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The Winter 2016 issue of *The Journal of Retirement* includes articles on a variety of issues. Four articles are devoted to investing for retirement, but there are also articles on applying default settings to the distribution stage of retirement savings plans, the relationship between the demographics of employer-provided plans and plan design, the impact of employer-provided financial education on major retirement decisions (e.g., when to claim Social Security), and a study of the pension system of the U.S. military.

The current dominance of 401(k) and other defined contribution (DC) plans and the declining role of defined benefit (DB) plans in the U.S. private sector have led to concerns that plan members may not be saving enough or investing their balances wisely. These concerns have helped inspire the development of automatic default settings, like automatic enrollment, qualified default investment alternatives, and automatic escalation of contribution rates. In "Defaulting Retirement Distributions out of Defined-Contribution Plans: *A Role for Managed-Payout Target-Date Portfolios*," Richard Fullmer argues that default settings can play a valuable role at the distribution or payout phase. He proposes a bundled approach, where plan participants who have been defaulted into a target–date fund (TDF) will automatically start to receive distributions at a specified retirement date, like age 65. He also notes that a number of different rules exist to determine the pattern of distributions. He explains that the investor would not be locked into a particular distribution timing or pattern. She could, for example, simply opt out of the initial distributions, or switch her assets to a TDF of a later vintage, which would delay the start of distributions. The author argues that well-conceived default settings at the distribution stage will enhance retirement security.

Plan sponsors have an obvious interest in ensuring that plan participants will be able to enjoy a satisfactory level of income in retirement. In "Variation of Retirement Income from 401(k) Plan Sponsors' Target-Date Choices?" Youngkyun Park uses simulation modeling to demonstrate how what he terms the success ratio—the percentage of simulations in which a targeted replacement ratio is met or exceeded—can vary with both plan demographics and the structure of the plan, and specifically with the maximum contribution rate. His model is based on a dataset of 958 plans and 1.5 million participants as of end-2007. For the purposes of his analysis he divides plans into nine groups—three participant tenure classes (short, mid,

and long), and three participant income classes (low, middle, and higher). He experiments with five qualified automatic contribution arrangements (QACAs) with maximum rates varying from 6% to 10%. Participants are assumed to invest in three different types of TDFs, with conservative, moderate, and aggressive equity glide paths.

Park's simulations produce some interesting results. For example, conservative and moderate glide paths generate higher success rates than the aggressive glide path when the targeted replacement rate is comparatively low, but lower success rates at higher replacement rates. In addition, success rates for different demographic groups can vary even with the same equity glide path, and the low-income short-tenure group experiences a greater variation of success rates than either the middle-income and mid-tenure group or the high-income and long-tenure group.

In general, the right choice of QACA (i.e., the right choice of the top contribution rate) can substantially increase retirement income, and make it less dependent on the choice of TDF. However, the maximum contribution rate that can increase retirement income for one group can decrease it for another. If a rate of 6% is chosen, for example, and most plan members are already contributing more than that, their contributions could decline. Park's findings underscore the importance of tailoring a plan's design to the characteristics of the workforce.

How rapidly a retirement nest egg will be depleted with a given withdrawal rate depends on the average rate of return to the portfolio. However, as W.V. Harlow and Keith Brown emphasize in "Improving the Outlook for a Successful Retirement: *A Case for Using Downside Hedging*," it also depends on the sequence of returns. They illustrate the importance of returns sequence with a dramatic example in which a portfolio with the same average rate of return over the planning period but with negative return years concentrated at the beginning of the period is depleted much earlier than it would be if positive return years were frontloaded instead.

The authors propose a downside hedging (DH) strategy, and focus on two particular variants of such a strategy: a costless collar approach, where downside risk is addressed by buying a put option using the proceeds of the sale of a call option, and a pure downside risk protection strategy where the portfolio is protected by a put, but without a call. Two additional examples illustrate the potential effectiveness of either of these strategies in avoiding early depletion.

The authors develop their analysis using Monte Carlo simulation (so they do not rely on examples assuming a particular string of returns) and taking account of the likelihood that the investor dies during retirement. This analysis calculates the present value of the future stream of income net of withdrawals for each simulation. For a particular investment strategy, these simulations are used to calculate the probability of ruin (i.e., complete depletion before the investor dies), the expected shortfall, and the semi-deviation (the variance of negative results, when future net income falls below the initial balance).

Simulations of the unprotected portfolio (which are carried out using various assumed rates of return and volatility) show a huge variation in possible outcomes. The same simulations with a costless collar have a much narrower distribution. Downside risk is greatly reduced, and in particular, the probability of ruin at low to moderate withdrawal rates is much reduced. However, adopting the hedging strategy also means that the investor gives up the possibility of very high returns. The protective put strategy gives similar results, broadly speaking. Interestingly, at high withdrawal rates, the probability of ruin for the hedged strategies exceeds that of the traditional portfolio. The authors conclude that if DH-type funds develop, sequence of returns risk could be greatly mitigated.

The issue of what is an appropriate equity glide path in TDFs has been hotly debated. In "A Profitable Dividend Yield Strategy for Retirement Portfolios," Wai Mun Fong addresses another important issue: the composition of the equity component of the portfolio. He contends that an equity portfolio that invests in firms with high gross profits to asset (GPA) ratios and high dividend yields has outperformed the general market and held up better during market declines. The theoretical rationale for his approach can be derived from the clean surplus accounting framework, in which the expected return of a stock varies with expected earnings. It may also be derived from the dividend discount model, where stock value is determined by the discounted value of the future stream of dividends.

The article explains how a set of stocks with both high GPA ratios and high dividends can be derived from a broad universe of stocks. This portfolio is tested by simulating its performance and comparing it to the performance of a broad market portfolio. These two different stock portfolios

are part of a portfolio of a retiree that also holds short and intermediate term bonds. The retiree's portfolio at age 65 is assumed to range from $200,000 to $400,000, which must support annual spending (over and above the spending financed by Social Security) of $20,000. The assumptions underlying the author's modeling are further described in the article.

The article's basic conclusion is that shortfall risk is much lower with GPA/high dividend stocks than with the market portfolio. For example, with starting wealth of $300,000 and an equity allocation of 40%, that strategy reduces shortfall risk from 20% to 1%. End-period wealth is also much higher. Fong addresses the basic issue of whether the superior performance of GPA/high dividend stocks can be expected to persist in the future, and concludes that there is reason to believe that it will.

One simple and well-known strategy for achieving a sustainable income throughout retirement was popularized by W.P. Bengen. The goal of this approach is to maintain a withdrawal that is constant in real terms, so that the initial withdrawal is indexed to inflation. The initial withdrawal rate is determined by portfolio simulations subject to the provision that the withdrawal can be sustained for some predetermined number of years, like 30, with a specified probability, like 85%.

This strategy is inflexible in the face of unusually strong or weak markets, since the amount of the withdrawal is fixed in real terms. Reducing the rate of withdrawal to reduce the probability of exhausting the nest egg runs the risk of leaving a large amount of capital unspent. The strategy is comparatively simple, however, and most of the time the real value of the income it generates can be maintained over the target period.

In "Mean-Variance Analysis in Post-Retirement Planning," Ganlin Xu and Thomas Anichini compare the 4% rule, as it has come to be called, with a strategy they call the self-funded variable annuity strategy (SVA strategy). Under the SVA strategy, each year the retiree determines her spending level as equivalent to the income she could theoretically obtain by purchasing an annuity (but without actually purchasing one). In a declining market, the SVA strategy requires a reduction in the withdrawal rate, because the income an annuity would buy would decline. However, although withdrawals under the SVA strategy can decline substantially, total resource exhaustion can never take place. Similarly, the increased withdrawals triggered by a strong market reduce the build-up of capital. The 4% rule entails lower average spending and little variability, while the SVA strategy entails higher average spending and higher variability.

The authors explain informally how an investor could calculate the ratio of income per dollar of annuity premium (the SVA payment factor, or SPF) under an SVA strategy (a more rigorous derivation is presented in an appendix), and how to choose the synthetic rate of return to the annuity that would generate this ratio. They illustrate how the risk of a given shortfall of actual from targeted income depends on the initial assumed rate of return to the annuity and the share of equity in the portfolio. They also simulate the risk of total failure under the 4% rule. If the probability of this failure is sufficiently high, a mixed strategy (an SVA combined with a 4% rule) could be appealing. With this in mind, they plot the average spending-variability trade-off of different combinations of the 4% rule and the SVA.

The authors initially assume a fixed planning period, but then consider the implications of introducing uncertain longevity. They find that a retiree who assumes a planning period as long as 25 years, but ignores longevity risk, ends up overstating sustainable expenditure. Investing in a real annuity and an SVA can substantially reduce this risk.

The risks of uncertain returns to investment and longevity risk are commonly considered to be the major risks to a secure retirement. However, a third risk, substantial but not always accorded the attention it deserves, is the risk of unexpectedly large health and long-term care expenditures. "Withdrawal Capacity in the Face of Expected and Unexpected Health and Aged-Care Expenses During Retirement," by Michael Drew, Adam Walk, and Jason West, is an ambitious study that incorporates the risk of unpredictably large health-care expenses in a model of optimal withdrawals from a portfolio at retirement. The article addresses the Australian experiences and uses Australian investment data, but its approach is clearly applicable to the United States and other countries. After a review of the relationship between age and health and aged-care (long-term care) expenses, the authors present their model. The basic idea is that investors choose between five combinations of stocks, bonds, and cash, ranging from very high to low risk. Three different dates of death—80, 90, and 100—are assumed, and an optimal rate of withdrawal that reduces the probability of ruin to 5% is calculated for each. Health-care costs fixed at $80,000 are assumed to be incurred randomly in

a lump sum over the retirement period (the analysis begins with a 50-year-old woman with savings at that point of $250,000 and 15 years to go until retirement). Interested readers should consult the article for details.

A basic conclusion of the modeling is that the probability of ruin declines the later in retirement that health-care costs are incurred. Similarly, the longer the retirement period, the less the probability of ruin. Asset allocation does not have a marked effect on the probability of ruin, provided the investor takes account of the likelihood of incurring health-care expenses. When these expenses are ignored, however, the probability of ruin bounces up, and the strategy with the greatest risk is actually the low-risk allocation. If health-care costs are incurred early in retirement, the low-risk strategy has little potential for recovery. The article ends with an interesting discussion of dynamic life-cycle (DLC) strategies (when asset allocation depends on the portfolio's performance and is not static). The authors conclude that DLC strategies outperform a static conservative strategy.

A low degree of financial literacy can have serious, even disastrous, consequences for personal finances by fostering ill-advised financial decisions. This is especially true of financial planning for retirement, where some of the consequences of bad decisions may not become apparent for many years. An increasing number of firms, especially large firms, offer retirement planning seminars to their older employees as they approach retirement. The effectiveness of these seminars and similar programs is therefore not merely of academic interest. In "Golden Years or Financial Fears? *How Plans Change after Retirement Seminars*," Steven Allen, Robert Clark, Jen Maki, and Melinda Sandler Morrill report on detailed surveys of the gains in knowledge among employees of five large U.S. companies based on questionnaires that tested general financial knowledge, and knowledge of key features of Social Security and participants' company plans. The tests were administered in 2008–2009 before a program of seminars and again after the program to employees aged approximately 50 to 65. These programs, which varied from company to company, emphasized key features of Social Security and the company pension. The article describes this survey experiment in some detail.

The average pre-seminar score of 6.1 out of 10 questions increased to 7.5 post-seminar, which is a significant increase in knowledge. Increases tended to be greater the lower the initial score, while participants with some college education enjoyed a bigger increase than participants with high school or less, which widened the pre-existing gap between the two groups. The authors conclude that their findings provide substantial statistical support for the effectiveness of workplace financial education in raising the financial literacy of older workers. This is especially true of those older workers whose initial level of financial literacy is low.

Knowledge is one thing; the ability to apply that knowledge is another. To take a homely example, a good knowledge of the basic principles of nutrition does not guarantee that a person will make healthy eating choices. The authors test the proposition that increased knowledge will lead to better choices indirectly, by observing whether there was a relationship between gains in knowledge and changes in intentions regarding such key decisions as when to claim Social Security or when to retire, the assumption being that changes in expressed intentions could be attributed to greater knowledge.

The post-seminar test asked participants if their planned retirement and Social Security claiming ages would change, as well as their plans for working post-retirement. More than one in four participants altered their planned retirement and social security claiming ages, with most planning a delay. To get a better idea of the impact of increased financial knowledge on decisions, the authors conduct a probit analysis that relates changes in planned retirement dates and Social Security claiming to changes in test scores. To mention just two key results, they find a significant relationship between greater knowledge of Social Security/Medicare eligibility and intentions to delay retirement. They also find a similar relationship between a greater knowledge of Social Security eligibility and intentions to delay Social Security claiming. Ideally, we might want to be able to follow survey participants as they age to see whether intentions, good or bad, were expressed in action. However, the careful research presented in this article does suggest that well-designed programs of financial education can lead to right actions.

Finally, the U.S. military has traditionally been covered by a DB plan, which, measured by the size of its unfunded liabilities, is apparently the largest in the nation. Its design and benefits have a bearing not only on the retirement security and enlistment incentives of military personnel, but also on the federal government's fiscal policy. In "Modernizing Pension Eligibility for the U.S. Military," John Turner and

Bruce Klein analyze the basic structure of the plan, noting recent reforms, and appraise its effectiveness as a recruiting tool, the consistency of its treatment of officers and enlisted men, and its cost.

Perhaps the most striking features of the plan are its vesting and service requirements. Although cliff vesting at 20 years applies, there is no minimum age requirement for personnel on active duty. Assuming that officers enlist in their early 20s, they can receive a pension in their early 40s equal to 50% percent of basic pay, and an estimated 33% of total compensation. The military in most other countries, including those with a degree of commitment to the military that the authors judge similar to that of the United States,

cannot draw a pension at so early an age. About half of all officers, but only one in five enlisted men, ultimately draws a pension, which must compromise the retirement security of many of them.

The authors make the case for earlier vesting and a higher retirement age. A reform along these lines can in principle both reduce the cost of the plan and make its treatment of enlisted personnel more equitable. The authors argue that such a reform need not have significant effects on recruitment or retention.

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