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Failing by a Wide Margin
Methods and Findings in the 2003 Social Security Trustees Report

by Andrew G. Biggs

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On March 17, 2003, the trustees of the Social Security program released their annual report on the system's financial status. Many observers took the report's extension of the trust fund's solvency one year to 2042 to mean that Social Security's financial health had improved. In fact, Social Security's actuarial balance declined and its cash flow deficits over the next 75 years *increased* to $25.33 trillion (in 2003 dollars).

More important, the report contained significant new methodologies that are central to the debate over personal retirement accounts.

The trustees now measure Social Security's deficits over the infinite horizon, providing remedies to the previous 75-year scoring window that substantially understates the costs of the current program and overstates the costs of personal account plans. Under this new perpetuity benchmark, the present value of Social Security's cash flow shortfalls totals $11.9 trillion, versus only $4.9 trillion over 75 years. To cover Social Security's cash deficits permanently would demand an immediate tax increase equal to 4.47 percent of payroll.

The 2003 report also includes a "stochastic analysis" accounting for the variability of the economic and demographic factors affecting Social Security's finances, finding there is less than a 1-in-40 chance of Social Security remaining solvent for even 75 years without reform.

The 2003 Trustees Report shows that Social Security's cash deficits are large, growing, and unlikely to fix themselves without action. Only personal account proposals have been certified to eliminate Social Security's multitrillion dollar cash shortfalls.

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The trust fund's insolvency date is just one—and hardly the most important—indicator of Social Security's fiscal viability.

Introduction

Media attention regarding the 2003 Trustees Report,[1] released March 17, focused almost exclusively on the delay of the trust fund's insolvency date from 2041 to 2042, with news service headlines such as "Social Security Fully Funded until 2042" from Scripps Howard and the Associated Press's "Social Security Stronger Than a Year Ago" indicating the general tenor of press coverage.[2] Prominent critics of Social Security reform, such as Rep. Robert Matsui (D-Calif.), argued that the one-year extension of trust fund solvency "made it clear that Social Security is not facing the crisis that its opponents claim. . . . Those who claim that Social Security is bankrupt are misleading the public."[3]

The focus on the trust fund's exhaustion date is understandable, particularly given the media's difficult task of making a complex issue understandable to the public.

Nevertheless, the trust fund's insolvency date is just one—and hardly the most important—indicator of Social Security's fiscal viability. Although largely ignored by the press, the 2003 Trustees Report contained important new information regarding Social Security's financial strength and new methods of analysis that strengthen the case for reform based on personal retirement accounts. Among that information is the following:

- Social Security's actuarial balance (the *official* measure of its financial health) worsened to a deficit of 1.92 percent of payroll over 75 years. Social Security's cash deficits over the next 75 years *increased* to $25.33 trillion (in constant 2003 dollars). The single year of additional trust fund solvency, which was due to one-time corrections of several economic and demographic assumptions, hides an overall decline in Social Security's financial strength.
- The trustees now extend their measurement of Social Security's deficits from 75 years to the infinite horizon, portraying more accurately the seriousness of Social Security's financing problems. To cover Social Security's total cash shortfalls in perpetuity would demand a lump sum payment *today* of $11.9 trillion. Delay only increases this cost.
- To achieve permanent solvency under traditional Social Security financing would demand an immediate tax increase equal to 4.47 percent of payroll: 0.67 percent to redeem the trust fund's bonds from 2018 through 2042, 1.92 percent to maintain solvency from 2042 through 2075, and 1.88 percent to achieve permanent solvency thereafter. By contrast, a number of personal account plans are certified by Social Security's actuaries to achieve sustainable solvency *without* large tax increases.
- Measuring solvency over the infinite term removes a significant methodological bias against personal accounts. For instance, scoring one personal accounts proposal from the pesident's reform commission in perpetuity rather than just 75 years improves its impact on the federal budget by the equivalent of a lump sum payment today of roughly $860 billion.
- The 2003 report includes a "stochastic analysis" that accounts for the infinite variability of the economic and demographic factors affecting Social Security's finances. This stochastic analysis finds there is less than a 1-in-40 chance of Social Security remaining solvent for even 75 years without reform, rebutting critics who claim that slightly higher economic growth will keep Social Security's finances on track.

The trustees conclude that Social Security *"continues to fail our test of financial balance by a wide margin."*[4] The new methods introduced in the 2003 report, by contrast, succeed in clarifying the program's financial position, showing Social Security's true cash shortfalls to be 2.5 times larger than previously understood, growing with each passing year, and

highly unlikely to be averted without reform.

Only proposals based on personal retirement accounts have been certified by Social Security's independent actuaries to eliminate the program's substantial cash deficits, not just for 75 years but forever. Personal account plans also address many of Social Security's nonfinancial shortcomings, not detailed here, which can include discriminatory treatment of single workers and dual-earner couples, divorced individuals, younger workers, and African Americans and other individuals with shorter life expectancies.[5]

System Solvency

Each year, Social Security's trustees examine projections for the various economic and demographic variables that affect the program's financial health. In the 2003 Trustees Report the trustees project that Social Security will begin running cash deficits in 2018, a delay of one year from the 2002 report. Likewise, the 2003 report also projects a one-year delay in the insolvency of the Social Security trust fund, from 2041 to 2042. The date of trust fund exhaustion, when by law benefits must be reduced to the level payable with tax revenues alone, is given the greatest prominence in media coverage of the trustees annual findings.

A number of small changes were made in these economic and demographic assumptions regarding Social Security's financing, which is common from year to year. For instance, the results of the 2000 census showed the population to be higher than was assumed in prior reports, which had to extrapolate population estimates without the benefit of the most recent census data. A larger population increases the assumed number of workers paying into the program, which can strengthen the system's finances. However, it also reduces the projected fertility rate: since the number of births is better known than the total population of parents associated with those births, and increased overall population implies a lower fertility rate. Reduced fertility rates entail slower labor force growth, which is central to the decline of Social Security's "pay-as-you-go" financing.

Also, new data from the Bureau of Labor Statistics show that wage growth during 2001 and 2002 was slightly lower than had been assumed in the 2002 Trustees Report. Although lower wage growth reduces actuarial balance in the long term, it is reported that, since benefits are tied to wages, the corrected wage growth figures entail slightly lower benefit obligations in the medium term and therefore contributed to the extension of trust fund solvency.[6] Nevertheless, the long-term effect of corrected wage growth figures for 2001–2002 should be modest.

However, the one-year increase in trust fund solvency from 2041 to 2042 is largely attributable to the 2000 census's findings of a substantially higher level of "other than legal" immigration than was previously assumed. Specifically, the new findings led to projections of 400,000 illegal immigrants annually—a one-third increase over the 2002 projection.[7] Since many illegal immigrants pay payroll taxes and proportionately fewer collect benefits, an increase in their number can have beneficial effects on Social Security's finances. The trustees report that it was the assumed increase in illegal immigration that pushed the date of first cash flow deficits from 2017 to 2018, contributing to the additional year of trust fund solvency.[8]

Although an extra year's trust fund solvency is certainly desirable, the economic and demographic adjustments (noted above) are one-time recalculations that are unlikely to be repeated in the future. They do not reflect larger trends or changes in the growth rates of those factors that could have substantial ongoing effects, and there is no reason to believe that in following years we will see further delays in Social Security's projected dates of cash flow deficits or trust fund insolvency.

More important, as Social Security's two public trustees—Profs. Thomas R. Saving of Texas A&M University and John L. Palmer of Syracuse—stress in their statement attached to the report,

Although an extra year's trust fund solvency is certainly desirable, the economic and demographic adjustments are one-time recalculations that are unlikely to be repeated in the future.

> *Public concern about the financial future of Medicare and Social Security tends to focus unduly on their trust fund exhaustion dates,* when benefits scheduled under current law legally could no longer be paid in full, rather than on the more immediate and fundamental financial challenges posed by the two programs.[9]

It is in 2018, when Social Security begins to collect less in taxes than is needed to pay annual benefits, that the government must produce extra cash to finance the program. Saving and Palmer continue,

> While projected assets of the [Hospital Insurance] and [Old Age, Survivors and Disability Insurance] Trust Funds are sufficient to pay projected Medicare and Social Security benefits under current law for another 23 and 39 years, respectively, *such a perspective belies the enormous—and more immediate—fiscal challenge these programs pose.* From a unified budget perspective, substantial fiscal pressure from Medicare and Social Security will appear in a decade and mount rapidly thereafter. At the time of OASDI Trust Fund estimated exhaustion in 2042, annual Social Security expenditures are projected to exceed annual tax income by 34 percent, with this excess growing to 49 percent by the end of the 75-year projection period.
>
> By the time the combined OASDI Trust Fund is exhausted in 2042, the redemption of its Treasury bonds to pay scheduled benefits will be requiring an annual general revenue transfer of $375 billion (in today's dollars), or the equivalent of nearly 19 percent of Federal income tax revenues under the same assumption.[10]

It is even earlier—in 2008—when Social Security's payroll tax surpluses begin to decline and the program's subsidy to the rest of the budget is reduced. "Despite little change in the near term financial outlook for OASDI," Saving and Palmer write, "in the longer term the outlook has deteriorated somewhat."[11]

This deterioration of Social Security's financial health is clear in several ways. First, in terms of its *actuarial balance,* which is the official measure of the financial strength of the Social Security program. In the 2002 Trustees Report, Social Security had an actuarial deficit of 1.87 percent of payroll. In the 2003 report, Social Security's actuarial deficit increased to 1.92 percent of payroll. That is to say, despite press headlines to the contrary, officially speaking Social Security's financing health *worsened* over the past year. As the trustees stated in the 2003 report, although Social Security's finances are healthy in the short run, "it is out of long-range close actuarial balance."[12]

Simply put, actuarial balance represents the present value of Social Security's annual surpluses or deficits over 75 years as a percentage of payroll, represented in Figure 1, plus the value of trust fund balances during the period. An actuarial deficit of 1.92 percent of payroll means that, technically speaking, a payroll tax increase of 1.92 percentage points today would keep Social Security solvent through 75 years.

Stress should be placed on the word "technically," however: a payroll tax increase would produce cash surpluses in the short term, but only if those short-term surpluses are effectively saved for the future will the program have reached solvency in a meaningful economic or budgetary sense, in which burdens on future workers are reduced by additional contributions from today's workers. Many nonpartisan observers doubt whether this trust fund saving has taken place in the past[13] or would take place in the future.

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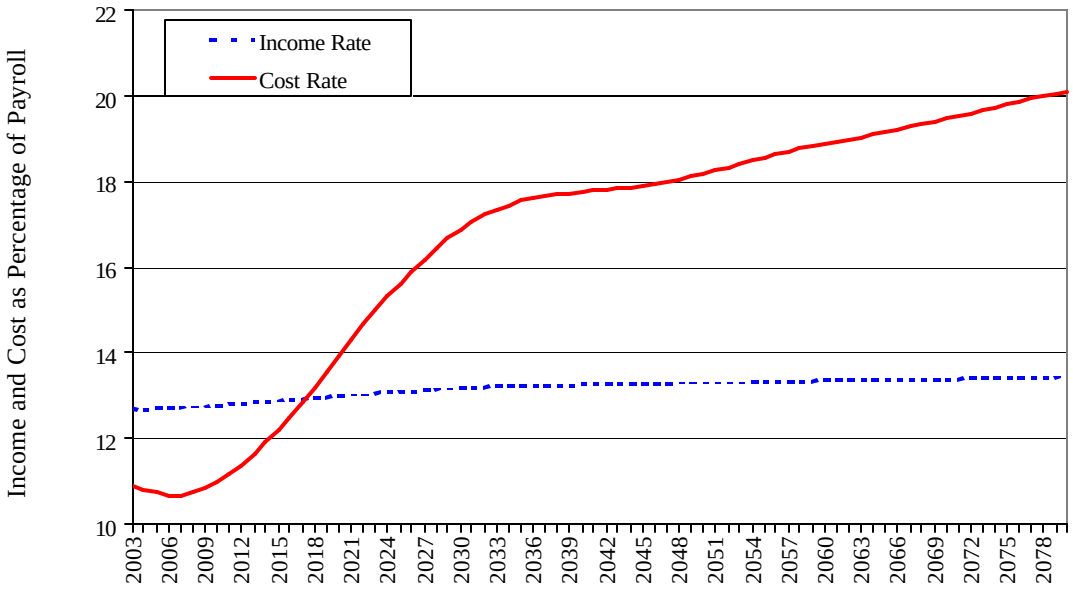
Moreover, actuarial balance has traditionally measured Social Security's financing only over a 75-year period, not in perpetuity. This can have important effects on the perceived size of Social Security's financial shortfalls as well as the degree to which personal account proposals can remedy those

Figure 1
Over the Long Term, Social Security Costs Vastly Exceed Dedicated Tax Revenues



Source: 2003 Trustees Report.

problems. The 2003 Trustees Report took steps to address this difficulty with the measure of actuarial balance.

Cash Deficits

A better measure of Social Security's financing health is its cash surpluses or deficits—that is, how much it collects in taxes relative to how much it has promised in benefits, without reference to the balance of the trust fund. Put another way, cash flows measure Social Security's impact on the unified federal budget.

Cash flow deficits occur when Social Security's dedicated tax revenues—primarily from payroll taxes, with a smaller portion derived from income taxes levied on retirement benefits—fall short of the amount of benefits promised in a particular year. As Figure 2 shows, under the intermediate assumptions of the 2003 Trustees Report, Social Security will begin running cash deficits in 2018. This constitutes an improvement of one year in cash flow solvency from the 2002 report.

Social Security's cash deficits from 2018 to the end of the 75-year scoring period in 2077 total $26.40 trillion (in today's dollars). When netted out against Social Security's cash surpluses prior to 2018, Social Security's cash flow over the next 75 years is a deficit of $25.33 trillion. As Figure 3 shows, this 75-year net cash flow deficit increases with each passing year, as periods of surplus at the beginning of the 75-year scoring window are replaced by years of deficits at the close.

Put in present value terms—the amount we would need to invest today at the government bond interest rate to cover future deficits—Social Security's 75-year cash flow shortfall equals roughly $4.9 trillion.[14] Of that, $1.4 trillion is cash needed to redeem the trust fund's bonds while $3.5 trillion would cover cash deficits from the point of trust fund exhaustion in 2042 to the end of the scoring period in 2077.

From 2018 to 2042, Social Security can redeem the government bonds in its trust fund to cover its cash flow deficits and pay full scheduled benefits. However, these

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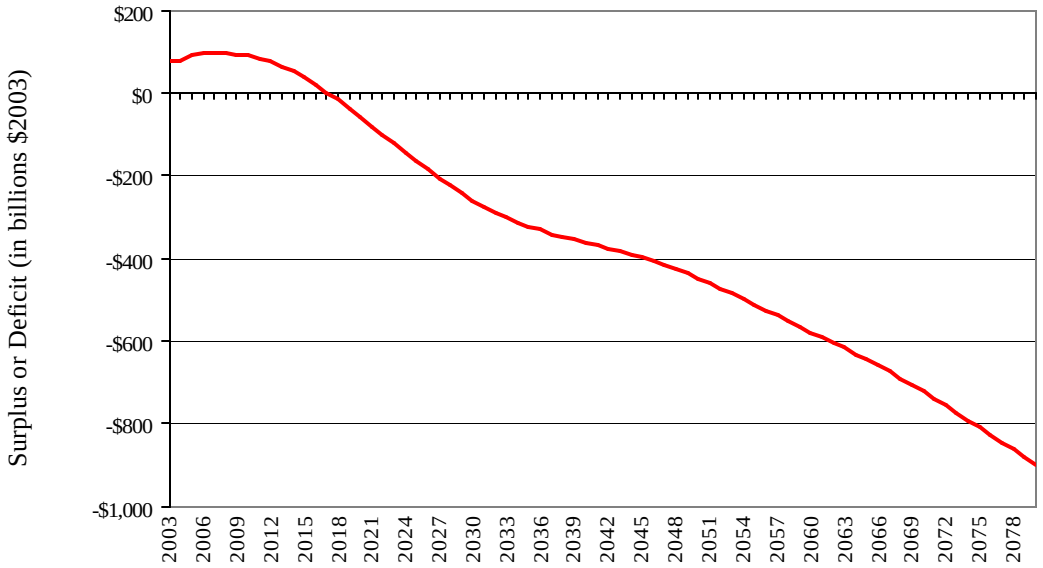
Figure 2
Social Security Cash Flow Deficits Begin in 2018



Source: 2003 Trustees Report.

In assessing the status of the current Social Security program, we must include all costs associated with the program—including the very real cost of honoring the trust fund's assets.

bonds don't make Social Security benefits any easier to pay for. After all, the government must produce the cash to repay these bonds. As the Clinton administration itself stated in its FY 2000 budget:

> These [Trust Fund] balances are available to finance future benefit payments and other trust fund expenditures—but only in a bookkeeping sense. . . . They do not consist of real economic assets that can be drawn down in the future to fund benefits. Instead, they are claims on the Treasury that, when redeemed, will have to be financed by raising taxes, borrowing from the public, or reducing benefits or other expenditures. The existence of large trust fund balances, therefore, does not, by itself, have any impact on the Government's ability to pay benefits.[15]

It is for that reason that most nonpartisan analysts—such as the Congressional Budget Office, Congressional Research Service, and General Accounting Office—place greater emphasis on unified budget measures that include the cost of redeeming the trust fund's bonds.

That does not mean that the trust fund's bonds will not be honored; they will and are in every personal account proposal on record. But in assessing the status of the current Social Security program, we must include all costs associated with the program—including the very real cost of honoring the trust fund's assets.

Perpetuity Measures of Solvency

Even cash flow measures have their shortcomings, if applied only over the 75-year scoring period traditionally used by the trustees and by Social Security's actuaries. A number of bipartisan commissions—among them the 1994–96 Advisory Council on Social Security, the 1999 Technical Panel on Assumptions and Methods, and the 2001 President's Commis-

Figure 3
Social Security's Cumulative Cash Flow Deficits Have Grown with Each New Trustees Report

Source: 1999–2003 Trustees Reports.

sion to Strengthen Social Security—have argued that greater emphasis should be put on solvency over the infinite term—commonly referred to as "sustainability."

The justification for sustainable solvency is that a reform proposal that makes Social Security solvent for only 75 years will immediately become insolvent as the 75-year scoring period moves forward over time, excluding years of surpluses at the beginning of the period and including years of deficits at the end. As the Technical Panel pointed out:

> When reformers aim only for 75-year balance, therefore, they usually end up in a situation where their reforms only last a year before being shown out of 75-year balance again. The 1994–96 Advisory Council wisely tried to accept only reforms that produced sustainability over the longer term—sustainability defined in a way that would ensure that taxes and benefits were more or less in line after the 75th year.[16]

It is only by focusing on the infinite term that reformers can achieve proposals that can be expected to remain solvent indefinitely without any future reforms needed.

To that end, in the 2003 report the trustees measure Social Security's cash shortfalls not simply over 75 years but in perpetuity. As noted above, the present value of Social Security's total cash shortfalls over 75 years equals roughly $4.9 trillion, consisting of $1.4 trillion to redeem the bonds in the Social Security trust fund and $3.5 trillion to meet cash deficits after the trust fund is exhausted.

Extending the scoring period from 75 years to perpetuity adds an additional $7 trillion (in present value) to the cost of maintaining Social Security, bringing the total to $11.9 trillion, as shown in Table 1.[17] That is to say, to eliminate Social Security's cash deficits permanently, we would need to produce a lump sum *today* of $11.9 trillion.

This $11.9 trillion cash deficit can be seen as an implicit debt of the government, a promise to make payments in the future (though with no dedicated stream of income

A reform proposal that makes Social Security solvent for only 75 years will immediately become insolvent as the 75-year scoring period moves forward over time.

Table 1
Lump Sum Payments Needed *Today* to Maintain Permanent Solvency

Purpose	Payment Size (present value)
Redeem trust fund bonds	$1.4 trillion
Cover cash shortfalls through 2077	$3.5 trillion
Cover cash shortfalls after 2077	$7.0 trillion
Total	$11.9 trillion

Source: 2003 Trustees Report.

To cover all of Social Security's cash deficits into perpetuity demands an immediate and permanent tax increase of roughly 4.47 percentage points.

to cover those payments). Like any debt, delaying repayment only increases the debt's size, in this case by roughly $350 billion annually.[18] This implicit pension debt is more than three times greater than the $3.7 trillion federal debt currently held by the public.

Opponents of reform based on personal accounts often downplay Social Security's financing problems, referring to them as a "2-percent problem" of actuarial imbalance for which a mere two percentage point payroll tax increase would be the solution. By contrast, proponents of reform often warn that without change, within 30 years Social Security's costs would require a payroll tax rate of some 17 percent or more.

The new methodology outlined in the 2003 Trustees Report shows that both camps are wrong. To maintain the current Social Security financing structure indefinitely demands an almost 17 percent tax rate *today*, not decades in the future. Consider the tax increase that would be needed to keep Social Security solvent under its current financing:

- The 75-year actuarial deficit of 1.92 percent of payroll implies that a 1.92 percentage point increase in the payroll tax today—from 12.4 percent of wages to 14.32—would keep Social Security technically solvent for 75 years.
- However, the 75-year actuarial deficit ignores the cost of repaying the trust fund's bonds. Trust fund repayment would demand an additional immediate tax increase equal to roughly 0.67 percent of payroll. This would raise the total cost rate to 15.03 percent of wages.[19]
- Finally, to keep Social Security solvent not simply for 75 years but permanently would demand an additional immediate tax increase of 1.88 percent of payroll.[20]

Taken together, to cover all of Social Security's cash deficits into perpetuity demands an immediate and permanent tax increase of roughly 4.47 percentage points, to 16.87 percent of payroll. Including revenue derived from income taxes on benefits, this would increase the total Social Security contribution rate to 18.93 percent of taxable payroll. Again, those are the steps that would be needed if we acted *immediately;* delay only increases the size of the necessary tax increase.

The substantial, immediate, and permanent tax increases needed to keep the traditional Social Security program solvent in perpetuity show the bar that personal account plans have set for themselves, since most account plans achieve not simply 75-year but sustainable, permanent solvency. Thus, the "pain" of accounts plans should be properly compared not to a 1.92 percentage point payroll tax increase but to a 3.8 percentage point hike (assuming that the reform plan also shoulders the 0.67 percent cost of redeeming trust fund bonds). By that measure, the strength of personal account proposals becomes clearer.

Some critics would argue that solvency measures in perpetuity are not needed, that we should not place undue emphasis on the program's finances more than 75 years in the

future. That charge is misguided for two reasons. First, children born today can expect to be covered by the Social Security program more than 75 years hence, with a second generation living substantially beyond that point. Therefore, if Social Security is to honor its promises to our children and grandchildren, mere 75-year solvency is clearly insufficient. Moreover, the present value measures used in perpetuity calculations do place greater emphasis on dollar values today than on dollar values in the future. While a perpetuity measure accounts for Social Security's cash flow, say, 200 years from now, the process of discounting assigns a dollar in 2203 substantially less weight than it does a dollar in 2003. Thus, a perpetuity measure doesn't say that Social Security's financial status in 2203 counts more than its status today; it merely says that Social Security's financial status in 2203 *counts*, and therefore should be part of a long-term solution.

Effect of Perpetuity Measures on Personal Account Plans

Scoring Social Security's finances in perpetuity has another important effect on reform. The traditional 75-year scoring period contains a substantial methodological bias against any effort to prefund Social Security benefits, particularly personal accounts.

Under a personal account plan, workers would invest part of their payroll taxes in an account while working. In exchange, they would give up part of their traditional government-paid benefits when they retired. Thus, reductions in traditional system funds due to personal account contributions are offset by reductions in the future benefits the traditional program owes to account holders. In a present value measurement, those two factors should roughly offset one another.

The difficulty with a truncated 75-year scoring period—or any scoring period other than the infinite term—is that it counts personal account contributions as losses to the traditional program's finances but fails to count reductions in benefit liabilities as gains to the system if those benefits would have been paid after the scoring period is finished. Consider a worker retiring in 2077, the final year of the current scoring period. His account contributions during the scoring period count against Social Security's finances, but the traditional benefits he agrees to forego are not counted as gains to system finances, since he does not retire until after the scoring period is completed.

The 75-year scoring window's failure to count both sides of the equation creates a substantial bias against personal account proposals relative to pay-as-you-go financing or centralized investment of the trust fund. Pay-as-you-go funding makes no attempt to prefund future benefits, so contributions to the program and the payoff from such contributions are never on different sides of the scoring window. Centralized investment of the trust fund also suffers no such bias, since the balance of the trust fund is accounted for as part of the 75-year actuarial balance. Other supplementary measures can reveal the financial strengths of personal account proposals. Nevertheless, to the extent that public debate over reform focuses on actuarial balance, the current accounting methods put personal account plans at an unfair disadvantage.

To illustrate this bias in the 75-year window, and thus the need for perpetuity measures of solvency, consider reform Model 1 from the President's Commission to Strengthen Social Security.[21] Model 1 allowed workers to invest two percentage points of their payroll taxes in a personal account. Workers choosing personal accounts would give up traditional benefits equal to their account contributions compounded at a 3.5 percent real interest rate. Since the trust fund is assumed to earn 3 percent interest, losses to the fund through account contributions would be more than compensated for by the larger benefit offsets that workers agree to. Although Model 1 would not fix all of Social Security's problems, it seems intuitively clear that it would at least move Social Security's

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Scoring personal account plans in perpetuity shows the true advantages of prefunding future retirement benefits.

finances in the right direction.

But that's not the way the traditional 75-year scoring period judges Model 1, because the 75-year window fails to count gains to Social Security's finances that were accumulated during the 75-year window but don't actually pay off until after the window ends. Social Security's traditional 75-year scoring gives the misleading impression that Model 1 actually *worsens* Social Security's financial standing, reducing actuarial balance from a deficit of 1.86 percent of payroll to a deficit of 2.18 percent of payroll.[22]

But the 75-year scoring window ignores the fact that at the end of the 75-year period, Model 1 leaves Social Security with $861 billion (in present value) worth of *future* benefit offsets based on account contributions *during* the 75-year period.

An improved accounting system would at least include the present value of improvements to Social Security's finances *accumulated* during the 75-year period, even if those improvements don't actually occur until after the period is over. Commission Model 1's $861 billion in future benefit offsets as of 2075 is equal to roughly 0.5 percent of payroll. If this amount were added to the 75-year actuarial balance of Model 1, it would show Model 1 *reducing* Social Security's deficit from 1.86 percent of payroll to roughly 1.68 percent of payroll. This 0.18 percent of payroll improvement is equivalent to the federal budget receiving a lump sum today of roughly $310 billion. Because Social Security's 75-year scoring window omits financial improvements occurring after the period ends, Model 1's $310 billion lump sum *gain* to the budget is treated as a $550 billion *loss.*

Scoring personal account plans in perpetuity removes the 75-year window's substantial methodological bias and shows the true advantages of prefunding future retirement benefits. To date, only personal account–based proposals have been shown to make Social Security solvent in perpetuity. Proposals from the Clinton administration would have kept Social Security solvent only into the 2050s; proposals from Reps. Jerrold Nadler (D-N.Y.) and Peter DeFazio (D-Ore.) would keep Social Security solvent through 75 years, but not permanently. By contrast, the comprehensive personal account plans from the president's reform commission and legislative proposals from members of Congress such as Reps. Jim Kolbe (R-Ariz.), Charlie Stenholm (D-Tex.), Jim DeMint (R-S.C.), and Clay Shaw (R-Fla.) would keep Social Security solvent *forever.* Permanent versus mere 75-year solvency is an important distinction when we consider whether Social Security will be around for our children and grandchildren.

Stochastic Analysis

The 2003 Trustees Report also contained for the first time a so-called stochastic analysis of the program's finances, which assigns probabilities to different possible outcomes for system solvency.

By way of background, trustees reports have traditionally presented three cost estimates for the program, dubbed the high-, low-, and intermediate-cost projections, as shown in Table 2. These alternate cost projections are based on different assumptions regarding each of the economic and demographic variables affecting Social Security's finances, shown in Table 3. The intermediate projections are considered by the trustees to be the most likely and are used in most analyses of policy proposals.

The high-cost projections measure Social Security's solvency when *all* of these economic and demographic variables are assumed to take values that raise costs to the program. Likewise, the low-cost projections assume that all the variables take values that reduce costs to the program.

Social Security's chief actuary notes that the high- and low-cost values for each *individual* variable are considered to be "quite unlikely to be achieved on the average in the long run."[23] For them *all* to be achieved over the long run is less likely still; not quite the equivalent of pulling a royal flush in poker, but close. It is thus extremely unlikely that

Table 2
Actuarial Surplus or Deficit (as Percent of Payroll) under Alternate Cost Assumptions

Low Cost	Intermediate Cost	High Cost
0.4	-1.92	-5.07

Source: 2003 Trustees Report, Table IV.B5.

Table 3
Ultimate Values of Key Demographic and Economic Assumptions

Ultimate Assumptions	Low Cost	Intermediate Cost	High Cost
Total fertility rate (children per woman)	2.2	1.95	1.7
Average annual percentage reduction in total age-sex-adjusted death rates from 2027 to 2077	.34	.73	1.27
Annual net immigration (in thousands)	1,300	900	672.5
Annual percentage change in:			
Average wage in covered employment	3.6	4.1	4.6
Consumer price index (CPI)	2.0	3.0	4.0
Real-wage growth (percent)	1.6	1.1	.6
Productivity (total U.S. economy)	1.9	1.6	1.3
Unemployment rate (percent)	4.5	5.5	6.5
Annual trust fund interest rate (percent)	5.7	6.0	6.2

Source: 2003 Trustees Report, Table II.C1.

either the high-cost or low-cost projections as a whole would come to pass.

Nevertheless, some opponents of reform claim that the low-cost projections—which show Social Security remaining solvent throughout 75 years—are as likely as the intermediate-cost projections. They use these claims to justify putting off action on reform, and have received greater press attention than they deserve.[24]

Stochastic analysis shows how unlikely it is that Social Security will remain solvent without reform. Stochastic analysis allows each of the economic and demographic factors to vary from its assumed intermediate-cost value throughout the 75-year scoring period, as they would vary in real life. Social Security's actuaries produced 5,000 "runs" in which these factors vary, then assessed how the interaction of these variations affects Social Security's financing over time.

Through this stochastic analysis, the trustees can determine the likelihood of different financial outcomes for the program. Figure 4, excerpted from the 2003 Trustees Report, illustrates this. The vertical (y) axis shows the balance of the trust fund as a percentage of annual benefit payments (the so-called "trust fund ratio"), beginning from where it stands today. The lines emanating from the starting point show the possible paths for the fund's balance as it grows over

Some opponents of reform claim that the low-cost projections are as likely as the intermediate-cost projections.

Figure 4
Stochastic Projections of Trust Fund Solvency

Source: 2003 Trustees Report.

There is a less than 1-in-40 likelihood that Social Security will remain solvent for 75 years without any changes to the system's financing.

the near term and heads toward insolvency in the longer term. The point where a line strikes the horizontal (x) axis signifies the date of trust fund insolvency.

The line labeled "50 percent" tracks the trustees' intermediate cost projections, in which the program becomes insolvent in 2041 (using assumptions from the 2002 Trustees Report; time prevented the trustees from performing the stochastic analysis on their latest set of assumptions). The 50 percent figures denote that 50 percent of projected outcomes have the trust fund becoming insolvent prior to 2041 and 50 percent after 2041. The intermediate projections thus form the median, or middle point, of the range of possibilities.

The line labeled "2.5 percent" in which the trust fund becomes insolvent in 2032 denotes that, of the 5,000 iterations of the stochastic model, only 2.5 percent of outcomes had the fund becoming insolvent prior to 2032. Likewise, the line marked "97.5 percent" on the right side of the chart denotes that in 97.5 instances the trust fund become insolvent prior to the year 2075.

Roughly speaking, the trustees' stochastic analysis assigns probabilities to the traditional low-cost and high-cost projections. There is only a 2.5 percent chance that the high-cost projection of insolvency in 2032 or earlier will take place. Likewise, in only 2.5 percent of outcomes does the low-cost assumption of solvency through 2075 take place.

In other words, *there is a less than 1-in-40 likelihood that Social Security will remain solvent for 75 years without any changes to the system's financing.* The chances of Social Security remaining solvent indefinitely without change are even more remote. The stochastic analysis in the 2003 Trustees Report clearly rebuts opponents of reform who claim that the program needs no changes.[25]

Conclusion

Certain aspects of the 2003 Trustees Report appear to show only minor changes in Social Security's finances, in one direction or the other. Trust fund exhaustion and the more important cash flow deficit dates were delayed by one year apiece, an improvement versus the 2002 report. On the other hand, the actuarial balance of the program declined to a deficit of 1.92 percent of payroll and

Social Security's 75-year total cash flow deficit increased from $23.87 trillion in the 2002 report to $25.33 trillion (in today's dollars) in the 2003 edition.

The more important changes in the 2003 Trustees Report were in the areas of methodology. Inclusion of solvency measures over an infinite horizon show the present value of Social Security's unfunded liabilities to be three times higher than in the traditional 75-year window; infinite term cash flow deficits are almost 2.5 times larger than over the 75-year period. Only personal account plans have been certified by Social Security's independent actuaries to eliminate this *permanent* funding deficit.

Moreover, perpetuity measures of solvency remove a substantial methodological bias against personal account plans. Scored on a perpetuity basis, the benefits derived from personal accounts after the close of the 75-year window can be incorporated into the proposal's scoring, further clarifying personal accounts' financial advantages over the traditional program.

Finally, while perpetuity measures show that Social Security's deficits are much larger than previously understood, the inclusion of a stochastic analysis shows how unlikely it is that Social Security's finances will "fix themselves" without reform. There is only a 1-in-40 likelihood that the current program will remain solvent through even 75 years without action.

The one conclusion all should share from the 2003 Trustees Report is that action is needed on Social Security, and the sooner action is taken the easier and cheaper it will be.

Notes

1. "The 2003 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds," March 17, 2003, www.ssa.gov/OACT/TR/TR03/ index.html. Hereinafter referred to as 2003 Trustees Report.

2. Mary Deibel, "Social Security Fully Funded until 2042," Scripps Howard News Service, March 17, 2003; Janelle Carter, "Medicare to Run Out of Cash Sooner; Social Security Stronger Than a Year Ago," Associated Press, March 18, 2003.

3. Office of Rep. Robert Matsui (D.-Calif.), "Rep. Matsui Responds to Social Security Trustees Report," Press Release, March 17, 2003.

4. Social Security and Medicare Boards of Trustees, "Status of the Social Security and Medicare Programs: A Summary of the 2003 Annual Reports," www.ssa.gov/OACT/TRSUM/ trsummary.html. Emphasis added.

5. See Michael Tanner, "'Saving' Social Security Is Not Enough," Cato Institute Social Security Choice Paper no. 20, May 25, 2000.

6. Bill Swindell and Mary Agnes Carey, "Medicare Finances Worsen and Social Security's Improve, New Report Shows," *Congressional Quarterly Daily Monitor*, March 17, 2003.

7. 2003 Trustees Report, p. 79.

8. Ibid., p. 13.

9. Social Security and Medicare Boards of Trustees. Emphasis added.

10. Ibid. Emphasis added.

11. Ibid.

12. 2003 Trustees Report, p. 65.

13. See, for instance, General Accounting Office, "Social Security: The Trust Fund Reserve Accumulation, the Economy, and the Federal Budget," GAO, Washington, January 1989.

14. To illustrate present values, assuming a nominal interest rate of 6.2 percent the present value of a dollar one year from today is 94 cents, the amount that if invested today would yield one dollar in one year's time. The present value of a dollar in 2077 is only around 1 cent.

15. Office of Management and Budget, *Budget of the United States, Fiscal Year 2000* (Washingon: GPO, 2000), Analytic Perspectives, p. 337.

16. "Report of the 1999 Technical Panel on Assumptions and Methods," p. 37, www.ssab.gov.

17. Perpetuity measures can only be usefully performed using present values, which assign a lower value to sums that are more distant in the future; Social Security's perpetuity cash deficit in constant 2003 dollars would be infinite.

18. The cost of delay is essentially the annual

interest cost on the present value cash deficit.

19. To be fair, of course, repayment of trust fund bonds would take place through general tax revenues, not payroll taxes; nevertheless, the size of the cash requirement is the same. Moreover, reform proposals also assume that trust fund assets will be honored, so this is a cost that both the current program and reform proposals must bear.

20. 2003 Trustees Report, p. 60.

21. For more information on the commission proposals, see "Strengthening Social Security and Creating Personal Wealth for All Americans: Report of the President's Commission, December 2001," www.csss.gov. See also Andrew G. Biggs, "Perspectives on the President's Commission to Strengthen Social Security," Cato Institute Social Security Choice Paper no. 27, August 2002; and John F. Cogan and Olivia S. Mitchell, "The Role of Economic Policy in Social Security Reform: Perspectives from the President's Commission," National Bureau of Economic Research Working Paper no. 9166, September 2002.

22. The commission proposals were scored under the 2001 trustees' assumptions, in which the current program had an actuarial deficit of 1.86 percent of payroll.

23. Steven C. Goss, "Measuring Solvency in the Social Security System," in *Prospects for Social Security Reform,* ed. Olivia S. Mitchell, Robert J. Myers and Howard Young (Philadelphia: Pension Reform Council, 1999), p. 29, www.prc.wharton.upenn.edu/prc/PRC/WP/ wp97-12.PDF

24. For more information, see Andrew G. Biggs, "Social Security: Is It 'A Crisis That Doesn't Exist'?" Cato Institute Social Security Choice Paper no. 21, October 5, 2000.

25. More information on the stochastic analysis in the 2003 Trustees Report is available at www.ssa.gov/OACT/TR/TR03/II_project.html.

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