

Russell Research

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Retirement sustainability for defined contribution plan participants

Defined benefit pensions have largely been replaced by defined contribution (DC) plans. So, to a greater extent than their parents' generation, retiring baby boomers will need to turn their nest eggs into streams of income to support their retirement. Investors are concerned; data from the AARP indicate that many boomers fear running out of money more than they fear death.¹

Retirees will be looking to their defined contribution plans for continuing advice. We look at how DC plan sponsors can help retiring participants get the most from their nest eggs and avoid the dreaded scenario of running out of money in retirement.

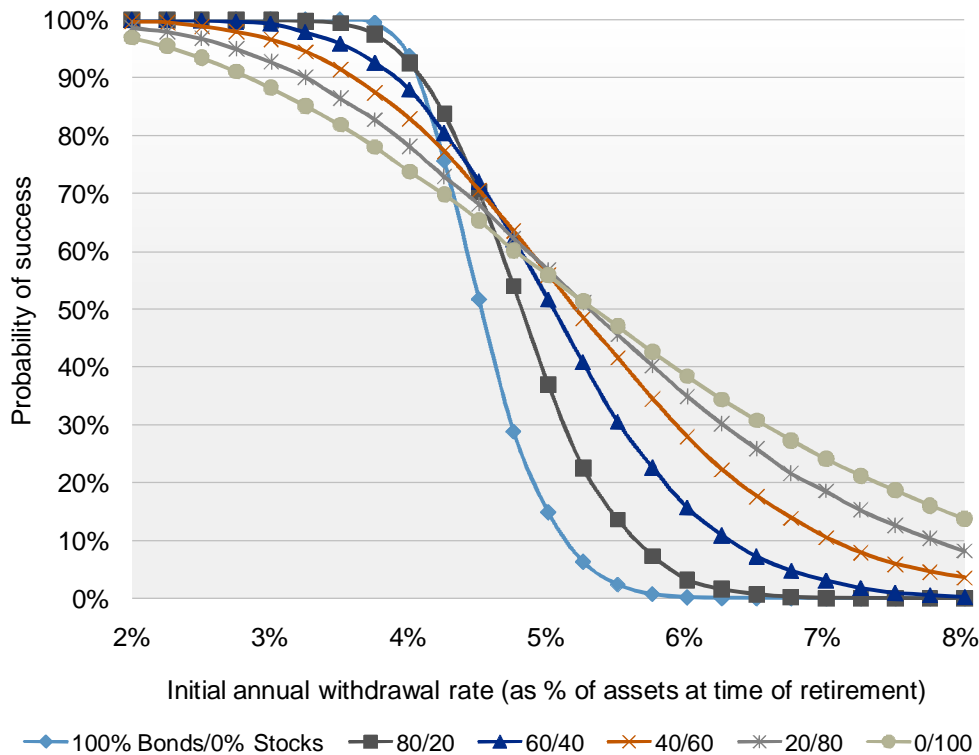
The best asset allocation depends on a participant's desired withdrawal rate

Exhibit 1 shows the probability of different withdrawal rates and asset allocations meeting a 65-year-old male's retirement income needs for life. Specifically, it plots, on the horizontal axis, the initial annual withdrawal rate as a percentage of assets at the time of retirement. All subsequent withdrawals are for the same dollar amount, with a cost-of-living adjustment (COLA) of 2.74% annually. The vertical axis indicates the probability of the withdrawal program supplying income for life. Each of the different-colored series represents a static asset allocation of bonds and equity.² Further details of Exhibit 1 are covered in the Appendix.

¹ "Running Out of Money Worse Than Death . . . poll reports." Carole Fleck, AARP Bulletin, July 1, 2010.

² Although other (potentially more effective) asset allocation strategies exist, we limit the discussion here to static asset allocation models.

Exhibit 1: Probability of plan success



Source: Russell Investments. See Appendix for further information.
 Hypothetical analysis shown for illustrative purposes only.

It turns out that the retirement investment challenge can be summarized as the ratio of retirement income to the account balance at the time of retirement. While the withdrawal rate in itself does not say much, retirees can use it to back out the likelihood that a given retirement income stream will be sustainable over time. If the retirement income level leads to a withdrawal rate being deemed too high, and thus unlikely to be sustainable through time, a lower income level may be prudent. If the withdrawal rate is low, there may be an opportunity to increase spending.

For example, suppose that 65-year-old Mike, who is single, has saved \$500,000 and would like his portfolio to generate income of \$25,000 per year (with COLAs) for the rest of his life. In Exhibit 1, this translates to “5% withdrawal rate” ($25,000 \div 500,000 = 0.05$). Looking at the exhibit, we can see that a 5% withdrawal rate has, at best, a 57% percent chance of succeeding. This estimated success rate is based on a 20% bonds / 80% stocks portfolio.

What have we learned from Mike’s case? The 5% withdrawal rate may be a bit too ambitious. A 57% chance of success is likely not palatable to most retirees.

This raises the question: what is a prudent withdrawal rate for retired investors? Most retirees are not going to be comfortable with a high probability of income-stream failure. Yet many would like to spend as much as possible to support their lifestyles. A simple approach is to select the highest withdrawal rate where the probability of success exceeds a minimum acceptable threshold. For example, a reasonable minimum could be 80%. In Exhibit 1, where there is still an asset allocation portfolio with a better than 80% chance of success, the highest withdrawal rate is 4.25%. Mike, with his \$500,000 nest egg, could reasonably expect to withdraw \$21,250 per year (with COLAs) for life.

Further, there are two asset allocation mixtures at this 4.25% withdrawal rate that have at least an 80% chance of success: 80% bonds / 20% stocks and 60% bonds / 40% stocks. Which asset allocation should Mike choose? This, too, depends on his appetite for risk. The more conservative option provides the greatest downside protection of retirement income, and the more aggressive option provides the greatest upside potential in terms of retirement income growth.

To summarize observations gleaned from Mike's case – generally speaking,³ if an investor wants to withdraw as much as possible while maintaining an acceptable probability of success, he should:

1. Choose the minimum acceptable likelihood of success – for example, 80%.
2. Select the highest withdrawal rate that meets this threshold – in Mike's case, 4.25%.

Note that retirees whose situations differ from Mike's should arrive at different withdrawal rates:

- Because women tend to live longer than men do, a 65-year-old woman should withdraw slightly less each year than Mike would.
 - A 65-year-old couple needing to make the assets last over both of their lives should withdraw less than a 65-year-old single woman would.
 - An older retiree can withdraw more.
 - A younger retiree should withdraw less.
3. Determine the asset allocations that meet the threshold, and choose one.

Design the plan to encourage retirement sustainability

DC plan sponsors can help to improve participants' retirement experiences by emphasizing the sustainability results depicted above in their plan designs. While DC plan participants tend to be disengaged for the majority of their careers, they are much more likely to actively engage as they near the time to start taking plan withdrawals.⁴ We recommend two actions plan sponsors can take to help participants approaching retirement:

1. **Educate participants about sustainable retirement planning.** We know that many participants fear financial ruin even more than they fear death. Sponsors can help alleviate their fears by providing some basic education about systematic withdrawal programs and the withdrawal rates that are likely to be sustainable, along with the asset allocations most appropriate for those withdrawal rates. They should take care to emphasize that no single plan is right for everyone.
2. **Establish a plan distribution option that promotes sustainable retirement planning.** When participants are ready to retire, plan sponsors should give them the option to receive automatic distributions with COLAs. Combined with sustainability education, offering a systematic withdrawal option would help retirees maintain sustainable spending plans. One approach would be to set up a web portal that guides a participant leaving the plan to a potentially appropriate withdrawal rate and asset allocation. To truly support the transition to retirement, that income asset allocation, as well as the withdrawals, would be automatically implemented for the participant.⁵

³ DC plan participants, like any investors, should keep in mind that no single withdrawal plan is right for everyone.

⁴ Source: Presentation by Diane Gallagher, Vice President & Head of Product Marketing, J.P. Morgan, at Institutional Investor Defined Contribution Forum, April 13, 2011.

⁵ For example, the participant's assets could be allocated to two balanced or target-risk funds in a way that results in the desired retirement income asset allocation.

Conclusion

DC plan participants need help in order to avoid running out of money in retirement. We've explored a framework for discussing this issue – the “withdrawal rate” approach – and have offered three steps individuals can take as they seek to arrive at a reasonable retirement distribution and asset allocation strategy. Finally, we've encouraged DC sponsors to use this knowledge to benefit participants, and have given some suggestions on how to go about it.

Appendix

Methodology and assumptions in construction of Exhibit 1

The Monte Carlo simulation process to construct Exhibit 1 uses the following assumptions:

- We examine the performance of a variety of static asset allocation portfolios while distributions are being deducted that are adjusted for inflation at the rate of 2.74%. Our purpose is to determine the wealth generated under the different investment portfolios and combinations of them. We also model the cost of an annuity by using the generic formula for actuarial net present value.
- Equity, bond and cash returns are modeled using a well-diversified portfolio of underlying investments. No fees are deducted from any investment.
- All withdrawals are considered to be pre-tax without regard to the investors' tax situations. Any taxes owed (if any) are assumed to be paid out of the withdrawals and/or any *Income from Other Sources* that is entered.
- The time horizon is 20 years. After 20 years we measure whether the account balance is sufficient to purchase a single life annuity.
- The annuity cost is calculated using standard actuarial net present value (NPV) calculations. It is a probability-weighted NPV, where the probability is determined from mortality tables (Society of Actuaries, U.S. Basic Individual Annuitant 2000 Table). The cost of the future value of the annuity (age 85) is calculated using a hypothetical AA Grade yield curve. Exhibit 3 shows the expectation of the yield curve, 20 years in the future; the yield curve used differs for each simulated outcome, and is linked to the simulation of the other asset classes.

Exhibit 2: Capital market assumptions for Monte Carlo simulations

	Equity	Bonds
Expected returns	8.22%	5.04%
Volatility	18.34%	5.52%
Correlation (stocks and bonds)	0.325	

Please note all information shown is based on assumptions. Expected returns employ proprietary projections of the returns of each asset class. We estimate the performance of an asset class or strategy by analyzing current economic and market conditions and historical market trends. It is likely that actual returns will vary considerably from these assumptions, even for a number of years. References to future returns for either asset allocation strategies or asset classes are not promises or even estimates of actual returns a client portfolio may achieve. The assumptions do not take fees into consideration and all returns are assumed gross of fees. Asset classes are broad general categories which may or may not correspond well to specific products. Additional information regarding Russell basis for these assumptions is available upon request.

Exhibit 3: Hypothetical yield curve used to compute annuity price at age 85

Duration	1	2	3	4	5	10	12	15	20	30	50
Rate	4.51%	4.69%	4.81%	4.91%	4.98%	5.24%	5.31%	5.38%	5.47%	5.61%	5.73%

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Although stocks have historically outperformed bonds, they also have historically been more volatile. Investors should carefully consider their ability to invest during volatile periods in the market.

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