

Russell Research

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The date debate:

Should target date fund glide paths be managed “to” or “through” retirement?

What is the “to” versus “through” debate?

You’ve probably heard about Ali versus Frazier and Coke versus Pepsi. But have you heard about the next great debate—in the defined contribution (DC) industry—known as “to” versus “through”? This debate centers around how a glide path (evolving mix of stocks and bonds) should be designed once a target date fund reaches the target year of an individual’s retirement.

The investment industry has characterized the “to” camp as proponents of the idea that target date funds should be designed primarily to build savings up *to* an individual’s target retirement date. Target date funds exemplifying the “to” principle have more conservative allocations to stocks (or other risky assets) at an individual’s target retirement date, typically with a flat or static allocation during later retirement years.

In contrast, the “through” side has been defined as those who believe target date funds should be designed to help investors save *through* retirement. The “through” camp reasons that because of increased longevity, investors need their accumulated balances to last them long after retirement. Target date funds employing the “through” approach may have higher allocations to stocks at an individual’s target retirement date, with a declining allocation to stocks for 15 to 30 years after retirement.

The distinction between “to” versus “through” philosophies took shape at a hearing held by the Securities and Exchange Commission (SEC) and Department of Labor (DOL) on target date funds in June 2009. These agencies were trying to better understand how there could be such wide differences in the performance of 2010 target date funds from different providers. For example, the Morningstar universe of 2000-2010 target date funds had a range of returns in 2008 from -3.6% to -41.8%.¹ That caused many to scratch their heads and ask “How could strategies designed for the same person have such different results?”

What should the target date debate focus on?

The distinction between “to” and “through” is sometimes characterized by whether a glide path is flat or sloping post retirement. We believe this is overly simplistic. The appropriate debate should address two questions:

1. What is the investment rationale for a sloping versus flat post-retirement glide path?
2. How aggressive should post-retirement allocations be?

QUESTION 1: WHAT IS THE INVESTMENT RATIONALE FOR A FLAT VERSUS A SLOPING POST RETIREMENT GLIDE PATH?

Russell believes, without regard to level of aggressiveness, that a flat glide path in retirement always makes sense relative to a sloping one. In fact, there is not clear investment rationale for the glide path to slope.

Retirees face their maximum risk exposure the day they retire. That day marks the beginning of the longest time period in which they need their savings to fund retirement. Assets are starting to come out of their accounts and they are quite vulnerable to a market decline—this is known as sequential risk². If this is the case, why would you take on high levels of market risk for your retirement years on that same day?

Think about it this way: If the market does well in the early years of retirement when retirees are starting to make withdrawals, then their accounts should maintain reasonable balances. As their time horizons shorten, the likelihood that their accounts will run out of money decreases and, therefore, there is no need to decrease risk.

Conversely, if the market does poorly in the early years of retirement, retirees will experience a rapidly declining account balance due to the combination of market losses and withdrawals from their accounts. Decreasing stock allocations later locks in their losses—and smaller allocations can't do enough to help retirees recover their savings.

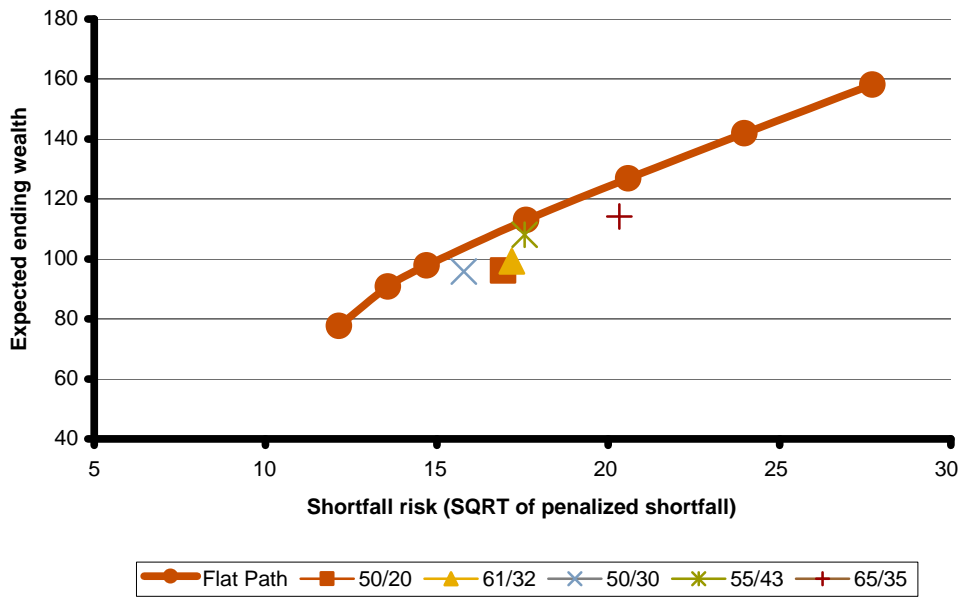
We can demonstrate that for any given downward sloping glide path, we can create a flat one that our research indicates is better in terms of its risk and reward trade-off. Specifically, we can show that for any downward sloping glide path, any withdrawal policy, and any time horizon, there exists a flat glide path that either 1) provides greater expected wealth at the time horizon for the same risk of running out of money before death, or 2) provides lower risk of running out of money for the same expected wealth at the time horizon.

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¹ Morningstar Target Date Fund 2000-2010 Universe members (200 members) one year annualized returns ending December 31, 2008. Data collected February 3, 2009 from Morningstar Direct.

² Smith, Matt and Bob Collie. “Sequential risk: When it comes to returns in defined contribution (DC) plans, “when” can be almost as important as “how much.” Russell Research. February 2008.

Exhibit 1: Efficient frontier for flat glide paths - 6% spending rate



...for each downward sloping glide path there is a corresponding flat glide path that gives a higher expected ending wealth for the same amount of risk. Also, there is a flat glide path that provides the same expected ending wealth for a lower level of risk.

IMPORTANT: The projections or other information generated by this analysis regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results.

Exhibit 1 illustrates an example. The withdrawal policy is 6% of the original balance. The time horizon is 20 years. Risk is measured in terms of the difference in wealth at the end of the 20 years and the amount of wealth needed to purchase a life annuity that extends the cash flow until death. The loss measure applies a per unit “penalty” to this shortfall that increases as the magnitude of the shortfall increases. You can think of this as the risk that someone won’t have enough to meet their retirement spending needs. The more you need to reduce your spending and/or the quicker you run out of money, the higher the penalty. The details of the simulation are described in the Appendix.

The red line shows the combinations of expected ending wealth and expected penalized shortfall available with flat glide paths. The scale assumes a beginning wealth of 100. The left end of this line corresponds to a flat glide path with 20% in equity, while the right end corresponds to a flat glide path with 80% in equity. This “efficient frontier” has the intuitive characteristic that higher equity allocations give a higher expected ending wealth along with higher risk. The points below the efficient frontier give the combinations of expected ending wealth and expected penalized shortfall generated by five downward sloping glide paths that approximate the glide paths of five leading target date families. These glide paths are labeled by their beginning and ending equity allocations. Thus the “65/35” path begins with 65% in equity and ends with 35% in year 20.

Note that for each downward sloping glide path there is a corresponding flat glide path that gives a higher expected ending wealth for the same amount of risk. Also, there is a flat glide path that provides the same expected ending wealth for a lower level of risk.

This result is quite general. We have conducted such simulations for a number of downward sloping glide paths. We have used a variety of withdrawal policies (including inflation-adjusted) time horizons and other risk measures.³

QUESTION 2: HOW AGGRESSIVE SHOULD POST-RETIREMENT ALLOCATIONS BE?

Now that we have demonstrated why we believe glide paths should be flat post retirement, one can ask the question, “How aggressive should post-retirement allocations be?”

Russell believes that one should be more conservative in post-retirement years. In fact, we have found that a 32% equity allocation at retirement gives over a 94% probability of preserving a nest egg if one assumes an annual withdrawal of 4% of the initial balance adjusted for inflation. If the equity allocation is increased to 60% of the portfolio, the probability of preserving the nest egg drops to about 88%. An 80% allocation reduces the probability of preserving the nest egg to 84%.⁴

Retirees are extremely vulnerable to negative market performance in their early retirement years. Because of the pattern of asset flows in and out of defined contribution plan accounts, sequential risk is an important risk to manage. Sequential risk states that *when* one experiences market performance greatly influences the outcome. For example, negative performance in your 20s is of little risk because you’ve put very little contributions into the plan and your retirement is many years away. Negative performance at age 65 can be devastating, not just because you have a short time horizon, but also because your account balance may be much larger and losses could represent multiple years of retirement income.

Why would someone advocate for a more aggressive allocation at the point of retirement? Those who are in the “through” camp suggest a much more aggressive weighting to equities is required to better the chance that one does not run out of money. One reason their models may suggest a more aggressive allocation is because they believe that individuals don’t follow the golden rule of 4% annual withdrawal rates, but withdraw at a higher rate from their retirement savings due to a lack of discipline and/or a failure to save sufficiently.

If that’s the assumption, then a more aggressive allocation may better the chances of preserving retirement savings for life, relative to a more conservative allocation. However, in either case, the outcomes don’t look promising. If we assume a 6% inflation-adjusted distribution, than a 32% equity allocation would result in only a 29% likelihood of preserving the nest egg while a 60% allocation improves those odds to only 42%. (And remember, we’d still advocate that the allocation should be a flat one, as discussed earlier.)

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³ The only qualification for this result is that when the withdrawal policy is so aggressive that no glide path can deliver a low risk of shortfall, the efficient frontier has a negative slope rather than the typical positive slope shown in the diagram. In the case of such aggressive withdrawal strategies, low allocations to equity lock in the exhaustion of wealth, and all-equity portfolios have both higher expected ending wealth and lower expected shortfall. The points giving the expected wealth/risk combinations of downward sloping glide paths will be below and to the left of this negatively sloped efficient frontier. In these extreme cases, the flat glide path that has the same expected ending wealth as a given downward sloping glide path will have higher risk. However, there still exists a flat glide path that has the same risk as the downward sloping glide path, but with higher expected ending wealth. Thus, you would always choose a flat glide path, even in such an extreme case. In such a case, the best glide path will be flat with 100% allocation to equity. This result is of little practical interest, since it only occurs with withdrawal policies that are so aggressive that they will almost surely leave the investor broke before death.

⁴ The methodology used to calculate these probabilities is described in the Appendix.

So perhaps if people are making inappropriate choices, the only thing investment providers can do is help them swing for the fences and take on higher stock allocations. However, when you swing for the fences and take on higher risk and stock allocations, you often strike out. We believe target date funds need to be built based on realistic, but also reasonable, assumptions. Plan sponsors and target date providers need to build a covenant with participants. If they save and spend at reasonable rates, then investment experts can build them an asset allocation that provides a reasonable expectation for meeting retirement goals. If they don't, there is only so much asset allocation can do. In other words, "What happens after the target date has no bearing on a participant's balance at the target date. Either the necessary amount of post-retirement funding will be there or it will not."⁵

A very important date: Financial security at and during retirement is paramount.

Some people assume that investment providers in the "to" camp just care about helping people build financial security before retirement and those participants will need to figure out another solution post-retirement. This is a false assumption, as we have shown in this paper.

"To" proponents care very much about getting a participant through retirement, but in a well planned and well executed way. For example, Russell's glide path methodology is built to help investors buy an income stream (e.g. a fixed annuity) to meet their retirement needs. However, we are also very mindful that many participants won't buy an income stream at retirement and are likely to remain in the plan. Therefore, we also created a post-retirement glide path that can support a reasonable pattern of withdrawals.

Individual circumstances vary greatly post-retirement—from the amount an investor has saved, their lifestyles, timing of retirement income needs, outside accounts, other retirement benefits, health and provisions for health care, spousal assets, value of real estate, bequest goals, and much more. Exhibit 2 highlights some of the differences between accumulation and decumulation. To precisely manage a post-retirement glide path that meets the diverse needs of investors is wishful thinking, at best. The complex and diverse nature of retirement circumstances supports the concept of a more conservative and flat post-retirement glide path. In addition, plan sponsors can provide other tools, like advice services and retirement income products that participants can use to understand and prepare for their unique circumstances. This could include an allocation more tailored to that participant's circumstances and a dynamic allocation based on changing circumstances.

The day you retire is a very important date and the retirement date shown on a target date fund should mean something. At retirement, investors face a great risk of outliving their savings. Target date funds should be designed with the primary objective to accumulate a nest egg healthy enough to provide an income stream in retirement. We believe that a flat and more conservative allocation to stocks during retirement can help more people meet or exceed their retirement income needs. At the end of the day, financial security at and during retirement is paramount.

⁵ Bodie, Zvi, Richard Fullmer, and Jonathan Treussard. "Unsafe at any speed? The designed-in risks of target-date glide paths." *Journal of Financial Planning*. 23.3 (2010): 42-48. Print.

Exhibit 2: Comparing accumulation and decumulation⁶

Attribute	Accumulation	Decumulation
Time horizon	Known, controllable	• Unknown, uncontrollable
Nature of investment goal	Future wealth (an amount required to achieve a desired level of income in retirement)	• Ongoing cash flow • Future wealth/bequest remainder
Risk measure	Variability in wealth	• Sustainability of cash flow • Variability in future wealth
Cash flow	Steady contributions	• Steady withdrawals
Timing of returns	Dollar-cost averaging generally is beneficial	• Market performance in the early years dramatically affects chances of success. • Reverse dollar-cost averaging generally is harmful but frequently unavoidable
Inflation	Seek growth in excess of inflation	• Protect purchasing power of cash flow

Appendix

The simulations used to construct Exhibit 1 assume equal withdrawals from an initial portfolio of size 100 for 20 years. The simulations used to calculate the inflation-adjusted results discussed under Question 2 assume that the withdrawals are increased by the previous year's inflation rate. Again, the initial portfolio is of size 100 and the withdrawals last for 20 years. The withdrawals occur at the beginning of each year. For the flat glide path portfolios, the portfolios are a constant mix of equity and fixed income. The downward sloping glide paths adjust the equity/fixed income mix each year. The equity segment of the portfolio is comprised of a 67%/33% mix of U.S. and non-U.S. equity. The annual returns of the asset classes are assumed to be lognormal, identically and independently distributed over all twenty years, and have the following distribution:

	Mean	Std. dev.	Correlations			
			U.S. equity	Non-U.S. equity	Fixed income	Discount rate
U.S. equity	8.29%	20.09%	1			
Non-U.S. equity	8.40%	22.23%	0.75	1		--
Fixed income	5.04%	6.74%	0.38	0.33	1	--
Discount rate	4.90%	3.24%	0.22	0.18	0.28	1

The purpose of the stochastic discount rate is explained below:

For each spending policy and glide path, 40,000 scenarios are generated. At the end of each scenario, the remaining wealth is calculated. In scenarios where the portfolios are exhausted before the end of 20 years, ending wealth is set at zero. The expected ending wealth is the average of the ending wealth over all 40,000 scenarios.

⁶ Fullmer, Richard K. "The Fundamental Differences in Accumulation and Decumulation." *The Journal of Investment Consulting*. 9.1 (2008): 26-30. Print.

The penalty function is calculated by comparing the ending wealth to the cost of a life annuity that would continue the assumed payment until death. In calculating the value of this annuity, it is assumed that the investor is an 85-year-old male (and thus was 65 years old at the beginning of the simulation). The annuity value calculation uses a discount rate that is drawn from the distribution shown in the table. If ending wealth exceeds the cost of annuity, the penalty function has a value of zero. If ending wealth is less than the cost of the annuity, the penalty function has a value of the square of the shortfall. In scenarios where all wealth is exhausted before the end of 20 years, the shortfall is the sum of the value of the annuity plus any unpaid cash flows. Thus a scenario where the cash flows run out after 10 years has a bigger penalty than one where the cash flows run out after 15 years. The expected penalized shortfall is the average value of the penalty over all 40,000 scenarios. The figure uses the square root of the expected penalized shortfall to have the units equal on both the vertical and horizontal axes. The results may vary with each use and over time. Other investments not considered may have characteristics similar or superior to those being analyzed.

The probability of preserving the nest egg, discussed in Question 2, is the percentage of scenarios that have a zero penalty function, i.e. the probability of having enough wealth to purchase an annuity to extend the nest egg until death.

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