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Retirement planning has traditionally concerned itself with saving and investing during working life; that is, ensuring that a household's wealth at retirement would be sufficient to allow it to maintain the standard of living in retirement that it had previously enjoyed. In recent years, more emphasis has been placed on the decumulation phase of retirement financing and the composition of a household's portfolio during retirement. Traditionally the goal of the accumulation phase has been framed as achieving the highest rate of return possible for a given, presumably not excessive, amount of risk—usually measured as the standard deviation of the portfolio's return. In "A Portfolio Approach to Retirement Income Security," the lead article in this issue of *The Journal of Retirement*, Wade Pfau, Joe Tomlinson, and Steve Vernon propose an approach to the decumulation phase similar to the mean-variance approach applied to accumulation. Specifically they propose that retiring households hold a portfolio of what the authors term retirement income generators (RIGs), which could include annuities, a systematic withdrawal program, and a guaranteed minimum withdrawal benefit. This portfolio should be chosen to maximize a measure of income subject to a measure of risk that is relevant to retirees.

The authors note that no one RIG can satisfy all of a retiree's goals, which could include generating income she can't outlive, maximizing the amount of post-retirement income, and minimizing the chances that post-retirement income will fall below some minimum acceptable level. Hence, diversification among RIGs is necessary and desirable.

The authors conducted simulations of a model with both uncertain returns and uncertain lifetimes in four phases. Phase 1 involved testing combinations of RIGs (including Social Security) with retirement beginning at 65. Phase 2 allowed for a delay in claiming Social Security to age 70. Phase 3 tested deferred-income annuities (DIAs), and Phase 4 tested strategies that could be employed in the run-up to retirement. Simulations were run on three different hypothetical retirees or retired couples.

The authors constructed two efficient frontiers, similar to the efficient frontier of return and risk used in asset allocation. In the first, return was a measure of average annual real post-retirement income at the median value of projected income, and risk was the average annual amount of income shortfall relative to an immediate annuity at the 10th percentile of the simulations. In the second efficient frontier, the same measure of income was used, but the measure of risk was related to the average amount of accessible savings in the post-retirement period under the median projection—the more savings, the less risk.

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It is not possible to give a complete summary of the authors' findings, and what follows will emphasize only the most important of them. With the first efficient frontier, a 100% investment in single-premium immediate annuities stands out as providing the highest income with the least amount of risk. Partial annuitization strategies also perform well. Systematic Withdrawal Programs (SWPs) produce less income at higher risk, but unlike annuities they produce some accessible wealth. Interestingly, SWPs with a high withdrawal rate (7%) produced more income and were less risky than SWPs with a 3% withdrawal rate. The combination of poorly performing financial markets and the conservative withdrawal rate would produce lower income. In the case of the second efficiency frontier, the RIGs on the frontier are more varied.

Phase 2 appears superior to Phase 1, mainly because the return to delaying Social Security claiming is more than actuarially fair, given recent gains in longevity and declines in interest rates. The DIA featured in Phase 3 apparently increases income, but the authors note that managing the transition to reliance on a DIA late in life may not be simple. Finally, in Phase 4 the purchase of a DIA at age 55 offered more protection than the other strategies tested. The authors conclude with a suggested strategy that would rely on RIGs that offer a guaranteed lifetime income like Social Security and pensions and also provide for drawdowns from remaining capital. They also note the potential role of reverse mortgages and the need to provide for long-term care expenses, which can be very high.

It may seem odd for an article in *The Journal of Retirement* to address the subject of climate change. "Migrating with Black Swans: *Climate Risk and Retirement Planning*" by John Mitchell does exactly that. His article combines a compact primer on the causes and effects of climate change with a discussion of the possible effects of climate change on particular industries and the implications for retirement planning.

Although the effects of climate change could be massive, they play themselves out over a very long time, and their timing and impact on the economy are almost impossible to predict—hence the "black swans" of the title. The author focuses on four black swans: land ice melt, sea level, water resources, and stranded assets.

The consequences of rising sea levels are incalculable, given that much of the world's economic infrastructure is within a few feet of sea level. One possible response might be to make huge investments to save these assets, which might well prove to be a futile effort. Before rising seas take their toll, rising insurance rates might lead to the abandonment of the affected properties. Given the slow pace and highly uncertain impact of these developments, the short-term focus of political systems might stymie a comprehensive response. Nonetheless, given the great risk of any of the black swans, it makes sense to plan for increased temperatures and the other effects of climate change.

In the energy sector, it is clear that fossil fuel power plants and oil and gas extraction are particularly vulnerable. Industries that would benefit from climate change include the agricultural and chemical industries, construction materials, and pharmaceuticals. Airlines and industrials in general are vulnerable.

Retirees and their advisors should regularly review the potential impact of climate change on various industries and scan portfolios for the presence of stranded asset risk. The author suggests that only publicly traded and liquid equities and inflation-protected securities are likely to avoid the deep risk associated with climate change. Investment in less-liquid assets should be confined to companies that recognize and manage climate risk. In his conclusion the author enjoins retirement planners to stay informed, educate their clients, and study the ways in which climate change could affect rates of return and the risk of different assets, while also advocating for better reporting of climate risk.

A perennial dilemma facing retirees is how to achieve a steady and adequate income. Speaking somewhat broadly, there are two solutions to the problem: Adopt a policy of systematic withdrawals from available capital, or buy an immediate annuity. The difficulty with the first solution is that it may require frequent adjustments of the rate of withdrawal in the face of fluctuations in the value of the retiree's remaining capital to avoid its complete exhaustion. The main problem with the second solution is its lack of popularity. Convincing most American retirees to invest in immediate annuities would be a near-vertical uphill battle.

In "Proposal for an Innovative Security for Retirees," Gowri Shankar proposes an innovative

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solution that combines the flexibility of access to capital of the first of the two solutions mentioned earlier with the steady income of the second. Specifically, he proposes the A-TIP (Annuitized Treasury Inflation-Protected Security), which would be a 20- to 25-year period certain indexed annuity, backed by a laddered portfolio of TIPS. The A-TIPS could be traded if its holder needed extra money, although its value would decline over time as the number of remaining payouts declined.

A period certain annuity is not intended to handle longevity risk, the risk a retiree lives so long she will run out of money. Shankar addresses this issue by proposing that retirees split their available capital into two parts: one to buy an A-TIP, the other to buy a deferred-income annuity, which begins payment at an advanced age like 80 or 85, and pays for the rest of life. One issue to be faced is that the DIAs now available on the market are not indexed. Protecting against an expected spike in inflation once the DIA begins to pay might require setting aside a fund that could be used to top up the DIA. This well-presented and thought-provoking article includes a brief discussion of the tax implications for the income from an A-TIP.

It is a truism that no investment strategy, however sophisticated, will allow you to achieve your financial goals if you do not save. That said, if the new normal in rates of return falls short of the past, the saving rate that was previously adequate will no longer be so. In “How Much Should DC Savers Worry about Expected Returns?” Antti Ilmanen, Matthew Rauseo, and Liza Truax explore the consequences for retirement savers of a decline in rates of return to stocks and bonds from the average rates of the past four decades. Specifically, they run a series of scenarios in which they assume savers target a replacement rate of 75% and invest their portfolios 60% in equities and 40% in bonds.¹ In the base-case scenario, the portfolio’s rate of return is assumed to be fixed at 6.5%, and the saving rate needed to achieve the 75% replacement rate is 6%. In subsequent scenarios, the rate of return is lowered successively by 1 percentage point. The key point here is that the effects of these returns on the saving rate is not linear; the reduction in the rate of return to 5.5% raises required saving to 8%, the reduction to 4.5% raises it to 11%, and the reduction to 3.5% raises it to 15%. The authors argue that savers are

probably now living in a world of diminished returns, implying that they need to save more.

The authors then present the results of a more sophisticated simulation exercise, which assumes stochastic rates of return and a glide path rather than a constant 60/40 portfolio. With the historical return assumptions, the median investor has to save 8%, and 12% if he is unlucky. With a return of 3.5%, the median investor has to save 15%, and 20% if he is unlucky. The authors have some comfort to offer the typical saver, who may blanch at these numbers; they suggest a number of alternative investment options. Nonetheless, if a 6.5% rate of return on a 60/40 portfolio is a thing of the past, higher rates of saving will be in everyone’s future.

In “Global Asset Allocation in Retirement: *Buffet’s Advice and a Simple Twist*,” Javier Estrada assesses the merits of maintaining a highly aggressive portfolio through retirement. Specifically, he compares the performance of a 90/10 portfolio over 86 overlapping periods beginning in 1900 in 21 countries, including the United States, with seven other static (i.e., fixed) strategies ranging from 100% stocks to 30% stocks and 70% bonds. (The 90/10 strategy was inspired by the recommendation Warren Buffet made to the trustee of his wife’s bequest.)

The author assesses the risk of each strategy he considers in two different ways: the proportion of the 86 overlapping periods in which the retiree runs out of money (a withdrawal rate of 4% is assumed initially), and the average amount of wealth remaining in the lower tail of the distribution. Upside potential is assessed in various ways. The portfolio is rebalanced after an annual withdrawal is made at the beginning of the year.

It turns out that the most aggressive allocations have the lowest failure rate, and the highest average bequest in the bottom 5th percentile of market performance. Although aggressive strategies have greater variance than less aggressive strategies, they enable higher bequests in periods of poorly performing financial markets. The author ends with a report on the performance of a dynamic strategy, where the role of stocks in financing withdrawals depends on the portfolio’s performance in a recent period (five years) compared with its long-term performance. He finds that this approach has a marginally higher failure rate, but provides somewhat higher upside potential.

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The financial troubles of a number of state and municipal employee pension plans have received a lot of attention in recent years. In fact, there is good reason to believe that the finances of public employee pension plans are in worse shape than is generally believed. In “State and Local Public Pension Finances and Reform Proposals: *Are Lump-Sum Payout Offerings a Solution?*” Mark Warshawsky and Ross Marchand provide a comprehensive overview of public plan finances, explain the divergent views regarding their basic financial condition, and review the legal framework that determines the extent to which their terms can be modified. After a review of two other reform proposals, they present their own.

The assessment of a public plan’s finances depends greatly on the choice of discount rate applied to a plan’s liabilities (expected future pension payments). Under the guidelines of the Government Accounting Standards Board (GASB), public plans are allowed to use expected investment returns as a discount rate. Private plans are expected to use a low-risk bond rate, a choice that financial economists maintain is the correct one for both public and private plans. One study the authors cite finds that choosing the Treasury rate as the discount rate is estimated to increase the present value of plan liabilities by \$1.3 trillion to \$4.4 trillion, compared with \$2 trillion in assets. Another study uses a higher discount rate but finds that several large plans will run out of funds within a decade.

For a reform of a public pension plan to have a legal basis, the law must allow state governments to change the terms and parameters of the plan; for example, by reducing or eliminating a cost of living adjustment. The authors find that reform is generally either difficult or nearly impossible. The pension plan is found to be comparatively easier to alter in only six states.

The authors’ proposal needs to be viewed in the context of a financially difficult environment in which reform is often difficult. Their proposal has two elements: improved plan reporting and communication of a summary annual report to participants, and allowing plan sponsors to offer lump sums to plan participants in exchange for their pension rights. They propose a rule that would set the payout equal to the present value of benefits accrued to date reduced by 100% minus the

plan’s funded ratio plus 5 percentage points. So if the expected payout had a present value of \$300,000 and the funded ratio was 45%, the lump-sum payout on offer would be \$150,000. This deal would be more attractive the worse the plan’s finances. There is evidence that people tend to discount income streams at relatively high rates, which suggests that the proposal might interest many plan members. It would of course be important that the proposal not be seen as capitalizing on people’s shortsightedness. The authors address a number of objections to their plan but argue that in current circumstances it can play a role in improving the finances of state pension plans and work better than more conventional approaches, particularly those that rely on government bailouts.

Social Security, it is well known, will need to be reformed before many years have passed if the trust fund is not to run dry. Many different proposals for reform, usually combining measures that would affect both expenditures and revenues, have been advanced. The political difficulties inherent in making any fundamental changes to an institution that has been an integral part of American life since its enactment by the Roosevelt Administration in the 1930s have prevented a major reform. In “Social Security Old-Age Benefits in Four OECD Countries: *Policy Lessons for the United States*,” John Turner and David Rajnes survey and analyze reforms in Canada, Germany, Sweden, and the United Kingdom to see what lessons might be drawn for reform in the United States. The authors briefly explain the structure of public pension systems, noting that there may be as many as five pillars (see Exhibit 1). They then offer thumbnail sketches of each of the four systems. The United States lacks the mandatory fully funded system that the other four countries have. The authors then address four policy goals for U.S. Social Security, and review the measures the four other countries have taken to implement them. These are: achieving fiscal sustainability, balancing the trade-off between affordability and benefit adequacy, making the distribution of benefits across different classes of beneficiaries fairer, and reducing political risk.

Fiscal sustainability in the four countries was enhanced by raising revenues, investing trust funds in financial markets, cutting benefits for future retirees,

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cutting benefits for current retirees, and raising early and normal retirement ages. For example, all four countries raised contribution rates, and some have raised the ceiling on the contribution base (currently \$118,500 in the United States). Automatic adjustment mechanisms have been used to cut benefits in Germany and Sweden. Changes in indexation have been employed to the same end. In Germany, the early retirement age has remained at 63, but increases in the statutory retirement age have lowered the early retirement pension. Measures have also been implemented to encourage the postponement of retirement. All four countries have taken measures that assist low-income workers, workers with child-care responsibilities, and others in need of assistance.

Automatic adjustment mechanisms have been introduced in Canada, Germany, and Sweden to reduce the risks that political pressures will upend efforts to maintain solvency. In Sweden and Germany, the desire not to raise the payroll tax rate or not to raise it excessively helped inspire the creation of automatic adjustment mechanisms that focus on benefit cuts. In Sweden, benefits are indexed to life expectancy. In Germany, the growth rate of benefits is inversely related to sustainability. The authors note that the governments of both Germany and Sweden intervened to override the automatic adjustment mechanism because the result would have been politically unpopular. This illustrates the fact that making the adjustments truly automatic may not be possible, at least not all the time.

The article's final section highlights the quantitative importance of U.S. reform proposals that have a counterpart in at least one of the four countries. Canada was successful in raising the contribution rate, and a

similar proposal for the United States would raise the payroll tax gradually to 18%. The impact of a U.S. proposal on Social Security's balance has been "scored" as a percentage of the aggregate payroll. A payroll tax increase of this order would have a major impact on Social Security finances because it would affect all current workers and because the tax would be increased by almost 50%.

The authors' analysis makes clear that there is a very broad menu of measures that could be adopted in the United States. As they put it "Reforms to old-age social security systems in the four countries—Canada, Germany, Sweden, and the United Kingdom—are varied and present an alternative universe for policymakers in the United States." They also note that declining replacement rates have been an important tool of policy in all four countries, even if such a policy may not be sustainable politically.

Finally, I invite JOR readers to take a look at my review of *How America Supports Retirement: Challenging the Conventional Wisdom on Who Benefits*, by Pete Brady of ICI. This book is a spirited defense of the current system of tax deferral for contributions to retirement savings plans.

ENDNOTE

¹Other assumptions are income growth of 2% per year, with 30 percentage points of retirement income coming from Social Security and sources other than savings.

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