Creating a Resilient Glide Path for a Target Date Strategy

Using market environment analysis to help improve retirement outcomes
Target date strategies are now the primary retirement investment vehicle for a large percentage of defined contribution (DC) workplace retirement plans.

Given this popularity, plan sponsors, advisors, and consultants should evaluate a target date provider’s glide path—it’s strategic asset allocation.

Percentage of all DC plans offering a target date strategy as the default investment option.

Target date strategies represent the sole investment option for nearly half of all plan participants, and two-thirds of millennials.

Source: Fidelity Investments recordkeeping data from 22,100 corporate DC plans and 14.5 million participants as of Dec. 31, 2016.
Constructing a glide path means making a series of active decisions

The glide path is an important investment driver of whether or not an investor will achieve their desired retirement outcomes. Glide path strategies vary based on each target date provider’s research, analysis, and approach. While it may be tempting to simplify a glide path discussion by focusing only on the level of equities at different points in an investor’s time horizon, there is more to consider.

Factors that can inform an effective glide path

- Investor’s time horizon
- Investor’s risk tolerance
- Investor’s target income goal
- Forward-looking capital market views

Market environment analysis

Take a closer look at how this input can be especially influential in creating a glide path that may help improve participant outcomes.
Market environment analysis is an essential contributor to glide path resiliency

In glide path development, market environment analysis goes beyond examining historical averages. A deeper deconstruction of market history has uncovered extended periods when asset class behaviors differ markedly from what only averages would suggest. These periods, or “states,” are distinct from one another, shift over time, and can be driven by a number of forces, such as macroeconomic changes, labor markets, and geopolitical events.

Using modern artificial-intelligence and machine-learning frameworks, Fidelity analysis has uncovered four distinctive market environments, each with different risk and performance characteristics for the major asset classes (i.e., stocks, bonds, cash).

Four distinct market states that shift over time

- **Growth**: 17% of the time
- **Expansion**: 52% of the time
- **Stagflation**: 17% of the time
- **Stress**: 14% of the time

Definitions of each market state: Growth—strong returns for stocks, strong growth, benign inflation, and moderately negative correlation between stocks and bonds; Expansion—relatively sluggish growth, low inflation, and moderately good for bonds; Stagflation—high inflation and low U.S. Treasury returns; Stress—deflation, recession, and market volatility.

Duration percentages of four historical market environments from Jan. 1, 1952 to Dec. 31, 2016. Research uses Fidelity’s Hidden Markov Model (HMM) with Gaussian Mixtures framework (part of Fidelity’s proprietary artificial intelligence and machine learning methodology to identify data-driven market regimes), which assumes there are four structural states or market environments that are more consistent, given historical realized asset class return data. This framework was used to develop this concept further to apply to our target date strategies. Please see Important Information on page 7 for a detailed view of this work and analysis. Source: Fidelity Investments, as of Aug 1, 2017.
The right asset mix is critical: Different market environments warrant different asset allocations.

A glide path informed by market environment analysis may help target date strategies be more resilient in dynamic and changing markets. Building an ideal asset allocation for a target date strategy—one that seeks the highest expected return for a given level of risk (i.e., volatility) over time—can vary depending on what market environment exists. For example, a hypothetical ideal portfolio for an investor with a target retirement age of 65 might include 100% exposure to U.S. investment-grade bonds in a “Stress” market environment. Meanwhile, the allocation for the same investor in a “Growth” market environment might include more than 50% in equities.

Market environments can shift, and positioning a target date strategy for any one market environment or an environment based only on the historical long-term averages of each asset class could lead to a substandard outcome. Research, modern artificial-intelligence, and machine-learning frameworks inform Fidelity’s glide path construction, offering investors a target date portfolio that aims for resiliency to different market states while being adaptable to market variations.

The optimal portfolio for each market state is significantly different

For illustrative purposes, we assumed 9% annualized volatility for an investor at a retirement age of 65. Risk/volatility represented by annualized standard deviation, which quantifies the magnitude of variation from the average (mean or expected value) over a given year. 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. Efficient frontier: the asset allocation of a series of portfolios reflecting the optimal mix of assets—those with the highest return for a given level of volatility (i.e., standard deviation).

*Each curved line represents a series of optimal portfolios (mean variance efficient portfolios) for each state from Jan. 1, 1952 to Dec. 31, 2016. Assumes a retirement age of 65. Research uses Fidelity’s Hidden Markov Model (HMM) with Gaussian Mixtures framework (part of Fidelity’s proprietary artificial intelligence and machine learning methodology to identify data-driven market regimes), which assumes there are four structural states or market environments, that are more consistent given historical realized asset class returns data. This framework was used to develop this concept further to apply to our target date strategies. Please see Important Information for a detailed view of this analysis.
Final Thoughts

Achieving retirement readiness requires an effective plan, active participation, and a disciplined investment strategy. Many target date investors are likely to experience several market environments in their lifetime. Plan sponsors, advisors, and consultants should seek a target date strategy with a glide path that is resilient to different market environments and flexible enough to evolve with the dynamic nature of the markets.

Contact your Fidelity Representative or visit our website for additional perspectives supported by extensive research:
• Regularly published white papers and Viewpoints
• Market insights from specialized research and analysis teams
• Reports on survey results on such topics as plan sponsor attitudes and college saving readiness

For a more in-depth examination of how Fidelity uses modern artificial-intelligence and machine-learning frameworks to inform the development of its glide path, visit our website to read our white paper, “Using Regime-Based Analysis to Develop a Resilient Glide Path.”
This article is based on the Fidelity Leadership Series paper, “Using Regime-Based Analysis to Build a Resilient Glide Path,” authored by Senior Research Analyst Srinivas Maloor, PhD, Portfolio Manager Brett Sumson, CFA, and Head of Consultant Relations Brian Leite, CFA, CEBS.

Important Information

Structural state/market environment analysis: Financial market behavior can change abruptly. Although some changes may be transitory, the new behavior often persists for several periods after a change. Such structural shifts lead to adjustments in asset pricing via changes in their means, volatilities, and serial correlation over time that may remain stable within that structural state, until markets transition to a different state. We have lived through only “one sample” of realized history. Embedded within this one window of history is a mix of different structural states (as well as state-conditional financial market regimes). The structural “states” could be thought of as referring to “secular” phenomena. However, within any such structural state, financial markets could transition between different “regimes,” which could be considered as “cyclical” trends that are reflected in asset pricing conditioned on the secular state. Markov chains (and models) have increasingly become a useful way of capturing the stochastic nature of many time series (the sequence of the four structural “states” as depicted, could be thought of as representing a four-state Markov chain). Markov models are used to train and recognize sequential data, such as speech utterances, temperature variations, biological sequences, and more recently, financial time series data. In a Markov model, each observation in the data sequence depends on previous elements in the sequence. A Hidden Markov Model (HMM) not only accommodates a Markov chain, but also considers the uncertainty in which state the system may be in at any given time. The word “hidden” in Hidden Markov Models means that market participants do not know with certainty which structural state the financial system may be in at any point in time, and has only some probabilistic insight on where it could be along the continuum of state transitions, given the observed behavior of (multi-class) asset returns. Hidden Markov processes have been widely employed for some time in many engineering applications, and their effectiveness has now been well recognized in modeling financial data. In an HMM, one does not know anything about what generates the observation sequence. The number of states, the state transition probabilities, and from which state an observation is generated are all unknown, and are all simultaneously estimated from data. Four states as described provided a robust mathematical expression (statistically significant) of the asset returns data.


Risk/volatility represented by standard deviation, which 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.

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Past performance is no guarantee of future results.

Diversification and asset allocation do not ensure a profit or guarantee against a loss.

Target date funds are designed for investors expecting to retire around the year indicated in each fund’s name. The funds are managed to gradually become more conservative over time as they approach the target date. The investment risk of each target date fund changes over time as the fund’s asset allocation changes. They are subject to the volatility of the financial markets, including that of equity and fixed income investments in the U.S. and abroad, and may be subject to risks associated with investing in high-yield, small cap, and foreign securities. Principal invested is not guaranteed at any time, including at or after the funds’ target dates.

Target date portfolios are designed to help achieve the retirement objectives of a large percentage of individuals, but the stated objectives may not be entirely applicable to all investors due to varying individual circumstances, including retirement savings plan contribution limitations. No target date fund is considered a complete retirement program and there is no guarantee any single fund will provide sufficient retirement income at or through retirement.

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