Selecting a Target Date Glide Path: A Framework for Active Decisions

The glide path, the strategic asset allocation of a target date strategy, is an essential driver of performance, and is itself an active decision

EXECUTIVE SUMMARY

- A target date strategy can be an effective approach for many retirement investors, and plan sponsors and investors should clearly understand the key differences among the glide paths of these strategies, which are a major driver of investor outcomes.

- The long-term performance of different strategic glide paths will lead to varying wealth outcomes; therefore, selecting and monitoring a target date strategy begins with selecting and monitoring a glide path.

- Glide paths vary widely among investment providers because they are based on each provider's view of a strategy's goal, assumptions, and risk management approach, among other factors—all of which are active decisions. Thus, selecting a target date strategy is an active decision.

- Beyond the significant importance of the glide path, target date strategists are faced with the decision of which type of glide path to employ, whether through index (passive) funds, actively managed funds, or a blend of both.

- While there may be periods of underperformance, fully active or blended implementation offers an opportunity for superior performance relative to a glide path benchmark, whereas a passive strategy's ability to outperform is limited given the associated fees and costs to implement against its stated objective.

- When evaluating the implementation of a glide path, key considerations should include the impact of asset class diversification and the potential for excess returns (or for below-benchmark returns) from active management.

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Overview

The glide path—the mix of asset classes that changes as the portfolio gets closer to its target date and, for some, even beyond this date—is the heart of a target date strategy. It is an investment expression of the goals, realities, and beliefs about retirement investing. The concept of a "passive" glide path is a misnomer; the glide path for the target date strategy is inherently an active decision, because it is developed based on active decisions. Determining the goals, assumptions, expectations, and risks that lead to the glide path is foundational to understanding whether the target date family is appropriate for a retirement plan or an individual investor, and establishes an objective basis to evaluate the strategy over time. The investments within a target date portfolio should be viewed subsequent to an evaluation of how a glide path is invested—whether it is via actively managed portfolios, passive portfolios, or a blend of both—and the choice of glide path should also be considered an active decision. This paper is designed to help plan sponsors, consultants, advisers, and other key retirement investing decision makers evaluate a glide path, its ap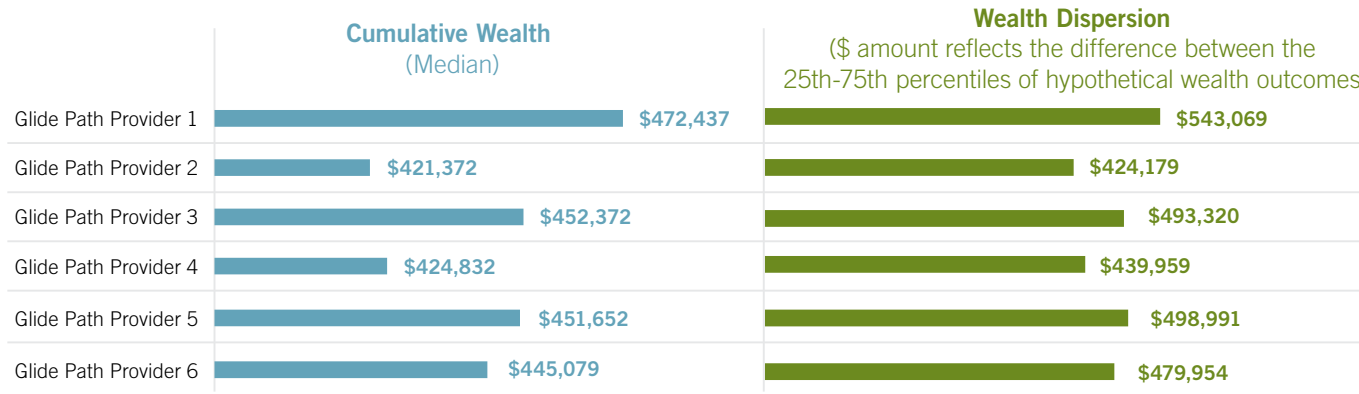propriateness for a plan population today and in the future, and the various active and passive investment options for how a glide path is implemented.

The glide path—an active decision

When evaluating a target date strategy, retirement investors often group strategies into "active" and "passive" categories, based on the types of underlying portfolios that are utilized in the target date strategy. Although this type of grouping is easy to understand, it overlooks the foundational importance of the asset allocation (i.e., glide path) on outcomes for investors in target date strategies. While representative, standardized indexes exist for portfolios in individual asset classes (e.g., the S&P 500 Index may be considered an unbiased allocation among U.S. large capitalization equities), there is no broadly accepted "passive" index for target date strategies in the financial services industry. In this section, we explore the active decisions that are involved in selecting and designing the asset allocation within target date strategies, including the goals, assumptions, expectations, and risks that must be considered and balanced.

Exhibit 1 Simulated Wealth Accumulated among Various Glide Paths Over a 40-Year Period

A simulated comparison of various industry glide paths with different objectives showed very different levels of accumulated wealth (left), and different ranges of potential outcomes (right).

	Cumulative Wealth (Median)	Wealth Dispersion ($ amount reflects the difference between the 25th-75th percentiles of hypothetical wealth outcomes)
Glide Path Provider 1	$472,437	$543,069
Glide Path Provider 2	$421,372	$424,179
Glide Path Provider 3	$452,372	$493,320
Glide Path Provider 4	$424,832	$439,959
Glide Path Provider 5	$451,652	$498,991
Glide Path Provider 6	$445,079	$479,954

Past performance is no guarantee of future results. This chart is for illustrative purposes only and does not represent actual or future performance of any investment option. Industry glide paths (ranging from conservative to more aggressive allocations) were derived from prospectus filings. We used a quantitative bootstrap simulation[1] method informed by historical index returns for each of the four asset classes: U.S. stocks, Non-U.S. stocks, Investment-Grade Bonds, Short-Term Investments, to generate 100,000 market environments (40-year returns histories for each of the four asset classes). These four asset classes were used for consistency and ease of comparison; note that individual glide paths may incorporate additional asset classes that could lead to different results. While indexes can provide insight on how asset classes have performed during historical market cycles, they do not take into account key factors such as portfolio expenses or portfolio manager investment decisions, and should not be considered representative of how a portfolio has, or will, perform. See the Important Information section on p. 8 for further explanation of bootstrap simulation and asset class data sources used in this exhibit.[2] Our assumptions: an investor with a starting age of 25 and a retirement age 65 has $2,000 of starting assets with a $25,000 starting salary that increases by a real (inflation-adjusted) 1.0% each year, and contributes 10% annually. The outcome of the simulation exercise is to contrast the cumulative wealth distributions (40-year cumulative asset distributions) of the different glide paths using median cumulative wealth and a measure of variability in the wealth distributions (Inter-Quartile Range). In the bar chart showing wealth dispersions, the dollar amount is the difference (or range) between the 75th and 25th percentiles of the wealth distributions. Typically, as the glide path becomes more aggressive, while the cumulative wealth could get larger, so would the variability of that outcome. Source: Fidelity Investments.

Over one's savings and retirement years, the glide path is an important determinant of a target date investor's retirement wealth, along with individual savings and withdrawal behavior, among other factors. Glide paths can vary significantly among providers, and can result in different outcomes, particularly over an extended period (Exhibit 1).

As a key driver of retirement wealth, target date managers and plan sponsors (in conjunction with their consultants and advisers) together can make choices to determine the appropriateness of a glide path—in most cases with the target date manager being responsible for the glide path design and execution, and the plan sponsors by careful and suitable selection and monitoring. But what are the key criteria for building and assessing a glide path?

A glide path is built on several active decisions, including:

- A desired standard of living in retirement, usually expressed as an **income-replacement goal** for retirement (often stated as a percentage of one's final preretirement salary). This goal determines the level of assets needed at retirement to provide an expected level of income (i.e., standard of living)

in retirement, and should reflect assumptions on various potential sources of income (e.g. Social Security, defined benefit pension, personal savings, etc.) in addition to the defined contribution plan and, most specifically, the target date strategy. *[Note: while target date strategies typically seek a desired income replacement rate, they do not guarantee it.]*

- A set of assumptions for **investor behavior** (e.g., savings rate, starting age for saving, retirement age, terminal age, etc.), which help define what is essentially an "asset-liability" modeling exercise, similar to the analysis that may be evaluated in a defined benefit plan. These assumptions quantify the dollars available for investment (the "assets") and in combination with the income-replacement goal, the dollars needed for withdrawals in retirement (the "liabilities"). This analysis establishes the (real) return objective for the glide path as the return on the contributed assets "required" to match the accumulated assets with the retirement liability.

- **Asset class returns and expectations**, including risk, correlation, dispersion, and scenarios of the major assets classes to be included in the glide path. These expectations

Exhibit 2 Hypothetical Wealth Accumulation and Volatility of Industry Glide Paths (1975-2015)

Different glide paths among industry target date providers can have varying levels of accumulated wealth and volatility.
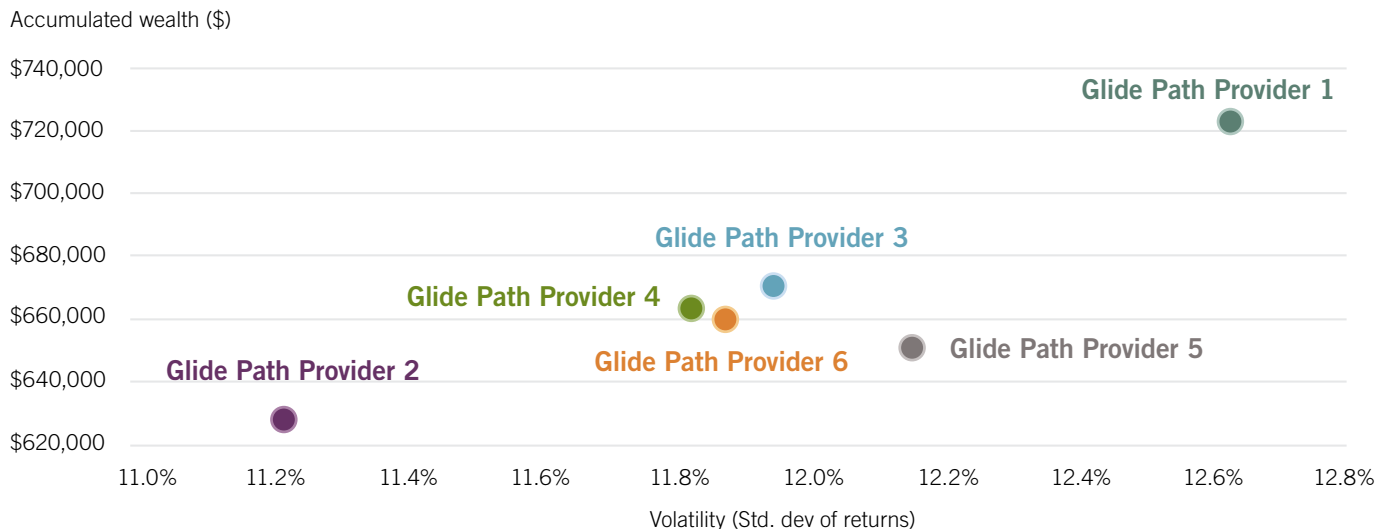
Past performance is no guarantee of future results. This chart is for illustrative purposes only and does not represent actual or future performance of any investment option. Industry glide paths were derived from prospectus filings. Wealth calculated for each glide path based on an initial investment of $10,000 using historical returns during the 40-year period ending March 31, 2015, for each of the four asset classes: U.S. stocks, Non-U.S. stocks, Investment-Grade Bonds, Short-Term Investments, and allocations corresponding to the different industry glide paths. These four asset classes were used for consistency and ease of comparison; note that individual glide paths may incorporate additional asset classes that could lead to different results. While indexes can provide insight on how asset classes have performed during historical market cycles, they do not take into account key factors such as portfolio expenses or portfolio manager investment decisions, and should not be considered representative of how a portfolio has, or will, perform. See the Important Information section on p. 8 of this article for further explanation of asset class data sources used.[3] No additional contributions are assumed. Standard deviation quantifies the magnitude of variation from the average (mean or expected value). A low standard deviation indicates that the data tend to be very close to the mean, whereas a high standard deviation indicates that the data points are spread out over a large range of values. A higher standard deviation represents greater relative risk. Source: Morningstar and Fidelity Investments, as of June 30, 2015.

can be based on observed actual results over various time periods, or on forward-looking expectations. This information establishes the returns and risk that are "expected" from the asset classes available for investment.

- A set of **observations about retirement investing risks** captured in a methodology and process on how to identify, balance, and manage these risks. This can include longevity risk (outliving one's assets), market risk (the risk of permanent loss of assets from a market downturn), and other risks such as inflation risk or behavioral risk.

It is important to recognize that, unlike a benchmark that can reflect the performance of an entire asset class, there is no single broadly accepted industry benchmark for glide paths; each glide path represents the goals, assumptions, expectations, and risks that underlie its design. Moreover, this set of criteria and beliefs can differ from glide path to glide path. As an example, surveying available income-replacement assumptions among target date strategies in the marketplace today reveals a range of objectives from 32% to 50% of an investor's final salary, with an average of 42%.[1]

Therefore, the process by which a target date provider evaluates and determines each of these active decisions can be subjective and variable in nature, which makes the development of every glide path an active decision. Across the industry, the significant variation in glide paths among target date providers attests to this observation, and can result in different levels of volatility and retirement wealth (Exhibit 2). As shown in Exhibit 2, higher wealth levels may reflect higher levels of volatility and variability in outcomes, so the balance between these factors should be considered by plan sponsors.

Glide path considerations for plan sponsors

Investors and plan sponsors may be well served in taking the time to seek out, question, and understand the research, reasoning, and rationale behind each of these key active decisions, and how they affect a provider's glide path design. Specifically:

1. Does the target date provider have a clear and well-informed view on income replacement or savings behavior?

2. Is the view backed by comprehensive research and analysis?

3. How do these factors play a role in the resulting glide path, and how do they compare with the sponsor's plan design and plan participants (see Exhibit 3)?

Since their inception in the mid 1990s, target date portfolios have proven to be an effective strategy for many investors. Given the importance of a target date strategy's glide path in determining an investor's retirement savings success, we recommend that the goals, assumptions, expectations, risks, and beliefs that underlie the glide path design be evaluated, documented, and monitored for the plan, and be used to select and monitor the plan's target date provider. This framework and resulting glide path knowledge can help to align the outcomes of the investment strategy with the needs of investors.

Complementing the glide path: Active management offers the potential to improve retirement outcomes

While the glide path will be a key determinant for a target date investor's retirement wealth, the implementation or investment of the glide path can also meaningfully affect retirement success. The implementation is generally done with passively managed portfolios, actively managed portfolios, or a blend of both. Passively managed portfolios attempt to closely mirror the holdings, risk characteristics, and performance of a stated benchmark index, less fees and expenses. Active managers believe they can capitalize on asset prices

Exhibit 3 Impact of Various Active Decisions on Glide Path Design

Differences among the various factors involved in developing a glide path can influence its design.

Glide Path Inputs	GLIDE PATH IMPLICATION	
	Active Decision: Higher	**Active Decision: Lower**
Income-Replacement Goal	Higher exposure to risk assets (ex. equities) over the investor's horizon	Lower exposure to risk assets (ex. equities) over the investor's horizon
Terminal Age	Higher exposure to risk assets over the investor's horizon	Lower exposure to risk assets over the investor's horizon
Contribution Rate	Lower exposure to risk assets over the investor's horizon	Higher exposure to risk assets over the investor's horizon

Source: Fidelity Investments.

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1   Source: Published industry reports, Fidelity Investments.

and asset classes that diverge from their inherent or historical long-term value—due to shifts in the macroeconomic backdrop, business conditions, investor sentiment, and geopolitical events. These inefficiencies can create opportunities for active managers with skill to achieve higher returns among and within asset classes, but could also result in lower returns relative to a benchmark or passive portfolio. At a high level, the following are three factors that plan sponsors should consider when evaluating their retirement plan lineup, and that investors should consider when choosing a target date strategy's implementation.

1. Actively implemented funds can offer a broader opportunity set, including extended asset classes

Extended asset classes are generally viewed as a subset of a major asset class (e.g., floating-rate notes/fixed income) or as a completely separate asset class (e.g., commodities) with distinct risk and return characteristics. Certain extended asset classes, such as high-yield debt, real estate debt, and emerging-market debt, may not have sufficient breadth and liquidity to be implemented efficiently in a passively managed strategy (i.e., a strategy that seeks to closely track the performance of a stated market index). While some passive target date strategies do provide exposure to extended asset classes, actively managed target date strategies tend to provide access to a broader, more complete set of asset classes.

2. Extended asset classes can improve diversification

As a standalone investment, extended asset classes often have demonstrated a higher level of risk than primary asset classes. However, combining extended asset classes that have more varied investment characteristics and performance relative to primary asset classes[1] can provide diversification benefits to a portfolio, such as the potential for higher returns with a similar level of risk over longer time periods. To demonstrate this concept, we created two hypothetical portfolios—a traditional portfolio of the primary asset classes and a more diversified portfolio with primary and extended asset classes—and applied the historical returns (past 20 years)

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1   Primary asset classes: Generally considered as the major asset categories: stocks, bonds, and cash-equivalent investments. Extended asset classes are generally viewed as being either subcategories within those primary asset classes (e.g., high-yield bonds, emerging-market bonds), or different from those asset classes (e.g., commodities).

Exhibit 4 Hypothetical Portfolio Wealth Accumulation: Traditional Portfolio (Primary Asset Classes) and Diversified Portfolio (Primary and Extended Asset Classes), 1995–2015

Adding extended assets to increase the diversification of a portfolio led to higher returns with the same level of volatility, and higher wealth over an extended period.
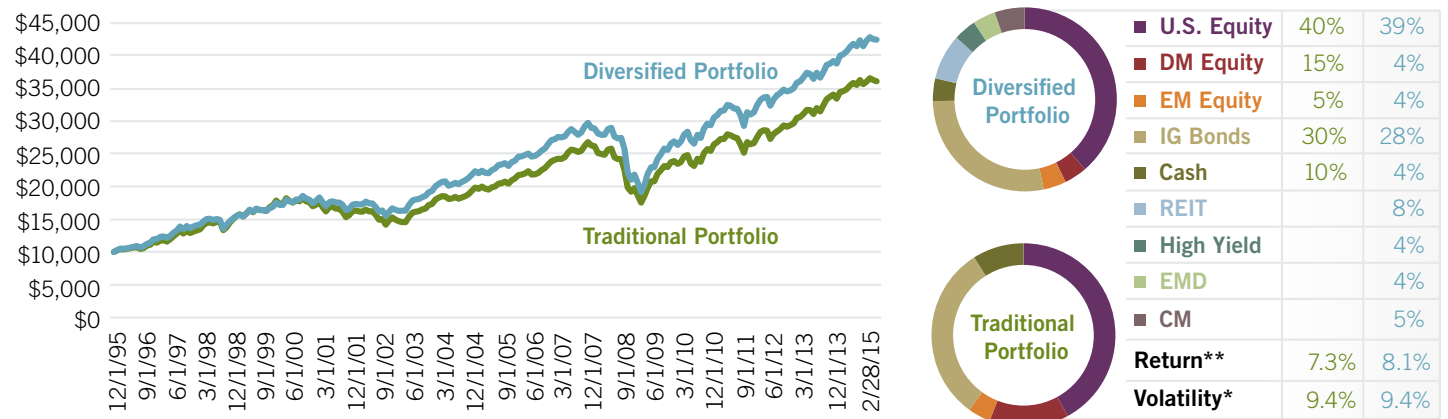
	Diversified	Traditional
U.S. Equity	40%	39%
DM Equity	15%	4%
EM Equity	5%	4%
IG Bonds	30%	28%
Cash	10%	4%
REIT		8%
High Yield		4%
EMD		4%
CM		5%
Return**	7.3%	8.1%
Volatility*	9.4%	9.4%

Past performance is no guarantee of future results. This chart is for illustrative purposes only and does not represent actual or future performance of any investment option. Diversification and asset allocation do not ensure a profit or guarantee against loss. Portfolio return reflects a $10,000 initial investment (no additional contributions) calculated by holding the respective asset mixes constant over the stated historical time period (20-year period ending Feb. 2015). See the Important Information section on p. 8 of this article for further explanation of asset class data sources used.[4] Asset class labels in chart: DM Equity: Developed-market equities; EM Equity: Emerging-market equities; IG Bonds: Investment-grade bonds; REIT: Real estate investment trust; High Yield: High-yield bonds; EMD: Emerging-market debt; CM: Commodities. Both portfolios were selected to reflect a mix of 60% equities/40% bonds, a widely accepted diversified portfolio; the Traditional Portfolio reflects a standard 60/40 portfolio; in the Diversified Portfolio, high yield and emerging-market debt are drawn from 40% investment-grade bond allocation, while REITs and commodities are drawn from 60% equities allocation. Note: the extended asset classes shown were chosen because data was available for each going back to 1995. Other asset classes may lead to different results. The asset allocation of the Diversified Portfolio is the optimal mix of assets on an efficient frontier analysis targeting a 9.4% standard deviation (the portfolio with the greatest return potential at a 9.4% level of volatility). **Return: Average annual total return. *Volatility: Expressed as standard deviation. Standard deviation quantifies the magnitude of variation from the average (mean or expected value). A low standard deviation indicates that the data points tend to be very close to the mean, whereas a high standard deviation indicates that the data points are spread out over a large range of values. A higher standard deviation represents greater relative risk. Source: Bloomberg L.P., and Fidelity Investments, as of April 30, 2015.

for each of the asset classes. By including the extended asset classes, the diversified portfolio exhibited both a higher absolute return and a higher risk-adjusted return (Exhibit 4).

We also found that the additional returns from the more diversified portfolio provided a meaningful improvement on wealth accumulation. Using historical returns, the growth of a $10,000 initial investment in each portfolio would have resulted in wealth accumulation of $43,305 for the diversified portfolio, and $37,082 in the traditional portfolio, over the past 20 years—an increase of nearly 17% while maintaining similar volatility (Exhibit 4). Keep in mind: a larger investment over a similar time period has the potential to result in a greater difference in wealth accumulation, and thus a more significant retirement cushion.

3. Successful active managers can potentially improve retirement outcomes

Active target date managers who can consistently achieve excess returns can also favorably influence retirement wealth for target date investors. Even a modest level of excess returns achieved on a consistent basis can lead to meaningful long-term results. Our research shows that adding as little as 25 basis points per year to a target date strategy's

Exhibit 5 Hypothetical Impact of Excess Returns in Terms of Years of Retirement Income

A small amount of excess return per year could deliver a material increase in retirement wealth.
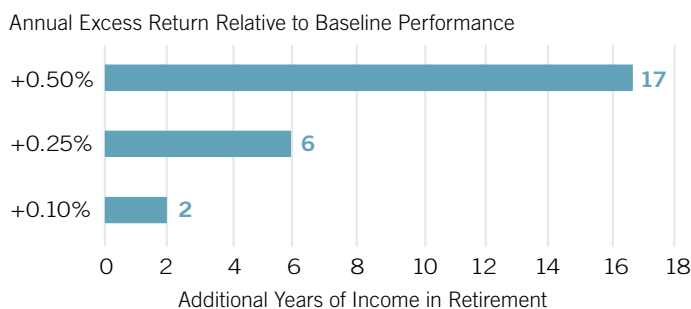
Annual Excess Return Relative to Baseline Performance

This chart is for illustrative purposes only and does not represent actual or future performance of any investment option. Figures above represent additional years of retirement income replacement beyond the baseline retirement horizon. Baseline assumption calculated by using a set of cash flow assumptions to determine a baseline (hypothetical) investment return (i.e., cash flow invested = amount of retirement income in years after retirement). We then compared this to the additional years of retirement income that could be generated by each incremental active return scenario. See Important Information on p. 8 for more on the methodology.[5] Source: Fidelity Investments, as of June 30, 2015.

Active managers have the potential to add value
Proponents of active management believe that excess returns over a stated benchmark index—through the power of compounding returns—can help shareholders increase their ability to achieve their financial goals. New Fidelity research indicates the following:

Investors can use simple, straightforward filters (those with lower fees and greater resources) to help them select actively managed large-cap U.S. equity mutual funds that on average have outperformed passive benchmark indexes over time. Many equity investors are unsure about how to find superior actively managed funds; as a consequence, some investors choose passive index funds instead (see *Leadership Series* paper "U.S. Large-Cap Equity: Can Simple Filters Help Investors Find Better-Performing Actively Managed Funds?" May 2015).

Historically, there have been distinctive, multiyear periods when actively managed, U.S. large-cap equity strategies on average have outperformed their passive benchmarks, and vice versa. Some market participants have claimed that passive management is inherently superior to active, implying that active management is a waste of time. But the fact is that active and passive management tend to work well in cycles: sometimes active outperforms passive; sometimes it is the other way around—and it often depends on certain market factors, such as dispersion

and return correlations. Most people assume that U.S. large cap stocks are the most efficient segment of the market. But there have been significant periods of time in which actively managed U.S. large cap funds have outperformed their benchmarks (see *Leadership Series* paper "Active Investing: The Cyclicality of Performance in the U.S. Large-cap Equity Market," June 2014).

Active bond fund managers can choose bonds from a wider "opportunity set" (i.e., range of potential investments) than a passive index fund can, and may employ other investing strategies that may contribute to improved overall performance. Passive investment strategies seek only to match a benchmark index, by attempting to mirror the characteristics of the underlying index and by generally limiting the field of potential investments to securities that meet the index's inclusion criteria. Active managers can consider a much broader spectrum of potential investments, and can act on informed assessments and market outlooks, constructing a portfolio that may differ from that of a passive strategy. During the 1-, 3-, and 5-year periods ending Oct. 31, 2014, these advantages allowed a majority of active managers in various bond fund categories to outperform their fixed-income benchmarks (see *Leadership Series* paper "Why Bond Investors May Benefit from Actively Managed Mutual Funds and ETFs," December 2014). *[Note: a majority of actively managed funds did not outperform in two of the four categories over a 10-year period.]*

performance could provide an additional six years of retirement income in comparison with the result from investing in index strategies (Exhibit 5). Keep in mind that active managers can potentially underperform benchmarks as well.

Final thoughts

Investors and plan sponsors evaluating target date strategies in the marketplace should recognize the primary importance of a fund's glide path and its influence on retirement outcomes. Investors should seek transparency from target date providers on the key factors—glide path goal, demographic and capital markets assumptions, and risk management framework—as well as the supporting research and process involved in the development of a glide path. Further, it is important to obtain clarity on how these goals, assumptions, expectations, and risk management approaches compare with the plan participant characteristics and the plan's goals and beliefs. A glide path is an active decision, and careful consideration and alignment of these factors is central to improving retirement success for investors.

Beyond the glide path, investors and plan sponsors must weigh the potential benefits, risks, and costs related to the implementation of a glide path. While actively managed strategies may not consistently deliver excess returns, both actively managed and blended portfolios offer the potential for improved outcomes, diversification, and performance for investors relative to a glide path that is implemented using passive portfolios.

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Fidelity Thought Leadership Vice President Kevin Lavelle provided editorial direction for this article.

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associated with investment funds. An investment cannot be made in an index.

Important Information

[1] Fidelity bootstrap simulation method: "Bootstrapping" is a simulation procedure that uses historical data to generate thousands of non-overlapping working phase periods. It is a statistical method for creating a very large number of possible scenarios from a finite sample set of observations while preserving the statistical properties of the underlying empirical distribution. We classified each year from 1900 to 2013 into one of four macroeconomic states, depending on how current real GDP growth and inflation compare with their secular trends (e.g., high/low growth and high/low inflation). We used this history of macroeconomic states to estimate a transition matrix that at each point in time provides the probability of transitioning to each of the four states over the next year, given the macroeconomic state in the current year. We then used the transition matrix to simulate 100,000 asset return time series of 40 years in length. For a given time series, the asset returns over a year associated with a macroeconomic state are randomly drawn with replacement from the historical asset return distribution for that macroeconomic state. Within a time series, the state of the economy transitions from year to year according to the empirical transition matrix. In this way, the simulation uses the underlying structure of the U.S. economy to generate a large number of non-overlapping 40-year periods that have historically plausible asset return distributions.

[2] U.S. stocks data: for the period 1900-1926, total return series calculated by Global Financial Data (GFD), for the U.S. Common Stock Indexes published by the Cowles Commission (http://cowles.econ.yale.edu/P/cm/m03/m03-intro.pdf); after 1926, U.S. Stock data is based on the value-weighted total return, obtained from CRSP, for all U.S. firms listed on the NYSE, AMEX, or NASDAQ. Non U.S. stocks data: UK FTSE All-Share Return Index (with GFD extension) for the period 1900-1949. For the period 1950-1969, World ex-USA Return Index (in U.S. Dollars) from GFD. After 1970, MSCI EAFE Return Index (in U.S. Dollars). U.S. investment-grade bonds data: Barclays U.S. Aggregate Bond Index since 1976 and the 10-year U.S. Treasury Bond prior to that date. U.S. Short-term Investments: 3-month U.S. Treasury Bill returns (GFD), entire time period (1900-2012).

[3] Historical asset class returns are represented by the following indices: U.S. Stocks: Dow Jones Total Stock Market Total Return Index; Non-U.S. stocks: MSCI EAFE (Net MA) (1975-2000) and MSCI ACWI Ex USA (Net MA) (2001-2015); Investment-Grade Bonds: IA SBBI U.S. Intermediate-Term-Government Total Return (1975) and Barclays U.S. Aggregate Bond Total Return Index (1976-2015); Short-Term Investments: IA SBBI U.S. 30 day T-Bill Total Return Index (1975-1980) and Barclays U.S. 3-Month Treasury Bellwether Index (1981-2015).

[4] Historical asset class returns are represented by the following indices (Dec. 31, 1995 to Feb. 28, 2015) - U.S. Equities (U.S.): S&P 500 Index; Developed-Market Equities: MSCI EAFE Index (Net MA) (EAFE); Emerging-Market Equities (EM): MSCI EM Total Return Index (USD); Investment-Grade Bonds (IG): Barclays U.S. Aggregate Bond Total Return Index; Cash: Barclays 3-Month T-Bill; REITs: FTSE NAREIT Total Return Index (USD); High Yield (HY): Barclays US Corporate High Yield Total Return Unhedged Index (USD); Emerging-Market Debt (EMD): JPM EMBI Global Index; Commodities (CM): Bloomberg Commodity Total Return Index.

[5] Chart is a hypothetical example based on a set of assumptions to illustrate the additional years of retirement income that could be obtained based on annual excess returns achieved above an amount of investor contributions and a calculated internal rate of return (IRR) necessary to obtain a level of income replacement through an expected lifecycle age in retirement. For the purposes of this chart, the following assumptions are presumed: investor starts contributing at age 25 through age 64, and receives annual salary increases equal to 1.5% over this period. Investor contributions increased from 8% to 13% of salary from age 25 through age 64 (includes company matching funds). Income replacement equal to approximately 50% of one's final preretirement salary through age 93. A hypothetical IRR equal to approximately 4.5% in real terms is assumed (required investment return to have savings equal income replacement needs). This hypothetical illustration is not intended to predict or project the investment performance of any security or product. The IRR is a rate of return used in capital budgeting to measure and compare the profitability of investments. Past performance is no guarantee of future results. Your performance will vary, and you may have a gain or loss when you sell your shares. For many investors, these assets will be combined with other complementary sources of income (e.g., Social Security, defined benefit plan benefits, and personal savings). Source: Fidelity Investments.

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The CRSP U.S. Stock databases contain daily and monthly market and corporate action data for securities with primary listings on the NYSE, AMEX, NASDAQ, or ARCA. CRSP refers to the Center for Research in Security Prices, located at the University of Chicago. The CRSP data is calculated based on data from its U.S. Stock database ©2013 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business.

Barclays U.S. Aggregate Bond Index is an unmanaged, market value-weighted performance benchmark for investment-grade fixed-rate debt issues, including government, corporate, asset-backed, and mortgage-backed securities with maturities of at least one year. The Barclays U.S. 3-Month Treasury Bellwether Index (1981-2015) measures the performance of Treasury bills with a maturity of less than three months. Barclays U.S. Corporate High Yield Total Return Unhedged Index is a market value-weighted index that covers the universe of dollar-denominated, fixed-rate, non-investment-grade debt.

Bloomberg Commodity Index measures the performance of the commodities market. It consists of exchange-traded futures contracts on physical commodities that are weighted to account for the economic significance and market liquidity of each commodity.

Dow Jones Total Stock Market Total Return Index measures all U.S. equity securities that have readily available prices.

FTSE All-Share Index represents 98-99% of U.K. market capitalization; it is the aggregation of the FTSE 100 and the FTSE 250. FTSE NAREIT Total Return Index is an unmanaged market value-weighted index based on the last closing price of the month for tax-qualified REITs listed on the New York Stock Exchange (NYSE).

IA SBBI U.S. Intermediate-Term Government Total Return Index is an unweighted index that measures the performance of five-year maturity U.S. Treasury bonds. Each year, a one-bond portfolio containing the shortest non-callable bond having a maturity of not less than five years is constructed. The IA SBBI U.S. 30-Day Treasury Bill Total Return Index is an unweighted index that measures the performance of 30-day maturity U.S. Treasury bills.

JPM® EMBI Global Index, and its country sub-indices, total returns for the U.S. dollar-denominated debt instruments issued by Emerging Market sovereign and quasi-sovereign entities, such as Brady bonds, loans, and Eurobonds.

MSCI Europe, Australasia, Far East Index (EAFE) is a market capitalization-weighted index that is designed to measure the investable equity market performance for global investors in developed markets, excluding the U.S. & Canada. MSCI All Country World (ACWI) Ex USA Index (Net MA) is a market capitalization-weighted index that is designed to measure the investable equity market performance for global investors of developed and emerging markets, excluding the U.S. MSCI Emerging Markets (EM) Total Return Index is a market capitalization-weighted index that is designed to measure the investable equity market performance for global investors in emerging markets.

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