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The interest in annuities as a way of ensuring adequate post-retirement lifetime income continues to grow. This issue of JOR features three articles on annuities: The first describes the recent proposal from the Department of Labor aimed at ensuring that members of defined contribution (DC) plans receive useful information on their projected lifetime income, and suggests some improvements to the list of requirements that plan sponsors would face. The second article presents a model of demand for deferred annuities, and the third analyzes the pros and cons of delaying the purchase of immediate annuities.

The five articles that make up the rest of this issue cover a wide range of topics. Two of them deal with the macro as well as the micro aspects of Social Security. One surveys the state of financial literacy in the United States and abroad, and one analyzes in considerable detail the impact of the Great Recession on employment trends and retirement decisions of Baby Boomers. The final article in this issue analyzes the results of a survey of English pensioners' attitudes toward the adequacy of their pensions, retirement preparation, and related topics. The system of retirement finances in the United Kingdom bears sufficient similarities to our own and this study affords useful insights for retirement security on both sides of the Atlantic. The JOR does not publish many comparative studies, but we welcome articles on other countries, especially when they provide lessons for the United States.

The dominant role now played by 401(k) plans and other DC plans in the provision of income in retirement has raised concerns as to whether plan members will be able to navigate the decumulation phase of retirement finance successfully. Ensuring that a retiree does not run through his nest egg or scrimp unnecessarily is no easy task. With a view to helping retirees avoid these two perils, the Department of Labor has issued what is known as an "advance notice of proposed rulemaking" that will require plan sponsors to provide members with estimates of the lifetime income stream they can expect at retirement. In "Illustrating Retirement Income for Defined Contribution Plan Participants: *A Critical Analysis of the Department of Labor Proposal*," Mark Warshawsky explains the proposal and proposes some modifications to it. Briefly, the proposal calls for the conversion of the account balance to a lifetime income stream expressed in nominal terms. The income generated by a joint and contingent 50% annuity is to be provided if the member is married. Because of its emphasis on the importance of lifetime retirement

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income, the DOL chose not to require plan sponsors to show the income from a program of systematic withdrawals. The DOL's proposal stipulates the use of the 10-year constant maturity Treasury rate, and a mortality table for which the IRS would be responsible. The account balances of plan participants who have not yet reached retirement age would be projected to that age.

Mark's article is a rigorous but constructive critique of the DOL's proposal, and he offers an approach that could be easily adopted by plan sponsors. He commends the DOL for the step it has taken, but argues that its proposal can be improved by using an inflation-indexed annuity; by showing the income from a joint and 67% to survivor annuity (an annuity which pays 67% of the original income to the survivor, not just the surviving spouse, of a couple) for both married and unmarried workers; by displaying income on an annual rather than a monthly basis, which is less familiar to most; by relying on so-called gender distinct annuity rates rather than gender-neutral rates (unless the plan provides a gender-neutral annuity). The author regresses the TIPS yield against the 10-year Treasury yield over the short period when TIPS were consistently issued, and uses that relationship to simulate what yields on TIPS would have been in the post-1919 period. This allows him to estimate a range of inflation-indexed annuity rates for single life as well as joint survivor annuities. By comparing the annuity rates his model generates with market rates in the period from 2013 to mid-2014, Mark is able to estimate a load factor.

Deferred income annuities (DIAs) do not begin paying income until as many as 20 years after the payment of the premium. They provide what is known as "tail insurance" for people who fear that they will outlive their resources. Because payments start late and cease upon the death of the annuitant, a DIA's cost compares or at least appears to compare very favorably with the cost of an immediate annuity. The market for DIAs is tiny, but given that the Treasury has approved their inclusion in a target-date fund as a default investment, it is likely to grow.

In "A Glide Path for Target Date Fund Annuitization," Moshe Milevsky, Huaxiong Huang, and Virginia Young describe an algorithm (a set of rules) that can be used to compute both the timing and the quantity of purchase of DIAs for TDFs. Their model is driven by the payout yield (if \$10,000 buys a 65-year-old male a DIA starting in 20 years' time that will pay \$3,600 per year, the payout

yield is 36%); the long-term annuity interest rate; the long-term payout yield, currently assumed to exceed the current yield; the current mortality rate for the relevant age group; the volatility of annuity payout yields, which should vary with the deferral period; the speed with which the current annuity payout yield is expected to converge to the long-term yield; and the degree of risk aversion of the potential purchaser. The greater that degree, the more longevity insurance is preferred. The authors assume that a set amount of wealth in an investment account is available to purchase DIAs. Their model is recursive, in that the existing stock of DIAs in a portfolio influences current demand.

The model this article presents is necessarily complex, given the nature of the decision and the authors' rigorous approach to modeling. Nonetheless, it has operational implications: in particular, that the acquisition of deferred annuities should not be determined by some naive rule based on the number of years to retirement, but should instead respond to changes in current payout yields. Finally, the article's method for investment in DIAs may satisfy the U.S Treasury's requirement for inclusion of annuities in target date funds.

In "Dynamic Choice and Optimal Annuitization," David Blanchett tackles the issue of demand for annuities from a different angle. His article is concerned with the demand for immediate, not deferred annuities. Studies of the demand for IAs have usually assumed that the annuitant chooses the share of her nest egg to be invested in annuities upon retirement, and does not postpone the choice or add to the value of annuity holdings as retirement progresses. These studies also tended to assume that the annuitant chooses a fixed annual rate of withdrawal (e.g., 4% of wealth) upon retirement, without subsequently adjusting it.

David's model relaxes both of these rather restrictive assumptions. The would-be annuitant is assumed to maximize a utility function with varying degrees of risk aversion and bequest preference. The non-annuitized part of her portfolio is assumed to be invested 60%/40% in stocks and bonds. The withdrawal rate is allowed to vary with the value of the portfolio and the share of assets that have been annuitized. The model assumes that annuities will be purchased whenever the ratio of the annuitant's assets to assumed future expenditure needs falls below one.

The most striking result of the model's simulations is the drop in the share of wealth that is annuitized upon retirement when a strategy of dynamic annuitization is adopted. When

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the annuitant may choose to annuitize part of her wealth at retirement, but no other time, she will want to ensure that she has adequate longevity insurance. When she can wait and annuitize in several installments, she can wait to see how her other investments perform without giving up the option of annuitizing later. In addition, as she ages, the conditional return of an annuity investment increases. The adoption of a dynamic withdrawal strategy lowers the annuitization rate upon retirement for both dynamic and static annuitization strategies. Interestingly, while there are substantial gains in certainty equivalent wealth from the adoption of a dynamic withdrawal strategy even with static annuitization, little is gained from a combined dynamic strategy.

“Dynamic Choice and Annuitization” sheds light on what economists call the annuity puzzle—Americans’ apparent lack of interest in annuities despite the valuable longevity insurance they provide. Depending on one’s preference for a sustainable income and the strength of a bequest motive, it may make sense to avoid annuitizing assets upon retirement, and instead adopt a wait-and-see policy.

One of the typical features of a pay-as-you-go public pension system is that it treats different generations or age cohorts differently. The early participants in the system enjoy an implicit rate of return to their contributions which can be very high. The discount rate that equalizes the payroll tax contributions and benefits of early participants is well above the rate of interest on long-term government bonds.

This implicit rate of return declines with time, and workers who have just started paying taxes and earning credits for a future pension enjoy a much lower rate of return. When their future benefits and tax payments are discounted by the long-term government rate, benefits can fall short of tax payments, making the net benefit negative. The study by Syl Schieber in the Winter 2015 issue of the JOR finds that the net benefit for most medium and higher income workers (apart from single-earner couples) born in 1949 is negative, although the net benefit for low earners remains positive.

In “Social Security’s Individual Value and Aggregate Burden,” Liqun Liu, Andy Rettenmaier, and Thomas Saving take this analysis a step further by adjusting the discount rate used to value future payroll tax payments to take account of their uncertainty. The importance of taking account of this uncertainty can be illustrated by a simple example: Suppose that a particular age cohort can expect to pay taxes of either \$100 or \$110 one year from now, with equal probability.

The expected value of this future payment is \$105 (halfway between \$100 and \$110), and the standard approach would be to discount \$105 by the government long-term bond rate. Assuming for the sake of simplicity that the rate is 5%, the present discounted value of the future tax payment is \$100. The question that arises, however, is whether a participant would be indifferent to the choice between a certain obligation of \$105 one year from now, and an obligation that could be either \$100 or \$110. The answer that the authors give is that the typical person would not be indifferent. The typical person is risk averse, and would rather trade the uncertain payment for a certain payment that is higher than the expected value of \$105. How much higher would depend on how risk averse she is.

This is a simplified account of the approach the authors use to value the net benefits of the Social Security contract to current participants. For workers who turned 21 in 2014, they find that the net value of Social Security for very low earners is positive for all degrees of risk aversion they test. For virtually everyone else, Social Security is found to be a bad deal. Its terms are most unfavorable for high-income workers who are particularly risk averse. In principle, this finding means that most workers would be willing to pay a tax to opt out of the system.

The authors apply a similar method to assessing the overall financial position (the “aggregate burden”) of Social Security. They calculate measures of both the closed-group (current members, whose numbers are not replaced as they die) and the open-group obligation. Adjusting payroll tax rates so that the Social Security budget is balanced in each subsequent year lowers the 100-year closed-group unfunded obligation (the current generation’s net benefit) from \$28.9 trillion to \$23.9 trillion. Adjusting tax rates to eliminate the imbalance in future years does not erase the closed-group obligation, because future generations shoulder most of the burden of balancing the system’s cash flows.

The final question this demanding article addresses is whether the taxes the younger generation would pay to opt out of Social Security are enough to finance the unfunded obligation of the older closed group and thus achieve a transition to self-funded savings that would pay for itself. The answer to this question again depends on the degree of risk aversion of the younger generation. If that degree is sufficiently high, the answer is yes.

One issue that this comprehensive study does not explore is the insurance value of the current system, and

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its value as a means of averting short-sighted decisions by retirement savers. This role is not fully reflected in the monetary value of Social Security's benefits.

A topic of continuing interest is the best age at which to claim Social Security's benefits. This problem can be approached in more than one way. In "Minimizing the Risk of Opportunity Loss in the Social Security Claiming Decision," Brian Alleva proposes an approach that is based on estimating the expected present value of the future stream of benefits using a standard life table and an assumed rate of discount. The author explains his own choice of discount rate among various possibilities. He then shows how expected present values would be calculated, for each possible claim age, which can range from 62 to 70 years. (The claimant is assumed to be 62.) The claim age at which the expected value of benefits is maximized is the optimal claim age.

The author explains that for each possible age of death, from 62 to 120, and for each claim age, what he calls an "opportunity loss" can be calculated: the difference between the realized present value at that claim age and the present value that would have obtained at the optimal claiming age for that particular age of death. That in turn yields an expected opportunity loss, which is the present value for a given claim age of the opportunity loss at each possible age of death weighted by the probability of death at that age. The author demonstrates that the expected opportunity loss is minimized when the expected present value is maximized.

The article finds that the benefit maximizing claim age is 62 for any death age up to 80 years and seven months. The optimal claiming age for males is 66 years and 11 months, and for females 67 years and 10 months. The article's approach can also be applied to claimants who are mainly concerned about outliving their resources and not about dying young. This can be accomplished by confining the calculations to ages between, say, 85 and 120, rather than the full age range of 62 to 120. Limiting the range of dates of death in this way pushes the optimal claiming age close to its maximum of 70. If a potential claimant is more concerned about her income early in retirement, the calculations could be confined to an age range such as 62 to 85.

The loss of a job by an older American can have very serious consequences for her retirement security. The savings that older workers count on to make their retirement more secure can be decimated. Although the unemployment rate of older Americans is comparatively low, once

a job is lost it can prove very hard to find another. In "Retirement and the Great Recession," Alan Gustman, Thomas Steinmeier, and Nahid Tabatabai explore the impact of the Great Recession on employment and retirement decisions of the early Baby Boomer generation (ages 53 to 58 in 2006). Using data from the Health and Retirement Study (HRS) they compare changes in employment and retirement status for the early Baby Boomers over the period 2006 to 2012 with the changes experienced by the War Baby cohort over the period 2000 to 2006 and the first HRS wave over the period of 1994 to 2000 at similar ages.

In general, the authors find that there is no obvious trend across the three cohorts in changes over the six-year period in the share of survey participants who declare themselves not retired, partially retired, or working more than 35 hours per week. Similarly, the differences across cohorts in the change in participants reducing work, working the same number of hours, and increasing work are not large. As might be expected, however, the increase in the share of Baby Boomers reporting unemployment is higher than it is for the other cohorts. One quite marked difference is the increase among Baby Boomers in the share of those who experience a layoff who nonetheless do not describe themselves as fully retired, which substantially exceeds the increase for the other two cohorts. The authors suggest that this increase might reflect a reluctance by those who have been laid off to admit to being permanently out of the labor force.

Perhaps unsurprisingly, the probability that Baby Boomers would be laid off jumped from 5.1% in 2008 to 11.5% in 2010 before receding to 5.2% in 2012. A statistical analysis finds that job tenure and educational level have a significant impact on the probability of being laid off. However, the impact of the Great Recession on the incidence of layoffs is particularly marked. The transitory nature of the increase in layoffs in 2010 suggests that future layoff probabilities will not have been affected. Similarly, although the Great Recession increased the average duration of layoffs, its effects do not appear to have been long-lasting. Finally, the authors find that a layoff during the Great Recession does not appear to have depressed wages at a subsequent job.

In sum, it appears that the most obvious impact of the Great Recession has been to incite laid-off workers to maintain or try to maintain some connection with the labor force, however tenuous.

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Financial literacy is a sine qua non for prudent financial decision making at all ages. In “Financial Literacy and Economic Outcomes: *Evidence and Policy Implications*,” Olivia Mitchell and Annamaria Lusardi offer a concise but very readable summary of the state of financial literacy here and abroad, discuss measures to improve it, and discuss the link between knowledge and behavior. They report on surveys they devised with simple test questions to assess the state of financial literacy in the United States and other industrial countries. The United States does not fare well in these tests, although financial literacy elsewhere is also lower than it should be. The authors find that even well-educated people do not score particularly well, while men tend to score better than women. Perhaps unsurprisingly, financial literacy improves with age.

Olivia and Anna explain convincingly the crucial importance of financial know-how. In particular, increased financial savvy makes retirement planning more likely, and gives retirees a more sophisticated understanding of lifetime income streams. To the argument that wealth increases financial literacy rather than the other way round, the authors report on studies establishing the link between knowledge and behavior. Finally, the authors make the case for focusing efforts to improve financial education on schools and workplaces, and stress the link between financial regulation and financial literacy. These efforts could pay dividends throughout a household’s life.

The systems of retirement finance in the United States and the United Kingdom are alike in some important ways. The role of the defined benefit (DB) pension in the private sector has declined in both countries, precipitously in the case of the United Kingdom, and DC pensions have taken up the slack. Account holders are no longer required to annuitize most of their account balances in the

United Kingdom, and no such requirement exists for 401(k) plans in the United States. One key difference between the two countries is the role of the public pension. The United Kingdom has a flat-rate public pension, whereas in the United States, the Social Security retirement pension increases until average income is above \$115,000.

In “Financial Planning and the Reality and Requirements of Retirees with Private Pensions,” Liam Foster reports on and analyzes the results of a survey of 200 U.K. residents ages 60 to 75 with a second-tier pension of some size conducted in 2011. The survey aimed to assess the adequacy of private pensions, and the timeliness of retirement planning and related issues. Before turning to the survey results, Liam offers the reader a very useful survey of previous work on these issues.

The survey found that the majority of respondents retired earlier than expected. Surveys of the American scene have had similar findings. There was definite evidence of a lack of financial planning, although this phenomenon was more prevalent among older and less well-off respondents. More than 40% expressed a need for more money, implying that simply participating in an employer-provided pension at least once during working life does not guarantee a comfortable income in retirement. The U.K. government’s efforts to encourage auto-enrollment might improve this situation, although the move to DC pensions in and of itself makes opting out easier than it is under a DB plan. Liam argues that the system has become more complex, making choices regarding annuitization or drawdowns more difficult. The enhanced personal responsibility entailed by recent reforms has its downside.

**George A. (Sandy) Mackenzie**  
**Editor**

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**Dave Blide**

**Publisher, Institutional Investor Journals, [dblide@ijournals.com](mailto:dblide@ijournals.com)**