

ISSUE BRIEF

Quantitative Measures for Evaluating Social Security Reform Proposals

Recent reports of the Social Security Board of Trustees estimate that the program's trust funds will be exhausted about halfway through the 75-year period over which system finances are projected unless changes are made to the program. Various reforms have been proposed, including:

- retaining the basic structure of the current system but alleviating its financial problems by increasing payroll taxes or reducing benefits;
- raising the age at which unreduced benefits are paid (a form of benefit reduction);
- investing some trust fund assets in publicly traded stocks to take advantage of potentially higher investment yields; and
- allocating some payroll taxes to individually owned accounts that will pay retirement benefits to the account owners, with some provision for reducing the benefits paid directly by the government.

Advocates of the various reforms all claim that their proposals would solve Social Security's financial problems while continuing to meet participants' financial needs in retirement. In the face of these competing claims, a tool kit of quantitative measures is needed for evaluating Social Security reform proposals. In this issue brief, the Social Insurance Committee describes a number of measures that can provide useful quantitative analysis of reform proposals. The issue brief explains how these measures can be used together to obtain a clearer picture of the relative advantages and disadvantages of the various proposals for bringing long-term financial soundness to Social Security.

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The Need for Quantitative Analysis

Reform proposals for a program like Social Security, which affects the vast majority of the population, have far-reaching implications that cannot be easily assessed. Many important *qualitative* factors should be considered, such as the behavioral responses of the various stakeholders. In addition, because Social Security is such a large system, changes in the program are likely to have macroeconomic effects about which there will be considerable debate. While policymakers must weigh these matters carefully, a number of *quantitative* issues should also be examined when evaluating the merits of the proposals.

Social Security reform proposals come from a number of sources. President Bush's 2001 Commission on Strengthening Social Security has published a report describing three models for restructuring Social Security. Members of Congress from both parties have also made proposals. In addition, private think tanks have contributed to the public debate on Social Security.

Social Security legislative proposals under serious consideration by the executive and legislative branches are normally given very thorough actuarial and other analysis by the Office of the Chief Actuary in the Social Security Administration. That office prepares both short- and longrange estimates, including the effect of such proposals on the actuarial balances of the Social Security trust funds. Other analyses examine the economic, budgetary and social policy effects of reform proposals.

The nature and extent of the analysis depend on the specifics of the proposal, its prospects for enactment into law and other factors. Reform proposals from outside the government are generally evaluated only by their authors, often using methods intentionally or unintentionally designed to present the proposals in the best light. The Social Insurance Committee has previously recommended that:

- all Social Security reform proposals that include calculations of financial effects should contain a description of the assumptions used in the calculations;
- such assumptions should be internally consistent with each other;
- where substantial uncertainty exists as to the appropriate level of a critical assumption, sensitivity analysis or a range of assumptions should be provided; and
- when calculations for competing reform proposals use different sets of assumptions, the effects of the different assumptions should be recognized in evaluating the merits of the competing proposals. [See American Academy of Actuaries, Assumptions Used to Project Social Security's Financial Condition, May 2001.]

Based on the analyses done for past Social Security legislative proposals, the Committee also recommends the use of a standard set of measurement tools that would clearly present the financial effects of Social Security reform proposals. The Committee recognizes that some of these measurement tools may not be appropriate for every reform alternative and may need to be adapted to the specific nature of a given proposal. Given the complex nature of the Social Security system, a one-size-fits-all approach would be inappropriate. At the same time, a balanced and clear analysis is important. The Committee believes that the following measurement tools would help to achieve these purposes.

In general, two types of measurement standards can be applied to Social Security reform proposals. Measures of actuarial viability show whether, under the proposal, income to the Social Security system would be sufficient to support the payment of projected benefits and other expenses. Measures of distributional impact show how well the system, under the proposal, would meet the financial needs and expectations of participants.

Four Measures of Actuarial Viability

The Social Insurance Committee believes that placing Social Security on a firm financial footing should be the first concern of any reform enacted into law. For this reason, any Social Security reform proposal should be analyzed according to the following four measures of actuarial viability if it is to receive serious consideration:

(1) Long-Term Adequacy: Does the proposal achieve a positive 75-year actuarial balance under the Trustees' inter*mediate assumptions?*

Actuarial balance refers to a long-range (75-year) comparison of the present values of (1) the Social Security trust funds' current assets and projected income to (2) projected outgo and an ending trust fund balance equal to the next year's outgo. Income is primarily comprised of payroll taxes, investment earnings and a portion of the income taxes paid by higher-income beneficiaries. Outgo is comprised of benefit payments and administrative expenses. When the present value of (1) exceeds the present value of (2), the system is said to have a positive actuarial balance.

Under current law, the Board of Trustees evaluates the program annually over a moving 75-year projection period. This period was chosen because it encompasses the entire lifetime of virtually all current workers. The annual calculations use three sets of assumptions: low-cost, high-cost and intermediate (best estimate). Results under the intermediate, or best-estimate, projection are those generally cited in the media and used by policymakers when debating the future of Social Security.

One must maintain a proper perspective when interpreting the results of these actuarial estimates. Social

Security itself is less than 75 years old. Many profound changes in U.S. society and economy have occurred since the mid-1930s when the program was created:

- In the 1930s, only about 6 percent of the population was over age 65, and many of these older Americans were still working. Few people enjoyed long periods of retirement. Today about 12 percent of the population is over age 65. Workers typically retire before age 65 despite longer life expectancies, and many live for decades after retirement.
- In the 1930s, most women in the labor force left when they had children and rarely returned. Today most women either continue working when they have children or return to the work force when their children enter school.
- In the 1930s and early 1940s, birth rates were low, the result of decades of rapid urbanization followed by economic depression and World War II. From 1946 until the mid-'60s, the United States experienced a baby boom, followed in the '70s and '80s by much lower birth rates.

These unanticipated changes, among others, have profoundly affected Social Security's finances. Given the dynamic nature of our society and economy, further unanticipated changes will inevitably occur over the next 75 years, rendering any long-range projection uncertain at best. Still, almost all workers who will receive Social Security retirement benefits in the next 75 years have already been born, and actuarial methods for projecting the program's finances are constantly being improved. The Social Insurance Committee believes that a 75-year projection of actuarial balance using the methodology developed by Social Security's actuaries and the intermediate assumptions is the best available measure of the actuarial viability of any reform proposal.

(2) Long-Term Solvency: Will the projected trust fund balances remain positive at all times during the 75-year projection period?

Even if the system is in actuarial balance over the 75-year projection period, the trust fund balance may not be positive at all points during that period. If one or the other of the trust funds (i.e., the fund which provides old age and survivor benefits and the separate fund which provides disability benefits) runs out of money and the shortfall is determined to be temporary, Congress could authorize interfund borrowing (as it has on occasion in the past) or borrowing from general revenues or other sources to tide the system over until income catches up with expenditures. In evaluating any reform proposal, any period during the 75-year projection period when the trust fund is expected to run out of money should be identified, even if the situation is only temporary and the system is expected to be in long-term actuarial balance.

(3) Sustainability: Will the projected trust fund ratio at the end of the 75th year at least equal the ratio at the end of the 70th year?

The trust fund ratio is the amount of trust fund assets at the beginning of a year divided by expected expenditures during that year. The trust fund ratio is an important ongoing measure of the financial health of the system.

As each year passes, the 75-year projection period moves forward one year; that is, the first year from the previous year's valuation becomes part of the past, and a new 75th year is added at the end of the previous year's projection period. A potential danger is that, if projected expenditures exceed projected income in the new 75th year, this would reduce the actuarial balance in the new valuation, compared to the previous one, all other things being equal. If this occurs many years in a row, a projected positive actuarial balance will turn into a negative actuarial balance. In fact, this happened after the enactment of the Social Security Amendments of 1983. Initially the system was in actuarial balance due to adoption of these amendments, but soon thereafter the system fell out of balance again. This occurred in part because each new year added to the projection period in subsequent valuations was a deficit year. Therefore, it is important to pay attention to the trend in the trust fund ratio during the last five years of the projection period to see if a continuation of this trend could change the actuarial balance in the future.

Use of General Revenue Transfers

Since its inception, Social Security has been financed primarily by payroll taxes, separate from general government revenue, collected at the same tax rate from employers and employees. Any excess payrolltax receipts over amounts needed for paying Social Security benefits and administrative expenses goes into a trust fund, whose assets are invested in specialissue U.S. Treasury securities. (Trust fund assets may also be invested in certain government agency bonds, but these have never been more than a small part of the trust fund's portfolio.) Investment income and assets of the trust fund can be drawn upon whenever payroll-tax receipts are insufficient to cover current outgo.

From about 1965 until 1993, the trust fund's assets never exceeded the next year's outgo. When assets exceeded this level, Congress usually adopted benefit increases or other changes that absorbed the excess assets. Thus, during this period the trust fund served primarily as a buffer between the tax-collection and benefit-payment processes in what was essentially pay-as-you-go financing.

Actuarial valuations of Social Security since the 1970s have shown that maintaining pay-as-you-go financing when members of the baby-boom generation begin retiring in large numbers early in the 21st century will be difficult, because the numbers of workers are expected to be insufficient to support benefit payments at anything close to the current payroll-tax rate. In 1977 and 1983, Congress enacted changes to Social Security's tax and benefit provisions that had the effect of modifying the system's pay-as-you-go financing. These changes eventually led to the current build-up in trust fund assets, which can be used to supplement payroll-tax receipts when these are no longer sufficient to pay benefits. Actuarial estimates made at the time of the 1983 legislation showed that the system would remain solvent for 75 years, until 2058. Later developments, primarily changes in the assumptions used to predict the system's future financial condition, moved the estimated year of trust fund exhaustion to about two decades earlier.

When Social Security's income exceeds its outgo, as is currently the case, the trust fund purchases more government bonds, reducing the revenue that the government needs to raise either through taxation or by selling bonds to the public. Conversely, when outgo exceeds income, the trust fund must redeem some of its government bonds, requiring the government to raise taxes or sell additional bonds to the public. When, as has been consistently predicted by Social Security's Board of Trustees, all of the trust fund's government bonds have been redeemed, the government will be in the same position it would have been in had the trust fund never existed. Thus, in the long run, the trust fund has little net economic effect. Some observers claim that the segregation of excess payroll-tax receipts into a separate trust fund has no economic meaning or purpose. Under this rationale, Social Security payroll taxes and the general revenues that fund most other federal government operations really go into a single pool of assets from which the government draws to fund its immediate needs, whatever they may be.

However, segregating income into separate accounts is a common practice among economic units of all kinds – families, corporations, governments, etc. This practice has two primary benefits: it provides a measure of progress toward meeting future financial goals, and it imposes a discipline on expenditure of current income in situations where future income is expected to fall short of needs. Examined in this light, the Social Security trust fund can have a real economic effect by restraining policymakers' natural inclination to expand benefits as many members of Congress (and others) compete to appear most generous to their older constituents. Further, as the debate about the so-called Social Security "lock-box" shows, the existence of the trust

(4) Need for General Revenue Subsidy: Does the proposal require the transfer of general revenues into the trust fund to achieve long-term adequacy and solvency?

Historically, most proposals to modify the existing OASDI program have retained the idea of funding the program almost exclusively through dedicated Social Security payroll taxes. Emerging demographic changes, however, suggest that significant increases in payroll taxes may be required to fund currently scheduled benefits. Many recent reform proposals make use of transfers from the general fund of the Treasury to assist in resolving anticipated Social Security financing difficulties. Such transfers enable a proposal to provide: (1) a given level of benefits at a lower payroll-tax rate, or (2) higher benefits at a given payroll tax rate. fund can also restrain Congress's spending outside Social Security in some circumstances. The lock-box debate demonstrated that, while the public does not fully understand the trust fund, it does care about protecting it.

Achieving long-term adequacy and solvency, as described in the first two measures above, requires that trust fund assets be sufficient to pay benefits and administrative expenses at all times over the 75-year projection period. Any reform proposal, as well as the current Social Security system, can be made to meet these criteria simply by adding a provision that covers any shortfall with transfers from the government's general revenues. Some recent reform proposals do indeed include transfers from general revenues. The existence of such transfers can be difficult to discern. One suggestion, for example, is to increase the interest rate payable on the special-issue government bonds held by the trust fund assets to above-market rates. The additional interest would be a subsidy from the government's general revenue. Other proposals are more direct, calling for outright transfers of funds from general revenues to the trust funds. Such transfers would sooner or later be funded either through increases in current taxation or by selling bonds to the public.

In general, reform proposals that retain the basic defined benefit structure of the current Social Security system do not include substantial transfers from general revenues. Instead, they usually opt to achieve 75-year actuarial balance by some combination of tax increases, benefit decreases and additional income through investment of trust fund assets in the stock market.

In contrast, many reform proposals that call for the establishment of individual accounts or investment of trust fund assets in equities do include transfers from general revenues. Under the current system, all assets are available to pay the benefits of any participant. Under an individual account plan, assets held in an individual account are available only to pay the benefits of the account's owner and family members. If the total contribution rate is held constant, then as more assets accumulate in the accounts, fewer assets are available to pay benefits not derived from the accounts. In the early years of such a plan, none, or only a small portion, of the benefits being paid is derived from the individual accounts. Because the assets allocated to individual accounts generally can be expected to increase more rapidly than benefits payable from unallocated assets can be expected to decline, the trust fund would run out of unallocated assets sooner than they would if the proposal had not been enacted. This need for additional unallocated assets to pay benefits during the period of transition from a defined benefit to an alternative system is called the "transition cost." The three reform models described in the report of President Bush's Commission have transition costs ranging from \$400 billion to \$1.1 trillion, payable over many years. Many reform proposals involving individual accounts, including those in the Commission's report, finance at least a portion of the transition cost through transfers from general revenues.

Proponents of converting Social Security in whole or in part to an individual account system often assert that their plans may have higher expected benefits, compared to those under the current system. However, proponents usually fail to note that, if the general-revenue transfers used to cover the transition cost were applied to the current system, they would often be sufficient not only to eliminate its long-term actuarial deficit, but also to increase benefits. Thus, at least some of the higher benefits estimated under individual account proposals is attributable to subsidies from general revenues rather than to the individual accounts themselves.

Consequently, analyses of reform proposals should make clear when such general revenue transfers are being used to achieve actuarial balance. This can best be accomplished by showing the year-by-year cash flows under the proposal from the government's general account to the trust fund (and vice versa where applicable) and the present value of these cash flows. For purposes of comparison to the various reform proposals, the current system should be treated as if it had been modified to include transfers from general revenues to the extent that the system is not in actuarial balance. After all, general revenues would be required to pay full, timely benefits after the trust fund's assets are exhausted, unless benefits are reduced from current-law levels.

Representative Earnings Histories for Computing Benefits

Because families in the United States are extremely diverse, measuring and illustrating the impact of Social Security reform proposals on prototypical workers with all possible combinations of earnings histories and family situations is impossible. Only a small sample can be included in a reasonably sized study. Traditionally, such studies have concentrated on hypothetical workers with steady earnings, i.e., earnings that remain constant as a percentage of national average wages over the worker's career. Traditional studies have shown results for four wage levels: low (45 percent of the average wage); average (equal to the average wage); high (160 percent of the average wage); and maximum (equal to the maximum earnings recognized for taxation and benefitcomputation purposes under current law). However, steady earnings, while easy to conceptualize and explain, are not typical among actual workers. More often, workers' earnings increase relative to the national average early in their careers, peak sometime in mid-career and may even decline as workers approach retirement. As a result, some recent studies by the Social Security actuaries and others have utilized scaled earnings patterns, where earnings vary as a percentage of average wages over a worker's career. These studies use statistical analyses of the earnings histories of large numbers of workers to derive earnings patterns more typical of actual workers. In the SSA studies, the scales are unisex and are designed to yield career-average earnings levels equivalent to the low, medium, high and maximum steady earnings levels described above. Similar studies by other groups have separate scales for male and female workers, recognizing the different earnings patterns of the sexes. Of course, no one can know whether historical earnings patterns will change over time.

The use of steady versus scaled models, and the scaling methodology itself, can influence the apparent impact of Social Security reform on workers' benefits. For example, in both the current system and an individual account system, benefits are based on earnings over a worker's entire career. However, the current system gives equal weight to all earnings (after indexing for changes in average wage levels), while an individual account system gives greater weight to earnings early in a worker's career, because compounding of investment earnings has more time to operate, and lesser weight to earnings that are closer to retirement. Earnings under a steady model start higher and peak lower than under a scaled model. Because an individual account system would give greater weight to the higher earlier earnings and lesser weight to the lower later earnings under a steady model, such models show an apparent advantage of individual account proposals over the current system or other career-average defined benefit proposals. However, scaled models have several drawbacks. Scaling adds another dimension to career earnings patterns, greatly multiplying the number of possible earnings profiles and increasing the difficulty of choosing a small number of profiles representative of the broad population of covered workers. Further, scaled models developed today may not accurately represent the earnings patterns of future generations of workers. Given the wide latitude available for choosing a scaling model, a study

Two Measures of Distributional Impact

Social Security covers nearly all working Americans at all income levels and in virtually all family situations. Because the federal government has always tried to achieve a balance between social adequacy and individual equity in the Social Security program, Social Security benefits vary, both in dollar amounts and as percentages of previous earnings levels, for participants in different situations. [See American Academy of Actuaries, *Social Adequacy and Individual Equity in Social Security*, Fall 1998.] Policy-makers naturally want to examine the impact of various reform proposals on participants in different situations and need suitable tools for this purpose. These additional measurement tools provide policy-makers with information about the impact of proposed changes on current and future workers in various situations.

(1) Replacement Rates: How will the proposal affect Social Security retirement benefits at age 65, expressed as a percentage of career-average earnings, over the next 75 years?

Replacement rates are frequently used by actuaries and economists to measure the relative level of retirement income. A replacement rate is the ratio of a worker's income in the first year of retirement to the average career

author could choose a scaling model that subtly enhances the performance of the Social Security proposal that he or she favors. Even recognizing these shortcomings, a scaled model generally produces more reliable results than a steady model, especially when comparing defined benefit and individual account plans, provided that both the scale and the methodology for developing the scale are disclosed.

Because benefits vary not only by earnings history but also by family situation, any comprehensive analysis of the effects of a reform proposal must show results for a variety of common family situations. These may include single workers, both male and female; married workers, both male and female, with non-working spouses; and married couples with two wage-earners. The last category can be further subdivided to take into account differences in the spouses' earnings levels. Other situations, such as workers becoming disabled or divorced or dying at various ages, may also be included. Following these suggestions would require calculations to be done for many different worker profiles.

Instead of or in addition to analysis using prototypical workers, microsimulation models provide another tool for examining the effects of Social Security reform options. In contrast to analysis using a small sample of prototypical workers, populationbased microsimulation models simulate the lifetime earnings, wealth and demographic profiles for large samples of families representing different cohorts and subgroups within the worker population. By showing the effects of changes in Social Security rules on the lifetime incomes and benefits of large groups instead of specific representative families, such models facilitate analysis of a broad array of demographic subgroups rather than focusing only on the most common situations. Because microsimulation models also include population weights, they automatically determine the share of the population that each subgroup represents.

Any analysis using prototypical workers or microsimulation models requires using assumptions regarding future economic and demographic experience. Testing the sensitivity of a proposal to different possible economic and demographic assumptions can provide useful information. All of these calculations can be difficult and costly to perform and interpret. The use of graphical presentation techniques can make the resulting large volume of data easier to comprehend and analyze.

Under the current Social Security program, workers may retire with unreduced benefits beginning at various normal retirement ages ranging from 65 to 67, depending on the worker's year of birth. Many reform proposals would change the age at which unreduced benefits are first paid for some or all future retirees, usually to a later age. To achieve comparability between different reform proposals and among workers in different situations, these calculations should use a uniform retirement age. The Committee recommends using age 65, which is Social Security's historical normal retirement age, Medicare's historical and present-law eligibility age in retirement cases and the age at which employersponsored retirement plans must pay benefits without reduction for early retirement. Therefore, benefits for workers who are not eligible for unreduced benefits at age 65 will include an early-retirement reduction.

level of earnings, which in the steady case is represented by earnings in the last year before retirement. Retirement income is derived from a combination of Social Security, employer-sponsored retirement plans, personal savings and part-time work. Thus, changes in the Social Security portion of a worker's replacement rate will affect how much the worker needs from these other sources.

Many studies have been carried out to estimate the replacement rate that workers need to maintain their preretirement standard of living at various income levels and in various family situations. These studies have shown that, due to changes in expenditure patterns and taxes when workers retire, a replacement rate in the range of 70-80 percent is generally adequate, although higher or lower rates may apply in certain situations.

(2) "Money's-Worth" Comparisons: One of several money's-worth measures is the internal rate of return, or IRR. This measure addresses the following question: What interest rate would a worker's Social Security payroll taxes need to earn to pay the worker's expected benefits – counting both the employer and employee share of the taxes, adjusting the interest return to an after-inflation rate and analyzing cases of retirement at age 65. This analysis should be done over the 75-year projection period for both the proposal and the current program.

Some analysts have applied a "money's-worth" approach to evaluating the Social Security system. In effect, they treat the employer/employee payroll taxes like an investment and measure the implicit rate of return represented by benefit payments. The Committee does not believe that this money's-worth approach reflects the true value of the current Social Security system because Social Security is not currently designed as a pure investment vehicle, and any proposal that shifts the program toward a greater investment orientation could modify or eliminate other features of social value not easily measured in monetary terms. Nevertheless, the effective rate of investment return can be one element in a balanced approach to evaluating proposed reforms.

Several potential pitfalls must be avoided in applying money's-worth analysis:

- As noted above, some reform proposals include subsidies from the government's general revenues. Any such general revenues would represent an investment in the system that, if ignored, could be manipulated to produce any desired rate of return. In practice, money's-worth calculations customarily count only payroll taxes as revenue. Further, it is unclear how any general revenue subsidy would be allocated among participants for purposes of these calculations, because income taxes and Social Security payoll taxes are levied on very different bases. In applying the money's-worth analysis to any reform proposal, all outside subsidies must be identified, regardless of whether the subsidy is funded by current taxation or by additional government debt. The analysis should, if possible, show how the outside subsidies contribute to the investment return in each hypothetical family situation. If this is not possible, then the analysis should at least describe in general terms how the outside subsidies affect investment returns.
- A special case of the above problem presents itself with regard to the current Social Security program. Because the program is not in actuarial balance, its funding deficit represents an effective subsidy. Therefore, values calculated from benefits versus payroll taxes for the current program must be modified to reflect either increases in the employer/employee payroll-tax rate or decreases in benefits necessary to bring the program into actuarial balance. Several approaches have been used to accomplish this by either assuming reduced benefits or increased taxes in the future. Interested readers may refer to the *Report of the 1994-96 Advisory Council on Social Security*, Volume 1, Appendix 2.
- The current Social Security program includes important nonretirement benefits, such as disability, family member and survivor benefits. Some reform proposals reduce these benefits. Therefore, to obtain a valid comparison, the expected value of nonretirement benefits must be included on the benefit side of the comparison.

Conclusion

The Social Insurance Committee recommends that, whenever practical, the measurement tools described in this issue brief should be applied to major Social Security reform proposals, including those intended to provide fundamental structural changes. To do so would provide policymakers and the public with important information needed to fairly evaluate each proposal.