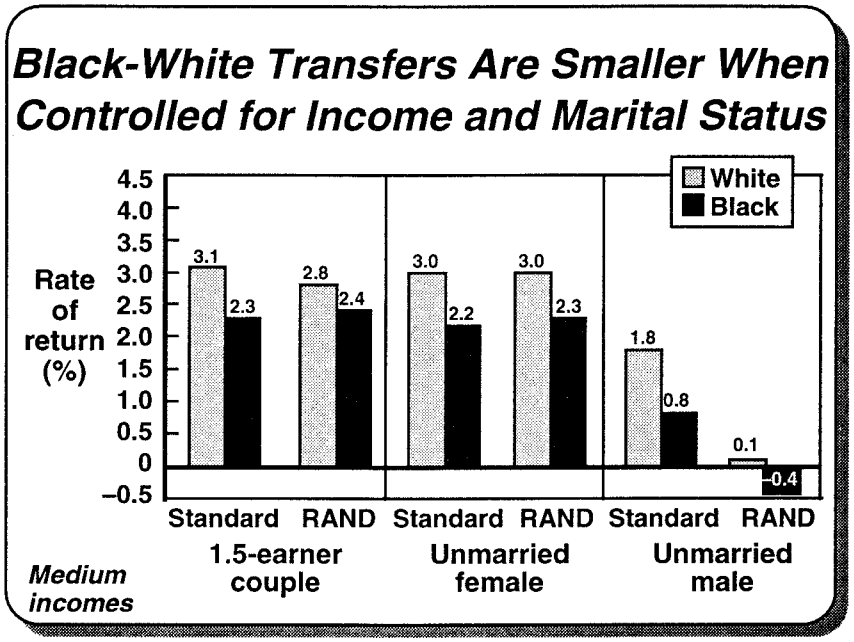
The picture looks somewhat different when we look at unmarried persons. The left panel on this slide is identical to the one you just saw. The middle shows rates of return for an unmarried female, and the right for an unmarried male.

The result for the unmarried female looks very similar to the couple scenario: accounting for lower mortality rates of higher incomes, the progressivity is less pronounced, and the rates of return are about the same as for a married couple.

Unmarried males, however, are far worse off. Their rates of return are much lower than those of an unmarried female, which is due to their lower life expectancy. In addition, it appears that the system is not just less progressive, but even regressive once we account for the differences in mortality rates by income. Whether the system is actually regressive for unmarried males depends on the definition of progressivity. In a few minutes, I will show you the dollar transfers that are implied by these rates of return. As you will see, by that metric, the system remains progressive, even for unmarried males.

The main reasons that the rates of return for a married couple (which includes a male spouse) are so much higher than they are for an unmarried male are (1) married people live longer, and (2) the surviving widow of a couple will get the full widowhood benefit and not just a benefit based on her own, lower, earnings.

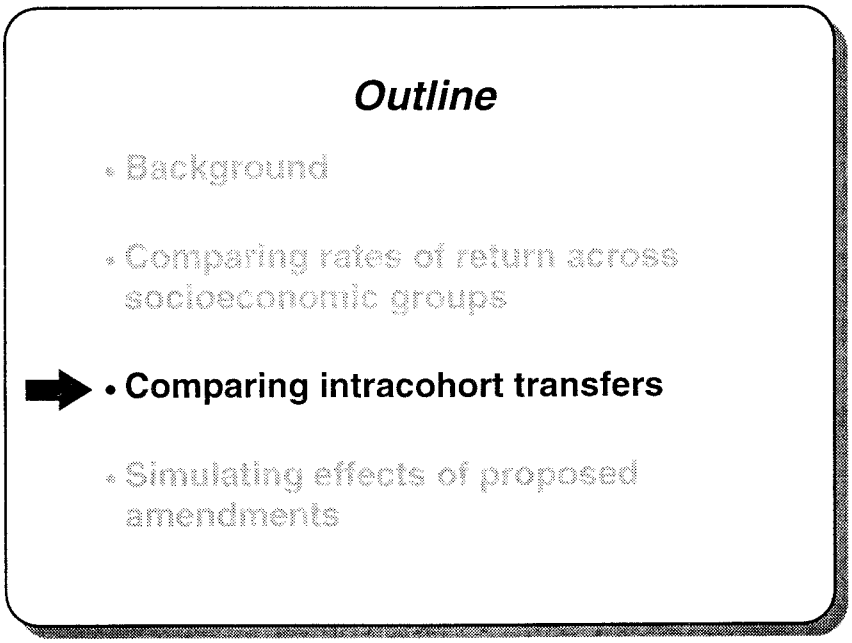
Before moving on, I'd like to point out that the large difference between unmarried women and unmarried men is, in part, purposely built into the Social Security system. Women tend to live longer than men, and thus need the benefits for a longer period than men. This goes back to the "social adequacy" foundation of the Social Security system. In this case, social adequacy is given priority over the principle of "individual equity," because clearly, unmarried males are not given a fair rate of return on their contributions.



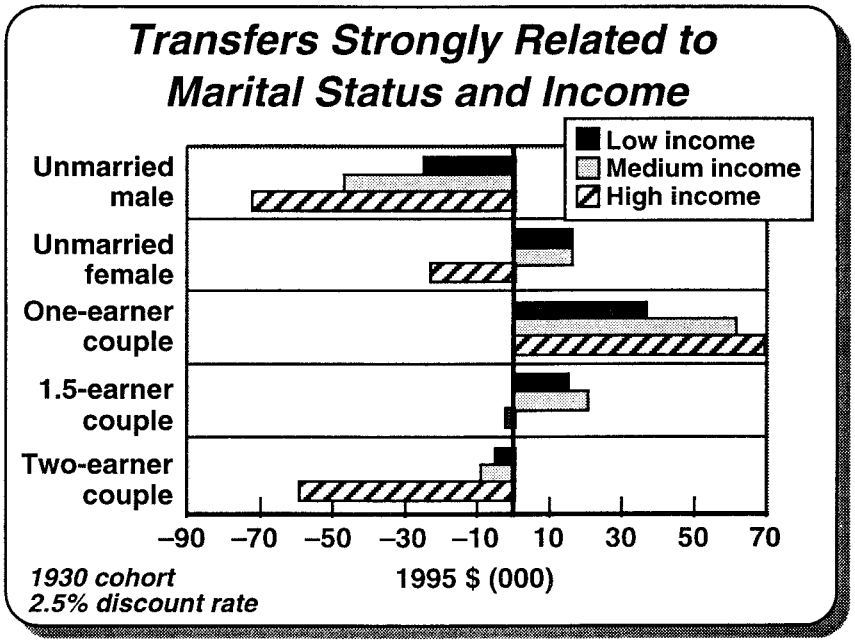
This slide compares rates of return of blacks and whites for a 1.5 earner couple, an unmarried female, and an unmarried male. We're only showing medium wage earners, but the results are similar for other levels of income.

Due to the fact that the life expectancy of blacks is lower than that of whites, the standard approach shows that there are fairly large differences—about 0.8 to 1 percentage points—in favor of whites.

However, part of the difference in life expectancy is due to the fact that blacks, on average, have lower incomes than whites, and that they are less likely to be married. Once we control for this, we find that black-white differences are only about half of what the standard method indicates.



Now I am going to show you estimates of the dollar transfers between groups that these differential rates of return translate into.



We're still looking only at the cohort that just recently retired. The contributions and benefit payments are made over several decades, and in order to summarize them into a net present value, we must select a discount rate. The appropriate rate here is the aggregate rate of return for this cohort, 2.5 percent. Only this aggregate rate of return guarantees a zero average transfer between groups in this cohort (weighted by population proportions).

The bars in this slide represent dollar transfers by this cohort as a whole to or from selected groups: unmarried males, unmarried females, one-earner couples, 1.5-earner couples, and two-earner couples. All is done by income for low, medium, and high wage earners. The amounts are in thousands of 1995 dollars. For example, the unmarried female, low income bar indicates that unmarried females who have earned minimum wage receive a transfer of about $16,000 each from the rest of this cohort. By contrast, unmarried low-wage males pay in about $25,000. These amounts thus represent net present values of benefits minus contributions. A zero transfer means that this group earns a rate of return that is equal to the aggregate rate of return for this cohort, 2.5 percent.

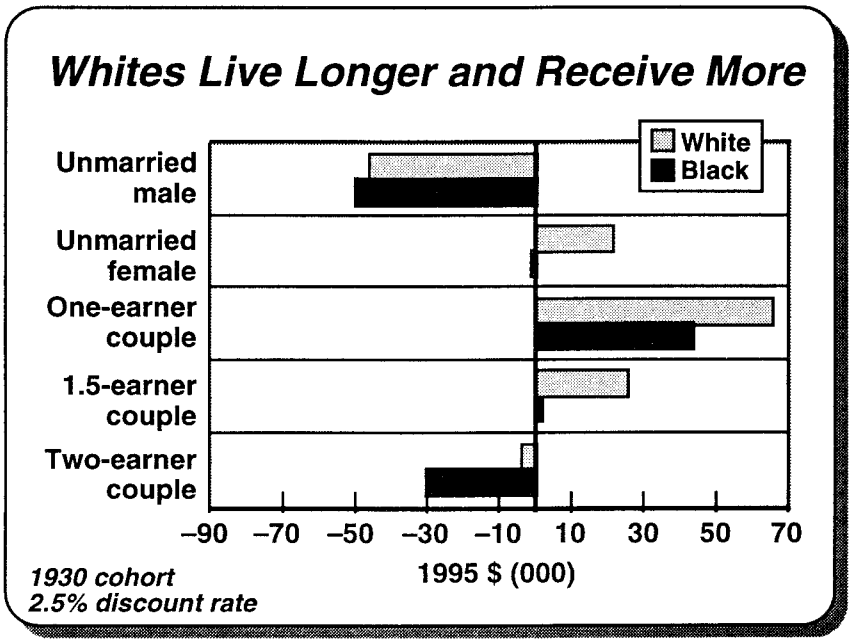
As is immediately obvious, unmarried males pay in large amounts of money, especially high-income unmarried males, who pay in about $72,000. Before, we saw that the rate of return of high-income unmarried males is actually higher than that of low-income males, so that the system may be considered regressive by that measure. Here we see that the dollar transfers into this cohort are actually higher for the high-income males. Their rate of return may be higher, but it is still far less than the aggregate rate of return. The amounts of money that are involved at the higher income levels are much larger than at the lower levels, so that the implied dollar transfers are larger than for the lower incomes. By this metric, the system is thus progressive, even for unmarried males.

We find the same thing for the other groups, except for one-earner couples. These couples are much better off than any other group. Despite a lower rate of return for high-wage earners relative to low-wage earners, the implied dollar transfer is larger because of the larger amounts of contributions and benefits.

1.5-earner couples receive smaller transfers than one-earner couples, because for them, the spousal benefit provision is irrelevant. Spousal benefits are 50 percent of the worker's benefit, so the spouse may as well claim benefits in her own right. 1.5-earner couples do still benefit from widowhood benefits, though, as these are 100 percent of the worker's benefit.

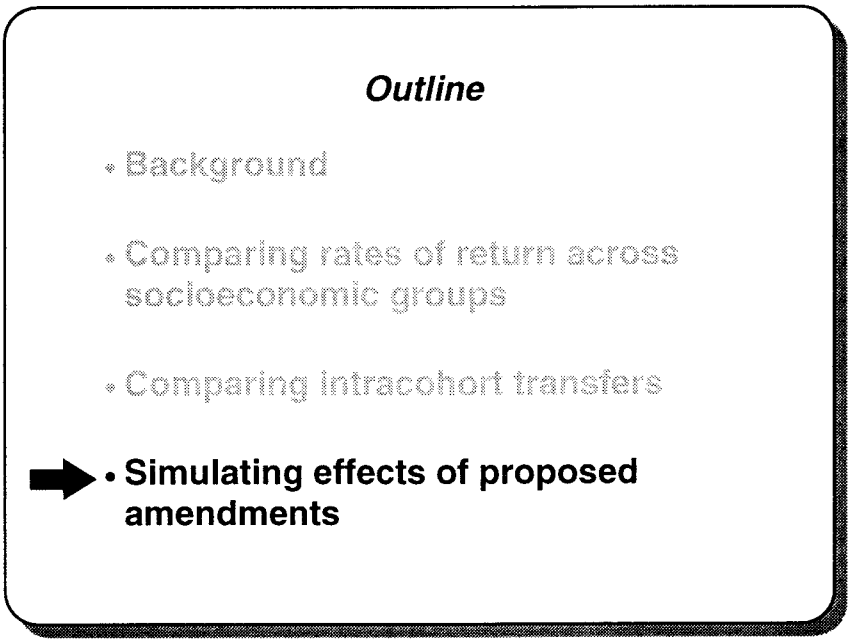
Those widowhood benefits are of no use to two-earner couples, so that their transfers are less again, and actually negative.

Summing up, there are large transfers within this cohort, with largest payments by unmarried males and two-earner couples, while one-earner couples are the main beneficiaries.

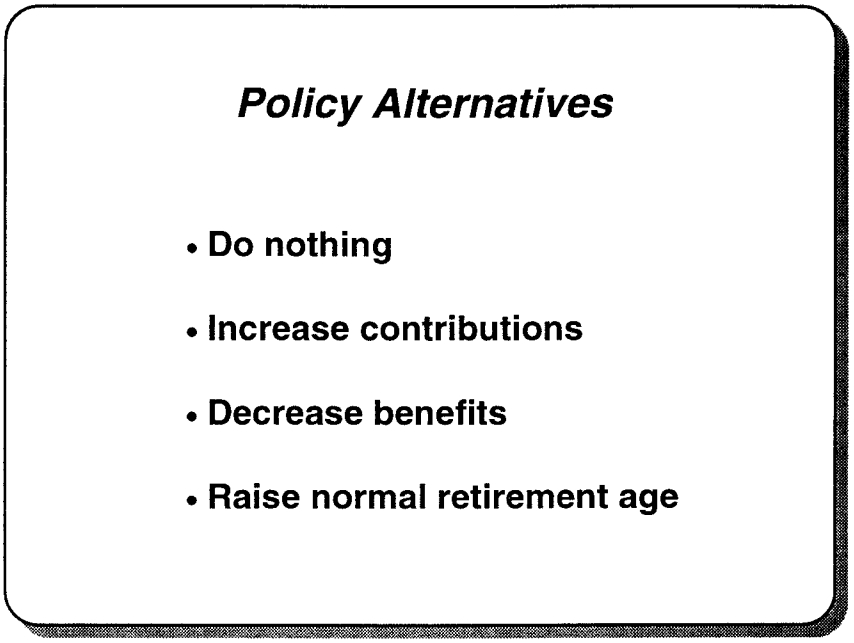


This slide shows black-white differences at the average wage level. Before, we saw that the rates of return for whites are approximately 0.5 percentage points higher than those for blacks, and here we see that this translates into about $10,000 per person. (The couple differences are about $20,000, i.e., $10,000 per person.)

It should be noted that this analysis is entirely conditional on a certain income level. Average income among blacks, however, is lower than among whites, and since the system is largely progressive, blacks as a group benefit more from the Social Security system than do whites.



Now we turn to the effects of proposed amendments.



The main policy alternatives are, first, to leave the system as it is. There are actually quite strong votes for doing nothing, in part because of the sweeping changes that are being made to the Medicare system.

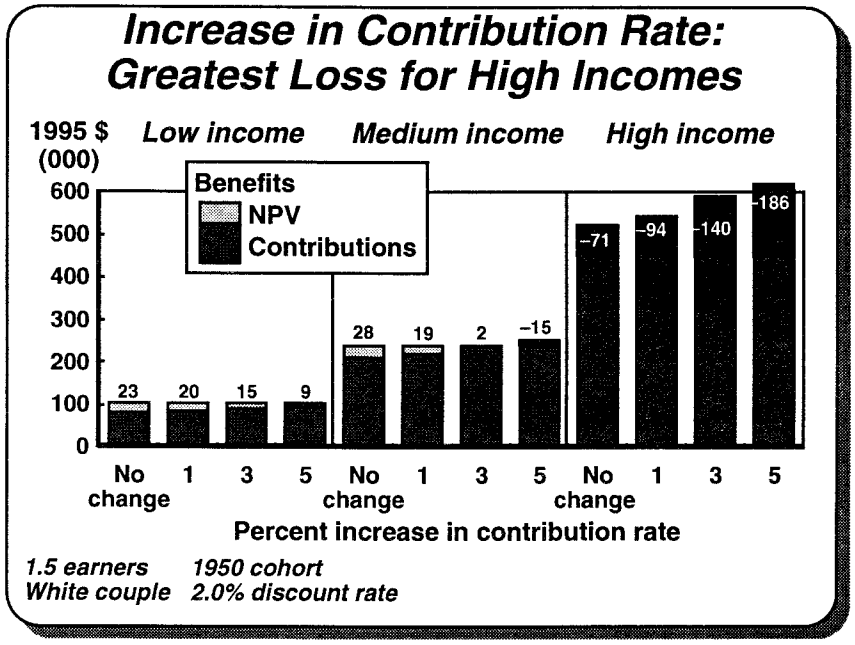
Alternatively, the payroll tax may be increased, or benefits may be decreased. We will consider benefit reductions across the board; the proposals that are actually on the table typically argue for making the benefit formula more progressive, so that the benefits of higher incomes only are reduced. I'll get back to that later.

The fourth alternative is to raise the normal retirement age to as high as age 70, instead of the already scheduled plan to raise it to age 67.

Most proposals currently on the table contain a package of measures. Last year, three proposals were submitted to the House of Representatives: one by Daniel Rostenkowsky, another by J. J. Pickle, and a third by Timothy Penny and Marjorie Margolies-Mezvinsky. None of these bills reached the floor for a vote, but they are likely to form the basis for future proposals. Rostenkowsky argued for increasing the payroll tax, making the benefit formula more progressive, and speeding up the rise of the normal retirement age. The other two bills both proposed raising the normal retirement age to age 70. In addition, Pickle wanted to reduce spousal benefits. All three bills proposed to reduce the annual cost-of-living increase in benefits.

Currently, two proposals are pending in the Senate. The first, by Alan Simpson and Bob Kerrey, is again a combination of measures, including a more progressive benefit formula, raising the normal retirement age to age 70, and a reduction of annual cost-of-living increases. The second, by Daniel Patrick Moynihan, proposes to reduce the cost-of-living increases by one percentage point.

Because none of the bills—with the possible exception of Moynihan's—is likely to be enacted without modification, we do not simulate any comprehensive package, but focus on the impact of individual measures instead. There are no strong interactions between any of these measures, so their combined impacts may be approximated by simply summing up individual effects.



This slide shows the present value of all contributions and benefits over the worker's lifetime, the difference being the Net Present Value. In other words, this NPV is a measure of how much more someone receives in benefits than he paid in. We cannot use the 2.5 percent aggregate rate of return as a discount rate any more, because the amendments will uniformly lower the aggregate rate of return. Instead, we selected the rate that is consistent with a mature system in long-term balance. If the Social Security system were a pure "pay-as-you-go" system, this rate would be equal to the average real growth rate of the nation's total wage bill—about 2.7 percent over the past three-and-a-half decades. If the system were based purely on a trust fund, the appropriate rate would be the average real rate of return on the securities in which the trust fund is invested. These securities earn the same interest as T-Bills, which yielded about 1.2 percent in real terms over the last fifty years. Because our Social Security system is a mixture of a pay-as-you-go system and a trust fund–based system, we estimate that an aggregate rate of return of 2.0 percent is sustainable in the long run, and we use that rate to convert benefits and contribution flows into present dollar values.

This simulation is for a 1.5-earner white couple that was born in 1950. We're not looking at the impact of amendments by marital status or race, because none of the amendments will have any strong disproportionate effects by marital status or race. We will look at different cohorts; the 1950 cohort here was chosen as an average.

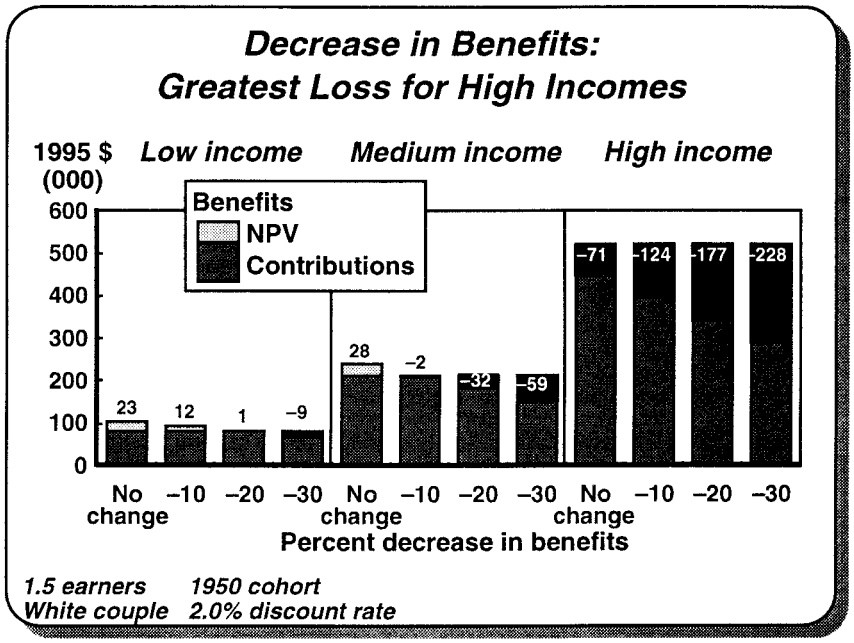
We have simulated the impact of increasing the combined employer-employee contribution rate by 1, 3, and 5 percentage points—the Rostenkowsky proposal argued for 3.9 percent.

For example, medium-wage earners under the current system may expect to pay $212,000 in total lifetime contributions. Their expected lifetime benefits are $240,000, so that they receive about $28,000 more than they pay in.

First, it is clear that the dollar amounts involved in the contributions and benefits of high incomes are far larger than those of low incomes, as may be expected.

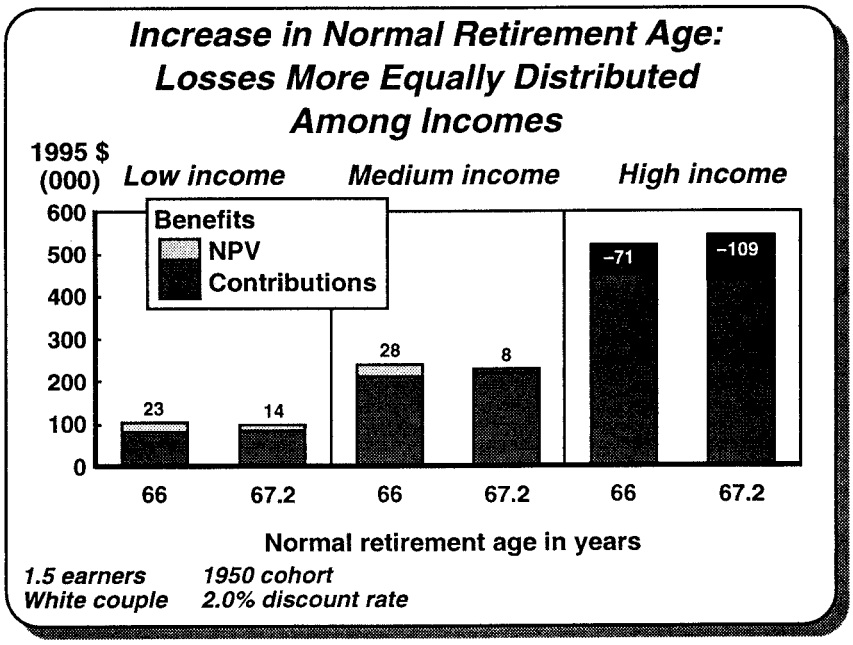
Second, increasing the payroll tax has no effect on total benefits, so that all bars within wage category are of equal height.

Increasing the contribution rate will have the strongest impact on the net present value of the highest incomes. This is true both in absolute dollar terms, and relative to the total benefits that will be paid out.



The same result holds for decreasing benefits. We simulated cuts of up to 30 percent across the board, because that reduction will provide savings of roughly the same magnitude as an increase of 5 percentage points in the payroll tax, which we simulated in the previous slide. Note that the contribution levels are not affected. Both in absolute and relative terms, high incomes lose the most.

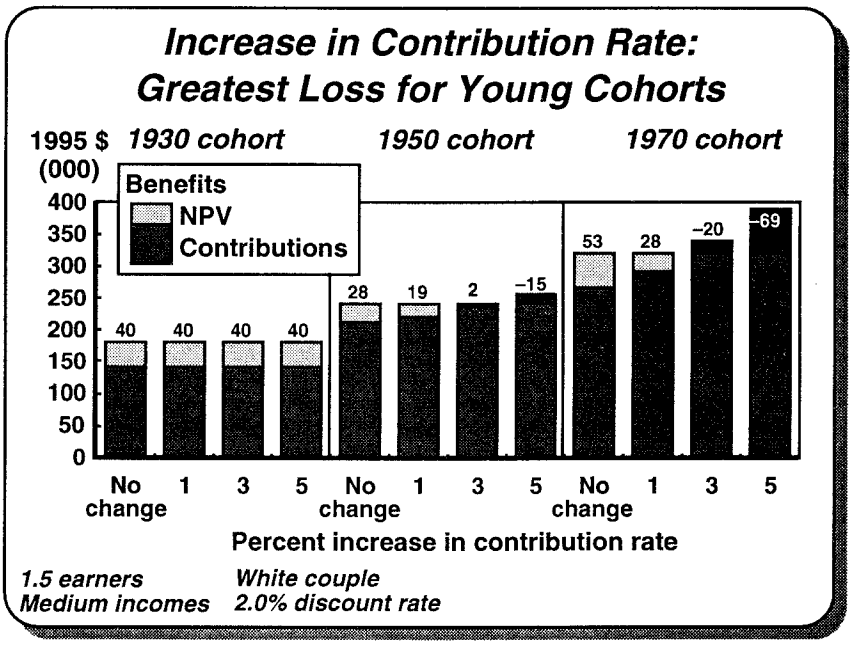
The proposals currently on the table typically make the benefit formula more progressive; this will make the effect on higher incomes even stronger than we show here.



Our last amendment is to raise the normal retirement age to age 70. We are looking at the 1950 birth cohort, so the impact of this amendment will not be fully felt, because raising the normal retirement age will be phased in gradually. Under the current schedule, the 1950 birth cohort may retire with full benefits at age 66; this would be age 67 and two months if the normal retirement age were raised gradually to age 70.

Unlike the effects of increasing the contribution rate and decreasing benefits, we see here that raising the normal retirement age affects all income categories roughly the same.

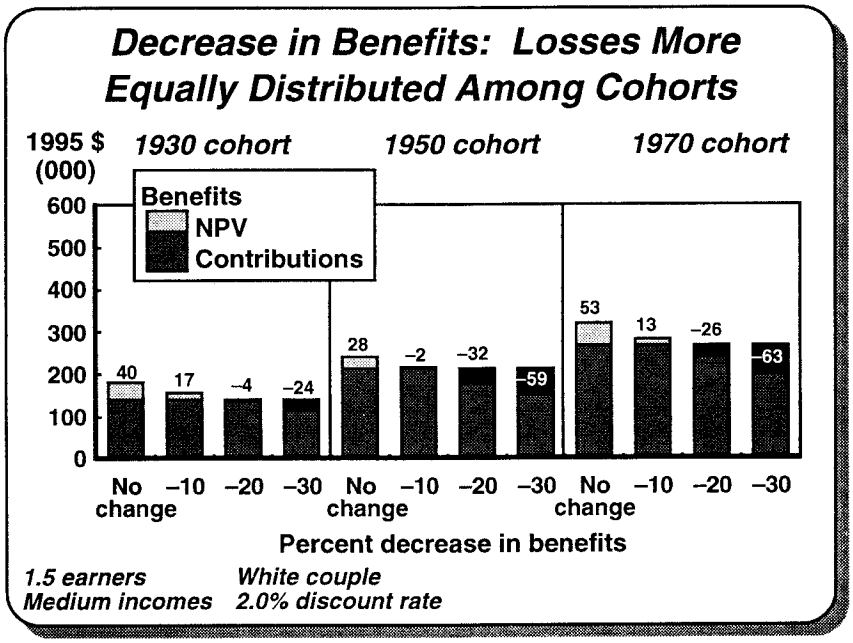
So, apart from raising the normal retirement age, the effects of various amendments will be felt most strongly by the higher incomes. Now we are going to see how the effects differ by birth cohort.



We have simulated the 1930, 1950, and 1970 birth cohorts. The 1930 cohort just recently retired; the 1970 cohort just recently entered the system and will thus feel the full impact of any amendment.

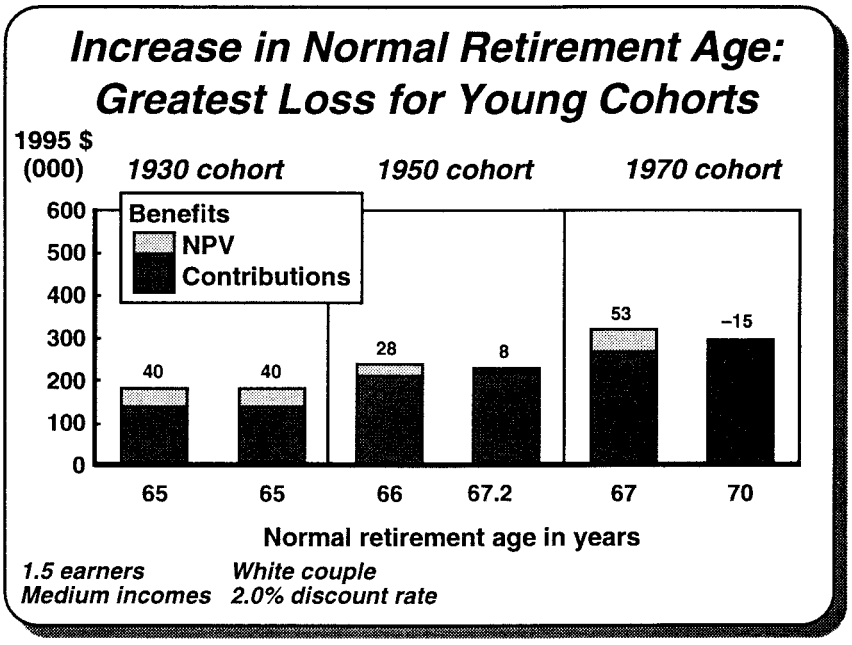
Note that the increase in contributions does not change the benefit levels, represented by the full height of these bars.

Increasing the contribution rate will have no effect whatsoever on the 1930 cohort, as they will not be paying any more contributions. The burden of this amendment will thus be borne by the younger cohorts.



Decreasing benefits, however, affects all cohorts roughly equally, including the cohort that just retired. The cohort that retired in 1995 faces the same reduction in benefits as younger cohorts.

Note that the benefit reduction does not change the contributions; only the benefits and the surpluses, the Net Present Values, are affected.



Finally, raising the normal retirement age does not affect the cohort that recently retired; they may still retire at age 65. The 1950 birth cohort is partly affected, as we saw before, and the 1970 cohort feels the full impact of this amendment. As one may expect, the burden of a rise in the normal retirement age will be borne by the younger generation.

Conclusions and Policy Implications: Current System

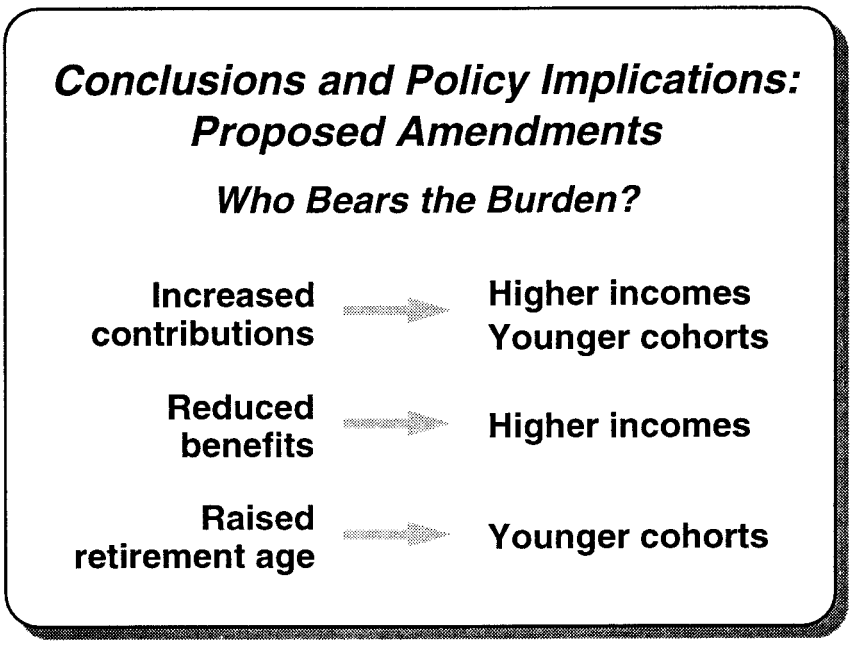
- **RAND methodology shows smaller differences by income and race**
- **One-earner couples benefit the most**
- **Unmarried males benefit the least**

This presentation first looked at differences across socioeconomic groups under the current system, and then simulated the impact of several reform proposals.

For the current system, we found that the RAND methodology, which accounts for greater longevity of married people and high-income individuals, results in smaller differences in rates of return and intracohort transfers than the standard procedure: black-white differences are smaller, and the system is less progressive than previously assumed.

Second, we found that one-earner couples benefit the most. Among currently retired couples, approximately 36 percent fall into the one-earner category, but this fraction is likely to become smaller in the future. Most of America's elderly poor are widowed females, which has led to a study within the Social Security Administration into the effects of reducing spousal benefits in favor of widowhood benefits. This would affect one-earner couples the most, but that may be acceptable, given our finding. A bill that would be consistent with such a policy was proposed by J. J. Pickle, former chairman of the House Subcommittee on Social Security. He argued for a reduction of spousal benefits from the current 50 percent to 33 percent, and an increase of benefits by 5 percent for people over age 85.

Third, we found that unmarried males benefit the least from the current Social Security system. This is partly the result of a choice that was based on the social adequacy principle, namely to pay Social Security benefits in the form of a lifelong annuity. However, the very low rates of return that single males earn may have implications for plans that allow workers to invest part of their Social Security contributions in securities of their own choice. For example, the Simpson-Kerrey proposal in the Senate would allow workers to divert up to 2 percentage points of their payroll taxes into a Personal Investment Plan or IRA-type account. We expect high participation rates in these types of defined-contribution plans among workers with below-average rates of return, such as unmarried men, which will have adverse consequences for the long-range balance of the public portion of the Social Security system.



For the proposed amendments to the Social Security system, I have shown you the effects by income group and birth cohort only, because there were no disproportionate impacts by sex, race, and marital status.

The burden of increasing the payroll tax will fall most heavily on the higher incomes and the younger cohorts. Reducing benefits across-the-board will be felt most strongly by the higher incomes. The proposals now under consideration typically argue for sharpening the progressivity of the benefit formula, which will further exacerbate the disproportionate negative impact on the higher incomes. The burden of a rise in the normal retirement age, finally, will be borne mostly by the younger generation.

It is clear that the Social Security system must be amended to ensure that there will be sufficient funds to pay benefits to future retired workers, their spouses, and their widows. This study provides no guidance for deciding on a fair distribution of the burdens these reforms will inevitably place on birth cohorts and income groups. One of our findings is that the system is not as progressive as often thought. It is for law makers and their supporters to decide how to balance the goals of equity and adequacy in the reforms.

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