

Reducing Social Security PRA Risk at the Individual Level: Lifecycle Funds and No-Loss Strategies

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In a Social Security system with a personal retirement account (PRA) component, retirement savers would have to decide how to allocate their PRA portfolios across a broad range of asset classes and financial products. Asset allocation decisions have important consequences for retirement wealth accumulation, since they affect the expenses of investing as well as the risk of low returns. The goal of this study is to assess the relative risk associated with alternative asset allocation strategies in PRAs. It also offers insight on the consequences of different asset allocation rules in current private-sector defined contribution (DC) plans, such as 401(k) plans.

The approach used in the study is to simulate the distribution of balances in PRA retirement saving accounts under various assumptions about the asset allocation strategies that investors may choose. In addition to a range of age-invariant strategies, such as an all-bond and an all-stock strategy, we consider several different “lifecycle funds” that automatically alter the investor’s mix of assets as he or she ages. These funds offer investors a higher portfolio allocation to stocks at the beginning of a working career than as they approach retirement, but in many cases charge higher expense ratios. We also consider a “no lose” allocation strategy for retirement saving, in which households purchase enough riskless bonds at each age to ensure that they will have no less than their nominal contribution when they reach retirement age, and then invest the balance in corporate stock. This strategy combines a riskless floor for retirement income with some upside investment potential.

Our results suggest several conclusions about the effect of investment strategy on retirement wealth. The expected utility associated with different PRA asset allocation strategies, and the ranking of these strategies, is very sensitive to four assumptions: the expected return on corporate stock, the relative risk aversion of the investing household, the amount of non-PRA wealth that the household will have available at retirement, and the expenses associated with the given investment strategies. At modest levels of risk aversion, or when the household has access to substantial non-PRA wealth at retirement, the historical pattern of stock and bond returns implies that the expected utility of an all-stock investment allocation rule is greater than that from any of the more conservative strategies.

When we reduce the expected return on stocks by 300 basis points relative to historical values, however, other strategies dominate the all-equity allocation for investors with high levels of relative risk aversion. For a risk aversion parameter of 2, the expected utility associated with investing in an optimally chosen mix of stocks and inflation-indexed government bonds (also known as TIPS), or in an inexpensive lifecycle product, is highest. For a risk aversion parameter of 4, the expected utility associated with an optimally chosen fixed portfolio of stocks and TIPS or an optimally chosen linear lifecycle product is highest and is substantially higher than investing 100% in stocks. The actual lifecycle products

available to investors often generate lower certainty equivalents than our derived optima, but this is partly related to the expense ratios charged by those products.

When households are calibrated to have non-PRA wealth, 100% stocks is optimal for a risk aversion parameter of 2, and is not far from optimal even when equity returns are reduced by 300 basis points. For a risk aversion parameter of 4, an optimally chosen fixed portfolio of stocks and TIPS, or an lifecycle product obtained at low cost, performs the best.

The analysis underscores the fact that avoiding high expense ratios is critical for households saving for retirement in a PRA. Many of the available lifecycle products have higher expense ratios than could be achieved by the household simply holding a stock index fund and some TIPS (or bonds) and either holding them in fixed proportions throughout their lifetime or rebalancing towards TIPS (or bonds) as they get older. Households who are unable to do this on their own will not do terribly in lifecycle funds but they will lose money relative to what they could get if they executed very simple investing strategies on their own.

The full working paper is available on our website, www.nber.org/programs/ag/rrc/books&papers.html as paper NB06-07.

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