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Report to Congressional Requesters

June 2004

SOCIAL SECURITY

Distribution of Benefits and Taxes Relative to Earnings Level

GAO-04-747

June 2004

SOCIAL SECURITY

Distribution of Benefits and Taxes Relative to Earnings Level

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Highlights

Highlights of GAO-04-747, a report to congressional requesters

Why GAO Did This Study

Under the current Social Security benefit formula, retired workers receive benefits that equal about 50 percent of pre-retirement earnings for a low-wage worker but only about 30 percent for a relatively high-wage worker. Factors other than earnings also influence the distribution of benefits, including the program's provisions for disabled workers, spouses, children, and survivors. Changes in the program over time also affect the distribution of benefits across generations.

Social Security faces a long-term structural financing shortfall. Program changes to address that shortfall could alter the way Social Security's benefits and revenues are distributed across the population and affect the income security of millions of Americans.

To gain a better understanding of the distributional effects of potential program changes, the Chairman and Ranking Minority Member of the Senate Special Committee on Aging asked us to address (1) how to define and describe "progressivity," that is, the distribution of benefits and taxes with respect to earnings level, when assessing the current Social Security system or proposed changes to it; (2) what factors influence the distributional effects of the current Social Security program; and (3) what would be the distributional effects of various reform proposals, compared with alternative solvent baselines for the current system.

www.gao.gov/cgi-bin/getrpt?GAO-04-747.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Barbara Bovbjerg at (202) 512-7215 or bovbjergb@gao.gov.

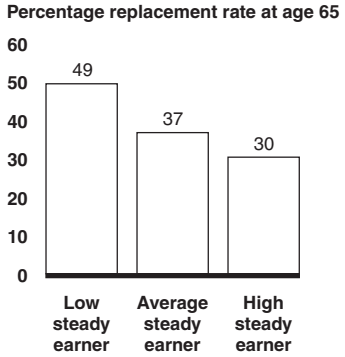
What GAO Found

Two distinct perspectives on Social Security's goals suggest different approaches to measuring "progressivity," or the distribution of benefits and taxes with respect to earnings level. Both perspectives provide valuable insights. An adequacy perspective focuses on benefit levels and how well they maintain pre-entitlement living standards. An equity perspective focuses on rates of return and other measures relating lifetime benefits to contributions. Both perspectives examine how their measures are distributed across earnings levels. However, equity measures take all benefits and taxes into account, which is difficult for reform proposals that rely on general revenue transfers because it is unclear who pays for those general revenues.

The Social Security program's distributional effects reflect both program features and demographic patterns among its recipients. In addition to the benefit formula, disability benefits favor lower earners because disabled workers are more likely to be lower lifetime earners. In contrast, household patterns reduce the system's tilt toward lower earners, for example, when lower earners have high-earner spouses. The advantage for lower earners is also diminished by the fact that they may not live as long as higher earners and therefore would get benefits for fewer years on average.

Proposals to alter the Social Security program would have different distributional effects, depending on their design. Model 2 of the President's Commission to Strengthen Social Security proposes new individual accounts, certain benefit reductions for all beneficiaries, and certain benefit enhancements for selected low earners and survivors. According to our simulations, the combined effect could result in lower earners receving a greater share of all benefits than promised or funded under the current system if all workers invest in the same portfolio.

Social Security Benefit Formula Provides Higher Replacement Rates for Lower Earners



Source: GAO analysis using SSA ANYPIA program.

Note: Replacement rates are the annual retired worker benefits at age 65 for workers born in 1985 divided by the earnings in the previous year. For such workers, the full retirement age will be 67. Steady earners have earnings equal to various percentages of Social Security's Average Wage Index in every year of their careers.

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Abbreviations

AIME	Average Indexed Monthly Earnings
CSSS	Commission to Strengthen Social Security
DI	Disability Insurance
GEMINI	Genuine Microsimulation of Social Security and Accounts
MINT3	Modeling Income in the Near Term
OCACT	Social Security Administration's Office of the Chief Actuary
PENSIM	Pension Simulator
PIA	Primary Insurance Amount
PSG	Policy Simulation Group
SSA	Social Security Administration
SSASIM	Social Security and Accounts Simulator

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G A O
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

June 15, 2004

The Honorable Larry E. Craig
Chairman
The Honorable John Breaux
Ranking Minority Member
Special Committee on Aging
United States Senate

Under Social Security, retired workers receive benefits that equal about 50 percent of pre-retirement earnings for a worker with relatively lower earnings but only about 30 percent of earnings for one with relatively higher earnings. To help ensure that beneficiaries have adequate incomes, Social Security's benefit formula is designed to be "progressive," that is, to provide disproportionately larger benefits, as a percentage of earnings, to lower earners than to higher earners. However, the benefit formula is just one of several program features that influence the way benefits are distributed. Other such program features include provisions for disabled workers, spouses, children, and survivors. Changes in the program over time also affect the distribution of benefits across generations. So the distribution of Social Security benefits can vary by eligibility, household type, and birth year as well as by earnings level.

Social Security faces a long-term structural financing shortfall, largely because people are living longer and having fewer children. According to the 2004 intermediate—or best-estimate—assumptions of the Social Security trustees, Social Security's annual benefit payments will exceed annual revenues beginning in 2018, and it will be necessary to draw on trust fund reserves to pay full benefits. In 2042, the trust funds will be exhausted, and annual revenues will only be sufficient to pay about 73 percent of benefits. As a result, some combination of benefit and/or revenue changes will be needed to restore the long-term solvency and sustainability of the program. Any such changes could alter the way Social Security's benefits and revenues are distributed across the population and affect the income security of millions of working Americans and their families.

To gain a better understanding of the distributional effects of potential program changes, you asked us to address (1) how to define and describe "progressivity," that is, the distribution of benefits and taxes with respect to earnings level, when assessing the current Social Security system or

proposed changes to it; (2) what factors influence the distributional effects of the current Social Security program; and (3) what would be the distributional effects of various reform proposals, compared with alternative solvent baselines for the current "defined-benefit" system.

To address how to define and measure progressivity, we conducted a literature review and interviewed researchers familiar with distributional analysis of Social Security benefits. To describe the factors affecting the current Social Security program's distributional effects, we calculated benefits and contributions for a sample of workers born in 1985 using a microsimulation model.[1] We tailored the analysis to examine the effects of specific program features, such as spouse, survivor, and disability benefits. In consultation with your staff, we selected three reform proposals for our analysis to illustrate a range of possible approaches to restoring solvency. To describe the distributional effects of the "Model 2" proposal put forth by the President's Commission to Strengthen Social Security (CSSS), we used our model to simulate benefits for workers born in 1985.[2] In our modeling, we focused on workers born in 1985 because all prospective program changes under all alternative policy scenarios would be almost fully phased in for such workers. We focused on examining the distribution of benefits and did not assess their adequacy. We did not examine other sources of retirement income, such as employer pensions or other individual retirement savings, and such sources may interact with Social Security benefits. Also, in our modeling, to illustrate a full range of possible outcomes, we used hypothetical benchmark policy scenarios that would achieve 75-year solvency either by only increasing payroll taxes (which simulated "promised benefits") or only reducing benefits (which simulated "funded benefits"). If benefits were reduced proportionally under the funded-benefits benchmark, then even though the benefits

[1]We used the GEMINI model under a license from the Policy Simulation Group, a private contractor. GEMINI estimates individual effects of policy scenarios for a representative sample of future beneficiaries. GEMINI can simulate different reform features, including individual accounts with an offset, for their effects on the level and distribution of benefits. See appendix I for more detail on the modeling analysis, including a discussion of our assessment of the data reliability of the model.

[2]In its final report, the commission proposed three models, each of which would create a new system of individual accounts. The models varied in the combination and specifications for various provisions, including the size of the accounts, benefit reductions, general revenue transfers, and benefit enhancements for survivors and low earners. We analyzed reform Models 2 and 3 in a previous report. See U.S. General Accounting Office, *Social Security Reform: Analysis of Reform Models Developed by the President's Commission to Strengthen Social Security*, GAO-03-310 (Washington, D.C.: January 15, 2003).

would be lower, the shape of the distribution of benefits would be very similar to that of the promised benefits benchmark. We also conducted a qualitative analysis of the distributional effects of two other proposals, one offered by Peter Ferrara and the other by Peter Diamond and Peter Orszag.[3] Our work was done between September 2003 and June 2004 in accordance with generally accepted government auditing standards.

Results in Brief

The research literature reveals several approaches to measuring progressivity—or the distribution of benefits and taxes with respect to earnings level. In the context of Social Security reform, these approaches reflect different perspectives on the program's objectives. One perspective focuses on the program's role in securing adequate incomes. Studies designed to reflect this perspective address the question of the extent to which Social Security benefits help ensure a minimal subsistence or maintain past standards of living. Consequently, these studies use measures such as absolute benefit levels at a point in time and benefit-to-earnings ratio, and then look at how these measures are distributed across various groups of earners. The measures themselves describe adequacy, but their distribution with respect to earnings level describes progressivity. Another perspective focuses on the program's role in assuring equity. Studies that adopt this perspective compare lifetime benefits with lifetime taxes to gauge whether participants get their money's worth from the system. The measures they use include internal rates of return, ratios of benefits received to taxes paid, and ratios of net benefits—benefits minus taxes—to earnings. However, these equity measures cannot accurately assess the distributional effects of reform proposals that rely on general revenue transfers. Such proposals do not generally specify what kind of future taxes or spending cuts will finance the transfers or who will bear their burden, but evaluating progressivity from an equity perspective requires that all taxes and benefits be clearly allocated. There is no one measure that best assesses progressivity or distributional effects; both the adequacy and the equity perspectives provide insights.

[3]The Ferrara proposal would create a new system of individual accounts that would ultimately be large enough to completely replace Social Security's old-age benefits for workers and their spouses; it would use general revenue transfers and other revenue increases to cover the costs of making the transition to the new system. The Diamond-Orszag proposal would restore long-term solvency without creating a new system of individual accounts using a variety of benefit reductions and revenue increases; it would also enhance benefits for survivors and low earners. We were limited to a qualitative analysis on these proposals because of modeling and time constraints.

Social Security's distributional effects reflect program features, such as its benefit formula, and demographic patterns among its recipients, such as marriage between lower and higher earners. The retired worker benefit formula favors lower earners by design, replacing about 50 percent of pre-retirement earnings for an illustrative low earner but only about 30 percent of pre-retirement earnings for an illustrative high earner. The disability benefit formula also favors lower earners, and disability recipients are disproportionately lower earners. Our simulations suggest that for individuals born in 1985, compared with a hypothetical program without disability insurance, Social Security's disability provisions increase lifetime Social Security benefits for the bottom fifth of earners by 43 percent, compared with 14 percent for the top fifth of earners. The extent to which Social Security benefits favor lower earners may be offset to some degree by demographic patterns. Household formation reduces the system's tilt toward lower earners because some of the lower-earning individuals helped by the program live in high-income households. For example, many of the lower-earning individuals that the system favors through spouse and survivor benefits actually live at some point in higher-income households because of marriage. In our simulations, the ratio of benefits received to payroll taxes contributed is higher for lower earners than for higher earners, but this difference is reduced when we account for household formation. Also, differences in mortality rates may reduce rates of return for lower earners, as studies show they may not live as long as higher earners and therefore would receive benefits for fewer years.

Alternative Social Security reform proposals would have different distributional effects. Model 2 of the President's Commission to Strengthen Social Security proposes a new system of voluntary individual accounts, along with a combination of certain benefit reductions for all beneficiaries and certain benefit enhancements for selected low earners and survivors. According to our simulations, the distribution of benefits under Model 2 could favor lower earners more than the distribution of benefits under either currently promised or currently funded benefits. For example, assuming universal account participation, households in the lowest fifth of earnings may receive about 14 percent of all lifetime benefits under Model 2, compared with about 12.5 percent under either currently promised or currently funded benefits. While the proposal's individual accounts and benefit reductions together may favor higher earners, this is more than offset by a limit on account contributions and the enhanced benefits for low earners and survivors. However, if individuals' investment decisions varied by earnings level, then the distribution of income from the accounts would differ from our simulations. In addition, the Ferrara proposal illustrates seeking

progressivity solely through an individual account approach, while the Diamond-Orszag proposal illustrates enhancing progressivity solely through modifications of the current defined-benefit program structure.

Background

In the midst of the Great Depression, Social Security was enacted to help ensure that the elderly would have adequate retirement incomes and would not have to depend on welfare. The program was designed to provide benefits that workers had earned to some degree through their contributions and those of their employers. The benefit amounts would depend in part on how much the worker had earned and therefore contributed. Today, about 10 percent of the elderly have incomes below the poverty line, compared with 35 percent in 1959. However, for about half of today's elderly, incomes excluding Social Security benefits are below the poverty line. Importantly, Social Security does not just provide benefits to retired workers. In 1939, coverage was extended to the dependents of retired and deceased workers, and in 1956 the Disability Insurance program was added.

To restore the long-term solvency and sustainability of the program, reductions in promised benefits and/or increases in program revenues will be needed. Within the program's current structure, possible benefit changes might include increases in the full retirement age, changes to the benefit formula, or reductions in cost-of-living increases, among other options. Revenue increases might include increases in payroll taxes or transfers from the Treasury's general fund.

Some proposals would change the structure of the program to incorporate a system of individual retirement savings accounts. Many such proposals would reduce benefits under the current system and make up for those reductions to some degree with income from the individual accounts. Individual account proposals also try to increase revenues, in effect, by providing the potential for higher rates of return on the individual accounts' investments than the trust funds would earn under the current system.

Three key distinctions help to identify the differences between Social Security's current structure and one that would use individual accounts.

- **Insurance versus savings**. Social Security is a form of insurance, while individual accounts would be a form of savings. As social insurance, Social Security protects workers and their dependents against a variety of risks such as the inability to earn income due to old age, disability, or death. In contrast, a savings account provides income only from individuals'

contributions and any earnings on them; individuals effectively insure themselves under a savings approach.

- **Defined-benefit versus defined-contribution**. Social Security provides a "defined-benefit" pension, while individual accounts would provide a "defined-contribution" pension. Defined-benefit pensions typically determine benefit amounts using a formula that takes into account individuals' earnings and years of earnings. The provider assumes the financial and insurance risk associated with funding those promised benefit levels. Defined-contribution pensions, such as 401(k) plans, determine benefit amounts based on the contributions made to the accounts and any earnings on those contributions. As a result, the individual bears the financial and insurance risks under a defined-contribution plan until retirement.[4]

- **Pay-as-you-go versus full funding**. Social Security is financed largely on a "pay-as-you-go" basis, while individual accounts would be "fully funded." In a pay-as-you-go system, contributions that workers make in a given year fund the payments to beneficiaries in that same year, and the system's trust funds are kept to a relatively small contingency reserve.[5] In contrast, in a fully funded system, contributions for a given year are put aside to pay for future benefits. The investment earnings on these funds contribute

[4]At retirement, individuals do have the option of purchasing an annuity with their defined-contribution accounts, which then transfers the financial and insurance risk to the annuity provider. Before retirement, individuals may also have the option of purchasing deferred annuities.

[5]Social Security is now temporarily deviating from pure pay-as-you-go financing by building up substantial trust fund reserves. Social Security is currently collecting more in revenues than it pays in benefits each year, partly because the baby boom generation makes the size of the workforce larger relative to the beneficiary population. However, these surpluses are currently being spent on other government expenses, and the trust funds are being credited with special issue U.S. Treasury securities. These securities are backed by the full faith and credit of the U.S. government as to both principal and interest. They have legal, political, and moral significance. They do not, however, have any independent economic value. In 2018, shortly after the baby boom starts to retire, the benefit payments are expected to exceed revenues, and the government will begin drawing on the trust funds to help pay the baby boom's retirement benefits. Importantly, drawing on the trust funds requires the Treasury to provide cash in exchange for redeemed bonds, which will in turn require increased revenue, increased borrowing, or reduced spending in the rest of the government. For more detail about this temporary trust fund buildup and how it interacts with the federal budget, see U.S. General Accounting Office, *Social Security Financing: Implications of Government Stock Investing for the Trust Fund, the Federal Budget, and the Economy*, GAO/AIMD/HEHS-98-74 (Washington, D.C.: Apr. 22, 1998), U.S. General Accounting Office, *Social Security Reform: Demographic Trends Underlie Long-Term Financing Shortage*, GAO/T-HEHS-98-43 (Washington, D.C.: Nov. 20, 1997).

considerable revenues and reduce the size of contributions that would otherwise be required to pay for the benefits. Defined-contribution pensions and individual retirement savings are fully funded by definition.

To evaluate reform proposals, we have suggested that policy makers should consider three basic criteria:[6]

1. the extent to which the proposal achieves sustainable solvency and how the proposal would affect the economy and the federal budget;

2. the balance struck between the twin goals of individual equity[7] (rates of return on individual contributions) and income adequacy (level and certainty of benefits); and

3. how readily such changes could be implemented, administered, and explained to the public.

Providing higher replacement rates for lower earners than for higher earners is just one of several aspects of our criterion for balancing adequacy and equity. With regard to adequacy, this criterion also considers the extent to which the proposal

- changes benefits for current and future retirees;
- maintains or enhances benefits for low-income workers who are most reliant on Social Security; and
- maintains benefits for the disabled, dependents, and survivors.

In addition, providing higher replacement rates for lower earners than for higher earners does not by itself ensure adequacy. A reform proposal could make replacement rates vary even more by earnings level than under the current system yet provide lower and less adequate benefits.[8]

[6]See U.S. General Accounting Office, *Social Security: Criteria for Evaluating Reform Proposals*, GAO/T-HEHS-99-94 (Washington, D.C.: Mar. 25, 1999), and U.S. General Accounting Office, *Social Security: Evaluating Reform Proposals*, GAO/AIMD/HEHS-00-29 (Washington, D.C.: Nov. 4, 1999).

[7]For a discussion of individual equity issues, see U.S. General Accounting Office, *Social Security: Issues in Comparing Rates of Return with Market Investments*, GAO/HEHS-99-110 (Washington, D.C.: Aug. 5, 1999).

[8]U.S. General Accounting Office, *Social Security: Program's Role in Helping Ensure Income Adequacy*, GAO-02-62 (Washington, D.C.: Nov. 30, 2001).

With regard to equity, our criterion for balancing adequacy and equity also considers the extent to which the proposal

- ensures that those who contribute receive benefits,
- expands individual choice and control over program contributions,
- increases returns on investment, and
- improves intergenerational equity.

Moreover, reform proposals should be evaluated as packages that strike a balance among individual reform elements and important interactive effects. The overall evaluation of any particular reform proposal depends on the weight individual policy makers place on each criterion.

In 2001, the President created the Commission to Strengthen Social Security to develop reform plans that strengthen Social Security and increase its fiscal sustainability while meeting certain principles:

- no changes to benefits for retirees or near retirees,
- dedication of entire Social Security surplus to Social Security,
- no increase in Social Security payroll taxes,
- no government investment of Social Security funds in the stock market,
- preservation of disability and survivor components,[9] and
- inclusion of individually controlled voluntary individual retirement accounts.

The commission developed three reform models, each of which represented a different approach to including voluntary individual accounts as part of Social Security. Under all three models, individuals could have a portion of their Social Security contributions deposited into individual accounts, and their Social Security defined benefits would be reduced relative to those account contributions. A governing board would administer the accounts in a fashion similar to the Thrift Savings Plan for

[9]The commission's final report states: "The Commission's short life span has not allowed time for the careful deliberation necessary to develop sound reform plans for the disability program. Because of the complexity and sensitivity of the issues involved, we recommend that the President address the DI [Disability Insurance] program through a separate policy development process. … In the absence of fully developed proposals, the calculations carried out for the Commission and included in this report assume that defined benefits will be changed in similar ways for the two programs. This should not be taken as a Commission recommendation for policy implementation." President's Commission to Strengthen Social Security, *Strengthening Social Security and Creating Personal Wealth for All Americans.* Washington, D.C., Dec. 21, 2001, http://www.csss.gov/reports/, p. 149.

federal employees. To continue paying benefits while also making deposits to the accounts, funds would need to be transferred from the Treasury's general fund. The models varied in the size of the account contributions. Models 2 and 3 had additional provisions for reducing certain benefits overall and enhancing benefits for surviving spouses and selected low earners.

Different Distributional Measures Reflect Different Perspectives

To assess the extent to which the Social Security program or reform options are progressive—distributes in a way that favors lower earners—researchers first select a number of measures and then compare how different groups of earners fare according to those measures. The choice of measures reflects a particular perspective on the goals of the program. For example, those who analyze Social Security from an adequacy perspective are primarily concerned with the program's role in securing adequate income and consequently tend to use measures of how much income Social Security provides. In contrast, those who view Social Security from an equity perspective focus on whether beneficiaries receive a fair return on their contributions and tend to choose measures balancing lifetime taxes against lifetime benefits. For each perspective, assessing progressivity involves determining how lower earners fare relative to higher earners on appropriate measures. In the context of Social Security reform, those scenarios in which the well-being of lower earners increased proportionally more, or decreased proportionally less, would be considered more progressive. Because of the different kinds of benefits that Social Security provides, many researchers agree that to investigate the distributional effect of the program, aggregating workers and their dependents into households better captures well-being, but doing so poses certain methodological challenges.

The Adequacy Perspective Focuses on Reducing Poverty and Dependency

Since its inception, Social Security's primary goal has been to provide adequate income, upon entitlement, so as to reduce dependency and poverty among its participants. Studies emphasizing this goal reflect the adequacy perspective; they view the program more as a safety net that helps ensure a minimum level of subsistence. Consequently, such studies use measures of how much income Social Security benefits provide. These measures include absolute benefit levels at a point in time and benefit-to-earnings ratios. Benefit levels are useful for estimating whether Social Security offers adequate protection for people covered by the system. Benefit-to-earnings ratios, which reflect how much of past earnings Social Security benefits replace, help gauge the extent to which the program allows people to maintain their past standard of living.

One way to assess the distributional effect of the current Social Security program or of various reform options is to look at how these adequacy measures are distributed across earners. Regarding benefit levels, one possibility is to compute the ratio of benefits received by lower earners to benefits received by higher earners, at a particular point in time. Comparing these benefit ratios under different policies helps determine how the well-being of lower earners changes relative to that of higher earners across reform proposals.[10] If, for example, benefits collected by individuals in the 20th percentile of the earnings distribution relative to benefits collected by those in the 80th percentile increased from one Social Security system to the next, the adequacy perspective would conclude that, other things being equal, the second is more progressive, that it is tilted toward lower earners.[11] Alternatively, one could compute the proportion of total benefits various groups of earners receive relative to the proportion the median gets and determine the manner in which these relative proportions change across proposals. For all groups below the median, for instance, an increase in this ratio would indicate a more progressive system.[12]

The distribution of replacement rates also helps assess progressivity. The change in the replacement rate of lower earners relative to that of high earners across reform options shows the extent to which lower earners

[10]Martin Feldstein and Jeffrey B. Liebman ("The Distributional Effects of an Investment-Based Social Security System," NBER Working Paper 7492, National Bureau of Economic of Economic Research, January 2000, p.46) suggest several reform options that raise everyone's benefit above its current law level but identify the most progressive plan as the one under which low earners' benefits increase by much more than high earners' benefit. In the same vein, Barry Bosworth and Gary Burtless (*Economic and Distributional Effects of the Proposals of President Bush's Social Security Commission*, the Brookings Institution, July 2002, p.25) predict no adverse distributional impact within a cohort in going from a pay-as-you-go system such as the current one to plans with individual accounts, since low earners lose proportionally less, or gain proportionally more, than high earners. Andrew Biggs ("Testimony before the Senate Finance Committee Hearing on the Final Report Produced by the President's Commission to Strengthen Social Security," October 2002, p.22) argues that the Commission to Strengthen Social Security's Model 2 maintains the progressivity of the current system, since the percent increase in benefit a low-wage worker receives under this model is higher than what a high-wage worker gets.

[11]The literature on inequality typically identifies low earners as individuals in the 20th percentile of the income distribution and high earners as those in the 80th percentile. See Karen Smith, *How Will Recent Patterns of Earnings Inequality Affect Future Retirement Incomes?* The Urban Institute, May 2003, p.16.

[12]The opposite holds for groups of earners above the median. An increase in the share of total benefits going to these high earners relative to the median would indicate a tilt in their favor, hence a less progressive system.

are able to maintain their pre-entitlement standard of living relative to higher earners. Under the current Social Security system, for instance, the monthly benefit lower earners receive upon entitlement replaces a larger portion of their monthly earnings; from an adequacy perspective, the system is therefore tilted in their favor. A reform proposal that increased the replacement rate of lower earners relative to higher earners would be deemed more progressive than one that did not.

The Equity Perspective Focuses on the Relationship between Contributions and Benefits over a Lifetime

By linking benefits to earnings, which link in turn to contributions, Social Security also incorporates the principle of individual equity. Under the current program, people who pay higher taxes generally collect higher benefits upon entitlement but not directly proportionally higher.[13] Studies that reflect the equity perspective focus on whether, over their lifetimes, beneficiaries can expect to receive a fair return on their contributions or get their money's worth from the system. These studies use such measures as lifetime benefit-to-tax ratios, internal rates of return, and net lifetime benefit-to-earnings ratios.[14] The benefit-to-tax ratio measure compares the present value of Social Security lifetime benefits with the present value of lifetime Social Security taxes.[15] The internal rate of return can be thought of as the interest rates individuals effectively receive on their lifetime contributions, given their lifetime Social Security benefits. Net lifetime benefit-to-earnings ratios show lifetime benefits minus lifetime taxes relative to lifetime earnings. This measure, also called the average rate of net taxation, borrows from the public finance literature the idea that equity measures ought to contain earnings.[16]

[13]A person contributing twice the amount of another, for instance, does not receive twice the benefit. This is because Social Security combines social adequacy and individual equity, transferring income from higher earners to lower earners within cohorts.

[14]These measures are the most commonly cited in the literature but do not constitute an exhaustive list. Alan L. Gustman and Thomas L. Steinmeier, "How Effective Is Redistribution under the Social Security Benefit Formula?" Retirement Research Center Working Paper 2000-005, University of Michigan, August 2000, for example, use the portion of total benefits received minus the portion of total taxes paid by different earnings groups. Some researchers also look at lifetime net transfers, that is, benefits minus taxes.

[15]A value less than one, for example, indicates that benefits collected fall short of taxes paid.

[16]See Julia L. Coronado, Don Fullerton, and Thomas Glass, "The Progressivity of Social Security," NBER Working Paper 7520, National Bureau of Economic Research, February 2000, and Jeffrey B. Liebman, "Redistribution in the Current U.S. Social Security System," NBER Working Paper 8625, National Bureau of Economic Research, December 2001.

From an equity perspective, examining the distribution of these measures helps gauge the distributional effects of Social Security or reform options. Many studies adopting the equity perspective find, for example, that the current program favors lower earners because this group enjoys higher rates of return and benefits whose value is larger relative to the value of their contributions.[17] Other studies confirm this result by observing that the net benefit-to-earnings ratio is higher for low earners.[18] If under a reform proposal, these measures increased more for lower earners, then that system would be considered more progressive.

Reform options that involve general revenue transfers to ensure solvency make it difficult to evaluate progressivity from an equity perspective because they do not typically specify how such transfers are to be financed or who will eventually bear their burden. Yet general revenue transfers implicitly require future tax increases, spending cuts, or a combination of both, all of which have substantial distributional consequences. Such consequences are difficult to evaluate analytically. Without knowing who will bear the costs of financing these transfers, the equity perspective cannot accurately determine how well lower earners fare relative to higher earners in a given system or across proposed reforms. Even if we knew how the tax burden of general revenues is distributed today, the tax system could change in the future in ways that would alter the distribution. Some proposals with individual account features, for example, involve general revenue transfers. They divert part of existing payroll tax revenues from traditional Social Security benefits and toward individual accounts. Consequently, to remain financially

[17]See Dean R. Leimer, "Lifetime Redistribution under the Social Security Program: A Literature Synopsis," *Social Security Bulletin*, Vol. 62, No. 2, 1999, for a review of the literature. It is important to note that in computing lifetime benefits and taxes, past values are accumulated and future values discounted using a particular interest rate. The choice of the interest rate has implications for progressivity. A higher interest rate makes the distant future less valuable, reducing the importance of benefits received in retirement relative to taxes paid earlier in life. Since benefits are more progressive and payroll taxes are regressive, given the contribution cap, higher interest rates generally decrease the progressivity of the program.

[18]See Coronado, Fullerton, and Glass, 2000, and Liebman, 2001.

solvent, such proposals typically require additional resources from Treasury's general fund for several years after implementation.[19]

Analyzing Households to Assess Social Security's Distributional Effects Offers Insight but Presents Analytical Challenges

Both the adequacy and the equity perspectives consider families or households, in addition to individuals, in assessing distributional effects. This is particularly relevant in the Social Security context because the program provides not only worker benefits to retired and disabled individuals, but also auxiliary benefits to current and former spouses, children, and surviving spouses. Household analysis has implications for progressivity. Most studies using equity measures find Social Security somewhat less progressive once workers and their dependents are combined in a single unit.[20] This is largely due to the fact that some individuals with little or no earnings, hence "poor" by themselves, end up in high-earning households. The benefit they collect no longer counts as transfers to low earners.[21]

However, the household approach presents analytical challenges. Multiple divorces and marriages, for example, make it difficult to define "household" on a lifetime basis.[22] Moreover, age differences between spouses, which imply different retirement dates, complicate the calculation of "total household benefit" at a given point in time. Nonetheless, researchers believe that aggregating workers and their dependents into households provides insight by giving a more complete picture of their well-being.

[19]CSSS Model 2, for example, does not specify any financing methods; Ferrara's Progressive Personal Account Plan relies on a reduction in federal spending growth coupled with a future increase in corporate tax revenues, but many analysts question the feasibility of the plan, given its assumptions and the budget deficit of the last few years.

[20]See, for example, Gustman and Steinmeier, 2000, p.18; Coronado, Fullerton, and Glass, 2000, p.2.

[21]Social Security data reveal that this is often the case with spouses of high earners. These spouses do not work, or do so at low wage rates or limited hours, appearing as low earners on an individual basis but not on a household basis.

[22]This is especially relevant in analyzing reform options because trends indicate that people in the future will experience relatively more marriages and divorces.

Program's Distributional Effects Reflect Various Program Features and Demographic Patterns

Social Security's distributional effects reflect program features, such as its benefit formula, and demographic patterns among its recipients, such as marriage between lower and higher earners. The benefit formula for retired workers favors lower earners by design, replacing a larger proportion of earnings for lower earners than for higher earners. Disability benefits use the same progressive benefit formula, and disability recipients are disproportionately lower lifetime earners. However, the extent to which these features favor lower earners may be offset to some degree by demographic patterns and other program features. Household formation reduces the system's tilt toward lower-income people because some of the lower-earning individuals helped by the program, in fact, live in high-income households. Differences in mortality rates may reduce rates of return for lower earners and increase rates of return for higher earners.

Benefit Formula Favors Lower Earners by Design

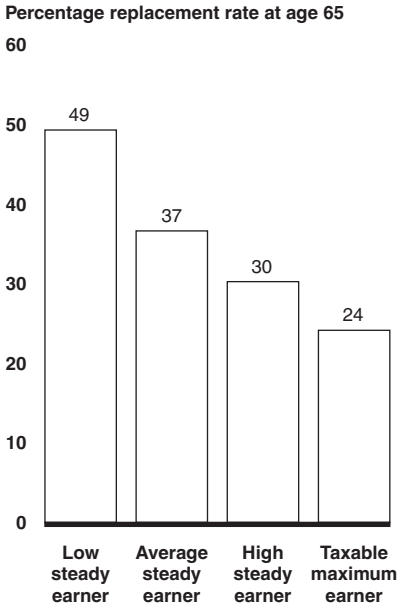
In order to help ensure adequate incomes in retirement, Congress designed Social Security's benefit formula for retired workers to favor lower earners.[23] When workers retire, Social Security uses their lifetime earnings records to determine their Primary Insurance Amount (PIA), on which initial monthly benefits are based. The PIA is determined by applying the Social Security benefit formula to a worker's Average Indexed Monthly Earnings (AIME). The AIME is the monthly average of a worker's 35 best years of earnings, with earnings before age 60 indexed to average wage growth.[24] For workers who become eligible for benefits in 2004, PIA equals 90 percent of the first $612 dollars of AIME plus 32 percent of the next $3,077 dollars of AIME plus 15 percent of AIME above $3,689. Consequently, the benefit formula replaces a higher proportion of pre-retirement earnings for lower lifetime earners than for higher lifetime earners. Figure 1 shows replacement rates for illustrative workers under the current benefit formula.[25] The replacement rate for the low earner is 49 percent, while the rate for the high earner is only around 30 percent.

[23]See U.S. General Accounting Office, *Social Security Reform: Program's Role in Helping Ensure Income Adequacy*, GAO-02-62 (Washington, D.C.: November 30, 2001), pp. 7-8.

[24]Indexing the earnings to changes in wage levels ensures that the same relative value is accorded to wages, no matter when they were earned.

[25]The annual trustees' report uses illustrative "scaled earnings" patterns. The values of the replacement rates for these scaled earnings patterns at age 65 are virtually identical to the ones presented in figure 1. See The Board of Trustees, Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, *The 2004 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds* (Washington, D.C.: Mar. 23, 2004). pp. 186-187.

Figure 1: Benefit Formula Provides Higher Replacement Rates for Lower Earners



Source: GAO analysis using SSA ANYPIA program.

Note: Replacement rates are the annual retired worker benefits at age 65 for workers born in 1985 divided by the earnings in the previous year. For such workers, the full retirement age will be 67. Steady earners have earnings equal to a constant percentage of Social Security's Average Wage Index in every year of their careers. Those percentages are 45, 100, and 160, respectively, for low, average, and high earners. Taxable maximum earners have earnings equal to the maximum taxable earnings in each year. Replacement rates are simulated under the tax-increase benchmark (promised benefits); they would be lower under the proportional benefit-reduction benchmark by a constant proportion and would therefore show a similar pattern. See appendix I for more on the benchmark policy scenarios.

Disability Benefits Favor Lower Earners

The Disability Insurance (DI) program, which provides benefits to workers who are no longer able to work because of severe long-term disabilities, also favors lower lifetime earners. Disability Insurance not only provides earnings replacement during the pre-retirement years but generally results in beneficiaries receiving higher benefits in retirement than they would have received if they had earned the same amount of money but had not received disability benefits.[26] Disability Insurance favors lower earners

[26]DI recipients are converted to retired worker recipients at the normal retirement age. Their retirement benefit is based on their disability benefit as opposed to the retirement benefit they would qualify for given their earnings record. This results in higher benefits because there are generally less computation years used when calculating AIME for disability benefits than for retirement benefits.

because it uses the same progressive benefit formula as retired worker benefits and because DI recipients are more likely to be lower earners. Disability Insurance recipients are disproportionately lower lifetime earners because an inability to continue working is necessary to qualify for benefits. Also, researchers have found that individuals with lower levels of educational attainment are more likely to experience disability.[27]

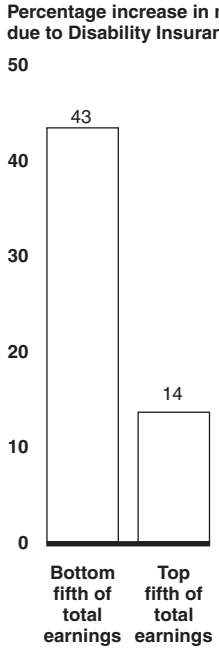
An analysis of lifetime benefits using a microsimulation model illustrates DI's tilt toward lower earners. To examine the distributional impact of DI, we simulated Social Security benefits for individuals born in 1985 under a scenario that pays retirement but not disability benefits and a scenario that pays all categories of Social Security benefits. Because simulations are sensitive to economic and demographic assumptions, it is more appropriate to compare benefits across the scenarios than to focus on the actual estimates themselves. Median lifetime Social Security benefits are 33 percent higher under the scenario that pays all types of Social Security benefits than under the scenario that does not pay disability benefits, with 30 percent of individuals receiving greater lifetime Social Security benefits due to the DI program. According to these simulations, DI increases median lifetime Social Security benefits for workers[28] in the lowest fifth of lifetime earnings by 43 percent while increasing lifetime benefits for the top fifth by 14 percent (see fig. 2).[29]

[27]See Constantijn Panis and Lee Lillard, *Final Report: Near Term Model Development Part II*, RAND (Santa Moncia, CA: Aug. 1999).

[28]These calculations are for all workers born in 1985—not just for those with disabilities.

[29]Studies also find that DI favors lower earners from equity perspectives such as benefit-to-tax ratios and real internal rates of return. See U.S. General Accounting Office, *Social Security and Minorities: Earnings, Disability Incidence, and Mortality Are Key Factors That Influence Taxes Paid and Benefits Received*, GAO-03-387 (Washington, D.C.: April 23, 2003) and Lee Cohen, Eugene Steuerle, and Adam Carasso, "The Effects of Disability Insurance on Redistribution within Social Security by Gender, Education, Race, and Income," presented at the Fourth Annual Joint Conference for the Retirement Research Consortium: Directions for Social Security Reform, May 30-31, 2002, Washington, DC, revision date June 11, 2002.

Figure 2: Disability Insurance Increases Median Lifetime Social Security Benefits by a Larger Percentage for Lower Earners



Source: GAO analysis using the GEMINI model.

Note: Percentage changes are the increase in individual lifetime Social Security benefits from a version of our tax-increase benchmark (promised benefits) where disability benefits are not paid to a version where all benefits are paid. Percentage changes would be different under the proportional benefit-reduction benchmark but would show a similar pattern. See appendix I for more on the benchmark policy scenarios. This includes all sample members who survive past age 24.

Household Formation Reduces the System's Tilt toward Lower Earners

Social Security favors lower earners less when considered from the household perspective.[30] Some of the lower-earning individuals who gain from the benefit formula or disability benefits do not live in low-income households, because they are married to higher earners. The same is often true for lower earners who receive spouse and survivors benefits. Married

[30]A number of studies find that the Social Security system is less progressive when considered from the household perspective. See Karen Smith, Eric Toder, and Howard Iams, "Lifetime Distributional Effects of Social Security Retirement Benefits," prepared for the Third Annual Joint Conference for the Retirement Research Consortium "Making Hard Choices about Retirement," Washington, D.C., May 17-18, 2001; Jeffrey Liebman, "Redistribution in the Current U.S. Social Security System," NBER Working Paper 8625, National Bureau of Economic Research, December 2001; Coronado, Fullerton, and Glass, 2000; and Gustman and Steinmeier, March 2000.

individuals are eligible for the greater of their own worker benefits or 50 percent of their spouses' benefits. Similarly, widows and widowers are eligible for the larger of their own worker benefits or 100 percent of their deceased spouses' benefits. Because of the nature of spouses' and survivors' benefits, recipients are on average lower lifetime earners—effectively they must earn less than their spouses to qualify. However, many of the lower-earning individuals that the system favors through spouses' and survivors' benefits actually live at some point in higher-income households because of marriage.

Some have suggested that household formation may have less of an impact on the degree to which Social Security favors lower earners in the future.[31] Increased female labor force participation and changing marital patterns suggest there will be less earnings differences between spouses in the future as well as fewer people who are married long enough to qualify for spouses' and survivors' benefits.[32] Consequently, there may be fewer instances of the system providing high replacement rates to low-earning spouses from high-income households.

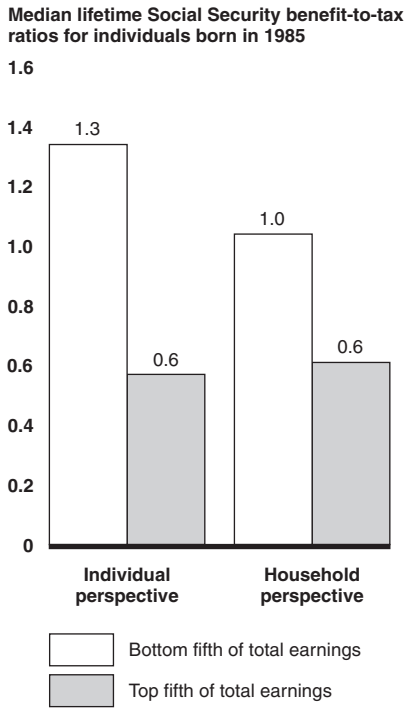
An analysis of simulated benefits and taxes illustrates how the system favors lower earners less when considered from the household perspective. For individuals born in 1985, figure 3 depicts the ratio of benefits received to taxes paid for the top and bottom fifths of earnings from an individual perspective and a household perspective. For example, the first bar indicates that individuals in the bottom fifth of earnings receive lifetime benefits that are 1.3 times higher than the lifetime taxes they paid to the program. When analyzed from an individual perspective, individuals are classified by their own lifetime earnings and ratios are calculated for their own taxes and benefits.[33] When analyzed from a household perspective, individuals are classified by household earnings and ratios are calculated for household taxes and benefits. In both cases, benefit-to-tax ratios are higher for the bottom fifth than for the top fifth, suggesting that the system favors lower earners. However, the difference in the benefit-to-tax ratios is smaller when considered from the household perspective.

[31]See Liebman 2001 and Smith, Toder, and Iams 2001.

[32]Divorced individuals must have been married for at least 10 years to qualify for spouses' and survivors' benefits.

[33]Spouses' and survivors' benefits are attributed to the individuals who receive them as opposed to the relevant retired workers.

Figure 3: Social Security Favors Lower Earners Less when Considered from the Household Perspective



Source: GAO analysis using the GEMINI model.

Note: Bars indicate the ratio of lifetime benefits received to lifetime taxes paid to the system. For example, the first bar indicates that lifetime benefits received are 1.3 times larger than taxes paid. Earnings fifths are based on the present value of total lifetime earnings. Individual analysis is based on own benefits, taxes, and earnings. Household analysis is based on per capita benefits, taxes, and earnings. Analysis includes all sample members who survive past age 24. Benefits and taxes are simulated under the tax-increase benchmark (promised benefits). Ratios would be different under the proportional benefit-reduction benchmark but would show a similar pattern. See appendix I for more on the benchmark policy scenarios.

Mortality Rates May Reduce the Degree to Which Social Security Favors Lower Earners

The extent to which the benefit formula and disability benefits favor lower earners may be offset to the extent that lower earners have higher mortality rates than do higher earners. A number of studies suggest that lower earners do not live as long as higher earners.[34] As a result, lower earners are likely to receive retirement benefits for fewer years than higher earners. Researchers have generally found that, to some degree, the relationship between mortality rates and earnings reduces rates of return for lower earners and increase rates of return for higher earners.[35]

Cap on Taxable Earnings Reduces Social Security's Tilt toward Lower Earners

Social Security taxes are levied on earnings up to a maximum level set each year, and earnings beyond the threshold are not counted when calculating benefits. In 2004, the cap on taxable earnings is $87,900, and in recent years about 6 percent of workers had earnings above the cap. Policy makers often argue that the cap helps higher earners because it results in their paying a smaller percentage of their earnings than do individuals whose earnings do not exceed the cap.[36] Also, while the cap limits both lifetime contributions and benefits, it increases equity measures such as benefit-to-tax ratios and rates of return for high earners. If the cap were repealed, the additional contributions paid by high earners would only be partially reflected in increased benefits, because the benefit formula is weighted toward lower earners.

[34]See Angus Deaton and Cristina Paxson, "Mortality, Education, Income, and Inequality among American Cohorts," NBER Working Paper 7140, National Bureau of Economic Research, May 1999; Adriana Lleras-Muney, "The Relationship between Education and Adult Mortality in The United States", NBER Working Paper 8986, National Bureau of Economic Research, June 2002; Constantijn Panis and Lee Lillard, *Final Report: Near Term Model Development Part II*, RAND, August 1999; and Eugene Rogot, Paul Sorlie, and Norman Johnson, "Life Expectancy by Employment Status, Income, and Education in the National Longitudinal Mortality Study," *Public Health Reports*, 107:4, 457-461.

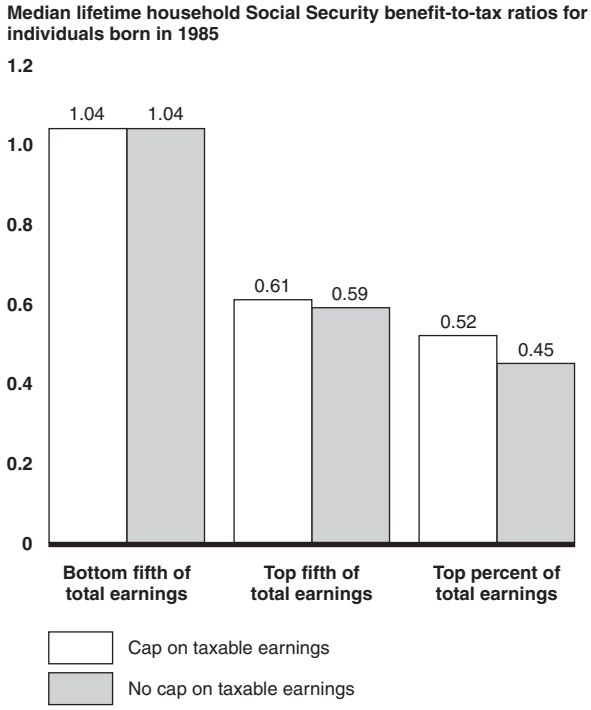
[35]The "implicit" rate of return equals the average interest rate workers would hypothetically have to earn on their contributions in order to pay for all the benefits they and their families will receive from Social Security. See U.S. General Accounting Office, *Social Security: Issues in Comparing Rates of Return with Market Investments*, GAO/HEHS-99-110 (Washington, D.C.: Aug., 1999), pp. 16 and 27-28; Lee Cohen, C. Eugene Steuerle, and Adam Carasso, "Social Security Redistribution by Education, Race, and Income: How Much and Why?" prepared for the Third Annual Conference of the Retirement Research Consortium: "Making Hard Choices about Retirement," Washington, D.C., May 17-18, 2001; and Julia Lynn Coronado, Don Fullerton, and Thomas Glass, "Distributional Impacts of Proposed Changes to the Social Security System," NBER Working Paper 6989, National Bureau of Economic Research, March 1999.

[36]See Laura Haltzel, *Social Security: Raising or Eliminating the Taxable Earnings Base*, Congressional Research Service (97-166 EPW), 2004.

Simulations illustrate that the cap on taxable earnings modestly favors higher earners for individuals born in 1985. We simulate benefits and taxes under a scenario with the cap on taxable earnings and one without the cap. Figure 4 shows household benefit-to-tax ratios by top and bottom fifth of earnings and top percentile of earnings. When the cap is removed, the median benefit-to-tax ratio for the bottom fifth remains unchanged and the ratio for the top fifth of earnings decreases from 0.61 to 0.59. Although 83 percent of households in the top fifth are affected by repealing the cap,[37] the increase in median lifetime taxes, 8.9 percent, is almost offset by the increase in median lifetime benefits, 6.5 percent. However, the impact on very high earners is larger. According to these simulations, the median benefit-to-tax ratio for households in the top 1 percent of earnings decreases from 0.52 to 0.45 when the cap is removed, indicating that very high earners gain from the cap; the increase in median lifetime taxes paid by this group, 50.4 percent, is not offset as much by the increase in their median lifetime benefits, 34.4 percent.

[37]The number of simulated households affected might appear inconsistent with the earlier reference to 6 percent of workers having earnings above the cap in recent years. However, the household number refers to the number of households that are ever affected on a lifetime basis while the 6 percent refers to the number of individual workers exceeding the cap in a given year. The number of workers that ever have earnings above the cap in at least one year over their careers is likely larger than the number exceeding the cap in a given year.

Figure 4: Cap on Taxable Earnings Favors High Earners



Source: GAO analysis using the GEMINI model.

Note: Earnings fifths and the top 1 percent of total earnings are based on the present value of total household lifetime earnings. Household analysis is based on per capita benefits, taxes, and earnings. Includes all sample members who survive past age 24. Benefits and taxes are simulated for a version of the tax-increase benchmark (promised benefits) with no cap on taxable earnings and a version with a cap. Ratios would be different under the proportional benefit-reduction benchmark but would show a similar pattern. See appendix I for more on the benchmark policy scenarios.

Distributional Effects Vary across Reform Proposals

We analyzed three proposals that illustrate the variation in the potential distributional effects of different approaches to reform. CSSS Model 2 would create a new system of voluntary individual accounts while reducing Social Security's defined benefits[38] overall but increasing them for surviving spouses and lower earners. The Ferrara proposal would create a system of voluntary individual accounts that would ultimately be large enough to completely replace Social Security's old-age benefits for workers and their spouses. The Diamond-Orszag proposal would restore long-term solvency without creating a new system of individual accounts

[38]In this report, we use "Social Security defined benefits" to refer to benefits not derived from the accounts, that is, retired workers' and aged spouses' and survivors' benefits.

by reducing benefits and increasing revenues while also increasing benefits for surviving spouses and lower earners.

CSSS Model 2

Under Model 2 of the President's Commission to Strengthen Social Security,

- For individuals choosing to participate, the Social Security system would redirect 4 percentage points of the payroll tax (up to a $1,000 annual limit[39]) into personal investment accounts. Participating individuals could access their accounts in retirement, but Social Security defined benefits would be reduced to reflect the amount diverted to their individual accounts. On net, benefits would increase for individuals whose accounts earned more than a 2 percent return beyond inflation.[40]

- Social Security defined benefits would be lower than benefits promised under the current benefit formula. Changes to the benefit formula would slow the growth in initial benefits from wage growth to price growth.[41] According to Social Security Administration's (SSA) Office of the Chief Actuary, these formula changes apply to initial benefits for all types of beneficiaries, including disabled workers.[42]

- Social Security defined benefits would be enhanced for certain surviving spouses and for low earners. When fully implemented, initial benefits for certain low-wage workers with steady work histories could be raised by as much as 40 percent.[43] Beneficiaries who lived longer than their spouses

[39]The limit on account contributions would be $1,000 in 2002 and would grow over time with wages.

[40]Social Security defined benefits for account participants would be offset by the annuitized value of a hypothetical account balance. Hypothetical account balances would be determined by individuals' actual account contributions and a 2 percent real return.

[41]On average, wages grow faster than prices.

[42]The commission's final report discusses the pros and cons of applying the benefit reduction to DI benefits. While all of the calculations in the report assume the benefit reductions apply to DI, the report states that the commission makes no recommendation as to whether DI benefits should be reduced. See *Strengthening Social Security and Creating Personal Wealth for All Americans*, Dec. 21, 2001, http://www.csss.gov/reports/, pp. 149-150.

[43]To receive the maximum enhancement, a retired worker would have to have wages less than a certain threshold and work for at least 30 years. The wage threshold would be $5.15 in 2000 and indexed thereafter by growth in the Social Security average wage index.

would receive the larger of their own benefit or 75 percent of the benefit that would be received by the couple if both spouses were alive.[44]

Simulations

We used simulations to examine how Model 2 might affect the distribution of Social Security benefits. We did not examine the distribution of equity measures such as benefit-to-tax ratios or rates of return, because the proposal's individual account feature requires general revenue transfers.[45] General revenue transfers are problematic when calculating equity measures because it is difficult to determine who ultimately pays for the additional financing. Because simulations are sensitive to economic and demographic assumptions, it is more appropriate to compare benefits across the scenarios than to focus on the actual estimates themselves. Since account participation is voluntary, we used two simulations to examine the effects of the Model 2 provisions, one with universal account participation (Model 2-100 percent) and one with no account participation (Model 2-0 percent). We also assumed that all account participants would invest in the same portfolios; consequently we did not capture any distributional effect that might occur if lower earners were to make different account participation or investment decisions than higher earners.[46] We compared benefits under Model 2 with hypothetical benchmark policy scenarios that would achieve 75-year solvency either by only increasing payroll taxes or by only reducing benefits. The tax-increase, or "promised benefits," benchmark scenario pays benefits defined by the current benefit formula and raises payroll taxes to bring the Social Security system into financial balance. The proportional benefit-reduction, or "funded benefits," benchmark scenario maintains current tax rates and achieves financial balance by gradually phasing in proportional benefit reductions. In order to compare Model 2 with the benchmarks, we assumed all account participants convert their account balances at retirement into periodic monthly payments.[47] We did not simulate other

[44]The enhanced survivors' benefit is capped at the average Primary Insurance Amount for all retired workers.

[45]See GAO-03-310, p. 24.

[46]Each participant has portfolio allocation of 50 percent in equities, 30 percent in corporate bonds, and 20 percent in U.S. Treasury long-term bonds. All portfolios earn a constant 4.6 percent real rate of return. For sensitivity analysis, we also simulated scenarios with rates of return varying stochastically across individuals and with higher and lower returns to equities. Shares of benefits by quintiles of lifetime earnings were very similar under all specifications.

[47]We assume participants purchase unisex annuities indexed to the Consumer Price Index with married individuals purchasing joint and two-thirds survivor annuities.

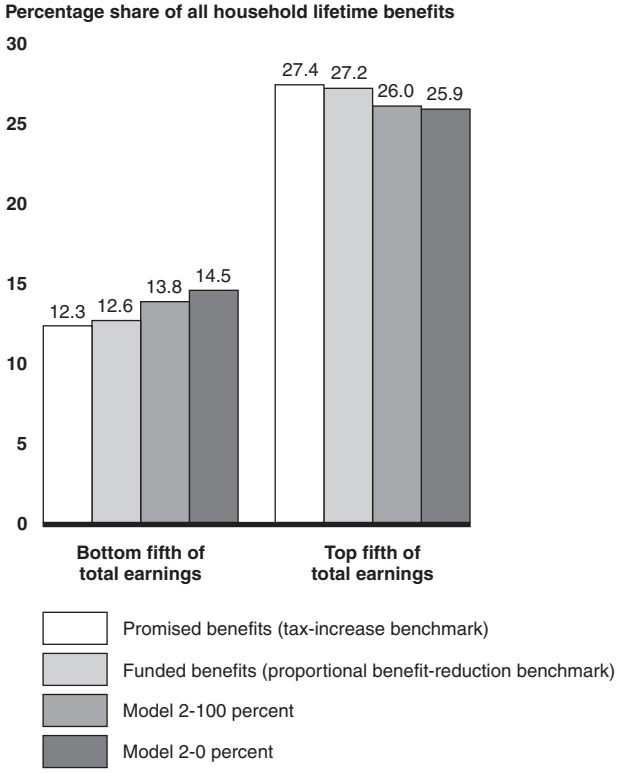
sources of retirement income, such as employer pensions or other individual retirement savings, and such sources may interact with Social Security policy. (See app. I for more details on the GEMINI microsimulation model, our benchmark policy scenarios, and our assumptions for CSSS Model 2.)

Model 2 Might Favor Lower Earners More than Benchmarks

Given our assumptions, our analysis suggests that Model 2 would favor lower earners somewhat more than the benchmark scenarios. Figure 5 shows the share of household lifetime benefits received by the bottom and top fifths of earnings for individuals born in 1985 for both Model 2 and for the promised and funded benefits scenarios. For example, households in the bottom fifth of earnings received about 12.5 percent of all lifetime benefits under both benchmark scenarios.[48] According to our simulations, households in the bottom fifth of earnings would receive greater shares of lifetime benefits under both Model 2 scenarios than under the benchmark scenarios, while households in the top fifth of earnings would receive smaller shares under Model 2 than under the benchmarks.

[48] Shares of benefits under the promised and funded benchmark scenarios are similar because the funded scenario reduces benefits by the same proportion for all recipients becoming eligibile in the same year. The small difference in shares is due to the timing of benefit reductions under the funded benefits scenario. The benefit reductions are phased in from 2005-2035, resulting in smaller reductions for individuals born in 1985 who become eligible for benefits before age 50. Those who become eligible before age 50 tend to be lower lifetime earners, which results in somewhat higher shares of benefits for the bottom quintile under the funded benefits scenario.

Figure 5: Model 2 Might Favor Lower Earners More than Benchmarks for Individuals Born in 1985



Source: GAO analysis using the GEMINI model.

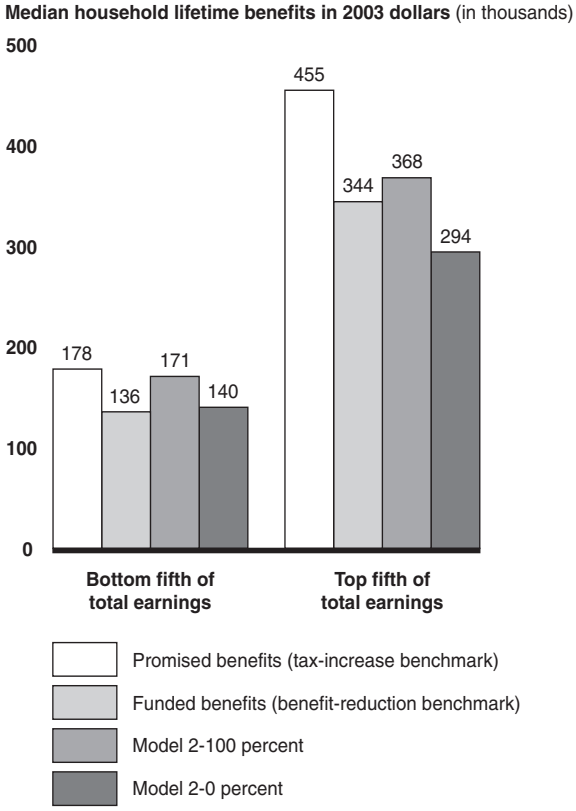
Notes: Earnings fifths are based on the present value of total household lifetime earnings. Household analysis is based on per capita benefits, taxes, and earnings. This includes all sample members who survive past age 24. It assumes all account participants choose the same portfolio—50 percent equities, 30 percent corporate bonds, and 20 percent Treasury bonds. Accounts earn a constant real return of 4.6 percent. For sensitivity analysis, we also simulated scenarios with rates of return varying stochastically across individuals and over time and scenarios with higher and lower returns to equities. Shares of benefits by earning fifths were similar under all specifications.

It should be noted that while the simulations suggest that the distribution of benefits under Model 2 is more progressive than under the benchmarks, this does not mean benefit levels are always higher for the bottom fifth under Model 2. (See fig. 6.) According to our simulations, median household lifetime benefits for the bottom fifth under Model 2-0 percent would be 3 percent higher than under the funded benefits scenario but 21 percent lower than under the promised benefits scenario. Median household lifetime benefits for the bottom fifth under Model 2-100 percent

would be 26 percent higher than under the funded benefits scenario but 4 percent lower than under the promised benefits scenario.[49] While Model 2 may improve the relative position of lower earners, it may not improve the adequacy of their benefits.

[49]Note that a previous GAO report found that real monthly individual benefits were slightly higher for the lowest benefit quintile under Model 2-100 percent than under the promised benefits (tax-increase) benchmark. Possible explanations for the apparent discrepancy include different measures of benefits and quintiles, and different assumptions for real wage growth. The previous report calculated real monthly individual benefits by benefit quintile, while this report calculates real household lifetime benefits by lifetime earnings quintile. This report assumes higher real wage growth than the previous report due to the Social Security trustees increasing their projection of real wage growth. Model 2 reduces PIA factors by real wage growth; so assuming higher real wage growth results in lower simulated benefits under the proposal. See GAO-03-310.

Figure 6: Median Household Lifetime Benefits under Model 2 and the Benchmarks for Individuals Born in 1985



Source: GAO analysis using the GEMINI model.

Note: Earnings fifths are based on the present value of total household lifetime earnings. Household analysis is based on per capita benefits, taxes, and earnings. This includes all sample members who survive past age 24. It assumes all account participants choose the same portfolio—50 percent equities, 30 percent corporate bonds, and 20 percent Treasury bonds. Accounts earn a constant real return of 4.6 percent.

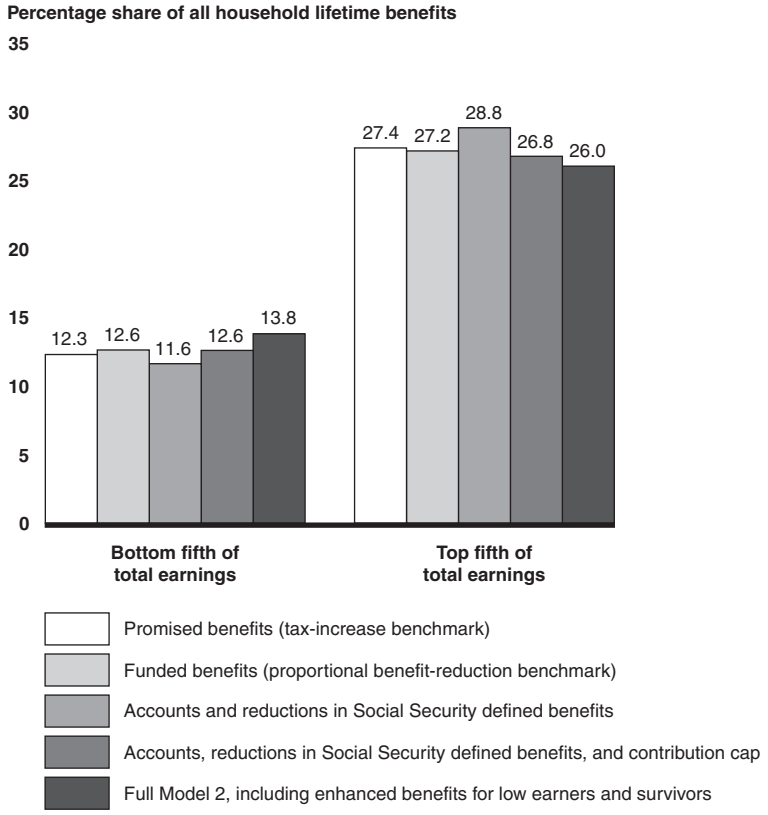
Features That Favor Higher Earners Are More than Offset by Features That Favor Lower Earners

To further understand how Model 2 distributes benefits toward lower earners, we examined the distributional effects of each of its core features. First we simulated a version of Model 2-100 percent that included the individual accounts and the reductions in Social Security defined benefits, but not the $1,000 cap on account contributions or the enhanced benefits for low earners and survivors. Next we simulated a version that included the defined-benefit reductions and the individual accounts with the $1,000 cap on account contributions. Finally, we simulated the complete Model 2-100 percent scenario, which included the enhanced benefits for lower earners and survivors.

Our analysis suggests that the effect of the individual accounts and defined benefit reductions, which favor higher earners, would be more than offset by the limit on account contributions and the enhanced benefits for lower earners and survivors. Figure 7 shows the distributional impact of each reform feature. First, we simulated adding the individual accounts and reducing Social Security defined benefits. The share of benefits received by the bottom fifth of earnings falls relative to the benchmarks by as much as a percentage point, and the share received by the top fifth increases by about 1.5 percentage points. Under this scenario, benefits from individual account balances effectively replace some of the benefits calculated from the Social Security benefit formula and the disability program. This shift favors higher earners because, unlike the benefit formula, accounts by themselves do not provide higher replacement rates for lower earners[50] and because DI recipients are more likely to be lower earners.

[50]This is because, assuming no differences in investment choices, individual accounts provide the same average rate of return across earnings levels.

Figure 7: Contribution Cap and Enhanced Benefits for Lower Earners and Survivors Offset the Distributional Effect of the Accounts and Reductions in Social Security Defined Benefits



Source: GAO analysis using the GEMINI model.

Note: Earnings fifths are based on the present value of total household lifetime earnings. Household analysis is based on per capita benefits, taxes, and earnings. This includes all sample members who survive past age 24 and assumes 100 percent account participation with all account participants choosing the same portfolios—50 percent equities, 30 percent corporate bonds, and 20 percent Treasury bonds. Accounts earn a constant real return of 4.6 percent.

Figure 7 also shows the impact of the cap on contributions and the enhanced benefits for low earners and survivors. Adding the cap on contributions would increase the share of benefits for the lowest fifth of earnings by more than a percentage point and would reduce the top fifth's share by two percentage points. The cap would reduce total benefits more for higher earners than for lower earners because higher earners have a

greater proportion of earnings above the limit.[51] As expected, adding the enhanced benefits for low earners and survivors[52] also favors lower earners. The lowest fifth's share of benefits increases by about a percentage point, and the top fifth's share of benefits decreases by almost a percentage point.

It should be emphasized that these simulations are only for individuals born in 1985, and the distributional impact of Model 2 could be different for individuals born in later years. For example, under the proposal, initial Social Security defined benefits only grow with prices, while initial benefits from account balances grow with wages. Since wages generally grow faster than prices, Social Security defined benefits will decline as a proportion of total benefits, reducing the importance of the progressive benefit formula, disability benefits, and the enhanced benefits for low earners and survivors.

It should also be noted that the account feature of Model 2-100 percent likely exposes recipients to greater financial risk. Greater exposure to risk may not affect the shares of benefits received by the bottom and top fifths of earnings.[53] However, greater risk may be more problematic for lower earners who likely have fewer resources to fall back on if their accounts perform poorly.[54]

Ferrara Proposal

The "Progressive Proposal for Social Security Personal Accounts," offered by Peter Ferrara, would establish voluntary, progressive individual accounts and reduce the Social Security retirement and aged survivor

[51]The cap on account contributions favors lower earners only if account participation increases benefits. In our simulations, account participation increases benefits because we assume actual real returns are 4.6 percent, which exceeds the 2 percent real return used by the hypothetical-account offsets. If actual real returns were lower than 2 percent, account participation would reduce benefits, and the cap on account contributions would favor higher earners by limiting their losses. If the actual returns equaled 2 percent, then account participation, and consequently the cap on the contributions, would have no distributional effect.

[52]We expect the enhanced survivors' benefit to favor lower earners because it is capped by the average Primary Insurance Amount for all retired workers.

[53]We simulated an alternative version of Model 2-100 percent where the return to equities varied stochastically across individuals and over time. Shares of benefits by earnings quintile were almost identical to the scenario that assumed constant returns to equities.

[54]Lower earners may be more risk averse and therefore suffer greater utility loss from increased risk.

benefits for those who participate.[55] A governing board would administer the accounts centrally in a fashion similar to the Thrift Savings Plan for federal employees. Specifically, under the proposal,

- Account contributions would be redirected from the Social Security payroll tax. They would equal 10 percent of the first $10,000 of annual earnings and 5 percent of earnings over $10,000 up to the maximum taxable earnings level, which is $87,900 in 2004. The $10,000 threshold would increase annually according to Social Security's national Average Wage Index.

- Participating workers would be guaranteed that the combined benefits from Social Security's defined benefit and their personal accounts would at least equal the Social Security benefits that current law promises them, as long as they choose the default investment option. The default investment option would have an allocation of 65 percent in broad indexed equity funds and 35 percent in broad indexed corporate bond funds. Those who never participate in the personal account option would be provided benefits promised by the current system.

- To continue paying benefits while also making deposits to the accounts, funds would be transferred from the Treasury's general fund.

- The accounts would eventually completely replace Social Security's old-age benefits for workers and their spouses, under the assumptions for investment returns used by Social Security actuaries. Accordingly, the proposal anticipates reductions in the Social Security payroll tax in the long term that would be identical for all workers.

- Social Security benefits for workers who become disabled or who die before retirement would not be affected.

[55]According to SSA actuaries, the benefit reduction would be equal to the Social Security benefits scheduled under current law "multiplied by the ratio of (a) the present value of all contributions redirected to the worker's account, to (b) the present value of all potential contributions that might have been made if the plan had been in existence throughout the working lifetime of the worker. …Workers who first enter the workforce in 2005 or later, and who choose to participate fully in the personal account through their working lifetime would have their affected OASI benefits reduced to zero." For more details on the proposal, see Peter Ferrara, "A Progressive Proposal for Social Security Personal Accounts," Institute for Policy Innovation, Policy Report #176, Lewisville, TX, June 2003 at http://www.ipi.org and the analysis by SSA actuaries, "Estimated Financial Effects of "The Progressive Personal Account Plan" –INFORMATION," memo by Steve Goss, SSA, Dec.1, 2003, at http://www.ssa.gov/OACT/solvency/.

Under the Ferrara proposal, no changes would be made to the Social Security defined benefits scheduled under current law for those who choose not to participate in the accounts or for whom the benefit guarantee would apply. In addition, benefits for disabled workers and those who die before retirement would remain in place, and the distributional effects of these parts of Social Security would remain largely unchanged. Thus, any changes to the distribution of benefits would occur through the individual accounts for those choosing the accounts. All workers would initially continue to pay payroll taxes at the same rate as under current law, which is the same for all earnings up to the maximum taxable earnings. At the same time, lower earners would have larger contributions made from the payroll tax to their voluntary individual accounts. As a result, holding all else equal, the annuities that lower earners could receive from their accounts would replace a higher share of their pre-retirement earnings than annuities for higher earners. However, without rigorous quantitative analysis, it remains unclear how the distributional effects of the accounts would compare with and interact with the effects of the current system. In particular, actual investment returns could vary depending on individuals' investment choices or on market performance, and in some cases returns may not be high enough to completely replace Social Security benefits, in which case the guarantee would apply.

The Ferrara proposal also would have significant distributional effects from an equity perspective due to its revenue provisions. The general revenue transfers needed to cover the transition to individual accounts could have substantial effects on rates of return and other equity measures. Also, once the transition is complete and it becomes possible under the proposal to reduce payroll taxes, such tax reductions would also affect equity measures and how they are distributed.

Diamond-Orszag Proposal

A proposal offered by Peter Diamond and Peter Orszag would restore Social Security's long-term solvency by increasing revenues and decreasing benefits while also increasing benefits for selected old-age survivors and low earners. Also provisions in the proposal ensure that benefits in the aggregate are not reduced for workers who become

disabled and for the young survivors of workers who die before retirement.[56] Specifically, under the proposal,

- **Benefit reductions**: Social Security benefits would decrease by having initial benefits grow at a slower rate to reflect expected gains in life expectancy. Benefits would decrease for higher earners through a change to the benefit formula.[57] Benefits would decrease by an additional proportional 0.30 percent beginning in 2023.

- **Revenue increases**: Payroll taxes would gradually increase by raising the maximum earnings level subject to the payroll tax, which is $87,900 in 2004. Also, Social Security would cover all new state and local government employees. (This would increase revenues from the payroll tax immediately but would not result in additional benefit payments until the newly covered workers became eligible for benefits.) In addition, payroll taxes would increase 3 percentage points (divided equally between employees and employers) for all earnings above the maximum taxable earnings level. Benefit calculations would not reflect the additional earnings taxed under this provision. The tax on earnings above the maximum taxable earnings level would increase by an additional 0.51 percent annually beginning in 2023. Payroll taxes on earnings at or below the maximum taxable earnings level would increase by an additional 0.255 percent annually beginning in 2023.

- **Benefit enhancements**: Benefits would increase for lower earners through a new benefit formula for qualifying workers. This provision is conceptually similar to the enhanced benefit for lower earners under CSSS Model 2 but uses a different formula. Benefits would increase for old-age surviving spouses to 75 percent of the benefit the married couple would have received if both were still alive. This provision is conceptually similar to the enhanced survivor benefit under CSSS Model 2 but is specified somewhat differently. Benefits for those workers who become disabled

[56]For more details on the proposal, see Peter A. Diamond and Peter R. Orszag, *Saving Social Security: A Balanced Approach*. Brookings Institution Press, Washington, D.C., 2003, or Peter A. Diamond and Peter R. Orszag, *Reforming Social Security: A Balanced Plan*. Brookings Institution, Policy Brief #126, Washington, DC, December 2003 at http://www.brookings.org/comm/policybriefs/pb126.pdf, and the analysis by SSA actuaries, "Subject: Estimates of Financial Effects for a Proposal to Restore Solvency to the Social Security Program—INFORMATION," memo by Stephen Goss, SSA, Oct. 8, 2003, at http://www.ssa.gov/OACT/solvency/DiamondOrszag_20031008.pdf.

[57]In the formula for the Primary Insurance Amount, the 15 percent formula factor would be reduced gradually to 10 percent. This formula factor is the rate at which Average Indexed Monthly Earnings are replaced above the second bend point, which is $3,689 in 2004.

and their dependents and for the young survivors of workers who die before retirement would increase under a “Super-COLA” through changes to the formula for calculating initial benefits, which would be recalculated each year benefits are received. This provision is designed so that the other reform provisions do not affect these beneficiaries.

The Diamond-Orszag proposal would make a variety of benefit changes that would affect the distribution of benefits. Reducing benefits to reflect expected gains in life expectancy would be a proportional reduction, decreasing benefits by the same percentage across all earnings levels. The additional reductions beginning in 2023 would also be proportional. Proportional reductions do not, by definition, change the share of benefits received by each segment of the earnings distribution. Still, they represent a downsizing of a redistributive benefit program. As a result the size of the redistributions would be smaller under these proportional reductions than under the current system, holding all else equal.

However, in addition, the proposal contains another benefit reduction that affects only higher earners, which would result in their getting a smaller share of total benefits and in increasing shares for all other workers not affected by the reduction. Moreover, the proposal would increase benefits for lower earners and surviving aged spouses. The proposal also preserves benefits for workers who become disabled and for young the survivors of workers who die before retirement. These workers tend to be lower earners, so all of the proposal's benefit increases would generally increase the share of total benefits received by lower earners.

Finally, the proposal includes a variety of revenue increases, most of which increase the tax burden on higher earners relative to lower earners. As a result, the distribution of rates of return and other equity measures would favor lower earners more and higher earners less than under the current system.

Concluding Observations

By design, Social Security distributes benefits and contributions across workers and their families in a variety of ways. These distributional effects illustrate how the program balances the goal of helping ensure adequate incomes with the goal of giving all workers a fair deal on their contributions. Any changes to Social Security would potentially alter those distributional effects and the balance between those goals. Therefore, policy makers need to understand how to evaluate distributional effects of alternative policies. The various evaluation approaches reflect varying emphases on Social Security’s adequacy and equity goals, so the methodological choices are connected inherently to policy choices.

Regardless of policy perspectives, methodological issues such as the effects of general revenue transfers muddy distributional analysis. Moreover, greater progressivity is not the same thing as greater adequacy. Under some reform scenarios, Social Security could distribute benefits more progressively than current law yet provide lower, less adequate benefits. At the same time, our analysis shows that reform provisions that favor lower earners can offset other provisions that disfavor them. In addition, greater progressivity may result in less equity. As a result, any evaluations should consider a proposal's provisions taken together as a whole. Moreover, distributional effects are only one of several kinds of effects proposals would have. A comprehensive evaluation is needed that considers a range of effects together. In our criteria for evaluating reform proposals, progressivity is just one of several aspects of balancing adequacy and equity.

Agency Comments and Our Evaluation

We provided SSA an opportunity to comment on the draft report. The agency provided us with written comments, which appear in Appendix II. In general, SSA concurred with the methodology, overall findings and conclusions of the report, noting that our modeling results are consistent with SSA's internal efforts to model the features of Model 2 of the Commission to Strengthen Social Security. Many of SSA's comments, for example those regarding progressivity measures and equity measure methodology, involve clarifying our presentation or conducting additional analyses to provide more consistency with other analyses or to extend the readers' understanding. We revised our draft in response to these suggestions as appropriate, given our time and resource constraints.

SSA agreed with GAO's discussion of the complications involved in applying equity measures to reform proposals that include general revenue transfers and concurred that a satisfactory resolution of the issue is complex and methodologically troublesome. SSA suggested some additional analysis relying on some simplifying assumptions, for example assuming any general revenue transfer is financed through a payroll tax increase, that one could use to tackle the problem. We agree that despite its methodological complexity, the use of general revenue transfers raises many important distributional issues. However, the analytical difficulties raised by this issue would require thoughtful and deliberate research that was beyond the scope of the current study, given our time and resource constraints.

SSA also had suggestions concerning our choice of benchmark policy scenarios against which to compare reform proposals. For example, while SSA is supportive of GAO's development of standard benchmarks, they

note that our benchmarks do not match the sustainable solvency achieved by Model 2 beyond 75 years and that this distinction should be noted in the report. SSA also suggests that a third benchmark be considered that would characterize a scenario where no reform action is taken and the program could only pay benefits equal to incoming payroll tax revenues.

As we have noted in the past, we agree that sustainable solvency is an important objective and that the GAO benchmarks do not achieve solvency beyond the 75 year period.[58] We share SSA's emphasis on the importance of careful and complete annotation and we have clarified our report, where appropriate, to minimize the potential for misinterpretation or misunderstanding on this matter. However, in this case, we did not revise our benchmarks because we recognized (along with SSA actuaries we consulted early in the assignment) that the use of sustainable benchmarks would not have a noticeable effect on an analysis of the shape of the distribution of benefits and taxes. Regarding the use of a "no action" benchmark, we continue to believe that comparing a proposal that starts relatively soon to one that posits that no legislative action is ever taken does not provide the consistent bounds for reform captured by our current benchmarks.[59] Appendix I of our report discusses the construction and rationale for the benchmarks used in this report. In our view, our set of benchmarks provides a fair and objective measuring stick with which to compare alternative proposals.

SSA also provided technical and other clarifying comments that we incorporated as appropriate.

[58]U.S. General Accounting Office, *Social Security Reform: Analysis of Reform Models Developed by the President's Commission to Strengthen Social Security*, GAO 03-310 (Washington, D.C.: Jan. 15, 2003), p. 9.

[59]It should be noted that a benchmark predicated on trust fund exhaustion would exhibit benefit levels that are significantly lower than other alternative benchmarks as well as most reform proposals.

We will send copies of this report to appropriate congressional committees and other interested parties. Copies will also be made available to others upon request. In addition, the report will be available at no charge on GAO's Web site at http://www.gao.gov. Please contact me at (202) 512-7215, Charles Jeszeck at (202) 512-7036, or Ken Stockbridge at (202) 512-7264, if you have any questions about this report. Other major contributors include Gordon Mermin and Seyda Wentworth.

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Appendix I: Microsimulation Modeling Methodology

Microsimulation Model

Description

Genuine Microsimulation of Social Security and Accounts (GEMINI) is a microsimulation model developed by the Policy Simulation Group (PSG). GEMINI simulates Social Security benefits and taxes for large representative samples of people born in the same year. GEMINI simulates all types of Social Security benefits including retired workers', spouses', survivors', and disability benefits. It can be used to model a variety of Social Security reforms including the introduction of individual accounts.

GEMINI uses inputs from two other PSG models, the Social Security and Accounts Simulator (SSASIM), which has been used in numerous GAO reports, and the Pension Simulator (PENSIM), which has been developed for the Department of Labor. GEMINI relies on SSASIM for economic and demographic projections and relies on PENSIM for simulated life histories of large representative samples of people born in the same year and their spouses.[1] Life histories include educational attainment, labor force participation, earnings, job mobility, marriage, disability, childbirth, retirement, and death. Life histories are validated against data from the Survey of Income and Program Participation, the Current Population Survey, Modeling Income in the Near Term (MINT3),[2] and the Panel Study of Income Dynamics. Additionally, any projected statistics (such as life expectancy, employment patterns, and marital status at age 60) are, where possible, consistent with intermediate-cost projections from Social Security Administration's Office of the Chief Actuary (OCACT). At their best, such models can only provide very rough estimates of future incomes. However, these estimates may be useful for comparing future incomes across alternative policy scenarios and over time.

For this report we used GEMINI to simulate Social Security benefits and taxes for 100,000 individuals born in 1985. Benefits and taxes were

[1]While these models use sample data, our report, like others using these models, does not address the issue of sampling errors. The results of the analysis reflect outcomes for individuals in the simulated populations and do not attempt to estimate outcomes for an actual population.

[2]MINT3 is a detailed microsimulation model developed jointly by the Social Security Administration, the Brookings Institution, RAND, and the Urban Institute to project the distribution of income in retirement for the 1931 to 1960 birth cohorts.

simulated under our tax-increase (promised benefits) and proportional benefit-reduction (funded benefits) benchmarks (described below) and under Model 2 of the President's Commission to Strengthen Social Security (CSSS). We also simulated variations of these scenarios to examine the impact of disability benefits, the cap on taxable earnings, each feature of Model 2, and different assumptions on the return to equities.

To examine lifetime earnings, benefits, and taxes on a household basis, we chose a "shared" concept that researchers have used with the MINT3 and DYNASIM[3] microsimulation models.[4] In years that individuals are married, we assign them half of their own earnings, benefits, and contributions and half of their spouses' earnings, benefits, and contributions. In years that individuals are single, we assign them their entire earnings, benefits, and contributions. This technique accounts for household dynamics including divorce, remarriage, and widowhood.

Assumptions and Limitations

To facilitate our modeling analysis, we made a variety of assumptions regarding economic and demographic trends and how CSSS Model 2's individual accounts would work. In choosing our assumptions, we focused our analysis to illustrate relevant points about distributional effects and hold equal as much as possible any variables that were either not relevant to or would unduly complicate that focus. As a result of these assumptions as well as issues inherent in any modeling effort, our analysis has some key limitations, especially relating to risk, individual account decisions, and changes over time.

[3]The Urban Institute's Dynamic Simulation of Income Model.

[4]See Cori Uccello, Melissa Favreault, Karen Smith, and Lawrence Thompson, "Simulating the Distributional Consequences of Personal Accounts: Sensitivity to Annuitizaton Options," Working Paper 2003-17, Center for Retirement Research at Boston College, October 2003; U.S. General Accounting Office, *Social Security and Minorities: Earnings, Disability Incidence, and Mortality are Key Factors That Influence Taxes Paid and Benefits* Received, GAO-03-387 (Washington, D.C.: Apr. 23, 2003); See Smith, Eric Toder, and Howard Iams, "Lifetime Distirubtional Effects of Social Security Retirement Benefits," prepared for the Third Annual Join Conference for the Retirement Research Consortium "Making Hard Choices About Retirement," Washington, D.C., May 17-18, 2001; and Lee Cohen, Eugene Steuerle, and Adam Carasso, "The Effects of Disability Insurance on Redistribution Within Social Security By Gender, Education, Race, and Income," presented at the Fourth Annual Joint Conference for the Retirement Research Consortium: Directions for Social Security Reform, May 30-31, 2002.

2003 Social Security Trustees' Assumptions

The simulations are based on economic and demographic assumptions from the 2003 Social Security trustees' report.[5] We used trustees' assumptions for inflation, real wage growth, mortality decline, immigration, labor force participation, and interest rates.

Adjusting Mortality for Educational Attainment and Disability

The simulations assumed that mortality rates vary by educational attainment and disability status. In every year, mortality rates implied by trustees assumptions are increased for those with lower levels of education and reduced for those with higher levels of education. For example, mortality rates are multiplied by 1.5 for women who do not complete high school, while rates are multiplied by 0.7 for women with four-year college degrees. Adjustment factors for education were chosen to calibrate life expectancy by demographic group with the MINT3 simulation model. Mortality rates are multiplied by a factor of 2 for Disability Insurance (DI) recipients. The adjustment factor for disability was chosen so PENSIM life histories produced aggregate results consistent with 2003 Social Security Trustees Report. Assuming constant adjustment factors over time does not capture any convergence in mortality rates as a birth cohort ages. It may be the case that differences in mortality rates across education levels may narrow by the time a birth cohort retires. If that is the case, our simulations overstate differences in life expectancy at retirement.

Model 2's Individual Accounts

Account participation

Rather than model account participation, we instead simulate benefits under two scenarios, one where all individuals participate and another scenario where no one participates. As a result, we do not capture any distributional effects that might result from account participation varying by earnings level. For instance, if lower earners are less likely to participate in the individual accounts, then our simulations may overstate their share of benefits, as account participation is likely to increase benefits.

[5]The Board of Trustees, Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, *The 2003 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds* (Washington, D.C.: Mar. 17, 2003).

Portfolio choice

Like the analysis of Model 2 by OCACT[6] we assume all individuals invest in the same portfolio: 50 percent in equities, 30 percent in corporate bonds, and 20 percent in Treasury bonds. We do not capture any distributional effects that might result if portfolio choice varies by earnings level. For instance, if lower earners were more risk averse and therefore choose more conservative portfolios, our simulations overstate the share of benefits for lower earners.

Rates of return

We use the same assumptions for asset returns as OCACT: In all years real returns are 6.5 percent for equities, 3.5 percent for corporate bonds, and 3 percent for Treasury bonds, with an annual administrative expense of 30 basis points. For sensitivity analysis, we simulated a version of Model 2 that assumed a 4.9 percent real return to equities, a version that assumed an 8.7 percent real return to equities, and a version that assumed the return to equities varied stochastically across individuals and over time. Shares of benefits by earnings quintile were similar under all specifications. However, if portfolio choice or participation in accounts varied by earnings quintile, then shares of benefits might be more sensitive to rates of return.

Annuitization

In order to compare account balances with Social Security defined benefits, we follow the assumption of OCACT that individuals fully annuitize their account balances at retirement. We assume individuals purchase inflation-indexed annuities, while married individuals purchasing inflation-indexed joint and two-thirds survivor annuities. The commission proposal, however, also allows participants to access their accounts through regular monthly withdrawals or through lump sum distributions if their monthly benefits (Social Security defined benefits and any annuity payments) are enough to keep them out of poverty. Given that few defined-contribution pension recipients currently choose to annuitize, it is possible that many retirees under Model 2 would not annuitize their accounts. To the extent that withdrawal decisions vary by earnings level,

[6]"Estimates of Financial Effects for Three Models Developed by the President's Commission to Strengthen Social Security" Memo from Steve Goss and Alice Wade, SSA, January 31, 2002, http://www.ssa.gov/OACT/solvency/PresComm_20020131.pdf.

there may be distributional consequences that our simulations do not capture. For instance, some people may withdraw money too quickly, leaving themselves with inadequate income later in retirement, and such behaviors could vary by earnings level.

Risk

Our quantitative analysis does not reflect differences in risk across policy scenarios. Because of financial market fluctuations, individual accounts likely expose recipients to greater financial risk.[7] For sensitivity analysis, we simulated a version of Model 2 where the return to equities varied stochastically across individuals and over time. Stochastic rates of return had very little impact on shares of benefits received by earnings quintiles. However, greater risk may be more problematic for lower earners, who likely have fewer resources to fall back on if their accounts perform poorly. Consequently, lower earners may be more risk averse and therefore suffer greater utility loss from increased risk.

Distributional Effects over Time

We simulated benefits for individuals born in 1985 because Model 2's reform features would be almost fully phased in for such workers. However, the distributional effects of Model 2 might change over time. For example, under the proposal initial Social Security defined benefits only grow with prices, while initial benefits from account balances grow with wages. Since wages generally grow faster than prices, Social Security defined benefits will decline as a proportion of total benefits, reducing the importance of the progressive benefit formula, disability benefits, and the enhanced benefits for low earners and survivors.

Pre-retirement Mortality

To capture the distributional impact of pre-retirement mortality, we calculated benefit-to-tax ratios and lifetime benefits for all sample members who survived past age 24. However, our measure of well-being, lifetime earnings, may not be the best way to assess the well-being of those who die before retirement. Some high-wage workers are classified as low lifetime earners simply because they did not live very long, and consequently our analysis overstates the degree to which those who die young are classified as low earners. As a result, our measures underestimate the degree to which Social Security favors lower earners under all of the scenarios we analyze. For sensitivity analysis, we also calculated benefit-to-tax ratios and lifetime benefits only for sample

[7] U.S. General Accounting Office, *Social Security Reform: Analysis of Reform Models Developed by the President's Commission to Strengthen Social Security*, GAO-03-310 (Washington, D.C.: January 15, 2003), p. 44-50.

members who lived to age 67 and beyond. While all of the measures of progressivity were lower, the findings were unchanged as the relationships across all of the scenarios remained the same.

Data Reliability

To assess the reliability of simulated data from GEMINI, we reviewed PSG's published validation checks, examined the data for reasonableness and consistency, preformed sensitivity analysis, and compared our results with a study by the actuaries at the Social Security Administration.

PSG has published a number of validation checks of its simulated life histories. For example, simulated life expectancy is compared with projections from the Social Security Trustees; simulated benefits at age 62 are compared with administrative data from SSA; and simulated educational attainment, labor force participation rates, and job tenure are compared with values from the Current Population Survey. We found that simulated statistics for the life histories were reasonably close to the validation targets.

For sensitivity analysis, we simulated benefits and taxes for policy scenarios under a number of alternative specifications including higher and lower returns to equities, stochastic returns to equities, and limiting the sample to those who survive to retirement. Our findings were consistent across all specifications.

Finally, we compared our results with those in a memo from the actuaries at the Social Security Administration.[8] Our finding that the lowest earnings quintile receives a greater share of benefits under Model 2-100 percent than under promised benefits is consistent with the actuaries' projections of benefits for illustrative high- and low- earning couples in 2052. Also, in a previous report we found that GEMINI simulations of promised Social Security benefits were similar to MINT simulations for the 1955 birth cohort.[9] We conclude from our assessment that simulated data from GEMINI are sufficiently reliable for the purposes of this report, particularly since we focus on the differences in simulated measures across scenarios, as opposed to the actual estimates themselves.

[8]See Goss and Wade, 2002.

[9]See U.S. General Accounting Office, *Social Security Reform: Program's Role in Helping Ensure Income Adequacy*, GAO-02-62 (Washington, D.C.: Nov. 30, 2001), p. 84.

Benchmark Policy Scenarios

According to current projections of the Social Security trustees for the next 75 years, revenues will not be adequate to pay full benefits as defined by the current benefit formula. Therefore, estimating future Social Security benefits should reflect that actuarial deficit and account for the fact that some combination of benefit reductions and revenue increases will be necessary to restore long-term solvency.

To illustrate a full range of possible outcomes, we developed hypothetical benchmark policy scenarios that would achieve 75-year solvency either by only increasing payroll taxes or by only reducing benefits.[10] In developing these benchmarks, we identified criteria to use to guide their design and selection. Our tax-increase-only benchmark simulates "promised benefits," or those benefits promised by the current benefit formula, while our benefit-reduction-only benchmarks simulate "funded benefits," or those benefits for which currently scheduled revenues are projected to be sufficient. Under the latter policy scenarios, the benefit reductions would be phased in between 2005 and 2035 to strike a balance between the size of the incremental reductions each year and the size of the ultimate reduction.

At our request, SSA actuaries scored our benchmark policies and determined the parameters for each that would achieve 75-year solvency.[11] Table 1 summarizes our benchmark policy scenarios. For our benefit-reduction scenarios, the actuaries determined these parameters assuming that disabled and survivor benefits would be reduced on the same basis as retired worker and dependent benefits. If disabled and survivor benefits were not reduced at all, reductions in other benefits would be deeper than shown in this analysis.

[10]These benchmarks were first developed for our report entitled *Social Security: Program's Role in Helping Ensure Income Adequacy* (GAO-02-62, Nov. 30, 2001). We have since used them in other studies, including GAO-03-310, *Social Security Reform: Analysis of a Trust Fund Exhaustion Scenario* (GAO-03-907, July 29, 2003), and GAO-03-387.

[11]The Social Security actuaries provided these scorings for a previous report and used assumptions from the 2001 trustees' report. The actuaries did not believe it was necessary to provide new scorings using updated assumptions for the purposes of our study since the assumptions and the estimates of actuarial balance on which they are based have changed little from the 2001 report. In particular, they did not believe that the differences in assumptions would materially affect the shape of the distribution of benefits, which is the focus of our analysis.

Table 1: Summary of Benchmark Policy Scenarios

			Ultimate new benefit reductions[a] (percent)	
Benchmark policy scenario	**Description**	**Phase-in period**	**Minimum**	**Maximum**
Tax increase only (promised benefits)	Increases payroll taxes in 2002 by amount necessary to achieve 75-year solvency (0.95 percent of payroll each for employees and employers)	Immediate	0	0
Proportional benefit reduction (funded benefits)	Reduces benefit formula factors proportionally across all earnings levels	2005-2035	24	24
Hypothetical-account benefit reduction	Reduces benefit formula factors by smaller proportion for lower earners	2005-2035	11	33

Source: GAO.

[a]These benefit reduction amounts do not reflect the implicit reductions resulting from the gradual increase in the full retirement age that has already been enacted.

Criteria

According to our analysis, appropriate benchmark policies should ideally be evaluated against the following criteria:

1. *"Distributional neutrality"*: the benchmark should reflect the current system as closely as possible while still restoring solvency. In particular, it should try to reflect the goals and effects of the current system with respect to redistribution of income. However, there are many possible ways to interpret what this means, such as

   a. producing a distribution of benefit levels with a shape similar to the distribution under the current benefit formula (as measured by coefficients of variation, skewness, kurtosis, etc.);

   b. maintaining a proportional level of income transfers in dollars;

   c. maintaining proportional replacement rates; and

   d. maintaining proportional rates of return.

2. *Demarcating upper and lower bounds:* These would be the bounds within which the effects of alternative proposals would fall. For example, one benchmark would reflect restoring solvency solely by increasing payroll taxes and therefore maximizing benefit levels, while another would solely reduce benefits and therefore minimize payroll tax rates.

3. *Ability to model:* The benchmark should lend itself to being modeled within the GEMINI model.

4. *Plausibility:* The benchmark should serve as a reasonable alternative within the current debate; otherwise, the benchmark could be perceived as an invalid basis for comparison.

5. *Transparency:* The benchmark should be readily explainable to the reader.

Tax-Increase-Only, or "Promised Benefits," Benchmark Policies

Our tax-increase-only benchmark would raise payroll taxes once and immediately by the amount of Social Security's actuarial deficit as a percentage of payroll. It results in the smallest ultimate tax rate of those we considered and spreads the tax burden most evenly across generations; this is the primary basis for our selection. The later that taxes are increased, the higher the ultimate tax rate needed to achieve solvency, and in turn the higher the tax burden on later taxpayers and lower on earlier taxpayers. Still, any policy scenario that achieves 75-year solvency only by increasing revenues would have the same effect on the adequacy of future benefits in that promised benefits would not be reduced. Nevertheless, alternative approaches to increasing revenues could have very different effects on individual equity.

Benefit-Reduction-Only, or "Funded Benefits," Benchmark Policies

We developed alternative benefit-reduction benchmarks for our analysis. For ease of modeling, all benefit-reduction benchmarks take the form of reductions in the benefit formula factors; they differ in the relative size of those reductions across the three factors, which are 90, 32, and 15 percent under the current formula. Each benchmark has three dimensions of specification: scope, phase-in period, and the factor changes themselves.

Scope

For our analysis, we apply benefit reductions in our benchmarks very generally to all types of benefits, including disability and survivors' benefits as well as old-age benefits. Our objective is to find policies that achieve solvency while reflecting the distributional effects of the current program as closely as possible. Therefore, it would not be appropriate to reduce some benefits and not others. If disability and survivors' benefits were not reduced at all, reductions in other benefits would be deeper than shown in this analysis.

Phase-in Period

We selected a phase-in period that begins with those reaching age 62 in 2005 and continues for 30 years. We chose this phase-in period to achieve a balance between two competing objectives: (1) minimizing the size of the ultimate benefit reduction and (2) minimizing the size of each year's incremental reduction to avoid "notches," or unduly large incremental reductions. Notches create marked inequities between beneficiaries close

in age to each other. Later birth cohorts are generally agreed to experience lower rates of return on their contributions already under the current system. Therefore, minimizing the size of the ultimate benefit reduction would also minimize further reductions in rates of return for later cohorts. The smaller each year's reduction, the longer it will take for benefit reductions to achieve solvency, and in turn the deeper the eventual reductions will have to be. However, the smallest possible ultimate reduction would be achieved by reducing benefits immediately for all new retirees by over 10 percent; this would create a huge notch.

Our analysis shows that a 30-year phase-in should produce incremental annual reductions that would be relatively small and avoid significant notches. In contrast, longer phase-in periods would require deeper ultimate reductions.

In addition, we feel it is appropriate to delay the first year of the benefit reductions for a few years because those within a few years of retirement would not have adequate time to adjust their retirement planning if the reductions applied immediately. The Maintain Tax Rates (MTR) benchmark in the 1994-96 Advisory Council Report also provided for a similar delay.[12]

Finally, the timing of any policy changes in a benchmark scenario should be consistent with the proposals against which the benchmark is compared. The analysis of any proposal assumes that the proposal is enacted, usually within a few years. Consistency requires that any benchmark also assume enactment of the benchmark policy in the same time frame. Some analysts have suggested using a benchmark scenario in which Congress does not act at all and the trust funds become exhausted.[13] However, such a benchmark assumes that no action is taken while the proposals against which it is compared assume that action is taken, which is inconsistent. It also seems unlikely that a policy enacted over the next few years would wait to reduce benefits until the trust funds are exhausted; such a policy would result in sudden, large benefit reductions and create substantial inequities across generations.

[12]Advisory Council on Social Security. *Report of the 1994-1996 Advisory Council on Social Security*, Vols. 1 and 2. Washington, D.C.: Jan. 1997.

[13]See U.S. General Accounting Office, *Social Security Reform: Analysis of a Trust Fund Exhaustion Scenario*, GAO-03-907 (Washington, D.C.: July 29, 2003), in which we analyzed such a policy scenario under a congressional request.

Defining the PIA Formula Factor Reductions

When workers retire, become disabled, or die, Social Security uses their lifetime earnings records to determine each worker's PIA, on which the initial benefit and auxiliary benefits are based. The PIA is the result of two elements—the Average Indexed Monthly Earnings (AIME) and the benefit formula. The AIME is determined by taking the lifetime earnings earnings record, indexing it, and taking the average of the highest 35 years of indexed wages. To determine the PIA, the AIME is then applied to a step-like formula, shown here for 2004.

$$\begin{aligned} \text{PIA} = \; & 90\% \bullet (\text{AIME}_1 \bullet \$612) \\ & + 32\% \bullet (\text{AIME}_2 > \$612 \text{ and } \bullet \$3689) \\ & + 15\% \bullet (\text{AIME}_3 > \$3689) \end{aligned}$$

where AIME_i is the applicable portion of AIME.

All of our benefit-reduction benchmarks are variations of changes in PIA formula factors.

Proportional reduction: Each formula factor is reduced annually by subtracting a constant proportion of that factor's value under current law, resulting in a constant percentage reduction of currently promised benefits for everyone. That is,

$$F^i_{t+1} = F^i_t - (F^i_{2004} \bullet x)$$

where F^i_t represents the 3 PIA formula factors in year t and

x = constant proportional formula factor reduction.

The value of x is calculated to achieve 75-year solvency, given the chosen phase-in period and scope of reductions.

The formula for this reduction specifies that the proportional reduction is always taken as a proportion of the current law factors rather than the factors for each preceding year. This maintains a constant rate of benefit reduction from year to year. In contrast, taking the reduction as a proportion of each preceding year's factors implies a decelerating of the benefit reduction over time because each preceding year's factors get smaller with each reduction. To achieve the same level of 75-year solvency, this would require a greater proportional reduction in earlier years because of the smaller reductions in later years.

The proportional reduction hits lower earners hard because the constant x percent of the higher formula factors results in a larger percentage point reduction over the lower earnings segments of the formula. For example, in a year when the cumulative size of the proportional reduction has reached 10 percent, the 90 percent factor would then have been reduced by 9 percentage points, the 32 percent factor by 3.2 percentage points, and the 15 percent factor by 1.5 percentage points. As a result, earnings in the first segment of the benefit formula would be replaced at 9 percentage points less than the current formula, while earnings in the third segment of the formula would be replaced at only 1.5 percentage points less than the current formula.[14]

Hypothetical-account reduction:[15] Each formula factor is reduced by annually subtracting a constant amount that is the same for all factors in all years. That is,

$$F^{i}_{t+1} = F^{i}_{t} - y$$

where y = constant formula factor reduction.

The value of y is calculated to achieve 75-year solvency, given the chosen phase-in period and scope of reductions.

This reduction results in equal percentage point reductions in the formula factors, by definition, and subjects earnings across all segments of the PIA formula to the same reduction. Therefore, it avoids hitting lower earners as hard as the proportional reduction.

We call this a hypothetical-account reduction because it has the same effect as a benefit reduction based on using a hypothetical account. In fact, we developed this benchmark first using a hypothetical-account approach and then discovered it can be reduced to a simple change in the PIA formula. Hypothetical-account calculations have become a common way

[14]Other analyses have addressed the concern about the effect of the proportional reduction on low earners by modifying that offset to apply only to the 32 and 15 percent formula factors. The MTR policy in the 1994 to 1996 Advisory Council Report used this approach, which in turn was based on the Individual Account (IA) proposal in that report. However, the MTR policy also reflected other changes in addition to PIA formula changes.

[15]For this benchmark, we used the label "progressive benefit-reduction benchmark" in our report entitled *Social Security: Program's Role in Helping Ensure Income Adequacy* (GAO-02-62, Nov. 30, 2001).

to offset benefits under individual account proposals, such as those by the President's Commission to Strengthen Social Security. Such proposals reduce Social Security's defined benefit to reflect the fact that contributions have been diverted from the trust funds into the individual accounts. The account contributions are accumulated in a hypothetical account at a specified rate of return and then converted to an annuity value.

We used a hypothetical-account offset in our 1990 analysis of a partial privatization proposal.[16] In that analysis, we were charged with finding a benefit reduction that would leave the redistributive effects of the program unchanged while allowing a diversion of 2 percentage points of contributions into individual accounts. We demonstrated the distributional neutrality of this benefit reduction by showing that if all individuals earned exactly the cohort rate of return on their individual accounts, then their income under the proposal from Social Security and the new accounts would be exactly the same as under the current system.

For the purposes of developing a benefit-reduction benchmark, we applied the hypothetical-account approach even though there are no actual individual accounts. From our previous analysis, we realized a hypothetical-account approach may produce distributional effects that might in some sense be more neutral than other reduction approaches and therefore worth studying as an alternative. In effect, using it to calculate a benefit-reduction benchmark implies calculating an annuity value of the percent of payroll that represents the system's revenue shortage.

As it turns out mathematically, the hypothetical-account approach to reducing benefits translates into PIA formula factor changes. Such a benefit reduction is proportional to the AIME, not to the PIA, because the contributions to a hypothetical account are proportional to earnings. Therefore, a benefit reduction based on such an account would also be proportional to earnings; that is,

$$\text{Benefit reduction} = y \bullet \text{AIME}$$

Therefore, the new PIA would be

[16]U.S. General Accounting Office, *Social Security: Analysis of a Proposal to Privatize Trust Fund Reserves*, GAO/HRD-91-22 (Washington, D.C.: Dec. 12, 1990).

$$PIA_{new} = 90\% \bullet AIME_1 + 32\% \bullet AIME_2 + 15\% \bullet AIME_3 - y \bullet AIME_T$$

Where $AIME_i$ is the applicable portion of AIME and $AIME_T$ is the total AIME. In turn,

$$PIA_{new} = (90\% - y) \bullet AIME_1 + (32\% - y) \bullet AIME_2 + (15\% - y) \bullet AIME_3$$

Thus, the reduction from a hypothetical account can be translated into a change in the PIA formula factors. Because this reduction can be described as subtracting a constant amount from each PIA formula factor, it is reasonably transparent.

In our analysis of CSSS Model 2, we found that Model 2 had a benefit distribution that was very close to our hypothetical-account benefit-reduction benchmark. For example, households in the bottom fifth of earnings received about 13.8 percent of all lifetime benefits under Model 2, compared with 13.5 percent under the hypothetical-account benefit-reduction benchmark. In this report, we present the results using the proportional benefit-reduction benchmark because this benefit-reduction approach is more easily understood.

Table 2 summarizes the features of our three benchmarks.

Table 2: Summary of Benchmark Policy Scenario Parameters

		Annual PIA factor reduction (percentage point)			Ultimate PIA factor (2035) (percent)		
Benchmark policy scenario	**Phase-in period**	**90 percent factor**	**32 percent factor**	**15 percent factor**	**90 percent factor**	**32 percent factor**	**15 percent factor**
Tax increase only (promised benefits)	2002	0.00	0.00	0.00	90.00	32.00	15.00
Proportional benefit reduction (funded benefits)	2005-2035	0.71	0.25	0.12	68.10	24.21	11.35
Hypothetical-account benefit reduction	2005-2035	0.32	0.32	0.32	80.11	22.11	5.11

Source: GAO's analysis as scored by SSA actuaries.

Appendix II: Comments from the Social Security Administration

SOCIAL SECURITY
Office of the Commissioner

June 9, 2004

Ms. Barbara Bovberg
Director
Education, Workforce,
and Income Security Issues
U.S. General Accounting Office
441 G Street, N.W.
Room 5928
Washington, DC 20548

Dear. Ms. Bovberg,

Thank you for the opportunity to review and comment on the preliminary draft report "Social Security: Distribution Of Benefits And Taxes Relative To Earnings Level" (GAO-04-747).

GAO has done an excellent job discussing progressivity issues and analyzing key factors that influence the benefit-to-tax-ratio. This analysis will provide policy makers and analysts with important information as they consider Social Security solvency reforms.

Enclosed are detailed comments and suggestions we have on the draft report. If your staff have questions about our comments, they may contact Andrew Biggs, Associate Commissioner for Retirement Policy. Mr. Biggs can be reached by phone at (202) 358-6064 or by E-mail at andrew.biggs@ssa.gov.

Sincerely,

Jo Anne B. Barnhart

Enclosure

SOCIAL SECURITY ADMINISTRATION BALTIMORE MD 21235-0001

COMMENTS ON THE GENERAL ACCOUNTING OFFICE (GAO) REPORT "SOCIAL SECURITY: DISTRIBUTION OF BENEFITS AND TAXES RELATIVE TO EARNINGS LEVEL" (GAO-04-747)

We appreciate the opportunity to review and comment on the draft report. The General Accounting Office has provided a thorough discussion of progressivity, the factors that affect progressivity in the current program and how progressivity may change under Model 2 of the President's Commission to Strengthen Social Security and other reform proposals. Major comments are provided first, followed by a listing of technical comments.

Progressivity

The discussion of progressivity measures and their adequacy and equity perspectives will be of great use to policy makers and analysts who are unfamiliar with the context of these measures' uses. Similarly, the discussion of the effect that the benefit formula, the cap on taxable earnings, disability benefits and mortality all have on progressivity will help policy makers who are considering reform proposals.

The discussion of how the current program favors lower earners from an individual perspective but less so from a household perspective could use more explanation. The discussion of how household formation reduces the system's tilt toward low earners should at least acknowledge the operation of the dual entitlement provision as it applies to individuals who are entitled to both a benefit as a worker and as a spouse/widow(er).

Furthermore, Figure 3 refers to the rate of return from the individual perspective and from the household perspective. For some readers it may not be clear how the ratio of benefits to taxes could fall for the lowest quintile of households compared to the lowest quintile of individuals. It appears that this might be caused by higher household income, i.e., a higher income wage earner, in the lowest quintile of households compared to the lowest quintile of individuals. It might be helpful to give income levels for each to make this clear – if this is the case.

Similarly, it would be helpful to include the earning levels of the highest quintiles of individuals and households to shed light on how the benefit-to-tax ratios could be the same for the highest quintiles of individuals and households. Since measuring by household earnings combines individuals with higher and low rates of return, the result should be to compress the distribution of returns on both the high and low end. Intuitively, the highest household quintile could be expected to have a higher rate of return than the highest individual quintile since at least some of these households would include wage earners from lower individual quintiles, which should result in a higher household benefit-to-tax ratio. Further, because some of the households presumably include one-earner couples (who receive the "free" spouse's benefit) this would tend to increase the rate of return on taxes paid for the household versus the individual. Any difference in the earnings levels that define the individual and household quintiles may explain this to readers who find the constant ratios counterintuitive.

CSSS Model 2 Findings

Our own internal modeling has produced similar results to those in the draft report: Model 2 would favor lower earners over higher earners. This should be mutually reassuring from a modeling standpoint as well as to others who have done analyses of Model 2 and found the same results.

Benchmarks

SSA has previously commented on the three GAO benchmarks (see SSA comments on page 101 of "Social Security Reform: Analysis of Reform Models Developed by the President's Commission to Strengthen Social Security, GAO-03-310) and will briefly summarize the relevant comments here.

- GAO is to be commended for developing standard benchmarks for comparison with proposed reforms.
- In the comparisons between Model 2 and the benchmarks, the report should note the difference in how solvent the proposal and the benchmarks are. The benchmarks are sustainable only for 75 years while Model 2 is sustainably solvent beyond that period. These different solvency horizons affect the level of benefits paid under each, and therefore affect comparisons of progressivity. Alternately, a sustainably solvent tax increase or benefit reduction benchmark could be introduced.
- Perhaps the primary benchmark that was not considered in this report is what would happen if nothing were done and Social Security could only pay benefits equal to incoming payroll tax revenues. While the report states that comparing a proposal that starts in a few years against a scenario where no action is taken for decades is inconsistent, comparing a policy change against a no-change scenario is a standard practice in policy analysis and is generally considered illustrative, not inconsistent. In many cases such a comparison is the only one that is done.

The report also states that a no-action scenario would create large notches, which GAO says creates marked inequities between beneficiaries close in age to each other. However any notch implicit in a no-action scenario would not create these inequities because beneficiaries close in age would experience similar lifetime reductions in benefits (while there would be a "notch" across generations, that is true of many reform proposals as well). The only inequity that would occur between beneficiaries close in age would be between those who would live long enough to receive the reductions and those who would die before insolvency occurs and thus avoid those reductions.

Equity measure methodology

The shared earnings methodology used in the report is a good approach for several reasons. It partially accounts for benefits and taxes of the household that don't belong to the individual. This method also neatly avoids the two problems of 1) attributing spousal and survivor benefits

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to the person who earned them or the person who received them and 2) resolving situations where an individual paid no taxes but received benefits from a spouse.

Hypothetical *steady* workers are used in the report's replacement rate analysis even though the SSA actuaries (OCACT) have switched to using more representative hypothetical *scaled* workers. This was first done in the 2002 Trustees Reports and included using career average earnings levels in the denominator of the replacement rate calculation instead of steady earnings from the year the prior to retirement. To be consistent, GAO may want to consider using scaled worker replacement rates for hypothetical earners (easily attainable for 1985 cohort from the OCACT website).

Accounting for general revenue transfers

The report provides a good discussion of the complications involved in applying equity measures to reform proposals that include general revenue transfers. The incidence of any tax increases or spending reductions required to fund the transfers was noted as particularly troublesome, which is an important point to make. However, there are ways to deal with these complications other than to forgo an analysis of the individual equity aspects of reform proposals. It is even more important to make the effort to account for the general revenue transfers in the equity measures when analyzing a reform proposal that is designed in part to raise the rates of return on Social Security contributions, such as CSSS Model 2 and the Ferrara proposal.

There is probably not one correct way to account for the general revenue transfers when the source of those funds is not clearly designated. However, the simplest possibility would be to not account for the general revenue transfers in any way. GAO could have taken the same type of approach that they used for their benchmarks and used multiple methods that would show the range of outcomes that may occur dependent upon the source of the general revenue transfers. The tax increase only benchmark assumed the payroll tax would be increased to pay promised benefits – why not assume a payroll tax increase as the source of the general revenue transfers as a regressive possibility? On the non-tax side, given that so many reformers want to fund their GR transfer with spending cuts, the question would be how progressive is the government spending that would be reduced? With a rough assumption as an answer, one could assess people with a tax whose progressivity is geared to match that of government spending that would be cut.

This is not to say that a precise estimate of the distributional impact of a proposal incorporating general revenue transfers is possible. However, various simplifying assumptions might allow the analysis to go somewhat further than presented in the draft.

Full retirement age

The use of "age 65" at various points in the draft may be inaccurate. Because of the gradual increase of full retirement age from age 65 to age 67 over a period of years, age 65 is usually replaced with "full retirement age." For workers born in 1985 who are central to this report, full retirement age is at age 67. The Ferrara proposal is described as not affecting benefits for workers who die before age 65. If appropriate, in describing the Ferrara proposal, replace "age

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65" in the final bullet to "full retirement age." If age 65 is intended rather than the full retirement age for the 1985 birth cohort, adding a note to clarify that "age 65" is not intended to refer to the full retirement age would help.

Technical comments

Page 4
The 4th sentence of the first full paragraph states that simulations suggest for the 1985 cohort an increase in lifetime Social Security benefits for the bottom fifth of earners by 43% compared with 14% for the top fifth of earners. This appears to be comparing current-law Social Security without disability benefits at all (i.e., no DI program) to the current-law OASDI program, as discussed later in the report. If so, this passage should be clarified.

Page 6
Second bullet: Some plans with individual accounts provide a guarantee of current-law Social Security benefits (see for example the Ferrara proposal if the default investment option is chosen) no matter how investments in the accounts fare. Consider mentioning this fact in the discussion.

Page 9
First line contains a typo – an errant number 9.

Page 13
The last sentence in footnote 17 says that Social Security taxes are proportional. However, this should be expanded to say they are proportional if one is just looking at most typical earners but regressive when all earners are included because of the contribution and wage base (taxable maximum).

Page 15
The last sentence on the page says the replacement rate for the low earner is *over* 50 percent, but the graph shows it to be 49 percent; it might be more accurate to say the replacement rate was *almost* 50 percent.

Page 16
The statement that DI insurance generally results in higher retirement benefits than would have been received with the same earnings but no disability is not entirely correct. DI benefits are based on the PIA and are equal to benefits paid to a worker retiring at the full retirement age. Further clarification may explain under what circumstances DI results in higher retirement benefits than if no disability occurred.

Page 22
Footnote 34, end of the 2nd line, has a typo – "they their families".

Pages 22-23
To some readers, it may seem inconsistent that 6 percent of workers earn more than the current taxable earnings cap in recent years, as stated on page 22, but 83 percent of the households in the top 20 percent of household lifetime earnings would be affected by repealing the cap, as stated

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on page 23. Footnote 36 should be clarified to better explain that this is not inconsistent by directly mentioning that the 6 percent number on page 22 is based on a single year while the 83 percent number is based on a lifetime perspective.

Page 36
First full sentence: Per OCACT's memo on the Diamond-Orszag proposal, the "Super-COLA" provision applies to child survivors or a surviving spouse with a child in care. This is a subset of beneficiaries relating to workers who die before retirement, which includes aged and disabled widow(er)s who are not affected by the super-COLA.

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Related GAO Products

Social Security Reform: Analysis of a Trust Fund Exhaustion Scenario. GAO-03-907. Washington, D.C.: July 29, 2003.

Social Security and Minorities: Earnings, Disability Incidence, and Mortality Are Key Factors That Influence Taxes Paid and Benefits Received. GAO-03-387. Washington, D.C.: Apr. 23, 2003.

Social Security Reform: Analysis of Reform Models Developed by the President's Commission to Strengthen Social Security. GAO-03-310. Washington, D.C.: Jan. 15, 2003.

Social Security: Program's Role in Helping Ensure Income Adequacy. GAO-02-62. Washington, D.C.: Nov. 30, 2001.

Social Security Reform: Potential Effects on SSA's Disability Programs and Beneficiaries. GAO-01-35. Washington, D.C.: Jan. 24, 2001.

Social Security Reform: Information on the Archer-Shaw Proposal. GAO/AIMD/HEHS-00-56. Washington, D.C.: Jan. 18, 2000.

Social Security: Evaluating Reform Proposals. GAO/AIMD/HEHS-00-29. Washington, D.C.: Nov. 4, 1999.

Social Security: Issues in Comparing Rates of Return with Market Investments. GAO/HEHS-99-110. Washington, D.C.: Aug. 5, 1999.

Social Security: Criteria for Evaluating Social Security Reform Proposals. GAO/T-HEHS-99-94. Washington, D.C.: Mar. 25, 1999.

Social Security: Different Approaches for Addressing Program Solvency. GAO/HEHS-98-33. Washington, D.C.: July 22, 1998.

Social Security Financing: Implications of Government Stock Investing for the Trust Fund, the Federal Budget, and the Economy. GAO/AIMD/HEHS-98-74. Washington, D.C.: Apr. 22, 1998.

Social Security: Restoring Long-Term Solvency Will Require Difficult Choices. GAO/T-HEHS-98-95. Washington, D.C.: Feb. 10, 1998.

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