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Made poorer by choice: Worker outcomes in social security vs. private retirement accounts ☆

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ABSTRACT

Can the freedom to choose how retirement funds are invested leave workers worse off? Via simulation, we document that choice in stock v. bond allocation and type of equity investments in private accounts leads to lower utility and greater risk of income shortfalls relative to private accounts without choice. We also compare private account outcomes to currently promised Social Security benefits to demonstrate that a representative worker (an average wage earner) benefits more from private-account alternatives—with or without choice—than do most workers. Thus, representative worker outcome should not be used to assess population-wide benefits of private account alternatives.

1. Introduction

In 2013, 37 million retired workers received an average annual Social Security benefit of about $15,000. Among those over age 65, 26% or more than 9 million retirees rely on Social Security for more than 90% of their income.[1]

Throughout most of Social Security's history, payroll tax inflows have exceeded benefit outflows. In 2010, benefits exceeded payroll taxes, and this funding deficit is expected to worsen in the coming decades absent reform. Many strategies have been proposed in response to Social Security's pending shortfall. These range from increases in the payroll tax and retirement age to privatization of Social Security. In 2001, the President's Commission to Strengthen Social Security proposed three models for Social Security reform which all incorporated voluntary personal accounts. Possible Social Security reform repeatedly emerges during major election cycles, along with recommendations featuring some form of private retirement accounts (PRAs).

In addition to suggesting that PRAs would earn high returns, some proponents argue they benefit workers by allowing them to choose how their retirement savings are invested. This is consistent with standard finance theory, where having more choices can only improve potential investment outcomes. However, to realize this improvement, investors must choose investments wisely. In the context of PRAs, there are two relevant issues. First, as discussed below, there is evidence that many investors do not choose portfolio allocations that maximize their utility. Second, evidence suggests that many investors fail to effectively diversify within their equity portfolios (Barber and Odean, 2000; Calvet et al., 2009; Goetzmann and Kumar, 2008; Gaudeker, 2015). If these tendencies extend to PRAs, outcomes for retirees become more dispersed, and the likelihood of shortfalls relative to currently-promised Social Security benefits increases. Allocation choice and equity choice impart decision risk that materially affects the risk of worker outcomes in a PRA system.

We analyze the effects of decision risk on workers' outcomes under a PRA system. We simulate retirement benefits for a representative cohort of 3655 workers born in the US in 1979. The

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[1] Income of the Population 55 or Older, 2010, SSA Publication No. 13-11871, Table 9.B6, p. 309. Among those in the bottom quintile of net worth (including home ownership), the present value of Social Security benefits represents 82% of total wealth (Brady et al. (2013), Figure 16, p.35).

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wages, demographic characteristics, and mortality of our cohort are generated by CORSIM, a dynamic micro-simulation model of the United States population.[2] We compare results from a baseline setting without investment choice to settings in which workers can choose their allocation to stocks and bonds, to equity investments within their stock portfolio, or both.

Two main results emerge from this analysis. First, analyses based on the outcomes of a representative worker are misleading. Several studies of Social Security focus on the welfare of a representative worker (e.g., Auerbach and Kotlikoff (1987), Feldstein and Ranguelova (2001)). Our utility analysis indicates PRAs are much more appealing to the representative worker than to a worker who does not yet know his future income. Second, investment choice decreases worker utility in a PRA system. Over reasonable levels of risk aversion, allowing either allocation or equity choice leaves most workers preferring Social Security. Allowing allocation choice in PRAs increases the probability of an income shortfall relative to Social Security benefits, as some workers will allocate a relatively small amount of their investment portfolio to stocks. Allowing equity choice increases the probability of an income shortfall relative to Social Security benefits, as some workers will fail to effectively diversify.

Though we study outcomes of PRA systems as alternatives to Social Security, our results regarding equity and allocation choice generalize to self-directed retirement accounts intended to provide for the basic living needs in retirement. With greater allocation choice and greater equity choice, more workers are likely to fall short of their minimum goals than if they invest in a balanced portfolio of equity and bond index funds.

2. Institutional background and related literature

2.1. Our Benchmark: the current social security program

Social Security provides guaranteed retirement benefits to those who contribute to the system during their working years. While the majority of Social Security benefits go to retirees, the disabled and family members of beneficiaries also receive benefits. The system is often referred to as a defined-benefit pay-as-you-go (PayGo) system as current taxes are used to pay benefits to current retirees.

Social Security faces a funding shortfall as the result of being set up as an unfunded pay-as-you-go system that delivered about $14 trillion of net transfers (in 2014 present value dollars) to people born before 1937. (See Geanakoplos et al. (1999) for an in depth discussion of the implications of this unfunded liability for returns in a privatized system.) If Social Security were privatized, taxes would need to be levied to pay this liability. In this paper, we ignore Social Securities' projected shortfall as well as the analogous costs of paying this unfunded liability in a transition to a PRA system.

We treat both our Social Security benchmark and the PRA plans as self-funding for the cohort we study. We make Social Security self-funding by setting the Social Security tax rate to 8.8%. In our simulations, the 8.8% tax rate is sufficient to guarantee the aggregate cohort Social Security payout assuming the savings earn the equivalent of US five-year government bond rates.

2.2. Private retirement accounts (PRAs)

Private retirement accounts (PRAs) have been proposed as alternatives to Social Security. These proposals do not address the funding shortfalls discussed above. Instead, they emphasize individual ownership and responsibility and allow individuals to choose how retirement assets are invested.

While many privatization reform plans initially restrict investment choice, restrictions often give way to more choice over time. For example, Australia legislation to adopt a PRA (the Superannuation Guarantee) was passed in 1992. When first introduced, employees had very limited choices available (Fear and Pace, 2009). Over time, the choices available to employees have expanded, an expansion accelerated by the passage of the Superannuation Legislation Amendment (Choice of Fund) Act in 2004. Workers invest through a superannuation fund, often referred to as a super fund. In 2011, there were hundreds of super funds. Each super fund may offer workers a wide variety of investment options (one fund offered 2700). The investment options offered by a super fund have few restrictions and can include mutual funds, individual stocks, hedge funds, private equity, and property trusts (to name a few).

The experience in 401(k) retirement plans in the US is also informative. Brown et al. (2007) document the number of options available to workers has increased over time. In addition, the new options tend to be actively managed equity funds that charge higher fees and earn lower returns. More recently, brokerage windows, which allow investors to direct 401(k) assets to brokerage accounts and purchase individual equities, have become increasingly popular. Aon Hewitt Inc. (2013) reports the percentage of plans that offer brokerage windows has increased from 12% in 2001 to 40% in 2013.

The anticipated benefits of personal accounts include direct ownership (including heritability) and higher expected returns from investing in equities and other securities. Several studies (for example, Diamond and Geanakoplos, 2003; Modigliani et al., 2003) point out the returns and risks from investing in equities could be incorporated into Social Security without adding to the administrative costs of managing many individual personal accounts.

Prior studies simulate outcomes from a PRA system. However, we add more detailed assumptions regarding risks and expected returns faced by workers in their forced savings accounts. For example, the Bush Commission's projections assume that all personal accounts are invested in a 50/50 portfolio of equities and bonds that earn a constant annual real rate of return of 4.6%; a constant return assumption is clearly unrealistic when workers invest in risky assets (particularly stocks).

Feldstein and Liebman (2002) consider the distributional aspects of Social Security by considering worker-level outcomes, but do not model variation in market outcomes or risks arising from workers' different investment choices. They conclude that virtually all demographic groups benefit from a shift to PRAs. They assume a constant (i.e., risk-free) annual after cost logarithmic real portfolio return of 5.5% on PRA investments, which is close to the historic returns on a 60/40 stock/bond portfolio. However, they do not model variation in the returns earned on these risky investments across years or across households.

Feldstein and Ranguelova (2001) analyze outcomes of a representative worker who invests in a PRA and conclude the representative worker generally fares well under PRAs. They assume that personal accounts are invested in a 60/40 portfolio of equities and bonds, which earns a stochastic annual real return of 6.5%.[3] The

[2] CORSIM was developed by Steven Caldwell at Cornell University. The model was purchased by the U.S. Social Security Administration, which adapted it for internal use under the name POLISIM. The model was also adapted for use by the Canadian and Swedish governments (see Caldwell, 1996; Caldwell and Morrison, 2000, and http://www.strategicforecasting.com/corsim/index.html).

[3] Feldstein and Ranguelova (2001) assume a mean annual real log return of 5.5% on a 60/40 stock/bond portfolio (with a standard deviation of 12.5%), which corresponds to a mean level real return of approximately $6.5\% = e^{(5.5\% + \frac{(12.5)^2}{2})} - 1$. Our main results differ from theirs because they ignore worker-level outcomes focusing only on a representative worker and, we believe, they overestimate the market risk premium by using historical averages.

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