

Changing Progressivity as a Means of Risk Protection in Investment-Based Social Security

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Around the globe, traditional pay-as-you-go Social Security systems are facing financial challenges due to demographic changes. With fertility rates at or below replacement levels in developed countries and life expectancy in retirement projected to continue increasing, the ratio of beneficiaries to workers will rise over the coming decades, increasing annual costs relative to income. The imminent retirement of the Baby Boom generation in many developed countries has sharpened attention on the need for reform.

Over the past twelve years, many analysts have proposed that at least some of the financial shortfalls be eliminated through the prefunding of future benefits, in order to ameliorate the increase in pay-as-you-go tax rates on future generations of workers that would otherwise be required. Prefunding can more readily take place in a system of decentralized Personal Retirement Accounts (PRAs) than in the Social Security Trust Fund, particularly when it is desired to exploit the risk-return tradeoff inherent in the equity premium and to separate the incremental saving due to higher Social Security taxes from the rest of the federal government's budget.

The possibility that Social Security benefits paid from personal accounts would be subject to financial risk due to stock return volatility, in turn, has focused attention on ways limit the risk in investment-based Social Security reform. Concerns focus particularly on low-income beneficiaries, for whom Social Security benefits make up a disproportionate share of their retirement income. Two principal methods have been explored in the recent literature. The first is to offer a guarantee to workers that benefits will not fall below a particular threshold (e.g., 90 percent of scheduled benefits). The second is to follow common financial planning strategies that reduce the portfolio allocation in equities as an individual approaches retirement.

This study considers an alternative approach based on modifications to the traditional benefit to protect low-earning workers while leaving all workers free to choose their own PRA portfolios. Such an approach may prove to be useful, particularly because any restrictions on the portfolio allocations in the PRAs beyond the determination of which investment choices will be offered are likely to be untenable as the accounts become larger and more popular.

The most direct way to make sure that low-earning workers do not fall into poverty in old age is to increase the progressivity of the benefit formula in the scaled-down version of the traditional system that remains after reform. Doing so would lessen the need to provide insurance against possibly low returns in the PRAs, because low-income retirees would depend less on the PRAs to stay out of poverty. To be sure, there have been discussions of progressive reductions in the traditional benefits as part of a plan to close the financial gap while protecting low-earning workers. This paper adds to the literature by

quantifying the effect of such changes to the traditional benefit formula on the need to invest PRAs in equity rather than bonds.

This paper illustrates the link between progressivity and risk using a stylized framework based on simulations of earnings trajectories and portfolio returns. The simulations are based on the projected experience of a cohort of workers corresponding roughly to those born in 1973. To calibrate the simulations, traditional retirement benefits are reduced by 40 percent, an amount comparable to what is projected to be required to restore solvency to the system. The simulations pair reductions in the traditional benefits of this magnitude with PRAs funded by contributions of 2 percent of earnings each year. The main comparisons are between the utility maximizing portfolio allocations to equities across the new configurations of the traditional benefit that are more versus less progressive.

The key finding is that under baseline parameters, the most progressive traditional benefit—a flat benefit independent of earnings—allows the bottom 30 percent of the earnings distribution to achieve a higher expected utility than under the proportional reductions to the current benefit formula even with no investments in equity. An additional 30 percent of earners can lessen their equity investments without loss of welfare relative to those available under the scaled-back current formula. Under more realistic and less extreme changes to the traditional benefit, about half of the equity risk can be eliminated for the lowest earnings decile, and some equity risk can be eliminated for the bottom six deciles. The optimal allocation to equities in the PRA is not particularly sensitive to the progressivity of the reductions in the traditional benefits—in most simulations, the share in equities increases slightly for low earners and decreases slightly for higher earners with more progressive reductions in the traditional benefits.

The full working paper is available on our website, www.nber.org/programs/ag/rrc/books&papers.html as paper NB06-02.

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