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The Personal Security Account 2000 Plan, Market Outcomes, and Risk

Sylvester J. Schieber and John B. Shoven

2.1 Introduction

In early 1997, the 1994–96 Advisory Council on Social Security released its final report, which remarkably altered the nature of the debate in the United States about the reform of our national retirement system. It did so by giving legitimacy to recommendations that some element of Social Security reform should include individual accounts held by workers. The majority of the council’s members actually advocated such reform. To be sure, there had been other people and groups who previously had advocated these types of Social Security reform in this country—but never before had a group of individuals assembled under an official charter by a presidential administration come close to such a recommendation. Since the Advisory Council’s report was released there have been several serious proposals put forward for reforming Social Security that include some element of individual accounts. There have also been numerous criticisms of this approach to Social Security reform.

In this paper, we present a framework for assessing Social Security reform proposals by evaluating a specific reform plan. This plan is one derived from the original personal security account (PSA) plan developed by the 1994–96 Advisory Council on Social Security (Advisory Council 1997). This plan has been dubbed *PSA 2000* and its full elaboration is presented in Schieber and Shoven (1999). In part, PSA 2000 was devel-

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oped to respond to some of the criticisms of the original PSA plan (see, e.g., Ball and Bethell 1998 and Aaron and Reischauer 1998). In section 2.2, a set of principles around which the plan was devised is briefly stated. In section 2.3, the proposal is developed and the underlying principles are developed in somewhat more detail. In section 2.4, we evaluate the long-term actuarial prospects of the proposal. In section 2.5, we evaluate the benefits that would be provided under the plan and the risks that individuals would bear with such a partial privatization approach. In the final section, we take measure of the plan against the principles laid out in section 2.2.

2.2 Guiding Principles

The principles underlying the PSA 2000 proposal were developed after a fairly extensive review of the history of our Social Security system in an attempt to reflect widely held values in this country about the appropriate design of a reform plan. Obviously, principles alone cannot determine the details of a proposal, but they can offer guidance to both the engineers of alternative systems and to the evaluators of proposed solutions. The principles that the PSA 2000 plan was built around are as follows:

1. The important “safety net” or progressivity of the existing Social Security system should be preserved.
2. Any redesign of Social Security should enhance the national saving rate.
3. The disability and early survivor insurance programs within Old-Age, Survivors, and Disability Insurance (OASDI) should be preserved.
4. Any reform should offer long-run solvency for the system, not simply postpone insolvency.
5. Any reform should improve equity between participants (particularly between one- and two-earner couples).
6. Economic efficiency should be increased by increasing the link between contributions and benefits.
7. The risks borne by individual participants should be diversified and kept at tolerable levels.
8. Administrative costs should be kept to reasonable levels.
9. The reforms should be determined and announced as soon as possible.

The first principle stems partially from the desire not to step back from the single greatest accomplishment of Social Security, namely, the relatively low incidence of official poverty amongst the elderly. One of the risks that Social Security insures against is a bad labor market outcome for workers during their careers. Bad labor market outcomes can be a result of poor health, a poor economy, or just lousy luck. There is a general

feeling that it is unseemly for a society as wealthy as ours to force people who have been unsuccessful in their working careers to live out an impoverished old age. The current program offers those with a low lifetime earnings profile a higher replacement rate than those with above-average lifetime labor earnings. The PSA 2000 plan was designed with the intent of preserving this general pattern.

The second principle is based on the proposition that, just as saving is the only reliable way for a household to get rich, saving is also the only reliable way for our country to become wealthier. More wealth for future Americans translates to higher productivity and higher real wages for future workers. The fact that higher national saving would result in significantly higher real wages within twenty years was effectively argued by Aaron, Bosworth, and Burtless (1989). While there is no agreement as to the exact magnitudes, there is widespread acceptance of the fact that the pay-as-you-go (or PAYGO) Social Security system has depressed personal and national saving. Furthermore, providing for retirement is the most important motive for saving. It is only natural to attempt to increase saving while restoring the long-run solvency of Social Security.

The third principle, that disability and early survivor insurance should be preserved, comes from the assessment that insuring these risks is very important and that Social Security is relatively efficient in providing this coverage. The lack of any significant clamoring to replace these elements of the system with a private alternative suggests that this type of term insurance should continue to be provided by the Social Security Administration. That is not to say that the Disability Insurance (DI) program in particular shouldn't be studied carefully for inefficiencies. The DI program itself is underfunded by 20 percent over the seventy-five-year projection period used by the actuaries. Before policymakers reallocate any additional portion of the payroll tax base to the disability program, it is likely that a full-blown review of the program's operations will be undertaken.

The fourth principle was prompted by the 1983 Social Security Amendments. A nontrivial contributor to the development of a large seventy-five-year actuarial deficit since 1983 has been the mere passage of time. Even with the optimistic projections in 1983, the reformed system ran large deficits beginning in the second decade of the twenty-first century. The claim was that the program was balanced for seventy-five years with the early surpluses financing the later losses. The built-in problem was that with each passing year there was one fewer of the surplus years in the seventy-five-year window and one more deficit year. This principle suggests that we should now aspire to a system that is not only balanced over the next seventy-five years, but one that appears to be workable thereafter.

The fifth principle deals with the equitable treatment of different groups of Social Security participants. The chief concerns here are the treatment of one-earner and two-earner households and the adequacy of resources

available to widows and widowers. Some of the transfers within the existing system are not only defensible but worth preserving; others are not. The large inequities among two-earner couples, one-earner couples, and single individuals should be rethought, along with other specific aspects of Social Security rules that seem convoluted and inappropriate. For instance, the cliff vesting of marriages at ten years seems arbitrary. Divorced individuals can claim benefits based on the earnings of their ex-spouses only if they were married for ten years or more. Finally, since poverty is greatest among widows, widow and widower benefits should be increased relative to those for married couples if true retirement income security is to be achieved.

The sixth principle is a very important one. There always has been a debate about whether Social Security contributions should be thought of as taxes or deferred compensation—i.e., as pension contributions. The current system has a relatively weak link between marginal contributions and marginal benefits and therefore may be viewed by most people as a tax/transfer system rather than as a deferred compensation pension system. For people with covered work histories shorter than ten years and for many whose careers are longer than thirty-five years, there is zero marginal benefit to additional marginal contributions. For secondary earners in two-earner households, the marginal connection between contributions and benefits is small or nil. If the full 15.3 percent payroll tax is viewed as a marginal tax with little or no offsetting marginal benefits, then the distortionary costs of the overall tax system are greatly increased. The total marginal tax rate for someone in the 15 percent federal income tax bracket is more than doubled and the efficiency costs of the tax system (which go up with the square of the marginal tax rate) more than quadruple due to the payroll tax. If marginal contributions and benefits are closely linked, this can lower the effective marginal tax rate and thereby enhance economic efficiency.

The seventh principle is one of the arguments against a purely privatized system, namely that such a plan has participants—some almost certainly unknowingly—who bear too much risk with their future retirement resources. Sophisticated investors can manage these risks, but many Social Security participants may be limited in this regard. This concern can be greatly reduced or even reversed for a partially privatized plan. A two-tier system in which everyone has some individual account investments would almost certainly prove a stimulus for greatly increasing the general level of financial literacy in the general population. At the same time, the tier-one or “floor” benefits provide protection from truly catastrophic financial results. Both defined benefit (DB) and defined contribution (DC) Social Security programs are risky. The DB plans bear political risks—i.e., the government can change the program at any time—as well as macroeco-

conomic and demographic risks. Defined contribution plans carry the underlying risks of financial instruments, and we all know that stock and bond returns are highly variable. The optimal thing to do when you have a situation in which two different designs face different kinds of risk is to come up with a hybrid or “some of each” solution. This follows from the first principles of risk diversification.

The eighth principle that we should be aware of, administrative costs, is another type of efficiency consideration. Social Security will remain the primary retirement program for the majority of Americans. It is important that their contributions not be consumed with high administrative expenses. Any privatization plan or partial privatization plan must be conscious of minimizing the administrative costs of the program. That said, the current program, which is relatively inexpensively administered, provides very poor information to participants. Annual statements are still not mailed to all participants, and the statements, which are sent on request, are misleading. For instance, the only contributions shown on the statement are the half of payroll taxes attributed to the employee—the other half, those paid by the employer, are simply missing. Most economists agree that the employee bears both halves of the payroll tax, and yet the average participant sees his or her projected benefits and half of his or her payments to the system. Any private mutual fund or insurance policy prospectus would be disallowed for failing to disclose fully the cost of the investment. The PSA 2000 plan is based on a premise that we should certainly try to control administrative expenses, but better and more informative communication to participants clearly should also be a goal.

The final principle, namely, to do something as soon as possible, stems from a couple of considerations. First, the Social Security Trustees themselves report that the structure of the system is unsustainable after the third decade of the twenty-first century. The one thing we do know, however, is that there is a tremendous advantage to allowing people time to adjust to any changes in the benefit rules. Second, there still is time for the baby boomers to contribute to the solution of Social Security’s solvency—but that opportunity is dwindling fast. Finally, the passage-of-time effect keeps bringing the financial problems of the system closer and making them larger with compound interest. The only way to put a check on the growth of the burden’s being placed on future generations of workers is to begin making payments on the solution soon.

2.3 The Proposal and the All-Important Details

The general outline of the PSA 2000 plan is quite simple. First, the payroll tax would remain unchanged from current legislation. That means that OASDI taxes would continue to be a total of 12.4 percent of annual earn-

ings, up to a ceiling amount of \$72,600 in 1999. The percentage would stay the same for the next several decades. In the distant future it would be reduced when transition costs were paid off and the residual trust fund for the PAYGO-financed flat benefit reached 1.5 years of benefits. Just as with current law, the maximum amount of earnings subject to tax would grow with the general level of wages.

The benefit side of the program is completely redesigned under the PSA 2000 proposal. There would be two parts to Social Security's retirement benefits, a DB part and a DC part. These two parts are often referred to as the two tiers of benefits with plans such as PSA 2000. The first tier would be a flat benefit for all individuals with a full career of thirty-five years or more. The flat benefit amount for single people would be \$500 per month in the year 2000. The \$500 amount as an initial benefit would increase in the future by an amount reflecting the general increase in wage levels. The second tier of benefits results from the participant's accumulation in the DC part of the plan. The second tier would be financed by a combination of employee contributions matched by contributions from Social Security.

Workers would be required to contribute 2.5 percent of covered pay up to the taxable limit on which payroll taxes are due. Social Security would match the worker's contribution on a 1:1 basis, providing another 2.5 percent of covered earnings. All told, workers would be accumulating 5.0 percent of their covered earnings in a personal security account. The mandatory 2.5 percent employee contribution should not be equated to a tax increase. The money would be deposited into an account in the worker's name, which never happens with tax payments. While workers would have no discretion about making these contributions, they would have considerable control over how the moneys are invested throughout their working careers and how they are redeemed after retirement. We note that, in cases where employers offer 401(k) plans with 100 percent matching of employee contributions, the participation rates in the plans are typically around 80 percent, and are generally somewhat higher for all but the youngest and lowest-paid employees.

In retirement, workers would have the proceeds of these accounts in addition to their tier-one benefits. The government's matching contribution would not come out of thin air. In fact, it would be a rebate of the worker's 12.4 percent payroll tax. After paying the 2.5 percent rebates, Social Security would have only a net amount of 9.9 percent of covered pay to finance tier-one benefits, disability, and survivors insurance, and to honor the promises of the existing program during the lengthy transition or phase-in period.

We have just described the basics of the proposal in a few short paragraphs. Obviously, there are many details to the plan. The most important of them follow in subsections 2.3.1–2.3.13.

2.3.1 Less-Than-Full Careers

A thirty-five-year career would be required in order to receive the full flat benefit of tier one (\$500 in 2000, indexed for average wage growth thereafter) at the normal retirement age. Those with a minimum-length career, ten years or forty covered quarters, would receive one-half of the flat tier-one benefit. Those with more than a ten-year covered career would get an extra 2 percent for each extra year, up to a total of 100 percent.

2.3.2 Normal Retirement Age

In order to receive the full flat tier-one benefit, or even the reduced benefit resulting from a shorter career, one would have to retire at the normal retirement age. Under the PSA 2000 plan the normal retirement age increases by two months per year for the years 2000 to 2011, reaching the age of sixty-seven years in 2011. Thereafter, further increases are indexed to improvements in life expectancies of people at the normal retirement age.

2.3.3 Early and Late Retirements

As the normal retirement age is gradually advanced, the age of eligibility for early retirement would also be advanced. Eventually, the youngest age for early retirement would reach sixty-five years. At that point, the PSA 2000 plan calls for no additional increases in the early retirement age. The adjustments for retiring at ages other than the normal retirement age (NRA) would remain as in the current law. Individuals retiring before the NRA would face reduced tier-one benefits at the rate of five-ninths of 1 percent per month. Those choosing to retire later than the NRA would have their benefits increased by two-thirds of 1 percent per month of delay in the commencement of benefits.

2.3.4 Earnings Test

Under the current Social Security system, persons who are receiving benefits have their benefits reduced if they have earnings above an exempt amount. The reduction is fifty cents for every dollar that earnings exceed the exempt amount for persons who have not attained Social Security's NRA and thirty-three and one-third cents for each dollar for persons who have. This clearly discourages part-time work for Social Security recipients. The PSA 2000 plan completely eliminates the earnings test for beneficiaries who have reached the NRA.

2.3.5 Spousal Benefits

Spouses would receive the higher of either the tier-one benefits that they would be entitled to receive based on their own earnings histories, or one-half of the tier-one benefits of their spouses. Two-earner married couples

would be treated as two single persons in terms of their tier-one benefits. If both partners had full thirty-five year careers, they would receive a total of \$1,000 per month in tier-one benefits. On the other hand, if one had a thirty-year career (qualifying for \$450 per month) and one had a twenty-year career (qualifying for \$350 per month), their total monthly tier-one benefits would be \$800. Of course, all of these dollar figures would be higher in the future since the amounts are for the year 2000 and future benefits would be increased to reflect average wage growth. Since the minimum qualifying career (ten years of covered earnings) qualifies for one-half of the full tier-one benefit, all two-earner couples (where both have qualifying careers) would receive tier-one benefits (and tier-two benefits, for that matter) based on their own work records. There would be no spousal benefits for the second tier of the system (although the money would be paid out as a joint survivor annuity rather than a single life annuity). Further, we think that very few couples in the future would qualify for spousal benefits for tier one; the vast majority of married couples would receive benefits based on their own individual work records.

2.3.6 Widow's Benefits

Currently, many widows and widowers receive two-thirds the amount that the couple received before the spouse's death. Under the PSA 2000 plan, the surviving spouse would receive the highest of either her or his own tier-one benefit, the deceased spouse's tier-one benefit, or 75 percent of the combined tier-one benefits. The tier-two annuities would be a joint survivor type with the survivor receiving 75 percent of the prior amount.

2.3.7 Divorce

Tier-two PSA accumulations would be treated like any other DC pension plan in terms of dividing the assets in the event of divorce. Tier-one benefits would be available to divorced spouses only with restrictive rules similar to those in the current program. It is our expectation that the vast majority of adults will earn their own tier-one benefits with a covered work career of at least ten years.

2.3.8 Universal Coverage

The PSA 2000 plan, like existing Social Security, involves redistribution from those with higher lifetime labor earnings and those with lower lifetime labor earnings. With PSA 2000 the redistribution is transparent. The tier-one benefit is the same for everyone regardless of wage. However, total payroll taxes are higher for those who have more earnings. The well off pay more for the system than the not-so-well off. That is the nature of redistribution. However, a fair redistributionary plan means that everyone must participate. Otherwise, groups that are well off opt out, refusing to help fund the transfers to those who are less well off. The bottom line of

this discussion is that PSA 2000 features compulsory universal coverage. The new group that is brought into the system is all newly hired state and local government employees.

2.3.9 Annuitization of PSA 2000 Payouts

Social Security benefits are currently paid out as inflation-indexed life annuities, meaning that once a person starts receiving benefits he or she gets that amount for the rest of his or her life, with annual increases reflecting price inflation as measured by the Consumer Price Index (CPI). The tier-one PSA 2000 benefits would be paid out in exactly the same manner. At the time of retirement, one-half of the tier-two accumulation would be automatically converted into an inflation-indexed life annuity. This half represents the government's matching contribution to the PSA accounts. The individuals would be able to choose how he or she would like to withdraw the other half of the PSA balance. Social Security would convert it into an indexed life-annuity on the same terms as the other half of the assets. On the other hand, participants could roll half of their PSA balances into individual retirement accounts (IRAs) or withdraw the money in any pattern that suits their needs.

2.3.10 Taxation of Benefits

The payroll tax would continue to be split between employees and employers. This means that workers would pay tax on half of the OASDI deductions (their own halves, but not the employers' halves). Half of the 2.5 percent mandatory contribution to the PSA account would be made with before-tax dollars and half with after-tax dollars. With this system, tax would be paid on half of all the money contributed to Social Security at the time of the earnings. In retirement, 50 percent of the payouts from both tier one and tier two would be subject to the personal income tax. This treatment means that the entire PSA 2000 system is taxed according to consumption tax principles. One way to think about it is that half of the contributions are treated like Roth IRAs (where after-tax contributions are withdrawn tax-free in retirement) and half are treated like normal IRAs (where before-tax contributions are taxable upon withdrawal). Taxing half the money going in and half coming out allows people to be diversified over two different tax regimes. It is important to note that the fact that half of the benefits constitute taxable income does not mean that all retired people will actually have to pay income taxes on this money. Take, for instance, a married couple who receives \$18,000 per year from the two parts of their PSA 2000 plan. Under the plan, only \$9,000 of their PSA payments would be treated as gross taxable income. However, as of 1998, a married couple with both spouses over age sixty-five was not required to file a federal income tax return unless they had gross income exceeding \$14,200. Therefore, such a couple could have up to \$5,200 of other income

and still not owe any federal income tax. Only those with larger sources of other income (such as taxable pension distributions and dividends and interest income) would have to pay income taxes on the \$9,000 of taxable PSA distributions.

2.3.11 Investment Choices and Regulation

The 5 percent tier-two PSA accounts would be funded through payroll deductions, half from the employee and half from Social Security as a rebate of the standard FICA tax. Social Security would offer a limited menu of diversified investment options: indexed stock and bond accounts, and one total market account combining stocks and bonds. It is likely that there would be considerable delays in transferring the money into the ultimate investment accounts. The government would pay interest on contributions during the delay period. In addition to the standard government-sponsored investment accounts, individuals could choose to place their money with an approved financial service provider such as Vanguard, Schwab, or Fidelity. All of these providers would be required to offer special investment funds for the PSA accounts. They would be regulated in terms of the information and service that they provided participants and the administrative costs they charged PSA account holders. The maximum administrative cost would be 1 percent per year. We expect that competition would force many vendors to provide investment products with much lower costs than that. Individuals would be required to invest all of their PSA balances with a single approved and regulated vendor, so that there would be a single centralized record keeper, and would be allowed to change vendors on an annual basis. It is possible that employers would be allowed to make direct deposits into their workers' PSA accounts, thus bypassing the need for the money to pass through Social Security's hands.

2.3.12 No Early Withdrawals Permitted

The tier-two PSA program would be an essential part of this particular proposal. No early withdrawals would be permitted from these accounts for any purpose. That means no hardship withdrawals, no withdrawals for down payments on first homes, nor for any other use for the money. The balances could not be used to collateralize loans and could not be touched even in bankruptcy proceedings. Individuals would be apt to accept these restrictions if the rationale for them were explained, namely, that the money is strictly for the purpose of retirement income provision. The 1:1 match also might make the restrictions more acceptable.

2.3.13 The Phase-In

The new program would be phased in extremely gradually. Current retirees and workers aged fifty-five and older in 2000 would be covered under

the existing Social Security system. They would be subject to the accelerated increase in the normal retirement age and the change in the tax treatment of benefits. Half the benefits would be taxable income under the new program, rather than the current 85 percent for those with taxable income above \$25,000 (single people) or \$32,000 (married couples). The net change for those aged fifty-five and over in 2000 would be quite small. The new program would be the only program for those under age twenty-five in 2000. They would have at least forty years to accumulate assets in their 5 percent PSA accounts until becoming eligible for early retirement at age sixty-five in 2040 and beyond. Workers who are between ages twenty-five and fifty-four in 2000 would get some benefits under the new PSA 2000 plan and some under the existing Social Security rules. The fractions would be different for each age cohort. For instance, someone who was forty-five in the year 2000 would get half of the full-career tier-one benefit and half of his or her benefits from the existing primary insurance amount (PIA) formula. Someone closer to age fifty-four would have more of his or her benefits determined the old way, and someone closer to twenty-five would have more of his or her benefits determined by the new PSA 2000 plan. With the phase-in, the DB payments from the existing PIA approach would be essentially unchanged for the first ten years. Then gradually those benefits would be reduced as people began to retire with some of their benefits determined by the new plan. Benefits under the old plan would be essentially completed in seventy-five years, when the twenty-five-year-olds of 2000 hit the century mark.

2.4 Static Macroeconomic Balance

Since one of the first goals of Social Security reform is to restore the solvency of the system, the first test of any proposal is whether it accomplishes this with any degree of certainty. The PSA 2000 plan retains a largely unfunded DB component to the program. Because 2.5 percent of covered payroll is used for the 1:1 matching of the individual contributions, Social Security would have less revenues to work with to meet its DB promises than under current law. Since the proposal calls for a very gradual transition from the existing program to the new one (with everyone over the age of fifty-five retaining their full current benefits), the program's DB expenditures would not be immediately lowered. As the new system matured, current law obligations would diminish. In the very long run, the only DB promises would be the flat tier-one benefits.

The Actuarial Research Corporation (ARC) has made a seventy-five-year forecast of the PSA 2000 plan using the intermediate demographic and economic assumptions of Social Security. We refer to these forecasts as the *static macroeconomic outlook* because they do not take into account the higher productivity growth that should accompany the higher saving

resulting from this program, and also from many of the other Social Security proposals. The long-run finances of the system would be more favorable with a dynamic model, perhaps significantly so. We are planning to develop such a model. For now, the direction of the bias of not including such feedback should be noted.

In developing the static projections of the PSA 2000 plan, ARC benchmarked its valuation of this type of plan by doing a seventy-five-year projection of the PSA plan that was developed by the 1994–96 Advisory Council on Social Security. The Office of the Actuary at the Social Security Administration (SSA) also valued this plan. In their work for the Advisory Council, the SSA actuaries had estimated that the PSA plan would restore actuarial balance to the OASDI system by the end of their seventy-five-year projection period. The ARC valuation of the original PSA plan suggests that the PSA proposal, as it was specified by its designers, was significantly underfunded. They estimated that the OASDI trust fund balance at the end of the projection period would be negative, with the aggregate borrowings at the time being about 7.5 years of annual benefit flows. The ARC contends that the Social Security actuaries captured adequately neither the interaction of increases in retirement ages nor the move to lower OASDI benefits in the proposal as the reasons for the difference between the two sets of projections. Social Security's actuaries do not necessarily agree with this assessment and have not conceded any problems with their earlier estimates. The point here is that the ARC valuation of the PSA 2000 proposal is being done with a model that would appear to be giving off very conservative estimates. That is, ARC's estimates make the PSA 2000 proposal look much worse than it would under the methodology used to assess the original proposal. Our analysis of the PSA 2000 plan utilizes ARC's projection of the plan supplemented with data, from the SSA Office of the Actuary, on the accumulations in the individual-account element of the system.

The basic seventy-five-year outlook for the Social Security trust fund under PSA 2000 is shown in figure 2.1. The trust fund and PSA 2000 accumulations are stated as ratios of assets to the total projected DB payments. In the initial years, the DB payments are purely current law benefits. As the transition evolves, the DB payments will increasingly become a blend between accrued benefits under the current system up to the point of transition plus the tier-one flat benefit accrued under the new system as it matures. Toward the end of the projection, the overwhelming majority of the defined benefit will be tier-one benefits paid out of the PSA 2000 system. The lowermost solid line in the figure is the OASDI trust fund balance over the projection period. The dashed line is the accumulations in the PSA accounts each year. The uppermost solid line is the aggregate of the two.

The intermediate-assumptions actuarial forecast for the PSA 2000 trust

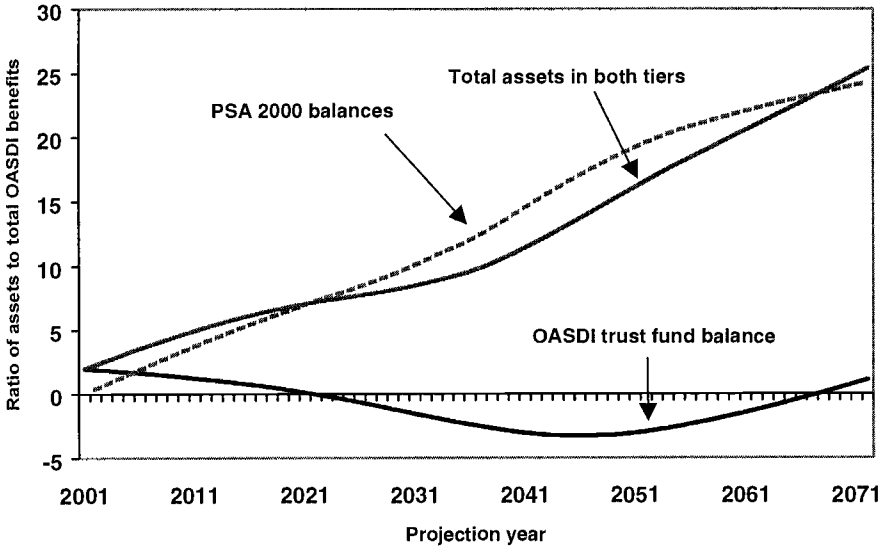


Fig. 2.1 OASDI trust fund ratios, PSA 2000 balances, and total asset levels

fund is that it would end the seventy-five-year period about where it started, with one to two years' worth of DB expenditures in assets. At the end of the seventy-five-year period, all of the current-law obligations would have been honored and the system would be running a substantial surplus. However, the ratio of trust fund assets to program expenditures would fall almost immediately upon the adoption of the PSA 2000 plan and the trust fund would be exhausted by 2022. Under current law, the Social Security trust funds do not have borrowing authority if their balances decline to zero. The projection of the trust fund balances in figure 2.1 portends a problem in that regard under the PSA 2000 proposal. Under the ARC projections, adjusted to account for the added benefits paid through the DI program, the trust funds would have negative balances of about 3.3 years' worth of benefit payments between 2045 and 2050. To deal with this potential some sort of special provisions would have to be made.

The program as a whole, including the second-tier accounts, would continue to be a net supplier of saving during this entire period, because the asset buildup in the PSA 2000 tier-two accounts, also shown in figure 2.1, would be significantly larger than the annual deficits of the DB portion of the program. The asset trajectory shown for the PSA 2000 accounts in figure 2.1 is based on the relatively conservative assumption of a net real annual rate of return of 4.5 percent on the assets in the accounts. This rate of return could be earned even if the PSA 2000 accounts accumulated most (if not all) of the bonds issued by the DB operation during the deficit years.

One conceivable way to handle the prospect that the OASDI system would have to borrow funds for some period of time is to construct a funding mechanism that is internal to the combined structure of the system. For example, over the initial years of the programs' operations, Congress might mandate that some portion of the PSA 2000 accounts must be invested in bonds issued to provide earmarked funding for the OASDI transition borrowing. The borrowing in this case would have to equal the projected trust fund debt associated with the transition to the PSA 2000 plan, plus some additional amount to finance a contingency fund to smooth financing over business cycles.

It is generally accepted that pay-as-you-go governmental retirement systems should maintain a contingency fund of around one year's worth of benefits. Social Security currently has a balance of nearly two years. In order to see how the transition might work under a plan of this type we assume that the OASDI trust fund would maintain roughly its two-year balance as long as the majority of the baby boomers continue to work. Beyond that, we assume it would be spent down to between one and one-and-a-half years' worth of benefits. Using these assumptions, we estimated how much of the PSA balances would be required to cover the transitional borrowing.

The results of our analysis are shown in figure 2.2. In the initial years, 25 percent of the PSA balances would be invested in U.S. government bonds. Starting in 2026, we increase the percentage by 1 point per year,

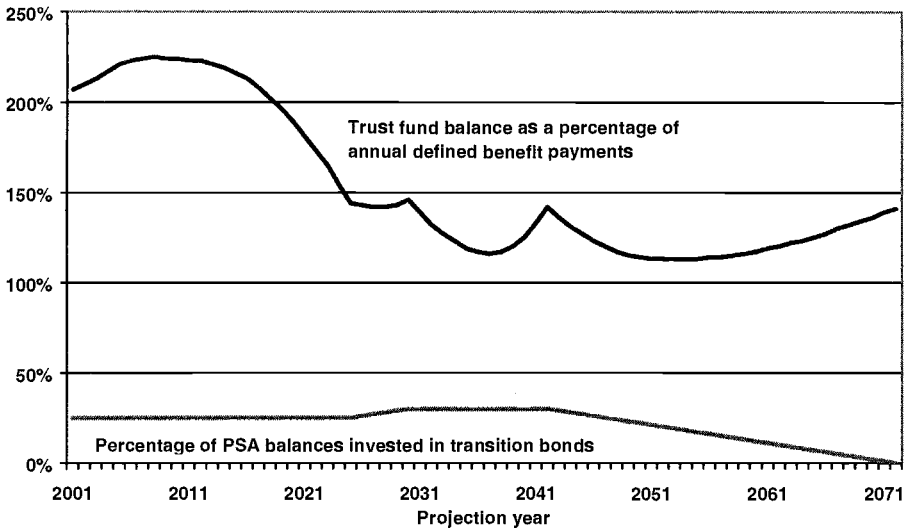


Fig. 2.2 Portion of PSA balances invested in OASDI Liberty bonds and the OASDI trust fund ratios during the full transition to the PSA 2000 plan

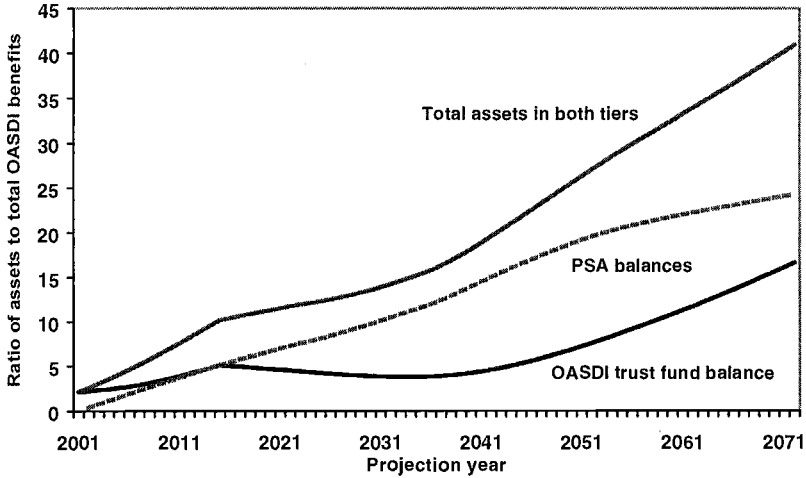


Fig. 2.3 OASDI trust fund ratios, PSA 2000 balances, and total asset levels after transferring 62 percent of the 2000–2014 projected budget surpluses to OASDI

reaching 30 percent in 2030 and holding steady there until 2043, when we begin to reduce the required bond holdings as a percentage of total PSA balances by 1 percent per year. These bonds would be completely paid off in 2070. At that point the trust fund balance would be rising steadily and it would be possible to implement a sizable payroll tax cut.

As a total stand-alone proposal, then, the PSA 2000 plan is balanced over seventy-five years and generates additional saving for the economy for every year in the forecast period. It should be noted that the assumptions behind figures 2.1 and 2.2 do not include using any of the projected federal government surpluses of the next fifteen years. Presumably, those surpluses could then be used for other valuable things such as helping Medicare’s finances or permitting tax reductions. During his term, President Clinton indicated that a large fraction of the surpluses should be used to restore the financial stability of Social Security and the Republicans for the most part agreed, we developed an analysis that would dedicate the surplus to the transition to the PSA 2000 plan. We attribute the projected surplus to saving Social Security at exactly the same rate as former President Clinton recommended as estimated by the Social Security actuaries (Goss 1999a).

The results of our analysis are shown in figure 2.3. This figure shows the effect of transferring 62 percent of the 2000–2014 surpluses into the Social Security trust fund and adopting the PSA 2000 plan. Now, under the intermediate assumptions, the trust fund backing the DB promises of the system always retains a sizable positive balance. In fact, the balance between 2015 and 2045 hovers between four and five years’ worth of expenditures

before rising sharply as the obligations of the current system recede. The total assets in the PSA 2000 accounts and the trust fund reach rather staggering levels by the end of the seventy-five-year forecasting period—i.e., forty years of expenditures. All this indicates is that the PSA 2000 plan with the infusion of surpluses proposed by Clinton is an overfunded package.

Of course, there is no shortage of things to do with the extra cash. If we were truly going to use the budget surpluses to help in the transition funding, figure 2.4 suggests that a payroll tax could be implemented as a means to reduce the cost of the shift to the PSA 2000 plan for workers. The flat line in the figure shows the combined payroll tax rate and PSA contribution to the system without the benefit of the budget surplus financing. The line with three flat steps shows a scenario in which the basic OASDI payroll tax rate is immediately lowered by 0.5 percent because of the beneficial effect of using some of the surplus to support the transition. The rate is lowered by a total of 1.2 percent, relative to current levels, in 2038 and by a total of 2.5 percent in 2055. Since the PSA 2000 plan calls for a mandatory contribution of 2.5 percent of payroll to the tier-two accounts, that contribution would be entirely offset by the permitted payroll tax reduction beginning in 2055. Twenty percent of the contribution would be offset immediately by the 0.5 percent tax reduction. The curved line in the figure shows the cost of the current-law benefits if we attempt to provide them using the current financing mechanism. While the PSA 2000 plan would cost somewhat more in the short term, the long-term cost rates would be sig-

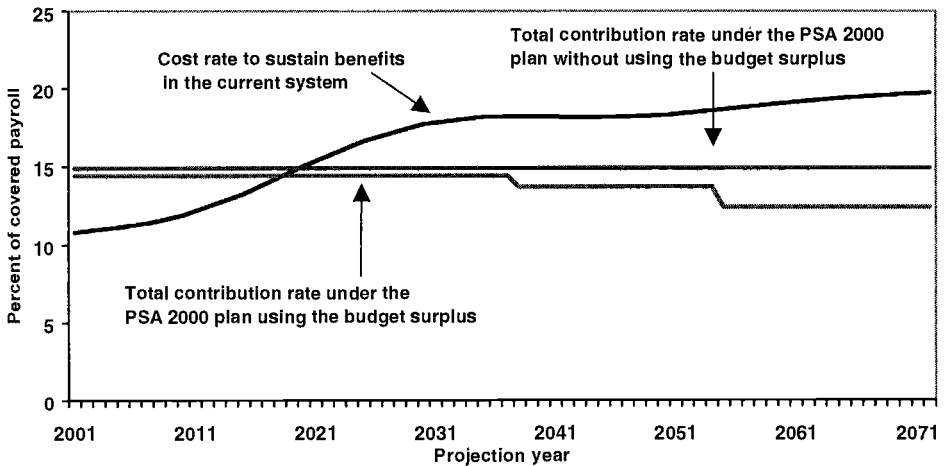


Fig. 2.4 Social Security cost rates and contributions under the PSA 2000 plan with utilization of the federal budget surpluses to help in financing the transition costs

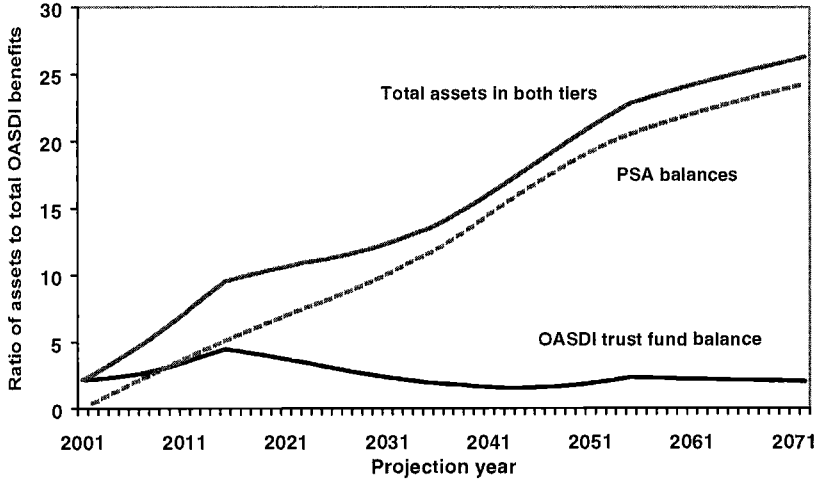


Fig. 2.5 OASDI trust fund ratios, PSA 2000 balances, and total asset levels after transferring 62 percent of budget surpluses to OASDI and reducing contribution rates

nificantly lower than staying the current course. The infusion of budget surpluses along with the series of tax cuts would result in a fairly stable trust fund, as shown in figure 2.5. The trust fund would range roughly between 2.0 and 4.0 years’ worth of expenditure, a slightly higher level than the current ratio.

The results in figure 2.4 suggest that over the next twenty years or so, workers would have to contribute at higher rates than under the current system in order to get their benefits under the PSA 2000 plan. The problem with the current system is that it cannot sustain current-law benefit obligations. The 1999 OASDI trustees’ report estimated that the seventy-five-year shortfall in the current payroll tax rate was 2.07 percent of covered payroll. That means the current tax rate of 12.4 percent would have to go immediately to 14.47 percent in order to meet the estimated seventy-five-year obligations. However, we know that the 2.07 percent increase in the payroll tax would likely fall short of meeting the long-term obligations of the program some five or ten years into the future. Goss (1999b) has estimated that the payroll tax would have to increase 4.7 percent of covered pay to restore actuarial balance to the system in perpetuity. The flat line in figure 2.4 is at 14.9 percent of covered payroll. If the surplus is used to help cover transition costs to the program, it would bring the total contribution rate down to 14.4 percent of payroll immediately and eventually allow it to return to 12.4 percent. In the next section of this discussion, we show how benefits under the PSA 2000 proposal fare compare to current law.

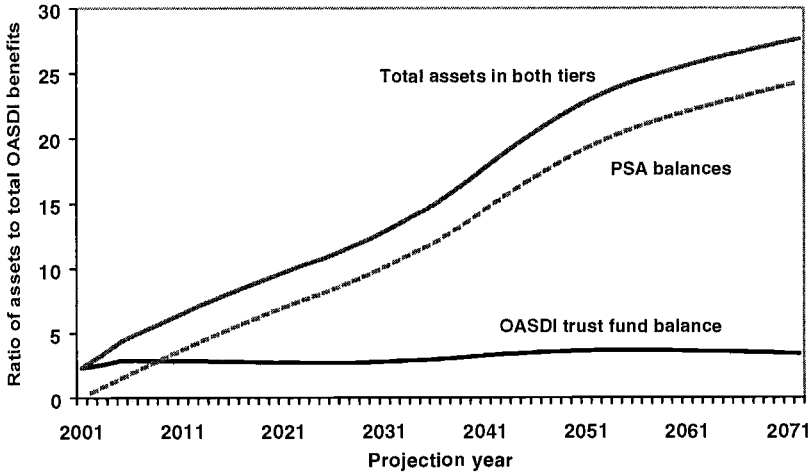


Fig. 2.6 OASDI trust fund ratios, PSA 2000 balances, and total asset levels by using part of the budget surpluses to fund DI maintaining current contribution rates

Using budget surpluses to give contribution relief to workers will preclude using them in some other fashion. Indeed, there may be other elements of Social Security that would potentially benefit from them. In the development of the original PSA plan its advocates proposed that future DI benefits be held at a level supportable by the current cost rate of these benefits stated as a percentage of covered payroll. At this rate, the current benefit structure is underfunded. The PSA proponents, however, felt that it was unfair simply to assume that additional contributions would be directed to DI without some sort of formal review of the plan. The 1994–96 Advisory Council did not undertake such a review. The net result was that the PSA plan would result in the scaling back of future DI benefit levels. This has been one of the major criticisms of the plan (Ball and Bethell 1998; Aaron and Reischauer 1998).

The baseline projections of the PSA 2000 plan also assume that future DI benefits would be financed at the rate legislated by current law. One way the federal budget surplus could be used would be to infuse excess revenues into the DI trust fund to maintain current-law benefits at current-law tax rates. The trust fund projections that would result if this were done without a tax cut are shown in figure 2.6. Over the projection period, the combined OASDI trust funds would gradually rise from their level of two times current benefits to three times annual benefits by the mid-2030s. They are projected to reach 3.6 times annual benefits by 2050 and to decline at a very slight rate beyond the mid-2050s. At the end of the projection period they would still be at about 3.4 times annual benefit levels. We believe the contention of the proponents of the original PSA proposal that DI be reviewed before revenues are added to it merits consideration.

Taken as a whole, the actuarial projections of this section show that the aggregate finances of the PSA 2000 program are feasible without counting on the dynamic gains from the additional saving and without using the projected federal government budget surpluses. Of course, if the surpluses were dedicated to a reformed Social Security program, they would permit other actions such a series of payroll tax cuts or a very substantial improvement in the finances of the disability program. Naturally, any combination of these two possibilities could be pursued.

2.5 Individual Choice and Individual Risk with Partial Privatization

In this section, we examine the choices and risks that individuals would face under a Social Security reform along the lines of the PSA 2000 plan. The outcomes are calculated under a very limited set of asset choices. We presume that the actual menu of options would be larger than those examined here. The two asset classes we consider are zero-coupon inflation-indexed government bonds and an S&P 500 index fund. We assume that the government would offer a full array of maturities of zero coupon inflation-indexed bonds. This would allow people to purchase bonds with different maturities at different points in their career, each of which matures upon retirement or upon the anticipated withdrawal date. The government or private investment companies could offer a simple program of lifecycle acquisition of inflation-indexed bonds. This would provide participants an extremely safe wealth accumulation vehicle. The other asset, the S&P 500 index fund, is examined here because of the availability of data regarding the returns on the S&P 500. Index funds have the appeal of low asset-management expenses. From a pure diversification point of view, a better offering for the actual implementation of a PSA 2000 plan would be a total market index fund that included the stocks of small capitalization and perhaps foreign companies. The S&P 500 index fund, however, will be used here to gauge the riskiness of stock accumulation in individual accounts.

We examine the outcomes for someone who is twenty-three years old in 2000 and who participates in the PSA 2000 plan for his or her entire career. The individual is assumed to work for forty-five years, retiring in 2045 at the age of sixty-eight. It is assumed that the normal retirement age has advanced to sixty-eight by 2045. The general real wage level is presumed to improve at the rate of 1 percent per year. The real wages of individual workers rise at the rate of 2 percent per year due to the accumulation of seniority and human capital. The inflation-indexed bonds are assumed to yield a real return of 3.8 percent (consistent with the returns on existing inflation-indexed coupon bonds) at all maturities. The gross real returns on the S&P 500 index fund are determined from the actual 1926–97 observations chosen in three-year blocks according to a bootstrap statistical technique. For each forty-five-year career, fifteen dates are chosen between

1926 and 1995 (with replacement, so that the same date can be chosen more than once). From these fifteen dates that each mark the first year of a three-year block of returns, we create a simulated sequence of forty-five years of real gross returns. With this procedure, we generate 10,000 sequences of stock returns for each case examined in the paper. Both stock and bond returns are reduced by 30 basis points per year to account for the costs of managing the individual accounts. This charge for 5 percent accounts is consistent with the recent estimates of Schieber and Shoven (2000), James et al. (2000), and Goldberg and Graetz (2000).

Figure 2.7 shows a simulation of the outcomes that this cohort of 2000–2045 workers would face if they chose to invest all of the money in their individual accounts in zero-coupon inflation-indexed government bonds. The assumed one percent per year growth in average covered wages means that the tier-one benefit becomes \$782.40 per month (in year-2000 dollars) by 2045. Of course, the entire PIA formula is also adjusted for the growth in average real wages. The tier-two benefits are proportional to contributions. The nonlinearity in the graph for people with high average indexed monthly earnings (AIME) is due to the interaction of the ceiling imposed on covered earnings and the fact that the AIME counts only the highest thirty-five years of earnings. Consider someone who has thirty-four years

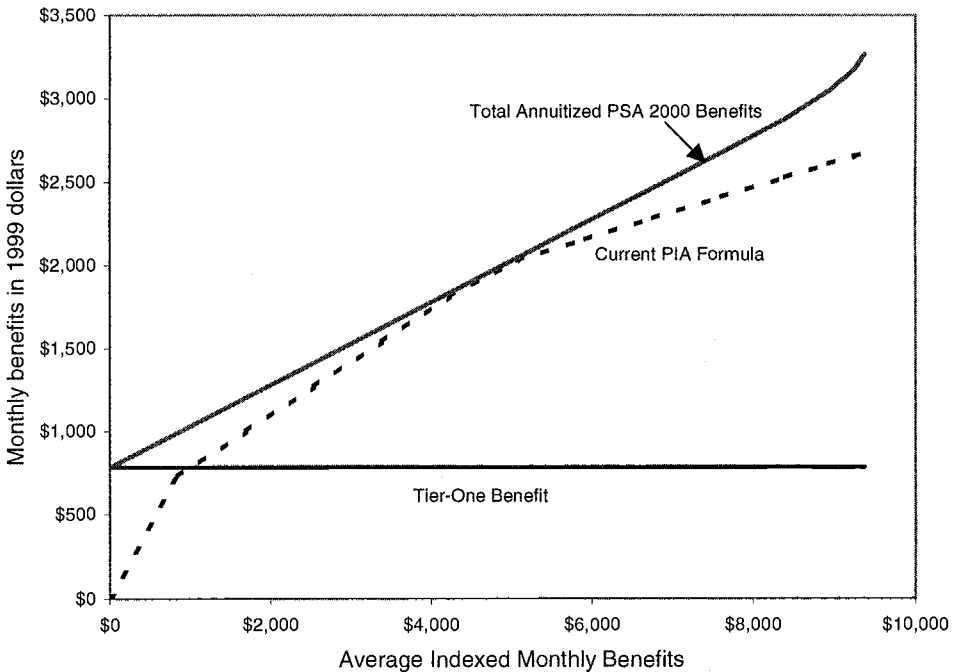


Fig. 2.7 Monthly benefits with 100 percent inflation-indexed bonds

of earnings at or above the cap and someone else who has thirty-five years at or above it. With our assumed smooth forty-five-year earnings histories, these two individuals will have very similar AIMEs. However, the person with thirty-five years at the cap will have eleven years of larger contributions to their tier-two account than will the person with thirty-four cap years (because of the assumed forty-five-year work career). The result is that the PSA 2000 benefits appear slightly convex when charted against AIME.

As can be seen in the figure 2.7, the PSA 2000 program would offer safe benefits at least as high as current benefits for all participants with full-length careers who choose to invest their individual accounts in safe inflation-indexed government bonds and who choose to annuitize their entire accumulation. We did not model the annuitization process in great detail. Instead we assumed a very high gender-blended life expectancy at sixty-eight in 2045 of twenty years and priced the annuities fairly for that life expectancy. In reality, life expectancy is not likely to have progressed that much by 2045. However, the conversion to annuities will not be costless as modeled here. We think that our overall results are reasonable predictions of the likely outcome of annuitized benefits. The results of figure 2.7 are for single individuals. Under the PSA 2000 proposal, the vast majority of married couples would receive benefits as if they were two single individuals.

Presumably most people would invest their tier-two PSA 2000 individual accounts in a diversified portfolio of stocks and bonds rather than in the all-bonds portfolio just examined. Figure 2.8 shows the outcomes for someone who consistently chooses to invest half of his or her individual account money in zero-coupon inflation-indexed bonds and half in the S&P 500 index fund. Note that the average outcome is significantly higher than current benefits for all levels of average indexed monthly earnings. The 25th percentile outcomes are also noticeably better than current benefits. The 5th percentile outcome crosses the current PIA formula at about \$3,250 per month and again at about \$7,000 per month, with both amounts in year-2000 dollars. That means that those whose average indexed annual earnings were between \$42,250 and \$84,000 would have a one in twenty chance of receiving less under the PSA 2000 plan than under current law. The poor, who benefit relatively more from the flat tier-one benefit, would enjoy higher benefits with the PSA 2000 plan with a very high degree of certainty.

Figure 2.9 charts the outcomes for people who invest their entire individual account balances in the S&P 500 index fund. Presumably, such people are less risk averse than most. On average, they do extremely well. For someone retiring in 2045 with an AIME of \$5,000, the mean PSA 2000 outcome would be about 2.5 times current benefits if all of the money had always been invested in stocks and if stock returns are generated by

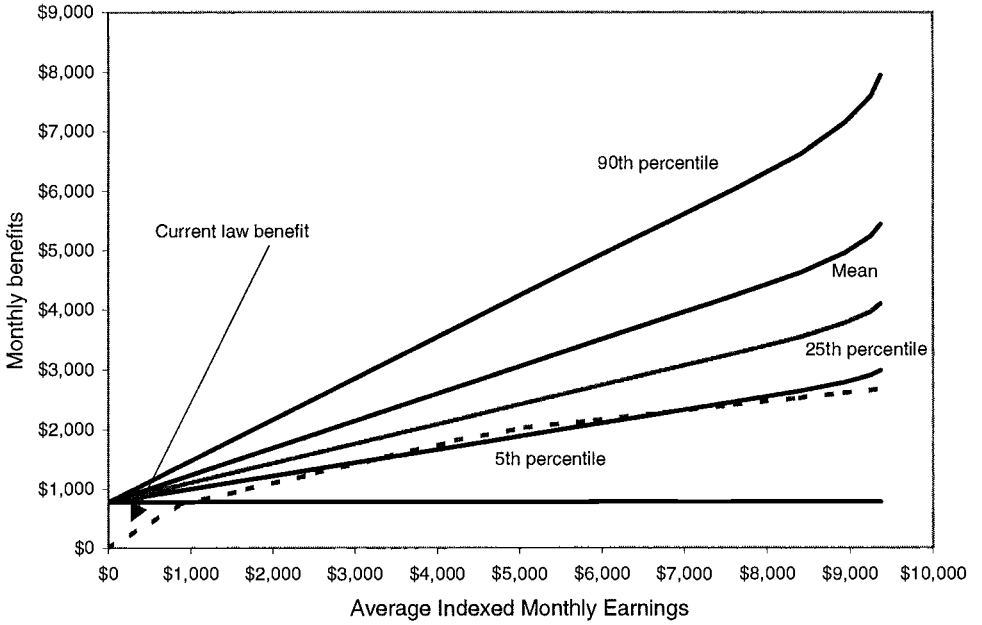


Fig. 2.8 Monthly benefits with 50-50 stocks and inflation-indexed bonds

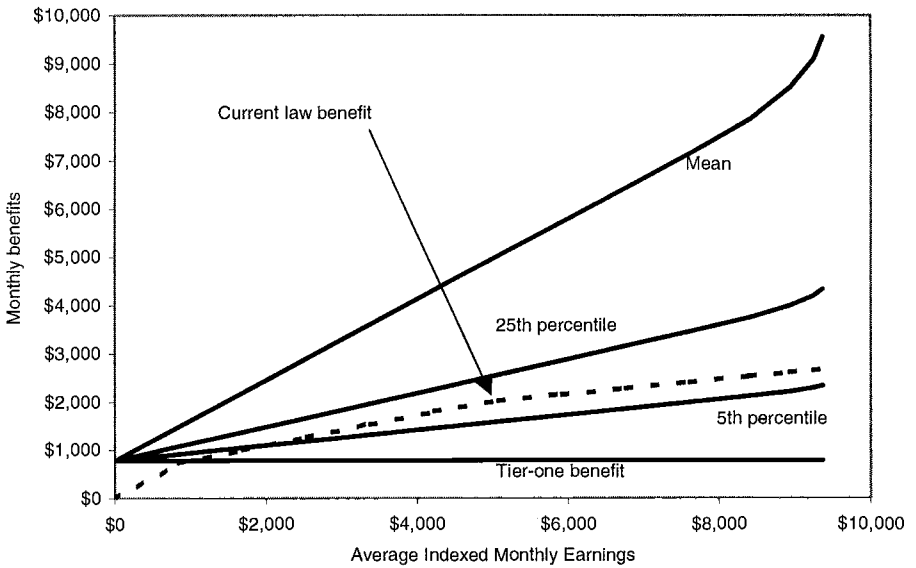


Fig. 2.9 Monthly benefits with 100 percent stocks

the bootstrap procedure just described. However, stocks are quite risky in the sense that the level of benefits under the PSA 2000 plan would be highly uncertain for people who put all of their individual account assets in the stock market. The 90th percentile outcome was so high that we couldn't include it on the chart without compressing the scale to an undesirable degree. The 25th percentile outcome is always at least 25 percent greater than current-law benefits. However, the 5th percentile outcome is as much as 20 percent less than current benefits. That means that there is a one in twenty chance that the PSA 2000 plan would leave an individual with less than 80 percent of current-law benefits if he or she invested 100 percent of the funds in his or her individual account in common stocks. The flat tier-one benefit helps reduce the overall riskiness of the plan however, particularly for low-income individuals. In fact, those whose AIME is less than \$2,000 are better off with the PSA 2000 plan even if they invest all of their funds in stocks and have the bad fortune to end up with the 5th percentile outcome.

So far we have concentrated on hypothetical smooth income paths in evaluating this particular Social Security reform proposal. Of course, people face uncertainty about their labor income as well as about the return on their financial investments. Next, we evaluate how the PSA 2000 plan compares to the present Social Security system for individuals facing labor income uncertainty. The process of real labor income growth is now taken as

$$\omega(t) = 1 + \bar{\omega} + \sigma_u u(t) + \sigma_e [e(t) - e(t - 1)],$$

where $\omega(t)$ is the growth rate of labor income between t and $t + 1$, $\bar{\omega}$ is the average individual wage growth rate (set 1 percent above the aggregate wage growth rate for seniority reasons), and $u(t)$ and $e(t)$ are standard normal random variables (zero mean and a standard deviation of one). σ_u is interpreted as the standard deviation of the permanent shocks on the *level* of labor income, while σ_e is the standard deviation of the transitory shock (again on the level of income). This specification is a simplification of the treatment in Campbell et al. (2000). We set $\bar{\omega}$ at 0.02 and obtain the magnitudes of σ_u and σ_e from Campbell et al. We separately evaluate high school graduates and college graduates. The specification for the σ_u and σ_e pair of parameters is (0.103, 0.272) for high school graduates and (0.130, 0.242) for college graduates. These imply that labor income is actually quite volatile.

Figure 2.10 shows the ratio of total PSA 2000 benefits to current-law benefits for college graduates who would participate in the new plan for their full careers if it were adopted. Figure 2.10 shows this ratio for those who invest solely in inflation-indexed bonds. The results for high school graduates are very similar, so much so that it is not worth showing them

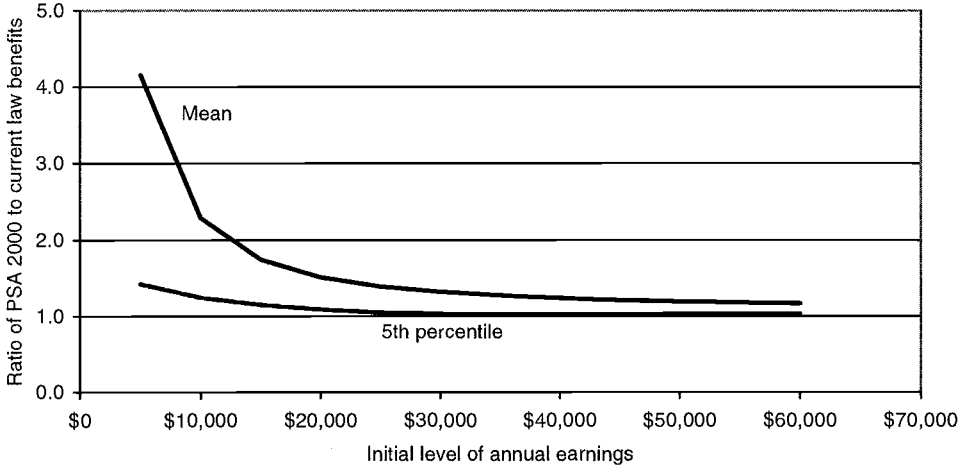


Fig. 2.10 Ratio of PSA 2000 benefits to current-law benefits for college graduates with uncertain labor earnings

separately. What the figure shows is that the benefits of the new program would be at least as great as current benefits with a high degree of certainty if the individual accounts were invested in inflation-indexed bonds.

Figure 2.11 shows the same type of information for college graduates who dedicate half of their contributions to stocks and half to indexed bonds. While this diversified investor can end up with less than current-law benefits, we had to go to the 1st percentile outcome to get this outcome. Investors who choose to invest in 100 percent stocks (not shown in the figure), of course, take more risks. For them, the 5th percentile outcome (in terms of these ratios) can be a 10 percent loss and the 1st percentile outcome is roughly a 20 percent loss relative to current-law benefits.

The final thing we look at in terms of how individuals would fare with the implementation of the PSA 2000 plan is how someone would do if he or she were in mid-career when the plan was adopted. We return to the case of smoothly rising wages and examine the outcome for someone who is forty-five years old in the year 2000 when the plan is hypothetically put into effect. This forty-five-year-old is assumed to work until 2022 when he or she retires at the then-normal retirement age of sixty-seven. This person will receive half of his or her current PIA benefits, half of his or her tier-one flat benefit, and the annuitized proceeds of his or her tier-two account. Figure 2.12 shows the person's outcomes under the reformed Social Security plan and his or her outcomes with current-law benefits. The assumption of this figure is that all of the tier-two investments are inflation-indexed bonds.

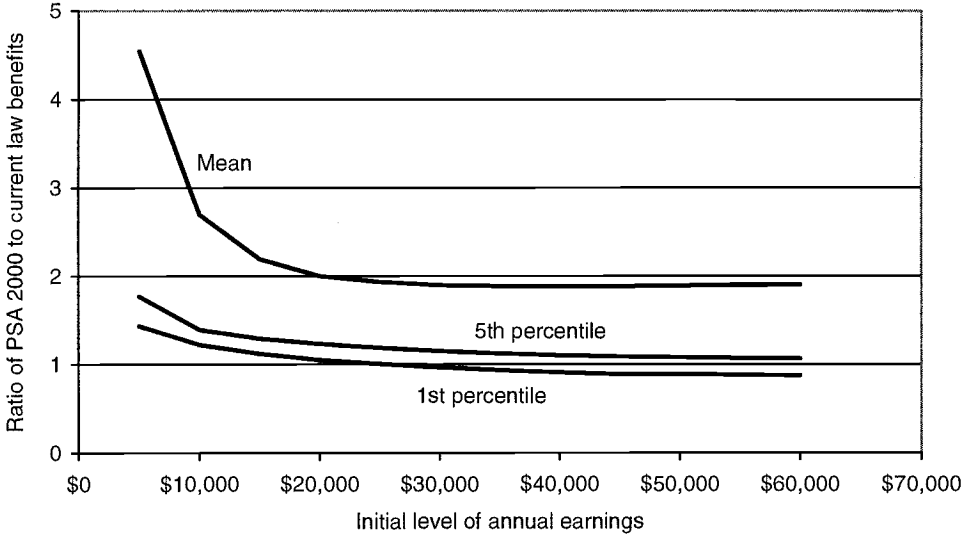


Fig. 2.11 Ratio of PSA 2000 benefits to current-law benefits for 50-50 investors with a college education and uncertain labor earnings

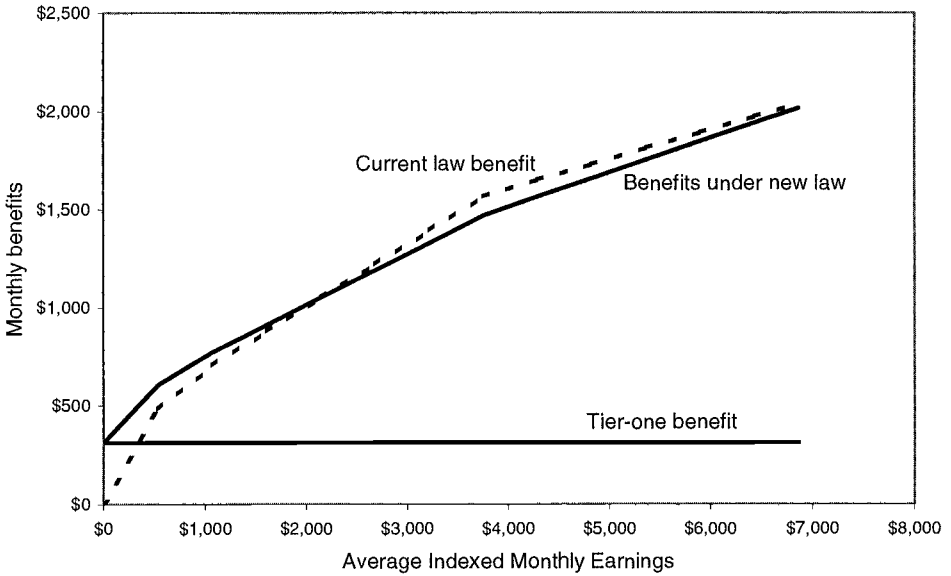


Fig. 2.12 Monthly benefits with 100 percent inflation-indexed bonds for someone aged forty-five

2.5.1 At the Time of the Reform

This person who was in mid-career at the time of the reform may get less under the reformed plan than with the current benefit structure. The reason that the mid-career individual does not do as well as those at the beginning of their careers at the time of the introduction of the new policy is that the contributions from the second half of a career are less valuable at the time of retirement than those from the first half. The transition plan of the PSA 2000 plan could be modified to phase out current benefits more slowly. For instance, this person who was forty-five when the new plan was introduced would be able to match current-law benefits if he or she qualified for 55 percent of current-law benefits rather than the 50 percent specified by the plan. This slower transition would, of course, cost more money; perhaps it is another use for the projected federal government surpluses.

Figure 2.13 shows how this same forty-five-year-old would do if he or she qualified for only 50 percent of current-law benefits and invested his or her tier-two funds 50-50 in stocks and bonds. The dotted line represents current-law benefits (the PIA formula). Also shown are the 90th percentile outcome, the mean outcome, the 25th percentile outcome, and the 5th percentile outcome. Since this person is going to get half of the PIA benefit

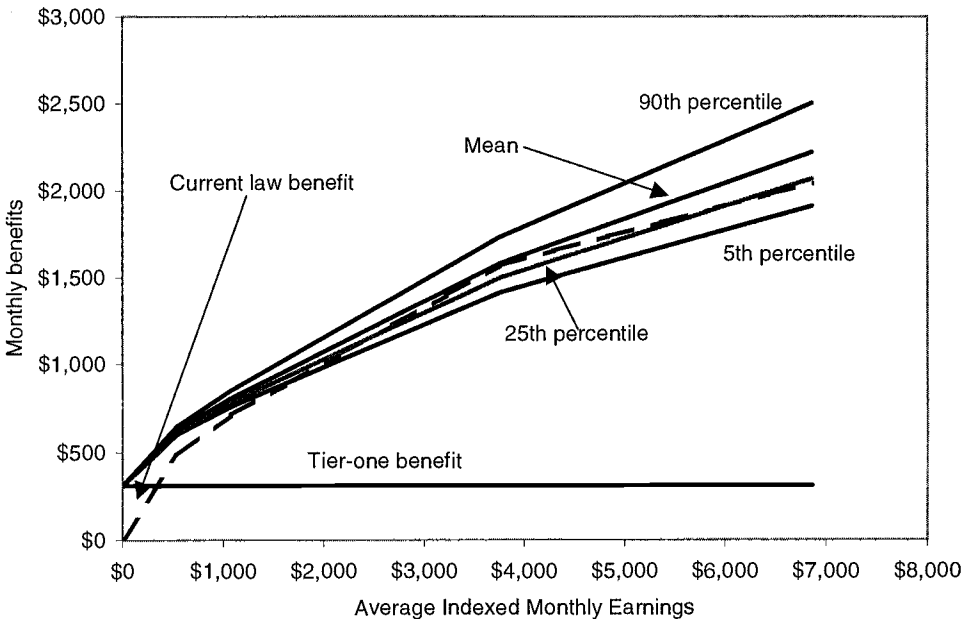


Fig. 2.13 Monthly benefits with 50-50 stocks and inflation-indexed bonds for someone aged forty-five at the time of the reform

Note: Dotted line represents benefits of the present Social Security program.

and half of the full tier-one benefit, the outcome is not as sensitive to financial market outcomes. Both the mean outcome and the 25th percentile outcomes for the individual accounts lead to total benefits closely approximating current-law benefits. The 5th percentile outcome can be approximately 10 percent less than current benefits. Of course, this 50-50 investor would also benefit if the phase-out of current law benefits were slightly slowed to reflect the fact that persons with half of their careers remaining would not be able to accumulate individual accounts half the size of full-career ones.

Our overall interpretation of the results of this section is that the PSA 2000 plan allows risk-averse individuals to retain benefits at least as high as current-law benefits. Those who choose to take the risks inherent in stocks bear some chance of having to live on lower than current-law benefits in retirement. These risks are modest, however, and the poor are significantly protected by the presence of the tier-one benefits.

2.6 Conclusions

The purpose of this paper has been to assess the riskiness of a partial privatization plan and to check how it performs with respect to the set of principles laid out in section 2.2. The main topic has been the risk evaluation. We have described a particular partial privatization plan, one that relies more heavily on individual accounts than do most proposals, and evaluated its overall actuarial soundness and the outcomes that individuals would face if it were adopted. The plan passes the actuarial soundness test and would permit individuals to enjoy safe benefits approximately equal to current-law benefits if U.S. government inflation-indexed bonds were offered and invested in. If participants invested their tier-two accounts in common stocks, they would face a small probability of having significantly less in retirement than current-law benefits. However, these risks are reduced by the presence of the flat tier-one benefits. This first tier is relatively more important for low-income households; who would enjoy benefits at least as great as current benefits with a high degree of certainty.

It is not surprising that the PSA 2000 plan performs well with respect to the principles of section 2.2. That is because these principles provided the design guidelines for the plan in the first place. To summarize briefly, the first-tier defined benefit feature provides an important safety net against poor investment returns and permits the retention of the basic progressive structure of the current program (Principle 1). A primary feature of the program is the mandatory contribution of 2.5 percent of covered payroll. While these additional contributions would be partially offset by actions of individuals, there would certainly be a significant net increase in national saving (Principle 2). The disability and early survivor programs would be retained, and if the same proportion of the projected federal

government surpluses as suggested by the Clinton administration were allocated to the program, there would be enough money to cover the long-run deficit of the disability program (Principle 3). Under all of the scenarios we have examined, the PSA 2000 plan would be in balance or surplus after seventy-five years and would offer the prospects of payroll tax reductions (Principle 4). Most retiring couples would be treated as two single individuals, thereby improving the equity between these participant classes (Principle 5). The tier-two contributions and payouts would be directly connected. In fact, the tax element of payroll deductions would be reduced by the 2.5 percent rebate in the form of a 1:1 match of tier-two contributions (Principle 6). We have examined the risks borne by individuals and judge them to be tolerable. In particular, the amount of risk one bears would be a matter of personal choice. Further, the risks are least for low-income households (Principle 7). We have written elsewhere about administrative costs. Here we note simply that the PSA 2000 plan has relatively low administrative costs partly, because it has relatively large (5 percent) individual accounts (Principle 8). We cannot control when Social Security will be reformed. However, there is nothing in the PSA 2000 plan that would delay implementation seriously.

In this paper, we are not advocating the particulars of the PSA 2000 plan. We are advocating that the riskiness of all serious proposals be evaluated in a manner similar to what we have done here. What is heartening about our findings is that a plan that relies heavily on individual accounts can still be relatively safe for individual participants.

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Comments Steven F. Venti

In the last three years no fewer than a dozen proposals have been offered to resolve the funding problems of the Social Security system. Most of these proposals include privately held individual accounts, although the details vary widely among plans. The Personal Security Account 2000 plan (PSA 2000) is one of the first (derived from the report of the 1994–96 Advisory Council on Social Security), one of the more widely known, and one of the more far-reaching of these proposals. Most of the plans incorporating individual accounts that have been advanced restore long-term balance to the system. All proposals help prefund the system. Many of these plans also increase benefits paid relative to current law in most future states of the world. Other benefits of individual accounts have been touted as well, including promoting personal responsibility, increasing awareness of the need to provide for retirement, and increased national saving and economic performance. Why has the public been so slow to embrace individual account plans?

There are several obstacles to public acceptance. The first is that many of the benefits of a privatized system of personal accounts may also be available through a variety of public sector arrangements. A second obstacle concerns the ability of an individual accounts system to maintain and protect the level of redistribution contained in the present system (I will say a few words about this problem at the end of this comment). A third obstacle, which is the primary focus of this paper, is the perceived risk associated with individual accounts. It is alleged that these accounts ex-

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pose participants to more risk—or at least to risk of a different sort—than the present system does. This aspect of Social Security reform mirrors the ongoing debate between the merits of defined benefit (DB) and defined contribution (DC) pensions in the private sector. How risky are DC-type plans? The goal of this paper is to develop a framework for assessing the consequences of investment risk and to apply this framework to the PSA 2000.

Before turning to this framework, it is useful to highlight a few details of the PSA 2000. Unlike most other individual account proposals, the PSA 2000 fundamentally changes the Social Security system. It is neither an add-on to the existing system nor an alternative way of funding the current benefit structure. After a lengthy forty-year transition period, retirees will receive an inflation-indexed flat benefit and an annuity from an IRA-like account. Like all proposals, the PSA 2000 must somehow pay for transition costs. It does so by effectively raising the tax rate to 14.9 percent, although the authors would argue that the 5 percent of payroll deposited in the PSA is not a tax since the employee retains control over the investment. The remaining 9.9 percent covers existing obligations as they are phased out and the flat benefit that is phased in over the transition period. In the steady-state, the tax rate will be reduced to the level required to fund the flat benefit and a little more than a one-year reserve. Note that the usual transition cost problem—paying for the retirement benefits of two generations—is a less serious problem for the PSA 2000 because it never becomes fully funded.

The evaluation framework involves simulating benefit outcomes for representative individuals with different earnings histories and one of three investment choices: 100 percent indexed bonds, 100 percent equities, and a 50-50 mix. Uncertain asset returns are bootstrapped from historical distributions using three-year blocks. On average, the PSA benefit dominates the current-law benefit at all levels of earnings and for all portfolio choices (more than double in some cases). However, in some states of the world the PSA benefits fall below existing law payouts. For example, a person with average indexed monthly earnings of \$5,000 would have a one in twenty chance of faring worse under the 50-50 PSA. The probability is somewhere in the neighborhood of 10 percent for the 100 percent equity case.

How should we expect most potential recipients to respond to the risks associated with the PSA 2000? The choice between current-law benefits and the PSA 2000 can be summarized as follows: There exists a safe asset that provides a rate of return B . A risky asset with the following distribution of returns is introduced. It yields more than $0.8B$ with a probability of .95, more than B with a probability of .9, more than $1.25B$ with probability .75, and more than $2B$ with a probability of .5. Moreover, losses are bounded from below (at $0.5B$) by the flat benefit. If faced with an all-or-nothing choice, most economists would probably jump at the chance to

buy the risky asset. Yet, as the equity premium has taught us, the behavior of real people is not quite so easy to predict. When faced with the choice between Social Security plans, many people have (or behave as if they have) a zero tolerance for risk. Just the whiff of a bad outcome—benefits below the currently legislated level—is enough to scare them off. If this is so, there are some deeper questions about whether such behavior is fully informed, whether people correctly assess low-probability events, or even whether choices are rational. In any case, it is my sense that perceptions of bad retirement scenarios will remain an obstacle to acceptance of the PSA 2000 (although it is not an issue with some other individual account proposals). The burden is on the authors to educate people about the probability distributions of both good and bad outcomes, and the framework developed here is an important step in that direction.

There are a couple of additional issues that may marginally affect the benefit projections (and these may be addressed in the more detailed account of the PSA in Schieber and Shoven 2000). First, the simulations assume that administrative fees are a modest 30 basis points. This is a reasonable assumption for large indexed accounts. However, during the phase-in period, older cohorts will retire with only a few years of PSA contributions. Given the high fixed costs of servicing accounts, private firms may be reluctant to deal with these persons and, if they do, the costs of servicing these accounts may be quite high relative to the accumulation. Second, the PSA 2000 requires beneficiaries to annuitize one-half of their PSA balances at retirement. Disposition of the other half is at the recipient's discretion. The authors assume that the discretionary component can be annuitized at the same rate as the mandatory component. With the possibility of opt-outs, costless conversion to a fair annuity may be overly optimistic.

In addition to the investment risk addressed above, there are other kinds of risk associated with individual account arrangements. The PSA 2000 reduces the risk that political forces will change future benefit levels. However, unlike the current system, the PSA 2000 allows persons to harm themselves by making bad decisions. Thus some sort of education effort or safeguards are necessary to minimize this kind of risk. The most obvious have already been addressed: The system must be mandatory, preretirement withdrawals must be prohibited, and fund providers must meet some minimum regulations. However, persons can also harm themselves in many other ways: by making bad investment choices, by failing to draw down equity holdings gradually prior to withdrawal or annuitization, by falling for pension scams (as in the United Kingdom). It seems clear that PSA 2000 would need to be accompanied by a massive educational effort after its introduction.

Nor is the PSA 2000 likely to win political favor among persons intent on preserving the redistribution inherent in the existing system. The cur-

rent system is based on a single formula that provides substantial assistance to low earners and a modest “pension” benefit to others. The PSA 2000 decouples the redistributive and nonredistributive components. The social assistance or safety net component is explicit. The pension is explicit. Each is subject to separate political bargaining. The PSA 2000 setup may make it more difficult to protect the tier-one benefit later on. Future decisions—should we increase the “base” or the “supplement”?—may erode the “insurance” component of the program over time. Certainly, when the market is booming and future retirees project high benefits from the tier-two component, there will be political pressure to lower the base.

Putting Social Security back on track will be one of the most important political and economic decisions the country will make in the next few years. The authors should be commended for their innovative long-term solution. There are a number of reasons why the PSA 2000 has not yet been more widely embraced by the public, yet my sense is that many of the objections are based more on perception than reality. Thus, providing as much information to the public as is possible about the distribution of outcomes under alternative reform proposals is critical for reform to be successful. Further analyses along the lines of this paper are a start in this direction.

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