

**GAO**

Report to the Chairman, Special  
Committee on Aging, and to the  
Honorable Richard C. Shelby, U.S.  
Senate

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August 1999

# SOCIAL SECURITY

## Issues in Comparing Rates of Return With Market Investments



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United States  
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**Health, Education, and  
Human Services Division**

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The Honorable Charles E. Grassley  
Chairman  
Special Committee on Aging  
United States Senate

The Honorable Richard C. Shelby  
United States Senate

As the Congress and the nation have examined how best to restore the long-term solvency of the Social Security system, many proposals to restructure the system to include individual accounts have been offered. Many who favor individual account proposals point to the low rates of return that workers can expect from the current system and the opportunity that individual accounts would offer for improving rates of return on retirement contributions. Opponents of individual accounts have taken exception to the usefulness and validity of focusing on rates of return. This report, entitled Social Security: Issues in Comparing Rates of Return With Market Investments, provides a discussion of the key issues to consider in comparing Social Security and private market rates of return.

We are sending this report to the Commissioner of Social Security and relevant congressional committees and subcommittees. The report will be available to others on request.

This report was prepared under my direction. Please contact Charles A. Jeszeck, Assistant Director, at (202) 512-7036 if you have questions.

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and Income Security Issues

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# Executive Summary

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## Purpose

Social Security forms the foundation for our retirement income system, providing crucial benefits to millions of Americans. However, the program faces a significant long-term financing shortage, according to government projections. In the debate about how to address this problem, some proposals would restructure Social Security to include individual retirement savings accounts that would either supplement or partially replace the current program's benefits. According to proponents, such accounts would substantially improve the rates of return individuals could receive on their retirement contributions relative to the current system. The proponents assert that rates of return under the current system will be near zero and even negative for many future retirees. According to others, however, a new system of individual accounts is not the only way to raise average rates of return for individuals; investing some portion of the Social Security trust funds in the stock market could also help do that. Moreover, opponents of individual accounts assert that the rate of return concept should not be applied to Social Security because it is a social insurance program and should not be viewed strictly as an investment program. Still, if rates of return are considered in weighing Social Security reforms, doing so raises numerous issues that should be kept in careful perspective.

In recognition of the role that rate of return comparisons are playing in the current reform debate, the Senate Special Committee on Aging and Senator Richard Shelby asked GAO to (1) examine estimates of Social Security's implicit rates of return for different birth years, earnings levels, household configurations, and other demographic groupings; (2) examine rates of return available on private market investments; and (3) discuss the issues that arise from comparing Social Security and market investment returns.

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## 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. It would provide benefits that workers had earned to some degree because of their contributions and those of their employers, and these benefits would be related to the earnings on which contributions would be based. Today, less than 11 percent of the elderly have incomes below the poverty line, compared with 35 percent in 1959; for about half of the elderly, incomes excluding Social Security benefits are below the poverty line. However, Social Security does not only provide benefits to retired workers. In 1939, coverage was extended to their dependents and survivors, and, in 1956, the Disability Insurance program was added.

The current Social Security program is not designed to pay interest on workers' contributions the way banks pay interest on a savings account; it is not a system of individual savings accounts. Rather, Social Security is financed largely on a "pay-as-you-go" basis, in which each year's revenues are primarily used to pay that year's benefits. Contributions are not deposited in interest-bearing accounts for individual workers but are instead credited to the Social Security trust funds. Under current law, the trust funds must invest any surplus funds in interest-bearing federal government securities. However, the benefit payments to any given individual are derived from a formula that does not use interest rates or the amount of contributions but, rather, uses average lifetime earnings.<sup>1</sup>

Still, the benefits workers eventually receive reflect an "implicit" rate of return they receive on their contributions. This implicit rate of return provides one measure of the relationship between contributions and benefits. It 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. Note that this implicit rate of return that individuals receive on their contributions is not the same as the rate of return (or interest rate) that the Social Security trust funds earn on their assets. Implicit rates of return for individuals depend on the relationship between lifetime benefits and contributions, while the interest earned by the trust funds reflects the prevailing rate of interest in the market. In part, implicit rates of return for individuals depend on the interest earned by the trust funds but only because it reduces the contribution rates required to fund benefits. In addition to depending on trust fund interest earnings, implicit returns depend on long-term demographic and economic trends that affect the program's flows of contributions and benefits.

To be accurate and consistent, rate of return estimates must reflect all the contributions and other revenues associated with the benefits that will eventually be received. For example, they should reflect the employers' payroll taxes as well as the employees' taxes. Also, given current law and actuarial projections, total revenues will not be sufficient to fund all the benefits anticipated by 2034. Rate of return estimates are misleading if they reflect a long-term imbalance between revenues and benefits. In

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<sup>1</sup>In technical terms, Social Security provides a "defined-benefit" pension, not a "defined-contribution" pension. A defined-benefit pension provides a benefit based on a specific formula generally linked to each worker's earnings and years of employment. In contrast, a defined-contribution pension resembles an individual savings account; retirement income from this type of pension depends on the total amount of contributions to the account and any investment earnings. As an example, 401(k) accounts are a type of defined-contribution pension.

addition, if rate of return estimates include contributions for survivors and dependents or for disability benefits, they should also include these benefits. While disagreement exists concerning the merits of including nonretirement benefits in rate of return calculations, estimates should treat benefits and contributions consistently. This report only presents estimates that satisfy these and similar standards of analytical rigor. Moreover, actual rates of return vary tremendously by individual, particularly because life spans vary; some die early and receive virtually no benefit payments while others live long past the average life expectancy. Therefore, rate of return estimates are used more appropriately for group averages than for individuals.

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## Results in Brief

Implicit rates of return that workers receive on their Social Security contributions vary significantly across a number of dimensions. The variations mostly reflect several types of income transfers that the program is designed to provide as part of its social insurance function. Implicit returns vary by birth year, reflecting the program's income transfers to the first generations of retirees from subsequent generations. For example, the inflation-adjusted (or "real") implicit rate of return averaged more than 25 percent annually for the earliest retirees covered by Social Security and is projected to average roughly 2 percent for baby boomers, according to a Social Security Administration (SSA) study. Implicit returns that workers receive also vary on average by their earnings level, by the number of their dependents and survivors, and by their life expectancies. These characteristics vary by race and gender and therefore rates of return do also.

Rates of return on private market assets vary substantially, depending on the investment risks associated with those assets, particularly the risk of asset price volatility and the risk of firms defaulting on obligations. For example, historical inflation-adjusted returns on stock market investments, which have relatively high investment risk, have averaged roughly 7 to 8 percent over the past 60 to 70 years, compared with roughly 2 to 3 percent for long-term corporate bonds and roughly 0 to 2 percent for government securities, which have very low investment risk. The choice of assets in a portfolio and the timing of investment decisions ultimately help determine the returns individuals receive and the risk they bear.

A simple comparison between the rates of return for the current Social Security program and private market investments would be misleading because of several key issues that such comparisons raise. First, a simple

comparison between the current Social Security program and market investments would not reflect all the costs associated with a new system with individual accounts. In particular, the returns individuals would effectively enjoy under a new system would depend on how the unfunded liabilities of the current system would be paid off. Also, costs for both managing and annuitizing the new accounts would reduce actual retirement incomes and therefore the effective rates of return workers enjoyed. Second, future rates of return for either market investments or Social Security as it is currently structured could differ from their historic averages. Third, risks differ between the current Social Security program and market investments.

Instead of making simple comparisons between Social Security and historical market returns, one should make any rate of return comparisons among comprehensive return estimates for specific reform proposals that include both the individual accounts and the Social Security components of the resulting system. Such return estimates would accurately measure the relationship between all the contributions and benefits implied in each proposal, including both the Social Security and individual account components. In particular, they would reflect the effect of measures taken to ensure the sustainable solvency of the system. However, such rate of return comparisons among reform proposals have some limitations of their own and address only one of several criteria on which to compare proposals. Other criteria include the adequacy and predictability of benefits, the extent of solvency improvement, and the effect on the federal budget and national saving.

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## Principal Findings

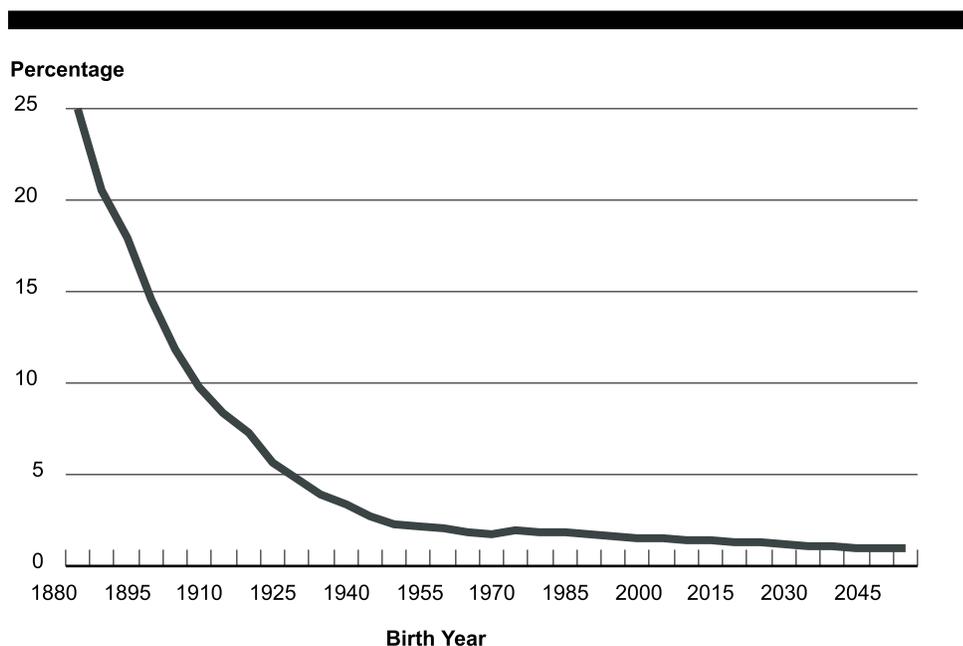
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### Implicit Rates of Return Vary Because of Social Security's Income Transfers

Social Security's implicit rates of return vary significantly by birth year, earnings level, household composition, and other demographic characteristics. Social Security insures workers against the uncertainties associated with various life events and low lifetime earnings. Its income transfers help ensure that beneficiaries have adequate incomes, and the program has proven effective in reducing poverty. For example, Social Security transfers income to persons who live longer—and therefore need income longer—from those who do not. Those who receive such transfers get higher rates of return than those who do not.

In the case of variation by birth year, Social Security's average implicit rates of return have fallen continuously since the beginning of the program. According to an SSA study, inflation-adjusted returns averaged more than 25 percent annually for Social Security's first retirees in the 1940s and are estimated to average roughly 4 percent for today's retirees, roughly 2 percent for baby boomers, and 1 percent for those who will be born 40 years from now. (See fig. 1.) These estimates do not include Social Security disability contributions and benefits but do reflect tax rates that would maintain actuarial balance on a pay-as-you-go basis.

Figure 1: Social Security's Implicit Rates of Return Are Higher for Earlier Beneficiaries



Note: Inflation-adjusted rates, average for all workers in each birth year. These estimates do not include Social Security disability contributions and benefits. They do reflect tax rates that would maintain actuarial balance on a pay-as-you-go basis. They also reflect employer as well as employee contributions. This is the most complete set of estimates by birth year and one of very few that compute average rates of return for all workers born in a given year.

Source: Dean R. Leimer, *Cohort-Specific Measures of Lifetime Net Social Security Transfers*, working paper 59 (Washington, D.C.: SSA, Office of Research and Statistics, Feb. 1994).

**This decline in rates of return is primarily a natural and anticipated consequence of the maturing of a pay-as-you-go system. Although both**

Social Security benefits and contributions have always been based on earnings, early beneficiaries made contributions over a smaller portion of their careers. Also, from 1937 to 1949, Social Security's tax rates were relatively low at 1 percent of payroll each for employees and employers, compared with 6.2 percent today. Higher rates were not necessary because only a small share of the elderly had contributed enough to the program to qualify for benefits. Early beneficiaries as a group received benefits that were large relative to their contributions, and therefore the implicit rates of return they enjoyed were very high. As the system matured—that is, as each year passed and another group of people reaching retirement age qualified for benefits—benefit costs increased. Tax rates eventually increased accordingly, and benefits were smaller relative to contributions. In effect, the start-up phase provided large transfers of income to the first generations of retirees from subsequent generations.

Now that the system is essentially mature, the lower rates of return for more recent and future retirees reflect an underlying relationship between a mature pay-as-you-go system's long-term average implicit rates and national trends in total wages covered by the system. While the declines have been dramatic, future declines should be small because the returns are now fundamentally tied to the growth of total wages because both contributions and benefits are based strictly on earnings.

In the case of variation by earnings level, Social Security's implicit rates of return are higher on average for workers with low lifetime earnings than for those with high earnings. For example, for single women born in 1973, SSA projects that inflation-adjusted implicit rates of return will range from 2.8 percent annually for women with low earnings to 0.4 percent for those with the maximum earnings on which Social Security taxes are paid. This pattern reflects the way the benefit formula transfers income from high to low earners.

Social Security's average implicit rates of return also differ considerably for workers if their family situations differ. For example, for workers with average earnings born in 1973, SSA projects that inflation-adjusted implicit rates of return will range from 3.7 percent for one-earner couples to 1.3 percent for single men. Workers' earnings may generate Social Security benefits for their spouses and dependents as well as themselves, both while they are receiving benefits and after they have died. Because workers do not make any additional contributions to receive any of these auxiliary benefits, workers with families that get them receive a higher implicit rate of return than workers without such families.

Social Security's average implicit rates of return also vary by demographic characteristics, such as race and gender, even though Social Security's benefit and contribution provisions are structurally neutral with respect to these characteristics. These variations in implicit returns arise because different demographic groups have different average earnings levels, life expectancies, and household configurations. Social Security's income transfers are designed to help ensure adequate incomes for beneficiaries and are not intended to mitigate any inequalities among various demographic groups in income or longevity that exist in our society.

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### Private Market Rates of Return Vary by Risk and Portfolio Composition

The private market offers a wide variety of investment opportunities with widely varying rates of return that reflect variations in the riskiness of those investments. Portfolio composition and the performance of the market ultimately determine the return individuals receive and the risks they bear. Over the long term, riskier investments offer higher average rates of return. The risk from volatile asset prices can be managed both by holding riskier investments over longer periods and by managing portfolios so that such risks tend to offset one another. While managing a portfolio's composition in this manner generally requires sophisticated data analysis and expertise, individual investors can take advantage of such expertise to some degree by investing in widely diversified mutual funds.

Social Security reform proposals that create individual accounts vary in the degree of latitude that workers would have in managing their investments. Some proposals would have the government centrally manage the accounts and limit the range of investments workers could choose. Others would have workers manage their own accounts and place few restrictions on their investment options. Such features would significantly determine the range of returns and risks workers would face with their market investments and also the costs of administering their accounts.

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### Issues in Comparing Rates of Return Suggest That Comparisons Should Be Made Across Reform Proposals

A simple comparison between the rates of return for the current Social Security program and private market investments would be misleading because of several key issues that such comparisons raise. First, a simple comparison of rates of return for the current Social Security system and private market investments would be misleading because it would not capture all the relevant costs that a new system would imply. Most significantly, the transition to a new system would entail costs to pay off

unfunded liabilities of the current system. The amount necessary to pay the benefits already accrued by current workers and current beneficiaries is roughly \$9 trillion, according to SSA. In a pay-as-you-go system, an unfunded liability always exists and will be covered by future program revenues or reduced by benefit cuts or both. However, during the transition to a restructured system, financing these costs would significantly reduce returns, and the transition could last for a generation or longer, depending on how its costs were paid. In addition, costs for both managing and annuitizing the new accounts would reduce actual retirement incomes and, therefore, the effective rates of return workers enjoyed.

Second, future average rates of return on either market investments or Social Security as it is currently structured could differ significantly from their historical averages, and the gap between these rates could narrow. Trends in rates of return on market investments and Social Security are difficult to predict for many reasons. Still, economic growth fundamentally drives rates of return for both, and projections for either are misleading if they are not consistent with economic growth projections. Current SSA projections suggest that economic growth will be slower in the future than in the past. They also suggest that labor will become relatively more scarce. In addition, capital may become more plentiful. Combined, these trends suggest that market investment returns may be smaller and that Social Security returns may be relatively larger than they would be without these trends.

Third, both the level and type of risk differ between the current Social Security program and private market investments. Some of the risks are market and economic risks that affect rates of return on either investments or Social Security or both. Such risks include the volatility of investment returns and the potential for broad economic downturns. Other risks are political, relating to uncertainties about what changes the Congress might make to either the current system or a new one. Estimates of average rates of return do not measure risk by themselves, and predicting the statistical variability of those estimates is difficult. In particular, rates of return do not measure whether retirement incomes will be adequate, which is a primary risk that Social Security is designed to help address. In addition, they do not measure the certainty or predictability of retirement incomes.

In contrast to simple comparisons between the current Social Security program and market investments, comprehensive rate of return

comparisons among specific reform proposals, with all their components, address many of the various issues that arise. Such comparisons among reform proposals reveal that transition costs would reduce rates of return to the extent that many participants would not get significantly higher rates of return than they would under the current system. However, such comparisons also show that once the transition costs are paid off, participants could potentially enjoy significantly higher returns, depending on market performance and economic trends. Comprehensive rate of return comparisons among reform proposals also capture the effects of administrative and annuity costs, which would depend to a large extent on the specific design of the proposals. Such comparisons can reflect the ways that portfolio choices and current economic projections might affect investment earnings.

Still, comparing rate of return estimates among specific proposals has some limitations. Some reform provisions are not easily incorporated into rate of return estimates. For example, some proposals would tap general revenues to help finance the system in addition to using payroll taxes, but how return estimates could incorporate such nonpayroll tax revenues is not clear. Moreover, average rate of return estimates do not by themselves reveal the different levels of risk that individuals would face under alternative reform proposals. Examining how total retirement incomes might vary under alternative proposals can suggest to a limited extent how much risk individuals might face in terms of the adequacy and predictability of their incomes. In addition, just as a trade-off exists between risk and return in market investments, the same trade-off exists among alternative approaches to Social Security reform. Some proposals might offer higher rates of return on Social Security contributions but might also increase the risk of inadequate retirement incomes. Alternatively, provisions that attempt to mitigate the risk of market investments, such as guarantees, might create incentives for individuals to take excessive investment risks. Such individuals would enjoy any gains from such excessive risk while the government would incur any losses insured by the guarantees. However, any additional costs resulting from such guarantees would ultimately lower participants' rates of return.

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## Agency Comments

GAO obtained comments on a draft of this report from SSA. SSA generally agreed with GAO's treatment of the issues and offered a number of technical comments, which were incorporated where appropriate.

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**Abbreviations**

AIME	average indexed monthly earnings
IA	individual accounts
MB	maintain benefits
PIA	primary insurance amount
PSA	personal security accounts
SSA	Social Security Administration
TSP	Thrift Savings Plan

# Introduction

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Social Security forms the foundation for our retirement income system, providing crucial benefits to millions of Americans. However, the program faces a long-term financing shortage, according to government projections. In the current Social Security reform debate, the rates of return workers implicitly receive on their Social Security contributions have received considerable attention.

Some proponents of reform assert that for many future retirees, the inflation-adjusted rates of return on Social Security contributions will be near zero and even negative for some people. However, others believe that the rate of return concept should not be applied to Social Security because it is a social insurance program and should not be viewed strictly as an investment program. Still others view Social Security as a tax-transfer program, in which taxes should not be associated with future benefits but simply considered to be transfers to current beneficiaries, replacing to some degree transfers workers would have otherwise made—for example, to their own parents—in the absence of the program. Nevertheless, if rates of return are considered in weighing Social Security reforms, they should be kept in careful perspective.

When applied to Social Security, the rate of return concept fundamentally measures the relationship between benefits and contributions, just as other so-called money's-worth measures do. Providing a fair return on contributions is just one of Social Security's objectives. In particular, this objective competes to some degree with the objective of helping ensure adequate incomes, which Social Security's various income transfers try to achieve.

Estimating rates of return involves complex actuarial computations and requires accounting for all contributions and benefits in a correct and consistent manner. Many of the relevant factors are subject to considerable uncertainty, so estimates ideally incorporate the statistical probabilities associated with the uncertainties of those factors. As a result of these uncertainties, actual rates of return for individuals vary tremendously; hence, rate of return estimates are used more appropriately for group averages than for individuals.

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## The Current Social Security Program and the Reform Debate

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. It would provide benefits that workers had earned to some degree because of their contributions and

those of their employers, and these benefits would be related to the earnings on which contributions would be based. However, Social Security does not only provide benefits to retired workers. In 1939, coverage was extended to their dependents and survivors. In 1956, the Disability Insurance program was added.

Profound demographic trends are contributing to Social Security's long-term financing shortfall. While 3.3 workers support each Social Security beneficiary today, only 2 workers are expected to be supporting each beneficiary by 2030. This trend reflects increasing longevity and declining fertility for all future workers, not just the baby boom generation. Restoring Social Security's long-term solvency will require increased revenues, reduced expenditures, or some combination of both.

A variety of options are available within the current structure of the program.<sup>2</sup> However, some proposals would go beyond restoring long-term solvency and restructure the program to include individual retirement savings accounts to either supplement or partially replace the current program's benefits. In effect, nontax revenues could be added to the program if the retirement funds could earn a higher rate of return than Social Security's current funds do. According to proponents, a new system of individual accounts would substantially improve the rates of return individuals can receive on their retirement contributions. However, others point out that reforms within the current structure could also improve rates of return. For example, increasing the build-up of the Social Security trust funds and having the government invest some of those funds in the stock market would also draw nontax revenues into the program and raise rates of return.<sup>3</sup>

Improving rates of return is just one of many criteria by which to evaluate alternative reform proposals.<sup>4</sup> It is also important to examine the effect of

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<sup>2</sup>See *Social Security: Different Approaches for Addressing Program Solvency* (GAO/HEHS-98-33, July 22, 1998).

<sup>3</sup>John Geanakoplos, Olivia S. Mitchell, and Stephen P. Zeldes, "Would a Privatized Social Security System Really Pay a Higher Rate of Return?" in R. Douglas Arnold, Michael Graetz, and Alicia H. Munnell, eds. *Framing the Social Security Debate* (Washington, D.C.: Brookings Institution, 1998), pp. 137-56. This paper makes the distinction between three distinct types of reform: privatization, prefunding, and diversification. Creating a new system of individual accounts would achieve all three, but only the last two would be necessary to improve rates of return. Privatization would transfer retirement funds from the government to individuals. Prefunding would build up retirement funds in advance, in contrast to the current system's pay-as-you-go financing structure. Diversification would invest those funds in a wider range of market investments than just government bonds.

<sup>4</sup>See *Social Security: Criteria for Evaluating Social Security Reform Proposals* (GAO/T-HEHS-99-94, Mar. 25, 1999).

reforms on the adequacy of retirement incomes, in terms of both the level and the certainty of those incomes. In addition, reforms should restore solvency in a way that is likely to be sustained over time. Moreover, reforms will have effects on the federal budget and the prospects for economic growth. Reforms should also be evaluated for how readily they can be implemented, administered, and explained to the public. Finally, reform proposals should be evaluated as entire packages, weighing all their many effects together.

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## Implicit Rates of Return Relate Benefits to Contributions

By design, Social Security contributions are not deposited in interest-bearing accounts for individual workers but are credited to the Social Security trust funds, which are primarily used to pay current benefits.<sup>5</sup> The trust funds are invested in interest-bearing federal government securities. However, the benefit payments to any given individual are derived from a formula that does not use interest rates or the amount of contributions but rather uses average lifetime earnings.<sup>6</sup>

Even though workers do not earn interest on their contributions as they would on a savings account, the benefits they receive do reflect a rate of return they implicitly receive on their contributions. This implicit rate equals the interest rate that workers would hypothetically have to earn on their contributions in order to pay exactly for all the benefits they and their families will receive over the course of their lives.<sup>7</sup> This implicit rate of return provides one measure of the relationship between contributions and benefits. It is important to recognize that this implicit rate of return that individuals receive on their contributions is not the same as the interest that the Social Security trust funds earn on their assets. Implicit rates of return for individuals depend on the relationship between lifetime

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<sup>5</sup>The Social Security trust funds are not trust funds in the sense used in the private sector. They are primarily used to keep track of amounts earmarked for a specific purpose. The Department of the Treasury has permanent authority to make Social Security benefit payments as long as there is a fund balance. As a result, benefit payments do not require annual appropriations from the Congress. The trust funds also provide a contingency reserve to help ensure that short-term economic downturns do not result in funding shortfalls. Currently, the trust fund balances equal about 194 percent of annual benefit payments.

<sup>6</sup>In technical terms, Social Security provides a “defined-benefit” pension, not a “defined-contribution” pension. A defined-benefit pension provides a benefit based on a specific formula generally linked to each worker’s earnings and years of employment. In contrast, a defined-contribution pension resembles an individual savings account; retirement income from this type of pension depends on the total amount of contributions to the account and any investment earnings. As an example, 401(k) accounts are a type of defined-contribution pension.

<sup>7</sup>A more technically precise definition of the rate of return for Social Security contributions would be the constant discount rate that equates the present discounted value of contributions with the present discounted value of benefits.

benefits and contributions, while the interest earned by the trust funds reflects the prevailing rate of interest in the market. In part, implicit rates of return for individuals depend on the interest earned by the trust funds but only because it reduces the contribution rates required to fund benefits. In addition to depending on trust fund interest earnings, implicit returns depend on long-term demographic and economic trends that affect the program's flows of contributions and benefits.<sup>8</sup>

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### Implicit Rates of Return Are One Type of “Money’s-Worth” Measure

Implicit rates of return are one type of so-called money’s-worth measure and measure the “individual equity” of the program—that is, how benefits compare with contributions. Such measures also reflect how well benefits compare with the income workers would have if they could keep their contributions and invest them elsewhere.

Other measures of Social Security’s money’s-worth include payback periods, lifetime benefit/tax ratios, and the dollar value of net lifetime transfers. Such measures begin with an interest rate workers could earn on their contributions. The payback period is how long it takes their benefits to pay back their contributions plus interest. Benefit/tax ratios, or money’s-worth ratios, compare the interest-adjusted value of lifetime benefits with lifetime contributions. In general, these alternative measures yield conclusions similar to the rate of return, but none gives a complete picture. For example, early Social Security beneficiaries enjoyed very high rates of return. However, those returns were on very small contributions, so the absolute dollar value of the income transfer they received was relatively small.

Money’s-worth calculations measure only individual equity, which is just one of Social Security’s objectives. The program’s insurance features inherently place greater emphasis on helping ensure that beneficiaries have adequate income; without its built-in income transfers across and within cohorts, Social Security would provide identical rates of return on contributions. In contrast, measures of “income adequacy” include how total retirement income, including benefits, compares with the poverty line. Today, less than 11 percent of the elderly have incomes below the poverty line, compared with 35 percent in 1959. For about half of the elderly, incomes excluding Social Security benefits are below the poverty

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<sup>8</sup>Rates of return are most useful when they are adjusted for inflation to reveal how much the purchasing power of an invested sum of money has increased. For example, the yield on a 3-month Treasury bill in 1981, not adjusted for inflation, was 14.0 percent, but inflation was 10.3 percent. Adjusted for inflation, the yield was 3.4 percent. In contrast, the same yield in 1986, not adjusted, was much lower at 6.0 percent although inflation was only 1.9 percent. Adjusted for inflation, the yield in 1986 was 4.0 percent, higher than in 1981.

line. Also, “replacement rates,” which equal the initial annual benefit amount divided by the earnings in the worker’s last year of work, show how well benefits compare with or “replace” preretirement income. For example, workers who retired in 1999 at age 65 with a history of average earnings had a replacement rate of 40 percent and an annual benefit of \$11,454.

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**Considerations Relating to Which Benefits and Contributions Are Included in Rate of Return Calculations**

Because rates of return show the relationship between benefits and contributions, rate of return calculations depend critically on which benefits and contributions are included. To be consistent, calculations must carefully include all the benefits associated with any of the contributions that are included, and vice versa. In particular, considerations in properly accounting for all benefits and contributions include the treatment of (1) inflation adjustment of benefits, (2) employers’ contributions, (3) any actuarial imbalance in the system, and (4) nonretirement benefits.

**Inflation Adjustment of Benefits**

Rate of return estimates should reflect the automatic annual inflation adjustment of Social Security benefits, which is a significant part of the benefit package that the payroll tax finances.

**Employers’ Contributions**

Including the employers’ share of the payroll tax has a significant effect on rate of return calculations since it is half of all payroll taxes. Currently, both the individual and the employer pay a 6.2-percent tax on covered earnings for retirement, survivors, and disability benefits combined.<sup>9</sup> Although a few studies use only the workers’ contributions to calculate rates of return, most studies use both the employers’ and employees’ contributions. Most analysts agree that employees ultimately pay the employers’ share because employers pay lower wages than they would if the employers’ contribution did not exist. Furthermore, estimates that leave out employers’ contributions reflect the full benefits but not the full costs of providing those benefits.

**Reflecting an Actuarially Balanced System**

Rate of return calculations that include only contributions and benefits as defined under current law are misleading, because the system is not in actuarial balance. The returns that workers actually receive will be different from any returns estimated using current contribution and benefit levels, depending on how the financing shortfall is addressed. One approach to resolving this is to use contribution levels that would restore

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<sup>9</sup>Self-employed workers pay a contribution rate of 12.4 percent, half of which is tax deductible as a business expense.

actuarial balance on a pay-as-you-go basis—that is, raising tax rates as the funds are needed to pay benefits. Another is to use reduced benefit levels that would require no tax increases. According to 1996 estimates by the Social Security actuaries, for example, two-earner couples born in 1973 with average earnings would receive an inflation-adjusted return of 1.9 percent under the tax-increase approach but would receive a return of 1.7 percent under the benefit-cut approach. In contrast, their estimated rate of return would be 2.1 percent using contributions and benefits from the current, imbalanced system.<sup>10</sup>

## Nonretirement Benefits

Rate of return calculations must be clear and consistent about whether benefits and contributions are included for survivors, dependents, and disabled workers as well as for retired workers.<sup>11</sup> If rate of return calculations included the full range of benefits provided by the Social Security program rather than retirement benefits alone, the calculations would also need to include the full range of contributions made for those benefits. Conversely, if the calculations included only the retirement portion of the benefits, then the contributions would need to be reduced accordingly.

Although disagreement exists about whether return estimates should include survivors and disability benefits, either approach can theoretically produce reasonable estimates as long as the contributions and benefits used are comparable. Analysts who prefer to exclude survivors and disability benefits from the computations believe that these benefits are distinct and separable from retirement benefits and that they are more like true insurance. Death and disability can strike at any time, but workers can plan and save for retirement over a known period. So providing for retirement is an issue more of saving than insurance, according to this view. In contrast, analysts preferring return estimates for the whole program point out that returns can vary significantly across retirement, survivors, and disability benefits for various groups of beneficiaries. For example, focusing only on retired worker rates of return for African-Americans, who have shorter life expectancies than whites,

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<sup>10</sup>Advisory Council on Social Security, *Report of the 1994-1996 Advisory Council on Social Security*, Vol. 1 (Washington, D.C.: Jan. 1997), p. 222.

<sup>11</sup>In 1996, retired workers accounted for 61 percent of all Social Security beneficiaries, and they received 68 percent of the benefits.

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ignores that African-Americans are considerably more likely to receive disability and survivors benefits.<sup>12</sup>

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## Several Factors Are Subject to Uncertainty

Several factors that affect rate of return calculations are subject to uncertainty, which makes projections complex and subject to error. Contributions depend on each worker's earnings level and the tax rate. Workers' benefits depend on various uncertain life events, such as when they retire, become disabled, or die; whether they have spouses or dependents who are eligible for benefits; and how long benefits are paid. Their benefits also depend on their lifetime earnings histories. Further, their benefits depend on national trends in wage and price levels. Both benefits and contributions depend on any changes in the law that the Congress may make. Rate of return estimates can reflect averages relating to these uncertainties across large groups, such as all average-income workers born in a given year. However, any projections for individual workers would prove to be misleading for many of them because their actual experience can vary so much from the average.<sup>13</sup>

To account for various uncertainties, accurate rate of return estimates require complex actuarial calculations. The most rigorous calculations produce an estimate of what workers can expect to receive from the time they start paying taxes. "Expected values" describe the average return for all possible outcomes, weighted for the probability of each outcome. In the perfect case, this would involve projecting statistical probabilities for each life event, including disability or death at each age, age at retirement, earnings in each year, marital status, number of children, and so on. The return calculations would then use these probabilities in the weighted average of all the benefits received under each of the many different possible scenarios. In contrast, less rigorous calculations estimate a rate of return for a small number of specific illustrative outcomes, such as having a low, average, or high level of lifetime earnings and being single or in a one-earner or two-earner couple. Such "hypothetical worker" calculations are by far the most common type of rate of return estimate. However, while they can be accurate for such specific cases and can be useful for making comparisons across types of individuals, they do not and cannot

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<sup>12</sup>In addition, the appropriate contribution rate to attribute to Disability Insurance is not as clear-cut as it may seem. Even though a distinct contribution rate exists for Disability Insurance, the Congress has occasionally adjusted the rates to manage the financial balances of the separate funds. The problems are more complicated for survivors and dependents benefits under the Old-Age and Survivors Insurance program, which does not have a separate contribution rate for each type of benefit.

<sup>13</sup>See SSA Benefit Estimate Statement: Adding Rate of Return Information May Not Be Appropriate (GAO/HEHS-98-228, Sept. 2, 1998).

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represent what all workers in a particular group can expect to receive on average. Still, even these simpler, hypothetical worker calculations require proper actuarial methods.

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## Objectives, Scope, and Methodology

In recognition of the role that rate of return comparisons are playing in the current reform debate, the Senate Special Committee on Aging and Senator Richard Shelby asked us to (1) examine estimates of Social Security's implicit rates of return for different birth years, earnings levels, household configurations, and other demographic groupings; (2) examine rates of return available on private market investments; and (3) discuss the issues that arise from comparing Social Security and market investment returns. To answer these questions, we conducted an extensive review of the growing literature on the subject and interviewed experts familiar with the estimates available. Many estimates of Social Security's rate of return have been made. Analysts generally agree on which approaches for calculating returns are the most rigorous and which are flawed. We examined estimates from several studies and found that the most rigorous ones produced generally consistent estimates. For example, estimates made by Social Security actuaries for the Report of the 1994-1996 Advisory Council on Social Security were among the most rigorous. In this report, we present only estimates that meet a rigorous standard, and we note any limitations or qualifications. In particular, we present only estimates that include employers' as well as employees' contributions and that reflect an actuarially balanced system. We conducted our work between January 1998 and June 1999 in accordance with generally accepted government auditing standards.

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# Implicit Rates of Return Vary Because of Social Security's Income Transfers

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Social Security's implicit rates of return vary significantly by birth year, earnings level, household composition, and other demographic characteristics. These variations reflect several types of income transfers that the program provides as part of its social insurance function. Social Security insures workers against the uncertainties associated with various life events and low lifetime earnings. In effect, any type of insurance transfers income to persons who incur losses from those who do not. Similarly, Social Security transfers income, for example, to persons who live longer—and therefore need income longer—from those who do not. Persons who receive such transfers get higher rates of return than those who do not.<sup>14</sup>

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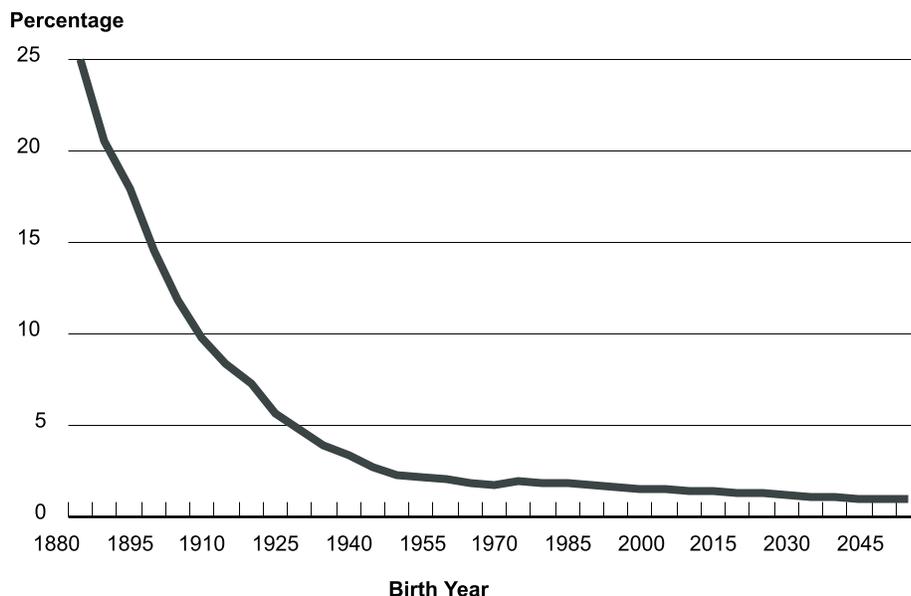
## Variation by Birth Year Reflects Maturing of System and Wage Growth

Social Security's implicit rates of return have fallen continuously since the beginning of the program. This decline is primarily a natural and anticipated consequence of the maturing of a pay-as-you-go system, in which each year's revenues are primarily used to pay that year's benefits. When a pay-as-you-go system is started, rates of return are high for earlier retirees because they receive large transfers of income from subsequent generations. While the declines were dramatic initially, they have been much smaller as the system has approached maturity. (See fig. 2.1.)

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<sup>14</sup>This chapter summarizes only the basic dimensions by which rates of return vary: birth year, earnings level, and household composition. In addition, interactions exist among these dimensions that present a more complicated picture. For example, a high-earning one-earner couple earns lower returns than average by virtue of its earnings level but higher returns by virtue of its household composition. Rate of return estimates can reveal the net effect for each particular combination of characteristics. However, as noted in chapter 1, rates of return by themselves do not provide a complete picture even then. The dollar value of the income transfer can be relatively low even when the rate of return is relatively high. For a more complete set of rates of return and money's-worth measures, see Advisory Council on Social Security, Report of the 1994-1996 Advisory Council on Social Security, Vol. 1, pp. 165-230.

**Figure 2.1: Social Security's Implicit Rates of Return Are Higher for Earlier Beneficiaries**



Note: Inflation-adjusted rates, average for all workers in each birth year. These estimates do not include Social Security disability contributions and benefits. They do reflect tax rates that would keep the system in actuarial balance on a pay-as-you-go basis. They use the intermediate assumptions of the 1991 Social Security Trustees' Report. This is the most complete set of estimates by birth year and one of very few that compute average rates of return for all workers born in a given year.

Source: Dean R. Leimer, *Cohort-Specific Measures of Lifetime Net Social Security Transfers*, working paper 59 (Washington, D.C.: SSA, Office of Research and Statistics, Feb. 1994).

Figure 2.1 illustrates inflation-adjusted average rates of return for all workers born in given years—that is, for “birth groups.” These estimates include all Social Security benefits and contributions except disability, and they assume that payroll tax rates will increase on a pay-as-you-go basis to keep the system actuarially balanced. Inflation-adjusted rate of return estimates were more than 25 percent per year for birth groups born in 1880 or earlier. However, these returns were on relatively small contributions, so the dollar value of the income transfer they received was relatively small. Rate of return estimates were more than 10 percent for birth groups born before 1905. They fell below 6 percent for those born in 1920, below 3 percent for those born in about 1940, and below 2 percent

for those born in about 1960. They will reach 1 percent for those who will be born in about 2040.<sup>15</sup>

Implicit rates of return declined for successive groups of workers during the maturing phase of Social Security's history. From 1937 to 1949, Social Security's tax rates were a relatively low 1 percent of payroll each for employees and employers, compared with 6.2 percent today. Higher rates were not necessary because only a small share of the elderly had contributed enough to the program to qualify for benefits.<sup>16</sup> In addition, early beneficiaries made contributions over fewer years in covered employment than later beneficiaries. As a result, the benefits they received were very high relative to these smaller contributions, and the implicit rates of return they enjoyed were very high. As the system matured—that is, as each year passed and another group of people reaching retirement age qualified for benefits—benefit costs increased. Tax rates eventually increased accordingly, newer beneficiaries had made contributions over more years, and benefits became smaller relative to those contributions.<sup>17</sup>

In designing Social Security, the Congress chose a pay-as-you-go system rather than an “advance-funded” one in which tax levels are high enough to finance future benefit promises.<sup>18</sup> In effect, the Congress provided large income transfers to early generations of beneficiaries. This decision reflected concern that the government might amass huge reserve funds and the prospect that this could weaken the economy. It also reflected a concern about helping improve retirement incomes much sooner than an advance-funded system would have done. While these early beneficiaries may have received a substantial income transfer within the Social Security system, as a group they contributed substantial amounts outside the system to the retirement incomes of their parents' generation, which did

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<sup>15</sup>Dean R. Leimer, *Cohort-Specific Measures of Lifetime Net Social Security Transfers*, working paper 59 (Washington, D.C.: SSA, Office of Research and Statistics, Feb. 1994).

<sup>16</sup>In addition, the maximum annual earnings subject to the payroll tax were only \$3,000 in 1937. However, in 1937, 97 percent of all covered workers had total earnings below \$3,000, while today about 94 percent have total earnings below the taxable maximum. Still, the percentage of workers with total wages under this ceiling was much lower from about 1950 to 1978, when this percentage ranged between 64 and 85 percent. So this pattern of relatively lower contributions also contributed to higher rates of return for those who paid taxes during this period.

<sup>17</sup>Technically speaking, more than one generation of retirees benefited from the transfers that resulted from starting a new system. The Congress increased Social Security benefit levels many times over several years and expanded coverage to new sets of workers. Each time benefits are added or coverage is expanded, those incremental changes begin a new maturing process of their own, which extends the maturing process for the system as a whole. Nevertheless, the current system can now be considered to be essentially mature since any remaining part of that process is relatively small.

<sup>18</sup>Social Security actually began in 1935 as a partially funded pension plan; however, the 1939 amendments modified it to more of a pay-as-you-go pension plan.

not qualify for Social Security benefits. Such contributions included not only income support that some provided to their own parents but also taxes and charitable contributions that paid for other forms of support.

In a fully mature pay-as-you-go system, long-term average implicit returns roughly equal the growth of total wages covered by the system because both contributions and benefits are based directly on covered wages.<sup>19</sup> In turn, total wage growth depends significantly on the growth of labor productivity and the growth of the labor force. Since both of these growth rates have slowed in recent years and are projected to remain low, implicit Social Security returns have been declining even though the system is now essentially mature. However, as long as total wage growth remains positive, long-term average returns on Social Security for birth groups will also generally remain positive.<sup>20</sup> This remains true over the long-term even with increasing longevity and a declining ratio of workers to beneficiaries. The estimates in figure 2.1 take these projected demographic changes into account and also reflect tax rates that would keep the system in actuarial balance. Under this scenario, tax rates would increase but so would lifetime benefits as people live longer.

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<sup>19</sup>While this fundamental relationship between Social Security's rate of return and wage growth may not be immediately obvious, the academic literature has shown it to be true. In short, if demographic and economic conditions and program provisions were all constant in a mature pay-as-you-go system, then benefits for one generation of retirees would equal the contributions paid by its children's generation. Those contributions would equal the retirees' contributions plus wage growth, since contributions are based on wages. If any of the constants were to change, program provisions would have to change to restore balance. Once balance were restored and all factors became constant again, this relationship between contributions and benefits would be restored. Of course, in the real world, returns vary within these long-term averages because contribution and benefit patterns can vary somewhat and still reflect long-term actuarial balance. For example, the Congress can increase taxes or cut benefits to achieve actuarial balance, but such policy changes can affect those born earlier more than those born later or vice versa and still achieve the same level of long-term balance.

<sup>20</sup>This relationship between returns and wage growth helps explain why Social Security is not a "Ponzi" or pyramid scheme. It is mathematically impossible for a pyramid scheme to continue indefinitely. As layers are added at the bottom of the pyramid, the number of participants required grows exponentially and eventually there would never be enough people to complete a full layer. However, under Social Security, positive rates of return on average can exist indefinitely as long as total wage growth remains positive.

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## **Variation by Earnings Level Reflects Income Redistribution**

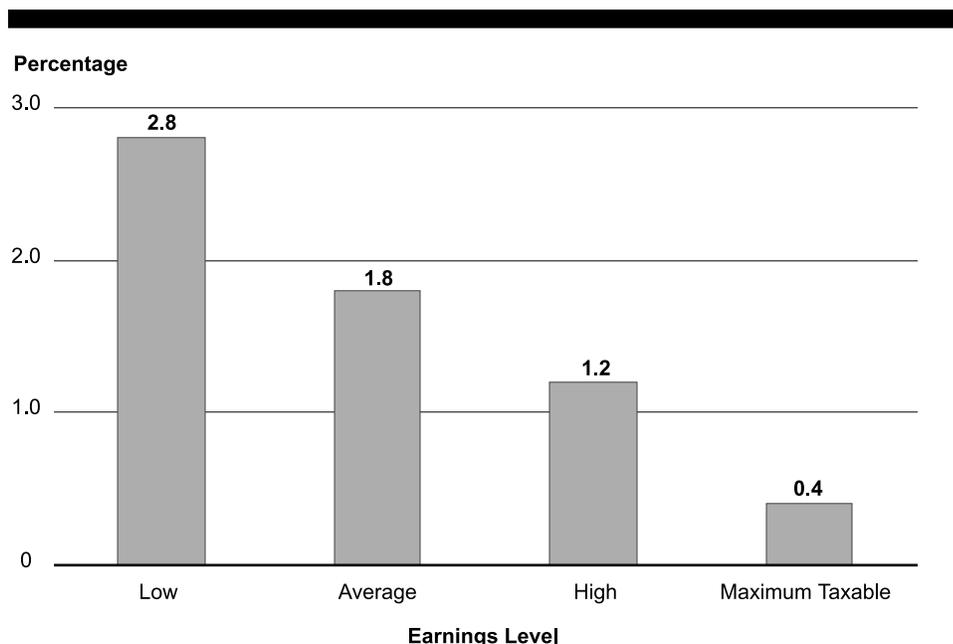
Social Security's implicit rates of return are higher on average for workers with low lifetime earnings than for those with high earnings. (See fig. 2.2.) This pattern reflects the way the benefit formula transfers income from high to low earners.<sup>21</sup> To help ensure that beneficiaries with low lifetime earnings have adequate incomes, the benefit formula was designed to be progressive and replace a higher percentage of average lifetime earnings for low earners than for high earners.<sup>22</sup>

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<sup>21</sup>The estimates for figures 2.2 and 2.3 are for illustrative, hypothetical workers. However, a recent study raises questions about whether the "low" and "average" earnings levels reflect earnings that are truly low and average. As a result, rates of return for truly low and average earnings levels would actually be somewhat higher than these estimates suggest. Earnings records for hypothetical workers are assumed to follow a steady, smooth lifetime earnings pattern. In reality, earnings patterns vary considerably, and many workers have some years of zero earnings. Those zero earnings in particular years are not reflected in the average earnings level used for the hypothetical worker cases, but they can affect the Social Security benefit calculation. As a result, the study found that the hypothetical "low" earnings level of \$13,000 actually falls between the low and average earnings level. Similarly, the hypothetical "average" earnings level of \$29,000 actually falls between the average and high levels. Because rates of return are lower for higher earnings, return estimates for these hypothetical earnings levels may be misleadingly low. Nevertheless, they do illustrate the general pattern by earnings level. See Gary Burtless, Barry Bosworth, and C. Eugene Steuerle. "Changing Patterns of Lifetime Earnings: What Do They Tell Us About Winners and Losers From Privatization?" Paper presented at the First Annual Joint Conference for the Retirement Research Consortium, "New Developments in Retirement Research," Boston College Center for Retirement Research and Michigan Retirement Research Center, Washington, D.C., May 20-21, 1999.

<sup>22</sup>Specifically, the primary insurance amount (PIA) is the full monthly benefit payable to retired workers at age 65 or to disabled workers when first eligible. Retired workers are first eligible for benefits at age 62 but the monthly benefit is reduced for each month they receive benefits before age 65. For those first eligible for benefits in 1998, the PIA equaled (1) 90 percent of the first \$477 of average indexed monthly earnings (AIME) plus (2) 32 percent of the next \$2,398 of AIME plus (3) 15 percent of AIME over \$2,875. The bend points in this formula (dollar amounts of AIME defining each bracket) are indexed to increases in average national earnings.

**Figure 2.2: Social Security's Implicit Rates of Return Are Higher for Low Than for High Earners**



Note: Inflation-adjusted rates, single women born in 1973. These estimates include all Social Security contributions and benefits, including disability, and reflect tax rates that would keep the system in actuarial balance on a pay-as-you-go basis. These estimates do not reflect the fact that life expectancy is lower for lower earners. These estimates are for hypothetical workers to illustrate differences across earnings levels. Each earnings level estimated represents one earnings amount in each year; the estimates do not represent ranges of earnings. The average earnings level equals the average Social Security covered earnings in each year, the low earnings level equals 45 percent of the average, and the high level equals 160 percent of the average. The maximum taxable earnings level reflects an earnings history in which the workers' earnings equaled the maximum taxable level in each year. In 1998, the average earnings level was about \$29,000, implying a low earnings level of roughly \$13,000 and a high level of roughly \$46,000. The maximum taxable earnings level was \$68,400. Returns for single men were roughly 0.5 percentage points lower at each earnings level.

Source: SSA.

However, some analysts have noted that lower earners have lower life expectancies on average, which reduces their rates of return.<sup>23</sup> Various sets of estimates have attempted to demonstrate the size of the effect on implicit returns from life expectancy differences across income groups. While some of these estimates have been flawed, rigorous and reasonably

<sup>23</sup>Also, lower earners tend to enter the workforce earlier than higher earners, who tend to have more years in school. Therefore, lower earners are likely to have more years of nonzero earnings, which diminishes the benefit formula's progressivity. However, lower earners more commonly have interrupted work histories or work outside of covered employment, which strengthens progressivity.

accurate estimates have shown that the life expectancy differences between income groups do lower rates of return for low earners and increase them for high earners. However, these effects are not large enough to reverse the overall progressivity of the benefit structure. For example, for workers born between 1917 and 1922, one study estimated that adjusting life expectancy for income differences would decrease the average annual, inflation-adjusted, implicit returns for low-wage men from 6.23 to 6.17 percent and would increase such returns for high-wage men from 4.99 to 5.04 percent.<sup>24</sup> These estimates did not include disability benefits or contributions.

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## **Variation by Household Type Reflects the Role of Dependents' Benefits**

Social Security's implicit rates of return also vary considerably for workers if their family situations differ. Workers' earnings generate Social Security benefits for themselves and may also generate benefits for their spouses and dependents, both while they are receiving benefits and after they have died.<sup>25</sup> Because workers do not make any additional contributions for any of these auxiliary benefits, workers with families that get them receive a higher implicit rate of return than workers without such families. Also, one-earner and two-earner couples both receive some combination of retired worker and spouse benefits, but the two-earner couples make contributions based on two earnings records instead of one.<sup>26</sup> As a result, one-earner couples receive significantly higher implicit rates of return than two-earner couples or single earners. (See fig. 2.3.) For these estimates, the hypothetical one-earner couples are those in which one spouse works steadily until retirement while the other does not work at all. In reality, a couple could have the second spouse work and make Social Security contributions for some number of years; if that spouse's average lifetime earnings were low enough, the couple might still receive the same benefit as the hypothetical one-earner couple. Such a couple

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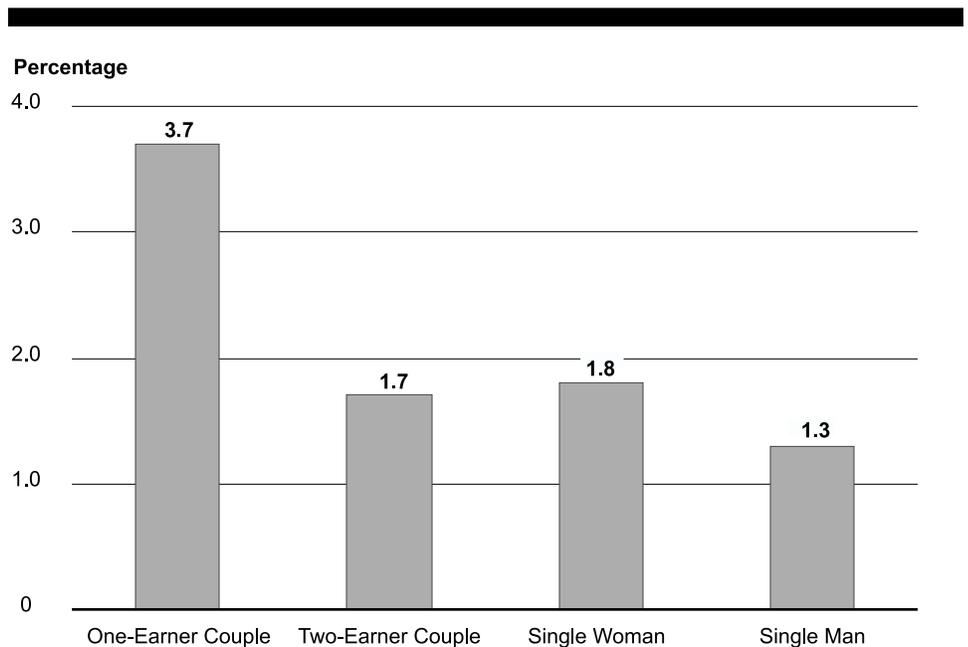
<sup>24</sup>James E. Duggan, Robert Gillingham, and John S. Greenlees, *Progressive Returns to Social Security? An Answer from Social Security Records*, research paper 9501 (Washington, D.C.: U.S. Treasury Department, Nov. 1995), p. 14.

<sup>25</sup>Social Security also pays benefits to divorced spouses. However, most divorced women do not qualify for divorced spouse benefits because most marriages that end in divorce last less than 10 years, the minimum marriage duration needed to qualify for such benefits. In addition, many divorced women who were married at least 10 years do not receive divorced spouse benefits because they either subsequently remarry or have retired worker benefits that exceed their benefit as a divorced spouse.

<sup>26</sup>The spouses with the lower earnings are eligible to receive spouse benefits based on their spouse's earnings record as well as retired worker benefits based on their own earnings, but they cannot receive both full benefits simultaneously. Essentially, these beneficiaries, who are called "dually entitled," receive their own retired worker benefit and the difference between that and the spouse benefit if it is higher. Spouse benefits equal 50 percent of the worker's benefit, which may be higher than the spouse's own retired worker benefit if the difference in their average lifetime earnings is large enough.

would have a lower implicit rate of return than the one-earner case in which the second spouse makes no contributions. The hypothetical one-earner case illustrates only one relatively extreme scenario.<sup>27</sup>

**Figure 2.3: Social Security's Implicit Rates of Return Are Higher for One-Earner Couples**



Note: Inflation-adjusted rates, average earners born in 1973. These estimates include all Social Security contributions and benefits, including disability, and reflect tax rates that would keep the system in actuarial balance on a pay-as-you-go basis. These estimates are for hypothetical workers with earnings equal to the national average each year; for the one-earner couple, one spouse does not work at all. In 1998, the average earnings level was about \$29,000. The estimates illustrate differences across household types but they are not averages for all workers in each type. In addition, they do not reflect any differences in average income that may exist across these groups.

Source: SSA.

**These patterns reflect that Social Security is designed to provide income transfers from families without dependents to those with them. In particular, Social Security's benefit provisions for spouses have the effect of subsidizing or in some way recognizing the work efforts of spouses who**

<sup>27</sup>In addition, the hypothetical couple does not capture the effect of the age difference between spouses; it assumes that spouses are the same age and have two children born when the spouses are in their mid-20s. Couples with large age differences may get higher rates of return than those with no age difference because, on average, they may receive benefits for longer periods.

do not work and earn income outside the home. However, women are increasingly participating in the labor force for greater proportions of their working years, so the role of spousal benefits may be declining in importance for such women but would still be significant for those who do not work outside the home.

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## **Variation by Demographic Group Reflects the Program's Social Insurance Role**

Social Security's implicit rates of return also vary by demographic characteristics, such as race and gender, even though Social Security's benefit and contribution provisions are structurally neutral with respect to these characteristics. Rather, these variations in implicit returns arise because such demographic groups have different average earnings levels, life expectancies, and household configurations. These factors significantly affect rates of return as a result of Social Security's insurance role and income transfers. Its income transfers are designed to help ensure adequate incomes for beneficiaries and are not intended to mitigate any inequalities in income or longevity that exist in our society among various racial, ethnic, or gender groups.

For example, figure 2.3 illustrates the difference in returns for hypothetical single men and women both with the same earnings equal to the national average earnings in each year. The difference in implicit returns between single men and women reflects the greater life expectancies of women. At age 65, women today have a life expectancy of about 19 additional years, compared with 16 years for men. However, note that women have lower incomes on average than men, which the estimates in figure 2.3 do not reflect; these estimates are for illustrative households in which all workers have equal earnings. Estimates of average implicit returns for all workers born in the same year would show that the difference between single men and women would be even greater because of the difference in average income.

With respect to race differences, nonwhites tend to have lower incomes than whites, which tends to increase the implicit returns of nonwhites. However, African-Americans tend to have shorter life expectancies than whites, which tends to decrease their implicit returns. Still, African-Americans are relatively more likely to be disabled, die before retirement, and have dependents than whites.<sup>28</sup> As a result, implicit rates of return are probably higher for African-Americans if the full range of

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<sup>28</sup>For example, while African-Americans make up 12 percent of the nation's population, they make up only 8 percent of Social Security retirement beneficiaries. However, they make up 18 percent of disabled beneficiaries and 23 percent of child beneficiaries. Also, nearly half of all African-American beneficiaries receive disability or survivor benefits compared with 28 percent of white beneficiaries.

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**Chapter 2**  
**Implicit Rates of Return Vary Because of**  
**Social Security's Income Transfers**

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Social Security benefits is included than if only retirement benefits are included. However, none of the currently available rate of return studies that examine race differences have included disability benefits. Still, rigorous and accurate return estimates that do not include disability benefits generally show that both African-Americans and other nonwhites have higher average implicit rates of return from Social Security than whites.<sup>29</sup>

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<sup>29</sup>James E. Duggan, Robert Gillingham, and John S. Greenlees, "Returns Paid to Early Social Security Cohorts," *Contemporary Policy Issues*, Vol. 11 (Oct. 1993), pp. 1-13; Charles Meyer and Nancy Wolff, "Intercohort and Intracohort Redistribution under Old Age Insurance," *Public Finance Quarterly*, Vol. 15, No. 3 (July 1987), pp. 259-81. For a review of the literature on this point, see Dean R. Leimer, "Guide to Social Security Money's Worth Issues," *Social Security Bulletin*, Vol. 58, No. 2 (summer 1995), p. 13.

# Private Market Rates of Return Vary by Risk and Portfolio Composition

The private market offers a variety of investment vehicles with widely varying rates of return, reflecting differences in the degree of risk associated with those investments. Portfolio composition and the performance of the market ultimately determine the returns individuals receive. Social Security reform proposals that would create individual accounts vary in the degree of latitude that workers would have in choosing their investments, and the returns they would potentially enjoy would depend on such provisions.

## Riskier Investments Generally Yield Higher Long-Term Average Returns

Over long periods of time, riskier investments generally yield higher average rates of return. Over the past 60 to 70 years, returns on low-risk government securities have been lower over the long term than private securities, with a compound annual average return of roughly 0 to 2 percent per year on an inflation-adjusted basis before personal income taxes.<sup>30</sup> In contrast, compound annual returns on stocks in Standard & Poor's composite stock index have averaged roughly 7 to 8 percent per year on an inflation-adjusted basis. On long-term corporate bonds, inflation-adjusted annual returns have averaged roughly 2 to 3 percent.

Two specific types of risk are particularly relevant to returns on market investments as they might relate to individual accounts. "Default" or "credit" risk is the risk of borrowers defaulting on their obligations, such as bonds. Bond-rating firms grade borrowers on the risk of default. Highly graded bonds—that is, bonds with low default risk—have consistently been sold at lower interest rates.

In contrast, "market" risk relates to the volatility of the price of broad groups of assets, such as stocks, bonds, and other types of investments. The volatility of asset prices is reflected in the volatility of the rates of return on those assets. For example, annual returns on a broad portfolio of stock investments are more volatile than returns on government bonds. On a long-term average basis, the market compensates for this greater market risk by offering higher average returns on riskier investments. For example, the year-to-year variation in rates of return is much greater for stocks than for government securities, and their long-term compound average annual rate of return is higher—roughly 7 to 8 percent per year compared with roughly 0 to 2 percent per year on government securities.

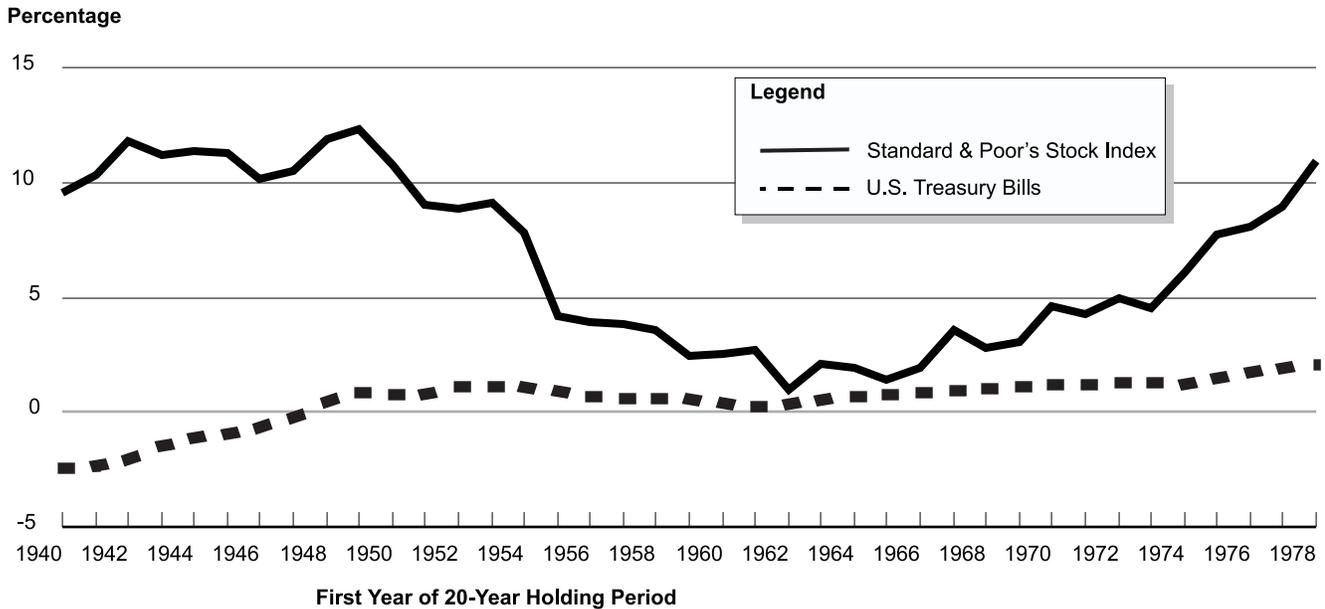
<sup>30</sup>Compound average annual rates of return reflect the total return on an investment over a number of years, figured on a constant annual basis; this is not the same as the arithmetic average of rates for each year.

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## **Portfolio Strategies Can Manage Risk**

Investors can manage the riskiness of their portfolios by both how long they hold specific investments and how they compose their portfolios. Historical data suggest that over long periods of time, riskier investments have quite reliably offered higher average rates of return than less risky investments. For example, figure 3.1 shows that over any 20-year holding period since 1940, compound average annual returns for the Standard & Poor's composite stock index have been higher than for U.S. Treasury bills, which have both less default risk and less market risk. However, figure 3.1 also shows that returns can still vary significantly across 20-year holding periods. For example, from 1953 to 1972, inflation-adjusted returns on Standard & Poor's index averaged 9.1 percent. However, for the 20-year holding period starting just 2 years later in 1955, returns averaged less than half that rate at 4.2 percent. This illustrates a related type of risk—"liquidity risk," or the risk of having to liquidate investments when market prices are not favorable. In addition, figure 3.1 shows that even conservative investments face the risk of being eroded by inflation. For example, Treasury bills provided negative inflation-adjusted returns for several 20-year holding periods.

**Figure 3.1: Holding Risky Investments for Long Periods Diminishes Risk**



Note: Inflation-adjusted compound annual average rates of return over rolling 20-year holding periods.

Source: GAO analysis using data from Robert J. Shiller, *Market Volatility* (Cambridge, Mass.: MIT Press, 1989), available at [www.econ.yale.edu/~shiller/chapt26.html](http://www.econ.yale.edu/~shiller/chapt26.html); Council of Economic Advisers, *Economic Report of the President, 1999* (Washington, D.C.: U.S. Government Printing Office, Feb. 1999).

Diversifying portfolios can also diminish the risks of investment while still providing relatively higher returns. A properly selected combination of risky assets can have a lower risk than any of its individual assets, and such portfolios would still provide higher average returns than an asset with equal risk over the long term. For example, in the case of market risk, the risks from different investments can offset one another if their prices do not fluctuate in a similar pattern, even though they still individually earn higher average returns. However, such techniques are very sophisticated, require substantial data analysis, and require the help of professional advisers for the average investor. Still, investors can also diversify by investing in mutual funds, which do have professional managers. Nevertheless, diversifying a stock portfolio does not protect

investors against the risk of large swings in the market as a whole; diversifying the portfolio to include other types of investment assets, such as bonds, commodities, or real estate, could help manage that risk.<sup>31</sup>

Measures of investment risk and risk-adjusted rates of return are available for helping plan portfolios. Estimating a return on an investment without taking into account its riskiness is likely to overstate the benefit of that investment. There are different ways to adjust returns for risk, but there is no clear best way to do so.<sup>32</sup> Moreover, these measures have key limitations that do not permit making generalizations about the risk-adjusted rates of return that individuals can earn on their portfolios as a whole. For example, a well-diversified portfolio has a different and often lower risk than that suggested by the risks of its individual components.<sup>33</sup> Also, some techniques for calculating risk-adjusted rates relate only to one type of risk, such as market risk. In short, the combinations of risk and return that individual investors face depend fundamentally on how portfolios are managed.<sup>34</sup>

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<sup>31</sup>For a more complete discussion, see Katerina Simons, "Risk Adjusted Performance of Mutual Funds," New England Economic Review (Federal Reserve Bank of Boston), Sept.-Oct. 1998, pp. 33-48.

<sup>32</sup>See Social Security: Capital Markets and Educational Issues Associated With Individual Accounts (GAO/GGD-99-115, June 28, 1999).

<sup>33</sup>Other limitations include (1) they are primarily useful for investments with normal probability distributions, which means, for example, that the probability of below-average returns equals the probability of above-average returns; (2) while many individual investments have such characteristics, different portfolios may not; and (3) the measures presume that investors are free to borrow and use leverage in their investment portfolios.

<sup>34</sup>Some controversy surrounds the issue of risk adjustment; there is no one risk-adjusted measure that everyone agrees is the correct one. For example, some analysts have suggested that the risk-adjusted rate of return on all assets simply equals the rate on the least risky assets. By holding a particular mix of assets, they argue, investors demonstrate that they are indifferent to the assets or else they would change the mix. However, different portfolios can have identical risk levels but different expected rates of return because portfolios can vary by how well risks are managed. Nevertheless, such analysts make the point that risk adjustment should reflect investors' subjective preferences as well as objective, statistical measures of risk. See John Geanakoplos, Olivia S. Mitchell, and Stephen P. Zeldes, "Social Security's Moneysworth," in Olivia S. Mitchell, Robert J. Myers, and Howard Young, eds., Prospects for Social Security Reform (Philadelphia: University of Pennsylvania Press, 1999), pp. 79-151.

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## Individuals' Portfolio Choices Reflect the Extent of Risk Aversion and Retirement Planning

Investors have varying degrees of aversion to risk that can vary in particular by income, education, and gender. Low-income and less-educated individuals and women tend to choose less-risky investments with lower average returns than high-income, highly educated individuals and men.<sup>35</sup> This may reflect more than a lack of knowledge of how to manage investment risk. Those with lower income and wealth have more to lose in relative terms than wealthier individuals. For example, if investors with savings of \$5 million each make a risky investment and lose 20 percent of the savings, they still have \$4 million and can still afford a very generous lifestyle. However, if investors with savings of only \$500,000 lose 20 percent, the \$100,000 they lose can have a significant effect on their lifestyle in retirement. For example, if annuities paid an annual benefit equal to 7 percent of the purchase price, a retiree with \$500,000 could purchase an annuity that paid \$35,000 annually, compared with the \$28,000 that \$400,000 would buy.

In choosing the riskiness of their portfolios, prudent investors also consider how close they are to retirement. Those who are 20 years away from retirement face less risk from investments with higher average returns than those who are only 5 or 10 years away, as fig. 3.1 suggests. Shifting assets gradually to less risky investments as retirement approaches helps guard against a sudden deterioration in savings balances just before retiring or purchasing an annuity.

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## Administrative Costs Vary by Investment Strategy

Some investment strategies incur smaller administrative costs than others. For example, some investment funds are “passively managed”—that is, the portfolio is based on a broad market index such as the Standard & Poor 500, and trading activity automatically follows a formula that tries to match the performance of that index. In contrast, some investment funds are “actively managed” by professionals who pick stocks in an attempt to beat the averages. Such funds are more expensive to manage. Moreover, some individual investors use brokers to manage their own portfolios rather than just buy shares in a large fund. Such investors incur transaction costs every time they make a trade.

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<sup>35</sup>For example, see *Social Security Reform: Implications for Women's Retirement Income* (GAO/HEHS-98-42, Dec. 31, 1997), pp. 9-10.

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## Portfolio Management Would Affect Returns on Individual Accounts Under a Restructured Social Security Program

Portfolio composition and timing would play a large role in determining the investment returns on individual accounts and, in turn, the retirement outcomes under Social Security reform proposals that would create individual accounts. However, returns would also depend substantially on the provisions of the proposal, particularly how much latitude it gave workers to choose their investments and annuitize their savings.

For example, the 1994-96 Advisory Council on Social Security offered three alternative reform proposals, two of which created a new system of individual accounts. The “individual accounts” (IA) proposal would restrict investments to a limited number of passively managed index funds, similar to the Thrift Savings Plan (TSP) available to federal employees. It also would require that workers purchase an annuity at retirement with their Social Security retirement accounts. The “personal security accounts” (PSA) proposal would not impose such restrictions.

To illustrate the potential investment returns on the individual accounts under alternative proposals, SSA actuaries developed a set of hypothetical portfolio scenarios for the Advisory Council. Table 3.1 presents these scenarios and the resulting investment yields. The scenarios illustrate how the combined effects of investment choices, allocation changes with age, and administrative costs would interact with three sets of assumptions for the returns on stock investments alone. The intermediate return assumption uses an inflation-adjusted stock return of 7 percent per year, which reflects the historical average for the period 1900-95; the high return assumption uses a return of 9.3 percent. In addition to making these return assumptions, the actuaries analyzed a low-return case in which the hypothetical worker’s stock returns are roughly no better than the returns on government bonds. As a result, allocation decisions do not affect the overall yield, although administrative costs still differ between the IA and PSA proposals. The low-return assumption illustrates conservative or poorly timed investments or generally poor returns on stocks. In this case, the PSA proposal has a net yield of 2.0 percent overall for the portfolio, and the IA proposal has a net yield of 2.3 percent at all ages. The estimated net yields in table 3.1 do not project what investment returns would be on average but simply illustrate a range of possible returns for hypothetical workers that fit these particular scenarios. Moreover, they illustrate only returns on the individual accounts themselves, not on all retirement contributions under a new system.

**Chapter 3**  
**Private Market Rates of Return Vary by Risk**  
**and Portfolio Composition**

**Table 3.1: Returns on Market Investments Depend on Portfolio Strategies**

Age group	PSA proposal—401(k)			IA proposal—401(k) annuitized		
	Percent of account balance in stock market	Annual administrative expense factor (percent of fund balance)	Portfolio's net inflation-adjusted annual yield (percent)	Percent of account balance in stock market	Annual administrative expense factor (percent of fund balance)	Portfolio's net inflation-adjusted annual yield (percent)
<b>Intermediate returns: Stocks earn 7 percent</b>						
Younger than 40	55	1.00	3.885	55	0.105	4.780
40-49	52	1.00	3.744	50	0.105	4.545
50-59	48	1.00	3.556	40	0.105	4.075
60-69	43	1.00	3.321	20	0.105	3.135
<b>High returns: Stocks earn 9.3 percent</b>						
Younger than 40	55	0.500	5.650	55	0.105	6.045
40-49	52	0.500	5.440	50	0.105	5.695
50-59	48	0.500	5.160	40	0.105	4.995
60-69	43	0.500	4.810	20	0.105	3.595

Note: Returns are adjusted for inflation. These estimated investment returns do not project what returns would be on average but simply illustrate a range of possible returns for hypothetical workers who fit these scenarios. The PSA proposal would have individually held and managed accounts and would not require that the funds be annuitized at retirement. The IA proposal would have the federal government hold and manage the accounts with a limited number of passively managed investment funds. It would also require that funds be annuitized. In addition to these scenarios, the actuaries analyzed a low-return case in which the hypothetical worker's stock returns were roughly no better than the returns on government bonds. This would illustrate conservative or poorly timed investments or generally poor returns on stocks. In this case, the PSA proposal has a net yield of 2.0 percent overall for the portfolio and the IA proposal has a net yield of 2.3 percent at all ages.

Source: Advisory Council on Social Security, *Report of the 1994-1996 Advisory Council on Social Security*, Vol. 1 (Washington, D.C.: Jan. 1997).

The share of the hypothetical portfolios invested in stocks is based on 401(k)-plan experience about how workers distribute their 401(k) funds among types of assets at different ages. Compared with the PSA proposal, the IA proposal assumptions have a smaller percentage of funds invested in the stock market as people approach retirement because of the annuity requirement.

With regard to administrative costs for the individual accounts, the hypothetical scenarios illustrate ranges as discussed in the reform debate. Account costs for the IA plan are smaller than for the PSA plan because accounts and transactions are managed centrally by the government,

similar to the TSP plan; they would not vary by individual. In contrast, the Advisory Council assumed that the account costs for the PSA plan would be larger than for the IA plan since they would be individually managed. Moreover, individuals could manage their accounts very differently with widely ranging administrative costs; some might modify their portfolios only rarely, incurring very few transaction costs, while others might trade very actively. The actuaries assumed lower administrative costs for the PSA high-return case than for the intermediate-return case; this lower cost assumption helps define a more optimistic, illustrative scenario.

Note that this table presents one limited set of returns illustrating one hypothetical worker's investment allocation choices. In fact, as some critics have contended, allocation choices could and would vary significantly, especially by income, because low-wage workers tend to invest more conservatively than high-wage workers.<sup>36</sup> Still, despite their limitations, the Advisory Council's portfolio scenarios represent one of the few efforts to illustrate the interaction between portfolio management choices and overall stock returns. Its scenarios could be interpreted to reflect variations among individuals as well as variations in market averages.

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<sup>36</sup>Gordon P. Goodfellow and Sylvester J. Schieber, "Simulating Benefit Levels Under Alternative Social Security Reforms," in Mitchell, Myers, and Young, eds., Prospects for Social Security Reform, pp. 152-83.

# Significant Issues in Comparing Rates of Return

A simple comparison between the rates of return for the current Social Security program and private market investments would be misleading because of several key issues that such comparisons raise. First, such comparisons do not capture all the relevant costs that a new system would imply, such as transition, administrative, and annuity costs. Second, future returns on both market investments and Social Security as it is now structured may not be the same as in the past, and the gap between those returns may narrow. Third, risks differ between the current Social Security program and private market investments. In contrast to simply comparing the current Social Security program with market investments, many of these issues can be addressed by estimating rates of return for specific reform proposals and including both the individual account and the Social Security components in those comprehensive estimates. Still, even comparisons of such return estimates among reform proposals have key limitations. For example, rates of return by themselves do not measure the risks workers may face with respect to their retirement incomes.

## Additional Costs Need to Be Considered in Comparing Social Security and Market Returns

Simple comparisons between returns on market investments and the current Social Security program do not reflect all the costs that would accompany a new system with individual accounts. Such costs include

- transition costs: making the transition to the new system would involve the substantial costs of covering the unfunded liabilities of the current system;
- administrative costs: administering the individual accounts and managing the investment of their funds would incur costs beyond the administrative costs of the current system; and
- annuity costs: converting the account balances at retirement into annuities would also incur costs beyond the current system's administrative costs.

All these costs would affect either the total contributions or the total retirement income benefits or both under the new system. Moreover, the size of these costs and who pays for them would depend on the provisions of a particular proposal. These costs would not necessarily be paid through the payroll taxes of the new system. Whoever pays these costs and how, they should all be reflected in any rate of return estimates made for the new system. Calculating valid, comprehensive rates of return for a new system requires taking into account all the contributions and benefits of the new system, including some new types of contributions and benefits that are not present in the current system. A simple comparison between

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the current program and historical market investments would not capture all the contributions and benefits implied by a new system.

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## Transition Costs

A new system with individual accounts would generally increase the degree to which retirement benefits are funded in advance. Today's pay-as-you-go system largely funds current benefits from current contributions, but those contributions also entitle workers to future benefits. The amount necessary to pay the benefits already accrued by current workers and current beneficiaries is roughly \$9 trillion, according to SSA. In a pay-as-you-go system, an unfunded liability will always exist and will be covered by future revenues or reduced by benefit cuts or both.<sup>37</sup> However, any changes that would create individual accounts would require revenues both to deposit in the new accounts for future benefits and to pay for existing accrued benefits. Rate of return estimates for such a system should reflect all the contributions and benefits implied by the whole reform package, including the costs of making the transition.

The effect of transition costs on rates of return depends greatly on how those transition costs would be paid. Tax rates could be increased right away or many years later. The costs could also be paid for with benefit cuts, again either sooner or later. Moreover, some proposals would increase federal borrowing for some period of time. If such debt is repaid very slowly by rolling over the debt, transition costs could be paid gradually over several generations. For some reform proposals, the "contributions" to pay transition costs would include general revenues, not payroll taxes or account deposits; general revenues primarily come from individual and corporate income taxes. Workers who pay these transition costs, whoever they are in whichever generation, would receive lower overall returns than those who do not.

Some proponents of individual accounts point out that making the transition to increased advanced funding is critical and has implications for comparing rates of return. They observe that rates of return from the individual accounts in an advance-funded system fundamentally differ from Social Security's implicit rates of return because individual accounts would provide a new source of investment funds and would increase

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<sup>37</sup>Note that the unfunded liability of \$9 trillion is not the same as the "actuarial imbalance," which equals roughly \$3 trillion, according to SSA. The actuarial imbalance reflects both future revenues and future benefit accruals. In contrast, the unfunded liability reflects neither of these but rather the dollar value of benefits accrued to date but not yet paid. Under any reform proposal that restored long-term solvency—that is, reduced the actuarial imbalance to zero—additional future program revenues would cover some portion of the imbalance while any benefit reductions would eliminate the remaining portion.

national saving. This increased pool of investment would produce real increases in economic activity that would make society better off. In contrast, they assert that Social Security only transfers income from taxpayers to beneficiaries, detracts from saving and long-term economic growth, and produces no real economic returns.

Other analysts contend that workers paying the transition costs must receive lower returns than they would otherwise in order to improve returns for future generations.<sup>38</sup> Moreover, some observe that increasing the advance funding of Social Security would not necessarily increase national saving. Consumers might compensate for their increased savings in their individual accounts by saving less elsewhere or borrowing more. National saving also depends on federal budgets and surpluses, which could be affected by the specific aspects of any changes enacted. For example, any federal borrowing that helps pay for transition costs would offset any corresponding increases in individual account balances to some degree.

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## **Administrative Costs**

Market investments entail a variety of transaction and administrative costs, which reduce the rates of return that investors effectively earn.<sup>39</sup> These costs are not present in the current Social Security system, at least not in the same form or to the same degree. For example, stock brokers charge commissions for making trades, mutual fund managers are compensated for managing the funds, and making deposits into accounts and recordkeeping entail some administrative costs. Reflected in such costs are marketing and advertising expenses, including sales commissions, incurred as money managers and brokers compete for the investors' business. In some countries that have privatized their social security systems, these costs have been quite high. In contrast, SSA does not maintain actual accounts for each individual but simply keeps records of earnings. Administrative costs for Social Security's Old-Age and

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<sup>38</sup>Geanakoplos, Mitchell, and Zeldes, "Would a Privatized Social Security System Really Pay a Higher Rate of Return?"

<sup>39</sup>See Social Security Reform: Administrative Costs for Individual Accounts Depend on System Design (GAO/HEHS-99-131, June 18, 1999).

Survivors Insurance program are less than 1 percent of annual program revenues.<sup>40</sup>

In a new Social Security system with individual retirement accounts, the size and effect of administrative costs would depend significantly on how the new system is designed. For example, just as administrative costs vary between active and passive investment strategies for individual investors, the range of investment strategies permitted under the new system would affect its administrative costs. A centrally managed approach, such as that envisioned in the IA proposal noted earlier, could minimize costs associated with recordkeeping and financial transactions. Limiting the range of investment options to a few types of funds available through the central system could also avoid substantial marketing costs that might arise if individuals had the freedom to switch from one money manager to another. Moreover, the effect of administrative costs on rates of return could vary across workers, depending on how those costs are paid. If individuals were charged a flat fee per account for administrative costs, accumulations in small accounts would be affected to a greater extent than if they were charged an annual percentage. Therefore, such costs would diminish the effective rates of return more for low-income workers with smaller balances than for high-income workers. Finally, higher administrative costs could be associated with more customer services, and some of the additional administrative costs would also provide other, nonquantifiable benefits, such as investors' freedom of choice.

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## **Annuity Costs**

In addition to the costs of managing the accounts before retirement, the costs of annuitizing the balances at retirement would affect the retirement incomes individuals actually enjoy and therefore their effective rates of return. Like other investments, annuities purchased in the private market entail a variety of transaction and administrative costs.<sup>41</sup> However, annuities are also a form of insurance, and annuity prices in a free market

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<sup>40</sup>In addition to direct administrative costs, various indirect costs exist under the current system, such as those that Treasury and employers incur for various processing tasks. Indirect costs would also exist in a restructured system, including some new costs potentially, such as costs for investor education. Because indirect costs may or may not have an effect on individuals' specific retirement contributions and benefits and in many cases are difficult to measure, it is not clear how or whether to incorporate them into rate of return estimates. Such costs may also ultimately be paid in the form of lower wages to workers or higher prices to consumers, which further complicates how to treat them in rate of return estimates.

<sup>41</sup>See *Social Security Reform: Implications of Annuities for Individual Accounts* (GAO/HEHS-99-160, July 30, 1999).

reflect profits that insurers make.<sup>42</sup> Moreover, annuity costs could vary substantially from person to person, depending especially on interest rates at the time of purchase. Annuity costs greatly depend on interest rates, with higher interest rates increasing the size of the annuity benefit.<sup>43</sup>

Annuity costs could also vary considerably across groups of people with different life expectancies, depending on the ability of annuity providers to charge different prices to different groups, such as groups defined by gender or health status. Those groups with longer life expectancies would receive their annuities longer, and their annuity providers would therefore incur higher annuity costs for them. Reform provisions might prohibit annuity providers from charging different prices based on race, gender, health status, or other factors that reflect differences in life expectancy.<sup>44</sup> Such prohibitions would reduce the variation in annuity costs across groups. However, they would also implicitly transfer income from those groups with shorter life expectancies—such as men or the poor or African-Americans—to groups with longer life expectancies—such as women or the wealthy or whites. Rates of return would vary across such groups accordingly. Still, such prohibitions might not prevent annuity providers from using marketing and advertising to appeal to retirees with shorter life expectancies.

Prohibiting annuity providers from charging different prices to different groups would probably have a limited effect unless annuities were mandatory. Otherwise, individuals with shorter life expectancies might perceive annuity costs to be too high and choose not to buy them. In effect, they would “self-annuitize” and face the risk that they might outlive their retirement savings. In the current annuity market, consumers who expect to live a long time because of health status or family history are much more likely to purchase annuities than those who do not. As a result, annuity purchasers as a group have a longer life expectancy at any given age than the population at large, so annuity prices are higher than they would be if everyone purchased an annuity. This problem, known as “adverse selection,” would not be nearly as significant if annuities were mandatory because people with lower life expectancies would not be able to opt out of buying an annuity.

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<sup>42</sup>In contrast, when the government provides annuities, such as Social Security benefits, it does not make a profit.

<sup>43</sup>The more money an annuity fund can earn in interest, the more it can pay out in benefits.

<sup>44</sup>Requiring insurers to use unisex annuity rates would be an example of this. Unisex annuity rates are currently required for employer-provided group annuities, but annuities sold to individuals are usually based on gender-specific life tables. The current Social Security program, in effect, also provides unisex annuities, which results in an income transfer from men to women and higher rates of return for women.

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By helping reduce adverse selection, making annuities mandatory in a new system could significantly reduce annuity costs for individuals who would buy annuities anyway while increasing costs for those who otherwise would not. It would implicitly transfer income from those who die earlier to those who die later but help ensure adequate retirement incomes for those who die later.

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## **Future Average Rates Could Differ From Historic Averages**

In the future, average rates of return on either market investments or Social Security as it is currently structured could differ significantly from their historical averages. Moreover, the gap between these rates could narrow. Fundamentally, economic growth drives rates of return for both market investments and Social Security. Rate of return projections for either are misleading if they are not consistent with economic growth projections. More specifically, capital productivity helps determine market rates of return while the growth of labor productivity helps determine Social Security's long-term average rates of return. Trends in the productivity of both capital and labor are difficult to predict for various reasons, and the markets for capital and labor interact with each other in determining what share of the national income is paid to each.

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## **Returns on Market Investments Depend on Economic Growth and Market Forces**

For market investments in capital, long-term average rates of return ultimately depend on whether those investments produce more income by producing more goods or services. However, capital comes in many forms, such as land, buildings, technology, machinery, supplies, and product inventory. Not all these forms of capital are financed through the stock and bond markets, but they all compete with labor for their share of the national income, which determines their rates of return. These rates of return are related to the productivity of each factor of production, but many economic forces work through the markets to determine the rates of return they earn individually.

Several issues make it hard to predict returns on capital. Investment in new technology can result in major breakthroughs that change the way we all live or it can go down dead-end paths with little if any result. Moreover, measuring productivity growth from advances in information technology, for example, has proven difficult. Also, the dynamics of the stock market may be changing. For example, the difference, or "spread," between rates of return on stocks and Treasury securities has been shrinking. Some economists have suggested that this trend reflects that the economy

appears to be less susceptible to recessions, making stock investments less risky.<sup>45</sup>

Still, in the aggregate, returns to capital and labor must fundamentally reflect growth in national income, so projections of future returns depend on assumptions about economic growth. In fact, the growth of the U.S. economy is expected to slow as the population ages. The rate of national saving and the growth in productivity and wages have slowed notably in the past two decades, and these trends relate to economic growth. The Social Security trustees' projections reflect an assumption that growth will slow as the baby boom generation retires and relatively fewer young people enter the labor force. From 1989 to 1997, the economy grew at an inflation-adjusted average annual rate of 2.2 percent. The trustees' intermediate assumptions use a growth rate of 2.0 percent over the next decade and 1.4 percent by 2020. One analysis estimated that these growth rate assumptions imply that future stock market returns could be as low as 4.0 percent.<sup>46</sup> If the rate of economic growth turns out to be higher than these projections, returns to capital could be higher, but so could be returns to labor and in turn Social Security's implicit rates of return and its actuarial balance.

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### Returns on Social Security Depend on Total Wage Growth

While rates of return on market investments depend on capital's share of income from economic growth, the current Social Security program's long-term average rates of return depend on labor's share. As discussed earlier, in a mature pay-as-you-go Social Security system, long-term average implicit returns depend predominantly on the growth rate of all wages covered by Social Security. Growth in total covered wages reflects both average wage increases and growth of the labor force. Wage increases depend on the growth of labor productivity, the growth of the economy as a whole, and the results of other market forces in determining labor's share of national income. As the baby boom generation retires, labor force growth is expected to slow dramatically but average wages could be bid up in response. As a result, the net effect on total covered wage growth is unclear.

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<sup>45</sup>For more discussion of factors that could diminish future stock returns, see *Social Security Financing: Implications of Government Stock Investing for the Trust Fund, the Federal Budget, and the Economy* (GAO/AIMD/HEHS-98-74, Apr. 22, 1998), pp. 41-44.

<sup>46</sup>Dean Baker, *Saving Social Security with Stocks: The Promises Don't Add Up* (New York: Twentieth Century Fund, 1997).

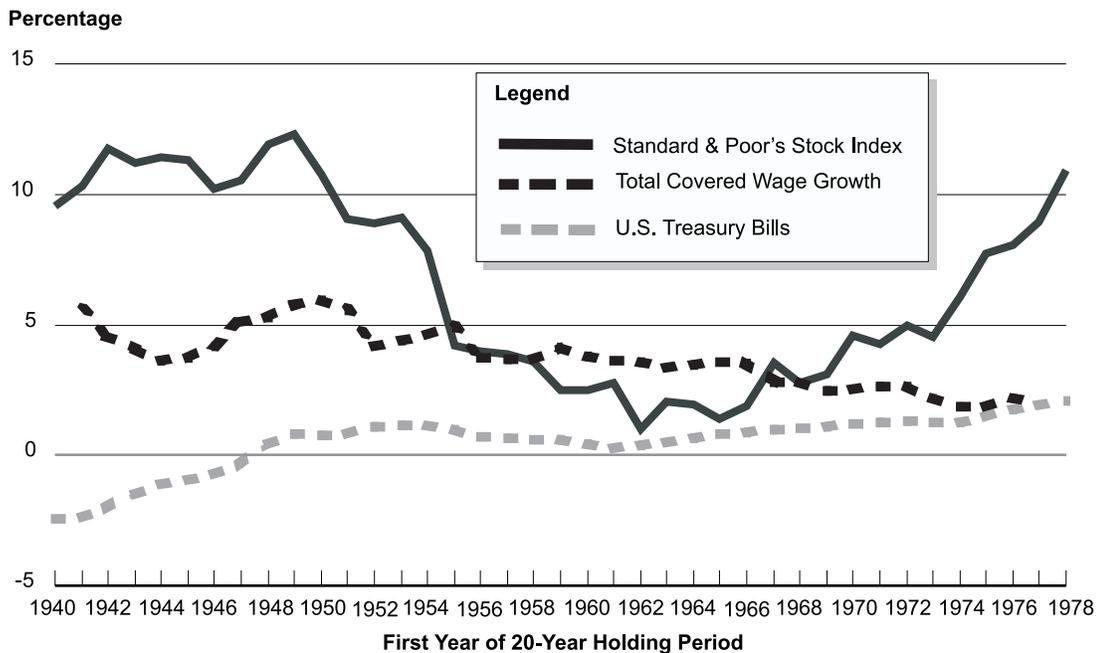
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**The Gap Between Market  
and Social Security  
Returns May Narrow**

As a result of anticipated trends, market forces could leave a smaller gap between the long-term average rates of return on market investments and Social Security as it is currently structured. Capital and labor compete in the market for their shares of the national income, and they interact with each other. For example, capital investment tends to improve the productivity of labor, which in turn tends to increase wages. As noted earlier, capital is expected to be relatively more plentiful, and labor is expected to be relatively more scarce in the future. Either of these trends could decrease returns to capital and increase returns to labor. In turn, the rates of return available from a new system with individual accounts could be smaller than historical returns on market investments might suggest, and Social Security's implicit rates of return could be higher than they are expected to be using the current trustees' assumptions regarding wage growth.

Since 1956, the growth rate of total inflation-adjusted wages has averaged roughly 3 percent on a compound annual basis; since 1967, it has averaged 2.4 percent. These growth rates are lower than the long-term average annual rate of return of 7 to 8 percent on stocks. However, figure 4.1 illustrates that over 20-year periods on a compound annual average basis, stock returns actually dipped below the growth rate of total covered wages during several periods since the 1950s. Still, it remains difficult to say just how narrow the gap will be and how much it may fluctuate.

**Figure 4.1: Twenty-Year Average Rates of Return on Market Investments Compared With Growth Rate in Total Covered Wages**



Note: Inflation-adjusted compound annual averages over rolling 20-year periods. In the early years of Social Security's history, total covered wages increased dramatically in some years as coverage was extended to more workers or the maximum taxable earnings increased.

Source: From GAO analysis of data from SSA; from Robert J. Shiller, *Market Volatility* (Cambridge, Mass.: MIT Press, 1989), available at [www.econ.yale.edu/~shiller/chapt26.html](http://www.econ.yale.edu/~shiller/chapt26.html); and from Council of Economic Advisers, *Economic Report of the President, 1999* (Washington, D.C.: U.S. Government Printing Office, Feb. 1999).

## Risks Differ Between Social Security and Market Investments

Simple rate of return comparisons between the current Social Security program and market investments do not take into account the differences in risk associated with those returns. Economic uncertainty affects the risks and returns of private market investments but also, in a different way, of the Social Security system. In addition, political risks exist for both the current and any restructured Social Security system. For retirement incomes, a primary risk is that they may not be adequate. In addition, risks make retirement income less predictable, which diminishes the ability of individuals and the society as a whole to set aside a level of resources for retirement that is neither too high nor too low. By themselves, rate of

return estimates reflect only the average of the possible retirement incomes, not their adequacy or the degree to which they could vary. While some approaches do exist for assessing the risks of alternative reform proposals, none fully capture the full range of variability in retirement incomes. Just as a trade-off largely exists between risk and return in market investments, the same trade-off exists among alternative approaches to Social Security reform.

As discussed earlier, rates of return in the private market vary considerably according to various types of investment risk, including market risk, default risk, and the like, and also according to how well investors manage those risks. As a result, in a new Social Security system with individual accounts, average rates of return would vary both by year of birth and by individual, and this source of variation is not present in the current system. Different groups of retirees born in different years would accumulate savings and receive investment earnings over different sets of years; the returns that the private market offers could vary substantially between those sets of years, as figure 3.1 illustrated earlier. Moreover, retirees born within a given year and facing the same investment period could have very different rates of return, depending on how they allocated and timed their investments. Even restrictive individual account proposals would permit workers to invest all their funds conservatively and switch back and forth between alternative funds with different types of assets. In contrast, Social Security's current structure results in rates of return that vary relatively little from year to year because its rate of return depends on long-term economic trends, not market fluctuations.

In addition to investment risk, participants face political risk under either the current system or a new one. That is, the Congress could enact changes to the system, such as cutting benefits, raising taxes, changing the tax treatment of retirement benefits, or guaranteeing a minimum retirement income, that would affect returns on retirement contributions. Rate of return comparisons should ideally account for differences in both market and political risk, but political risks are not easily quantified and both require subjective judgments.

As discussed earlier, a variety of attempts have been made to measure rates of return on a risk-adjusted basis. While some measures have been developed for individual investments based on the statistical variation of their rates of return, these measures adjust only for market risk. Moreover, risk fundamentally depends on portfolio choice because portfolios can be designed so that investment risks offset one another to some degree.

One recent study analyzed historical investment returns in various countries and examined how much retirement incomes in an individual account system would vary from workers who retire in one year to those who retire in the next. In the case in which workers with average earnings invested half their portfolio in stocks and received a pension equal to 50 percent of average earnings, identical workers in the next year could expect, on average, to get a pension equal to anywhere from 46 to 54 percent of average earnings. In some years, this variation could be less, in others more.<sup>47</sup>

Just as a trade-off exists between risk and return in market investments, the same trade-off exists among alternative approaches to Social Security reform. Any Social Security changes enacted will implicitly reflect the relative priorities placed on maximizing returns or minimizing risks for workers and beneficiaries. For example, some individual account proposals would guarantee that workers would have at least as much retirement income as they do under the current system. To some degree, such guarantees provide an incentive to take greater investment risks. If some workers do poorly enough that the government must make up the difference, taxpayers paying the subsidies will have lower rates of return than they would otherwise. Thus, efforts to minimize risk could also reduce returns.

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## **Comparisons Between Reform Proposals Help Capture Relevant Issues**

As the preceding discussion demonstrates, the rates of return that participants would enjoy under a restructured Social Security program are not equal to the returns they might receive on their market investment accounts, so a simple rate of return comparison between the current program and market investments would be misleading in assessing the advantages of a new system. All the costs participants pay and all the benefits they receive under the new system should enter into the rate of return calculations. Including both the individual account and Social Security components in one comprehensive rate of return estimate provides the best basis for comparing the individual equity of alternative reform proposals. Still, individual equity is only one of many criteria to use in comparing proposals, and rates of return are only one measure of individual equity.

Comparing such comprehensive rates of return for reform proposals can show how transition costs will have different effects on workers born in

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<sup>47</sup>Lawrence H. Thompson, *Predictability of Individual Pensions*, Ageing Working Paper 3.5 (Paris: Organisation for Economic Co-operation and Development, 1997), [www.oecd.org/els/pds/socialpolicy/ENG5.PDF](http://www.oecd.org/els/pds/socialpolicy/ENG5.PDF).

different years and, hence, can reveal their effects on intergenerational equity. They can show that returns on the entire package of retirement contributions depend on the proportion that is deposited into individual accounts. They can show how returns depend on different provisions relating to administrative costs, annuities, and investment restrictions. They can show how returns depend on the economic assumptions that drive the rates of return on market investments and Social Security benefits generally.

However, such comparisons among reform proposals are limited because many of these effects are difficult to predict and model. Moreover, such comparisons should be made only between proposals that achieve comparable levels of long-term actuarial balance. Also, some reform provisions under consideration, such as the use of general revenues, are complicated to incorporate in rate of return calculations. Finally, rates of return alone do not measure the risks that individuals would face in terms of the adequacy and predictability of their retirement incomes.

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**Advisory Council**  
**Estimates Illustrate**  
**Returns for Alternative**  
**Proposals**

While many studies have published rate of return estimates for the current Social Security program, very few have published estimates for alternative reform proposals. The Report of the 1994-1996 Advisory Council on Social Security provides an extensive set of rate of return estimates for reform proposals.<sup>48</sup> These estimates are now somewhat dated, especially since they are based on projections from the 1995 Social Security trustees' report. Since then, the economy has grown faster than projected, and the long-term actuarial balance has improved somewhat. Also, other reform proposals have been introduced that warrant study. Still, the Advisory Council's rate of return estimates are the best available and are sufficient to illustrate some key points about comparing returns across reform proposals. Moreover, the Council's three alternative proposals provide a broad range of reform approaches that reflect the essence of key components of more recent proposals.

The Advisory Council report provides estimates for three reform proposals and two benchmark cases of particular interest. The IA and PSA plans are individual account proposals, described in chapter 3. The third proposal, the "maintain benefits" (MB) plan, would make changes within the current

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<sup>48</sup>One other study has published payback ratios, which are another type of money's-worth measure, for some stylized, illustrative reform approaches but only for workers from two different birth years. See Kelly A. Olsen and others, How Do Individual Social Security Accounts Stack Up? An Evaluation Using the EBRI-SSASIM2 Policy Simulation Model, issue brief 195 (Washington, D.C.: Employee Benefits Research Institute, Mar. 1998).

program structure to restore solvency. In part, as one alternative, the MB plan would increase revenues by investing up to 40 percent of the trust funds in the stock market. Although it would not create a new system of individual accounts, it would increase advance funding somewhat. The report also provides estimates for two illustrative benchmark cases. The first, known as “present law-PAYGO,” makes no changes except for increasing taxes sufficient to restore solvency on a pay-as-you-go basis. The second, known as “maintain tax rates,” makes no changes except to cut benefits enough to restore solvency with the current tax levels.

Among individual account proposals, the IA and PSA plans represent two ends of a spectrum along which most individual account proposals fall. The IA plan would have deposits to the accounts equal to 1.6 percent of workers’ earnings, while the PSA plan would have deposits of 5 percent. Several recent proposals currently under discussion have deposits in the range of 2 to 2.5 percent of earnings, while a few others have deposits as low as 1 percent and as high as 10 percent. The IA plan would have the federal government centrally manage the accounts on workers’ behalf, while the PSA plan would have individuals manage their own accounts. The IA plan would provide a limited selection of investment options, while the PSA plan would place few restrictions on how workers invest their funds. The IA proposal would require workers to purchase an annuity at retirement, while the PSA plan would not. The IA plan would retain the current structure of Social Security benefits but would reduce benefits so that current Social Security payroll tax rates would adequately fund them. The PSA plan would replace the current Social Security benefit with a relatively small flat benefit that would not depend on lifetime earnings.

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**Reform Proposal**  
**Comparisons Illustrate the**  
**Effect of Transition Costs**  
**and Intergenerational**  
**Equity**

Social Security reforms will have different effects on different generations depending on their specific provisions. One criterion for evaluating alternative proposals is the “intergenerational equity” they provide, or whether rates of return are fairly consistent across generations. The way proposals would handle the current long-term financing shortfall and the costs of making a transition to a new system would have especially significant effects on intergenerational equity.

Figure 4.2 provides the rate of return estimates for one illustrative type of household with average earnings for workers born in different years, as

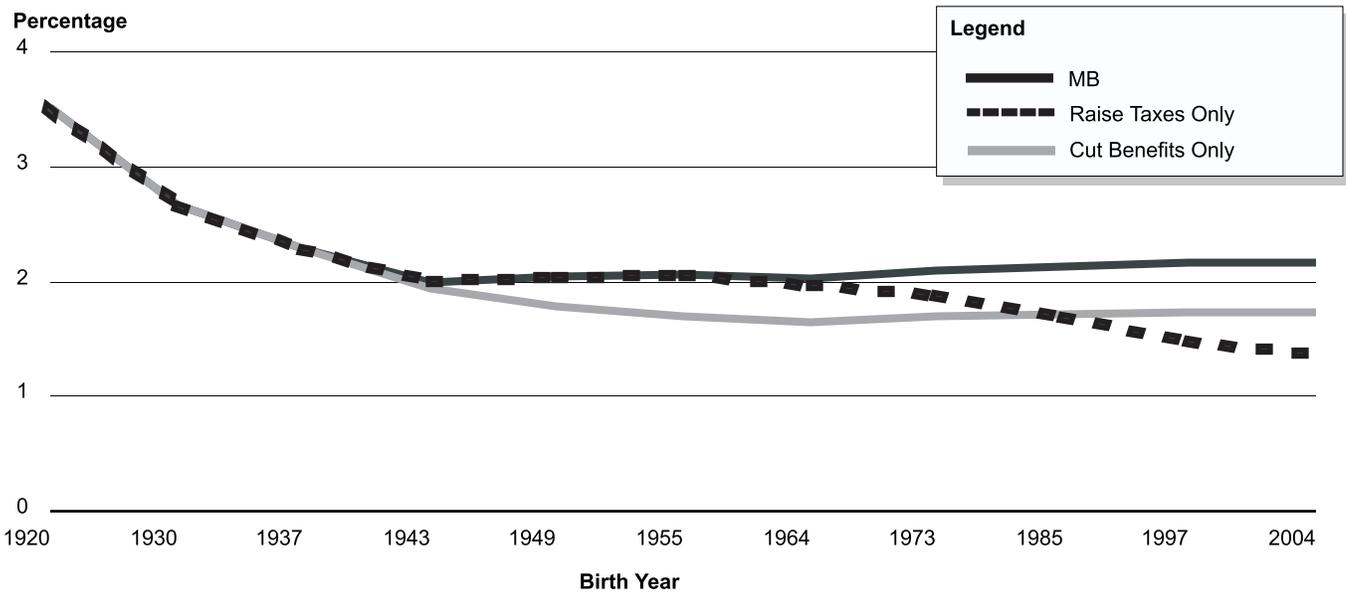
calculated by SSA actuaries for the Advisory Council.<sup>49</sup> Also, these estimates illustrate only the intermediate return case in which any stock market investments in a household's portfolio earn an inflation-adjusted average annual return of 7 percent. Rates of return for workers born in earlier years would not vary significantly among the reform options because none of them would reduce benefits for those already retired or nearing retirement. The declining rates of return for persons born earlier reflect the maturing of the current system and recent declines in total wage growth, as discussed earlier.

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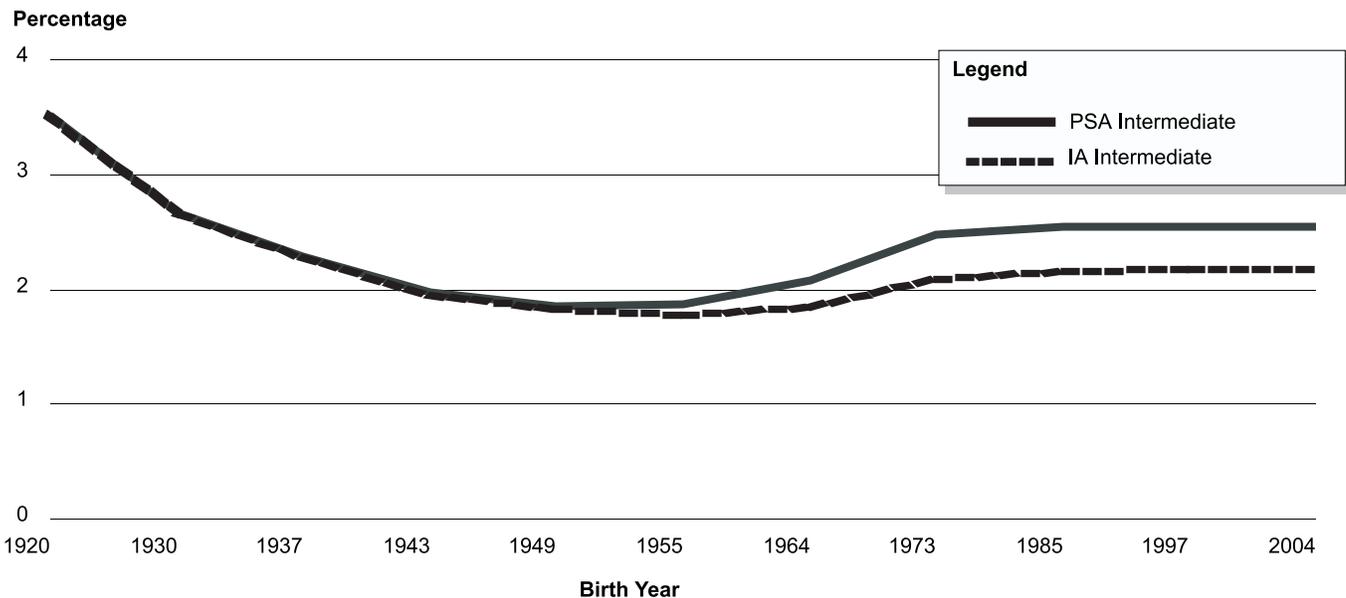
<sup>49</sup>Other types of households, such as single workers or one-earner couples, with different earnings levels exhibit somewhat similar patterns with regard to intergenerational equity. However, higher earners have generally lower rates of return, and lower earners have generally higher rates of return. Also, one-earner couples have generally higher rates of return under the MB plan than under either the PSA or IA plan. As noted earlier, some interactions exist among the various characteristics—for example, between household type and earnings level. All the various combinations present a more complicated picture. For a more extensive set of rates of return and money's-worth measures, see Advisory Council on Social Security, *Report of the 1994-1996 Advisory Council on Social Security*, Vol. 1, pp. 165-230. In addition, these estimates are for hypothetical workers with a steady pattern of lifetime earnings. As noted in chapter 2, the hypothetical "average" earner may have earnings somewhat higher than the true average. As a result, workers with earnings closer to the true average would have higher rates of return on the Social Security component of their retirement income. Moreover, rates of return will vary for the individual account component by the shape of the earnings history. For example, for a given lifetime average earnings level, workers who have higher earnings earlier in their careers would have higher rates of return on their individual accounts than those with lower early earnings since their account deposits would have more years to earn interest. See Burtless, Bosworth, and Steuerle, "Changing Patterns of Lifetime Earnings."

**Figure 4.2: Rate of Return Comparisons for Reform Proposals Illustrate Effects on Intergenerational Equity**

**Using the Current Structure**



**Adding Individual Accounts**



(Figure notes on next page)

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**Chapter 4**  
**Significant Issues in Comparing Rates of Return**

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Note: Inflation-adjusted rates, two-earner couples with average earnings. All proposals achieve comparable actuarial balance over 75 years. These estimates include all Social Security contributions and benefits, including disability. In 1998, the average earnings level was about \$29,000. The raise taxes only option makes no changes to the current program except to raise taxes on a pay-as-you-go basis. The cut benefits only option cuts benefits sufficiently to maintain the current tax rate within the current program structure. The MB (maintain-benefits) proposal, among other provisions, provides for investing 40 percent of trust fund assets in stocks. The last two proposals establish individual savings accounts with various provisions, including different provisions about the range of investment flexibility. The MB and the PSA and IA intermediate return cases reflect an annual inflation-adjusted rate of return on equities equal to 7 percent.

Source: Advisory Council on Social Security, Report of the 1994-1996 Advisory Council on Social Security, Vol. 1 (Washington, D.C.: Jan. 1997).

The trough in rates of return for both the IA and PSA intermediate cases reflects the effect of transition costs, with rates of return depressed while these costs are paid off.<sup>50</sup> As a result, many participants would not get significantly higher rates of return than they would under the current system. However, rates of return then improve as the transition costs diminish. This improvement also reflects that persons born in each successive year have had more years in which to make individual account deposits. Each successive group has a larger proportion of retirement income coming from these accounts and has more to gain from the new system's potentially higher investment returns. In contrast, rates of return are roughly level for the MB plan from the 1943 birth year on. The MB plan offers higher rates of return than either the raise-taxes-only or cut-benefits-only cases, largely because it draws new revenue from higher investment returns.

For the raise-taxes-only case, rates of return decline for the later birth years because taxes increase only as revenues are needed to pay benefits in this scenario. Under current projections, no further tax increases would be needed until 2034, and further increases would be required in later years. Rates of return therefore diminish for persons working in later years because they pay more in taxes without any corresponding increases in benefit levels. In contrast, the effect on rates of return of the cut-benefits-only approach becomes more level because the tax rate remains constant from now on. While benefit cuts are necessary to sustain solvency in this case, rates of return remain fairly constant. In effect, the cuts in the benefit amounts are compensating for the fact that people are living longer and collecting benefits longer; but on a total lifetime basis,

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<sup>50</sup>Note that the PSA proposal has a higher comprehensive rate of return than the IA proposal, even though the IA individual account component has a higher yield. This reflects the difference in the size of each proposal's account. See below for further discussion.

benefits are roughly constant, as is the tax rate.<sup>51</sup> This observation underscores the fact that increasing longevity is one of the root causes of Social Security's long-term financing problem, since it contributes substantially to the declining ratio of workers to beneficiaries. Current benefit levels cannot be sustained under any scenario without additional revenues of one sort or another, which could include higher investment returns.

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**Reform Proposal**  
**Comparisons Illustrate the**  
**Effects of Account Size**  
**and Costs**

For individual account proposals, the comprehensive rates of return will depend primarily on (1) what proportion of retirement contributions can be invested in the market for potentially higher returns and (2) what net returns those market investments actually earn. In addition to depending on market outcomes, net returns will depend on administrative and annuitization costs, the effect of annuitization requirements on investment strategies, and the range of permitted investment options. The Advisory Council's rate of return estimates reflect these various factors to some degree. For example, as discussed earlier and as illustrated in table 3.1, these estimates reflect the administrative and annuity costs implied under the proposals.

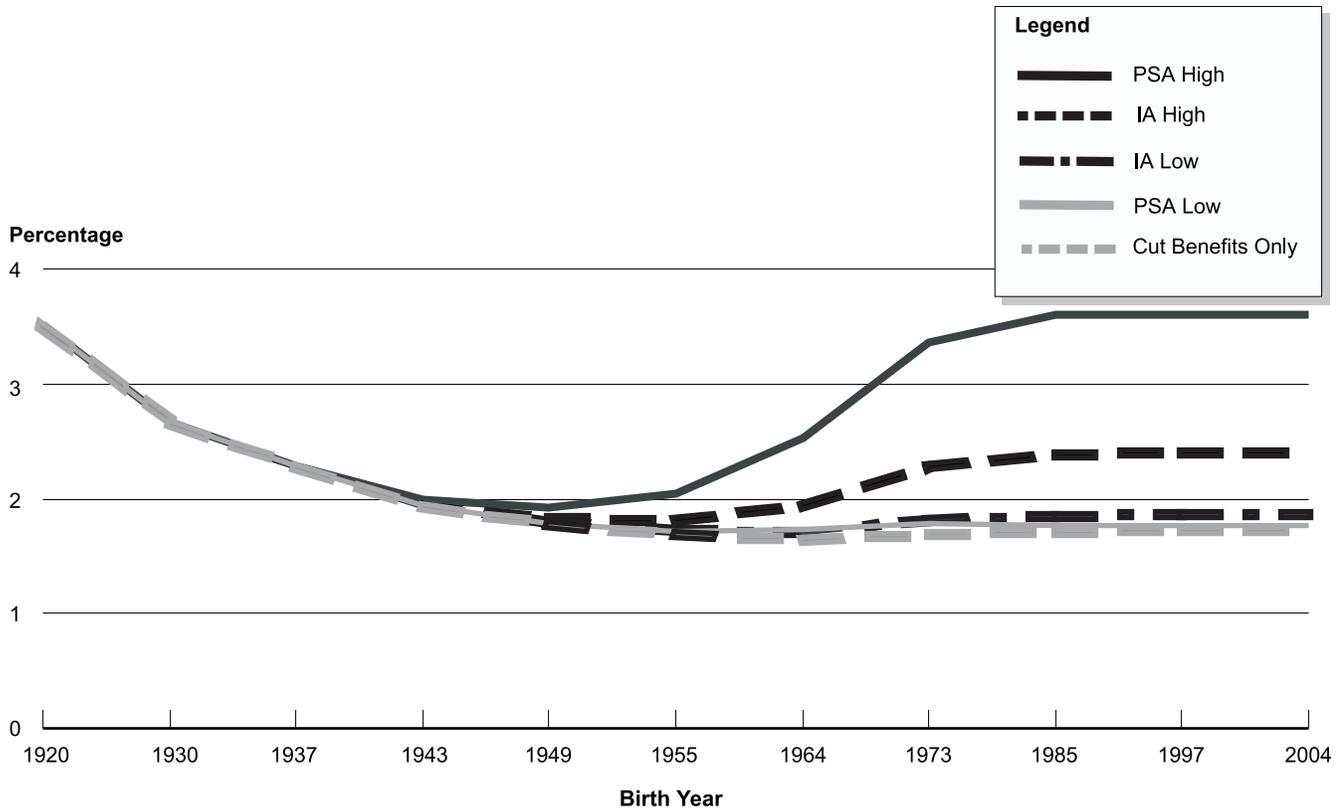
Figure 4.3 includes two lines each for the IA and PSA proposals, one for low and one for high investment returns, as well as the benchmark case of cutting benefits only. Rates of return for the low-return cases do not vary significantly from each other or from the option of restoring actuarial balance by cutting benefits alone. This largely reflects that the low-investment earnings assumption roughly parallels Social Security's long-term implicit rate of return. However, these low-return scenarios also illustrate that any improvement in rates of return from individual account proposals depends on actually realizing higher investment returns. Increasing the level of advanced funding alone does not improve returns, even after all transition costs have been paid.

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<sup>51</sup>In theory, a scenario in which annual benefit levels are maintained could be sustained by taxes that increase gradually in a way that reflects longevity improvements. Such an approach could also result in relatively level rates of return for different birth years if tax increases were actuarially calculated to reflect longevity trends. The raise-taxes-only scenario illustrated here does not do that because the tax increases reflect the cash flow demands of the program, not the actuarial cost of each year's newly accrued benefit promises.

**Chapter 4**  
**Significant Issues in Comparing Rates of**  
**Return**

**Figure 4.3: Rate of Return Comparisons for Reform Proposals Illustrate the Effects of Account Size and Net Returns**



Note: Inflation-adjusted rates, two-earner couples with average earnings. All proposals achieve comparable actuarial balance over 75 years. These estimates include all Social Security contributions and benefits, including disability. In 1998, the average earnings level was about \$29,000. The high-return cases reflect an annual inflation-adjusted rate of return on equities equal to 9.3 percent. The low-return cases reflect a 2.3-percent rate of return, which is comparable to returns earned by the Social Security trust funds.

Source: Advisory Council on Social Security, Report of the 1994-1996 Advisory Council on Social Security, Vol. 1 (Washington, D.C.: Jan. 1997).

In the high-return cases, the PSA proposal yields higher comprehensive rates of return, largely because a larger proportion of earnings is going into the individual accounts than with the IA proposal. Since the accounts are earning a high rate of return, the larger the account the more it raises the comprehensive rate of return. This also explains why the PSA plan

provides higher returns than the IA plan in the intermediate-return case illustrated in figure 4.2. In the intermediate case, the IA accounts yield a higher investment return than the PSA plan in all but the last age range. However, when averaged in with the Social Security component in the comprehensive rate of return, the PSA still yields a higher overall return because the PSA accounts provide a larger share of retirement income. In the high-return cases, the higher returns for the PSA plan also reflect the assumption that workers under the PSA plan would have a larger share of their accounts invested in stocks at later ages, as illustrated in table 3.1. For both plans, stocks are assumed to provide an inflation-adjusted return of 9.3 percent annually in the high-return scenarios. The three alternative return assumptions of 2.3, 7, and 9.3 percent are arbitrary illustrative cases agreed on by the Advisory Council; they do not necessarily reflect the latest assumptions about economic growth or other market projections.

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## **Reform Proposal Comparisons Have Some Limitations**

Even though comparing rates of return for reform proposals is much more valid than simply comparing returns for the current system with those for market investments, limitations and cautions still arise. For example, any reform proposals that are compared should achieve the same degree of long-term solvency. Also, it may not be possible to incorporate the effects of some specific provisions of reform proposals. Moreover, by themselves, rate of return estimates do not measure the risks that workers may face in terms of the predictability or adequacy of their retirement incomes.

Some reform provisions make it difficult to generalize exactly what contributions and benefits would be, which complicates rate of return analysis.<sup>52</sup> For example, some reform proposals would draw on general revenues of the federal government as well as on Social Security's own revenues. General revenues come from a wide variety of sources, including both personal and corporate income tax. Shareholders, employees, suppliers, or consumers ultimately end up paying corporate income tax in the form of reduced earnings, reduced wages, reduced supplier prices, or increased consumer prices. Rate of return estimates should include all contributions to the new Social Security system made

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<sup>52</sup>In addition, one recent study points out that these estimates do not capture the difference in the tax treatment of Social Security benefits under the alternative proposals. Under the IA and MB plans, Social Security benefits would be subject to income tax to the extent that they exceeded contributions, although the personal account portion of the IA plan would not be taxable. Under the PSA proposal, retirement benefits would not be taxable. More generally, incorporating tax effects vastly complicates rate of return analysis. Because income tax rates depend on all sources of income, not just income from Social Security or the individual accounts, two retirees could have the same retirement benefits from the new system but pay different tax rates on those benefits. One retiree may have income from an employer pension, employment during retirement, or other saved assets, while another retiree may have none of these. See Goodfellow and Schieber, "Simulating Benefit Levels."

by all who benefit from it, regardless of how those contributions are made. It is not at all clear how to incorporate contributions from general revenues into return estimates because general revenues come from many current and future beneficiaries born in various years with various incomes and household sizes who provide those revenues in varying proportions. However, to leave any general revenue contributions out of return estimates would artificially make rates of return look better than they would actually be.

As discussed earlier, any rate of return is associated with some level of risk, but the return estimate itself does not measure that risk. For rates of return under a restructured Social Security system, two distinct types of risk are of interest. First, how much could actual rates of return vary from the average projected rate? This variability arises on both the aggregate and the individual level. A projection that stock investments will earn 7 percent over some future period represents an average for a number of possible aggregate outcomes with different probabilities. The actual aggregate outcome could be higher or lower. However, even if the aggregate outcome actually turns out to be 7 percent, it would represent an average across many different investors. So the first type of risk, variability, reflects the risk both that the aggregate projection may be wrong and that an individual's return could vary from the average. The second type of risk is the risk for specific individuals that retirement outcomes are not adequate. For example, what is the probability for a given individual of winding up with a retirement income below the poverty line? Workers value not only being able to predict their retirement income but also knowing that it will be adequate.

The Advisory Council estimates do not really illustrate the risk of either variability or inadequacy. They do suggest a range of possible outcomes, but no probabilities are associated with those outcomes. So these estimates do not reveal the degree to which actual retirement incomes could vary from one worker to another or from one birth group to another; they illustrate only that they could vary using arbitrarily chosen examples.

Some studies have examined the statistical variation of outcomes from various reform packages, but this analysis still goes only so far.<sup>53</sup> In particular, they examine two types of outcomes. Two studies examine the variation in dollar retirement incomes under alternative proposals while a

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<sup>53</sup>Goodfellow and Schieber, "Simulating Benefit Levels"; Olsen and others, "How Do Individual Social Security Accounts Stack Up?"; Lee Cohen, Laurel Beedon, and Carlos Figueiredo, *A Critical Look at Equity Investment in the 1994-1996 Advisory Council on Social Security Recommendations*, issue brief 30 (Washington, D.C.: American Association of Retired Persons, Public Policy Institute, Apr. 1998).

third examines the variation in rates of return that workers experience. Such studies make an important contribution, but it is necessary to appreciate their limitations and how such analysis might be extended. They do study the aggregate variability risk—that is, how much outcomes vary because of how much actual aggregate returns could vary from the projected average. Studies examining retirement incomes address adequacy somewhat by making comparisons with other reforms that do not involve individual accounts. However, all these studies assume that all individuals have identical investments and earn the aggregate rate of return. This understates an individual's risk of inadequacy because it does not reflect individual variation in investment returns. Also, these studies do not examine the possible variability among persons born in different years—for example, if there were a dramatic surge or drop in the stock market or interest rates from one retirement year to the next.

So, while such statistical approaches help describe the minimum extent of variability, they do not describe the maximum variation possible. Moreover, they do not capture how individuals subjectively assess and respond to risk in their own investment choices. Some individuals may be indifferent to receiving a lower rate of return with less risk and a higher rate with more risk, and such preferences vary by individual. Risk analysis based on objective statistical measures is possible and useful, but ultimately it is limited to some degree in its ability to address individuals' subjective preferences regarding risk.

# Observations

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Comparing rates of return on Social Security and private market investments has frequently been discussed in evaluating options for reform. Social Security's implicit rate of return provides a measure of individual equity—that is, whether workers get a fair level of benefits relative to their contributions. Intuitively, it gives a sense of whether workers get their money's worth from Social Security, especially in relation to what they could have earned on their contributions elsewhere. However, simply comparing the current Social Security program's implicit rate of return with historical returns on market investments reveals little about what workers have to gain from alternative reform proposals. Rather, if rates of return are to be compared, they should ideally be compared among complete reform proposals to capture all the costs that the proposals imply and to reflect the latest projections of future economic and demographic trends.

Even such rate of return comparisons among reform proposals must be kept in careful perspective. Rates of return address individual equity alone, which is just one of many factors that should be used in considering Social Security reform alternatives. One of Social Security's primary objectives has always been to help ensure adequate incomes not just for the elderly but also for the disabled and for dependents and survivors. The current Social Security system attempts to strike a balance between the competing goals of income adequacy and individual equity. Social Security's income transfers are a primary means of helping ensure income adequacy but implicitly diminish individual equity at the same time. Reforms could alter the balance between equity and adequacy, but any such change should be a conscious and informed choice.

In addition to the adequacy-equity balance, several other considerations deserve attention in weighing alternatives for reform. Potential effects on the federal budget and the national economy are key factors to examine. Reforms could have significant implications for the level of national saving, which fundamentally affects the prospects for economic growth. Such growth can substantially ease the pressures of an aging population in which relatively fewer workers will support more retirees.

Addressing Social Security's financing issues is similarly essential. Reforms clearly must address the long-term actuarial balance of the Social Security system and whether that balance is sustainable as time goes on. Potentially improving rates of return on workers' contributions cannot in itself restore Social Security's solvency without additional changes to the current system.

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Also, proposals should be examined for a number of design and implementation issues and whether the new system would function effectively at a reasonable cost. Finally, the public will need to be able to understand how a reformed Social Security system will be financed and how benefits will be determined.

Restoring Social Security's long-term solvency will require making difficult choices involving many complex and sometimes conflicting objectives. Given the complexity of the program, its financing, and how it fits in with the rest of the government and the economy as a whole, the results and implications of any changes cannot be known with certainty. Improving rates of return has been one objective that has received much attention in the Social Security reform debate. However, it is also one of the most complex and contentious issues, and it is fraught with many key subtleties and qualifications. Moreover, it is just one of many important considerations in finding the best approach to restoring Social Security's long-term solvency. While rates of return may continue to receive much attention, they should be kept in careful perspective, acknowledging both the inherent complexities of rate of return analysis and the larger context of making trade-offs among several other important objectives.

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# Comments From the Social Security Administration



## SOCIAL SECURITY

Office of the Commissioner

July 16, 1999

Ms. Cynthia Fagnoni  
Director, Education, Workforce,  
and Income Security Issues  
U.S. General Accounting Office  
Washington, D.C. 20548

Dear Ms. Fagnoni:

Enclosed are our comments on the General Accounting Office's (GAO) draft report Social Security: Issues in Comparing Rates of Return with Market Investments (GAO/HEHS-99-110). We appreciate the opportunity to review the report and hope these comments will prove useful.

We are pleased that this GAO report addresses the issues related to comparing the return on Social Security contributions to rates of return on market investments. Improved understanding of these issues is important in evaluating the many options for changes that have been put forward. The efforts of SSA to educate the public about rates of return and other "moneysworth" issues have been a challenge and echo the report's statements on this issue's complexity. The information in this report will no doubt increase the level of understanding of the complex issues surrounding rate of return comparisons.

We would like to emphasize a point mentioned in the report that Social Security's implicit rate of return is not the only measure by which the program should be evaluated. Social Security is a social insurance program that provides comprehensive disability and survivor's insurance protection for millions of workers and their families, in addition to retirement benefits. There are several other indicators used to measure the program's effectiveness, including the replacement rate and the percent of elderly kept out of poverty due to Social Security.

SOCIAL SECURITY ADMINISTRATION BALTIMORE MD 21235-0001

**Appendix I  
Comments From the Social Security  
Administration**

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Some studies have indicated that the retirement portion of Social Security is not progressive in terms of rate of return. However, we are pleased that the report makes the point that Social Security's implicit rates of return on retirement contributions are progressive, despite differences in life expectancy.

Additionally, the report's examination of the complexity of comparing market rates of return with Social Security's implicit rate of return makes a noteworthy contribution to the discussion. Specifically, two points are made by the report that are often overlooked in comparisons of the current Social Security program and solvency proposals. The first is that returns on individual accounts will vary depending on several factors, including future market performance, investor education, portfolio allocation choices and costs associated with the individual accounts. The second is that any additional costs and benefits resulting from solvency proposals should be included to produce more thorough rate of return comparisons between the proposals and current law.

Our specific comments are detailed in the attached document. If you should have any questions concerning our comments, you may contact Jane L. Ross, the Social Security Administration's Deputy Commissioner for Policy, at (202) 358-6082 in Washington, or (410) 966-6756 in Baltimore. Again, we appreciate the opportunity to review the draft report and request an opportunity to review the revised report. We look forward to the GAO's continued involvement in this vital debate.

Sincerely,

  
Kenneth S. Apfel  
Commissioner  
of Social Security

Enclosure

# GAO Contacts and Staff Acknowledgments

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## GAO Contacts

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## Staff Acknowledgments

In addition to the persons named above, Ken Stockbridge, William McNaught, and Francis P. Mulvey made key contributions to this report.

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