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“To” versus “Through”: The great glidepath debate

Executive summary

- Target-date fund glidepaths, which represent a planned progression of asset allocation changes over time, differ in that some continue to change allocations past the point of retirement (“through retirement” glidepaths), while others stop changing allocations once retirement is reached (“to retirement” glidepaths).
- In our view, “through retirement” glidepaths, more commonly used in the industry, represent the most effective solution for those wishing to save for retirement, and for those wishing to save for and withdraw income during retirement using target-date funds.
- Furthermore, while “to retirement” glidepaths may offer the potential for more effective downside risk protection, they fall short in addressing longevity risk, or the risk of outliving savings during retirement.
- Analysis conducted by TIAA-CREF shows that “through retirement” glidepaths may allow for greater savings at retirement and an increased likelihood of maintaining income throughout retirement.

Differences between “to” and “through” glidepaths

All target-date funds feature a planned progression of asset allocation changes, known as a “glidepath,” that has a strong bearing on how the funds will perform under varied market conditions and over various time horizons associated with retirement savings. Glidepath designs can differ significantly among fund providers, with a primary difference being that “to retirement” glidepaths are intended to be used primarily up until the point of retirement, while “through retirement” glidepaths are intended to be used both up to and throughout retirement.¹

Distinctions between the two extend beyond the timing of the asset allocation landing point of the glidepath, however, and include many more facets of the target-date design, as well as the target-date funds’ projected ability to meet various objectives for retirement. The merits of each approach have been extensively debated within the target-date-fund industry. Some key differences between the two designs are highlighted in Exhibit 1.



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Exhibit 1: “To retirement” vs. “Through retirement” target-date funds

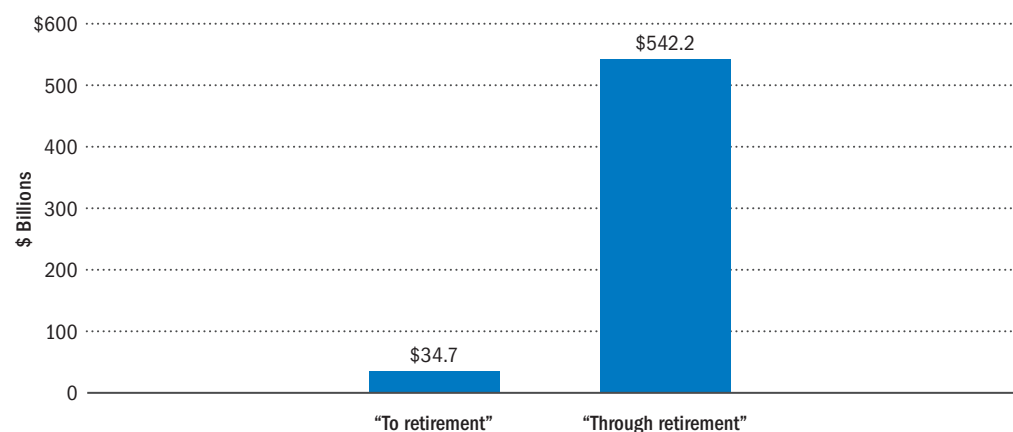
	“To retirement”	“Through retirement”
Does the glidepath continue to adjust asset allocation past the point of retirement?	No	Yes
Average ending equity allocation at age 65	31%	49%
Length of glidepath past age 65	N/A	5–30 years (varies by fund family)
Final average equity allocation	31%	28% – 34%
Are investors expected to make an active decision at retirement to pursue an investment strategy outside of target-date funds?	Yes	No, but investors are encouraged to consider their objectives as retirement approaches
Market risk (risk of loss due to market declines)	Generally lower, but at the expense of potentially reduced asset growth prior to and during retirement	Potentially higher risk in the short term, in exchange for potentially greater returns in the medium to longer term
Longevity risk (risk of outliving savings)	Lower equity allocation potentially increases longevity risk	Generally lower risk, but at the expense of potentially increased short-term volatility
Percentage of all target-date funds	34%	66%

Source: TIAA-CREF Asset Management.

“Through retirement” glidepaths are more common, used by approximately two-thirds of all target-date fund offerings. Further, as shown in Exhibit 2, assets under management (AUM) for funds using “through retirement” glidepaths are far greater than those using “to retirement” glidepaths.

Exhibit 2: Assets under management: “To” vs. “Through” retirement target-date funds

Among the 10 largest target-date fund complexes*



* Source: Morningstar, “2014 Target-Date Series Research Paper,” July 2014. Totals shown include mutual funds only and not CIT (Collective Investment Trust) assets.

TIAA-CREF’s analysis supports “through retirement” glidepaths.

Target-date funds that incorporate “through retirement” glidepaths are designed to balance market risk and longevity risk, making them a compelling choice for those who wish to use target-date funds as an accumulation vehicle and as a means to generate retirement income through systematic withdrawals.

We recognize that many investors will incorporate other reliable income-producing vehicles—such as annuities—into a prudent investment strategy at the point of retirement. At the same time, we understand that many target-date fund investors—whether through inertia, indecision, or by design—will remain invested in target-date funds beyond the point of retirement, thereby requiring an investment strategy designed to address future income needs. Many have come to rely on target-date funds with their embedded advice, not just during an individual’s working years, but also through retirement. The TIAA-CREF Lifecycle 2010 Fund, for example, continues to see net inflows beyond its target date. A “through retirement” glidepath accommodates the needs of those who remain invested in target-date funds beyond retirement, while also considering the risks faced by those who may decide to pursue other strategies at retirement.

Target-date funds that incorporate a “to retirement” glidepath are designed to reach an asset allocation landing point at retirement that includes reduced exposure to equities and corresponding increased exposure to fixed income to limit downside market risk and preserve capital in retirement. This reduced exposure to equities may allow some investors to avoid locking in losses that could occur during a protracted market decline when withdrawing from potentially needed savings to meet short-term income needs. Such an approach may be desirable for those who do not plan to use a target-date strategy as a vehicle to draw income during retirement.

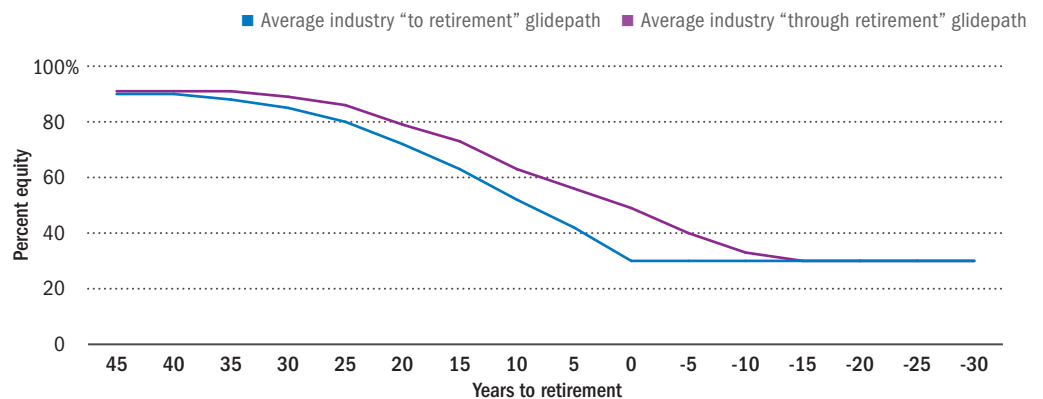
However, an often overlooked characteristic of “to retirement” glidepaths is that, in order to arrive at a lower ending equity exposure, they typically maintain lower exposure to equities in the years *leading up to retirement*. This may represent an overly conservative approach, considering that individuals generally have greater capacity to take on risk during the years before they retire than in the years following, and that equities tend to outperform over the long term. A more conservative approach can lead to potentially lower savings for retirement.

Target-date funds that incorporate “through retirement” glidepaths are designed to balance market risk and longevity risk.

Comparison of "to" vs. "through" glidepaths

In order to better understand the differences between the two types of glidepaths, TIAA-CREF's Lifecycle team conducted an analysis to estimate likely savings and retirement outcomes based on average "to retirement" and "through retirement" glidepath allocations. These industry average allocations (calculated as a simple arithmetic mean) were taken from a 2012 Morningstar industry research survey (Exhibit 3).

Exhibit 3: Strategic glidepaths total equity exposure



Source: Morningstar, "Target Date Series Research Paper: 2012 Industry Survey," May 2012.

Our simulations incorporated the following savings assumptions:

- Starting salary: \$35,000
- Begin working/saving at age 30; retire at age 65; 30-year retirement period (to age 95)
- Annual savings rate (% of salary): 10%; includes employer matching contributions
- Rate of salary increase: 2%; equal to an average of (a) the market-implied inflation from Treasury Inflation Protected Securities (TIPS) over the next 10 years and (b) the consensus forecast for the average inflation expected over the next 10 years by the Society of Professional Forecasters
- Income drawn in retirement: 80% of ending salary, increased each year at the rate of inflation. Income drawn in retirement includes Social Security payments.²

Note: The assumptions shown can be customized for any particular population base. However, if applied evenly to both glidepaths, the result should be directionally similar, but with varied degrees of difference.

IMPORTANT: Projections and other information generated through the model described above regarding the likelihood of various investment outcomes are hypothetical, do not reflect actual investment results and are not a guarantee of future results. The projections are dependent in part on subjective assumptions, including the rate of inflation and the rate of return for different asset classes. These rates are difficult to accurately predict. The projections also rely on financial and economic historical assumptions that may not reoccur in the future, volatility measures and other facts. Changes to the law, financial markets or individual personal circumstances can cause substantial deviation from the estimates. This could result in declines in an account's value over short or even extended periods of time. Results may vary with each use and over time.

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Using these glidepaths as a basis for asset allocation, the Lifecycle team employed Monte Carlo simulation techniques to estimate 10,000 scenarios for a 65-year return series (spanning 35 years working/savings and 30 years in retirement) for each glidepath. This modeling process was used to realistically simulate a broad range of potential outcomes for differentiated glidepaths, incorporating proprietary assumptions for long-run expected returns for stocks and bonds, as well as savings and retirement assumptions.

Using these assumptions, along with proprietary expected returns by asset class, we estimated outcomes associated with “to” and “through” glidepath designs. In assessing outcomes, we considered three primary measures of success:

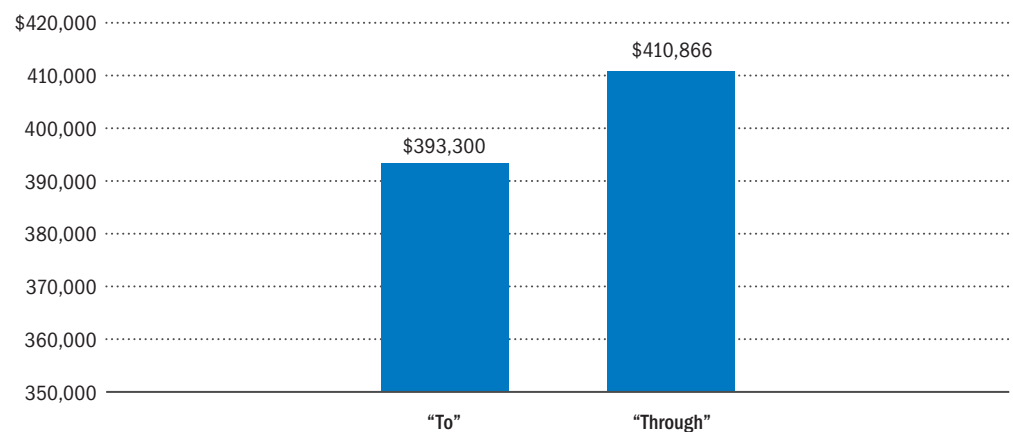
(1) the expected amount of accumulated savings at the point of retirement; (2) the potential tradeoff between upside and downside tail risks (i.e., the probable impact that +/- 1 standard deviation market returns would have on accumulated savings); and (3) the likelihood that accumulated savings at retirement would be sufficiently large to generate income for an individual’s lifetime in retirement via a systematic withdrawal program.

1. Expected amount of accumulated savings

Based on our analysis, the median accumulated savings for “through retirement” glidepaths was \$410,866, outpacing the \$393,300 for “to retirement” glidepaths, as shown in Exhibit 4. This difference highlights the ability of a “through retirement” glidepath to increase expected returns/savings over the long term (an investor’s working years). A potential drawback is that “through retirement” glidepaths were associated with greater volatility in returns, given their generally higher equity allocations. This was demonstrated by a worst 12-month return over the savings time horizon of -21.5%, vs. -14.2% for “to retirement” glidepaths. For investors with time horizons associated with retirement saving, such short-term volatility in most cases may be tolerated without adverse effects.

Exhibit 4: Median accumulated savings

“To” vs. “Through” glidepaths



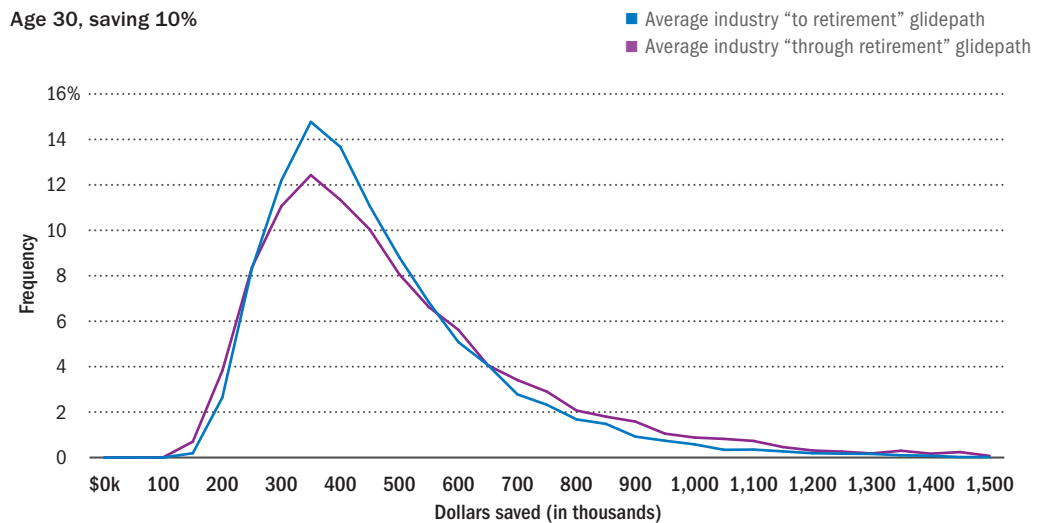
Source: TIAA-CREF.

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A histogram showing the distribution of expected accumulated savings at retirement using “to” and “through” glidepaths is shown in Exhibit 5.

At the low end of the histogram, “through retirement” glidepaths are slightly more likely to generate very low accumulated savings (e.g., \$150,000–\$250,000). However, they are also more likely to generate accumulated savings of more than \$600,000. In contrast, across the entire range of outcomes, “to retirement” glidepaths are more likely to generate accumulated savings at retirement of \$400,000 or less.

Exhibit 5: Histogram of savings at retirement



Source: TIAA-CREF. Note that the lines in Exhibit 4 are not perfectly smooth because they are the actual counts from a simulation of 10,000 market scenarios, which we found to be more than adequate to capture the dynamics of the problem. Significantly increasing the number of simulations would smooth the lines.

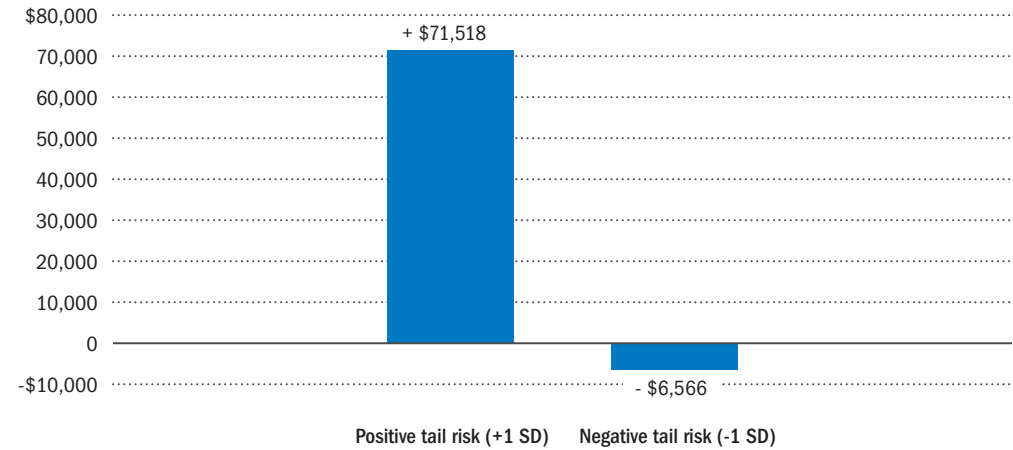
2. Potential tradeoff between upside and downside tail risks

“Through retirement” glidepaths were associated with a greater potential gain from positive tail risk events. For example, a positive 1 standard deviation market scenario resulted in savings of \$676,786 for the “through retirement” glidepath, versus \$605,268 for the “to retirement” glidepath—a difference of more than \$71,000 in favor of the “through” design. (See Exhibit 6.) On the other hand, a negative 1 standard deviation event resulted in at-retirement savings of \$265,381 for the “through retirement” glidepath, only \$6,566 less than the \$271,619 for the “to retirement” glidepath—a minor difference relative to the potential gain under the positive tail risk scenario. These results accentuate the benefits of “through retirement” glidepaths in terms of achieving higher expected returns under median and positive tail risk market scenarios, while realizing potential losses under negative tail risk events that are in most cases only marginally worse than those for “to retirement” glidepaths.

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Exhibit 6: "Through retirement" glidepaths under tail risk scenarios*

A favorable tradeoff vs. "To retirement" glidepaths



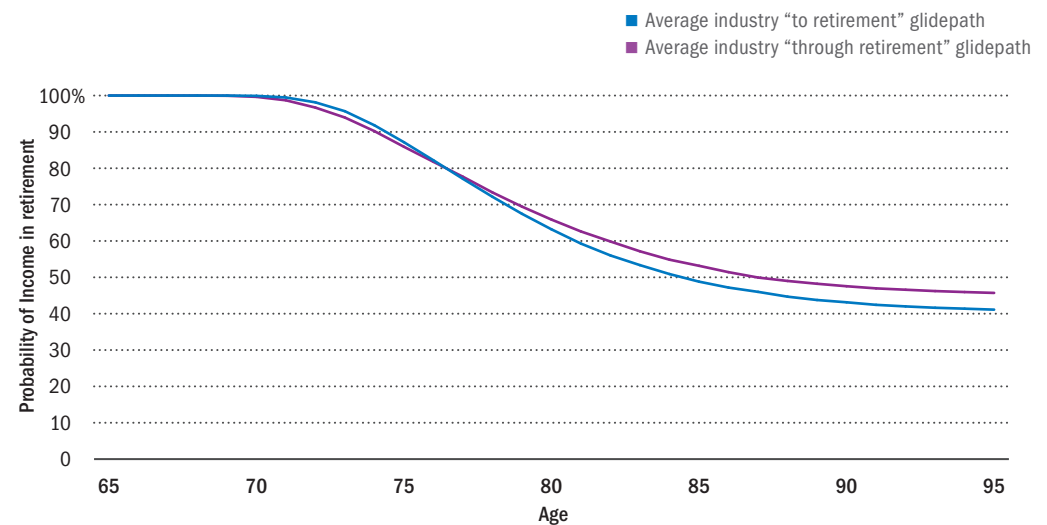
* Dollar amounts represent the difference in expected accumulated savings of "through" vs. "to" retirement glidepaths under +/- 1 standard deviation (SD) market returns. Source: TIAA-CREF.

3. Likelihood of generating income for an individual's lifetime in retirement

In addition to savings outcomes, we also compared the likelihood that accumulated savings at retirement would be sufficiently large to generate income for an individual's lifetime in retirement via a systematic withdrawal program. The associated probabilities of maintaining income in retirement are illustrated in Exhibit 7.

Exhibit 7: Probability of income in retirement

Target-date fund savings and Social Security = 80% replacement rate



Source: TIAA-CREF.

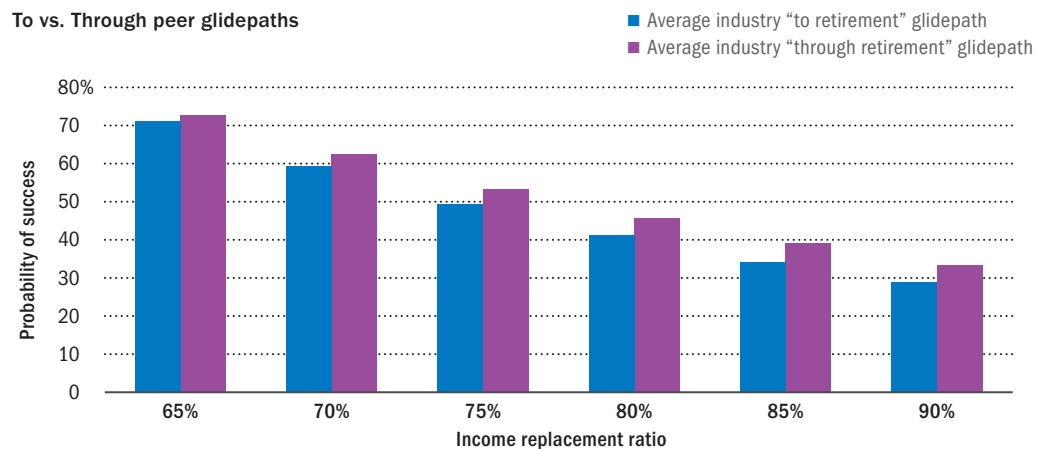
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"Through retirement" glidepaths are more likely to generate income to last through retirement years, offering better protection against longevity risk.

As shown in Exhibit 7, "through retirement" glidepaths were more likely to generate income to last through retirement years. Based on our analysis, a retiree drawing 80% of his or her ending salary (the assumed income replacement ratio used in the simulations, funded through liquidation of target-date fund holdings as well as Social Security payments, as described on page 4) would have a 48% chance of maintaining income through age 90 if using a "through retirement" glidepath. With a "to retirement" glidepath, the likelihood of maintaining the same level of income through age 90 falls to 43%—providing less protection against longevity risk (i.e., the risk of outliving one's savings).

Moreover, as shown in Exhibit 8 below, our analysis demonstrated that the "through retirement" glidepath also offers a higher probability of success in providing retirement income all the way to age 95 and for every replacement income ratio up to and including 90%.

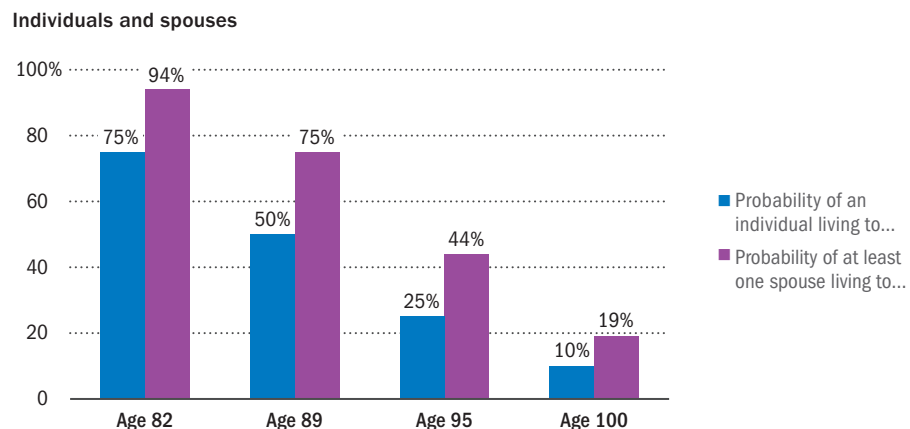
Exhibit 8: Probability of success for income in retirement at age 95



Source: TIAA-CREF.

These findings demonstrate the importance of addressing longevity risk, not just market risk (exposure to market volatility), in retirement planning. This is particularly true in light of longer life expectancies for current and future retirees (see Exhibit 9).

Exhibit 9: Life expectancy of retirees



Source: TIAA-CREF.

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Exhibit 9 shows the high probability of an individual, or in the case of a couple, at least one spouse, living to age 82 and beyond. Returning to the assumptions used in our simulations, the increased probability of “through retirement” glidepaths being able to maintain income in retirement becomes especially important, given the 75% likelihood that at least one spouse will live to age 89.

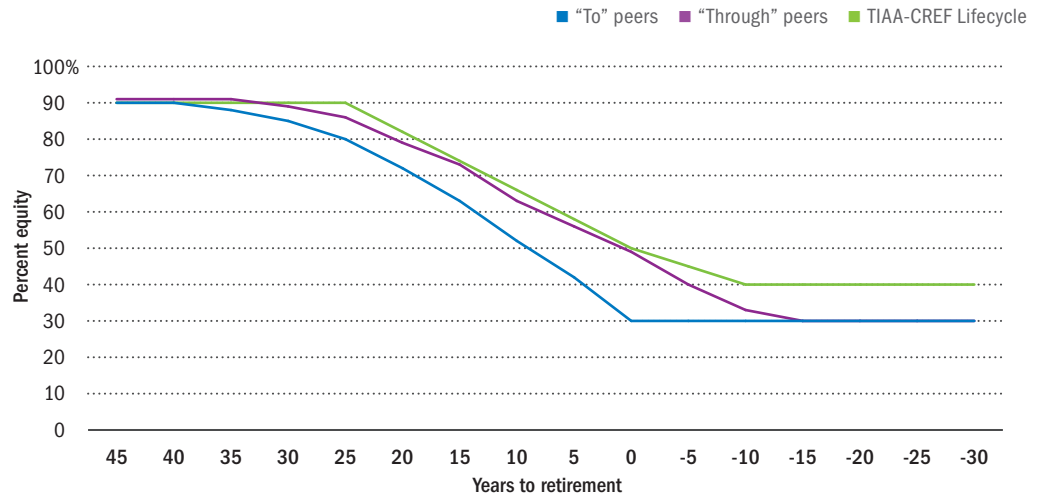
Another way to measure the effectiveness of a “through” versus “to” glidepath in the context of longer life expectancies is to calculate how many more years of retirement income the “through” approach is likely to provide older retirees. The average American is expected to live for about 20 years after retirement age (65), to age 85, and many are fortunate to live even longer. Our analysis found that a “through retirement” glidepath consistently provides an advantage for individuals between the ages of 85 and 95 for all income replacement rates between 65% and 90%. For example, at a 90% replacement rate, an 85-year-old is likely to receive almost three years of additional income with a “through” glidepath. At a 75% replacement rate, a 90-year-old is likely to receive 5.5 more years of income. These additional years of income can significantly address longevity risk.

Conclusion

While choosing a “to” or “through” glidepath design involves necessary tradeoffs, we believe a “through retirement” glidepath represents the most beneficial choice for most target-date investors, and it is the only approach that appropriately takes into account both market risk and longevity risk. By increasing the potential for both a greater accumulation of savings and sustained income streams in retirement, a “through retirement” glidepath may be more likely to meet retirement planning objectives. These findings are consistent with and support the broad use of “through retirement” glidepaths in the target-date fund industry.

Appendix

Exhibit 10: Target-date glidepaths: TIAA-CREF vs. "To" and "Through" peers



Source: TIAA-CREF.

TIAA-CREF asset class expected return models, mortality and inflation assumptions

TIAA-CREF's Lifecycle Funds portfolio management team gauges the implied returns in market prices given available information using our proprietary asset class expected return models. These models consider current market information such as forecasted economic growth, stock market dividend yields, stock buybacks, valuations, profit margins, forecasted earnings growth, and bond yields. The forecasted expected returns are integral to the design of our strategic asset allocations for our Lifecycle Funds glidepath.

Our expected return models are evaluated, updated and discussed within the team on a monthly basis. The capital market returns assumed in our Monte Carlo simulations are generated using the American Academy of Actuaries stochastic return model.

Equity expected return models

We have two equity return models:

- 1. Components of return.** This model builds an expected return assuming a long-run sales real growth estimate, a long-run inflation estimate, and current dividend yields. Current Price/Earnings valuations and profit margins are assumed to revert gradually over the long run to the median historical valuation level and profit margins.
- 2. Dividend discount/share buyback.** This model establishes a net present value (NPV) based on future dividends and/or share repurchases.

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Fixed-income expected return models

Within fixed income, we also have two long-run total return models:

1. **Current yield to maturity.** This model historically is a reliable predictor of future returns over the next decade.
2. **Yield-to-maturity spread.** This model assumes that current yields revert to historical median values over the long run.

Mortality/life expectancy expectations

The Monte Carlo simulations assume a mortality table/life expectancy shifted about 3 years forward from the current national mortality table, in recognition of the growing life expectancy of the U.S. population and TIAA-CREF participant base.

Inflation assumptions

Our long-run inflation assumptions represent an average of (a) the market-implied inflation from Treasury Inflation Protected Securities (TIPS) over the next 10 years and (b) the consensus forecast for the average inflation expected over the next 10 years by the Society of Professional Forecasters administered by the Federal Reserve Bank of Philadelphia.

¹ The point of retirement is typically age 65.

² Social Security is considered to be 40% of total income; based on the Employee Benefit Research Institute (EBRI), Issue Brief, May 2009, page 18 (middle Group V cohort – middle income, middle tenure).

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